



10

UTILITIES

BACKGROUND INFORMATION



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INTRODUCTION

The following section of the City of Madison Comprehensive Plan was prepared pursuant to Section 66.1001(2)(d) of the Wisconsin Statutes and includes background information for water supply, sanitary sewer service and treatment, storm water management, solid waste disposal, recycling facilities, telecommunications facilities, and power plants/transmission lines. The background information for utilities includes a description of existing and future public utility facilities, and assesses the future needs for government services related to such utilities.

REGIONAL WASTEWATER SERVICE AND TREATMENT

The Madison Metropolitan Sewerage District (MMSD) manages the regional wastewater service and treatment for the Madison area. The condition and capacity of MMSD's collection system and treatment plant facilities are reviewed by MMSD on an ongoing basis. Repair and maintenance projects are undertaken annually to keep the facilities in proper working order. Major expansions and capital improvements are guided by MMSD Facilities Plan studies. Individual projects are incorporated into MMSD's annual capital budgeting process.

The Madison Metropolitan Sewerage District (MMSD) provides regional wastewater collection and treatment services for 43 municipal customers, including cities, villages, utility districts and sanitary districts. As of 2001, MMSD had a total service area of 170 square miles and served a population of approximately 300,000. The average daily volume of wastewater received by MMSD in 2001 was 41.8 million gallons per day (mgd). The City of Madison is MMSD's largest municipal customer and contributes about 70 percent of MMSD's total wastewater flow. The existing interceptors, forcemains, and lift stations are depicted on Volume I, [Map 10-1](#) at the end of this chapter.

Each municipality within MMSD owns and operates a local sanitary sewer collection system that feeds into MMSD's regional system. The MMSD-owned regional collection system includes 17 pumping stations, 92 miles of gravity interceptor sewer and 29 miles of forcemain. All wastewater collected within the MMSD system is conveyed to and treated at MMSD's Nine Springs Wastewater Treatment Plant, located at 1610 Moorland Road on the south side of Madison.

Preliminary treatment at the Nine Springs plant is performed in aerated grit chambers. The grit chambers remove mainly inorganic material that is disposed of at the Dane County Landfill. Following the grit chambers, primary settling tanks are used to remove materials that settle and float from the wastewater. The activated sludge process that takes place in aeration tanks and



final clarifiers then provides biological secondary treatment. Bio-solids that are separated from the wastewater during primary and secondary treatment are thickened and digested and applied to cropland as a soil conditioner and fertilizer. The bio-solids are marketed by MMSD under the name of “Metrogro”. The treated effluent water from the Nine Springs plant is disinfected by ultraviolet radiation and is pumped to MMSD’s discharge sites at Badfish Creek and at Badger Mill Creek.

LOCAL WASTEWATER SERVICE

The Madison Sewer Utility manages the local wastewater services for the Madison area. Key issues with regard to the local wastewater system have been identified through knowledge gained by City Engineering operations and design staff; through the preparation of neighborhood development plans; and through communication with customers of the Madison Sewer Utility.

The Madison Sewer Utility’s conveyance system consists of a series of gravity sewer mains, sewer access structures, pumping stations and force mains. The Sewer Utility provides local collection for customers within the City of Madison. The local sewer system feeds into MMSD’s regional collection and treatment system.

As of April 2002, the Sewer Utility was responsible for the ownership and maintenance of 671 miles of gravity sewer main and 27 pumping stations. The Sewer Utility provides routine maintenance of the local collection system, including cleaning, televising, and repair of sewer mains. MMSD maintains the City’s pumping stations, with the maintenance costs paid by the Sewer Utility.

There are few on-site wastewater facilities in the City. Some of the remaining farmhouses in the City use on-site facilities and there are a number of homes in the Westview Hills plat off of County Highway M that also use on-site wastewater facilities. If a property owner would like to install on-site wastewater facilities, he or she must make a formal request to the Board of Public Works. If the Board determines that sewer service is not available nearby, or would not be available in the near-term, the Board may allow the property owner to install a wastewater holding tank.



