A VISION SHARED:
Owning the future through a Decorah Municipal Electric Utility
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>WHAT IS PUBLIC POWER?</td>
<td>7</td>
</tr>
<tr>
<td>Chapter 2</td>
<td>RATES &amp; RELIABILITY</td>
<td>10</td>
</tr>
<tr>
<td>Chapter 3</td>
<td>LOCAL CONTROL &amp; ECONOMIC DEVELOPMENT</td>
<td>15</td>
</tr>
<tr>
<td>Chapter 4</td>
<td>ENERGY EFFICIENCY AND RENEWABLE ENERGY</td>
<td>19</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>FAITH, STEWARDSHIP, AND COMMUNITY VALUES</td>
<td>24</td>
</tr>
<tr>
<td>Chapter 6</td>
<td>MICROGRIDS, ENERGY STORAGE, AND CYBERSECURITY</td>
<td>30</td>
</tr>
<tr>
<td>Chapter 7</td>
<td>THE PATH FORWARD</td>
<td>35</td>
</tr>
</tbody>
</table>
This report is developed by Decorah Power as a companion to the Feasibility Study Report developed by NewGen Strategies and Solutions, LLC (NewGen). The NewGen feasibility study is fundamentally about economic viability—could a Decorah Municipal Electric Utility provide the same commodity (electricity) to the same customer base at similar cost?

This companion report brings together the expertise and perspective of numerous Iowa municipal electric utility directors and other energy leaders to outline the wide array of opportunities a community-owned electric utility could bring to the Decorah area, from economic development, jobs, and environmental stewardship to energy efficiency and solar and cutting-edge energy technologies, such as microgrids, storage, and cybersecurity. The contributors include many experts that presented to the community as part of a “Learning Series” organized by Decorah Power, which paralleled the NewGen feasibility study process through the second half of 2017.

We are calling this companion report “A Vision Shared” not because everyone in the community is in agreement, but rather because

• A tremendous range of households, businesses, organizations, and institutions have been involved in this study process – contributing ideas, challenging assumptions, and learning together about the opportunities in front of us
• The motivations and opportunities are diverse and inclusive, with many of those interested primarily in the economic impacts also sharing stewardship concerns, and many interested primarily in environmental imperatives also recognizing the economic opportunities
• The key findings presented here come in large part from leaders of other Iowa locally-owned utilities who have shared their experience and wisdom with us, and with whom Decorah may have the privilege of sharing a locally-owned energy future
Along with Nebraska, Iowa leads the nation in number of communities with municipal electric utilities. According to the Iowa Utilities Board (IUB), over 445,000 customers (nearly 900,000 people) are served by one of the 136 municipal electric utilities (MEUs) or the 44 rural electric cooperatives (RECs) that are publically-owned by the electricity consumers in those areas.

These utilities provide reliable, affordable power to their citizens, are responsive to local needs and priorities, create strong and innovative partnerships for emergency response and energy market access, and are economic development powerhouses for their local economies. Community conversations around Decorah have begun to explore these opportunities in recent years.

Early in 2017, a group of area residents formed a non-profit organization called Decorah Power to investigate the potential for a Decorah municipal electric utility (MEU). They decided that a high-quality feasibility study and a community-learning process would be important prior to a public decision. In March of 2017, Decorah Power approached the Decorah City Council with a proposal to organize, fundraise for, and conduct a feasibility study on an MEU. The Council passed three resolutions:

1. To approve of Decorah Power conducting a feasibility study for a Decorah MEU as long as it is done with privately raised funds (passed 6-0)

2. To appoint council member Steve Luse as City Council Liaison to Decorah Power through the study process (passed 6-0), and

3. To refrain from franchise agreement negotiations with Alliant Energy for the duration of 2017, to allow time for the study to take place and results brought back to the Council (passed 5-1)

Decorah Power immediately went to work planning the fundraising and working on a request for proposals (RFP). To ensure the study would meet the needs of the City and the requirements of the Iowa Utilities Board (IUB) we enlisted key advisors: Sheila Tipton—former member of the Iowa Utilities Board and current head of the Energy Law Practice at BrownWinick law firm—as legal counsel, and Bob Haug—former director of the Iowa Association of Municipal Utilities—as lead study consultant. An RFP was issued in April, a national selection of well-qualified bidders was interviewed in May, and a contract with NewGen was established in June. The study kickoff was scheduled for August to allow time for further fundraising.

Throughout this process, it became clear that the focus of the feasibility study itself is fundamentally on the economic viability, yet there are many potential opportunities and benefits to a municipal electric utility other than bottom line financials. So Decorah Power planned a “Learning Series” to parallel the NewGen feasibility study, inviting energy experts and directors of other Iowa municipal electric utilities to give public presentations on a variety of topics in Decorah.

This companion report is a compilation of what we’ve learned from these experts. In some cases, our guests have authored and shared brief narratives, and in other cases the Decorah Power team has distilled and compiled lessons from multiple energy leaders. Taken together with the NewGen report, we hope it will provide a broad and deep foundation for the Decorah area residents when considering the municipal electric utility option.

Editor’s note: Except where otherwise noted, the Decorah Power team authored the chapters in this report in large part based on what we learned from invited speakers and other energy experts.
The following is a brief summary of key findings during the “Learning Process,” organized by chapter topic. We encourage the reader to refer to the chapters for a fuller discussion and for references.

CHAPTER 1. WHAT IS PUBLIC POWER?

Municipal Electric Utilities are also termed public power utilities, because they are publicly owned and operated. If Decorah were to establish an MEU, it would join the ranks of thousands of communities across the country that reap the benefits of a locally-owned electric utility.

- Over 2,000 community-owned utilities serve over 48 million people nationwide.
- Iowa and Nebraska lead the country in number of public power utilities, with 136 in Iowa.
- There are three types of electric utilities in the US: Consumer-owned utilities, which include public power utilities (MEUs) and rural electric cooperatives, and investor-owned utilities, such as Alliant and MidAmerican.
- Public power utilities are under local control, are directly responsible to their customers and communities, and reflect local priorities and values.
- Public power utilities are an efficient, low-cost business model that reinvests 100% of profit into local communities.

CHAPTER 2. RATES AND RELIABILITY

The NewGen study is fundamentally a business case analysis: given existing energy markets, the need to buy the existing infrastructure, and the operating costs associated with running an electric utility, could a Decorah MEU provide the same commodity (electricity) to the same customer base at similar prices? The study finding is a resounding yes. Here, we present additional information and context on rates and reliability of municipal electric utilities in Iowa and across the country, which concur with the NewGen results.

- Average “all-in” rates of Iowa municipal electric utilities—and especially those of Iowa MEUs of peer communities—are less than those of Alliant, and consistent with the NewGen results.
- Alliant is currently in the process of raising rates and will likely be raising rates again within three to four years, according to testimony in the current rate docket.
- Nationally, municipal electric utilities consistently outperform investor-owned utilities on reliability metrics.
- Municipal electric utilities participate in mutual aid networks such as those managed by the Iowa Association of Municipal Utilities, which is a major factor in rapid response times.
- Many municipal electric utilities have made local decisions to invest in significant infrastructure protection, such as burying power lines underground, dramatically improving future resilience.
- The transition from the incumbent utility to an MEU would be seamless, and Decorah could contract with a nearby utility to provide grid management for a period of time.

CHAPTER 3. LOCAL OWNERSHIP AND ECONOMIC DEVELOPMENT

Municipal electric utilities can be economic development powerhouses in many ways. Some of these are obvious, while some of the greatest possibilities for wealth and job creation and retention are new to the 21st century energy world and require innovative local leadership to realize the potential.

- A locally-owned utility would be a major new business operation subject to local ownership and decision-
making. This is not a question of government versus private sector: all electric utilities in Iowa are monopolies not subject to competition. Alliant is a state-regulated monopoly owned by outside investors and guaranteed a significant profit by the IUB, while a locally-owned utility would be owned by local consumers and subject to local control.

- A municipal utility would likely entail a larger workforce of local residents, and could certainly offer employment to all current local utility employees similar to what happened when a group of rural electric cooperatives bought out Alliant’s 128,000 customers in southern Minnesota recently.
- Virtually all municipal electric utilities make some sort of “payment in lieu of taxes” to their local government, and this has been included in the NewGen study pro forma at a significant level.
- The major potential cost savings identified in NewGen report (up to 30%), plus operating margin, are available to re-invest in local priorities such as lower rates, reliability, clean energy and more.
- Twenty-first century advances in renewable energy generation, storage, and management technologies and economics have created tremendous opportunities for smaller consumer-owned utilities to make significant, cost-effective investments in generation and distributed energy resources. This investment process could last a generation or more.
- Global and national climate stewardship imperatives will likely result in increasing electrification of the economy, with dramatic growth opportunities (such as transportation and building heat). Those utilities ready to accept the challenge will lead their communities into the clean energy future.

