Approved: February 6, 2001 Carl Dean Holmes
Date

MINUTES OF THE HOUSE COMMITTEE ON UTILITIES.

The meeting was called to order by Chairman Carl D. Holmes at 9:05 a.m. on January 11, 2001 in Room 526-S of the Capitol.

All members were present except: Rep. Jerry Williams

Committee staff present: Lynne Holt, Legislative Research
Mary Torrence, Revisor of Statutes
Jo Cook, Committee Secretary

Conferees appearing before the committee: Leo Haynos, Kansas Corporation Commission

Others attending: See Attached List

Several items were distributed to the committee. Rep. Meyers provided an article titled "Time for Nuclear Power" (Attachment 1). Rep. Sloan distributed a USA Today article entitled "Prices Spike as California Bungles Deregulation" (Attachment 2). Chairman Holmes shared a Reuters article "California Gov. Davis Sets Power Plan" (Attachment 3). Lynne Holt distributed Telecommunication Glossary (Attachment 4), Electric Restructuring Terms (Attachment 5) and Natural Gas Industry Terms (Attachment 6).

Lynne Holt, Principal Analyst, provided an overview of the State Education Technology-Based Network Task Force. She distributed a listing of the Task Force Members (Attachment 7), an outline of the Recommendations of the Task Force (Attachment 8) and the Task Force Report (Attachment 9). The Task Force recommended the introduction of enabling legislation to authorize establishment of a broad-band technology-based network called KAN-ED and the creation of a public-private entity and board to contract for the creation, operation, and maintenance of that network. The Task Force stressed that the network must be assembled from facilities owned or be constructed by the private sector and must be managed in a manner that will not compete with private sector initiatives. The proposed legislation authorizes schools, libraries and hospitals in Kansas to connect to the KAN-ED network. Mary Torrence, Revisor of Statutes, detailed the bill, section by section. Ms. Holt and Ms. Torrence responded to questions from the committee.

Leo Haynos, Chief of Pipeline Safety for the Kansas Corporation Commission, provided a briefing on the Kansas Underground Utilities Damage Prevention Act Task Force (Attachment 10). The Task Force was convened as a result of Session 2000 **HR 6011**, which required the Kansas Corporation Commission to conduct a review and study of the Kansas Underground Utilities Damage Prevention Act, to provide for participation of interested parties in the study, and to use the U.S. Department of Transportation's Common Ground Study as a basis for the review. Mr. Haynos also distributed copies of the review of the Act (Copy available from Kansas Legislative Research Department). Mr. Haynos outlined the most significant recommendations of the Task Force: 1) Water and sewer facilities required to participate in the One Call system, although at a lower level of participation than other buried facilities; 2) Expand the requirements for oil and gas production facilities to include those buried facilities that are located near or along public roads; and 3) Excavators using directional boring equipment be required to dig a hole that will allow them to observe the head of the boring tool as it crosses a buried facility. Mr. Haynos responded to questions from the committee

Meeting adjourned at 10:38 a.m.

Next meeting is Tuesday, January 16, 2001.

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: January 11, 2001

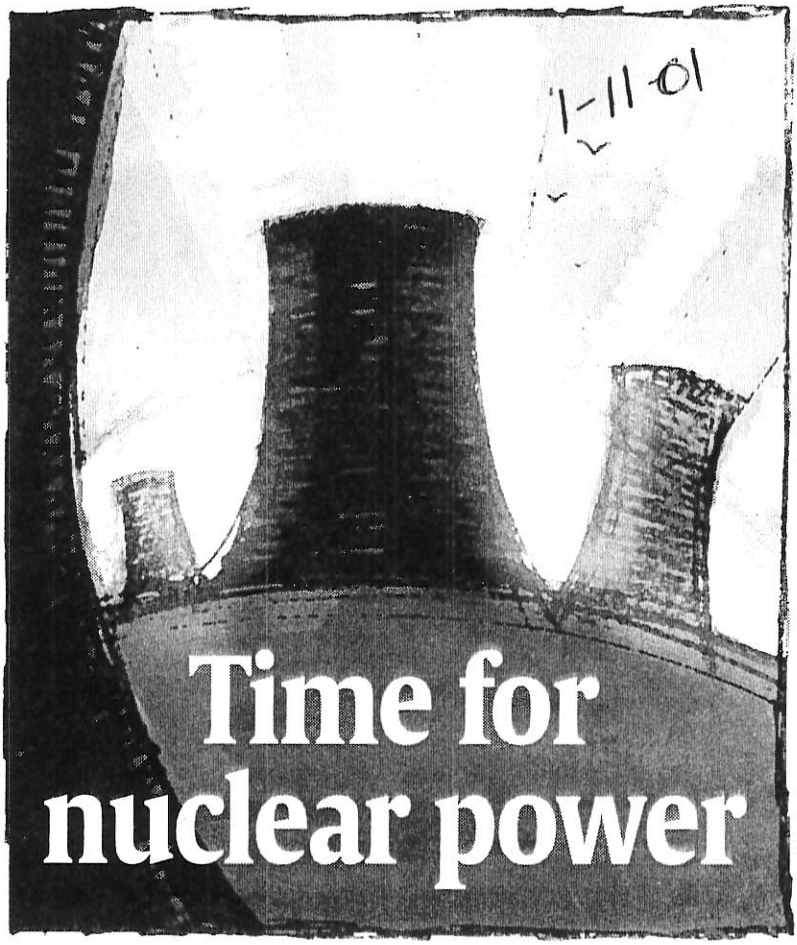
NAME	REPRESENTING
LARRY ETHRIDGE	SW BELL
Joe Dick	KCKBPU
Kelly Kultala	City of Overland Park
[illegible]	KCC
LEO HAYNOS	KCC
John Federico	KS Cable Telecom Assn
Doug Lawrence	Connect Kansas
Greg Rasmussen	KSDE
Sal Tayani	KSDE
[illegible]	[illegible]
JOE Lawson	Post Audit
BILL HAISLIP	KCC
Scott Brunner	DOB
Rebecca Lund	KDA
Alan Weis	KTEC
Danielle Noe	D of A
Susan Mahoney	Govs Office
Chris Cole	Western Resources.
[illegible] Sullivan	DISC
BRUCE GRAHAM	KEPCo

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: 1/11/01

NAME	REPRESENTING
DAVE HOLTHAUS	W.R.
J.C. Long	Utili Corp United Inc.
WALKER HENDRIX	CURB
Don Myles	KEC
Mike Reecat	AT&T
Mike Ohrt	Pinegar-Smith
JEFF NIXON	STATE LIBRARY
ERIC SEXTON	WSU
BOB Totten	Ks Contractors association
JEFF MORRIS	Gov.
Kim Gulley	LKM
Dick Carter Jr	KBOR
Brad Smoot	Ks Library Assoc
Tom Harrell	KASB
Nelson Krueger	Leading Edge, Ltd
TOM DAY	KCC
Rob Hodges	KTIA
ANDY SCHAFF	DISC
Steve Montgomery	MCI Worldcom
Bob Krehbiel	KIOGA

Time for nuclear power



By Keith Simmons, USA TODAY

By Lester C. Thurow

California's electrical-power crisis tells something about Americans and electric power. When push comes to shove, they aren't willing to simply cut back on their use of electricity.

In California, every solution other than this option seems to generate more interest. Gov. Gray Davis on Monday encouraged consumers to cut their consumption by 7% and promised that the state would do even better, but his "please-use-less-electricity" idea barely made it into most news stories, which were dominated by his tough talk about forming a public power authority to build more power plants and take over others.

Several other states also seem on the verge of power crises. It is clear that Americans are going to use a lot more electricity in the years ahead and that a lot more generating capacity must be built.

But this is in direct conflict with desires to do something about global warming. Global warming has reached the point where a scientific consensus is rapidly emerging. The globe is getting warmer, and human activities — the burning of fossil fuels — are the principal cause.

There are two principal places fossil fuels are used: the burning of oil in cars and trucks, and the burning of gas and coal in the generation of electricity. In both instances, if the green movement wants to solve the problem of global warming, it is going to have to embrace new technologies rather than reject them — its standard operating procedure for the past decade.

Solving the problems by changing behavior simply isn't an option. Americans are not going to go without electricity, and they aren't going to quit driving. American politicians are not going to force Americans to drive smaller cars by putting higher taxes on gasoline, or to use less electricity by charging more for it.

In the case of electricity, we already have a technical solution at hand. It is called nuclear power — a clean way to generate electricity that does not cause global warming. Yet there is nothing the green movement likes less than nuclear power. In Europe, closing nuclear power plants is at the center of Green Party political platforms.

This ugly choice is going to confront the green movement with a moment of truth. What does it like less: global warming or nuclear power?

There isn't any third way. Solar power simply cannot do what is necessary. There isn't enough sunshine available to provide the electricity needed during the night, during the winter and during cloudy weather. Solar power also takes enormous amounts of space devoted to ugly collectors.

One can wait for fuel cells to be perfected for autos at some point in the future and then hope that they also can be used in the home to generate electricity, but that means doing nothing about global warming today.

> Members of the environmental movement ... don't like global warming, and they don't like nuclear power. But if they want to prevent global warming, they are going to have to embrace nuclear power.

Nuclear power is one of the few examples in which human sociology has completely dominated hard science. Serious studies consistently show that, to generate the same amount of electricity, more people will die if coal is used than if nuclear power is the energy source.

Remember a year ago when two workers died in a nuclear power plant in Japan? Their deaths were in the headlines of every newspaper in the world. How many people do you think die every day in the coal mining industries of the world?

In America, we kill about 36 per year. In China, they reportedly kill 10,000 per "normal" year. The July 1976 Tangshan earthquake is believed to have killed 200,000 coal miners. Together, China (the world's biggest producer of coal) and America (the world's second-biggest producer) mine half of the world's coal. We don't know the exact death rates elsewhere, but we do know how many millions of tons of coal are produced in different countries. If we assume that the developed world has a death rate per million tons mined equal to that of the United States and that the Third World (India is the world's third-largest producer of coal) has a death rate per million tons mined equal to that of China, 55 people per day die in the world's coal mining industries. Few of those deaths make headlines.

The problem with nuclear power is not that it kills people; it kills very few. Its problem is that humans have a fear of something they cannot see, hear, feel and smell. Humans are used to the idea that a rock can fall on your head and kill you. They have not been able to get used to the idea that an invisible particle they cannot sense can kill them. Nuclear radiation is the ultimate ghost.

But there is another, perhaps more important, dirty little reality about nuclear power that the green movement would rather not talk about. Most of us know with certainty that we will not be the ones killed in a coal mining accident. We don't work in the world's coal mines. Someone else does. They are the ones risking their lives to give us electricity. We don't want to risk our own lives with nuclear power to give ourselves electricity — no matter how small the probabilities may be.

Having spent a few college summers working in an underground copper mine in Montana, my sympathies are with the coal miners. But for most Americans, it swings the other way: It is OK for them to risk their lives to give me the electricity that I want. My death and his death are not equivalent.

The fatality equation is clear. Nuclear power is much safer than coal. It is also safer than natural gas; the number of American deaths in oil and gas exploration is more than twice that in coal mining.

The environmental side effects are equally clear. Coal piles are slightly radioactive. Millions of tons of fly ash have to be dumped somewhere. Burning coal causes global warming. Nuclear power is cleaner.

This leaves members of the environmental movement between a rock and a hard place. They don't like global warming, and they don't like nuclear power. But if they want to prevent global warming, they are going to have to embrace nuclear power.

Like most of us who face such dilemmas, the green movement's forces will end up choosing to be hypocrites. They will talk about nonexistent third ways to solve global warming. But since none of these ways is politically viable, they will end up living with global warming. Reversing themselves and admitting that they are wrong on nuclear power would be just too difficult psychologically.

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ATTACHMENT 1

"USA TODAY hopes to serve as a forum for better understanding and unity to help make the USA truly one nation."
—Allen H. Neuharth, Founder, Sept. 15, 1982

President and Publisher: Tom Curley

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Executive Editor: Bob Dubill
Editor, Editorial Page: Brian Gallagher
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USA TODAY

Today's debate: Electricity prices

Prices spike as Calif. bungles deregulation

Our view:
Other states' success suggests go-slow approach.

When Californians bought into the idea of deregulated electricity in 1996, they did so on the promise they'd get reliable power at cheap prices. Instead, they're facing power shortages and whopping bills.

The state's public utilities commission is scheduled to decide Thursday whether to let two big utilities raise rates by up to 30%, ending a price freeze that was supposed to last until 2002. Financially strapped utilities, meanwhile, are threatening blackouts.

With electricity deregulation underway in 23 other states, households nationwide should be wondering whether they'll be next to face California-style chaos. It is a red flag that electricity deregulation, which continues to hold promise for lower rates, must be approached cautiously and gradually.

California made a series of remarkably large blunders, many encouraged by utilities, that set the state on a dangerous path to deregulation without the competition needed to hold down prices. Unless the state corrects those errors, matters will get worse when full deregulation comes in two years. Much of the state could be served by power monopolies free to hike prices.

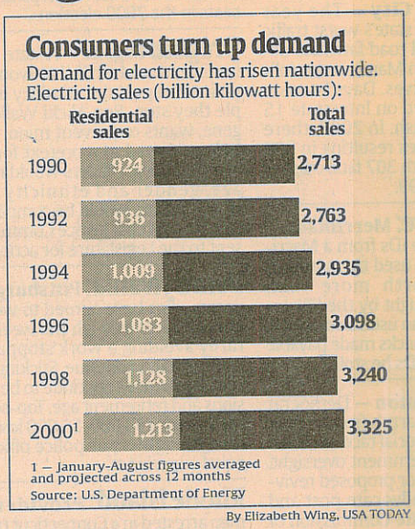
The good news is that other deregulating states have planned better, though the process in those states is less advanced than in California.

Among California's failings:

▶ Utilities were barred from raising rates to consumers but had to cope with market prices from power plants. When deregulation began, the utilities heartily backed the arrangement, because the frozen prices were far higher than the market prices they paid. Now, with a national energy shortage pushing prices higher, they're worried about bankruptcy, threatening blackouts and pleading for relief. Some seek re-regulation to protect themselves from their own ineptitude.

▶ The state failed to bring enough new supply online before deregulating. No major plants were built in the previous decade, contributing to a supply crunch in a state where electricity demand has been growing 4%-6% per year. By contrast, Texas, which is rolling out its deregulation more slowly, has since 1996 built 23 new plants that have added 15% more power-generation.

▶ California tried to manipulate prices and blew it. The state required utilities to buy all of their power from a "power exchange" in short-term blocks. This prevented utilities from entering long-term contracts or adopting hedging strategies that could keep prices stable. After prices spiked, the government worsened the situation by trying to cap prices utilities could pay for power. Not surprisingly, power suppliers then sold their electricity to other states without price caps, where they could get a better return. Result: power shortages rectified only by an emergency federal order that some out-of-state plants in the West sell California electricity. Price controls were lifted.



By Elizabeth Wing, USA TODAY

Other states have avoided this problem. New York, for instance, encouraged its utilities to enter into "transition contracts" under which plants have an obligation to sell them power. Similarly, Texas has long-term contracts, under which the utilities buy power for long periods at set prices, allowing them to hedge against short-term changes in price.

The price of all this bungling will be huge for Californians, but households outside California may pay as well. The Western plants that the federal government has forced to supply California's thirst could in time have difficulty supplying their traditional customers, driving up their prices. In the extreme, the financial instability of California utilities Pacific Gas and Electric and Southern California Edison could roil markets and add to recession pressures.

At a minimum, most Californians will soon face significant financial pain — unwarranted on their part — to pay for the botched deregulation either through taxes or higher rates. If this bailout isn't accompanied by new rules, the 2002 ending of price caps may bring the worst of all worlds: monopoly markets without price controls.

Long term, the best hope for controlling prices is competition, but California has yet to come up with a convincing plan to make sure that exists. In fact, in the San Diego area, where controls were briefly lifted without significant new competition, prices more than doubled.

Some advocacy groups and politicians are calling for more radical solutions, such as a state buyout of the utilities or simple refusal to pay the utilities on the grounds they must be hiding money somewhere. The utilities, having tasted their own medicine, now say they'd support re-regulation.

But none of these fixes would save California's consumers from the dim-bulb management that has put the state at risk of power outages and financial catastrophe.

California Gov. Gray Davis' said recently that "if deregulation fails in California, it is dead in America." To the contrary, as California does its repair work, the rest of the county will be taking notes on how not to deregulate as carelessly as California did.

States deregulate

Electricity deregulation is underway in the following areas:

- ▶ Arizona
- ▶ Arkansas
- ▶ California
- ▶ Connecticut
- ▶ Delaware
- ▶ District of Columbia
- ▶ Illinois
- ▶ Maine
- ▶ Maryland
- ▶ Massachusetts
- ▶ Michigan
- ▶ Montana
- ▶ Nevada
- ▶ New York
- ▶ New Hampshire
- ▶ New Jersey
- ▶ New Mexico
- ▶ Ohio
- ▶ Oklahoma
- ▶ Oregon
- ▶ Pennsylvania
- ▶ Rhode Island
- ▶ Texas
- ▶ Virginia
- ▶ West Virginia

Source: U.S. Department of Energy

Monday January 8 10:21 PM ET
California Gov. Davis Sets Power Plan

By Michael Kahn

SACRAMENTO, Calif. (Reuters) - California Gov. Gray Davis vowed on Monday to put the brakes on ``out-of-state profiteers'' and save major utilities from bankruptcy as he presented a plan to pull California out of an escalating power crisis caused by a failed effort at electricity deregulation.

Davis, making what many political analysts said was the most important speech of his career, said the state had to act fast to create a new state authority to buy and build new plants and expand state controls over existing plant operators. He spoke just a day before he planned to go to Washington for an emergency energy crisis summit meeting with senior Clinton administration officials.

``California's deregulation scheme is a colossal and dangerous failure,'' Davis said in his annual ``State of the State'' speech in Sacramento. ``It has resulted in skyrocketing prices, price-gouging, and an unreliable supply of electricity. In short, an energy nightmare.''

Davis proposed a wide range of remedies for the situation, ranging from voluntary consumption cuts to broader government powers to force generators to keep power flowing in the event of imminent outages.

He said also California would need some sort of centralized power authority to develop new power plants, and vowed to get tough on ``out-of-state profiteers'' and other power wholesalers he said were holding California consumers hostage.

``I'm not interested in utopian proposals,'' Davis said. ``I want ideas that will work in the real world.''

Crackdown On ``Profiteers''

He also said he would urge the state to get tough on out-of-state generators many suspect of price gouging during the state's current crisis. ``Never again can we allow out-of-state profiteers to hold Californians hostage,'' Davis said.

The governor was set to attend a Washington meeting Tuesday with senior Clinton administration economic officials as well as utility company executives in an effort to find a compromise solution. U.S. Energy Secretary Bill Richardson Monday urged all sides to ``give a little'' when they meet.

But Davis was clearly not in a giving mood Monday night, blasting power generators and pouring scorn on the notion that the holding companies behind the state's two top utilities,

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Southern California, owned by Edison International, and Pacific Gas & Electric, owned by PG&E Corp., should be allowed to slide into slide into bankruptcy.

Caught between soaring wholesale power costs and capped rates they can charge consumers, the utilities say they have lost some $12 billion since June and may simply fold if action is not taken to ensure their financial survival.

The power crisis, ironically, was brought on by an economic boom that created surging demand for electricity in a state where no new generators had been built for a decade, partly due to uncertainty linked to deregulation.

Southern California Edison (news - web sites) Friday cut 1,450 jobs -- 13 percent of the work force -- and officials at both companies say the present situation is unsustainable, a verdict backed by Wall Street, which has hammered their stock prices and downgraded their credit ratings to just above junk level.

As if to underscore the state's continued power woes, officials who manage most of the California power grid declared a "stage one" emergency Monday evening -- the first of the new year -- as operating reserves dropped to low levels.

Davis, a rising national star for the Democratic Party, has found himself placed squarely on the hotseat because of California's power crisis which has enraged consumers, worried Wall Street and threatened the state's economic boom.

Bankruptcy Notion Rejected

``To the utilities and the financial community, let me say this: I reject the irresponsible notion that we can afford to allow our major utilities to go bankrupt,'' Davis said.

``There is no easy solution. But, if I have to use the power of eminent domain to prevent generators from driving consumers into the dark and utilities into bankruptcy -- then that's what I'll do,'' Davis said.