COLLECTION SYSTEM IMPROVEMENTS AND EXPANSIONS

Collection system facilities were most recently reviewed in MMSD's Collection System Facilities Plan (July 2002). The facilities plan identifies future needs and provides an anticipated schedule for major collection system improvements and extensions through 2020.

The recommended projects are intended to systematically improve or replace individual facilities as needed. The anticipated projects include major upgrades at selected MMSD pumping stations, a schedule for interceptor replacement and relief projects, replacement of MMSD's Crosstown Forcemain and Burke Outfall sewer systems, the development of a dynamic flow computer model, and a future Pumping Station No. 18 to provide capacity for future flow increases.

Given the length of the planning period (20-years), the scope and priority of individual projects may change as detailed engineering studies are performed and as future developments occur. Individual projects and schedules are therefore regularly updated and incorporated into MMSD's annual capital budgeting process. Potential additions to the regional collection system are depicted in Volume I, [Map 10-1](#), which is found at the end of this chapter.

TREATMENT PLANT IMPROVEMENTS AND EXPANSIONS

The processes and facilities at the Nine Springs Wastewater Treatment Plant have been addressed in a series of Nine Springs facilities plans. Most recently, MMSD's Tenth Addition Facilities Plan (2002) addresses recommended improvements to the screening, grit handling, digestion, energy utilization, and biosolids end-use processes.

Based on the facilities plan and subsequent work, MMSD is adding a new fine screening headworks facility, new temperature-phased anaerobic digestion facilities, a new biosolids dewatering facility, and other improvements in the Tenth Addition to the Nine Springs Wastewater Treatment Plant.





EFFLUENT AS A RESOURCE

MMSD is a proponent of the idea that treated effluent is a valuable water resource. MMSD's Badger Mill Creek Effluent Return project, completed in 1998, returns three million gallons per day of treated effluent to the Upper Sugar River watershed, rather than to the Yahara River watershed. This helps to restore the natural water balance in the Sugar River watershed by returning treated effluent to the basin from which a corresponding volume of water was removed as potable water from groundwater aquifers.

As a longer range extension of this concept, MMSD is examining the potential for possible future advanced treatment plants to return highly treated effluent to surface water bodies within local watersheds. A potential Upper Yahara Treatment Plant, for example, could provide highly treated effluent to the Yahara River upstream of Lake Mendota. Another possibility may be an advanced treatment plant at Nine Springs to provide highly treated effluent upstream of Lake Waubesa. At this time, future advanced treatment plants are preliminary concepts, and much analysis and public input would be needed to determine their feasibility.

FLOOD-PROOFING OF WASTEWATER SYSTEM

The Sewer Utility has identified several areas within the City that require improved conveyance of wastewater during large, intense rainfall events. Problem areas of the City have been readily identified through reported sewage backups into basements during storm events.

The City has initiated engineering studies in most of the areas with a known history of sanitary sewer flooding in order to develop recommendations for improving conveyance. Several of the recommendations from each of the reports have already been implemented. Future studies and recommendations will continue to be undertaken as the Sewer Utility's budget warrants. The Sewer Utility should continue to prioritize studies and engineering projects in flood-prone areas based on input received by City residents during the planning process.

REPLACEMENT OF AGING OR INADEQUATE FACILITIES

The Sewer Utility's standard policy is to replace sanitary sewer mains on streets which are to be resurfaced or reconstructed if they are less than eight inches in diameter, were constructed prior to 1930, have a history of repeated backups, or lack adequate capacity.

The primary factor to consider in replacing aging or inadequate sewer mains is funding. The Sewer Utility goal is to develop annual budgets that provide for the replacement of segments of the wastewater system each year without resorting to unreasonable rate increases to its customers. Another factor that influences this issue is the priority ranking of streets for either resurfacing or reconstruction projects.



Replacement of sanitary sewer mains along Broom Street.

Aging sewers on streets with a low pavement rating are more likely to be replaced than those sewers in similar condition on streets with a high pavement rating.

The Sewer Utility must continue to evaluate those portions of the wastewater system, which are in need of replacement. Public input during the planning process can aid in identifying areas of concern.