CHAPTER 4. ENERGY EFFICIENCY AND RENEWABLE ENERGY

Energy efficiency and consumer/community-owned renewable energy represent tremendous economic and stewardship opportunity for locally-owned electric utilities. While efficiency and consumer-owned renewables both represent lost profits for investor-owned utilities, the incentives are much better aligned with locally-owned utilities that do not depend on maximizing sales to profit investors. In locally-owned utilities, efficiency and renewables represent investment in local businesses and contractors, reduced cost of new infrastructure, and dollars kept local rather than exported from the economy.

- Municipal electric utilities have been leaders in offering energy efficiency programs to their customers since long before the investor-owned utilities were required by the State of Iowa to offer rate-payer funded programs: Osage and Cedar Falls for example have both gained national recognition for their programs, which began well before those of Alliant.
- While Alliant has refused to allow local, qualified energy professionals to offer technical assistance through the efficiency programs (auditors often drive to Decorah from as far away as Des Moines, Madison WI, and Northfield MN in an energy efficiency program!), municipal utilities almost always make good use of those local, qualified energy professionals.
- Municipal electric utilities have also been leaders in renewable energy, seeing the benefit of locally-owned assets for economic development, market hedging, and reliability.
- Many municipal utilities (and many rural electric cooperatives too) have created community solar programs, allowing customers to subscribe to output (Cedar Falls, Osage, MiEnergy Cooperative, Allamakee-Clayton Coop), which no investor-owned utility in Iowa has yet offered.
- Unfortunately for consumers (though understandable within their business model), Alliant has been opposing consumer and community ownership of renewable energy on many fronts, including rejecting the Winneshiek Shared Solar initiative (see chapter 3 for more information), restricting net metering, and supporting federal legislation to change “PURPA,” the foundation of consumer-owned generation access to the grid and fair compensation for power production.
According to the NewGen report and public data on Alliant’s energy mix, a Decorah municipal electric utility could start from day one with a cleaner overall energy mix. Decorah could develop investment plans to move toward 100% locally-owned clean energy by mid-century.

A majority of the global, US, and Iowa population believe climate change is an urgent issue that must be addressed to secure the health and well-being of future generations. A municipal electric utility could shift to 100% clean energy much more quickly than Alliant is doing.

The 2015 Papal Encyclical Letter “Laudato Si” represents a growing concern about the environment that is being expressed in many faith traditions. Many congregations in Decorah have expressed similar concerns, and are actively pursuing solutions via energy efficiency and renewables. A locally-owned electric utility would be another way to address the challenges posed by climate change.

Local residents across the ideological spectrum generally find aspects of municipal utilities they value highly, from local control to stewardship to jobs to equality to basic “shop local!”

Accepting responsibility for the good of future generations and the welfare of the disadvantaged in our present generation are twin and inescapable ethical obligations. Municipal electric utilities offer the opportunity for important local efforts to eliminate energy poverty, reduce inequality, and remove the barriers to equal opportunity for all our residents.

While investor-owned utilities (including Alliant) are required by the State of Iowa to offer (rate-payer funded) programs targeted toward low to moderate income households, many consumer-owned utilities have demonstrated greater effectiveness and compassion in this area.

Microgrids are simply subsets of the larger interconnected grid that can “island,” or function independently from the larger grid when necessary. They can vary greatly in size, from an individual home/farm/business up to an entire community or city, or portions thereof such as hospitals and emergency management operations.

Leaders of the New Hampton and Osage municipal electric utilities and the Farmers Electric Cooperative in Kalona explained how they already have the ability to fully power their communities in the event of a larger grid failure, through community-owned diesel and natural gas generators.

Next-generation microgrids are already being built that combine renewable energy from solar and wind with battery storage systems that—when designed properly—can “provide power during critical outages” and do so “almost indefinitely.”

As stated by our contributor, this section “provides a discussion on emerging topics of interest for next generation electric power systems.” While they may seem highly technical or futuristic, these topics actually represent much of the future of our energy world, and include tremendous opportunities for locally-owned electric utilities to provide cleaner energy which is more affordable and reliable and creates more wealth than the alternative ownership and management models.
• Storage in the new energy world, however, is not limited to microgrid applications or to battery technology. Innovations in batteries along with pumped hydro, flywheels, and other storage technologies are quickly being recognized as the large-scale grid balancers that will enable renewable energy to replace fossil fuels in coming decades.

• There is widespread recognition within the industry that our highly automated power systems are vulnerable to cyber-attacks, and such attacks have already been seen abroad and within the U.S.

• A municipal electric utility is not immune from cyber threats, but “by having the appropriate generation resources and digital perimeter defined, a municipal utility would be able to isolate itself physically and to reduce its network exposure significantly.”

CHAPTER 7. THE PATH FORWARD

Iowa Code 476.23 governs electric municipalization efforts of Iowa communities as follows:

1. There must be an affirmative vote in a city election.
2. A municipalization petition must be filed by the city with the IUB.
3. The IUB is to issue a certificate authorizing the municipality to provide the service, if there are no objections to the petition filed.
4. If an objection is filed, the IUB will first hold a hearing, and grant the petition for municipalization (upon such terms, conditions, and restrictions as may be justified), if the Board determines the outcome to be (per code) “in the public interest.” The IUB also determines the price to be paid for any utility assets taken over by the MEU.

This is neither an easy nor cheap process, but few things in life worth striving for are. Chapter six provides extensive detail on these steps, on the only other municipalization attempt to reach the IUB in recent Iowa history, and on the relevance of the franchise agreement to the current discussion.
More than 2,000 cities and towns in the United States light up their homes, businesses and streets with “public power—electricity that comes from a community-owned and -operated utility.

Public power utilities are like our public schools and libraries: a division of local government, owned by the community, run by boards of local officials accountable to the citizens. Most public power utilities are owned by cities and towns, but many are owned by counties, public utility districts, and even states.

While each public power utility is different, reflecting its hometown characteristics and values, all have a common purpose: providing customers in the community with safe, reliable, not-for-profit electricity at a reasonable price while protecting the environment.

Public power today is an important contemporary American institution. From small towns to big cities, wherever public power exists, it is an expression of the American ideal of local people working together to meet local needs. It is a manifestation of local control.

Source: Public Power for Your Community by the American Public Power Association, p. 7–9.

A PUBLIC POWER UTILITY:

- Brings electricity to homes and businesses
- May generate and/or buy power
- Is a not-for-profit entity
- Is owned by the community
- Is usually a division of local government
- Is transparent (subject to sunshine laws)
- Involves citizens in decision-making

Who does public power serve?

- More than 2,000 community-owned electric utilities serve more than 48 million people.¹
- Public power utilities serve small communities as well as large cities, including Los Angeles, San Antonio, Nashville, Orlando and Seattle.
- Public power serves customers in 49 states—all but Hawaii—and five U.S. territories.
- Three million businesses receive their power from a publicly owned electric utility.

¹Based on U.S. Census Bureau statistics of 2.54 people per household/meter.
Public power utilities are entities of local or state government. The public power business model is based on public ownership and local control, a not-for-profit motive, and focus on its customers. Because they are public entities, public power utilities do not pay federal income taxes or most state taxes, but they support the local government through payments in lieu of taxes or transfers to the general fund.

Electric cooperatives are private, not-for-profit businesses. They are owned by their consumer-members, who elect governing board members and are required to return any excess revenue (above what is needed for operating costs) to their members. The local government and broader community generally have no involvement in the governance of the utility. Most electric cooperatives are exempt from federal income tax, and may pay neither taxes nor payments-in-lieu-of-taxes to support the local government.

Investor-owned utilities are private, for-profit enterprises. They are owned by investors or shareholders, who generally are not customers of the utility or members of the community, and their primary motivation is to increase the value to shareholders. As private businesses, investor-owned utilities do pay taxes to local governments, but customers have no voice in the operation of the utility.
WHAT IS THE PUBLIC POWER BUSINESS MODEL?