The utility stocks were already strengthening ahead of Davis' speech, with PG&E closing at $14, up $1-3/8, or 10.89 percent on the New York Stock Exchange (news - web sites). Edison International closed at $12, up $1-11/16, or 16.36 percent.

Davis suggested a number of other strategies, repeating earlier pledges to set aside some $1.25 billion to help bring new power plants on line and encourage energy conservation, pushing for an overhaul to the ``crazy'' bidding process for electricity, and put more public advocates on the governing boards of the Independent System Operators.

State Senate President John Burton, a fellow Democrat, said Davis' proposals were an important first step toward addressing the power problems caused by California's four-year-old experiment with market deregulation.

``These are all weapons in the arsenal..you don't get much bolder than eminent domain and the public power authority,'' Burton said.

Republicans, however, were less enthusiastic, with the state Assembly's Republican leader Bill Campbell saying Davis proposals came months after the first problems with deregulation were becoming clear.

``Governor, even when your lights were on, your eyes were shut,'' Campbell said. Earlier Monday, state Assembly Speaker Robert Hertzberg announced he was forming a bipartisan panel to look into the power crisis and craft legislation to address it.

``The public deserves to know what went wrong. They deserve to know where the money went,'' Hertzberg said.

One of the beleaguered utilities had a brief glimmer of good news as Southern California Edison said a federal court had upheld its right to recover reasonable costs it incurred in purchasing power for its customers.

The company is suing the California Public Utilities Commission (news - web sites) (CPUC) regulatory body, seeking to recover from customers about $5 billion it has spent on purchasing power.

Telecommunications Glossary

Access charge -- A special fee to compensate the local exchange company for use of its network to connect to the long distance network; recently a fixed fee for access has been authorized to be charged to U.S. telephone customers.

AM -- Amplitude modulation (see Modulation).

Analog -- Representations that bear some physical relationship to the original quantity: usually electrical voltage, frequency, resistance, or mechanical translation or rotation.

Antenna -- A device used to collect and/or radiate radio energy.

Artificial intelligence -- Computer programs that perform functions, often by imitation, usually associated with human reasoning and learning.

ASCII -- (pronounced ask-ee). American Standard Code for Information Interchange. The binary transmission code used by most teletypewriters and display terminals.

Band -- A range of radio frequencies within prescribed limits of the radio frequency spectrum.

Bandwith -- The width of an electrical transmission path or circuit, in terms of the range of frequencies it can pass; a measure of the volume of communications traffic that the channel can carry. A voice channel typically has a bandwidth of 4000 cycles per second; a TV channel requires about 6.5 MHz.

Baseband -- An information or message signal whose content extends from a frequency near dc to some finite value. For voice, baseband extends from 300 hertz (Hz) to 3400 Hz. Video baseband is from 50 Hz to 4.2 MHz (NTSC standard).

Baud -- Bits per second (bps) in a binary (two-state) telecommunications transmission. After Emile Baudot, the inventor of the asynchronous telegraph printer.

Bell-compatible -- Essentially this means that a modem conforms to the standards of the Bell Telephone System.

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Binary -- A numbering system having only digits, typically 0 and 1.

Bit -- Binary digit. The smallest part of information with values or states of 0 or 1, or yes or no. In electrical communication systems, a bit can be represented by the presence or absence of a pulse.

BOC -- Telephone jargon for Bell operating company, used to refer to divested companies.

Booster -- Amplifier in a communications system that increases the power of a signal for retransmission to a further point in the system.

Bridge -- In teleconferencing, a device used to interconnect three or more phone lines in different locations.

Broadband carriers -- The term to describe high-capacity transmission systems used to carry large blocks of, for instance, telephone channels or one or more video channels. Such broadband systems may be provided by coaxial cables and repeated amplifiers or microwave radio systems.

Broadband communication -- A communications system with a bandwidth greater than voiceband. Cable is a broadband communication system with a bandwidth usually from 5 MHz to 450 MHz.

Buffer -- A machine or other device to be inserted between other machines or devices to match systems or speeds, prevent unwanted interaction, or delay the rate of information flow.

Bypass -- A telephone industry term meaning service that avoids use of the local exchange company network, such as a customer connecting directly into the long distance network or buying a direct line between offices instead of using the public
network.

Byte -- A group of bits processed or operating together. Bytes are often a 8-bit group, but 16-bit and 32-bit bytes are not uncommon.

Cable television -- The use of a broadband cable (coaxial cable or optical fiber) to deliver video signals directly to television sets in contrast to over-the-air transmissions. Current systems may have the capability of receiving data inputs from the viewer and of transmitting video signals in two directions, permitting pay services and videoconferencing from selected locations.

CAD -- Computer-aided design. Techniques that use computers to help design machinery and electronic components.

CAI -- Computer-assisted instruction.

CAM -- Computer-aided manufacturing.

Carrier -- Signal with given frequency, amplitude, and phase characteristics that is modulated in order to transmit messages.

Carrier signal -- The tone that you hear when you manually dial into a computer network.

Cathode ray tube -- Called CRT, this is the display unit or screen of your computer.

CCITT -- Consultative Committee for International Telephone and Telegraphs, an arm of the International Telecommunications Union (ITU), which establishes voluntary standards for telephone and telegraph interconnection.

Cellular radio (telephone) -- Radio or telephone system that operates within a grid of low-powered radio sender-receivers. As a user travels to different locations on the grid, different receiver-transmitters automatically support the message traffic. This is the basis for modern cellular telephone systems.

Central office -- The local switch for a telephone system, sometimes referred to as a wire center.

Channel -- A segment of bandwidth that may be used to establish a communications link. A television channel has a bandwidth of 6 MHz, a voice channel about 4000 Hz.

Chip -- A single device made up of transistors, diodes, and other components, interconnected by chemical process and forming the basic component of microprocessors.

Circuit switching -- The process by which a physical interconnection is made between two circuits or channels.

Coaxial cable -- A metal cable consisting of a conductor surrounded by another conductor in the form of a tube that can carry broadband signals by guiding high-frequency electromagnetic radiation.

Common carrier -- An organization licensed by the Federal Communications Commission (FCC) and/or by various state public utility commissions to supply communications services to all users at established and stated prices.

Computer word -- A string of characters or binary numbers considered as one unit and stored at a single computer address or location.

COMSAT -- Communications Satellite Corporation. A private corporation authorized by the Communications Satellite Act of 1962 to represent the United States in international satellite communications and to operate domestic and international satellites.

CPE -- Telephone jargon for customer premises equipment, which may often be distinguished from telephone company-owned equipment.

CPU -- The central processing unit of a computer.

Cross-subsidy -- A telephone term meaning that funds from one part of the business (e.g., long distance) are used to lower prices in another (local service).

A controversy is how to prevent cross-subsidy between regulated and unregulated parts of the telephone business.

CRT -- See Cathode ray tube.

Database -- Information or files stored in a computer for subsequent retrieval and use. Many of the services obtained from information utilities actually involve accessing large databases.

DCE -- Data communications equipment, computer components that are designed to communicate directly to data terminal equipment (see DTE).

Deaveraging -- Changing telephone rates so as to reflect true cost differences, thus making rates vary in different parts of a state. (Local rates are typically regulated so that telephone service is not much more expensive in some parts of a state than in others, although the costs to the providers may vary greatly; rates are kept at an "average" by having a pool so that high-cost areas are subsidized by low-cost ones. Typically rural telephone companies are against deaveraging because it could cause a major increase in their rates.

Dedicated lines -- Telephone lines leased for a specific term between specific points on a network, usually to provide certain special services not otherwise available on the public watched network.

Demodulate -- A process in which information is recovered from a carrier.

Depreciation -- As usually defined, the tax "write-off" or giving credit in some way for the declining value of equipment investments; in the telephone business, depreciation variations are an important variable in setting rates.

Digital -- A function that operates in discrete steps as contrasted to a continuous or analog function. Digital computers manipulate numbers encoded into binary (on-off) forms, while analog computers sum continuously varying forms. Digital communication is the transmission of information using discontinuous, discrete electrical or electromagnetic signals that change in frequency, polarity, or amplitude. Analog intelligence may be encoded for transmission on digital communication systems (see Pulse code modulation).

Direct broadcast satellite (DBS) -- A satellite system designed with sufficient power so that inexpensive earth stations can be used for direct residential or community reception, thus reducing the need for a local loop by allowing use of a receiving antenna with a diameter that is less than one meter.

Divestiture -- The breakup of AT&T into separate companies.

Dominance -- A telephone industry term meaning whether a company serving an area has such a high percentage of the business that it drives out competition; a current challenge is in how to define and measure dominance.

Downlink -- An antenna designed to receive signals from a communications satellite (see Uplink).

4-4

Download -- To receive information from another computer and store it into your computer memory or disk files.

Dumb terminal -- See Terminal.

Duplex -- The condition when information can flow two ways simultaneously in a communication link. This condition is often called full duplex as contrasted with one-way communications or half duplex. For most computer communication services, a full duplex condition is necessary.

Earth station -- A communication station on the surface of the earth used to communicate with a satellite. (Also TVRO, television receive-only earth station.)

Elasticity -- How one variable may be subject to change given changes in a related variable; "demand elasticity" in the telephone business is how much the quantity of service demanded may vary with changes in price.

Electronic mail -- The delivery of correspondence, including graphics, by electronic means, usually by the interconnection of computers, word processors, or facsimile equipment.

Encryption -- To change from a plain text to an encoded form requiring sophisticated techniques for decoding. Digital information can be encrypted directly with computer software.

Equity -- In the telephone business, this refers mainly to the availability of low cost service to all groups of customers, including the poor, handicapped, elderly, or rural.

ESS -- Electronic switching system. The Bell System designation for their stored program control switching machines.

FAX -- Facsimile. A system for the transmission of images. It is a black and white reproduction of a document or picture transmitted over a telephone or other transmission system.

FCC -- Federal Communications Commission. A board of five members (commissioners) appointed by the president and confirmed by the Senate under the provision of the Communications Act of 1934. The FCC has the power to regulate interstate communications.

Fiber optics -- Glass strands that allow transmission of modulated light waves for communication.

Final mile -- The communications systems required to get from the earth station to where the information or program is to be received and used. Terrestrial broadcasting from local stations and/or cable television systems provide the final mile for today's satellite networks.

FM -- Frequency modulation (see Modulation).

Frequency -- The number of recurrences of a phenomenon during a specified period of time. Electrical frequency is expressed in hertz, equivalent to cycles per second.

Frequency spectrum -- A term describing a range of frequencies of electromagnetic waves in radio terms; the range of frequencies useful for radio communication, from about 10 Hz to 3000 GHz.

Full duplex -- See Duplex.

Gateway -- The ability of one information service to transfer the user to another one, as from Dow Jones/News Retrieval to MCI Mail.

Geostationary satellite -- A satellite, with a circular orbit 22,400 miles in space, which lies in the satellite plane of the earth's equator and which turns about the polar axis of the earth in the same direction and with the same period as that of the earth's rotation. Thus, the satellite is stationary when viewed from the earth.

Gigahertz (GHz) -- Billions of cycles per second.

Half duplex -- Message flow is only one-way at a time (see Duplex).

Handshaking -- Jargon for the electronic exchange of signals as one computer links with another.

Hardware -- The electrical and mechanical equipment used in telecommunications and computer systems (see Software).

Hard wire modem -- Or direct modem; as contrasted with an acoustic modem, this equipment plugs directly into a telephone jack.

Headend -- The electronic control center of the cable television system where weaving signals are amplified, filtered, or converted as necessary. The headend is usually located at or near the antenna site.

Hertz (Hz) -- The frequency of an electric or electromagnetic wave in cycles per second, named after Heinrich Hertz, who detected such waves in 1883.

Host -- The main computer or computer system that is supporting a group of users.

IEEE -- Institute of Electrical and Electronic Engineers, a professional society.

Information utility -- A term increasingly used to refer to services that offer a wide variety of information, communications, and computing services to subscribers; examples are The Source, CompuServe, or Dow Jones News/Retrieval.

Institutional loop -- A separate cable for a CATV system designed to serve public institutions or businesses, usually with two-way video and data services. Also called I-net.

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Interface -- Devices that operates at a common boundary of adjacent components or systems and that enable these components or systems to interchange information.

I/O -- Input-output. The equipment or processes that transmit data into or out of a computer's central processing unit.

ISDN -- Integrated Services Digital Network; a set of standards for integrating voice, data, and image communication; a service now being promoted by AT&T and some regional telephone companies.

IXC -- Interexchange carrier; telephone companies (e.g., AT&T, MCI, Sprint) that connect local exchanges and local access and transport areas (LATAs) to one another; a highly competitive part of the business.

Kilobyte (Kb) -- 1024 bytes of information, or roughly the same number of symbols or digits.

Kilohertz (KHz) -- Thousands of cycles per second.

LAN -- See Local area network.

Laser -- Light amplification by simulated emission of radiation. An intense beam that can be modulated for communications.

LATA -- Local access and transport area; a telephone service region incorporating local exchanges, yet usually smaller than a state; typically are serviced by a given telephone company for local services, and interexchange carriers for some intraLATA and all interLATA service.

Local area network (LAN) -- A special linkage of computers or other communications devices into their own network for use by an individual or organization. Local area networks are part of the modern trend of office communication systems.

LMS -- Local measured service; a method of telephone rate calculation that is sensitive to amount of usage as against a flat rate.

LEC -- Local exchange company; the telephone company that supports local calls (non long distance); typically a regulated monopoly. LECs are within larger areas called LATAs (Local access and transport areas).

Loop -- The wire pair that extends from a telephone central office to a telephone instrument. The coaxial cable in broadband or CATV systems that passes by each building or residence on a street and connects with the trunk cable at a neighborhood node is often called the "subscriber loop" or "local loop."

LSI -- Large-scale integration. Single integrated circuits that contain more than 100 logic circuits on one microchip (see VLSI).

Mainframe -- The base or main part of a large computer, as contrasted with mini- or microcomputers. Usually refers to the actual processing unit.

Mass storage -- A device that can hold very large amounts of information cheaply with automated access on demand.

Megahertz (MHz) -- Millions of cycles per second.

Memory -- One of the basic components of a central processing unit (CPU). It stores information for future use.

MFJ -- Short for modified final judgment which set AT&T divestiture in motion.

Microchip -- An electronic circuit with multiple solid-state devices engraved through photolithographic or microbeam processes on one substrate (see Microcomputer; Microprocessor).

Microcomputer -- A set of microchips that can perform all of the functions of a digital stored-program computer (see Microprocessor).

Microprocessor -- A microchip that performs the logic functions of a digital computer.

Microsecond -- One millionth of a second.

Microwave -- The short wave lengths from 1 GHz to 30 GHz used for radio, television, and satellite systems.

Millisecond -- One thousandth of a second.

Minicomputer -- In general, a minicomputer is a stationary computer that has more computer power than a microcomputer but less than a large mainframe computer.

MOU -- Minute of use; a usage measure used in the telephone business to calculate certain rates.

Modem -- Short for modulator-demodulator. The equipment used to link a computer to a telephone line.

Modulation -- A process of modifying the characteristics of a propagating signal, such as a carrier, so that it represents the instantaneous changes of another signal. The carrier wave can change its amplitude (AM), its frequency (FM), its phase, or its duration (pulse code modulation), or combinations of these.

Monitor (Video) -- Usually refers to the video screen on a computer, but has more technical meanings as well.

Multiplexing -- A process of combining two or more signals from separate sources into a single signal for sending on a transmission system from which the original signals may be recovered.

Nanosecond -- One billionth of a second.

Narrowband communication -- A communication system capable of carrying only voice or relatively slow-speed computer signals.

Network -- The circuits over which computers or other devices may be connected with one another, such as over the telephone network. One can also speak of computer networking.

Node -- A point at which terminals and other computer and telecommunications equipment are connected to the transmissions network.

Off-line -- Equipment not connected to a telecommunications system or an operating computer system.

On-line -- A device normally connected to a microcomputer that permit it to run various programs and handle scheduling, control of printers, terminals, memory devices, and so forth.

Optical fiber -- A thin flexible glass fiber the size of a human hair which will transmit light waves capable of carrying large amounts of information.

Packet switching -- A technique of switching digital signals with computers wherein the signal stream is broken into packets and reassembled in the correct sequence at the destination.

Parallel interface -- Refers to a computer communications connection where the bits code for a symbol is sent simultaneously as contrasted with serial interface, where the symbols are sent in sequence.

PBX -- A private branch exchange which may or may not be automated. Also called PABX (private automatic branch exchange).

Peripherals -- Units that operate in conjunction with a computer but are not a part of it, such as printers, modems, or disk drive.

Pooling -- "Revenue pooling". A telephone industry term meaning setting up special collections of funds for intended cross-subsidy, as in averaging rates between high-cost rural services and less expensive urban ones.

Port -- A place for a communication signal to enter or exit a computer.

POTS -- Jargon for "plain old telephone service."

Program -- A set of instructions arranged in proper sequence for directing a computer to perform a desired operation.

Protocol -- A description of the requirements for enabling one computer to communicate with another.

Public switched telephone network -- The more formal name given to the commercial telephone business in the United States; includes all the operating companies.

PUC -- Public Utility Commission, usually the entity that sets telephone rates in a state.

Pulse code modulation (PCM) -- A technique by which a signal is sampled periodically, each sample quantitized, and transmitted as a signal binary code.

RAM -- Random access memory. A RAM provides access to any storage or memory location point directly by means of vertical and horizontal coordinates. It is erasable and reusable.

Regional holding companies (RHC) -- The companies formed to take over the individual Bell System operating companies at divestiture; there are seven (e.g., Pacific Telesis).

Return key -- A holdover from the carriage return of a typewriter keyboard, the return key is used to tell a computer to execute what it has received. It is sometimes called an enter or execute key.

Robotics -- The use of electronic control techniques, as programmed on microprocessors and microcomputers, to operate mechanical sensing and guidance mechanism or robots in manufacturing and assembly processes.

ROM -- Read only memory. A permanently stored memory which is read out and not altered in the operation.

RS232 -- An interface between a modem and associated data terminal equipment. It is standardized.

Separations -- A telephone industry term meaning methods for dividing costs, revenues, etc. between different types of carriers, especially long distance versus local exchanges.

Slow-scan television -- A technique of placing video signals on a narrowband circuit, such as telephone lines, which results in a picture changing every few seconds.

Software -- The written instructions that direct a computer program. Any written material or script for use on a communications system or the program produced from the script (see Hardware).

Systems program -- As contrasted with an applications program which accomplishes specific tasks (e.g., word processing), this supports the basic operating system of the computer, for example, in allocating memory storage and operating peripherals.

Tariff -- The published rate for a service, equipment, or facility established by the communications common carrier.

Telco -- Jargon for "telephone company."

Telecommuting -- The use of computers and telecommunications to enable people to work at home. More broadly, the substitution of telecommunications for transportation.

Teleconference -- The simultaneous visual and/or sound interconnection that allows individuals in two or more locations to see and talk to one another in a long distance conference arrangement.

Telemarketing -- A method of marketing that emphasizes the creative use of the telephone and other telecommunications systems.

Teletext -- The generic name for a set of systems that transmit alphanumeric and simple graphical information over the broadcast (or one-way cable) signal, using spare line capacity in the signal for display on a suitably modified TV receiver.

Telex -- A dial-up telegraph service.

Terminal -- A point at which a communication can either leave or enter a communications network.

Terminal emulator -- Use of a personal computer to act as a dumb terminal; this requires special software or firmware.

TIBS -- Telecommunications-intensive businesses.

Timesharing -- When a computer can support two or more users. The large computers used by the information utilities can accommodate many users simultaneously who are said to be timesharing on the system.

Transponder -- The electronic circuit of a satellite that receives a signal from the transmitting earth station, amplifies it, and transmits it to the earth at a different frequency.

Trunk -- A main cable that runs from the head end to a local node, then connects to the drop running to a home in a cable television system; a main circuit connected to local central offices with regional or intercity switches in telephone systems.

Twisted pair -- The term given to the two wires that connect local telephone circuits to the telephone central office.

Uplink -- The communications link from the transmitting earth station to the satellite.

Upload -- To transfer information out of the memory or disk file of your computer to another computer.

Videotext -- The generic name for a computer system that transmits alphanumeric and simple graphics information over the ordinary telephone line for display on a video monitor.

VLSI -- Very large scale integration. Single integrated circuits that contain more than 100,000 logic gates on one microchip (see LSI).