EXPANSION OF FACILITIES

The Sewer Utility provides extensions of the public sanitary wastewater system as the City grows and develops along its boundaries. The primary areas of growth will be on the City's northeast and southwest sides. In addition, the Sewer Utility evaluates high-density residential development projects on the Isthmus to determine if wastewater conveyance capacity is adequate.

These extensions are initially financed and constructed by the Sewer Utility, with the costs recovered through connection charges at the time of initial development. The timing and location of sanitary sewer extensions is done in conjunction with neighborhood planning efforts and generally precedes actual development by two or more years.

STORM WATER DRAINAGE

Madison Storm Water Utility manages the storm water drainage for the Madison area. Key issues have been identified through knowledge gained by City Engineering operations and design staff; through the preparation of neighborhood development plans; and through regulations and cooperation with other governmental agencies. Improvements are also coordinated on a watershed basis. The City needs to comply with NR 151 and NR 216 of the Wisconsin Administrative Code, as more restrictive requirements of Dane County Ordinances. Specifically, all new developments have stringent requirements for peak runoff values, the infiltration of storm water into the ground, and an 80 percent reduction in sediment. New developments provide opportunities for storm water detention and treatment.



Adams Street rain garden installation.

The Storm Water Drainage System is depicted on Volume I, [Map 10-2](#). The major drainage sub-basins of the City are depicted on Volume I, [Map 6-2](#).

WATER QUALITY IMPROVEMENTS

The City of Madison shall discharge storm water in a manner that the health, safety and welfare of the public and natural resources are protected.

The Wisconsin Pollutant Discharge Elimination System (WPDES) discharge permit requires the City to reduce non-point source pollution to the area lakes and streams. The permit requires implementation of best management practices, estimated annual pollutant load calculations, storm water monitoring, creation and enforcement of local ordinances, annual reporting, and public outreach and education with a focus on “source-area control” instead of numerical effluent limits. The City has implemented aggressive street sweeping and leaf collection programs as best management practices to reduce pollutant loading of storm water runoff.



SolarBees are solar powered water circulators being tested as a means of monitoring and controlling blue-green algae blooms in Monona Bay.



The City shall continue to coordinate with adjacent municipalities and governmental agencies to protect and improve water quality. Methods to accomplish these goals such as street sweepers, leaf collection procedures and rain gardens shall be researched, tested and implemented where practical.

Effective October 1, 2004, Wisconsin Administrative Codes NR 151 and NR 216 have established statewide criteria for measurers to improve water quality. These codes establish standards for runoff and infiltration of storm water. Of significance is that, in addition to developing lands, these codes also require reductions in suspended solids from lands that have already been developed. Suspended solids are to be reduced by 20% by 2008 and 40% by 2013.

Improvements to the water quality of the City's lakes and streams represent a service in flux at this time. The requirements of the state and the interest of the public to improve water quality are expected to have significantly impact storm water management, land use and this plan.

FLOOD PROTECTION INCLUDING SHORELINES

The City of Madison shall protect public and private property from damage resulting from flooding and maintain the safe capacity of existing drainage facilities and receiving water bodies.

Chapter 37 of the City of Madison General Ordinances requires the public storm water system be designed and constructed to convey the storm water runoff in the ten-year storm event. Acceptable flooding shall not leave the public right-of-way or public easements. Repeated high waters in our receiving waters have left the majority of the shorelines in need of repair and stabilization.

The City shall continue to prioritize studies and projects in areas where the safe capacity is exceeded and the shorelines are eroded. Flood plains are depicted in Chapter 6, Volume I, [Map 6-1](#).



Shoreline stabilization along Monona Bay in Brittingham Park.



RECONSTRUCT AGING FACILITIES

As the average age of the system increases, management and rehabilitation of the existing storm water drainage system will become increasingly important. The City of Madison will maintain the aggressive replacement of the decaying storm water drainage system components and incorporating, where practical, increased capacity for flood control and measures for storm water pollutant reduction.

