

A Study of the Economic and Community Benefits of Cedar Falls,
Iowa's Municipal Telecommunications Network

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Cedar Falls Utilities

Cedar Falls Utilities, the largest municipally owned four-service utility in Iowa, provides electric, natural gas, water and communications services to a community of over 36,000 people. The citizens of Cedar Falls have been and continue to be the driving force behind Cedar Falls Utilities. Because of citizen demand and involvement, what once began as an unreliable water supply from “Big Springs,” a small light plant built with discarded bricks and an outdated manufactured gas system, has grown into an organization that is recognized nation-wide in the utility industry for outstanding performance management and some of the most favorable utility rates in the country.

Cedar Falls Utilities (CFU) is a strong supporter of economic development. Through the years, the Cedar Falls community has directly benefited by the operation of its municipally owned utilities through direct customer rate savings, free or special customer service programs and fund transfers to the City’s general fund.

CFU has made great strides to further its commitment to economic development. In 1994, a new horizon was encouraged through visionary thinking. Considerable strategic planning and analysis preceded the decision to design, construct and operate a Broadband Fiber Optic Communications System. The Cedar Falls Board of Trustees spent approximately 24 months studying the technical and financial feasibility of constructing and operating such a network. Finally, on October 24, 1994, the Cedar Falls City Council adopted ordinance No. 2072 forming the country’s second Municipal Communications Utility and transferring authority to the Cedar Falls Utilities Board of Trustees.

Design work on the new system began almost immediately and Cedar Falls Utilities crews constructed the fiber optic backbone system. Administrative staff was recruited for the Communications Utility along with some experienced technical support. The efficiencies of operating a four-service utility were leveraged to keep the additional staff to a minimum.

Cable television entertainment was among the first of the services made possible through the fourth utility. The first customer was connected on February 28, 1996. Today, approximately 7,625 residents have access to cable television services. However,

this system was not created to provide cable television services alone. The fiber optic network was equipped to provide a wide-array of communications services.

On January 9, 1997, Cedar Falls Utilities introduced its second communications service – CFU-CyberNet, a virtual 10 MB/s citywide Ethernet network. Today, more than 5,500 Cedar Falls Utilities customers transfer files, log on to other computers connected to the Metro Area Network (MAN) (Telnet); and have shared access to the Internet, including e-mail, news and other Internet services.

In addition to CFU CyberNet, special telecommunication services including T1 point-to-point, Ethernet private point-to-point, private point-to-multipoint, and public point-to-point are available for commercial and industrial customers. The network is also used for the Utilities' and the City's telephone system. The networked telephone system replaces numerous old systems of various brands and provides many new features including direct inward dialing, voice mail, automated attendant, automatic call distribution and computer telephone integration capabilities.

According to the American Public Power Association, Cedar Falls Utilities approached the operation of its broadband communications network with much the same goal as the creation of the electric utility infrastructure: to serve as a model for public power communities across the country interested in becoming the communications utilities of the twenty-first century.

For CFU, their vision to strategically position their community, provide economic benefits, improve their overall quality of life, create community distinctiveness, while enhancing their operations and service competitiveness compelled municipal ownership of a fully interactive communications network. This study investigates the economic and community benefits Cedar Falls derived from its system by comparing two bordering communities, one with a municipal network and one without. The study also studies how the system has enhanced business and economic development in Cedar Falls by keeping more money in the local economy.

Communications Utility System Overview

Cedar Falls Utilities' Communications network is based on the hybrid fiber/coax (HFC), fiber to the feeder (FTTF) design philosophy. The HFC-FTTF design includes several major components as described below.

The headend is the heart of the system – the facility that houses all of the network receiving, processing and transmission equipment for video, voice and data. The computers that control the network, monitor it for problems, program the orders, and route the data from customers to provide full two-way communication capabilities are also located in the headend.

A fiber optic backbone network provides the high-speed, reliable, and interference-free link from the headend out to many points around the city. The fiber delivers voice, data and video signals to ten neighborhood nodes and delivers services directly to major commercial, industrial, and institutional users who need high-bandwidth services.