WATS -- Wide area telephone service. A service offered by telephone companies in the United States that permits customers to make dial calls to telephones in a specific area for a flat monthly charge, or to receive calls collect at a flat monthly charge.

This document was created to serve as a reference tool for consumer advocates and representatives who seek to facilitate the individual consumer's understanding of some of the more common technical terms and concepts pertaining to electric utility restructuring. Knowledge of these terms and concepts is essential if consumers are to benefit from the restructuring process.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

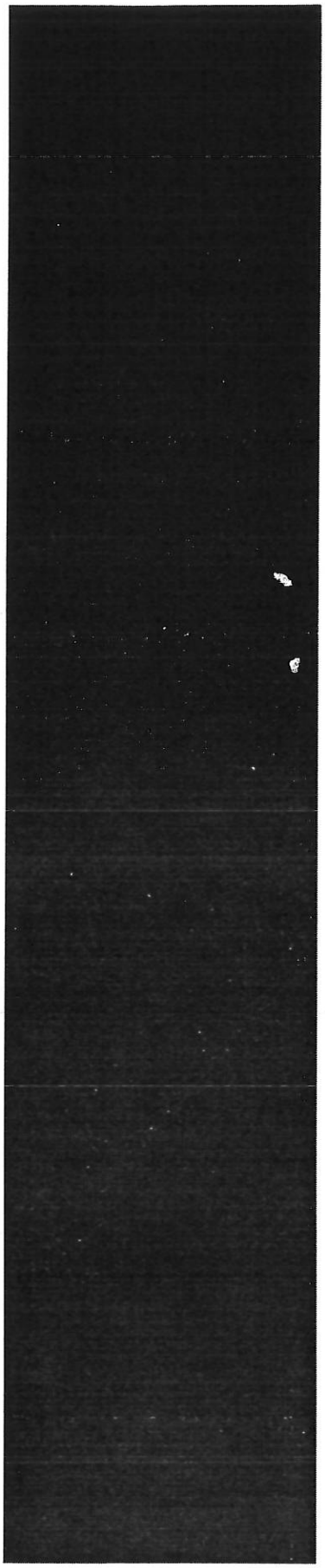
Access
The right to use part of the transmission or distribution system to send and/or receive electricity.

Affiliate
A company that is directly or indirectly controlled by, or shares the same owner as, another company.

Aggregator
An entity that brings together retail customers, negotiates on their behalf for a lower price, and purchases their electricity.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Baseload
The minimum amount of electric power that a company must deliver to its customers over a



given period and at a constant rate.

Bilateral Contract
A direct contract that individual consumers or aggregators make with power producers.

Broker
Any entity that serves as an agent or intermediary in the purchase and sale of electricity without ever owning either the facilities that produce electric power or the power itself.

Bulk Power Market
Purchases and sales of electricity among utilities.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Cogeneration
The production of both electricity and some form of useful thermal energy, such as heat or steam, from a single fuel source.

Cogenerator
A power plant that produces both electrical and thermal energy.

Commercial Consumer
One of three commonly-used designations (the others are residential and industrial) used to differentiate among consumer classes of electricity. Commercial consumers consist of nonmanufacturing business establishments including retail stores, hotels, restaurants, wholesale businesses, and educational institutions, among others.

Cost Allocation
The process of assigning the costs for the generation, transmission and/or distribution of electricity among industrial, commercial, and residential customers.

Cramming
The practice of adding charges to a customer's monthly bill for optional services that the customer has not authorized.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Date Certain

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The establishment of a specific date by which restructuring efforts are to be implemented.

Default Provider
Any entity that, in the transition to retail competition and under retail competition, provides electric generation services for customers who fail or are unable to make their own arrangements for electric generation services.

Demand
The amount of electricity, expressed in kilowatts, that is required by customers at a given point in time.

Deregulation
1) Less government oversight.
2) The elimination or relaxation of regulations governing an industry or sector of an industry.

Direct Access
A key feature of the restructuring process - the opportunity for consumers to bypass their local utility, the generator of their electricity, and purchase electricity from the generator of their choice (also see Retail Wheeling).

Distribution Service
The delivery of electricity through local, low-voltage wires to end-use consumers from high-voltage transmission lines.

Divestiture
1) The requirement that an electric utility separate its generation services from its transmission and distribution services and that it then legally transfer ownership and control of all generation-related assets to a non-affiliated company. Divestiture of generation services is one of three often-mentioned policy options for protecting consumers from the disadvantages of market power (the others are functional separation and structural separation).
2) The term (rare) also can refer to the transfer of ownership and control of a utility's transmission or distribution functions to a non-affiliated interest.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Electric Utility
Any regulated entity that owns and/or operates facilities for the generation, transmission, or

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distribution of electricity, and has the exclusive right, within a defined geographic area, to sell customers these services.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Federal Energy Regulatory Commission (FERC)
An independent federal agency within the U.S. Department of Energy that has jurisdiction over rates, terms and conditions of the transmission and the wholesale sales of electricity in interstate commerce.

Functional Separation
1) The requirement that an electric utility segregate its books and records to isolate the generation function from all other functions. Functional separation of generation services is one of three often-mentioned policy options for protecting consumers from the disadvantages of market power (the other policy options are divestiture and structural separation).
2) The term (rare) also can refer to the segregation of books and records to isolate the transmission or distribution functions from all other functions of the utility.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Generation
1) The process of producing electrical energy from other forms of energy.
2) The amount of electric energy produced, usually expressed in watthours (Wh), kilowatthours (kWh), or megawatthours (MWh).

Gigawatt (GW)
One thousand megawatts (1,000 MW), or one million kilowatts (1,000,000 kW), or one billion watts (1,000,000,000 watts) of electricity. A measure that is often used to describe the capacity of large power plants or of many plants.

Grid
A system of interconnected power lines for the transmission and distribution of electricity both locally and nationally.

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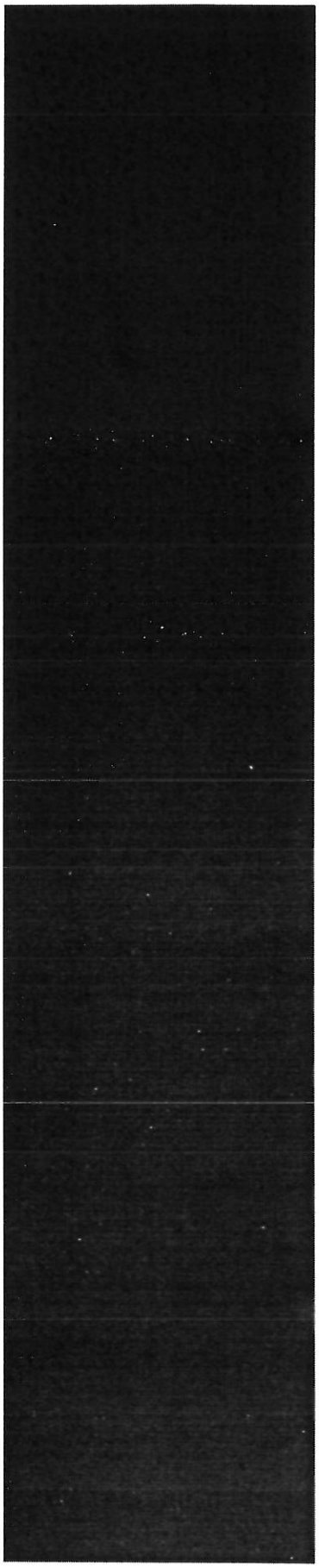

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Independent Power Producers (IPP)
Any entity not regulated by the government as a public utility that owns or operates an electricity generating facility and offers electric power for sale to utilities and/or the public (also known as Non-Utility Generators).

Independent System Operator (ISO)
A neutral entity, not affiliated in any way with any generation, transmission or distribution market participant, created to operate, control and/or maintain an instantaneous balance of the transmission grid system in a manner that will ensure reliable and fair transfers of electricity between generators and distribution companies.

Industrial Consumer
One of three commonly-used terms (two others are residential and commercial) used to differentiate among customer classes of electricity. The classification of industrial consumer is made either because the consumer 1) is a manufacturing, construction, mining, agriculture, fishing, or forestry establishment or; 2) uses an amount of electricity that exceeds some specified limit.

Investor-Owned Utility (IOU)
A company, owned and operated by private investors; can be contrasted with a governmental agency or a cooperatively owned organization, that provides utility services.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Kilowatt (kW)
One thousand (1,000) watts. A measure of the amount of electricity used by large appliances and households.

Kilowatt-hour (kWh)
The unit of electricity for which most customers are charged on their monthly bill (in cents per kilowatt-hour). One kilowatt-hour equals one hour of using electricity at a rate of 1,000 watts. Three and a half-kilowatt hours will provide enough power to keep a 150-watt light bulb on for an entire day.

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A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Load
The amount of electric power required at a specific time, or over a specific period of time, by a consumer, circuit, or system.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Market Power
The ability of a company, either individually or in collaboration with other companies, to affect the price of electricity in the relevant market.

Megawatt (MW)
One thousand kilowatts (1,000 kW) or one million watts (1,000,000 watts). A term that is most often used to measure the output of a power plant. While a large power plant might be 1000 MW, the average size of a U.S. power plant is just over 200 MW.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Nonbypassable Charge
A charge that all consumers must pay, whether they continue to receive electric service from their present utility or select a new supplier.

Non-Utility Generator (NUG)
Any entity not regulated by the government as a public utility that owns or operates a generating facility and offers electric power for sale to utilities or the public (also known as Independent Power Producers).

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Pilot Program
A program offered by a utility that allows a limited number of customers to select their energy suppliers on an experimental basis.

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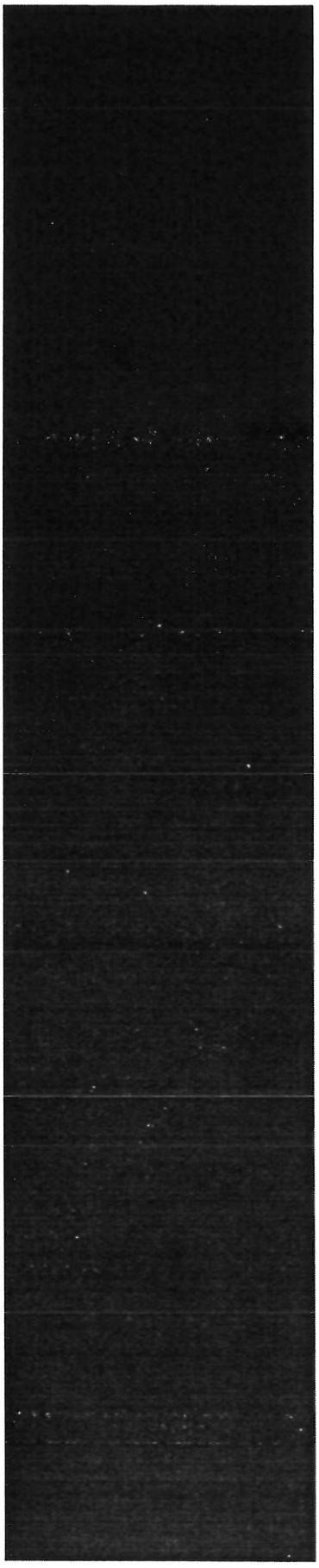

Poolco
A system in which an independent operator, acting as both the central buying entity for electricity suppliers in the region and the single agent for selling power to retail customers and their aggregators, accepts bids from the suppliers to sell their power and then, based on the bids and the demand for power at that time, establishes the short-term market price for electricity.

Power Marketers
Entities that buy and sell electricity, but do not own generation, transmission, or distribution facilities. The difference between power marketers and brokers is that power marketers actually take ownership of electricity and also must register with FERC.

Power Pool
Two or more interconnected electric systems that seek to obtain greater reliability of service and efficiency of operation by coordinating the development and operation of their electric generation and transmission facilities.

Provider of Last Resort
An entity that is legally required to provide service to customers who are not offered electricity service from any competitors.

Public Utility Commission (PUC) or Public Service Commission (PSC)
A state authority responsible for the regulation of retail sales of electricity within a particular state.

Public Utility Holding Company Act of 1935 (PUHCA)
A federal law that was enacted to address and correct abusive practices by large and powerful utility holding companies that were operating to the detriment of utility ratepayers and shareholders. PUCHA granted the Securities and Exchange Commission the authority to abolish the large holding companies and to regulate mergers and diversification proposals of the remaining holding companies, now known as registered holding companies.

Public Utility Regulatory Policies Act of 1978 (PURPA)
Congress passed PURPA with the intent to encourage cleaner, more energy-efficient power production. PURPA has created a new class of non-utility generators called "qualifying facilities" (QFs), that must meet certain ownership, size, and efficiency criteria established by the Federal Energy Regulatory Commission. Once a generator

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is designated as a QF, it can force a utility to purchase its power, but only at a price that is no higher than the cost that the utility would have had to pay to produce the electricity itself or the cost it would have had to incur to purchase the power from another source (avoided cost).

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Qualifying Facility (QF)
A term created in the Public Utility Regulatory Policies Act of 1978 that describes a cogenerator or small power producer that meets certain ownership, operating, and efficiency criteria set by the Federal Energy Regulatory Commission.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Regulation
A rule established by the federal or state government that sets procedures that a utility must follow. A regulation must first be offered for public comment before it becomes effective.

Reliability
Electric system reliability has two components: adequacy and security. Adequacy is the ability of the electric system to supply customers at all times, taking into account scheduled and unscheduled outages of system facilities. Security is the ability of the electric system to withstand sudden disturbances, such as electric short circuits or unanticipated loss of system facilities.

Residential Consumer
One of three commonly-used terms (also commercial and industrial) that differentiate among consumer classes of electricity. Residential consumers are made up of private households that consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and drying clothes.

Restructuring
The reorganization of the electric utility industry's market structure. A movement toward a structure that allows consumers to purchase electricity generation services from competing suppliers and away from the traditional regulated monopoly structure, in which utilities receive exclusive

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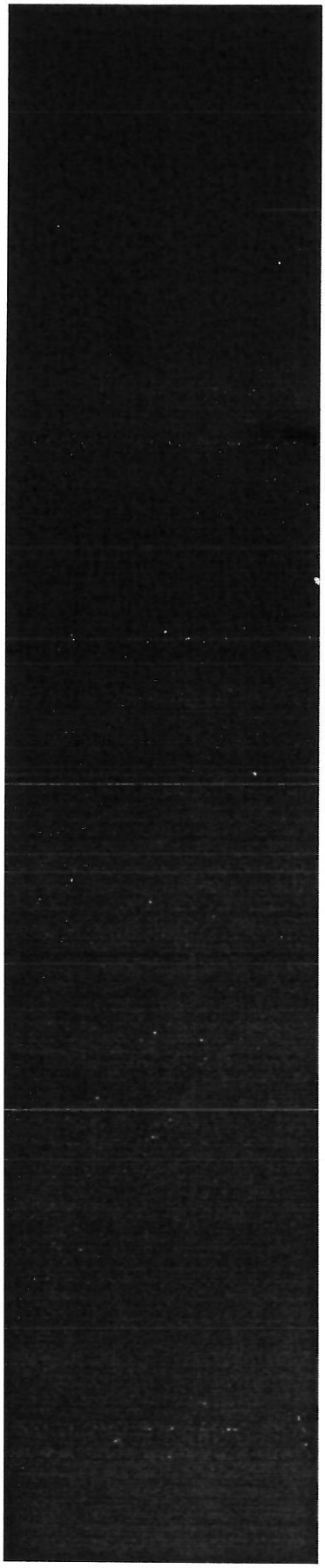

rights to generate, transmit, and distribute electricity to serve all customers in their jurisdiction.

Retail Wheeling
A method of transmitting power in which utility customers would get direct access to power generators, giving them the option to purchase electricity from more than one provider (also see Direct Access).

Rural Electric Cooperative (Co-op)
An independent electric utility that is owned by the consumers it serves and is legally established to provide at-cost electric service. Typically co-ops are financed initially by the Rural Electrification Administration (REA) and are exempt from federal income tax laws.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Securitization
A financial mechanism through which a utility can recover its stranded costs (see "stranded" below) up front, in a single lump sum payment via the issuance of securities, i.e., bonds.

Service Area
The geographical territory served by a utility.

Slamming
The practice of switching customers from one power provider to another without their consent.

Stranded Benefits
Programs funded by a monopoly utility to support environmental protection, fuel diversity, energy efficiency, low-income ratepayer assistance, renewable energy, demand side management, etc., that could be compromised or abandoned in a restructured electric industry.

Stranded Costs
Costs incurred because the value of utility investments (e.g., investments in nuclear power plants or in purchased power contracts) that were made and are recoverable under regulation cannot be recovered from the sale of the power from such investments in a competitive market.

Stranded Margins
Revenue generated because the value of utility investments that were made under regulation is

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greater in a competitive market than it is under a regulated monopoly structure.

Structural Separation
1) The requirement that an electric utility create a separate subsidiary to run its generation services. The subsidiary would operate in a separate building and have its own employees and financial reporting procedures. Structural separation of generation services is one of three often-mentioned policy options for protecting consumers from the disadvantages of market power (the others are divestiture and functional separation).
2) The term (rare) also can refer to the requirement that an electric utility create a separate subsidiary to run its transmission or distribution services.

Supplier
Any entity that sells electricity to customers using either its own transmission and distribution facilities or those of another company.

System Benefits Charge
A charge on all users of electricity to fund public interest programs, such as energy conservation, research and development, energy efficiency, and low-income assistance.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Transition Charge
A cents-per-kilowatt-hour charge added to every customer's bill to recover an electric utility's stranded costs.

Transmission
The process of transporting high-voltage electricity from the points of generation to the location of groups of electricity users and low-voltage distribution wires.

True-up Mechanism
A method for adjusting for price fluctuations and other changes to prevent the over-recovery of stranded costs. The term typically refers to a provision in legislation or regulation that gives such authority to state regulators.

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A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Unbundled Service
Electricity service that is broken down into its basic components. Each component is priced and sold separately. For example, generation, transmission, and distribution could be unbundled and offered as individual services.

Universal Service
A policy guaranteeing that all ratepayers receive reliable electric service with no degradation in service quality, and at rates that are just, reasonable, and affordable.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Vertical Integration
The structure of an electric utility in which the company owns generation plants, a transmission system, and distribution lines and thus can provide all aspects of electric service.

A|B|C|D|E|F|G|I|K|L|M|N|P|Q|R|S|T|U|V|W

Watt
A unit of measure of electric power at a specific moment in time. Seventy-five watts describes the amount of electricity that a 75-watt light bulb draws at any particular moment.

Wheeling
The transmission of power to customers.

Wholesale Competition
A market structure where a utility may buy its power from a variety of power producers, and power producers may compete to sell their power to a variety of utilities.

Wires Charge
A charge expressed in cents-per-kilowatt-hour that is levied on electric power suppliers or their customers based on the use of transmission and distribution wires.

▲ TOP OF PAGE

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5-12

DESC Glossary of Natural Gas Industry Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

affiliated marketer - a marketing company that buys and resells gas and is owned either by an interstate pipeline, a local distribution company or a corporation that also owns either an interstate pipeline subsidiary or a local distribution company.

Abandonment Rule (Order 490) - A FERC rule that allows producers and their pipeline purchasers with pre-granted "blanket" authority to abandon sales when the contract has expired or has been mutually renegotiated. It also allows the abandonment of an expired or renegotiated contract between one pipeline and another.

allocation method - The method of allocating volumes to affected parties for a variety of reasons.

allowance for funds used during construction (AFUDC) - A component of construction costs representing the net cost of borrowed funds and a reasonable rate on other funds used during the period of construction. AFUDC is capitalized until the project is placed in operation by concurrent credits to the income statement and charges to utility plant, based generally on the amount expended to date on the particular project. Effective January 1, 1977, FERC amended the Uniform System of Accounts establishing formulas for maximum allowable AFUDC rates.

allowed rate of return - The rate of return that a regulatory commission allows on a rate base in establishing just and reasonable rates for a utility. It is usually based on the composite cost of financing rate base from debt, preferred stock, and common equity. See RATE OF RETURN.

American Gas Association (AGA) - An industry trade group representing local distribution companies.