While each community-owned utility is unique, all public power utilities share five basic tenets that comprise the public power business model:

PUBLIC OWNERSHIP
Public power utilities are owned by and operated for the citizens they serve and therefore are accountable to their local owners.

LOCAL CONTROL
Local, independent regulation and governance gives utility policymakers greater agility in decision-making and protects the long-term viability of the utility, while permitting customer involvement in the process. This ensures decisions reflect the values of the community.

NONPROFIT OPERATIONS
Community-owned electric utilities serve only the interest of their customers, avoiding conflicts between the interests of shareholders and customers because they are one and the same. Excess revenues stay in the local community and are invested in system improvements and utility reserves, shared with the local government, or returned to the customer in the form of lower rates. They are not distributed among outside shareholders, as they are in the case of for-profit utilities.

LOW-COST STRUCTURE
Public power utilities have access to lower cost tax-exempt financing and generally have stronger credit ratings than privately owned utilities. Publicly owned utilities may have more efficient operations and access to less expensive federal hydro power.

CUSTOMER FOCUSED
Community-owned electric utilities are dedicated to the singular mission of delivering the highest level of service and value to their customer-owners for the long term. Public power utilities focus on the specific needs of customers, including high reliability and lower rates, as well as local priorities, which may include new technologies, environmental concerns or advanced communications.
As the Executive Summary states, the NewGen feasibility study is fundamentally a business case analysis: given existing energy markets, the need to buy the existing infrastructure, and the operating costs associated with running an electric utility, could a Decorah MEU provide the same commodity (electricity) to the same customer base at similar prices?

**BRIEF NEWGEN STUDY DISCUSSION**

The NewGen study finding is a resounding yes. We’re confident in the quality of the study, and equally confident those results will be questioned and challenged. The NewGen study was conducted per previous guidance issued by the IUB, and their report is thorough. A few key answers to a few key questions include:

**HOW CAN A SMALL COMMUNITY “COMPETE” WITH SUCH A LARGE INVESTOR-OWNED UTILITY LIKE ALLIANT AND OFFER SIMILAR OR BETTER RATES?**

There are many answers to this question, and the first is that Alliant does not operate in a competitive marketplace. It is an investor-owned monopoly granted by the State of Iowa to serve a given customer base, with authorized profits to those investors. If the community were to own the utility, those profits would be re-invested in the community, whether through rate reduction or other priorities, as we’ve heard from the heads of many other MEUs. Another answer comes directly from rate comparison with those peer Iowa MEUs, which we provide below. If they can do it, there’s no reason we can’t.

**BUT HOW CAN WE DO THIS WITH THE DEBT BURDEN OF BUYING OUT THE EXISTING LOCAL GRID?**

This has been a concern of ours also, and is one of the major reasons to start with the feasibility study. The NewGen Study included an on-site inventory and valuation of the substation and distribution system. The valuation started by calculating what is termed “replacement cost new,” but then applied depreciation according to methodology outlined by the IUB in 2008. Because most of the infrastructure is older, we the ratepayers have paid for much of it through rates and the company has depreciated it, and so we would pay much less than if it was brand new. Also, a close look at the pro forma provided in the study shows that total debt service (including infrastructure acquisition and startup costs) is roughly 5% of the total annual budget, which is significant but clearly not insurmountable. In fact, it is roughly half the annual return on investment authorized by the State of Iowa to the investor-owned utilities in Iowa for the rate-basing of projects, and just one-quarter of Alliant’s 2016 “Total Return to Investors.”¹

**WHY DOESN’T THE STUDY TELL ME THE RATE I WILL BE PAYING?**

The economic analysis in the study is inclusive of the entire customer base—residential, commercial, industrial, and institutional. It is calculating an all-inclusive volume of kWh sales, a total annual revenue, and dividing the revenue by sales to get a community-wide “all-in” single rate. Then it calculates the full cost of doing business for an MEU to provide the same volume of kWh sales to the same customer base to get a similar community-wide “all-in” single rate, which in this case is significantly less than Alliant, thanks in part to energy market conditions, smaller bureaucracy, and the absence of profit flowing to investors. If Decorah were to eventually serve local customers through an MEU, the creation of actual rates for different customer classes would be up to the local utility board of trustees. Given the study’s favorable conclusion, it is likely the board could keep all rates stable for quite some time.

There are 136 Iowa communities with MEUs. We were fortunate to have leadership from three of them (plus a couple rural electric cooperative managers) speak to us in Decorah. Rates were always a question, and while the figures varied they often elicited surprise from many in attendance, who thought they would be higher. We decided to do a comparison using the best available information: the Utility Annual Report Filings\(^2\) with the Iowa Utilities Board (IUB).

Figure 2.1 shows a comparison based on the 2016 data of the all-inclusive rates (all direct sales to all customers) of Iowa’s two investor-owned utilities (Alliant Energy and MidAmerican Energy), of the weighted average of all 136 Iowa MEUs, and the average of the six MEUs that best bracket a potential Decorah MEU in customer numbers.

The bracket was determined objectively as follows: since the NewGen analysis placed potential Decorah area MEU customer numbers and total annual revenue at close to 3,500 and $10 million, respectively, we selected all MEUs from the 2016 report with between 2,500 and 4,500 customers AND revenues between $8 and $12 million. Broadening the bracket would not have significantly changed the outcome; in fact, as the graph shows, the six “peer” communities thus chosen have all-inclusive electric rates a bit higher than the statewide MEU average, and yet are lower than the Alliant statewide all-inclusive rate.

Figure 2.2 shows the six peer community all-inclusive rates individually, and the Decorah area rates as presented by the NewGen report. The anticipated all-inclusive rate for a Decorah MEU is labeled “Decorah NewGen,” while the report’s calculated equivalent all-inclusive rate for the same customer base as currently served by Alliant/IPL is labeled “Alliant Decorah.” The all-inclusive rate paid currently by Alliant’s Decorah area customers is significantly higher than the statewide figure shown in Figure 2.1 for reasons explained in the NewGen report, including 1) the report includes a rate increase subsequent to 2016 (estimate, as the final rate is not yet approved by the IUB), and 2) the Decorah area market characteristics are significantly different than Alliant/IPL’s statewide market characteristics.

\(^2\) Found on this page of the IUB web site: https://iub.iowa.gov/utility-annual-report-info: expand “Utility Annual Report Information”, and under the “electric” column, select “2016.”
Clearly, the Decorah area customers currently pay significantly higher all-inclusive rates than those of the communities with MEUs most similar in size and sales to Decorah. Also, the projections for Decorah area all-inclusive rates under an MEU fall squarely within the range of peer communities.

These results should not be seen as absolute guarantees of lower rates for Decorah area customers from day one under a MEU. They should emphasize, however, a few very important points in the conversation about an MEU option for Decorah. One such point is that while MEU rates vary by community around Iowa, as a group they are very competitive with Alliant/IPL rates, debunking the notion that very large utilities have an inherent ability to offer lower rates. This conclusion, and these Iowa results, are supported by similar nationwide data from the American Public Power Association.

Another important point to make is that Alliant/IPL filed for a roughly 12.5% rate increase in 2017 (on which the IUB has yet to make a final ruling), and yet also in 2017 filed for “advanced ratemaking principles” for a new proposed wind farm. While MidAmerican Energy has been adding major wind generation capacity in Iowa for a decade without increasing rates, Alliant made it clear in 2017 that their wind projects and “grid modernization” investments would likely result in another rate increase proposal within a few short years.³
Another favorite topic of the locally-owned utility leaders (including MEUs and rural co-ops) that visited Decorah is that of reliability and responsiveness. Being locally-owned clearly creates a great sense of pride in a well-managed grid, and a direct responsibility to the customers who are your friends, neighbors, co-workers, or simply fellow “locals.”

As with rates, there was certainly some skepticism among learning series attendees about the capabilities of small communities (relative to very large corporations) to “keep the lights on” as consistently as Alliant/IPL. The presentations of the muni leaders, and the consultation of the former director of the Iowa Association of Municipal Utilities Bob Haug, (bullets submitted below), helped us understand how municipal utilities find strength in joint action and partnership:

- The American Public Power Association (APPA) represents 2,000 public power systems, ranging in size from Los Angeles, Seattle, and San Antonio to remote villages in Alaska. APPA provides a wide range of services and training to its members.

- The Iowa Association of Municipal Utilities (IAMU) represents Iowa’s 136 municipal electric utilities, 51 gas utilities, and 28 community broadband systems and also provides services and training and sponsors all manner of cooperative programs. For example, the association conducted a study of the economic value of LED street lighting and negotiated purchase agreements that were open to all members.