Cedar Falls Utilities' fiber backbone network consists of five primary loops of cable that surround various parts of the city. In addition, five secondary loops of fiber cable surround areas within the city that have a heavier concentration of high-bandwidth users. The loops of cable assure exceptional reliability by providing two paths for all large users, both downstream from the headend and upstream from the customers.

Ten neighborhood nodes convert the pulses of light in the fiber optic cables to electrical signals that can be used in homes and small businesses. The nodes also contain communication-type lasers that allow voice and data signals from the homes and businesses to be transmitted upstream on the fiber optic cables to the headend.

The coaxial cable (coax) system distributes the electrical signals from the ten nodes to the homes and small businesses. A direct feed of coax from the headend serves an eleventh neighborhood. In the short distances within each neighborhood, coax provides adequate bandwidth and transmission quality required by today's communications equipment. It also provides two-way connectivity for voice and data applications.

Study Methodology

The purpose of this study was to investigate the economic growth and quality of life benefits a municipal communications system stimulates. Data was collected to compare the level of activity within two adjoining communities, Cedar Falls and Waterloo commonly referred to as the “Cedar Valley”. The specific areas measured include economic development (business recruitment, business retention and expansion), enhanced education, improved healthcare, competitive advantages and population growth. The following presents the findings in each of these identified areas.

Study Results

There is no geographical difference between Cedar Falls and Waterloo. The most significant differences are found in population and communications infrastructure. Waterloo’s population is approximately 69,000, while Cedar Falls’ numbers are around 36,000.

Cedar Falls has a citywide municipal fiber optic network and Waterloo’s communications services are available through the private sector.

Historically, Waterloo has been better positioned for economic growth. A majority of the area’s major private employers are based in Waterloo including John Deere’s tractor operations. Four of the five facilities are located in Waterloo and one facility, Product Engineering, is situated in Cedar Falls. In addition, the major financial institutions are located in downtown Waterloo. Waterloo is also the county seat. Until recently, Cedar Falls was viewed as the bedroom community, but that is quickly changing.

Economic Development

The value and need for economic development is critical to substantiating community growth. Land at reasonable prices, good highways, adequate water and sewer lines, utilities, telecommunications services, railheads/port facilities, skilled work force and competitive tax rates are key elements for business growth. This study deals with each key element noting the differences and similarities between the two communities.

Available Land at Reasonable Prices

The Cedar Valley is unique because it has five municipally-owned industrial/business parks including Cedar Falls Industrial Park, Cedar Falls Technology Park, Midport America, Waterloo North East Industrial Park, and Evansdale Technology Park. The parks have infrastructure in place with available parcels up to 650 acres. The Cedar Falls Industrial and Technology Park infrastructure includes a fiber optics network. Midport America, Waterloo North East Industrial Park and Evansdale Technology Park lack fiber optic systems. Tax Increment Finance is available in all five parks, and Midport America is a State Enterprise Zone. The price of an acre of land in the Cedar Falls Industrial Park and Technology Park ranges from \$35,000 to \$50,000, while Waterloo's price per acre is \$30,000 in Midport, \$25,000 in Waterloo North East Industrial Park and Evansdale Technology is \$25,000 per acre. In addition to these five municipally owned parks, there are several privately developed commercial and industrial sites available in the area.

The Cedar Falls Industrial Park in south Cedar Falls was developed on land purchased by the Cedar Falls Utilities. Property ownership was transferred in 1985 to the City of Cedar Falls to enhance marketing efforts. This was the initial phase of the City owned Industrial Park development. Another large parcel of land, located north of Viking Road on South Main Street, was also transferred to the City of Cedar Falls in 1989. This parcel, plus additional land purchased by the City, is the site of the Cedar Falls Industrial Park and Technology Park.