As streets are rated for reconstruction and resurfacing, the corresponding storm water drainage system shall be assessed and replaced or repaired. As problematic areas are identified, repair and replacement of these systems will be incorporated into the budget.



Storm water culvert

INCREASED STANDARDS FOR NEW DEVELOPMENT

The City of Madison and the neighboring communities and organizations have participated in many Storm Water Management Plans encompassing the City and the surrounding area. These plans provide recommendations for managing runoff quantity and quality of existing systems and new development. As the City expands and develops, recommendations from existing Storm Water Management Plans will be implemented where possible while enforcing the Erosion Control and Storm Water Management Ordinance (Chapter 37).

Future development and expansion of the City will require enforcement of ordinances that prevent soil erosion during construction and improvements to the storm water drainage system that minimize storm water runoff increases. New development is subject to on-site detention requirements that reduce flooding and negative impacts on storm water quality during the one, two, five and ten-year storm events and provide safe passage of the 100-year storm event. These requirements must incorporate measures for sediment, thermal, and oil and grease controls. Most land disturbing activities are subject to the erosion, sediment, and runoff control requirements of this ordinance. As the City plans to expand to regions that have not been covered by existing Storm Water Management Plans, the City shall contract the completion of such a plan and implement the recommendations as possible.

The Madison Storm Water Utility has a storm water conveyance system consisting of streets, inlets, pipes, open channel drainage ways, and intermediate storage and treatment basins that ultimately drain to two primary basins within Dane County. The majority of the City drains into the collective Lower Rock River Basin with a portion of the City to the west draining to the



collective Sugar-Pecatonica Rivers basin. The Sugar Pecatonica Rivers Basin joins the Rock River in Illinois and ultimately drains into the Mississippi River. The City has divided these basins into local watersheds, sub-watersheds and sewersheds. The mainline storm water drainage systems are depicted in Volume I, [Map 10-2](#) and watershed divides are depicted in Volume I, [Map 6-2](#), which is found at the end of chapter 6.

Chapter 37 of the City of Madison General Ordinances regulates storm water management within the City. Chapter 37 requires that the public storm water system is designed and constructed to convey storm water runoff from the ten-year storm event. New development is subject to on-site detention requirements that reduce flooding and negative impacts on storm water quality during the one-, two-, five-, and ten-year storm events and provide safe passage of the 100-year storm event. These requirements must incorporate measures for sediment, thermal, and oil and grease controls. Most land disturbing activities are subject to the erosion, sediment, and runoff control requirements of this ordinance.

In 2000, the City created a Storm Water Utility to manage the storm water system and impose charges for recovery of costs connected with such storm water management.

Since 1995, the City of Madison has been a permitted municipality under the Wisconsin Pollutant Discharge Elimination System (WPDES) and must meet the requirements of the Clean Water Act. The WPDES Storm Water Program regulates discharge of storm water in Wisconsin from construction sites, industrial facilities, and selected municipalities as mandated by the Wisconsin Administrative Code NR 216. The permit requires implementation of best management practices, estimated annual pollutant load calculations, storm water monitoring, creation and enforcement of local ordinances, annual reporting, and public outreach and education with a focus on “source-area control” instead of numerical effluent limits. The City has implemented aggressive street sweeping and leaf collection programs as best management practices to reduce pollutant loading of storm water runoff.



PUBLIC WATER SUPPLY

The Madison Water Utility manages the public water supply for the City. The Water Utility has identified key issues through operational experiences, input from customers and regulators, and the identification of goals for the Utility. The Madison Water Utility will continue to evaluate the system to determine the facilities that are in most need of replacement. Operational characteristics, overall system needs and public input during the planning process will aid in identifying areas of concern.

PROTECT THE PUBLIC HEALTH BY PROVIDING SAFE DRINKING WATER

The Madison Water Utility works closely with the Wisconsin Department of Natural Resources (WDNR) to ensure that the public water system meets all current regulations and is positioned to comply with future regulations that become law. Routine frequent sampling of the supply points and the distribution system provide the information needed to monitor water quality.