American National Standards Institute (ANSI) - The coordinating organization for America's federated national standards system. The ANSI federation consists of nine hundred companies, large and small, and some two hundred trade, technical, professional, labor, and consumer organizations.

annual quantity entitlement (AQE) - The quantity of gas a Buyer or Shipper has nominated to receive on an annual basis from a pipeline.

as billed rates - A policy requiring pipelines to flow through gas costs to their customers in the same manner as they are billed to the pipeline.

automated meter reading (AMR) - "Real time" monitoring of natural gas quantities and characteristics as it passes through a specific location. This is usually accomplished through the use of radio or telephone technologies.

backhaul - A transaction that results in the transportation of gas in a direction opposite of the aggregate physical flow of gas in the pipeline. This is typically achieved when the transporting pipeline redelivers gas at a point(s) upstream from the point(s) of receipt. A back haul condition will exist as long as the aggregate back haul transactions total less than the aggregate forward haul transactions. A back haul transaction can result in a delivery by non-delivery or cut back (reduction) of physical flow at a delivery point.

balancing -- The act of making receipts and deliveries of gas into or withdrawals from either an interstate gas pipeline or a local distribution company's distribution system equal. Balancing may be accomplished daily, monthly or seasonally, with fees or penalties generally assessed for excessive imbalances. The purpose of balancing requirements is to prevent a shipper from trying

up storage and line pack with excess deliveries of transportation gas, or from depleting storage and line pack by taking more gas off the system than it delivers, both of which disrupt other sales and transportation services.

balancing agreement - A contractual agreement between two or more legal entities to account for differences between chart measured quantities and the total confirmed nominated quantities at a point. They have been used to keep track of over/under production relative to entitlements between producers; over/under deliveries relative to confirmed nominations between operators of wells, pipelines and LDCs.

balancing tolerance - The amount of imbalance allowed by a utility which is not subject to a penalty charge. The imbalance tolerance is usually stated in a range expressed in percentage terms.

base gas - gas in a storage reservoir which provides the pressure necessary for designed withdrawals of working gas. Also called cushion gas.

base load - market requirements that remain fairly constant over a period of time that usually are not temperature sensitive.

basis - The difference between the local physical price for natural gas and the current price of the nearest futures contract. The basis can express differences between this month's spot cash prices and next month's futures price, or it can represent the difference between futures prices at the Henry Hub and cash prices at other locations for the same time. Cash price equals futures price plus basis.

bid week - The period preceding monthly interstate gas pipeline nomination deadlines during which parties negotiate prices and other contract terms.

billing cycle - the regular, periodic interval used for reading meters of customers for billing purposes. The customers in each bill group have their meter read and receive their bill on a different day of the month than customers in other bill groups.

blanket certificate -- Certificate issued by FERC which authorizes open access transportation by interstate pipeline companies on behalf of others and certain services by local distribution companies and Hinshaw companies under blanket certificates (of public convenience and necessity) subject to certain conditions and reporting requirements.

boiler - A closed vessel in which a liquid is heated and/or vaporized. Often classified as to steam or hot water, low pressure or high pressure, capable of burning one fuel or a number of fuels.

boiler efficiency - The ratio of the useful heat output to the heat input multiplied by 100 and expressed as a percent.

boiler rating - The rating of a steam boiler expressed as the total heat transferred by the heating surfaces in Btu per hour. Sometimes also expressed in horsepower or pounds of steam per hour.

British Thermal Unit (Btu) - The measure used to gauge the heating quality of various fuels. It is the amount of heat needed to increase the temperature of one pound of water one degree Fahrenheit from 58.5 to 59.5 degrees under standard pressure of 30 inches of mercury at or near its point of maximum density. General conversion factors are:

1 Btu = 252 calories,

1,055 joules, or

0.293 watt hours.

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Btu, Dry - The heating value contained in a cubic foot of natural gas measured and calculated free of moisture content. Contractually, dry may be defined as less than or equal to 7 pounds of water per Mcf.

Btu, Saturated (or Wet) - The number of Btus contained in a cubic foot of natural gas fully saturated with water under actual delivery pressure, temperature and gravity conditions.

broker - In the gas industry, an agent, independent of the end user and gas supplier, who negotiates contracts for gas purchases or transportation. A broker provides the function of bringing the buyer and the seller together.

bundled sales service - Natural gas sold on an as-needed basis, without prior scheduling. Prior to implementation of various transportation programs, this constituted all gas delivered to customers.

burner capacity - The maximum Btu per hour that can be released by a burner while burning with a stable flame and satisfactory combustion. Also called burner rating.

burner tip - An attachment for a burner head which forms a burner port modified for a specific application. Also, a generic term that refers to the ultimate point of consumption of natural gas.

buy-out costs (buy-down costs) - Payments made by pipelines to producers to extinguish (buy-out) outstanding take-or-pay liabilities under existing contracts, or to reform (buy-down) the contracts.

buyer protection clause - A provision in a gas purchase contract permitting the buyer, under certain circumstances, to reduce the price below the amount specified in the contract.

buyer's right of first refusal - In negotiating situations where the seller of gas has the right to solicit third-party bids for his gas, a right of first refusal provision gives the buyer of the gas the option of meeting the third party bid price and continuing the contract on such terms.

by-pass - An auxiliary piping arrangement, generally to carry gas around specific equipment or an integral section of a piping system. A by-pass is usually installed to permit passage through the line while adjustments or repairs are made on the section which is by-passed. Also used to describe the circumvention of a local distribution company's distribution system to supply gas to a specific Customer.

call - An option which gives the holder the right, but not the obligation, to buy a specific asset at a set time and for a pre-determined price.

cap - A series of call options which gives the buyer protection against a rise in the price of an asset above a fixed price over a period of time.

capacity - the maximum quantity of natural gas that can be produced, transported, stored, distributed, or used in a given period of time under specified conditions.

capacity assignment - The assignment of a specific right to firm transportation (or storage) on an interstate natural gas pipeline

capacity brokering - The ability of a shipper to sell or transfer the transportation capacity it holds on pipelines to any shipper. In some instances, transportation capacity rights may be rebrokered. The FERC's general policy is to require the initial broker to remain obligated to the pipeline for scheduling and payment of charges.

capacity release - A mechanism by which holders of firm interstate transportation capacity can

relinquish their rights to utilize the firm capacity to other parties that are interested in obtaining the right to use that capacity for a specific price, for a given period of time and under a specifically identified set of conditions. The firm transportation rights may include transmission capacity and/or storage capacity.

capacity rights - Refers to the level of firm transportation service to which a customer has a contractual right.

cascading accounts - A term used to describe two or more billing accounts under the same corporate umbrella which are prioritized for deliveries and interruptions.

cash out - A generic term used to describe the corrective measures taken when a Customer's imbalance exceeds the prescribed tolerance. Over-tendered imbalances are generally purchased by the interstate gas pipeline or local distribution company, and under-tendered imbalances are generally purchased by the Customer from the pipeline or local distribution company. See BALANCING.

cathodic protection - a technique that uses electrolysis to control corrosion and prevents deterioration of steel pipe and connected metallic equipment.

ceiling price - The maximum lawful price which may be charged for regulated gas.

centralized procurement - Procurement characterized by the purchase for more than one end user customer. The procurement of gas, by an agent, on behalf of more than one end user.

Certificate of Public Convenience and Necessity - A special permit (which supplements the franchise) commonly issued by a state commission, which authorizes a utility to engage in business, construct facilities, or perform some other service. Also, a permit issued by the Federal Energy Regulatory Commission to engage in the transportation or sale for resale of natural gas in interstate commerce or to construct or acquire and operate any facilities necessary. The Commission may attach to the certificate any reasonable terms and conditions as the public convenience and necessity may require.

city gate - The site where a local distribution company receives and measures gas from a pipeline company.

co-firing - The process of burning natural gas in conjunction with another fossil fuel.

cogeneration - The use of a single prime fuel source in a reciprocating engine or gas turbine to generate electrical and thermal energy in order to optimize the efficiency of the fuel used. The dominant demand for energy can be either electrical or thermal. Usually it is the latter with excess electrical energy, if any, being transmitted into the local power supply company's lines (with a reciprocal situation existing when electrical demands exceed the cogeneration plant's output). A parallel exists with total energy plants, which are typically designed for demands rather than thermal. Under the 1978 Public Utility Regulatory Policies Act (PURPA), regulated utilities are required to purchase electricity furnished by cogenerators and small power producers at rates set by regulatory bodies having jurisdiction over the utility receiving the electricity based on "full avoided cost."

coincidence factor - The ratio of the maximum demand of a group, class, or system as a whole to the sum of the individual maximum demands of the several components of the group, class or system. Reciprocal of the diversity factor. Compare DIVERSITY FACTOR.

coincident demand - The sum of the simultaneous demands of a group of consumers.

collar - The process of using puts and calls to set a price range. It is equivalent to combining a price cap and a floor.

combination utility - Utility which supplies both gas and some other utility service (electricity, water, etc.). For purposes of AGA statistics, a combination utility derives at least 5 percent but less than 95 percent of its total operating revenues from gas operation.

combined-cycle - The utilization of waste heat from large gas turbines to generate steam for conventional steam turbines, thus extracting the maximum amount of useful work from fuel combustion.

Commission - The regulatory body having jurisdiction over a utility. For example, the Federal Energy Regulatory Commission (FERC), or state Public Service Commission (PSC)

commodity rate - A generic term used to describe that portion of a natural gas rate based upon the quantity actually purchased or transported.

common trench - A trench containing two or more utilities.

compressed natural gas (CNG) - Natural gas (methane) after being compressed for storage in pressure vessels. Natural gas stored in this manner can be used to fuel vehicles.

compressor - a mechanical device for increasing the pressure of gas.

compressor station - a facility which supplies the energy to move gas in transmission lines or into storage by increasing the pressure.

condensate - The liquid resulting when a vapor is subjected to cooling or application of pressure. Also, liquid hydrocarbons condensed from gas and oil wells.

confirmed nomination - An agreement by a seller to deliver or cause delivery, or a transporter to receive and deliver a specific quantity of gas for a specified period at various points under a Sales or Transportation Agreement or for all contracts at one specific point. The confirmed nomination is in response to a purchaser's or shipper's nomination. See NOMINATION.

conversion to natural gas - Changing the gas service to ultimate customers from a fuel other than natural gas to natural gas, including adjustment of consumers' appliances to perform satisfactorily with natural gas.

core/non-core customers - Core refers to residential and small commercial customers who must stick with the traditional distributor bundled service of sales and transportation.

cost of service - a company's cost of doing business, including operating expenses, depreciation and depletion expenses, taxes, and return on rate base.

cubic foot (cf) - 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 - Reducing deliveries of gas below contract entitlement due to system restrictions. See INTERRUPTION.

curtailment policy - A policy for reducing natural gas service to designated customers when there is insufficient supply or capacity to meet demand.

customer charge - A fixed amount to be paid periodically by the Customer without regard to demand or energy actually used. The customer charge recovers the cost of meters and other administrative costs of billing.

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decentralized procurement - procurement of gas by the end user of that gas.

degree days - One way to calculate heating or cooling value is by adding a particular day's high and low temperatures, dividing by 2, and subtracting that average temperature from a base level (the National Weather Service uses 65 degrees).

daily dispatch - The process by which an end user informs the spot gas supplier and/or the LDC of the amount of natural gas expected to be consumed in the following day. If required by an LDC, daily dispatch becomes a pre-condition for the receipt of spot market gas. Failure to dispatch may result in the use of higher-priced tariff gas.

daily imbalance - The difference between the Customer's daily use and daily delivery of Customer-owned gas to the City Gate. See BALANCING

deep gas - gas found at depths greater than the average for a particular area. For Federal Energy Regulatory Commission purposes, it is gas found at depths of more than 15,000 feet.

dekatherm (Dth) - A unit of measurement equal to ten therms or one million Btu.

deliverability - The rate (normally during a 24-hour period) at which gas can be withdrawn/produced under given pressure conditions from a well, storage field, pipeline, or distribution system.

delivery period - NYMEX delivery shall take place no earlier than the first calendar day of the delivery month and shall be completed no later than the last calendar day of the delivery month. All deliveries shall be made at, as uniform as possible, an hourly and daily rate of flow over the course of the delivery month.

delivery point - The point on an interstate gas pipeline's system at which it delivers natural gas it has transported.

delivery service - Transportation component of unbundled services on a distribution system. This service does not include the gas commodity or the transportation of the gas across interstate gas pipelines.

delivery service customer - A customer purchasing all or a portion of their gas at the wellhead or through a marketer.

demand charge - a fixed charge for sales or transportation service based on estimated peak hourly, daily or monthly gas usage of the customer.

demand rate - see reservation charge.

demand side management (DSM) - Utility activities designed to influence the amount and timing of customer demand, thereby producing changes to the utility's load shape and providing benefits to both the utility and its customers.

Defense Energy Policy Program Memorandum (DEPPM) 93-1 - This document, issued by the Office of the Assistant Secretary of Defense, establishes responsibilities and procedural guidelines for centralized, competitive acquisition of direct supply natural gas.

derivative - a financial product whose value depends upon the values of underlying variables, such as spot gas prices. Derivatives are used to manage price risk. Forward contracts, futures, swaps, options, caps, and collars are all forms of derivative products.

design day - a 24-hour period of the theoretical maximum gas demand, used by utilities as a basis for designing facilities, determining delivery capacity and formulating purchase and

transport contracts.

discount - A rate charged for a transportation service that is less than the maximum rate stated in the pipeline's approved FERC Gas Tariff.

dispatching - A call for action to effectuate a transaction. For example, a request to the operator for a certain amount of gas to be delivered. Also, the resulting sendout of natural gas. More generally, the control of product flow in a system involving the assignment of load to the various sources of supply.

displacement - A type of pipeline transportation service that permits lateral movement of gas through a transportation network.

dissolved gas - Gas contained in solution with the crude oil in the reservoir.

distribution - The act or process of distributing gas from the City Gate or plant to end-users.

diversity - A characteristic of the variety of gas loads whereby individual maximum demands usually occur at different times. Therefore, the maximum coincident load of a group of individual loads is less than the sum of the individual maximum loads.

downstream - Any point in the direction of flow of a liquid or gas from the reference point. For example, a downstream pipeline is a pipeline that receives gas through one or more other pipelines.

dual fuel capacity - Ability of an energy-burning facility to alternately use more than one kind of fuel, usually gas and oil.

easement - An acquired privilege or right, distinct from ownership of the soil, to use a specified area for certain specified uses. See RIGHT-OF-WAY.

economic price adjustment (EPA) - An adjustment to supply and/or transportation costs to reflect current market prices.

electronic data interchange (EDI) - A developing standard for exchanging computerized information among shippers and transportation outlets.

efficiency - Relating to heat, a percentage indicating the available Btu input to combustion equipment that is converted to useful purposes.

electronic bulletin board (EBB) - A computer system providing current gas information on nominations, interruptions, rates and other items.

end use - The final use to which gas is put by the ultimate consumer.

end-user - A consumer that uses natural gas. An end-user purchases the gas for consumption, but not for resale.

escalator clause - a contract provision that allows for progressive increases in the price paid for natural gas over the term of the contract upon the occurrence of a predetermined event.

estimated bill - a bill for service not based on meter readings for the period being billed but based on calculations of how much gas a customer used during a particular period of time utilizing the gas consumption history of that customer.

evergreen clause - A provision in a contract that provides for the automatic extension of the contract for specified periods beyond the primary term unless either party specifically elects to

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terminate the contract by giving the required notice prior to the anniversary date.

exchange of futures for, or in connection with, physicals (EFP) - The commercial buyer or seller may exchange a futures position for a physical position of equal quantity by submitting a notice to the NYMEX. EFPs may be used to either initiate or liquidate a futures position.

Federal Acquisition Regulation (FAR) - Regulation governing the acquisition of goods and services for the Federal Government.

Federal Energy Regulatory Commission (FERC) - the federal agency that, among other functions, regulates all interstate gas pipelines and some intrastate gas operations. Prior to 1979 it was known as the Federal Power Commission (FPC).

feeder line - A pipeline; a gathering line tied into a trunk line.

feedstock gas - Gas used as a raw material for its chemical properties to make an end product, such as plastics or fertilizers.

field - The area encompassing a group of producing oil and gas pools. An oil field may include one or more pools and have wells producing from several different formations at different depths. A roughly contiguous grouping of wells in an identified area. Some of the early prolific fields were: East Texas, Seminole, Cushing, Oklahoma City, and West Texas. Large areas that used to be designated as fields are now identifield as districts. (Appalachian, Mid-Continent, Gulf Coast, Rocky Mountain Permian Basin).

filed rate doctrine - Legal principle that protects regulated customers from getting their rates hiked retroactively.

firm gas - gas required to be delivered and taken under the terms of a firm gas purchase contract.

firm service - A service provided to customers which anticipates no interruptions.

firm storage service (FSS) - A firm contract service Columbia Transmission offers for injecting, storing and withdrawing gas.

firm transportation service (FT) - The highest priority transportation service offered under a filed rate schedule which anticipates no interruption except force majeure.

first-come, first-served - The method of allocating transportation capacity on an interstate pipeline. Under this system, new shippers are considered in the order in which their requests are received.

fixed costs - all costs included in the cost of service which do not fluctuate with the volume of gas passing through the system (i.e., labor, maintenance, and taxes).

fixed variable - A cost classification method used by interstate gas pipelines that assigns 100% of fixed costs to the reservation component of the rate and all of the variable costs to the commodity, or volumetric, component.

fixed variable rate design - Pipeline rate design that allocate all of the fixed costs to the demand component and all the variable costs to the commodity, or volumetric, component

flex rates - Monthly price changes in pipeline rates within a minimum/maximum range.

floor - In financing, a series of put options which gives the buyer protection against a fall in the price of an asset below a fixed price over a period of time.

flue gas - The products of combustion and excess air before the draft hood or draft regulator consisting principally of carbon dioxide, carbon monoxide, oxygen, and nitrogen.

force majeure - A French term meaning superior force. In the gas industry it refers to unexpected and uncontrollable disruptive events that excuse a party from contract obligations.

free market price - Prices not subject to controls by the government.

fuel and shrinkage - The difference between the amount if gas produced at the wellhead and the gas that enters a pipeline. This includes separator losses, field uses including fuel, flare gas and plant extraction losses.

futures - Standardized contract for the purchase or sale of a commodity which is traded for future delivery under the provisions of exchanged regulations.

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

1. **Dry.** Gas whose water content has been reduced by a dehydration process. Gas containing little or no hydrocarbons commercially recoverable as liquid product. Specified small quantities of liquids are permitted by varying statutory definitions in certain states. See BTU, DRY.
2. **Liquefied (LNG)** . See LIQUEFIED NATURAL GAS.
3. **Sour.** Gas found in its natural state, containing such amounts of compounds of sulfur as to make it impractical to use, without purifying, because of its corrosive effect on piping and equipment.
4. **Sweet.** Gas found in its natural state, containing such amounts of compounds of sulfur that it can be used without purifying, with no deleterious effect on piping and equipment.
5. **Wet.** Wet natural gas is unprocessed natural gas or partially processed natural gas produced from strata containing condensable hydrocarbons. The term is subject to varying legal definitions as specified by certain state statutes. The usual maximum allowable is 7 lb./MMcf water content and .02 gallons/Mcf of Natural Gasoline. See BTU, WET.

gas condensate - Liquid hydrocarbons present in casinghead gas that condensate upon being brought to the surface; formerly distillate, now condensate. Also casinghead gasoline; white oil.

gas day - A period of twenty-four (24) consecutive hours commencing at a specified hour on a given calendar day and ending at the same specified hour on the next succeeding calendar day. The GISB standard is a gas day beginning at 10:00 a.m. central time.

gas inventory charge (GIC) or gas supply charge (GSC) - A charge by a pipeline assessed for standing ready to serve sales customers. The GIC is designed to prevent the occurrence of take-or-pay liability by charging the customer for all the costs associated with maintaining a gas supply. The GIC may be based on customer purchase deficiencies or on a current charge system.

gas measurement (standard) - A method of measuring volumes of natural gas by the use of conversion factors of standard pressure and temperature. The standard pressure is 14.65 pounds per square inch; the standard temperature is 60F. One standard cubic foot of gas is the amount of gas contained in one cubic foot of pace at a pressure of 14.65 psi at a temperature of 60F. Using the conversion table, natural gas at any temperature and pressure can be converted to standard cubic feet, the measurement by which the volume of gas is determined.

gas supply realignment costs (GSR) - These are interstate pipeline "transition" costs resulting from the restructuring of the natural gas industry under FERC Order 636. These costs are

determined through negotiations between interstate pipelines and natural gas producers, are approved by FERC, and are passed on to local distribution companies and end users through pipeline rates.