- Both state and national organizations coordinate mutual aid. Crews respond quickly to emergencies affecting other utilities. It is not unusual for municipal utilities to offer crews and equipment in emergencies outside the state. Crews and trucks from Alta, Denison, Lake Park, Sioux Center, and Spencer worked on service restoration in Florida in the aftermath of Hurricane Irma.

- The state’s municipal utilities have worked together to find economies of scale, such as joint investments in regional transmission facilities and dividend-producing insurance programs.

- Municipal utilities also find opportunities to work with neighboring utilities to share items in their separate inventories as well as personnel and equipment.

- Many municipal electric utilities have made local decisions to invest in significant infrastructure protection, such as burying power lines underground, dramatically improving future resilience.
Reliability data are tougher to compare throughout a state than rates, since not all utilities report the same data. One measure that many do report is called the System Average Interruptible Duration Index (SAIDI). This measures the average length of time, in minutes, that each customer of a given utility was without power during a given year. SAIDI figures are often presented excluding “major events” such as hurricanes or tornadoes, since comparing a utility that experienced a major event with one that didn’t is clearly not an apples-to-apples comparison. The American Public Power Association graphic shows that MEUs as a group are top performers in reliability.

Response to major events is clearly critical, but also a different issue than day-to-day grid quality, maintenance, and reliability. In fact resilience of our electrical infrastructure in the face of future major events such as storms includes two sides to the same coin: first comes the quality of the grid itself and its resistance to damage, then comes the response to an event and outage restoration ability. MEUs excel in both categories.

Iowans are good at common sense, and our communities are good at forward thinking. We recognize the wisdom in the old adage “an ounce of prevention is worth a pound of cure.” MEUs, being responsible and responsive exclusively to their local customer-owners, have all incentives aligned to invest heavily in grid quality, maintenance, and the prevention of outages. The investor-owned utility business model, on the other hand, may find that the incentive to maximize investor profits conflicts with the incentive to invest in local grid resilience. It also explains why many MEUs lead the industry in placing their distribution lines underground—all profit is reinvested in the local community.

When major events such as hurricanes or (in the Midwest) wind, ice, or floods hit, the key concept with consumer-owned utilities is again joint action, or “mutual aid.” There is strength in numbers, and Iowa communities are well experienced at partnership and helping each other out. As stated on the Iowa Association of Municipal Utilities website, “In the true spirit of cooperation, IAMU members participate in the Association’s Mutual Aid Programs providing disaster assistance to any member community in need of emergency support.” Virtually all of Iowa’s 136 MEUs participate in the mutual aid agreement, and many also partner with local rural electric co-ops and other utilities on mutual aid.
Public Power puts communities in the driver’s seat. Consumer-owned utilities have a strong history of efficient operations, keeping costs low, and investing appropriately in infrastructure. This is reflected in the favorable outcomes public power sees in rates and reliability as discussed in the previous chapter, and in a broad suite of additional impacts communities realize from owning their electric utilities. Here we discuss the benefits of local control, the array of powerful economic impacts, and highlight the synergies local governments can realize from multiple utilities.

ACCOUNTABILITY AND TRANSPARENCY
Like public schools and libraries, public power utilities are owned by the community and run as a division of local government. In Iowa, they are governed by a 3 or 5 member board of trustees, appointed by the mayor and approved by the city council. Citizens have a direct voice in utility decisions, policymaking, and rates. Business is conducted in the open and citizens know where their power comes from and how and why decisions affecting their utility bills are made. This is entirely different from the situation faced by customers of a private, investor-owned utility, where decisions are made far away and the company is accountable primarily to the state regulatory agency.

SUPPORTING LOCAL GOVERNMENT
Municipal electric utilities (MEUs) provide direct financial benefits to state and local governments. These contributions come in many forms, such as payments in lieu of taxes, transfers to the general fund, or free or reduced cost services. According to the American Public Power Association, data show that public power utilities on average contribute over 5% of operating revenues to state and local government, while the comparable figure for investor-owned utilities is just over 4%. The NewGen feasibility study includes the 5% figure in its operating cost assumptions, estimated at roughly $600,000 per year.

“But it surely also helps that Norwich Public Utilities’ general manager, 12 linemen and five commissioners live in the community, drive the local roads, see the overhanging branches and bump into their customers at the Norwichtown Mall. That’s a rare kind of accountability.”

LOCAL PRIORITIES
The reality of local decision-making is critical to considering a potential MEU in the Decorah area. The NewGen report shows that an MEU could likely provide the same service for roughly 30% less. A future MEU Board of Trustees – in conversation with the community to be sure! – could then decide how best to invest those savings. This could include lowering rates, or investing in significant infrastructure improvement such as burying lines to improve reliability, or investing in clean energy generation and storage with returns over generations, or any combination of those and other opportunities. The point is, the choice is ours.

EFFICIENT OPERATIONS
As we heard from MEU leadership that visited Decorah, public power utilities can keep costs down in many ways. Local governments are usually small governments, and operations are under constant pressure and scrutiny to maximize efficiency. We also heard of the tremendous potential for partnerships, and how virtually all MEUs participate in joint action agencies to gain the advantages of scale in accessing wholesale energy markets. A critical point to this discussion is that the transmission lines serving the Decorah area not owned by Alliant, and Decorah would be charged the same as any other utility. There are also significant potential efficiencies to be found in synergies between city utilities, for example:

- Decorah already operates a water and sewer utility, with employees for technical operations, administration, and billing, etc.
- There are several great examples of multiple-service municipal utilities in northeast Iowa, including Cedar Falls, Waverly, New Hampton, and Osage that serve their communities with water, sewer, electricity, and telecommunications.
- Useful synergies can be found with multiple utilities under common management, in terms of infrastructure installation and management, personnel, customer management systems, technology innovation, equipment and vehicles, Advanced Metering (AMI) via fiber, etc.
- Decorah already has a Telecommunications Utility Board that is pursuing options for creating a municipally-owned fiber optic system. Opportunities for collaboration and synergy would certainly exist among all Decorah municipal utilities, as our peer communities demonstrate.
When local customers are the utility’s shareholders, serving the community is the utility’s only priority. Public power utilities are embedded into the fabric of their communities and support a range of community programs including charitable, educational, and beautification programs. Each dollar of a public power utility employee’s paycheck circulates through the community an estimated four to five times.

1. **A MUNICIPAL UTILITY WILL KEEP MORE DOLLARS CIRCULATING IN THE COMMUNITY.**

   Businesses and residents of the Decorah area spend over $15,000,000 annually on electricity. Based on the NewGen feasibility study, about 30% of that could be retained in the local economy through reduced costs, if Decorah acquired Alliant’s distribution system and operated a municipal utility. Over time, as more energy is produced locally and as the cost of renewable energy and storage systems continues to decline, even more money could be kept in the community. Additional local spending on home improvements, cars, groceries, restaurant meals, entertainment and other goods and services roll over in the local economy creating a multiplier effect.

2. **A MUNICIPAL UTILITY PROVIDES NEW JOB OPPORTUNITIES.**

   Initially, some operation and maintenance functions will be performed by contractors, but in time the municipal utility will have a general manager, supervisors, line mechanics, and other support staff.

3. **A MUNICIPAL UTILITY ADDS EXPERTISE FOR COMMUNITY PLANNING AND OPERATIONS.**

   Utility personnel bring new ideas and leadership to community activities. They bring expertise about energy issues as well as their individual life experiences to city government and to the many community activities in which they participate.

4. **A MUNICIPAL UTILITY IS A CUSTOMER OF LOCAL BUSINESSES.**

   The utility purchases vehicles and buys parts and equipment from local vendors. It uses such local services as accounting, banking, insurance, and automotive services.

5. **A MUNICIPAL UTILITY MAY CREATE LOCAL INVESTMENT OPPORTUNITIES.**

   Decorah residents and businesses have proven their ability to finance renewable energy systems. Local investors/developers are experienced in utility scale wind and solar projects and are researching storage. Local investors/developers also had plans to complete a 2.5 MW solar project that was not approved by our incumbent utility. The project, entitled Winneshiek Shared Solar, involved power purchase agreements between local investors and five local governments and college entities. These types of investment opportunities can help create a stronger and more viable local economy.
6. A MUNICIPAL UTILITY HAS THE FLEXIBILITY TO CAPTURE NEW OPPORTUNITIES.
Changes in utility markets, lower costs for renewable energy, and decentralization of electric generation give a locally controlled municipal utility new options for power supply that are below the embedded costs faced by traditional for-profit utilities. These opportunities also create major local economic growth opportunities. Cost-effective community investment in clean energy generation and storage, for example, could continue for a generation or more and create large numbers of new jobs and cascading economic impacts.

