

Chapter 7

Infrastructure and Facilities



INTRODUCTION

Public infrastructure and facilities are an important element in the comprehensive planning process. Access to infrastructure has a profound impact on land development. Land that has access to municipal utilities has greater development potential and has a higher value than land without access. Good quality facilities are also crucial to quality of life. Potential residents and businesses will closely evaluate the community's education, safety, and health care facilities when choosing where to live or locate a business.

The City of Maquoketa manages much of the community's infrastructure, but important facilities are also managed by other government agencies, private businesses, and non-profit organizations. Coordination with these agencies is fundamental to providing the best quality community facilities. Improved coordination allows communities to combine resources to eliminate duplication of services and achieve economies of scale.

This chapter will provide an introduction to Maquoketa's public infrastructure and facilities and explore how these necessary systems impact the community's growth and development. The chapter includes an inventory of Maquoketa's infrastructure and facilities, as they exist today, and provides a list of recommendations that will help the City provide the best quality community facilities to its residents in the future.

PUBLIC INFRASTRUCTURE AND UTILITIES

Water

A typical municipal water supply and distribution system contains four basic components: a water source, filtration and treatment, water pressure and storage tank, and local distribution pipes. Water treatment reduces undesirable contaminants to acceptable levels and provides water with a desirable chemical balance. The treated water is pumped from the treatment source to a water storage tank. The purpose of the tank, which is usually in the form of an elevated water tower or reservoir, is to provide pressure to push water throughout the system. After water leaves the storage tank, a system of underground pipes delivers the water to homes and businesses.¹

The City of Maquoketa's current water treatment plant has been in operation since May of 2006. The plant's ion exchange softening treatment facility is capable of producing 1.44 million gallons of potable water per day. The City operates four wells that supply water to the system. Chlorine and fluoride are added prior to the water entering the distribution system. The distribution system consists of approximately 25 miles of water mains, two water towers with a 750,000 gallon total capacity and a ground storage tank with a 1,200,000 gallon capacity.

Wastewater

A typical city wastewater treatment facility collects wastewater through a network of pipes that let it flow by gravity to a treatment plant. In areas where gravity flow is not possible, a lift station may be required to pump the wastewater uphill. The treatment plant separates solids (sludge) and liquids (effluent). The sludge is disposed of in a way that is economical and safe for the environment, and the effluent is tested to ensure it meets water

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quality standards and is usually discharged into a flowing stream or river.²

The City of Maquoketa's wastewater is treated at the Maquoketa Wastewater Plant under the supervision of licensed wastewater treatment professionals to meet standards set by the Iowa Department of Natural Resources and the US Environmental Protection Agency. The wastewater plant is located on the City's north side on Pershing Road next to the Maquoketa River.

The City's wastewater treatment facilities consist of 5 lift stations, bar screen, grit removal, 2 aeration basins, 2 clarifiers, chlorination and de-chlorination chambers, and an aerobic thermophilic sludge process. Chemicals used at the plant include chlorine for disinfection and sulfur dioxide for de-chlorination. After it has been processed, the sludge is stored in a 1.4 million gallon holding lagoon, and is later applied to nearby fields.



Maquoketa Water Tower

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Electricity

Maquoketa Municipal Electric Utility (MMEU) supplies electricity to 3,500 residential, commercial, and industrial customers. The City of Maquoketa established an electric utility in 1919 to power the City's new electric street lights. As the City grew and use of electricity became more common in homes and businesses, the utility expanded to meet the growing demand for electricity. The Maquoketa City Council directly oversaw the operations of the utility until 1985 when Maquoketa citizens voted to establish the independent board of trustees that oversees the utility today.³

MMEU owns and operates distribution lines, transmission lines, and two power plants. Plant 1, located on the north side of the City, was built as the City's original power plant in 1919, and has the capacity to generate 18,534 kWh of power. Plant 1 can operate on diesel fuel or natural gas. Plant 2 is located in the City's South Industrial Park and has the capacity to generate 5,000 kWh of power.⁴

MMEU provides electrical services to almost all customers within the Maquoketa city limits and to some customers that are immediately adjacent to the City. Maquoketa Valley Rural Electric Cooperative (REC) and Alliant Energy supply power to the areas surrounding Maquoketa.