Business growth in the Cedar Valley area was extremely slow in the 80s. John Deere began reducing their work force from 13,000 employees down to approximately 5,000. Rath Packing Company, one of Waterloo's major employers, closed its doors and submitted to bankruptcy. At the end of the 80's the size of Cedar Falls' Industrial Park was approximately 125 acres. There were 25 companies located in the park employing 750 employees.

In January 2003, the Cedar Falls Parks had a total of 125 businesses. Three of these businesses, Target Corporation Distribution Center, Principal

Financial Group and Ag Services of America, Inc. invested \$52 million in facilities. Target constructed a 1,350,000 square foot facility with a price tag of \$40 million. They also invested \$60 million in machinery and equipment, provided 900 full time and 200 part time jobs with an annual payroll of \$25 million. This was the largest project in square feet in Iowa during the last 15 years. Principal constructed a \$7 million, 75,000 square foot Corporate Class A office building providing 350 full time jobs and Ag Services constructed a \$5 million, 62,000 square foot Corporate Class A office building.

With the major projects currently under construction, Cedar Falls is projecting that by the end of 2003, they will have 130 companies employing over 5,000 and occupying 4,000,000 sq. feet of building space.

In Waterloo, MidPort America has four businesses, five businesses are located in the Waterloo North East Industrial Park and Evansdale Technology Park has one business.

Highways

Cedar Falls and Waterloo is located on the “Avenue of the Saints,” a federal interstate highway planned to connect Minneapolis, Minnesota to St. Louis, Missouri. It is anticipated that highway construction in Iowa will be completed in 2003. Both communities also have equal access to interstate highway 380, U.S. highways 20, 63, 218 and Iowa highways 21, 57 and 58.

Water and Sewer Lines

Both communities receive their water from the Cedar Valley Aquifer an inexpensive, high quality and abundant source. Waterloo’s capacity is 53,900,000 gallons per day (gpd). The average daily use is 13,769,100 with a peak daily use of 28,780,000. Cedar Falls has a capacity of 25,000,000 gpd with an average daily use of 4,000,000 and peak use of 10,423,000 gpd. Waterloo’s average daily sanitation use is 18,440,000 gpd with a capacity of 36,500,000 gpd. Cedar Falls average use is 5,000,000 gpd with a capacity of 7,680,000 gpd.

Utilities

In Cedar Falls electricity and natural gas are provided by Cedar Falls Utilities, a municipally owned and operated utility. MidAmerican Energy, an investor-owned utility, provides Waterloo electricity and natural gas. Municipally owned utilities in Iowa average approximately 5.7 cents per kilowatt-hour for commercial, while investor-owned utilities electric rates average about 6.6 cents per kilowatt-hour.

Telecommunications Services

Cedar Falls has a citywide municipal fiber optic network providing high-speed fiber connections via cable modems, Fiber-to-the-Business (FTTB) and T1 through DS3 level services. Waterloo's communications services are available through the private sector. These services are limited to cable modem access (HFC transport), DSL (Digital Subscriber Line using copper transport) and dial-up services delivered over a copper network. To the writer's knowledge, FTTB is not readily accessible in Waterloo.

Both communities are served by the same Incumbent Local Exchange Carrier (ILEC), which has a central office in each community. The Cedar Valley area also has a Competitive Local Exchange Carrier (CLEC). There are two Points of Presence (POP) in the area provided by MCI and AT&T. Both POPs are located in Waterloo. Long Distance Carriers include MCI, AT&T and Sprint.

Railheads/Port Facilities

There are twenty local motor carriers serving the Cedar Valley area. Rail Service includes Chicago Central and Pacific Railroad, Iowa Northern Railway and the Union Pacific Railroad. Waterloo has a municipal airport that borders Cedar Falls.

Skilled Work Force

Both communities, located in Black Hawk County, draw from the same workforce. In 2001, the civilian labor population for both communities was

67,400 with a recorded 3.4% unemployment rate. Service area jobs represented the highest percentage (27.7%) of total employed, with manufacturing ranking second at 20%. Nearly 27% of the workforce is between the age of 35 and 54. The average hourly wage was \$11.29 with a mean salary of \$43,577.00 annually. The mean household income is \$68,552.