7. A MUNICIPAL UTILITY CAN HELP RESIDENTS AND BUSINESSES BE MORE ENERGY EFFICIENT.
Municipal utilities can develop energy efficiency programs designed to meet the specific needs of the community. Rebate programs can help bring work to local contractors, appliance, electricians, plumbers and other service providers, while reducing electricity bills. The level of awareness in the Decorah area for efficiency, conservation, and solar energy is advanced due to six years of local public education efforts of the Winneshiek Energy District and local contractor expertise. Efficiency programs can be designed for Decorah’s needs and implemented by local professionals. The NewGen study includes a major line item (over $600,000) for these programs – a higher investment per capita than the current Alliant program.

8. A MUNICIPAL UTILITY CAN IMPROVE RELIABILITY AND RESILIENCY.
A municipal utility will be laser focused on maintaining the infrastructure that serves its customer owners. Local generation can help keep the lights on, even when the transmission system fails. Many of Iowa’s municipal utilities have converted much of their distribution systems to underground cables. That means fewer downed lines in an ice storm or other weather event. When outages occur, local utility employees can mobilize immediately, because they are your neighbors. In a major emergency, municipal utilities can rely on a well-tested mutual aid program that can mobilize personnel, equipment, and materials from across the state and, if necessary, from neighboring states. This improved reliability and resiliency has direct and long-term economic impacts throughout the community.

9. A MUNICIPAL UTILITY CAN GIVE DECORAH A COMPETITIVE ADVANTAGE.
Many businesses and industries look for communities that offer advantages such as great educational institutions, recreation and entertainment, progressive local government and, yes, clean energy. A municipal utility that makes local renewable energy and smart grid technology a significant part of its energy portfolio will attract new business that give our kids and other educated young people opportunities to stay and grow in Decorah.

10. A MUNICIPAL UTILITY WILL PROVIDE DIVIDENDS TO LOCAL GOVERNMENTS.
The feasibility study assumes that the municipal utility will make a payment in lieu of taxes to the city, equal to 5% of operating revenues or about $600,000 annually. In addition, a new utility creates opportunities for interdepartmental transfers and personnel and equipment sharing arrangements.
By the Decorah Power team and Bob Hang

We know much about the energy future Decorah must address as it considers whether to authorize establishment of a municipal electric utility. It will likely include restrictions on carbon emissions, greater reliance on renewable energy technologies and storage, electrification of transportation, more emphasis on distributed generation (DG), community or neighborhood micro-grids that share distributed generation in real time, advanced metering technology that can allow smart appliances to respond to time-of-use pricing, and more efficient lighting.

A community-owned, locally-controlled electric utility gives us the opportunity to create an energy future that relies more on efficiency and local renewable resources, addresses the need to reduce carbon emissions, and keeps more dollars working in the local economy. How Decorah will respond to changes in technology and environmental obligations can’t be known, but the value of local control can be seen in the choices that existing municipal utilities have made. In many ways, those choices have made municipal utilities laboratories for innovation.

The NewGen feasibility study business model includes dedicating 5% of operating revenues to energy efficiency programs (including low-moderate income and education programs). This is significantly higher than the 3.6% corresponding figure for the Alliant program in 2016 (as reported to the IUB).

Most municipal utilities make energy efficiency a key part of their operation. It is clearly a part of Decorah Power’s vision. Here are some examples of what other Iowa municipal utilities have done.

• One example of ground-breaking energy efficiency programs started in Osage in the 1970s.¹ The energy efficiency measures started there won worldwide recognition. They were based on a simple idea – invest in energy efficiency and keep money in the local community that would otherwise go to the owners of distant power plants, transmission lines, coal mines, railroads, gas fields, and pipelines. The idea is as relevant today as it was then.²

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² Graphic “Energy Dollars Impact the Local Economy” from here: http://www.lakewood.org/uploadedFiles/Departments/City_Managers_Office/Sustainability
• Cedar Falls Utilities has carried out a decade-long program that works closely with local appliance dealers/installers to properly size air conditioners. The result is a much lower peak demand, reducing investment in unnecessary generation, fuel, and transmission facilities.

• Algona and Bloomfield undertook energy-independence studies to develop 15-year plans that use energy efficiency and local renewable energy to move them toward independence from the grid. With a community-owned, locally-controlled utility, Decorah could offer energy-efficiency programs specifically designed for its customers. As part of its energy-independence plan, Bloomfield chose 17 residential efficiency measures and 34 commercial measures that are calculated to reduce overall energy use by 22% in 15 years.

• Municipal utilities organized a number of energy-efficiency programs through the Iowa Association of Municipal Utilities (IAMU). One of these was a concept known as “Whole-Town Energy Audits. These audits worked to improve the efficiency of the utilities’ largest energy users, especially the efficiency of lighting, motors, and compressors. They identified efficiencies in local government buildings and in water and wastewater operations. Audits of homes often found the need for more attic insulation. In one community the whole-town audit resulted in the utility’s decision to bulk purchase insulating materials and to hire a local contractor to add insulation in homes that needed it.

• Based on a study of the range of costs for treating a gallon of drinking water and a gallon of wastewater, a manual was developed to help communities identify technologies and practices that reduce energy consumption and capacity demand by the city government’s own largest energy users. Municipal utilities also used IAMU to lower the cost of energy efficiency through competitively bid, joint purchase programs. Contracts for variable speed drives for motor efficiency was one example; another was an open contract for the purchase of LED lights and street lights, including a handbook on how to select LED street lighting.

RENEWABLE ENERGY AT MUNICIPAL ELECTRIC UTILITIES

Investment in renewable energy got an early start with municipal utilities and it continues to grow:

• Seven Iowa municipal utilities joined together to build the region’s first utility-owned wind farm at Algona. It began operation in 1998.

• Cedar Falls and Traer were among the first to develop community solar projects in which customers invest and earn credit on their bills. Ames is in the process of a similar project that will be one of the largest solar arrays in the state. These projects deliver significant economies of scale and make it possible for customers who may not have a south-facing roof, who have obstructed solar access, or who rent or live in condominiums to invest in renewable energy at an affordable level.
• In fact, while neither Alliant nor MidAmerican have yet to offer community solar programs with subscriptions and bill credits, Iowa’s consumer-owned utilities have been innovation leaders for years, including many rural electric cooperatives such as MiEnergy (formerly Hawkeye), Allamakee Clayton, and Farmers Electric Cooperative.

• Many municipal utilities purchase wind energy from independent producers and some, like Lenox, Stuart, Waverly, and Osage, own their own local wind turbines.

• Utilities can provide incentives for roof-top solar arrays. One approach being piloted in some communities is the joint purchase of solar PV panels and racking systems with training for local installers.

• Ownership matters, for both customers and communities as a whole, because with investment in ownership come long-term returns on that investment. When municipal utilities invest in large-scale solar and wind, all the utility’s members are also owners of the resource and receive multiple benefits including the economy of scale.

• To address climate change, many in the energy world are saying we need to “make electricity clean, then electrify everything,” including transportation and building heat. The rest of the world is moving in this direction already. We can do this much faster, and we can own that energy future, with a municipal electric utility.
Alliant has been touting its clean energy credentials in the Decorah area media ever since the MEU conversation began to get traction. Here, we attempt to clear the air. Two issues are critical to this discussion:

1. Context and pace relative to peers and Decorah: is Alliant a leader or laggard relative to their Midwest peers in overall clean energy mix, and what might that mean for a Decorah MEU?
2. Ownership and control: who will own the clean energy future and decide future directions?

IOWA AND REGIONAL CONTEXT

According to Alliant’s web site⁵ (see graphic), their energy generation capacity mix in 2016 included about 15% renewables in their generation mix, while their goal for 2024 is to reach 29%, largely from the addition of a major new wind farm.

Even before comparing these figures to Alliant’s peers, we should note that the NewGen study includes an assumption that Decorah MEU energy purchases would include paying a modest premium for a minimum 30% wind energy, putting Decorah well ahead of Alliant from day one. The greatest opportunity for a Decorah MEU is to chart a course to build and own local renewables at even higher levels, but more on that later.