MMEU generates only a small portion of the electricity consumed within the City. MMEU purchases most of its electricity from a Wisconsin based not-for-profit power company called WPPI Energy. Several municipal utilities in Wisconsin joined forces in the 1970s to form WPPI as a way to share resources and manage costs. Today, WPPI serves 51 municipal utilities in Wisconsin, Michigan, and Iowa.⁵

Solid Waste Disposal and Recycling

The City of Maquoketa does not provide garbage and recycling collection to residents and businesses within the City. Collection service is provided by a number of private providers that contract with individual property owners.

Waste disposal service is provided by the Jackson County Waste Authority. The Waste Authority operates a transfer station about nine miles north of Maquoketa off Iowa Highway 62. The waste collected at the transfer station is loaded onto semi-trailers and shipped to a cooperating landfill in Illinois. Recycling collected in Maquoketa is processed at a recycling center managed by Imagine the Possibilities on E. Maple Street in Maquoketa.

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Broadband

Access to high speed broadband internet plays an increasingly important role in a community's quality of life. Maquoketa residents and businesses rely on internet connections for work, education, and entertainment.

Centurylink and Mediacom are the two primary internet service providers in Maquoketa. The current internet service in the City adequately serves basic needs, but Maquoketa tends to lag behind larger cities in the number of available providers, download speeds, and price.

The community has identified broadband internet access as an important priority for the future. The City should adopt policies that:

- Improve access to reliable high speed internet.
- Maintain affordable prices.
- Encourage competition among providers.
- Encourage providers to upgrade technology.



Maquoketa Municipal Light Plant

COMMUNITY FACILITIES

Maquoketa Fire Department

The Maquoketa Fire Department is responsible for protecting life and property from fire, responding to emergencies involving hazardous materials, and responding to natural and man-made disasters. The department is also responsible for maintenance and operations of the City's fire station and department vehicles. The fire station is located at 106 S. Niagara St. in Maquoketa.

Maquoketa Police Department

Maquoketa Police Department is located at the Jackson County Law Enforcement Center, 104 S. Niagara Street. The Maquoketa police force is made up of 32 people in three divisions: Enforcement, Communications, and Reserves. The department employs a School Resource Officer that works with students in the Maquoketa Community School District.

Jackson County Jail

The Maquoketa Police Department and the Jackson County Sheriff's Department have identified construction of a new jail as a top facilities priority. The existing jail is undersized and lacks proper ventilation, natural light for inmates, and maximum security cells. These issues create an unsafe environment for staff and inmates. The jail does not meet state requirements and could be shut down by state inspectors. With limited space, the County must frequently transfer inmates to another county jail and pay the cost of housing and transportation.

A bond referendum in 2018 to fund the new jail failed to achieve the 60% of the vote needed to pass. Officials revised plans for the facility and called another referendum in 2019, but the measure again failed to pass. The failure of the bond measures was a setback, but the issues with the jail still persist and must be addressed. The City should continue to work with the County and other partners to reevaluate the situation and explore available options for the jail.

Jackson County Regional Health Center

The Jackson County Regional Health Center (JCRHC) provides health care services to residents of Maquoketa and the surrounding area. The 25 bed hospital, located at 700 W. Grove St. in Maquoketa, offers a full range of health services including inpatient and outpatient care, skilled nursing, acute care, radiology, surgical services, and many others. JCRHC also provides 24-hour paramedic services to Maquoketa and surrounding areas in Jackson, Clinton and Jones Counties.

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To meet the future needs of the community, the JCRHC is building a new facility on the City's south side. The JCRHC is constructing its new facility on a 25-acre site that was recently annexed into the City of Maquoketa. The site is located on Maquoketa's south side near Walmart just north of US Highway 61. The new \$37 million facility will replace the existing JCRHC building that has been in its current location for 66 years. The project is expected to improve JCRHC's ability to serve its patients and will also impact land use. Once open, the hospital will attract many people to the area and is expected to stimulate new development in the surrounding area. Possible development in the area could include medical offices and retail.



Jackson County Regional Health Center



Rendering of the Planned JCRHC Facility

City Public Works Facility

The City of Maquoketa public works facility is located at 507 North Old Highway 61. The existing facility has some issues that will need to be addressed in the future. The facility's existing buildings are older and their condition is deteriorating. The facility is also located in the flood zone. With the potential for flooding, construction of a new building on the existing site may not make sense. The City should begin evaluating options for and developing a long-range plan for the facility.