The Madison Water Utility continually reviews United States Environmental Protection Agency (USEPA) requirements and communicates with WDNR to plan for and budget funds for necessary water quality improvements and/or programs. An annual water quality report is prepared and delivered to each customer to inform them of system characteristics and report any water quality violations that may occur.



Lead pipe replacement.

The Madison Water Utility will continue to prioritize studies and engineering projects in an effort to meet or exceed any and all federal and state drinking water regulations.

All of Madison's water comes from a deep high quality aquifer located under the City. The Madison Water Utility operates 23 deep high capacity wells ranging in depth from 500 to 1,130 feet in what is known as a distributed supply system. The average well capacity is approximately 2,000 gallons per minute. The total well pumping capacity in the system is approximately 69.5 million gallons per day. Twenty-eight reservoirs in the system provide over 31 million gallons of storage.

The City operates eleven (11) different pressure zones and uses five (5) stand alone booster pump stations to provide adequate water pressure at the customer tap. Water is conveyed to the consumer in over 770 miles of buried pipelines ranging in size from 4 to 24-inches. Due to the hydraulic nature of a distributed supply system, no dedicated water transmission mains are



required in the system. The existing facility well capture areas and pressure zones are depicted in Volume I, [Map 10-3](#), which is found at the end of this chapter.

Madison's deep well water source is filtered naturally by a sandstone aquifer and this produces very high quality, but very hard groundwater for the City. Very little additional treatment is required to meet all of the safe drinking water standards. Madison's drinking water meets or surpasses all state and federal drinking water quality standards.

Under the authority of the Federal Safe Drinking Water Act, the United States Environmental Protection Agency (USEPA) and the Wisconsin Department of Natural Resources (WDNR) establish the safe drinking water regulations that limit the amount of contaminants allowed in the water. The USEPA sets the Maximum Contaminant Levels for each regulated contaminant. The Madison Water Utility works closely with the USEPA and WDNR to ensure that the Utility meets all of the regulations.

The Madison Water Utility staff takes more than 20,000 water quality samples each year. The samples are tested for more than 120 different substances and potential contaminants. Testing is completed for microorganisms, inorganic contaminants, organic contaminants and radioactive materials. This testing program far exceeds the state and federal requirements for drinking water systems.

Fluorosilicic Acid is added at each wellhead to fluoridate the water and improve the body's resistance to tooth decay and improve overall dental health. The goal is to maintain a level of 1.1 mg/l of fluoride in the water delivered to the customer. Disinfection of the water is provided at each wellhead using chlorine gas. The chlorine gas is mixed with water and the chlorine solution is added to the water as it enters the Unit Well reservoir. The operational goal is to maintain a minimum of 0.2 mg/l free chlorine residual at the Unit Well. The Utility is required to maintain a measurable trace of free chlorine residual at all points in the distribution system to meet State and Federal regulations.

On average, the Madison Water Utility pumps approximately 32 million gallons of water per day. The total system peak capacity is estimated to be 69.5 million gallons per day. The actual recorded peak day for 2001 was approximately 54.2 million gallons. During the Year 2001, the Madison Water Utility pumped a total of 12,230 million gallons of water. Pumpage varies seasonally in the system due primarily to irrigation demands in the Spring and the Summer. During 2001, the highest demand month was July and the lowest demand occurred in February.



PROTECTION OF THE GROUNDWATER SOURCE

The Madison Water Utility relies solely on a groundwater aquifer to supply residents with drinking water. The Utility must take steps to protect and preserve the aquifer to sustain the existing and future supply of safe drinking water to Madison residents.

Preparing wellhead protection plans for all current and future wells is vital to aquifer protection. Working with City Planning and Zoning officials to monitor and control development around each of the wells through the City's wellhead protection ordinance will be required to protect the drinking water source. Once in place, the wellhead protection plans will have to be regularly reviewed and updated to sustain their effectiveness. Recognizing that the aquifer reaches far beyond Madison's borders, regional groundwater management will be necessary to ensure that Madison is working with other jurisdictions to manage and protect the aquifer.