Gas Research Institute (GRI) - An organization sponsored by a number of U.S. gas companies to investigate new sources of supply and new uses (applications) for natural gas.

gate station - Also referred to as a city gate station. See "city gate."

gathering lines - These are pipelines that connect wells or meters to a transmission line.

Gas Industry Standards Board (GISB) - A group of individuals involved in the natural gas industry (i.e. end users, local distribution companies, marketers, etc) tasked with development of standards which the FERC will implement.

grouping - Balancing provision allowing customers to form a group for daily balancing purposes.

headstation - Mainline receipt points on pipelines. Also called "pooling points".

heating degree days (HDD) - A measure of the coldness of the weather experienced, based on the extent to which the daily mean temperature falls below a reference temperature, usually 65 degrees F. For example, on a day when the mean outdoor dry-bulb temperature is 35 degrees F, there would be 30 degree days experienced. A daily mean temperature usually represents the sum of the high and low readings divided by two.

hedging - Any method of minimizing the risk of price change. Since the movement of cash prices is usually in the same direction and in about the same degree as the movement of the present prices of futures contracts, any loss (or gain) resulting from carrying the actual merchandise is approximately offset by a corresponding gain (or loss) when the contract is liquidated.

Henry Hub - A pipeline interchange, located in Vermilion Parish, Louisiana, which serves as the delivery point of natural gas futures contracts.

holder, gas - A gas-tight receptacle or container in which gas is stored for future use.

hub - A location where several pipelines connect near sources of gas that can meet large balancing and inventory needs. It may have a single operator to control the exchange of gas and coordinate transportation. Also known as a market center.

imbalance - When a party receives or delivers a quantity of natural gas, then delivers or redelivers a larger or smaller quantity of natural gas to another party. See BALANCING.

incentive ratemaking - A theory currently under discussion at FERC that would create incentives for regulated utilities to keep down gas supply costs and price services more efficiently.

indexing - Tying the commodity price in a contract to other published prices, such as spot prices for gas or alternate fuels, or general indexes like the Consumer Price Index or Producer Price Index.

interruptible service - lower-priority service provided to customers which anticipates and permits interruption on short notice, generally in peak-load seasons.

interruptible transportation service (IT) - Interstate gas pipeline transportation service which is subject to interruption at the option of the pipeline company.

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interruption - The temporary ceasing of pipeline supply or delivery as a result of insufficient capacity available for that priority of service. See CURTAILMENT.

Interstate Natural Gas Association of America (INGAA) - Industry trade group representing interstate pipeline companies.

interstate gas pipeline - A company that transports natural gas across state lines.

intervenor - A person, institution, or organization admitted as a participant to a legal or regulatory proceeding.

intrastate gas - Natural gas produced and used within the same state.

intrastate gas pipeline - A transmission company that transports gas within one state's boundaries.

jurisdictional - That part of a natural gas company's business which is subject to the rules and regulations of the Commission. Generally, the Commission has (1) rate jurisdiction over transportation and sales of gas and (2) certificate jurisdiction over those facilities (except purely gathering) used to transport gas.

last trading day - The last day NYMEX trades the prompt month contract.

Futures: Trading terminates on the fifth business day prior to the first calendar day of the delivery month.

Options: Trading terminates at the close of business on the business day immediately preceding the expiration of the underlying futures contract.

line pack - The volume of gas in a pipeline or gas distribution system used to maintain pressure and effect uninterrupted flow of gas to customers at take-off points.

liquefied natural gas (LNG) - A method of storing natural gas as a liquid. When the temperature of natural gas is reduced to minus 260 degrees Fahrenheit, it becomes a liquid and its volume is reduced 600 times. LNG is used for peak shaving or augmenting flowing gas supplies during periods of high load.

liquefied petroleum gas (LPG) - A gas containing certain specific hydrocarbons which are gaseous under normal atmospheric conditions, but can be liquefied under moderate pressure at normal temperatures. Propane and butane are the principal examples.

load - The amount of gas delivered or required at any specified point or points on a system. Load originates primarily at the gas consuming equipment of the customers. Also, to load a pressure regulator is to set the regulator to maintain a given pressure as the rate of gas flow through the regulator varies.

load balancing - Meeting fluctuations in demand. Sometimes this can be done by making delivery or withdrawal through underground storage facilities.

load factor - The ratio of the average requirement to the maximum requirements for the same time period, such as one day, one hour etc.

local distribution company (LDC) - a state-regulated utility that distributes natural gas to residential, commercial, and industrial customers.

looping - The construction of a second pipeline parallel to an existing pipeline, thus increasing the capacity of that section of the system.

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main - A distribution line that serves as a common source of supply for more than one service line.

mainline - Trunkline; a large-diameter pipeline into which smaller lines connect; a line that runs from an oil-producing area to a refinery.

margin requirements - Margins are required for open futures and short options positions. The margin requirement for an options purchaser will never exceed the premium paid.

market based rates or market responsive pricing - The methodology to bill customers based on the market value of the natural gas purchased. Market based rates introduce an incentive versus cost based rates which allow for full recovery of purchased gas costs.

market center - See HUB.

market sensitive contract - A contract whose pricing and sales quantity terms can be adjusted to reflect changes in supply and demand conditions.

marketer - An unregulated company involved in the business of purchasing and reselling gas.

marketing affiliate - A marketing company that has corporate ties to an interstate pipeline, an intrastate pipeline, or a local distribution company.

maximum transportation rates - The maximum rate that an open-access transporter may charge for its services. Section 284.7(c) of FERC's regulations states that maximum rates for both peak and off-peak periods should ration capacity during peak periods and maximize throughput.

maximum daily quantity (MDQ) - The greatest quantity of gas to be received and/or delivered in a twenty-four hour period by the pipeline on behalf of the shipper under terms defined in a contract.

mercaptan - a chemical compound injected into natural gas pipelines as a safety measure to give natural gas a distinctive odor and help detect leaks.

merchant function - the activity of a pipeline company or LDC that purchases gas for resale customers who do not have transportation gas service and require gas supplies on a firm basis.

meter, gas - An instrument for measuring and indicating or recording the volume of gas that has passed through it.

meter seal - A metal wire or tape seal attached to a gas meter or a service stop in such a way as to prevent its being opened by an unauthorized person.

meter set - The meter and appurtenances thereto, including the meter, meter bar, and connected pipe and fittings. Also called METER SET ASSEMBLY.

methane (CH 4) - The chief component of natural gas. A molecule of methane is composed of one atom of carbon joined to four atoms of hydrogen. Pure methane has a heating value of 1012 Btu per cubic foot.

mileage-based rates - Rates designed to reflect the difference in pipeline costs based on the distance between supply sources and delivery points.

minimum commodity bill - Amount that must be paid by a pipeline's customer, over and above a demand charge, whether the customer takes the gas or not.

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name plate rating - The full-load continuous rating of a generator, prime mover, pump, compressor, or other equipment under specified conditions as designated by the manufacturer. It is usually indicated on a name plate attached to the individual machine or device.

National Transportation Safety Board (NTSB) - An independent agency reporting administratively to the Secretary of Transportation, charged with the investigation of all safety-related incidents involving transportation. These include air, rail, highway, liquid and gas pipeline transportation. The NTSB has no power to issue regulations; however, it issues reports and recommendations.

natural gas - Gaseous forms of petroleum consisting of mixtures of hydrocarbon gases and vapors, the more important of which are methane, ethane, propane, butane, pentane, and hexane; gas produced from a gas well. See GAS, NATURAL.

Natural Gas Act of 1938 (NGA) - Federal law giving the FPC/FERC jurisdiction of all gas moving in interstate commerce, as well as companies that operate in more than one state.

Natural Gas Policy Act (NGPA) - Federal law enacted in 1978 during an era of concern over energy shortages, rising prices, and increasing reliance upon oil imports. The NGPA's major feature was a phased-in deregulation schedule for "new" natural gas, as well as incentives to increase exploration and production.

natural gas vehicle (NGV) - Any vehicle fueled by natural gas.

nominations - A precise listing of the quantities of gas to be transported during any specified time period. A nomination includes all custody transfer entities, locations, compressor fueled and other volumetric assessments, and the precise routing of gas through the pipeline network. Nominations often create contract rights and liabilities.

no-notice transportation (NTS) - A firm service where customers may change their delivery nominations throughout the day without notice to the interstate gas pipeline.

odorant - A chemical compound, typically a mixture of mercaptans and methyl sulfates, injected into local distribution systems as a safety measure to give natural gas a distinctive odor and help detect leaks.

off peak - Period of low system demand for natural gas, such as during summertime in the Northeast.

off-peak transportation (OPT) - A firm interstate transportation service except for 30 or 60 days during the winter.

offshore gas - Gas found beneath bodies of water.

off-system sale - Sale of natural gas by an interstate pipeline to a new customer, outside its traditional service area.

open access transportation - The non-discriminatory access to transportation services.

open season - This generally refers to a period of time when all parties are given equal opportunity to submit filings, make requests for service, or construct facilities.

operational flow orders (OFOs) - A directive by the interstate gas pipeline or the local distribution company to either flow additional gas supplies or to reduce flowing gas supplies to correct an operational problem on the system.

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Order No. 436 - FERC Order No. 436 adopted a new blanket transportation program requiring interstate pipelines to offer open access transportation to all shippers without discrimination. It allowed pipeline merchant service customers (i.e. LDCs) to convert their sales service contract demands to transportation entitlements. This Order served as the catalyst for the growth of transportation service on interstate pipelines.

Order No. 500 - FERC Order No. 500 expanded the aspects of open access transportation rules originally established in Order No. 436. The open access transportation rules under Order No. 500 stated that no pipeline is required to become an open access transporter. Pipelines opting to participate must provide open access to shippers without undue discrimination, capacity will be assigned on a first-come/first-served basis, and participating open access pipelines must employ generic rate conditions in developing actual transportation rates. These rate objectives give the pipeline a reasonable opportunity to recover costs by separately identifying transportation, storage and gathering costs.

Order No. 636 - FERC Order No. 636 required interstate pipelines to "unbundle" firm and interruptible transportation service from firm and interruptible sales service. Firm capacity holders notified the pipelines of the amount of capacity they intended to continue to hold after restructuring, with the costs associated with excess capacity recoverable through transition costs. The straight fixed variable (SFV) method was adopted where all fixed transmission and storage costs are billed through the pipeline's reservation charge.

overrun, authorized - On a daily basis, gas allowed in advance to be taken, within specified parameters, above contract demand volume. On a monthly, seasonal or annual basis, gas allowed in advance to be taken above a customer nominated level. Generally must be offset by reduced volumes being taken within some specified period subsequent to the allowed excess volumes taken.

over-tender - An imbalance where the shipper has put more gas into either the interstate gas pipeline or the local distribution system than was physically taken by the customer.

over-the-counter (OTC) - A private market for the purchase and sale of unregulated hedge instruments such as swaps and options.

peak day - The maximum use of gas by a customer during a 24-hour period.

peak shaving - Adding gas to a distribution system from an auxiliary source, typically propane-air and LNG, during periods of maximum demand.

pooling point - A common market point, generally located at the terminus of a pipeline's production area. Under a Pooling Point transportation arrangement, the shipper is responsible for ensuring that the total nominations of gas received at the pooling point are in balance with the amounts received into the main stream. Volumes are then transported downstream under corresponding transportation arrangements. Such arrangements are designed to increase the receipt point flexibility of the system. Also referred to as telescoping points or head stations.

postage stamp rates - A single rate for the entire system; in contrast to zone or mileage based rates.

price ceiling - statutory maximum lawful prices for various categories of regulated natural gas.

price majeure - The retrading of interruptible gas resulting from significant upward or downward price changes.

processing plant - A plant, generally located at the terminus of a gathering system, in which liquefiable hydrocarbons such as propane, butane, ethane, or natural gasoline are extracted from the gas stream.

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propane - A gas, the molecules of which is composed of three carbon and eight hydrogen atoms. Propane is present in most natural gas and is the first product refined from crude petroleum. It has many industrial uses and may be used for heating and lighting. Contains approximately 2,500 Btu per cubic foot.

pro rata allocation - Methodology that allows all customers to receive the same proportion of gas available as their portion of total volumes under contract (as opposed to first come, first served).

purchased gas adjustment (PGA) - A regulatory procedure that permits utility to reflect, dollar for dollar, in its sales rates, changes in its purchased gas costs. Sometimes referred to as fuel cost adjustment or gas cost adjustment.

put - An option contract which gives the buyer the right, but not the obligation, to sell a specific asset at a set time and for a pre-determined price.

quality specifications - Pipeline specifications in effect at time of delivery.

rate base - The investment value established by a regulatory authority upon which a utility is permitted to earn a specified rate of return. Generally, this represents the amount of property used and useful in public service and may include plant held for future use and may or may not include all or part of construction work in progress.

rate design - The method of classifying fixed and variable costs between and commodity components. Different formulas include United, Seaboard, Straight Fixed Variable and Modified Fixed Variable.

rate of return - The return allowed to be earned (generally based on a cost of capital determination) or actually earned by a utility (generally calculated by dividing the net operating income by the rate base). See ALLOWED RATE OF RETURN.

rate schedules (rates) - provide the method for charging the customer for consumption of gas.

rate zones - Segments along a pipeline that reflect variations in costs of service; usually costs increase as the distance of haul increases.

rebundling - After pipelines get done unbundling their rates to provide a menu of services under FERC's Mega-NOPR, they may want to "rebundle" services tailored to the needs of some distributors who prefer to rely on gas sold by the pipeline at the citygate.

receipt point - Point at which transportation begins pursuant to the transportation contract. Generally, a producer's gas well, the outlet (tailgate) of a gas processing plant, or the delivery point (end) of a previous transportation contract.

regulator - A valve, either automatic or manually operated, that controls gas pressures.

reservation charge - A set unit fee payable by the recipient of a service based on the total entitlement. For example, the fee a shipper pays to a pipeline in order to reserve space on the system. Also referred to as a demand rate.

reserve margin - The amount of design peak day supply and/or capacity a utility has available in excess of its design peak day demand. The reserve margin allows for the effects of potential contingencies that could act to disrupt supply or increase demand on the design day.

right-of-way - A strip of land, the use of which is acquired for the construction and operation of a gas line or some other facility. It may be owned outright or as an easement taken for a specific

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purpose.

rolled-in pricing - A method that bases rates on a weighted average of all costs, rather than allocating specific costs to specific customers.

shipper - The contracting party or buyer of a transportation service.

shrinkage - The reduction in volume of natural gas due to necessary removal of water vapor, carbon dioxide, and other materials or to fuel compression prior to the City Gate. Shrinkage is also used to refer to fuel retainage, or the portion of gas retained by a LDC for system losses.

spot market - The term applied to short-term, direct sales of natural gas by producers, marketers or brokers to others.

storage - Storing gas that has been transferred from its original location in underground reservoirs. Gas is usually stored in the summer for winter delivery reducing peak winter pipeline requirements. Storage can be in either the market or producing areas.

straight fixed variable (SFV) - A cost classification method pipelines are required to use to for rates.

submetering - The practice of re-metering purchased energy on the Customer's side of the utility meter, generally for distribution to building tenants through privately owned or rented meters.

swap - An exchange of payments between two parties, generally with one paying a fixed or floating price in exchange for receiving a fixed or floating price.

synthetic natural gas (SNG) - Natural gas that is manufactured from coal or naphtha.

take-or-pay A clause in a gas supply contract which provides that during a specified period, a specific minimum quantity of gas must be paid for whether or not delivery is accepted by the purchaser. Some contracts contain a time period in which the buyer may later take delivery of the gas without penalty.

tariff - The formal rules and regulations of a utility for providing service to customers. It contains a compilation of all of the effective rate schedules of a particular company and the general terms and conditions of service. Everything that is contained in the Service Tariff must be filed with and approved by the appropriate regulatory agency.

telemetering - Use of an electrical apparatus to transmit data to a distant point for indicating, recording, or integrating the values of a variable quantity.

therm - A unit if measurement equal to one hundred thousand Btu.

throughput - The total of transportation volumes and utility sales. Stated differently, all gas volumes delivered.

total firm entitlement (TFE) - The sum of a shipper's firm transportation and firm storage delivery quantities.

transmission line - A pipeline installed to a transmit gas from a source or sources of supply to one or more distribution companies. Typically, gas transmission lines differ from gas mains in that they operate at higher pressures over greater distances.

transportation gas - All gas to which the customer takes title at or before the City Gate.

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unaccounted-for gas - The difference between total sendout and the total amount of gas recorded on the meter. This difference includes leakage or other actual losses, and discrepancies due to billing cycles and meter inaccuracies.

unbundling - The separation of traditionally bundled services provided by pipelines and LDCs by function-such as merchant function, distribution, storage, transmission, or gathering- into an ala carte menu of services from which a Customer may choose, and pay for, only those services desired.

undue discrimination - Under Section 4(b) of the NGA, no natural company is allowed, with respect to any transportation or sale of natural gas subject to Commission jurisdiction, to 1) make or grant any preference or advantage to any person or subject any person to any prejudice or disadvantage, or 2) maintain an unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.

under-tender - An imbalance where the shipper has put less gas into either the interstate gas pipeline or the local distribution system than was physically taken by the Customer.

upstream pipeline - An interstate gas pipeline that delivers gas into another pipeline.

volumetric charges - Charges for service based on the quantity of gas that is purchased or transported.

wellhead price - The price paid for gas at the well site.

This page was last updated 9 January 1998
Please e-mail us with your comments on these pages.

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STATE EDUCATION TECHNOLOGY-BASED NETWORK TASK FORCE

Senate Members	House Members
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Sen. Dwayne Umbarger	Rep. Laura McClure
Sen. John Vratil	Rep. Tom Sloan

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HOUSE UTILITIES
DATE: 01-11-01
ATTACHMENT 7

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January 10, 2001

Recommendations of State Education Technology-Based Network Task Force

- The state broadband technology-based network will be called KAN-ED.
- KAN-ED will be an intranet and will use standards-based monitoring protocol.
- The specifications of the KAN-ED network will depend upon the participating entities' content needs and bandwidth requirements.
- KAN-ED must be assembled from facilities owned, or to be constructed, by the private sector.
- KAN-ED must be managed in a manner that will not compete with the private sector.
- KAN-ED must not abrogate existing contracts between participating end users and telecommunications and Internet Service providers.
- KAN-ED could provide: better Internet access; distance learning opportunities; curriculum enrichment and research; and special services, such as E-mail and web hosting.
- KAN-ED network services recipients include:
  - School districts;
  - School district interlocal cooperatives;
  - School district cooperatives;
  - Accredited nonpublic schools;
  - Public libraries;
  - Regional library systems;
  - Libraries of nonpublic postsecondary educational institutions;
  - Regents universities;
  - Community colleges;
  - Technical colleges;
  - Area vocational schools;
  - Area vocational-technical schools; and
  - Hospitals.

HOUSE UTILITIES
DATE: 01-11-01
ATTACHMENT 8

- Schools and libraries must be connected to the KAN-ED network by July 1, 2002.
- Hospitals must be connected to the KAN-ED network by July 1, 2003.
- The KAN-ED Board will consist of nine members who will serve three-year, staggered, terms.
- The KAN-ED Board will plan, implement, and administer all aspects of the KAN-ED network and will contract for the creation, operation, and maintenance of the network.
- The KAN-ED Board's responsibilities will include:
    - Appointing a technical advisory committee and a content advisory committee;
    - Developing a plan to ensure all institutions participating in the network have broadband Internet access and standards for quality and affordability governing such access;
    - Developing the appropriate method of ensuring ongoing monitoring of network operations and of increasing capacity to accommodate changes in content demand;
    - Identifying regulatory impediments and measures for their elimination;
    - Receiving moneys from all sources to fulfill Board responsibilities;
    - Hiring a chief executive officer to direct and supervise general management of the Board;
    - Assessing the need of network participants for full-motion video connectivity and developing a plan to provide such connectivity, if needed; and
    - Assessing the need for Internet 2 and developing a plan for such access if benefits are considered to outweigh costs.
- The Governor recommended $500,000 from the State General Fund in the Department of Education's budget to assess and clarify education community needs and available capacity.