Education

Maquoketa Community School District

The Maquoketa Community School District provides public Pre-K through 12 educational services to children in Maquoketa and the surrounding area including the communities of Baldwin, Leisure Lake, and Zwingle. The district operates four school buildings including the High School, Middle School, Briggs Elementary, and Cardinal Elementary. The district had a certified enrollment of 1,305 students for the 2018-2019 school year. The District had a graduation rate of 91.43% in 2018.⁶

Sacred Heart School

Sacred Heart School offers Pre-K through 6 private Catholic educational services to students in Maquoketa. The school is located at 806 Eddy St. next to the Sacred Heart Church.

Clinton Community College

Clinton Community College operates an 11,000 square-foot center at 4703 W. Washington St. in Maquoketa. The center has two computer labs, a large meeting room, and four classrooms with additional learning space. The center offers a wide range of credit courses, non-credit courses for all ages, dual enrollment classes for current high school students, training for area businesses, and adult classes including preparation for the High School Equivalency test.⁷

The center also includes a 3,300 square foot Advanced Manufacturing Center that houses several mills, CNC/Machining simulators, a robotic plasma cutter, and two robotic welders. The Advanced Manufacturing Center is a cooperative effort between CCC and the Maquoketa Community School District. The center is used for training new students and for retaining current employees.

The City of Maquoketa maintains strong partnerships with the community's educational institutions. The City should continue to develop these partnerships to ensure continued improvement in educational outcomes for Maquoketa's students.

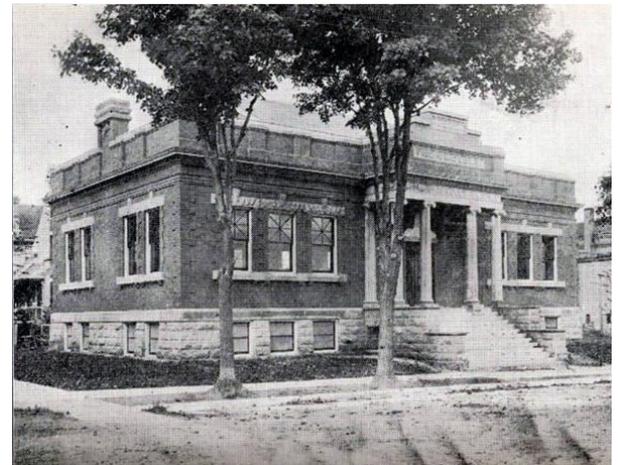
Maquoketa Public Library

The Maquoketa Public Library is a community institution that has served the citizens of Maquoketa for over one hundred years. The library, located at 126 S. Second St., provides books and other materials for loan and in-house use, in-house use of computers with internet access, online reference databases, scheduled programs for children and adults, and accessible meeting rooms for public use. The original library building was funded in part by a grant from Andrew Carnegie. The library opened to the public in 1904 and built a new addition in 1998.⁸

The Friends of the Maquoketa Public Library is a non-profit organization that is dedicated to improving library programs. All funding raised by the group goes directly into library programs. With changes in culture and advances in technology the role of the public library has changed and will continue to change. While loaning out books is still an important part of the library's mission, the role of a library has expanded to include providing computer and internet access, providing educational programming for adults and children, serving as a community gathering space, and many other offerings. To best serve the people of Maquoketa, the library must continue to adapt, updating its programming and materials to keep up with the changing needs of the community.



Clinton Community College Advanced Manufacturing Center



Maquoketa Public Library 1904⁹



Maquoketa Public Library 2019

Maquoketa Municipal Airport

The Maquoketa Municipal Airport is located at 2215 134th Ave. The City of Maquoketa owns the airport and the Maquoketa Airport Commission supervises its operations. The airport has one runway that is 60 feet wide and 3,304 feet long. The airport has eight T-hangars that are available for rent plus the community hanger with up to five spaces.

The airport is an important asset for the community that serves multiple purposes including business, agriculture, personal recreation, air medical transportation, and law enforcement. Local businesses can use small aircraft to carry company employees working in sales or technicians providing customer support. Easy access to an airport provides increased productivity, better access to communities, flexible itineraries, and the ability to quickly react to customer and other business needs.

The Federal Aviation Administration (FAA) recognizes the Maquoketa Municipal Airport as playing a role in the national airport system and includes the airport in the National Plan of Integrated Airport Systems (NPIAS) as a general aviation airport, which makes the airport eligible for federal funding.