Alliant’s only peer investor-owned utility in Iowa is MidAmerican Energy. According to MidAmerican’s website, “at year-end 2016, 48% of our generation capacity came from wind and 31% came from coal . . . When the Wind XI project is complete, our annual renewable energy generation is expected to reach a level that’s equivalent to 89% of our customers’ annual retail usage.”⁴ The Wind XI project is scheduled for completion the end of 2019. Clearly MidAmerican is the leader among Iowa investor-owned utilities. Minnesota’s largest investor-owned utility, Xcel Energy, lags MidAmerican, yet is still well ahead of Alliant with 25% electricity supply from renewable generation in 2016.⁵
NET METERING AND CONSUMER OWNERSHIP

Alliant has made a point of the large numbers of their customers in the Decorah area who own solar. This impressive level of local solar adoption in recent years is due largely to local initiative and can-do spirit, even in the face of growing Alliant resistance. It is true the company offered a solar rebate through their ratepayer funded energy-efficiency program until 2014, but just when it was becoming popular (and despite extensive requests to continue), they persuaded the Iowa Utilities Board (IUB) to terminate the program.

The key grid- and rate-related policy that enables consumer ownership or renewable-energy systems is net energy metering (NEM). NEM gives consumers access to the grid on fair terms, allowing them to feed the grid with excess production at times and withdraw a similar amount of energy at other times (hence the term “net”) at equal value. Alliant, like most investor-owned utilities across the country, has been attempting to move away from NEM or to impose significant additional fees on NEM customers.

This stance was evidenced during the Distributed Generation docket (NOI-2014-0001) at the IUB, which stretched from 2014 to 2016. Alliant and MidAmerican both submitted extensive testimony claiming that NEM customers were unfairly shifting costs to other customers, that the growth of customer-owned DG was untenable, and that it was time to move away from the existing NEM tariff and impose new fees and costs on NEM customers. Thankfully, due to extensive testimony refuting these claims by many people, including the Winneshiek Energy District and many Decorah and Winneshiek County individuals, the IUB kept the current NEM tariff largely intact . . . though only through 2019.

Unfortunately, Alliant continues to oppose consumer-owned renewables at the federal level as well. This was clearly evidenced by the testimony of Alliant’s VP for Iowa Operations, Terry Kouba, at a recent congressional hearing about the Public Utilities Regulatory Policy Act (PURPA). PURPA is the 1978 federal law that is the foundation for fair and democratic grid access for non-utility-owned electric generation, from home/farm/business solar owners to schools and colleges to larger developers investing in solar and wind and accessing energy markets. Mr. Kouba clearly stated that PURPA is no longer necessary, and barring repeal, Congress should at least enact legislation giving state regulators the power to exempt utilities such as Alliant from paying anything for private generation they deem unnecessary to meeting customer demand for electricity.

WINNESHIEK SHARED SOLAR INITIATIVE

During the Distributed Generation docket at the IUB mentioned above, the IUB itself requested proposals for pilot projects that would test innovative approaches to incorporating locally-owned generation in the grid. A group of Decorah and Winneshiek County institutions, facilitated by Winneshiek Energy District, developed and submitted a project called the Winneshiek Shared Solar project. The following institutions participated in the planning and proposal:

- City of Decorah
- Luther College
- Northeast Iowa Community College
- Winneshiek County Supervisors
- Winneshiek Medical Center

The full pilot project history can be found in the proposal submitted to the IUB. The basic outline of the proposal was simply to allow these institutions to invest in significant solar arrays at a common location and receive bill credits for energy produced in a manner similar to how net metering works for “on-site” solar owners.

The project was named “Winneshiek Shared Solar” because of the obvious partnership between Winneshiek County and Decorah institutions, but also because the investments made by these institutions would have benefited all Winneshiek County residents. Unfortunately, after nearly a year of work and discussions and meetings, Alliant never provided a clear response to the community effort, and when pressed for an answer within the IUB docket, simply stated it was “not something [IPL] wishes to pursue.”

¹ Full docket history including filings available here: https://efs.iowa.gov/efs/
Municipal electric utilities carry all the rights and responsibilities of local ownership. Those rights and responsibilities include acting on shared community values that—regardless of ideological or other differences—extend well beyond the economic bottom line to include faith, environmental stewardship, and economic fairness and opportunity for all. This chapter includes a pair of submissions that span this spectrum of community values.

These brief excerpts from sacred scriptures in the Jewish, Christian, Muslim, and Buddhist traditions illustrate how love, justice, and wisdom represent the beating heart of the world’s religious traditions.

People of faith are called to love our neighbors who are near and far in place and time, to seek justice for all, and to act with wisdom on the basis of the knowledge we possess.

People of faith around the world, within our state, and in the Decorah area are drawing on all three of these fundamental moral values to face the unprecedented challenges posed by global climate change. Virtually every major religious tradition has issued a statement about the religious and moral challenges posed by global warming and climate change.¹ The most famous recent example is the papal encyclical, Laudato Si’: On Care for our Common Home, issued by Pope Francis in May 2015.²

People of faith are putting their core values into action all over the world. We don’t have to look far to see that this is also the case in the Decorah community. It is hard to miss Luther College’s wind turbine on the west side of town or the large solar fields to the north. Luther’s investments in renewable energy and energy efficiency are rooted in the college’s mission “to practice joyful stewardship of the resources around us.” In addition, those entering First United Methodist Church, First Lutheran Church, and Good Shepherd Lutheran Church are greeted by signs telling them that each is an EPA-certified Energy Star Congregation, which means their facilities are 75% more efficient than comparable facilities in the U.S.

Individually, many people of faith in the Decorah area have also made investments in energy efficiency and renewable energy as a way of living out their commitments to love, justice, and wisdom. Our very own Winneshiek Energy District has helped over 600 property owners in the area make investments that will save an estimated $3 million dollars that is being recycled in our local economy and used to support charitable giving and civic commitments.

Establishing a municipal electric utility in Decorah is another way for people of faith in the Decorah area to demonstrate their commitments to love, justice, and wisdom in the face of global climate change. Accepting responsibility for the good of future generations and the welfare of the disadvantaged in our present generation are twin and inescapable ethical obligations. Municipal electric utilities offer the opportunity for important local efforts to eliminate energy poverty, reduce inequality, and remove the barriers to equal opportunity for all our residents. In addition, a municipal electric utility will enable us to keep a larger percentage of electricity bill payments in our local economy and it increases the likelihood that more green power can be acquired in the future to address the challenges posed by global warming and climate change.

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³ Luther College Mission Statement. https://www.luther.edu/about/mission/.


The establishment of a new municipal electric utility in Decorah would also be consistent with another important moral value—subsidiarity. This value is central to Roman Catholic social teaching and serves as one of the foundations of American democracy. According to the principle of subsidiarity, “decisions should be made at the lowest possible level of a government or an organization, rather than always being made at a high level.” This tenet holds that nothing should be done by a larger and more complex organization which can be done as well by a smaller and simpler organization.

Decorah’s electricity is currently supplied by Alliant Energy, which is headquartered in Madison, Wisconsin and serves customers in Wisconsin and Iowa. According to Fortune 500, Alliant generated over $371 million in profits and provided a 25.3% return to shareholders in 2016. Every Alliant customer in the Decorah area contributed to these remarkable returns enjoyed by Alliant shareholders. Imagine the benefits we could enjoy if a much larger percentage of these funds were recycled in our local community. While most do not realize this, there are currently 136 municipal electric utilities in the State of Iowa. We probably have more expertise in our state with regard to running a municipal electric utility than any other state in the country.

We also have energy resources in our state and area that could be tapped for the benefit of our community. Wind energy now provides more than 36% of our electric generation, the highest percentage of any state in the nation, and provides more than 6,000 jobs for Iowans. Last year, a group of religious leaders in Iowa concluded:

We do not have to choose between what is good for our planet and what is good for our economy. When combined with energy efficiency and solar, clean energy investment creates opportunities to alleviate rural poverty through good-paying jobs and other economic benefits to small communities.

We know that effective action requires leadership at the local, state, national, and international levels to form policies and strategies that promote sustainable energy use. We urge all decision-makers to work together for solutions to lower our carbon emissions and build a clean energy future. We urge all Iowans to support efforts to lower their energy use and to advocate for clean energy. Finally, we urge all people of faith to provide leadership on this issue and act in the interest of the common good.