STATE EDUCATION TECHNOLOGY-BASED NETWORK TASK FORCE

STATE EDUCATION TECHNOLOGY-BASED NETWORK

CONCLUSIONS AND RECOMMENDATIONS

The Task Force recommends introduction of enabling legislation to authorize establishment of a broad-band technology-based network called KAN-ED and the creation of a public-private entity and board to contract for the creation, operation, and maintenance of that network. The Task Force stresses that this network must be assembled from facilities owned or to be constructed by the private sector and must be managed in a manner that will not compete with private sector initiatives. As defined in the proposed legislation, schools (including postsecondary institutions), libraries, and hospitals in Kansas will be authorized to connect to the KAN-ED network for broadband Internet access and intranet access for distance learning.

Proposed Legislation: The Task Force does not have the authority to introduce legislation.

BACKGROUND

Definition of a State Education Technology-Based Network

A "network" is a fabric of elements which work together to support the transfer of information.[1] A state education technology-based network connects state educational institutions to a high-speed, high-bandwidth backbone[2] so that these institutions can share the costs and benefits of: aggregated database purchases through subscriptions or licenses and access to statewide databases; broadband Internet access; curriculum development and integration; technical support; training for teachers, student teachers, and technical personnel; full-motion video service capability; E-mail and web hosting services; and centralized application submittals for external funding, such as e-rate discounts. State networks include access to the commercial Internet but they also offer an array of content and support services.

State networks are essentially composed of "network facilities," "network services," and "network content." The hardware and leased physical facilities required to physically connect the necessary equipment and the software that provides these network services are considered to be "network facilities." Examples of network facilities include coaxial cable, fiber optic cable, and hub antennas for wireless transmissions. Certain "network services," such as Integrated Ser-

1 Ray Horak, *Communications Systems & Networks*, 2nd ed. (Foster City, CA: M&T Books, 2000), p. 4. Several other definitions in this report were taken from Mr. Horak's book.

2 A backbone is a network arrangement designed to interconnect lower-speed channels or dispersed users.

vices Digital Network (ISDN), Digital Subscriber Line (DSL), wireless local loop services, and cable modem service, are purchased and are subsequently transported over network facilities. These services, in turn, enable end users, such as teachers, students, and library patrons, to participate in distance learning opportunities, access the Internet, or use specialized databases, generally referred to as "content." The actual design of network facilities is dependent upon the capacity needed to carry anticipated content and required quality of service over the network.

Absent a state technology-based education network, school districts and libraries will continue to purchase their own network services and content instead of doing so on an aggregated basis. In many cases, individually purchased services are too expensive. In addition, the schools' and libraries' network facilities might not have sufficient capacity to support broadband Internet access, desktop video, full-motion interactive video conferencing, or other desired content.

SR 1848

On April 28, 2000, the Senate adopted SR 1848, which established the 15-member Task Force on State Education Technology-Based Network. The Task Force includes six legislative members appointed by the Legislative Coordinating Council and nine members representing the communications industry, schools, and libraries appointed by the Governor. (See Appendix 1 for a copy of the resolution.) The following charges to the Task Force were outlined in the resolution.

- Evaluate the current status and cost of Internet access for elementary and secondary schools and public libraries and the need for access to Internet 2 and full motion video interconnectivity;

- Establish a plan for updating and validating data from surveys of school districts and library interconnectivity to ensure that the data are accurate and consistent;

- Determine the need of state involvement in providing essential communication for present and future learning opportunities;

- Create for legislative consideration a plan for such state involvement if the Task Force determines such involvement is needed; and

- On or before December 1, 2000, submit a report of the Task Force's findings and recommendations to the Legislative Coordinating Council regarding the foregoing.

The charges to the Task Force are addressed in the section on Task Force Conclusions and Recommendations.

Summary of Events Leading to SR 1848

October 1998. The Commissioner of Education (Andy Tompkins) appointed an advisory committee of 22 members plus staff (ex-officio members) to develop a proposal to provide connectivity to each school in Kansas. Commissioner Tompkins asked the advisory committee to consider conducting a pilot project that would provide integrated delivery of voice, data, and video to users in select school districts with the necessary technological infrastructure to support those enhanced services.

January 1999. The advisory group appointed in October 1998 submitted a proposal to the Kansas State Board of Education titled *Today's Technology and a Second Generation Network for All Students in Kansas*. The Task Force's proposal contemplated Internet and data services to 332 school districts and video services to 110 school districts. Enhanced services would be provided to 25 school districts. Interlocal cooperatives also could receive Internet connectivity, video, and enhanced services. The proposal established the Kansas Education Network which would offer Internet and data services to every school district and offer districts an opportunity to purchase long distance service, additional bandwidth, and video services. The services would be provided by vendors who contract with the Division of Information Systems and Communications (DISC). For its part, DISC would manage the network operation center with the Kansas Research Education Network (KANREN).[3]

1999 Legislative Session. The House Budget Committee received information on the advisory committee's proposal to the Kansas State Board of Education. In its subcommittee report on the FY 2000 budget, the House Budget Committee noted: "The Budget Committee believes access to technology is important for students and encourages the efforts of the State Department and the other agencies involved to develop a state telecommunications infrastructure. It asks the State Department to keep the Legislature informed of its progress." The Legislature considered the issue of funding the proposal in the omnibus bill but funding was never appropriated.

1999 Interim Study. As funding was not appropriated for a statewide education technology-based network, the House Appropriations Committee, the House Education Committee, and the House Utilities Committee requested this topic as an interim study. The Legislative Coordinating Council directed the Special Committee on Education to consider options for a statewide backbone to interconnect educational institutions.

Proposal to Special Committee on Education. Under the direction of the Kansas Technology Enterprise Corporation, two groups – the Kansas Information Technology Action Committee and the Kansas Education Technology Advisory Board—collaborated to develop a proposal for a statewide network for schools, libraries, and state agencies in Kansas. This proposal, known as the KAN-ED proposal, was conceptually modeled after the one developed by the advisory committee for the Kansas State Board of Education. Central to both proposals was the partnership between DISC and KANREN for management and technical support of the network. The major differences in the KAN-ED proposal were inclusion of the libraries in the network and connection to Internet 2[4] via the Great Plains Network.[5]

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3 KANREN is a nonprofit consortium of colleges, universities, school districts, libraries, and other organizations in Kansas, organized to provide statewide network connectivity in support of education and research.

4 Internet 2 is a private high-speed network used by higher education institutions to aid education and research. The network's content is specialized for educational purposes, such as materials for educational research and specialized databases for the educational community.

5 The Great Plains Network is a consortium of Great Plains states dedicated to supporting scientific research through the use of high-speed networking technology.

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Recommendation by the Special Committee on Education. The Special Committee on Education reviewed the KAN-ED proposal submitted by the Kansas Information Technology Action Committee and the Kansas Education Technology Advisory Board. At its meetings in August and September 1999, the Committee also heard presentations on several technology-based education networks within Kansas (the KANS-A-N network, Southwestern Bell's Broadband Education Service, the Great Plains Network, KANREN, the Missouri Research and Education Network (MOREnet), and Washington's K-20 Network). Ultimately, the Committee recommended introduction and passage of a bill to establish a state education technology network (KAN-ED).

Substitute for HB 2591. This bill was separately referred to the House Committee on Education and the House Committee on Utilities. Both committees amended the bill and the bill was further amended by the Senate Committee on Ways and Means. The bill died in the Senate Committee of the Whole. The bill would have authorized the establishment of the state education technology network (KAN-ED). School districts (including cooperatives), accredited private schools, and public libraries would have had access to: Internet connectivity with a minimum speed of 128 kilobits per second; distance learning capability; and integration of technology into the curriculum. KAN-ED would have been part of the multi-service, broadband backbone network provided for by DISC under the supervision of the Secretary of Administration. The Department of Education and the State Library, after consultation with the Board of Regents, would have prepared and jointly submitted an information technology project plan to the Director of the Division of Information Systems and Communications. State funding for KAN-ED would have been triggered by the Director's approval of that plan. Although not specified in Sub. for HB 2591, the Legislature intended state expenditures to be released pending the Department of Education's successful application for federal e-rate discounts for the KAN-ED project.

TASK FORCE ACTIVITIES

The Task Force had five meetings: August 3, August 24, September 19-20, October 19, and November 13, 2000. The first three meetings were devoted to gathering information on:

- The status of connectivity and the need for a broadband statewide education network in Kansas;
- Existing and proposed state education networks in Kansas; and
- State education network models, with a focus on Missouri's and South Dakota's education networks.

These three issues are addressed in greater detail below.

Status of Connectivity and the Need for a Broadband Statewide Education Network in Kansas

***From the K-12 School Perspective*:**

Profile of K-12 School Connectivity in Kansas. The following information from *Technology Counts '99*[6] was furnished to the Task Force:

6 *Technology Counts '99*, September 23, 1999.

- Kansas ranks 8th in the United States in number of K-12 students per instructional multimedia computer.[7]

- Kansas ranks 23rd in the number of Internet connected computers per K-12 student.

- The percentage of Kansas schools with broadband access is 34 percent, compared to the national average of 49 percent.

The following information from the *National Profile of Statewide Education Networks*[8] was furnished to the Task Force:

- Thirty-four states, including the District of Columbia, report having a statewide education network that serves the K-12 community.

- Of states with education networks, 27 states, including the District of Columbia, fund those networks from state funds or a combination of state funds and fees for service; four states fund those networks from fees for service and, in two states, from other funding sources, as well; and the remaining three states fund their networks in another manner.

The Kansas Department of Education's 1999 survey disclosed that all school districts in Kansas had at least one connection to the Internet. The bandwidth for that connection varied considerably as responses from 286 school districts indicate. Of all respondents, only 73 school districts (26 percent) reported having T1 (1.5 megabits per second) connections to the Internet.

A Rural School District's Experience. Many rural school districts have elected to offer on-line courses and provide students with dedicated Internet access and virtual learning centers. The reasons include declining or stagnant enrollment, scheduling conflicts, and an inability due to budget constraints to offer certain courses, such as foreign languages and advanced math, through traditional classroom instruction. The Superintendent of USD 444, Little River, described his district's technology activities. (USD 444 has an enrollment of 270 students, roughly the same as last year. However, enrollment has decreased from a few years ago.) USD 444 has a diversity of learners and is trying to use technology to meet the needs of each student. The school district has a 256K line for connectivity which is part of a package of services, including filtering, E-mail, and administration. This package is provided by Two Trees and costs $22,000 per year. USD 444 students may participate in a dual credit program with Edu-Kan, which is a consortium of courses offered on-line by community colleges. The school district has a wireless system and a wireless connection between its two schools. The school district recently hired a Spanish instructor whose assignment is to devote 60 percent of her time to teaching and the remaining 40 percent to creating a course to offer on-line to other school districts. USD 444 recently started the "Anytime-Anywhere Learning Program." Through this program, all students in the middle school are ensured a laptop computer. The school district also uses specialized on-line staff development for its

7 An "instructional multimedia computer" refers to any computer with a sound card and CD-ROM drive that is used for student instruction.

8 James Bosco *et al.*, *National Profile of Statewide Education Networks*, Edvancenet, September 1999.

teachers. The district is looking for ways to create opportunities for students and staff at less cost to the district.

School Districts' Questions about a State Education Network. On July 19, 2000, Steve Wyckoff, Task Force Chairperson, asked all public school superintendents in Kansas to formulate questions considered of most importance to them in order to accomplish the tasks outlined in 2000 SR 1848. These questions would need to be answered before their respective school districts would commit to a statewide network.

In response to the survey transmittal, staff received 69 responses as of August 18, 2000. This is a 22.7 percent response rate. With respect to a statewide education network, the most frequently raised questions addressed:

Cost. Who pays? Does the district? On what basis will costs be determined? What are the initial costs? Ongoing costs? What will the costs include? How will a commitment to the statewide network affect existing budgets and individual districts' e-rate funding?

Management. Who will manage the network and when will network services be available?

Backbone Capacity. What will the capacity be? Which applications can be supported by the network? (Interactive video and distance learning were frequently referenced.) Will capacity be as good as it currently is for certain districts? Who will be responsible for expanding bandwidth capacity?

Connectivity. Will the statewide backbone connect to the district office or to all school sites? Will noneducation sites be connected to the backbone? What is the number of connection points within the district? What is the desired bandwidth/speed for connections to the district and between buildings within the district? What equipment will school districts need? How will compatibility of school districts' existing in-house networks and computer systems and the components of the state network be addressed?

Existing Contracts. How will the statewide network affect existing school district contracts with Internet Service Providers (ISPs)[9]? Who will the ISP be and what services will it provide?

Quality of Service and Accountability. How will network problems be handled? What technical support will be provided and by whom? What will the process be for updating backbone technology? Who will set standards for network use? How will quality of network services be ensured?

Equity Issues. What is equitable access to the network worth? What type of equity will be ensured: rates to school districts, access speed, bandwidth, rural/urban information and re-

9 An Internet Service Provider is a company that purchases direct access to the Internet and then resells that access to subscribers for a monthly fee. An Internet Service Provider could be a national company or a local company. The company sometimes also performs additional services, such as providing E-mail or maintaining the subscriber's webpage.

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search services? What are the benefits to districts that have already invested in the technology?

Other Issues:

Security. How will security and filtering be addressed and by whom?

Benefits/Effectiveness. What would be the instructional benefit of the network to students and teachers? What additional instructional opportunities will exist through the network? Will the state develop content and services that take advantage of the network? How will the long-term success of the network be monitored? What are the cost benefits of a state network?

Obsolescence. Would it be better for the state to fund a wireless backbone? Will funding be committed to prevent network obsolescence (see quality of service, cost)?

Involvement. To what extent will school districts be involved in the design and operation of the network? Will school district participation in the network be required?

Internet 2. What will be available through Internet 2 and will all school districts be able to access it?

***From the Public Libraries' Perspective*:**

Profile of Public Library Connectivity in Kansas. A survey of 124 public libraries conducted in February through August 2000 disclosed the following:

72 public libraries had broadband connection to the Internet;

223 public libraries had dial-up connection to the Internet; and

29 public libraries had no Internet connection.

Librarians' Observations Concerning Libraries' Needs. Public libraries are committed to the mission of providing access to information. As the Director of Lawrence Public Library stated, "Libraries are in the business of connecting people of all ages, backgrounds, abilities, and needs with information and knowledge . . . . Providing access to useful information today means supplementing print collections with computerized information." Yet, as he and other librarians have observed, the majority of libraries with Internet access have dial-up service which is unacceptable in a library setting. Not only is reliable broadband access to the Internet considered extremely important for library patrons but so is broadband access to on-line reference information, including: full text, electronic journals; World Wide Web resources; library holdings; and interlibrary loan information. Certain types of databases, such as newspaper electronic archives and readers' advisory databases, are too expensive for local libraries to purchase but may be affordable on a statewide education network. A state education network would afford all libraries in Kansas access to such reference resources.

Libraries' Questions about a State Education Network. On July 19, 2000, Steve Wyckoff, Task Force Chairperson, asked all public libraries in Kansas to formulate questions considered of most importance to them in order to accomplish the tasks outlined in 2000 SR 1848. These questions would need to be answered before their respective libraries would commit to a statewide network.

In response to the survey transmittal, staff received 17 responses representing 88 out of 321 public libraries, as of August 24, 2000. This is a 27.4 percent response rate. With respect to a statewide education network, the most frequently raised questions addressed:

Cost

- What will the network cost?
- Who will pay for it?
- Will it be affordable for small libraries? If not, what will be done to make it available?

Content

- What databases would be available and what would they cost?
- What restrictions would there be on use, *i.e.*, filtering?
- What educational materials would be available for adults and children?

Properties

- What speed and bandwidth would be available?
- Will service be fast and reliable?
- Will the ISP be the same statewide? What ISP would be used? Can the library continue to use its current provider?

Conflict with Current Services

- How will the network affect existing e-rate discounts to libraries?
- Will the network be compatible with existing networks?

Other Issues

- Will the network include all libraries?
- Will training be provided and who will pay for it?
- Will it be politicized? How will politicization be avoided?
- Will there be standards for connection with flexibility for future network growth?
- Will state commitment be permanent or will state funding be reviewed annually?

From an Economic Development Perspective:

The President of the Kansas Technology Enterprise Corporation stressed the importance of information technology for the Kansas and national economy. The state's network facilities need to be in place to educate and train Kansans for high paying information technology jobs.

The following information was presented to the Task Force from *the Emerging Digital Economy II*:[10]

Information technology-producing industries (*i.e.*, producers of computers and communications hardware, software, and services) accounted for only 8 percent of the Gross Domestic Product between 1995 and 1998. However, they contributed on average 35 percent of the nation's real economic growth.

By 2006, almost one half of the U.S. workforce will be employed by industries that are either major producers or intensive users of information technology products and services. Innovation has increased demand for high paid core Information Technology workers, such as computer scientists and engineers; created new skill requirements for some non- Information Technology occupations; and raised minimum skill requirements for many other jobs. Wage gaps

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10 U.S. Department of Commerce, *The Emerging Digital Economy II*, Executive Summary, June 1999.

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between workers in Information Technology industries and all other workers continue to widen.

The following information was presented to the Task Force from *Information Technology Research: Investing in Our Future*:[11]

11 President's Information Technology Advisory Committee Report to the President, *Information Technology Research: Investing in Our Future*, February 1999, pp. 18-19.

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Transforming the Way We . . .	Challenges	Benefits
1. Communicate	Scaling for growth and reliability through the telephone system. Improving human interaction with computers. Fragility of systems. Global networking issues. Finding best use of new communication possibilities, 1-on-1 and in groups.	One billion users can access the Internet simultaneously, regardless of language and physical limitations.
2. Deal with Information	Improving data access methods. Multi-modal human-computer interaction technologies. Reliability and bandwidth, better audio and video streaming. Scalable software support. High-performance computing. Delivering and protecting critical information. Policy for electronic dissemination of information.	Everyone can access, query, and print any book, magazine, newspaper, video, data item, or reference document, regardless of language, using mouse, touch screen, speech, or eye blink. Value is added to information through networked and software-enabled tools.
3. Learn	Scalability and reliability of the information infrastructure. Improving software technologies for development of educational materials and support of their modifications and maintenance. Determining the best use of computing and communication technology for effective teaching and learning. Learning which traditional teaching methods to leave alone. Learning how to teach citizens best use of these new technologies.	Regardless of location, age, handicaps, or schedule, anyone can participate in on-line education programs. Everyone can access educational materials to discover the best learning style for them. Customized educational programs exist for everyone, so no one is left behind.
4. Conduct Commerce	Having sufficient privacy and security to ensure consumer confidence. Reliability of communication networks, computers, and business applications needs to be high.	Customers can reach any company regardless of location. Immediate feedback facilitates fast adjustment of marketing strategies and inventories. Consumers shop at their convenience. Companies can immediately access funds from sales. Consumers have automated statements permitting improved financial management.

Transforming the Way We . . .	Challenges	Benefits
5. Work	Developing high-speed networking for all, regardless of location or handicap. Developing software to allow effective collaboration. Ensuring privacy and reliability of the information infrastructure. Determining how employers, employees, and the self-employed can respond to changes.	Workers have access to jobs regardless of proximity to population centers. Workers can live where they want, not needing to be near jobs. Workplace can better accommodate individual needs.
6. Practice Health Care	Ensuring privacy of information repositories. Developing robotics and remote visualization methods to support applications such as telepresent surgery.	Doctors use teleconferencing and telesensing to interview and examine patients. Surgical procedures can be demonstrated with Internet-based video. High-end systems provide expert advice. Patients access biomedical information, gaining empowerment to make decisions.
7. Design and Build Things	High-end computing technologies are needed for concept design, simulation, analysis with interactive control and computation steering, mining archived data, and rendering of data. Need bi-directional engineering development processes linked with business processes.	Complex designs done via computer simulations. All parties, including end users, participate in the process. Safer products, higher quality, lower costs.
8. Conduct Research	Research problems have become more complex and inter-disciplinary. Researchers need to find innovative ways to collaborate.	Research is conducted in virtual laboratories, interacting, accessing instrumentation, and sharing data and other resources, all regardless of physical location. All journals are available on-line.
9. Deal with the Environment	To accelerate and extend climate modeling research to improve forecasting. Increasing computing capability by orders of magnitude. Develop improved numerical methods and algorithms, tools for data storage, management, analysis and visualization, software development and testing, and advanced networks for distributed computing.	Reliable climate models. Ecosystem models accurately predict responses to changes in conditions. Fully integrated models facilitate decision making by scientists and policymakers.
10. Conduct Government	Develop significant improvements in data access: high performance file systems and tools. Develop reliable, secure networks and software to deliver and protect critical data.	Government services and information are available to all regardless of location, computer literacy, etc. One-stop shopping for locating information. Automated business processes accelerate responsiveness. Enhanced responsiveness to natural disasters.