The Iowa DOT updated its Iowa Aviation System Plan in 2010.¹⁰ The plan provides an overview of the aviation system in Iowa, as well as specific information related to the Maquoketa Municipal Airport. The plan includes a list of projects that are intended to improve safety and keep the airport in good working condition. Projects include: pavement rehabilitation, relocation of 134th Ave, runway extension, runway lighting replacement, and construction of a turf crosswind runway.

Maquoketa YMCA

Studies like the Jackson County Tomorrow Strategic Plan have shown that good recreational facilities and programs are a key quality of life component and an important tool for attracting and retaining community residents.¹¹ In Maquoketa, the YMCA provides many options for recreation including: a full-size gym, weight training and cardio areas, a multi-purpose room, and an aquatic center with zero depth entry, a kids splash area, and lap lanes.

The City of Maquoketa owns the YMCA building and contracts with Scott County YMCA for the management of the YMCA facility and the City's recreational programs. The YMCA offers a year-round collection of activities that includes aquatics instruction, exercise classes, senior activities, and youth and adult sports leagues.

The Maquoketa YMCA opened at 500 E. Summit St. in the fall of 2007 after several years of planning and fundraising. The facility is currently in good physical and financial condition; however, the City and YMCA staff should continue to develop long-range plans for the facility that will ensure that it continues to be an excellent community resource for many years to come. Long-range planning should include routine maintenance, capital improvements, and programming updates. The YMCA has identified several potential future needs that it hopes to explore in the future. The list includes child watch with a play maze and/or climbing wall, dance/group exercise/general use space, a running track, and racquetball courts.

The map in Figure 14 shows the location of key community facilities in Maquoketa.

Maquoketa YMCA



Maquoketa Airport

Community Facilities

Arts & Culture

- 1. Maquoketa Art Experience
- 2. Ohnward Fine Arts Center
- 3. Old City Hall Gallery

Attractions

- 4. Clinton Engines Museum
- 5. La Motte Depot
- 6. Jackson County Fairgrounds
- 7. Maquoketa Speedway
- 8. Jackson County Museum

Community Organizations

- 9. Maquoketa YMCA
- 10. Jackson County Economic Alliance
- 11. Maquoketa Area Chamber of Commerce
- 12. Jackson County Regional Health Center

Education

- 13. Maquoketa High School
- 14. Clinton Community College
- 15. Maquoketa Middle School
- 16. Cardinal Elementary
- 17. Briggs Elementary
- 18. Sacred Heart Catholic School
- 19. Maquoketa Public Library

Government

- 20. Maquoketa City Hall
- 21. Jackson County Courthouse
- 22. Maquoketa Police Department
- 22. Jackson County Sheriff's Office
- 23. Maquoketa Fire Department

Utilities

- 24. Municipal Light Plant
- 25. Maquoketa Wastewater Plant
- 26. Maquoketa Water Plant