The University of Northern Iowa is located in Cedar Falls. Hawkeye Community College and Upper Iowa University's extended site are situated in Waterloo. Both communities have equal access to higher education. Seventy-nine percent of Cedar Valley's work force has attained an educational level of high school graduate or higher, while 21% have a bachelor's degree.

Taxes

Cedar Falls' current property tax rate payable in fiscal year 2003 (July 1, 2002 thru June 30, 2003) is \$36.40 per \$1,000 of taxable value – \$.15 less than fiscal year 2002. Waterloo's rate is \$42.69 per \$1,000 taxable value – an increase of \$6.29 over fiscal year 2002. In both communities, commercial and industrial properties are taxed at 100%. Residential is taxed at 54.85%. Personal property is not assessed for tax purposes. Personal property includes corporate inventories of saleable goods, raw materials and goods-in-process. Also, manufacturing machinery and equipment, as well as computers used to process data by insurance companies and financial institutions are exempt from property tax.

Although Waterloo's property tax is considerably higher, the median selling price of a home is much lower than in Cedar Falls. In 2001, Cedar Falls' median housing price was \$105,000 compared to Waterloo's \$72,000 price.

A 5% state sales tax and a 2% local tax apply to both communities.

Enhanced Education

Cedar Falls Utilities constructed a fiber optic loop connecting all 13 Cedar Falls' school buildings. The loop, made of one pair of strands in CFU's fiber backbone network, is dedicated to the public schools. The interconnection between the school

facilities is used to transport high-speed data, and the connection to Area Education Agency 7 is used to provide the schools Internet access and administrative computing services. This connection to AEA 7 eliminates the need for T1s. In addition to the fiber loop, all classrooms are fully wired and connected with access to multi-media, streaming video. The Cedar Falls School district has a Fiber Data Distribution Interface municipal area network, along with direct, high speed Internet access.

The Waterloo Community Schools has 21 buildings. The Iowa Communications Network (ICN), a state-owned and managed fiber optic system, feeds to ICN rooms in three buildings. These buildings are used for distance learning. All of the buildings are connected to the Waterloo Administration Building via a frame relay. All buildings, plus administration, have a T1 connection. The school district lacks the capability of multi-media, streaming video in 18 buildings. According to school officials, a fiber connection would result in an annual savings of approximately \$100,000, plus costs for equipment support.

Improved Healthcare

There are three major hospitals in the Cedar Valley area; Allen Memorial Hospital and Covenant Medical Center are located in Waterloo, and Sartori Memorial Hospital is in Cedar Falls. Covenant Medical Center and Sartori are owned and operated by the same parent company. In 1995 Cedar Falls Utilities signed a contract with Allen Memorial Hospital to provide a connection to the ICN, a statewide, state-administered, fiber optics network. The network enables authorized users such as hospitals, state and federal government, public defense armories, libraries, schools, and higher education to communicate via high quality, full-motion video, data, high-speed Internet connections, and telephones.

In 1996, Cedar Falls Utilities provided a point-to-point private connection linking the Waterloo-based Covenant Medical Center to Sartori Memorial Hospital.

Competitive Advantages

Since 1996, approximately 11 companies have relocated from Waterloo to the Cedar Falls Industrial and Technology Parks including Team Technologies, Principal

Financial, The Department of Human Services, Hawkeye Community Business Center and the Waterloo Wood Bearing Co. In the same time frame, Cedar Falls has not lost a business to relocation.

An article in the March 11, 2002 Waterloo Cedar Falls Courier reported, “The vast majority of new industries moving to the Cedar Valley are locating in the Cedar Falls Industrial Park, which has caused some discontent from local business leaders and residents wondering why Waterloo is falling short. While officials note any jobs created in Waterloo-Cedar Falls benefit the entire area, Waterloo needs industrial development to boost its tax base. An earlier article published in the same newspaper on August 21, 2001 quoted Waterloo Mayor John Roof. “Fiber optics is the key to Waterloo’s future growth,” Roof said. “In order for Waterloo with its businesses to move into the 21st century, we need fiber optic capability...I believe it has hurt us economically not be able to provide fiber optics to businesses locating in our city.”