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Existing and Proposed State Education Networks and Network Services in Kansas

The Task Force acknowledged that any development of a statewide education technology-based network should take into account those networks that are already in existence or are under serious consideration. To that end, the Task Force received information on the following statewide networks and network services: KANREN; TELENET 2; the High Southwest Plains Network and other instructional television (ITV) networks; the STAR School Grant proposal; and ChalkWaves.

KANREN. The Kansas Research and Education Network (KANREN) is an independent, nonprofit membership consortium, created in 1993 to serve the education and research communities of the State of Kansas. The membership consists of 65 nonprofit institutions including all the Regents institutions and the KU Medical Center, 11 private colleges and universities, 10 community colleges, 17 USDs, 17 public libraries, and 5 other education and research-based nonprofit organizations. This consortium is staffed by 3.0 FTE positions with an FY 2001 budget of $1.2 million. KANREN was funded with National Science Foundation grants from 1993 through 1995 but has been self-supported through membership and connectivity fees since that time.

The KANREN backbone network currently provides dedicated Internet access for nearly all KANREN member institutions, and Internet 2 (very high speed) access for the University of Kansas, Kansas State University, and the KU Medical Center. KANREN's main backbone points of presence (POPs)[12] are at Manhattan, Lawrence, Kansas City, and Wichita. Currently, more than 53 Mbps of commercial Internet connectivity is distributed among those sites, along with 40 Mbps of Internet 2 bandwidth. KANREN's member sites are connected to this high-speed backbone via frame relay links[13] at T-1 or fractional T-1 speeds. The KANREN backbone network runs over ATM DS-3 (45 Mbps) circuits in areas of the state served by the 785 and 913 area codes, and over T-1 circuits in areas of the state served by the 316 area code. KANREN's Kansas City POP is co-located with the Great Plains Network gigaPOP, and KANREN is connected to the Great Plains Network via OC-3 (155 Mbps), for both commercial Internet and Internet 2 access. The Great Plains Network connection also provides KANREN with direct access to the state network infrastructures in all of the Great Plains Network member states: North Dakota, South Dakota, Nebraska, Oklahoma, Missouri, Arkansas, and Minnesota.

KANREN's services include: network monitoring; Usenet News service; domain name service; consulting; intranet[14] design and implementation; various Web support services; and training. KANREN provides on-site training in many areas (more than 15 different workshops). Customized training also is available. In addition, KANREN develops and disseminates training materials for members and

12 POP is a switch positioned as an access point.

13 Frame relay is a high-speed transmission service that moves data in units at access speeds of up to 1.536 Mbps.

14 An intranet is essentially a mini-Internet deployed within organizations or groups of organizations. It can be confined to a campus environment or extend across a wide area to link together multiple, geographically dispersed locations.

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hosts a technical conference annually for member site representatives.

TELENET 2. TELENET 2 is a Kansas statewide educational videoconference network. This network links up 20 sites simultaneously, enabling people to electronically attend university courses, training sessions, seminars, and workshops. There are 29 established TELENET 2 sites in Kansas.

TELENET 2 classrooms are located throughout Kansas to maximize accessibility to continuing education. Each classroom is equipped with videoconferencing equipment operated by a TELENET 2 assistant. Support services are provided by the Kansas Regents Network located on the Kansas State University campus and by local site personnel.

The educational network is used for a variety of programming. Emporia State, Fort Hays State, and Kansas State universities regularly offer upper division and graduate courses on TELENET 2 for educators, nurses, librarians, counselors, dieticians, and others. The University of Kansas Law Enforcement Training Center provides state in-service training. Other organizations have offered health training, legislative updates, job training, and administrative meetings using TELENET 2.

Kansas Association of Interactive Distance Education. The Kansas Association of Interactive Distance Education (KAIDE) includes 11 ITV networks and consortia in Kansas. These networks and consortia serve 109 school districts, 2,863 students enrolled in day-time classes, and 1,654 students enrolled in evening classes. Thirteen community colleges and area vocational technical schools and four universities participate in KAIDE to provide advanced placement and college courses. The ITV networks also have partnerships with special education cooperatives, educational service centers, and the Kansas Department of Education. KAIDE also provides access to videoconferencing, staff development, and K-12 enrollment special projects. Appendix 2 is a list of all the existing Kansas ITV networks, with information on number and type of courses offered and technology used; a map of the existing ITV networks; and a list of all the school districts, service centers, community colleges, technical schools, and universities participating in each ITV network. The information included in Appendix 2 is dated October 2000.

STAR School Grant Proposal. The Task Force received information about a proposal that, if implemented, could provide full-motion video capability to currently unserved school districts in Kansas. A partnership was established by educators from Nebraska and Kansas to bring about the first multi-state distance learning network in the country. A grant proposal was submitted to and funded by the U.S. Department of Education through the STAR School project. A five-year project, the grant provides $9.5 million for the establishment of a fiber optic backbone, installation of equipment for distance learning, and high speed Internet access. The final project is also expected to make IP telephony and computer desktop videoconferencing available at each site.

This project is governed by a board of directors and a Kansas grant coordinator, who make decisions to ensure the money is expended in compliance with grant specifications. Short-term goals include establishing standards and parameters for the acquisition of the infrastructure and the deployment of the interactive technology. Three fiber infrastructure routes will

be subject to bid with the intent of acquiring existing fiber and not laying new fiber. School districts in close proximity to the fiber routes were invited to participate in the process and, as of September 15, 2000, 51 districts had written letters of commitment to be part of the bidding process and a site on the fiber infrastructure. Schools are expected to begin operations by July 2001, and all participating schools are expected to apply for e-rate funding discounts. Schools will have to make a financial commitment if they want to participate in the STAR School project but their costs cannot be determined until responses are received from the Request for Proposal inviting vendors to bid on routes for the fiber infrastructure. A not-for-profit private corporation will be established to supervise the network operations and ensure ongoing management of the system.

ChalkWaves. ChalkWaves (formerly known as MoKan Kids Network) is a partnership between public television stations and school districts, providing 720 hours of instructional television programs, on-line educational resources, and teacher professional development services. Four public television stations serving Kansans (KPTS, Smoky Hills, KCPT, and KTWU) provide 200 Kansas school districts with these programs and services. Unlike the other networks summarized above, this partnership is focused on content delivered through public television stations' existing technologies. This instruction is provided to students at a cost of $1.25 per student per year. The Task Force was informed that ChalkWaves would like to offer digital television, with its four capabilities of multicasting, datacasting, enhanced television, and high definition television, to direct video stream on demand to school districts to augment K-12 students' lessons.

Review of Statewide Education Network Models from Other States

Comparison Between South Dakota's and Missouri's Networks. On August 24, the Task Force heard presentations on two state education technology-based networks using very different approaches: South Dakota (through a video conference) and Missouri. The Task Force was informed that:

- Both states had no legislation governing their respective networks.
- Both states lease and do not own the fiber optics for the network backbone.
- Both states provide school districts and libraries with high-speed Internet access.
- In both states, schools and libraries are part the of same network.
- South Dakota's initiative has been more compressed in build-out of the network and more top-down in planning and implementation of the network. Governor Bill Janklow launched this network in 1999 (after wiring of schools was completed) and garnered the necessary legislative support to fund it. Missouri's initiative was not the outgrowth of a Governor's "vision." It began as a higher education consortium initially funded by the National Science Foundation in 1991 and expanded in 1993 to include K-12 schools through a contract with the Missouri Department of Elementary and Secondary Education. As opportunities have arisen, MOREnet has included libraries in its network and has expanded the types of services it provides its network members.

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- South Dakota committed state funding for T1 connections from each K-12 school building to the network. Missouri's commitment is for T1 (or more) connections to each school district (connections to individual buildings are the school districts' responsibility).

- Wiring within the South Dakota schools was funded by the state; wiring within Missouri's schools was the school districts' responsibility.

- South Dakota contracts out the operation of the network facility and uses resources from various entities in state government to provide network services whereas MOREnet, for the most part, uses inhouse staff to oversee and maintain the network facility and provides network services and training. (Accordingly, the staffing complement in both states reflects this situation.)

South Dakota. The development of South Dakota's network proceeded in the following sequence:

- Through the Wiring the Schools initiative, all K-12 schools were wired with electrical and local area network computer cable as a precondition for optimal use of a statewide network's resources and content.

- Through the Connecting the Schools initiative, network hardware and software were provided to each K-12 school and schools were provided broadband Internet connectivity and video conferencing capability through the statewide Digital Dakota Network (DDN).

Wiring Initiative. The Wiring the Schools initiative was announced in 1995 and began in 1996. All K-12 schools were wired with minimum security inmate labor as a precondition for being incorporated into a single statewide TCP\IP[15] intranet (the DDN). School buildings had to be wired to standardize connections and to upgrade their electrical systems in order to support the installation and use of the new network technology. The wiring initiative provided three drops for every four students, new circuits in each classroom, cable TV connections, and fiber cable where needed. The state paid for the electrical supplies and the cost of electricians supervising the inmates' work. The total cost to the state for the wiring initiative was $11 million. Local communities were responsible for feeding and housing the inmates, and for inmate supervision during nonwork hours. School districts also arranged for inmate transportation between communities. Over the entire course of the Wiring the Schools project (1996-1998), approximately 600 inmates participated and approximately 675,000 inmate work hours were recorded for the project.

Digital Dakota Network. The development of the actual DDN began in April 1999. This is a broadband statewide telecommunications network that intends to provide data and video services to

15 TCP\IP is the protocol that integrates dissimilar systems and networks and enables all the computers on the Internet to communicate.

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all public sector entities in the state (K-12 is one component of the network). The DDN currently provides to K-12 schools: Internet access; video distance learning opportunities in grades 7-12; a minimum of one T1 telecommunications circuit; file servers and software; network administrator training; Local Area Network switches; and E-mail and web hosting services. US West installed the video and data technology in the schools and provided them free access to more than $17 million of company data networking and interactive video equipment.

Technology for Teaching and Learning. The TTL Academy's major emphasis is on the integration of technology into teaching and learning. The academy provides training to teachers and administrators. Sessions are 200 hours in the summer. The state provides $1,000 stipends to school districts to offset costs of enrolled teachers. Thirty percent of all teachers and administrators have received training from the TTL Academy to date. The amount of $5 million has been committed to training.

Missouri. MOREnet presently provides data and video service to 950 public and private universities, 513 of the 520 public school districts, private schools, libraries, hospitals, and state government. Private vendors own the transport but MOREnet owns all the hardware. The MOREnet staff of 130.0 FTE positions operate the network, provide assistance and licensing to all clients, offer training, and assist educational institutions with E-rate applications. The network provides a T1 connection protected by SONET rings[16] and access to Internet 2 service. All contract services are subject to public bid.

MOREnet's $27 million budget is funded by one direct state appropriation; all other funds are received as fee-for-services from clients. School district fees ranging from $1,500 to $6,000 per district are based on the number of certificated teachers in the district. The network can leverage federal e-rate discounts, which reduces by approximately 50 percent a district's annual fee to participate in MOREnet. Annual e-rate reimbursements total $7.5 million for MOREnet and $20 million for individual school districts statewide. These reimbursements are deployed to enhance network services and hold down school districts' membership fees. E-rate reimbursements are not used to supplant ongoing network support.

MOREnet's services statewide to K-12 schools encompassed 950,000 students, 2,200 buildings, and 50,000 classrooms. Technology funds that were available for local districts to upgrade their local networks include: $12 million in technology grants, $4.8 million in matching grants, plus an additional $10 million in competitive grants. MOREnet generates $3.7 million in user fees, with the balance met by state appropriations.

MOREnet provides one point of presence for each school district, and each district builds its own local area network.

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16 The Synchronous Optical NETwork or SONET network is highly redundant. In the dual-ring topology or configuration, one fiber transmits in one direction and the other transmits in the other direction. Throughout this layout, it is highly unlikely that any device on the network can be isolated through a catastrophic failure.

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Contracts with telephone companies are established by a series of RFPs. Private schools are allowed to participate in MOREnet although they are on a different fee structure.

Discussion and Recommendations

Task Force's Position on a Proposed State Education Network

The Task Force supports the establishment of a state broadband technology-based network that would provide content to end users in the most efficient, cost-effective, and accessible manner. This network will be known as the KAN-ED network. The Task Force stresses that this network must be assembled from facilities owned or to be constructed by the private sector and must be managed in a manner that will not compete with private sector initiatives. The Task Force further stresses that this network must not abrogate existing contracts between educational institutions and hospitals participating in the network and providers of telecommunications and Internet services. This network must, to the maximum extent possible, incorporate and utilize the services and facilities of the telecommunications industry, cable industry, and other emerging industries. Through use of private network facilities and services, the KAN-ED network could provide: better Internet access, distance learning opportunities, curriculum enrichment and research, and special services like E-mail and web hosting for interested users.

Justification for a State Education Network

Network Benefits. The Task Force notes the following possible advantages that might be realized through implementation of the proposed KAN-ED network:

- Coordinated planning, purchasing, monitoring, and service delivery, thus maximizing state and local resources and expertise;
- Potential savings from aggregated purchases of online databases and other content;
- Availability of network content to end users on a more equitable basis;
- Availability of technology staff training and support to end users on a more equitable basis;
- Nontraditional delivery of instruction to deal with increased student need, declining enrollments, and teaching shortages;
- Better and, in some cases, more affordable access to the commercial Internet;
- Potential savings from centralized e-rate discount applications for network facility components;
- Increased partnerships among participating end users for shared curriculum, courses, and training of teachers, student teachers, administrators, librarians, hospital personnel, and other end users.
- Adoption of uniform technical standards for interoperability of network services and facilities;

- Kansas traffic to be kept in Kansas; (The proposed network will allow data to flow from one connected site to another and the traffic will not have to go on to the commercial Internet where it could move all over the country from one national provider network to another.) and

- Easier access to advanced network content as the content and the network services capable of supporting it evolve.

Equity Issue. The Task Force recognized the equity issue as one of the most compelling reasons to support the proposed KAN-ED network. In a recent report, the Division of Legislative Post Audit surveyed Internet access costs of 13 sample school districts as of August 1999.[17] The Division noted that the amount owed (after e-rate discounts) for broadband connections and Internet costs varied among the 13 school districts due to factors, such as: the distance between the telephone company's central office and the school district site; the terms of school district-provider agreements (two of the 13 school districts did not have to pay a portion of the connection costs); and the type of services included in the connection costs. The KAN-ED network should be able to make such connection costs more equitable among all participating school districts.

The KAN-ED network should offer all school districts a wider array of educational resources. Enrollment has declined in 190 school districts from 1998-1999 to 1999-2000 and in approximately 175 school districts from 1999-2000 to 2000-2001. Declining enrollment in rural districts affects course offerings. In addition, recruitment of teachers and funding for their salaries, as well as recruitment and retention of technical support staff is particularly challenging in rural areas. However, the network would be one means of reducing the disparities facing "have" and "have not" educational institutions. For example, all school districts in rural Kansas should be able to offer students foreign languages, advanced placement courses, and a more customized curriculum. Rural school districts and libraries should be able to access large on-line databases and pay for reliable, broadband access to the Internet. At the same time, the network would benefit school districts and libraries in more urban regions of the state because school districts and libraries could realize savings from aggregated purchases of content and enhanced network applications.

Recipients of Network Services and Content

The Task Force recommends that recipients of KAN-ED network services and content include the following Kansas institutions:

- School districts;

- School district interlocal cooperatives;

- School district cooperatives;

- Nonpublic schools accredited by the State Board of Education;

- Public libraries;

- Regional library systems;

17 Performance Audit Report to the Legislative Post Audit Committee, *High-Capacity Telecommunications Services: Examining Local Telephone Companies' Compliance with the 1996 Telecommunications Act*, April 2000.

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- Libraries of nonpublic postsecondary educational institutions participating in the library research network administered by the State Library;
- Regents universities;
- Community colleges;
- Technical colleges;
- Area vocational schools;
- Area vocational-technical schools; and
- Hospitals.

If all the above institutions agreed to participate, the network would serve: 304 school districts, 28 education service centers (school district interlocal cooperatives and school district cooperatives), 163 accredited nonpublic elementary and secondary schools, six Regents universities, Washburn University, 19 community colleges, four technical colleges, 11 area vocational schools of which four are community colleges designated area vocational schools, 324 public libraries, seven regional library systems, 23 libraries of nonpublic postsecondary schools, and 129 community hospitals.

Implementation Dates

The Task Force recommends that connection of schools and libraries to the network commence not later than July 1, 2002, and connection of hospitals commence not later than July 1, 2003.

Network Design

The Task Force recommends establishment of the KAN-ED network. (See Appendix 3.) This network will be an intranet which will use the existing facilities and services of telecommunications and cable providers and support existing protocols through network gateways.[18] The network will use a standards-based monitoring protocol. Technologies will be used to enable people to communicate with each other regardless of the access device used. The Task Force recognizes that formal specifications for the network will depend upon a determination of the content to be provided to participating end users and the bandwidth requirements for providing that content. The network design should take into consideration all existing service providers (telephone companies, cable companies, local Internet Service Providers, and others) and the existing ITV networks in Kansas, as well as the services they are providing.

Network Oversight Board

Composition of Board. The Task Force recommends the creation of a public-private partnership, to be known as the KAN-ED Board. The Board will consist of nine members: three members from the telecommunications or cable industries appointed by the Governor; one member appointed by the Governor to represent hospitals; one member appointed by the Governor to represent elementary and secondary education; the Commissioner of Education or designee; the State Librarian or designee; the Chief Executive Officer of the Kansas Board of Regents or designee; and the Executive Chief Information Technology Architect or designee. The members appointed by the Governor will serve for three-year terms, on a staggered basis, subject to

18 *Protocols* are standards or procedures employed to ensure the orderly exchange of information between devices on a data network. *Gateways* are hardware and software combinations that connect devices running different protocols.

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confirmation by the Senate. These members will be entitled to mileage and expenses in accordance with KSA 75-3223.

Purpose of the KAN-ED Board. The purpose of the Board is to contract for the creation, operation, and maintenance of the KAN-ED network to which schools, libraries, and hospitals may connect for broadband Internet access and intranet access for distance learning.

Responsibilities of the KAN-ED Board. The Board will be responsible for planning, implementing, and administering all aspects of the network. In its design of the KAN-ED network backbone and extensions off the backbone to the gateways, the Board must adhere to and facilitate a market-driven approach to network infrastructure development, in coordination with all local service providers. The Board also should consider possible implications for the telecommunications and cable industries of any policy that may be adopted on network management.

- The Board will appoint two advisory committees—a technical advisory committee and a content advisory committee. The technical advisory committee will make recommendations to the Board on matters concerning network facilities and network services. The content advisory committee will make recommendations to the Board on all matters concerning content. The Board may appoint other advisory committees, as needed. The Board also may include representation from non-Board members on these advisory committees as needed. Members of advisory committees will be entitled to mileage and expenses in accordance with KSA 75-3223.

- The Board will develop a plan to ensure that all institutions participating in the network have broadband Internet access. The Board will determine the standards for both quality and affordability. The Board may request and receive assistance from any participating institution, the Kansas Corporation Commission, or any affected telecommunications or cable provider to gather the necessary data to implement such a plan. The Board will develop a methodology for updating and validating any data collected for periodic revisions of such a plan.

- The Board will determine the appropriate method of ensuring seven days-a week, 24-hour monitoring of the network's operations and the appropriate method or methods of increasing capacity on the network to accommodate changes in the content demands of participating institutions.

- The Board will identify any potential regulatory impediments to implementation of the network and will propose measures to eliminate those impediments.

- The Board may receive state appropriations and may enter into contracts with, and receive donations, contributions, and grants from individuals, corporations, private foundations, and other governmental and
- nongovernmental entities for purposes of fulfilling its responsibilities.

- The Board will hire a chief executive officer, subject to the Governor's approval, to direct and supervise the general management of the Board.

Chief Executive Officer and Staff. The chief executive officer may employ and terminate other staff, subject to appropriations. The chief executive officer must attend Board meetings and keep a record

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of all proceedings and maintain all financial and operational records.