The Madison Water Utility must continue to complete and enforce wellhead protection plans for the municipal wells. A regional groundwater organization is needed to coordinate the groundwater protection efforts of the area.

MAINTAIN A SYSTEM THAT MEETS AND EXCEEDS THE REQUIREMENTS OF ALL CUSTOMERS

As the City grows and develops, the Madison Water Utility must continue to provide additional wells, reservoirs, and pipelines to meet the City's water supply and fire protection standards. The primary areas of growth will be on the City's east and west sides. New wells and reservoirs are part of the Water Utility capital improvement program and are financed by the Utility. Pipe extensions are initially financed and constructed by developers through private contracts based on the overall requirements of the Water Utility and are then turned over to the Utility.

The timing and location of new facilities is a function of development pressure within a certain area in conjunction with the Utility's adopted Master Plan. The Madison Water Utility plans and designs new facilities and pipeline extensions for new lands in response to requests by developers for service.

The Madison Water Utility will continue to regularly update the Utility's Master Plan to develop a Capital Improvement Program that meets the area's needs. Potential additions to the water system are depicted in Volume I, [Map 10-3](#), which is found at the end of this chapter.

RECONSTRUCT AGING FACILITIES

The Madison Water Utility constantly works to upgrade and renew its facility to provide the required facilities and level of service to utility customers indefinitely. The Utility accomplishes this goal by replacing or rehabilitating aging and undersized pipes, inefficient wells, and old reservoirs as necessary.

One of the primary factors to consider in replacing aging or inadequate facilities is funding. The Water Utility develops budgets to allow the replacement of a reasonable portion of all facilities each year without the need for unreasonable rate increases to its customers. The priority ranking of streets for either resurfacing or reconstruction projects also drives the water main replacement project schedule. Water mains in poor condition or undersized on streets with a low pavement rating are more likely to be replaced than those water mains in similar condition on streets with a high pavement rating.



Water distribution system pipe replacement on First Street.



City of Madison Water Utility Operations Center on Main Street



Utility replacement on First Street.



SOLID WASTE DISPOSAL

City of Madison Streets Division manages the collection of household refuse and yard waste for the Madison area. The City's goal is to maintain efficient, convenient, and cost-effective solid waste collection service. The City of Madison provides curbside collection of trash and recyclables to 62,000 households and approximately 500 small businesses. Larger multi-family and commercial buildings contract with private haulers. In September 2005, the Streets Division will begin using an automated collection system for recycling. The refuse collection system will be automated in May 2007.

The Streets Division hauls its solid waste to the Dane County landfill, located at 7102 US Highways 12-18 on the City's Southeast side. The County landfill has a projected life expectancy of 12 years.

The Transfer Station is a critical facility for the long-term future of solid waste disposal. The Division uses this facility to ship waste to the landfill. The facility will become more important to the City in the future, especially if the County is not able to site a new landfill. Having a Transfer Station will allow the City to choose among competing landfills that should keep our disposal costs low.

The Transfer Station also serves as the City's brush processing facility. The brush processing equipment is a key component of everyday operations and is critical to storm clean up efforts.

HOUSEHOLD REFUSE

Household refuse is disposed of at the Dane County Landfill (7102 US Highway 12/18, Madison, WI) and yard waste is composted at three different sites located in Madison, Westport, and Verona. Household refuse does not include recyclables, vehicle batteries, animal waste, and household hazardous waste. Recyclables are collected under a separate program as described below. Vehicle batteries are to be returned to battery dealers. Animal waste should be flushed down the toilet or buried in the yard. Household hazardous waste shall be disposed of at Clean Sweep, a disposal site for hazardous waste operated jointly by the City of Madison and Dane County.

Yard waste collection is completed seasonally along a route following a similar sequence to refuse collection. Residents can obtain more specific collection schedules from the City of Madison website or by phoning the Streets Division.

LANDFILL CAPACITY

The County Landfill is expected to be available until 2015 to 2020. No other landfills are being considered as a successor to the Dane County Landfill at this time.