Maquoketa Districts

- Downtown District
- Industrial Park
- Municipal Utilities
- Schools
- Parks

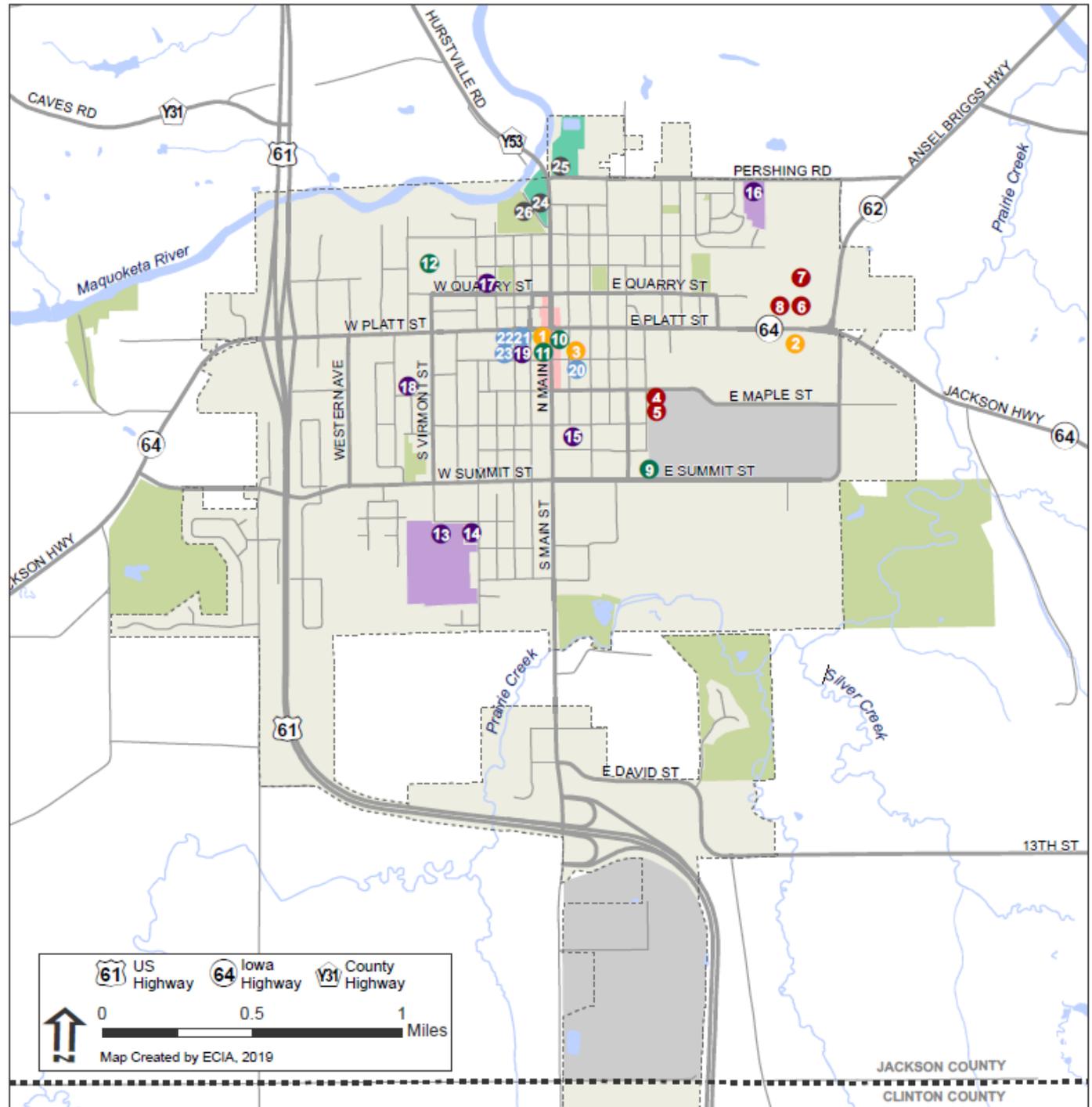


Figure 14. Maquoketa Community Facilities

INFRASTRUCTURE AND FUTURE DEVELOPMENT

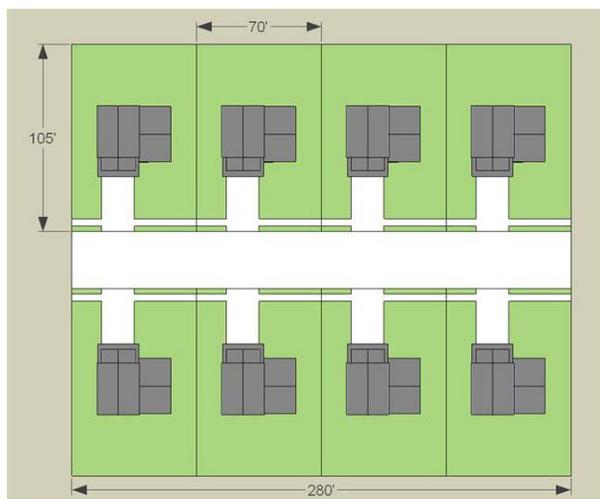
Public expenditures for infrastructure can shape a community's land use patterns, and in turn, the community's land use patterns will determine the costs and efficiency of utility service delivery. Communities invest in the installation and maintenance of infrastructure to stimulate private sector investment and development, which creates value in the local economy. The city taxes the value created and uses the tax revenue in part to pay for the maintenance of the infrastructure.

Adding new developments to the existing city spreads the system's capital costs over a larger customer base, lowering the costs of service per customer. However, when new infrastructure is built solely for new customers, maintenance costs go up and the opportunity to improve the efficiency of the existing system is lost.

Through comprehensive planning, the city can implement land use policies that guide development with the goal of keeping utility rates low and improving delivery system efficiency, effectively maximizing the community's return on its infrastructure investment. Examples of development policies include planning for new development infrastructure, new subdivision design, new subdivision lot size, infill development, and rehab and rehabilitation.