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As a group, low and moderate-income (LMI) residential customers use less electricity than more affluent customers. Their use per square foot of living space may be more than the average since their electric-using equipment may be less efficient, but their total energy use is less because they live in smaller living spaces. The National Consumer Law Center has studied electricity usage by income level. For the block of states in this region, (Iowa, Minnesota, North Dakota, South Dakota) customers at or below 150% of the Poverty Level used 27.4% less electricity than non-low-income customers. In addition, such customers have a greater incentive to conserve since they must watch all their costs to live, and since they pay a much higher percentage of their income on energy costs than do those with higher incomes. In recognition of this usage pattern and for reasons of equity, investor-owned utility companies in Iowa have made funds available to the state’s Community Action Agencies to reduce the energy use of low-income customers through weatherization programs.

This is usual behavior among utilities in the nation and included in energy efficiency programs in Iowa since the 1990 state energy efficiency law required rate regulated utilities to include a low-income program as part of their mandated overall energy efficiency portfolio. The Alliant/Interstate Power and Light (IPL) weatherization low-income weatherization program proposed spending $3,208,113 in 2018, the last year of their latest five-year energy-efficiency plan.

As discussed by IPL witness Joel J. Schmidt in the company’s latest rate-increase proposal, approximately 25% of IPL’s 400,000 residential customers have household incomes of less than $25,000. The 2017 US Poverty Level for a family of three is $25,520. Thus, approximately 100,000 customers would be eligible for the $3,208,113 of weatherization spending for a total of just over $32.00 per low-income customer per year. Any successor company should continue such a program which will take only modest resources. The funds would come from the same source IPL gets its energy-efficiency funds—from their customers.
IPL has other low-income programs that should continue. The Home Energy Savers Program already part of IPL’s programs for low-income customers. According to the company website:

The Home Energy Savers™ program can help put energy efficiency upgrades within reach. If you qualify for the program, you pay just 10% of the project cost and Alliant Energy will pick up the rest. These upgrades can help bring down monthly energy bills and make your home more comfortable.¹⁷

The company also recognizes that some of its limited-income customers have difficulty with paying utility bills and their latest rate increase proposal included another pilot program to help customers regain financial control of their utility bills and decrease the likelihood of disconnection.¹⁸ This is a tiny program that IPL expected to be accessed by fewer than 100 of their low-income customers statewide.

One sort of program in which the present company has yet to express interest is solar for LMI customers. Such programs make sense according to a theoretical paper on utility regulation.

Low-income households are less likely to be able to install solar PV or other renewable energy measures owing to lack of income, lack of access to credit, and the fact that many live in rental properties. Some states have begun to address this issue by providing for shared renewable systems, with some portion reserved for low-income households.

One approach for these, in which customers subscribe to a share of a common system, is to reserve a portion of each system for access by low-income households. If the shared renewables provide power at lower cost than system power, low-income customers can participate by subscription, and save money. Shared renewables can also be priced like green power programs, in fixed-price blocks for a certain number of kWh. This kind of pricing can help low-income customers by reducing rate volatility typically associated with fuel surcharges. Another approach has been for low-income assistance agencies or nonprofit organizations to invest in renewable energy projects and dedicate the resource or the proceeds or profits to assistance for low-income consumers. Because these agencies and organizations can sometimes obtain grant funding, it may be possible to generate a long-term income source for low-income energy assistance by building renewable energy facilities.¹⁹

While the focus thus far has been on national programs, we can also find such programs closer to home. Xcel Energy in Minnesota has filed a “concept proposal” with its utility commission to develop a community solar garden project to serve low-income customers. The utility submitted a number of ideas to its Commission and not a detailed pilot.²⁰ The Xcel program is not unique in that state, since the Leech Lake Band on the Ojibwe Reservation in northern Minnesota is working with the Rural Renewable Energy Alliance (RREAL) to install a 200 kW community solar garden at a local community center. “The local [Low-Income Home Energy Assistance (LIHEAP)] provider, Leech Lake Energy Assistance Program, will identify 100 low-income households per year to receive the electricity from the community solar garden. As a result, participating customers will see a reduction in their utility bills, which will decrease their need for energy assistance support.” ²¹

Even closer to home, the city of Bloomfield, Iowa is proceeding on a low-income solar project with a small grant from the US Department of Energy.²² The grant requires the City of Bloomfield and the local Community Action (Sieda) to create a project that will increase the participation of low and moderate households by requiring that at least 20% of energy produced from a community solar array be from such households. The two local organizations are planning a 28 kW system all dedicated to lower income households. Since Sieda Community Action already qualifies households for the LIHEAP program, they will chose 25 households within the service area of the City of Bloomfield Municipal Utility. The estimated saving for each family will be just over $211 per year.

There are many reasons for a successor consumer-owned utility company in Decorah and one of these is to provide benefits to LMI customers who may not own their home and/or have financial difficulty participating in a program that installs solar panels on rooftops. The new Decorah utility should consider working with the local Community Action Agency to make weatherization include solar panels and to include community solar in what they offer to their LMI customers.

²² Sieda Community Action Agency. DOE SunShot Solar in your Community Challenge. Undated
CHAPTER 6
MICROGRIDS, ENERGY STORAGE, & CYBERSECURITY

By Matthew Backes

This chapter provides a discussion on emerging topics of interest for next generation electric power systems. The topics to be covered include microgrids, cybersecurity, and energy storage. A brief description of each technology is given, followed by an abridged discussion of opportunities these technologies present to a new municipal electric utility.

MICROGRIDS

Microgrids can be defined in many ways. Here, microgrids will be defined as a group of interconnected electric loads and distributed energy resources (DERs) that can act as a single controllable entity with respect to the grid, and can connect and disconnect from the grid to enable it to operate in grid-connected or islanded mode. The DERs can be any type of generation source, such as diesel gensets, natural gas gensets, combined heat and power (CHP) plants, solar PV, wind, and energy storage. Historically these have been predominantly diesel gensets, but nowadays there is a clear trend toward integrating renewables and energy storage into microgrids.

Microgrids can be deployed in a variety of settings. These can range from forward deployed military installations, to universities and communities. The size of microgrids can range from tens of kilowatts to tens of megawatts. Typical design choices to consider when building a microgrid include: reliability requirements, critical load designation, islanding duration, and seamless transition. Another important consideration is what types of markets exist with the regional energy market that the microgrid can take advantage of, such as demand response, frequency regulation, and real-time energy market.

Microgrid deployments are increasing to-date, and there are numerous successful pilot projects that point to the efficacy of microgrids. Here we will focus on community microgrid pilot projects. Ameren Illinois, an investor-owned utility (IOU) installed a community microgrid in Champaign, IL, in December 2016.

Microgrids can provide many benefits to a community. The most apparent benefit is that microgrids can provide constant power service to critical public services, such as hospitals, police stations, and fire stations. In addition, other services such as ATMs, grocery stores, and gas stations rely on power, and in extended duration bulk grid outages, these services need to be provided to communities. There is a good case study from Hurricane Harvey showing how microgrids can support grocery chains.¹


AMEREN ILLINOIS MICROGRID

The Ameren microgrid can produce up to 1,475 kW, enough to power 190 homes. It is capable of seamlessly transitioning the power source for an entire distribution circuit from DERs to the traditional grid. The generation assets includes:

- 100 kW wind turbine
- 125 kW solar PV
- 2-500 kW natural gas gensets
- 250 kW battery storage (500 kWh)
In addition to critical power services, microgrids can serve as a catalyst for economic development. Microgrids increase local investment through community on-bill financing of energy efficiency, local spending on grid improvements, and integration of distributed energy and other smart technologies.

Microgrids can lower energy costs through CHP, renewables, and energy management software. Microgrids can reduce costs to upgrade the distribution system infrastructure. Doing so allows microgrids to provide better reliability and resiliency to its customers.

Microgrids can generate revenue for both consumers and operators of the microgrid. Consumers and businesses can supply valuable services to the grid in return for payments from the serving utility or independent system operator (ISO). This includes demand response, real-time price response, day-ahead price response, voltage support, capacity support, and spinning reserve to name a few. These smart microgrids also set the stage for additional consumer revenues from distributed power generation, plug-in electric vehicles and carbon credits. The figure below shows the key indicators to measure and consider when evaluating the efficacy of a microgrid.

![Figure 6.1. Microgrid metrics.](image)

**ENERGY STORAGE**

Energy storage is the capture of energy produced at one time for use at a later time. Energy storage can refer to any type of energy, such as chemical, electrical, and kinetic, among others. Here the discussion is limited to those types of energy storage that are relevant to electricity storage, which includes chemical energy storage (batteries), kinetic energy storage (flywheels), and gravitational energy (pumped hydro).