Full-Motion Video Connectivity. The Board will assess the need of network participants for full-motion video connectivity. Based on its findings, the Board may develop a plan to provide such connectivity. The plan may require users of such connectivity to bear part of its cost.

Internet 2. The Task Force has determined that access by elementary and secondary schools to Internet 2 is not necessary at this time. However, nothing precludes the Board from developing a plan to make such access available to participating schools in the future if the Board determines that benefits will outweigh costs.

Recommendation on Legislation

The Task Force recommends enabling legislation be introduced in both the House and the Senate for their consideration during the 2001 Session.

APPENDIX 1

Session 2000
Effective: April 28, 2000

SENATE RESOLUTION No. 1848

A Resolution establishing a task force on a state education technology-based network.

Be it resolved by the Senate of the State of Kansas: That a task force on a state education technology-based network be formed, which task force shall be composed of 15 members to be appointed as follows: (1) The Legislative Coordinating Council shall appoint six members, two of whom shall be Senators who are members of the majority party, one of whom shall be a Senator who is a member of the minority party, two of whom shall be Representatives who are members of the majority party and one of whom shall be a Representative who is a member of the minority party; and (2) the Governor shall appoint nine members, four of whom shall represent telecommunications, cable and other communications service providers and five of whom shall represent public and private elementary and secondary schools and public libraries. The chairperson and vice-chairperson of the task force shall be designated by the Governor; and

Be it further resolved: That the task force shall: (1) Evaluate the current status and cost of Internet access for elementary and secondary schools and public libraries and the need for access to "Internet2" and full motion video interconnectivity; (2) establish a plan for updating and validating data from surveys of school district and library Internet connectivity to ensure that the data are accurate and consistent; (3) determine the need for state involvement in providing essential electronic communication for present and future learning opportunities; (4) create for legislative consideration a plan for such state involvement if the task force determines such involvement is needed; and (5) on or before December 1, 2000, submit to the Legislative Coordinating Council a report of the task force findings and recommendations regarding the foregoing; and

Be it further resolved: That the task force shall meet upon the call of the chairperson of the task force as authorized by the Legislative Coordinating Council; and

Be it further resolved: That members of the task force shall receive reimbursement for attending meetings of the task force authorized by the Legislative Coordinating Council consistent with the provisions of K.S.A. 46-1209 and amendments thereto; and

Be it further resolved: That the staff of the legislative research department, the office of the revisor of statutes, the division of legislative administrative services, the state library, the state department of education and the division of information systems and communications of the department of administration shall provide such assistance as may be requested by the task force.

Senate Resolution No. 1848 was sponsored by Senator Dave Kerr.

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KAIDE 2000-2001
Kansas Association of Interactive Distance Education
Existing ITV Networks October 2000

A PLUS NETWORK - EDDIE L. GOBLE, DIRECTOR

USD 219 Minneola USD 220 Ashland USD 225 Fowler
USD 226 Meade USD 300 Comanche (Coldwater Protection)
USD 422 Greenburg USD 424 Mullinville
USD 459 Bucklin USD 474 Haviland
USD 483 Kismet Plains
Dodge City Community College
Pratt Community College
Fort Hays State University

Pratt Cluster Pam Dietz, ITV Coordinator

USD 255 South Barber USD 361 Anthony-Harper USD 511 Attica
Pratt Community College

CLAFLIN - BUSHTON NETWORK - CHARLES STOCKTON, SUPERINTENDENT (USD 328)

USD 328 Lorraine (Bushton, Holyrood ,Wilson) USD 354 Claflin

GOLDEN BELT ITV- RAYMOND PATTERSON , SUPERINTENDENT (USD 496)

USD 228 Hanston USD 303 Ness City USD 395 Lacrosse
USD 403 Otis-Bison USD 496 Pawnee Heights USD 502 Lewis

GREENBUSH INTERACTIVE DISTANCE LEARNING NETWORK- CAROL WOOLBRIGHT, IDL NETWORK COORDINATOR

USD 101 Erie-St. Paul USD 232 Desoto USD 235 Uniontown

KAIDE 2000-2001
Kansas Association of Interactive Distance Education
Existing ITV Networks October 2000

A PLUS NETWORK - EDDIE L. GOBLE, DIRECTOR

USD 219 Minneola
USD 220 Ashland
USD 225 Fowler
USD 226 Meade
USD 300 Comanche (Coldwater Protection)
USD 422 Greenburg
USD 424 Mullinville
USD 459 Bucklin
USD 474 Haviland
USD 483 Kismet Plains
Dodge City Community College
Pratt Community College
Fort Hays State University

Pratt Cluster Pam Dietz, ITV Coordinator

USD 255 South Barber
USD 361 Anthony-Harper
USD 511 Attica
Pratt Community College

CLAFLIN - BUSHTON NETWORK - CHARLES STOCKTON, SUPERINTENDENT (USD 328)

USD 328 Lorraine (Bushton, Holyrood ,Wilson)
USD 354 Claflin

GOLDEN BELT ITV- RAYMOND PATTERSON , SUPERINTENDENT (USD 496)

USD 228 Hanston
USD 303 Ness City
USD 395 Lacrosse
USD 403 Otis-Bison
USD 496 Pawnee Heights
USD 502 Lewis

GREENBUSH INTERACTIVE DISTANCE LEARNING NETWORK- CAROL WOOLBRIGHT, IDL NETWORK COORDINATOR

USD 101 Erie-St. Paul
USD 232 Desoto
USD 235 Uniontown

- Erie High School
- Desoto High School
- St. Paul High School
- Mill Valley High School
- Thayer High School

USD 244 Burlington USD 246 Northeast- Arma
USD 247 Cherokee USD 248 Girard USD 249 Frontenac
USD 251 North Lyon County USD 256 Marmaton Valley
USD 258 Humbolt USD 265 Goddard USD 266 Maize
USD 273 Beloit USD 286 Chautauqua Co. Community
USD 298 Lincoln USD 333 Concordia USD 366 Yates Center
USD 379 Clay Center USD 380 Vermillion USD 393 Soloman

-Clay Center High School - Centralia High School
- Wakefield High School - Frankfort High School

USD 404 Riverton USD 426 Pike USD 436 Caney Valley
USD 447 Cherryvale USD 458 Basehor- Linwood USD 493 Columbus
USD 498 Valley Heights USD 499 Galena USD 508 Baxter Springs

Allen County Community College
Coffeyville Community College
Fort Scott Community College
Independence Community College
Neosho County Community College
Emporia State University
Pittsburg State University
Wichita State University
The Greenbush Archaeology Dig
Greenbush North At Paola
The William L. Abernathy Science Center and Rain Forrest
The PSU Greenbush Astrophyscial Observatory
The Southeast Kansas Education Service Center at Greenbush

HIGH - SOUTHWEST PLAINS NETWORK- CAROL SWINNEY, COORDINATOR

USD 102 Cimarron- Ensign USD 209 Moscow USD 210 Hugoton
USD 214 Ulysses USD 215 Lakin USD 216 Deerfield
USD 217 Rolla USD 218 Elkhart USD 363 Holcomb
USD 374 Sublette USD 457 Garden City USD 466 Scott City
USD 477 Ingalls USD 507 Satanta

High Plains Education Cooperative District (Ulysses),

Southwest Kansas Cooperative District (Ensign),
Garden City Community College, Seward County Community College,
Fort Hays State University, Southwest Plains Regional Service Center (Sublette), Pioneer Communications (Ulysses)

NORTH CENTRAL KANSAS EDUCATIONAL INTERACTIVE TELEVISION CONSORTUM (I CAN)- LESTA JAGGERS, DIRECTOR

USD 213 West Solomon Valley Schools (Lenora)
USD 238 West Smith County (Kensington)
USD 269 Palco
USD 270 Plainville, Morland
USD 280 West Graham Morland
USD 281 Hill City
USD 324 Eastern Heights
USD 325 Philipsburg
USD 326 Logan
USD 392 Osborn, Natoma
USD 399 Paradise
USD 432 Victoria
Fort Hays State University

THREE RIVERS ITV NETWORK,-DREW HARRIS SUPERINTENDENT (USD 369)

USD 310 Fairfield
USD 369 Burrton
USD 439 Sedgwick

NORTHWEST KANSAS EDUCATIONAL SERVICE CENTER - DEE SIRUTA, ITV DIRECTOR

USD 274 Oakley
USD 275 Triplains, Winona
USD 291 Grinnel
USD 292 Wheatland, Grainfield
USD 293 Quinter
USD 314 Brewster
USD 316 Golden Plains, Rexford
USD 352 Goodland
USD 468 Healy
Colby Community College, Northwest Kansas Technical School (Goodland),
Northwest Kansas Educational Service Center (Oaklay)

SOUTH CENTRAL KANSAS INTERACTIVE LEARNING NETWORK PROJECT - ANN LUNDY, DIRECTOR

USD 285 Cedar- Vale
USD 353 Wellington
USD 356 Conway Springs
USD 358 Oxford
USD 359 Argonia
USD 360 Caldwell

USD 463 Udall USD 509 South Haven
Cowley County Community College

TECHNOLOGY EXCELLENCE IN EDUCATION NETWORK (TEEN) - DR. SHARON TATGE, DIRECTOR

USD 397 Lost Springs USD 398 Peabody-Burns USD 408 Marion
USD 410 Hillsboro USD 487 Herington

THE LEARNING CONSORTIUM EDUCATIONAL COOPERATIVE-DR.VERN MINOR -Superintendent (USD 460)

USD 308 Hutchinson USD 411 Goessel USD 419 Canton Galva
USD 423 Moundridge USD 460 Hesston

U.S. 36 NETWORK- THERESA E. GRAM, DIRECTOR

USD 104 White Rock USD 221 North Central
USD 427 Republic County USD 455 Hillcrest Rural
Cloud County Community College (Concordia)
Hutchinson Community College

KAIDE 2000-2001

Kansas Association of Interactive Distance Education

Existing ITV Networks October 2000

A+ Network ATM/Analog/Codec
Ed Goble, Director
Carol Swinney (01-01)
11 USD's Dodge City CC, Fort Hays State
27 Daytime Classes- 400 Students
25 Evening Classes- 75-100 Students

Pratt Cluster ATM
Pam Dietz, ITV Coordinator
3 USD's Pratt Community College
9 Daytime Classes – 147 students
4 Evening Classes – 28 students

CLAFLIN-BUSHTON NETWORK Analog
Charles Stockton, Superintendent USD # 328
2 USD's
2 Daytime Classes 40 Students

GOLDEN BELT ITV Analog
Ray Patterson, Superintendent USD # 496
6 USD's
9 Daytime Classes 116 Students
1 Evening Class 5 Students

GREENBUSH IDL NETWORK ATM/Analog/ Codec
Carol Woolbright, Director
49 Sites (41 ATM-8 Analog)(30 USD's Allen CC, Coffeyville CC, Fort Scott CC, Independence CC, Neosho County CC, Emporia State, Pittsburg State, Wichita State)
53 Daytime Classes 600 Students
2500 Students special projects, summer programs, enrichment
College Enrollment 700 students

HIGH SW PLAINS NETWORK DS3 Digital, Codec, ISDN
Carol Swinney, Director
21 sites (14 USD's, Garden City CC, Seward County CC, Fort Hays State, 2 Spec. Ed Coop)
25 High School Courses 200 Students
50 Evening Classes 250 Students
250 Annual Video Conference s
(KSDE, LR Zoo, Special Programs - 1000 students)

NC KS ED INTERACTIVE TV CONSORTIUM (I-CAN) Analog/Codec
Lesta Jaggers, Director w/NWKESC
15 Daytime Classes - 220 Students
20 Evening Classes 150 Students
12 USD's, FHSU

NW KANSAS EDUCATION SERVICE CENTER Analog/Codec
Dee Siruta, Director (MPEG 3 Upgrade Dec. 2000)
9 USD'S , Colby CC, NWKan. Tech. School, Goodland
11 High School Courses - 312 Students
17 Evening Classes 45 Students

40-45 Annual Video Conferences

KSDE Codec / ISDN
Linda Grindol
200 Annual Video Conferences
2-3 College courses

SOUTH CENTRAL KANSAS EDUCATION NETWORK ATM/Analog /Codec
Ann Lundy, Director
12 Sites (8 USD'S) Cowley County CC
18 High School Classes - 307 Students
23 Evening Classes 300 + Students
25 Annual Video Conferences

TECH EXCELLENCE IN EDUCATION NETWORK (TEEN) Analog
Dr. Sharon Tatge, Director
5 USD's
14 High School Classes - 258 Students

THE LEARNING CONSORTIUM Analog
Dr. Vern Minor, Superintendent USD # 460
4 USD's
1 Daytime Class
4 College Classes
1 Video Conference per Month

3 RIVERS Analog
Drew Harris, Superintendent, USD # 369

3 USD's, Hutchinson CC
6 Daytime Classes 100 Students
Evening Classes 10-20 Students

US 36 NETWORK ATM/ ISDN
Theresa Gram, Director
4 USD's, Cloud County CC
21 Classes 200 Students
(19 ATM, 2 ISDN)
3 Evening Classes 84 Students
6 Video Conferences Per Month

Totals:
154 Total Sites
112 USD's

214 Daytime Classes
3,010 Students enrolled

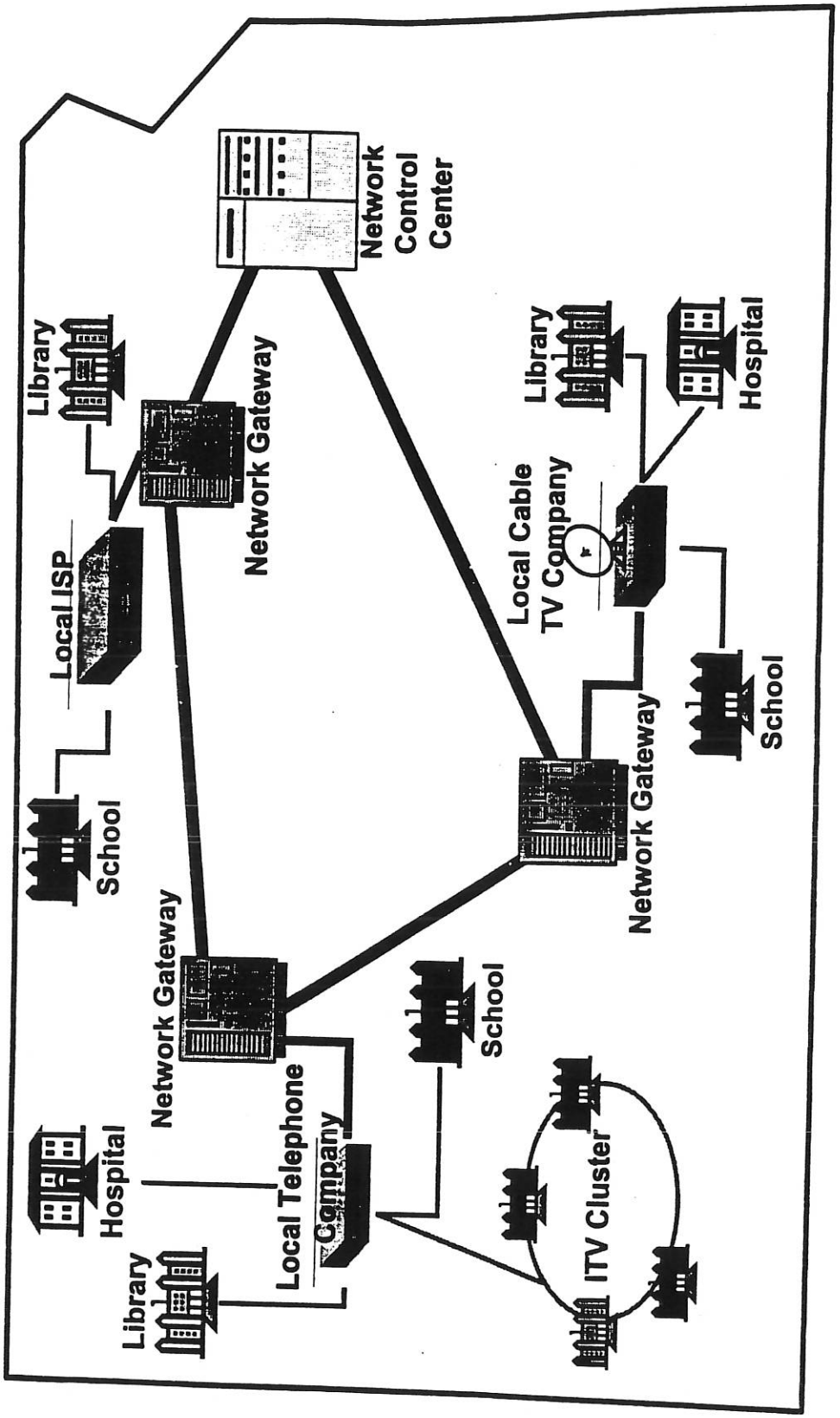
147 Evening/College Classes
1,682 Students Enrolled

604 Annual Video Conferences

3,500 K-12 Enrollment Special Programs

13 Community Colleges/Tech Schools
4 Universities

CONCEPTUAL ILLUSTRATION OF KAN ED NETWORK



Before the House Utilities Committee
Comments by the
Staff of the Kansas Corporation Commission
January 11, 2001

House Resolution 6011
Kansas Underground Utilities Damage Prevention Act
Task Force Report Briefing

Thank you Mr. Chair and members of the Committee. I am Leo Haynos, Chief of Pipeline Safety for the Kansas Corporation Commission. I appreciate having the opportunity to be here today to testify for the Commission on the results and recommendations of the Damage Prevention Task Force which was organized in response to House Resolution No. 6011.

HR 6011 required the Kansas Corporation Commission to conduct a review and study of the Kansas Underground Utility Damage Prevention Act and to provide for participation of interested parties in the study, using the United States Department of Transportation's Common Ground Study as a basis for the review. The Commission was also requested to review 14 specific issues dealing with the Act. The Common Ground Study is a national effort to identify recommended best practices in damage prevention. The study was completed in 1999.

In May of 2000, Staff invited interested stakeholders to participate in a task force, in order to review the specific issues requested by the legislature, and to offer and discuss various proposals to improve the Act. In all, 48 individuals representing all entities affected by the One Call law volunteered their time to participate in the task force. To

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ATTACHMENT 10

accommodate this large number of members, Staff used the approach described in the Common Ground Study to designate a steering committee and 5 subcommittees. Each of the committees had representation from all stakeholders affected by the Act. For each item discussed, the task force tried to reach consensus from the various stakeholder representatives; however, if consensus was not achieved, a simple majority vote was allowed to determine a position. To encourage further participation, Staff established a page on the KCC web site to publish the results of the task force meetings and to solicit additional comments from the public.

Because of the relatively short period of time and the large number of topics to cover, the task force initially focused its efforts on answering the specific issues addressed in HR 6011 and comparing the current Kansas statute to the relevant best practices listed in the Common Ground study. By the second meeting of the steering committee, it became apparent that the focus should shift to preparing a proposed revision to the current statute. With that in mind, Staff prepared a list of issue items that combined the HR 6011 issues, relevant best practices, proposals brought up by the task force, and a review of the One Call statutes from 15 other states. These proposals were debated by the various subcommittees and steering committee before drafting proposed statutes. The proposed statutes were then discussed at the steering committee level resulting in the final version attached as Appendix 2 of this report.

The report also gives detailed answers to the 14 issues listed in HR 6011. These answers can be found in Section 1 of the report. Section 2 describes, in detail, the rationale

behind each change listed in the proposed statute rewrite. The third section of the report compares the proposed statute to the relevant best practices listed in the Common Ground Study.

Very briefly, I would like to mention what I feel are the three most significant recommendations of the report. They are as follows:

1. The task force recommends water and sewer facilities be required to participate in the One Call system, although at a lower level of participation than other buried facilities.

2. The task force recommends to expand the requirements for oil and gas production facilities to include those buried facilities that are located near or along public roads.

3. The task force recommends that excavators using directional boring equipment be required to dig a hole that will allow them to observe the head of the boring tool as it crosses a buried facility. This practice, known as "potholing", allows the excavator to visually insure that he has not damaged a buried utility.

There are several more recommendations that are incorporated in the proposed statute revisions and, they are discussed in detail in this report. However, they can be discussed at greater length when the proposed statute revisions are introduced as a bill.