Plan for New Development Infrastructure

The Comprehensive Plan's future land use map is a tool for planning the extension of services to new development on the edges of the City. The future land use map identifies key development areas and assigns planned future land uses within each area. Future land use plans allow the City to size infrastructure to serve to serve the land being developed today, as well as development that will occur in future years. The City can keep its costs down over the long-term by ensuring infrastructure for new development will have enough capacity to serve future developments in the area. For example, by installing a 10-inch sewer pipe today instead of the 8-inch pipe needed to serve a new subdivision, the City can avoid the costs of installing a larger pipe when additional development occurs in the future.



Subdivision Lot Size

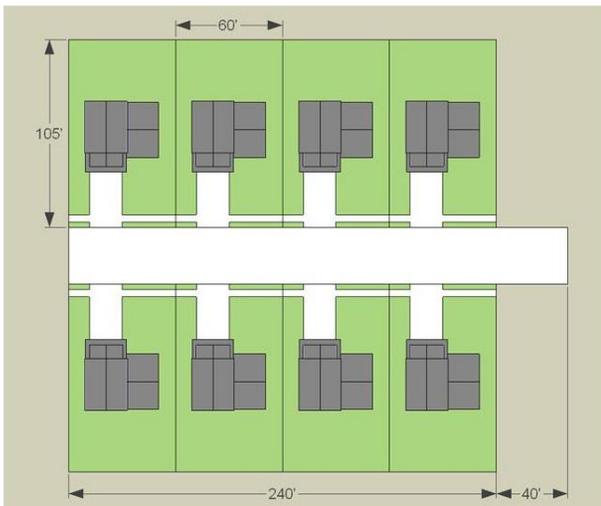
Lot size in a subdivision can have a large effect on infrastructure efficiency. Subdivisions with smaller lots can have more houses per linear foot of infrastructure, spreading the cost of water mains or sewer lines over more houses and reducing the infrastructure per house.

The illustrations in Figure 15 show how lot size can affect the cost of providing services to a subdivision. The illustrations show two similar subdivisions, both with eight lots and identical houses on each lot. Subdivision A has 70-foot-wide lots and Subdivision B has 60-foot-wide lots. Because Subdivision B's lots are

narrower by ten feet each, the City has 40 less linear feet of street, water main, sewer main, storm sewer, and electrical lines to maintain when compared with the Subdivision A.

While ten feet per lot may seem like a small difference, over time the cost of maintaining the extra infrastructure will be compounded over multiple subdivisions. If the City constructed ten new houses per year over the next twenty years at 60 feet wide instead of 70 feet wide, it could reduce its infrastructure maintenance responsibility by 4,000 linear feet.

For the most part, the local housing market will determine the size of lots in new subdivisions, e.g. land prices, construction costs, and buyer preferences. However, rules established by the City can also contribute to lot size. The City's zoning and subdivision ordinances may contain minimum lot sizes and building setbacks that can result in lots larger than what would be determined by the market. The City can encourage more efficient lot sizes by making sure that any rules that increase the size of a lot, represent the minimum required for public health safety and welfare, and do not increase the size of a lot without a compelling reason.



Subdivision A

Subdivision B

Figure 15. Residential Lot Width

Subdivision Design

Poorly planned lot layout in new subdivisions can result in greater costs for roads, water, and sewer infrastructure. The City can avoid higher maintenance costs by implementing policies through its subdivision review process that encourage the orderly development of land, the efficient extension of services, and lowest maintenance cost over the long term. Good subdivision design policies include:

- Ensure that new subdivision designs are consistent with future growth plans allowing the logical extension of streets, water lines, and sewer lines.
- Ensure that lots are arranged and graded to prevent storm water from collecting on residential properties.
- Arrange lots in a way that reduces water, sewer, and street costs.
- Use the City's extraterritorial jurisdiction authority to ensure that development that occurs within two miles of the City is built to City standards or is annexed into the City.¹²

Infill Development

Not all future development sites will be in new subdivisions on the edge of the City. Maquoketa has several available sites within the City that could be developed. Developing these infill sites can improve the efficiency of the community's infrastructure by adding to the tax base using infrastructure that the City is already paying to maintain. The vacant property along Western Street is a good example of a site that has good potential for infill. Located in a residential neighborhood, the site is a good candidate for new residential development. See Key Development Area 5 in the Land Use Chapter for more information on the Western Street site.