There are closed landfills and underground storage tanks within the City limits. The Engineering Division serves as a warden of these facilities, protecting the adjacent residents and properties in compliance with the environmental regulations.

RECYCLING FACILITIES

The City of Madison Streets Division manages only the collection of household recyclables for the Madison area. Recycling is mandatory for all City of Madison residents and is collected curbside on the same day as regular refuse collection.

The current recycling system is called dual stream. Each truck has two compartments, one for paper products and the other for the bags of containers. These compartments are emptied at separate processing lines at the recycling center.

The processing and disposal of the household recyclables is contracted out to private recycling firms. There are many private recycling firms in the Madison area that can provide additional recycling service to residential and commercial property owners.



Single stream recycling cart.

SINGLE STREAM RECYCLING

In August of 2005, the City will initiate a “Single Stream Recycling”. Single Stream Recycling is a system where all recyclables, paper, cardboard, glass, plastic, and metal cans are mixed together in one cart. The cart is emptied into a separate recycling truck with only one compartment. The mixed recyclables are then separated at a special processing center.

To process the recycled material, the City has contracted with Recycle America Alliance (RAA). RAA is planning to construct a new, single stream recycling processing center at 2200 Fish Hatchery Road.

Given the capital costs involved for trucks and carts, this program is expected continue through 2015 without significant change.



TELECOMMUNICATIONS FACILITIES

Telecommunication facilities are privately constructed and maintained throughout the City of Madison. Private telecommunications companies coordinate with the communities they serve to evaluate the need for modifications or expansion to their current network. As the City expands and develops, extensions of the telecommunication lines are required. Private land owners/developers are required to coordinate the extension of the new lines to serve their development.

The telecommunication industry is undergoing dramatic changes as a result of deregulation and technological advances. The City of Madison, in partnership with the State of Wisconsin and Dane County, is encouraging wireless technology for data transmission. It remains the goal of the City to facilitate the provision of telecommunications, including wireless technology, to Madison residents and businesses.

LOCATION, CONSTRUCTION, AND MAINTENANCE

Although within the City of Madison, the construction and maintenance of telecommunications facilities are privately controlled; but the locations of these facilities are within the City rights-of-way. As a result, the private companies are required to obtain permits from the City to perform any construction or maintenance of their facilities within the public right-of-way and must conform to City standards. In addition, the City has ordinances that require permits for the installation of communication towers, dish systems, or antenna systems within the City limits.

POWER PLANTS/TRANSMISSION LINES

Power plants and transmission lines are privately constructed and maintained throughout the City of Madison. The City is provided power by the Madison Gas & Electric Company and the Alliant Energy Company. In addition, the American Transmission Company has been recently created to manage the electrical transmission lines.



ENERGY USE

Between 1997 and 2002, energy use by MGE's 111,000 residential customers increased 10% and the energy use by the company's 17,250 commercial customers increased 16.4%. Factors driving this growth include:

- Population Increase
- New Businesses
- Computers and computer systems
- Air conditioning
- Electronic appliances
- Larger homes

The electrical energy used by MGE's customers is supplied as follows:

- Coal 57%
- Gas/Oil 4%
- Purchased Power 37%
- Renewable 2%

Of particular interest in comprehensive planning is that only 15% of the energy consumed by MGE customers is from local sources and that the remaining 85% has to be imported. Both MGE and Alliant are planning for new energy resources including renewable energy. The growth of the City of Madison and the need to provide reliable energy for the City's businesses, governmental, and biomedical facilities will require considerable reliability improvements to the transmission system in Dane County, within the City and on the City's immediate perimeter. In addition, it is expected that a new transmission line will need to be installed to convey renewable power from the wind swept western states to Wisconsin.

LOCATION OF TRANSMISSION FACILITIES

The City favors underground transmission facilities and has created an ordinance to require the underground construction of distribution lines in developing areas. The City encourages large transmission lines to be placed underground but the Wisconsin Public Service Commission regulates this activity. Comprehensive planning will require the City to balance the needs of its citizens who reside adjacent to existing or proposed transmission lines and the energy needs of the City.