Battery energy storage may be the most applicable type of storage for microgrids. Typically pumped hydro storage occurs at the multi-megawatt level, and suitable physical conditions must exist. Flywheels provide incredibly fast response and are a source of inertia to help stabilize the grid, but the technology is emergent, and cost-parity is a long way off. Batteries are increasingly used for electric vehicles, and the production economies of scale are significantly lowering the price of batteries, making them cost-effective in certain situations. There are many battery chemistries, but it seems that lithium-ion (is and) will be the preferred chemistry due to efficiency and cost reductions.

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An illustrative example of the usefulness of battery storage is again the Ameren microgrid. In this project, the battery storage has successfully islanded a substation and powered it for 24 hours using only solar, wind, and battery storage.³ This could have continued almost indefinitely since the state of charge of the battery was the same at the end of the day as it was at the beginning. This use case shows that batteries can be used to provide power during critical outages, and can do so for a long time when paired with renewable energy sources.

Energy storage provides a variety of benefits. These benefits include helping to integrate intermittent renewable energy sources, shaving expensive peak energy demand, delaying investment into distribution system upgrades, and improved asset utilization. Energy storage also enables its owners to be remunerated from a variety of revenue sources. The figure below provides a listing of the revenue sources available to energy storage depending upon the use case. As can be seen, microgrids typically enable the greatest benefit realization of energy storage.


As power systems become increasingly controlled and monitored via digitally connected devices, cybersecurity considerations need to be taken into account. Cyber incidents in industrial control systems (of which power is a subset) have increased dramatically over the past few years. A variety of actors, from corporate espionage to nation-state adversaries to hacktivists, have contributed to this increasing frequency. Devices used within power systems are typically not made with cybersecurity as a primary concern, and this has led to a state of insecurity where the power system is rife with vulnerabilities.

However, power system operators derive significant benefits from the increasing monitoring and control capabilities, so one cannot simply ignore these modern features in the name of security. Operators must make informed decisions that consider cybersecurity ramifications. This is applicable to things such as advanced metering infrastructure (AMI) rollout, electric vehicle charging, centralized energy management systems, and remote-enabled protection devices. The figure on the next page shows an example of the interconnectedness of a modern-day power system.

Traditionally, cybersecurity has focused on the CIA triad composed of Confidentiality, Integrity, and Availability. Confidentiality helps to ensure that sensitive information isn’t accessible to unauthorized people. Integrity ensures that the information you are seeing is indeed correct and has not been tampered with. Availability of your services and data ensures against temporary or permanent losses. Applying these cybersecurity principles to power systems helps to bring some confidence in the security posture of this critical infrastructure.

In addition to the typical cybersecurity protections, there needs to be a focus on response and recovery. It is here that municipal electric utilities (MEUs) will have the greatest influence over how they implement cybersecurity procedures. When a cyber incident does occur, the first step is to detect it. Having a smaller footprint, both physically and digitally, allows an MEU to be able to scan a smaller number of devices to, hopefully, be able to detect a cyber incident.
If a cyber incident happens on the larger bulk power system, this can certainly cascade across the entire grid. By having the appropriate generation resources and digital perimeter defined, an MEU would be able to isolate itself physically and to reduce its network exposure significantly. One can never eliminate the cyber threat, but careful management of digital interconnections can strengthen the security posture greatly. The response to a cyber incident involves not only an MEU, but many community stakeholders. Since an MEU is closely tied to the community, prioritized recovery procedures can be determined beforehand. This symbiotic relationship with the community and local control of both digital and physical assets allows for a community to take charge of its security posture in ways that typically aren’t available when directly tied to a large IOU.

There can be a number of examples to showcase with regards to cybersecurity of power systems. However, many of these are related to technologies, and they are only one aspect of the solution. More germane to MEUs and communities are resources that detail what people, policies, and procedures can do to inform the security posture.

The city of Houston has published an informative piece called “Cybersecurity and Business Vitality.” This sort of publication helps to educate the community on the threat to cybersecurity and how it can affect businesses and critical services that communities need to thrive. An MEU can help to start this discussion in its own community, and highlight the critical infrastructure that serves the community so that democratic decisions can be made about how best to make the community resilient. This puts the MEU in a core position to help create sustainability within the community.

Iowa Code 476.23 gives communities the right to create a municipal electric utility (MEU) through public vote, as Decorah recently has done with creation of the Telecommunications Utility Board. Telecommunications, however, is a largely deregulated industry in Iowa, and so when a community creates a municipal utility they are deciding to enter a potentially competitive marketplace.

Electricity, however, remains a regulated industry in Iowa, with exclusive service territories assigned to electric utilities by the IUB. This adds another step to the process, because if and after a community votes to create the municipal electric utility, the community (city government) then must apply to the IUB for authority to take over the service territory of the utility currently serving the community and to pay the incumbent utility a fair price to be determined by the IUB for the utility’s assets. The path forward for Decorah, then, includes the following steps:

1. With the results of the feasibility study and learning series in hand, the issue can be put before the voters. Pursuant to Iowa Code Chapter 388, there are two ways to bring the question to the voters:
   a. A petition can be brought by citizens, signed by a number of eligible electors equal to at least 10% of the persons who voted in the last preceding regular city election, or
   b. By resolution of a majority vote, the issue can be placed before the voters by direct council action, at a special election, next city election, or general election.

2. If the result of the election is affirmative, the council creates a municipal electric board of trustees (3 or 5 members), and submits a petition to the IUB for the Acquisition of the utility.

3. Whichever way the IUB rules, the losing party may appeal to the Iowa courts.

4. If the city’s IUB petition is successful, the costs would be wrapped into initial bond funding upon legal establishment of the utility, and repaid to the city. The city utility could decide to build full capabilities to take over the system from “day 1,” although a more likely scenario would involve a multi-year contract for infrastructure management (and possibly energy market management, and/or customer management) with an existing entity with demonstrated capacity. The city utility would then decide when to take over each aspect.
It is worth noting that there has only been one such case brought to the IUB in recent years, and that was in 2008.³ It was a combination of five small communities (Everly, Kalona, Rolfe, Terril, and Wellman) that collaborated on a feasibility study and applied simultaneously. The IUB ruled against the five communities, but in doing so clarified aspects such as infrastructure valuation methodology, emphasized the importance of clean energy and other community motivations, and in general provided a roadmap for communities to be better prepared for such applications in the future. The NewGen team has studied this ruling and has followed the IUB guidelines as closely as possible in conducting the feasibility study and economic analysis. Specifically, in 2008 the IUB followed these steps:

5. After the analyses in steps 2, 3, and 4 are completed, the total customer costs for each city of municipalization and the total customer costs for each city remaining with IPL are then used to make a determination of net present value (NPV) of the costs of municipalization for each city.

6. Make public interest determinations, factoring in not only the Net Present Value (NPV) but also such things as impact on coordinated electric service at retail and promotion of efficient and adequate service.

It is also worth noting that the expiration of the franchise agreement between the City of Decorah and Alliant Energy at the end of May, 2018 is not a critical deadline. Franchise agreements in Iowa do not determine provision of electric service – Alliant may not stop providing service to Decorah if the franchise expires, and the company has confirmed this directly in response to questions at previous city meetings. Many cities in Iowa go for years without franchise agreements with investor-owned utilities, and there are few franchise agreements between communities and rural electric cooperatives, or between counties and electric utilities. An active franchise agreement would, however, preclude a newly-created municipal electric utility from taking over the power system from an unwilling incumbent, and so the better part of wisdom in the current situation is to simply let the franchise agreement expire until the municipal electric utility option is decided one way or another.

LET’S MOVE FORWARD

Small communities across Iowa and the Midwest are struggling, as socioeconomic trends draw wealth and young people elsewhere. To survive and to thrive, communities and their leaders must be creative, innovative, and bold in their willingness to pursue the path less traveled. Risk must be carefully considered along with potential returns to the health, wealth, vitality, and security of the community over time.

Decorah Power believes that while not without risks, the opportunities facing Decorah through creation of a twenty-first century municipal electric utility will pay community dividends for generations, and simultaneously promote a healthier world for those future generations. We have done our best to do our homework, and hope the NewGen feasibility study and this companion report provide sound footing for the community and city council to proceed.
A VISION SHARED:
Owning the future through a Decorah Municipal Electric Utility