Redevelopment and Rehabilitation

Like infill development, redevelopment and rehabilitation of existing buildings uses existing infrastructure capacity that the City is already paying to maintain. A good portion of Maquoketa's existing housing stock is made up of older homes. According to the census, about a quarter of the homes in Maquoketa were built before 1940. Rehabbing under-performing properties increases their value which in turn increases the City's tax base without adding new maintenance responsibilities.

Redeveloping existing structures for a new use is another way of to improve properties served by existing infrastructure. The upper story housing redevelopment project planned for 124 South Main Street is a good example of a housing redevelopment project. The project will convert underused space in an existing Main Street building into four apartments. See the Housing Chapter for more information on this project.

INFRASTRUCTURE MAINTENANCE

All infrastructure has a life cycle. As development occurs, new water and sewer pipes, streets, and electrical lines are installed to serve it. This new infrastructure will remain in service for many years, but over time it will deteriorate and eventually need to be replaced. Replacement is the most expensive part of the infrastructure life cycle, and is inevitable. However, the City can maximize the life of its infrastructure through investments in routine maintenance.

While a city that defers routine maintenance projects may save money in the short-term, it will likely pay more in the long run for emergency repairs and eventual reconstruction as the infrastructure deteriorates at a faster pace.

Capital Improvements Program

The City can plan for future infrastructure maintenance projects by Identifying and prioritizing them in its Capital Improvements Program (CIP). The CIP is a tool for scheduling, planning, and financing large construction projects and major pieces of equipment. The CIP is a written document that links together the City's comprehensive plan with its annual budget.

The City uses its CIP process to identify needed infrastructure projects and rank them based on their importance to the community. Once the projects are ranked the City uses the CIP to develop its annual budget, identify project funding sources such as grant or loan programs, and to set rates for utilities like water and sewer.

The goal of the CIP is to inform the City Council's decision making process by providing the big picture view of all projects. Without a CIP, the City Council would be aware of the need for many capital projects, but they would likely have questions about how to pay for them, when to construct them, and how to rank them.

The City of Maquoketa should review and update its CIP on an annual basis. Completed projects will be removed. New projects will be added, and some projects will be revised and updated as new information becomes available.

RECOMMENDATIONS

The following recommendations are intended to guide the City of Maquoketa in providing high quality infrastructure and facilities for all residents of the City.

Public Safety

- Monitor public safety facilities, equipment, and procedures to ensure that adequate service is provided.
- Encourage coordination, cooperation, and resource sharing among local public safety agencies.
- Coordinate with local police and fire departments to ensure that new development can be served by existing facilities and equipment.

Health Care

- Maintain quality health care facilities that promote physical and mental health, safety, and wellness for all members of the community.
- Support access to good quality, affordable care for children, the disabled, and the elderly.

Education

- Coordinate with local schools to provide adequate educational facilities and improve educational opportunities for the community's children.
- Coordinate with local schools to ensure that proposed development can be served by existing educational facilities.
- Coordinate with education partners such as the Maquoketa Public Library and Clinton Community College to support opportunities for life-long learning.

Public Infrastructure and Services

- Plan for, build, and improve infrastructure systems to meet anticipated growth and development needs.
- Encourage new development to size facilities to serve the needs of future development.
- Encourage development and redevelopment in areas with access to existing infrastructure.
- Invest in infrastructure projects that will result in private sector investments that can financially sustain the maintenance of the infrastructure.
- Perform routine maintenance and support ongoing improvements that will extend the life of infrastructure systems.
- Encourage access to reliable and affordable broadband internet.
- Revise the City's Capital Improvements Program on an annual basis.
- Consider trash and recycling collection being provided by the City.

Notes

1. See Anderson Chapter 4.
2. See Anderson Chapter 5.
3. See “Maquoketa Municipal Electric Utility”
4. See “Maquoketa Municipal Electric Utility Financial Statements.”
5. See WPPI Energy.
6. See “2018-2019 Certified Enrollment Summary by District”
7. See “Clinton Community College Maquoketa Center”
8. See “Maquoketa Public Library”
9. Black and white image of the front exterior of the Maquoketa Public Library. Source: 1st Report of the Iowa Library Commission, coverage 1900-1903 (1904), opposite p. 106.
10. See “Iowa Aviation System Plan”
11. See Axness, Brooke, et al.
12. See the Land Use chapter for more information on the city’s extraterritorial jurisdiction authority in subdivision review.