Population Growth

Cedar Falls population increased from 34,298 in 1990 to 36,145 in 2002 – a 5.3% increase. During the same time period, Waterloo increased 3.4% -- from 66,467 to 68,747. Black Hawk County recorded a population growth of 3.4%.

Conclusions

Cedar Falls and Waterloo are adjoining communities with only a sign separating the two. It is extremely difficult for a visitor to identify departing one community and entering the other. While Cedar Falls is a quaint community, Waterloo imparts a city resonance.

An analysis of the information collected shows that there are very few differences between these two communities. Both communities are located in the same geographical area, Waterloo is approximately double the population of Cedar Falls, both communities have access to the same highway systems, draw from the same water source, their electric rates are some of the lowest in the country, both have equal access to railheads, motor carriers and airport and offer land at reasonable prices. However, the price of land in Cedar Falls runs \$10,000 to \$25,000 more an acre than Waterloo’s price. Waterloo’s

property taxes are approximately \$10 per \$1,000 taxable value higher than Cedar Falls' tax rate. Yet, Cedar Falls property is valued higher than Waterloo property. The area's major private employers are located in Waterloo. The major disparity is Cedar Falls' municipal communications network -- a key component for economic growth in a "knowledge driven economy." Table 1 provides data comparing Cedar Falls' and Waterloo's new construction valuation for 1996, 2001 and 2002.

Table 1
New Construction Valuation

Year	Cedar Falls	Waterloo
1996	\$32 M	\$58 M
2001	\$65 M	\$76 M
2002	\$101 M	\$53 M

An article published in the Waterloo-Cedar Falls Courier on July 12, 2002 reported that "Cedar Falls set a Cedar Valley construction record this fiscal year, topping out at more than \$101 million...Despite a downturn in the national economy, the city blew away all existing records in the fiscal year ending June 30...Meanwhile, the city of Waterloo failed to escape the stalled economy...Suffering from declining commercial permits and no large industrial projects to boost the value, the city recorded less than \$53 million in construction during the last fiscal year --- its lowest total in eight years."

Cedar Falls' growth has been a mix of residential, commercial, corporate office and industrial. The majority of this growth has occurred in the Industrial and Technology Parks and along the University Avenue corridor. Waterloo's growth has been a mix of residential (25%) and commercial/retail (75%). Much of the commercial/retail growth occurred around Crossroads Shopping Center and along the San Marnan Corridor.

According to Moody's Investors Service, December 3, 2001, Cedar Falls' assessed valuation has increased at an average annual rate of 7.4% over the last five years, despite state-mandated rollbacks in residential property and machine and equipment assessment rates. Moody's expects the tax base to continue to show strong growth due to "ongoing residential and industrial development projects."

This study not only demonstrates how crucial information and communications technology is to economic growth, but also the important role it plays in providing world-class education. The combination of the fiber optic system provided by Cedar Falls Utilities and the technology hardware, software and training resources provided by the City's Instructional Support Levy has enabled the Cedar Falls Schools to be a leader in the information age in this new millennium. In 2002, the Cedar Falls Community Schools received \$1 Million from the State of Iowa to provide streaming video on demand to all school buildings. All classrooms have access to distance learning. School officials are working on a project that will allow students to access streaming video via a home connection utilizing Cedar Falls' community-wide communications network.

Although the implementation of Cedar Falls' Communications Network is relatively young, Cedar Falls is already reaping economic and community benefits.

There may be no single thing more important in a community's efforts to achieve economic well-being than to grasp the role that telecommunications plays in creating meaningful jobs, enhanced education and world class healthcare. Now, more than ever, the direct link is evident between advanced communications and productivity and economic development.