12/27/2017

CITY OF EAU CLAIRE

TOWARDS A RENEWABLE CITY

Executive Summary Report | Sustainability Advisory Committee

Council Directive

On June 27, 2017, the Eau Claire City Council passed Resolution No. 2017-311 (Appendix A) directing the City's Sustainability Advisory Committee (SAC) and staff to produce this Executive Summary Report. The Council asked for

1) **Recommendations related to supporting the Paris Agreement, Article 2**
2) **For objectives not addressed, provide a list of suggestions for Council to consider**

Paris Agreement

The Paris Agreement[1] is a global response in the context of promoting sustainable and equitable development against the risks and impacts of climate change. Years in the making, the United Nations treaty was struck in 2015 with 195 nations committing to significantly reduce their nation's greenhouse gas (GHG) emissions. The U.S. was an important signatory; but withdrew in summer of 2017. Since the agreement is based on national decreases of GHGs, it is difficult for cities to be compared exactly against it. However, cities play a large role in contributions to GHG emissions, so many have taken up pledges and actions to assist in meeting the Agreement's intent.

Recommendations

The Paris Agreement's main objectives, as found in its Article 2, are three related strategies. Each one is listed in headings with information on how the City and community are comparing. Arrows note recommendations with the rationale following. Deeper analysis is provided in appendices and sources.

PARIS OBJECTIVE 1: Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels

The City and community have no formal greenhouse (GHG) drawdown policy to assist in limiting century-end temperature increase to well below 2 °C (3.6 °F) or pursuing 1.5 °C (2.7 °F). Climate scientists have calculated this upper limit to be the best case scenario in managing climate change impacts. While the municipality has begun to bi-annually record GHG emissions (2011, 2013, 2015), there are not enough data points to reliably determine if the City is on track. Further, there are less yearly data points currently for the community at-large, although a 2015 baseline is fairly complete.

⇨ **The first recommendation is use a 2015 baseline and commit to annual data tracking in order to know how the municipality and community are performing.**

Rationale

Without accurate measurement, progress cannot be ascertained. Though the City has begun to track its own municipal operations, the community at-large (within city limits and a much larger source and more

complete picture of the city's emissions) was not investigated until recently obtaining 2015 data. Therefore, a baseline of 2015 is the best place to begin in measuring reductions.

The second recommendation is to be carbon neutral by 2050 at both the municipal and community levels.

Rationale

Carbon neutral means the amount of carbon dioxide (and its GHG equivalences) are net-zero, or in other words, the amount emitted equals or is less than the amount captured. In Eau Claire's case, decreases would be measured from a 2015 ceiling. Ideally by 2050, the amount of GHG emissions would be zero or, if there were some, they would be captured in the community's carbon sinks such as trees.

The Intergovernmental Panel on Climate Change (IPCC) determined to stabilize the climate and limit warming to less than 2 °C, an 80% to 95% reduction by 2050 from 1990 levels is needed.[2] Since it is quite reasonable to assume 2015 levels are higher than 1990 levels in Eau Claire, the goal of carbon neutrality compensates for starting later. Cities that have been measuring and reducing their emissions since 1990 or 2005 may have lower goals than Eau Claire since they are starting with fewer emissions. The year 2050 is important because GHG emissions can remain in the atmosphere for a decade or for thousands of years[3] and will continue to warm the planet past 2100. There also is lag time in oceans taking longer to heat up and cool down.

The carbon neutral goal further counterbalances GHG emissions not accounted for in the consumption category (purchased/used goods and services) of the City and community. Often times, these are difficult to track but can mean a doubling or more of a community's baseline. This reinforces the fact that, by only focusing on reducing the municipality's own emissions, little is accomplished for a city. Local officials must lead by example, but goals should be mutual to make a real difference. Carbon neutrality by 2050 is also shared by UW-Eau Claire and so joint leadership will help others in the community. If a national cap and trade market system for emissions occurs, individual businesses in the community will be better positioned pursuing net-zero.

The third recommendation is to obtain 100% renewable energy by 2050 for both the municipality and community.

Rationale

This is the most significant means to achieve the GHG target while continuing to grow. Homes, businesses and vehicles running on renewables and carbon-free energy will greatly reduce emissions. The City's 2010 25 x 25 Plan for Energy Independence[4] found if all recommended energy efficiency measures were installed by 2025, 45% of the municipality's energy use could be offset by the plan's proposed renewables. Further, by 2030, Xcel Energy expects 35% renewable energy/60% carbon-free energy. Their additions would put the municipality at a conceivable 57% renewable energy mix by 2030.

Pursuing local renewable energy generation will also create more construction and servicing jobs and possibly more manufacturing and clean technology companies.

The recommendations under this first Paris objective are summarized in the table. The strategy is broken down by practical annual goals and incremental phases that accelerate action over the long term. This phased approach is similar to what the U.S. pledged for its national determined contributions (NDCs) to meet the Paris Agreement. The first five year phase allows for transition and is similar to the agreement where nations must peak emissions by 2020 and begin a reverse course. The whole timeframe and process needs to be seen as a journey where continuous improvement will occur. Not all solutions are known today but getting started is what is important. Technological advancements and price declines are assumed to come as the market has seen with solar photovoltaics. The community survey (Appendix C) that was undertaken to help inform this report demonstrated there is local citizen support for aggressive goals.

City & Community 100% Carbon Neutral Goal by 2050	
4% annually over 2041 – 2050 (40% drop)	**100% Renewable Energy Goal by 2050**
3% annually over 2031 – 2040 (30% drop)	
2.5% annually over 2021 – 2030 (25% drop)	
1% annually over 2015 – 2020 (5% drop)	
Community/City Emission Baseline 2015	

PARIS OBJECTIVE 2: Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production.

The City and community have no formal policy on adapting to adverse impacts of climate change and fostering resiliency to buffer such impacts. The City's Natural Hazard's Mitigation Plan mentions the local risks of climate change such as greater rain fall events and heat waves. The plan is being updated and could better address how to adapt to these possible risks. The City and community also do not have formal policy on development that produces low emissions. The City did commit to being an "eco-municipality"/The Natural Step community for sustainable development and could use that framework and the Comprehensive Plan's Sustainability Chapter to advance policies that would produce greater low emission municipal infrastructure and development. The City's compact development strategy, redevelopment districts, urban forestry goals and intergovernmental growth management agreements/subarea plans help to lower emissions while lessening development demand on prime food production areas, but more needs to be done.

The fourth recommendation is to create a climate and energy action plan with stakeholders in 2018 for the municipality and community.

Rationale

This plan would address the recommendations concerning the greenhouse gas and renewable energy goals through the lens of low-emission sustainable development while improving resiliency to climate impacts and local food production concerns. It would use urban planning, capital improvement planning, economic development, health risk, equity, and other strategies to advance these goals.

An action plan would also be consistent with the City's Comprehensive Plan Sustainability and Health Chapters. It could update the City's out-of-date 2010 Energy Independence Plan since renewable economics, especially solar, have greatly improved. After the initial plan sets goals, carbon emission drawdowns and renewable energy performance/strategies will need to be monitored annually and revisited during regular (3-5 year) planning updates.

Working with area stakeholders will be important. Power utilities, large businesses, education and medical institutions are some to engage while also working with residents. UW-Eau Claire has the same carbon neutral goal by 2050 and Xcel Energy is targeting over 60% carbon-free by 2030. By working together with these leaders and others in the community, more should be able to be accomplished.

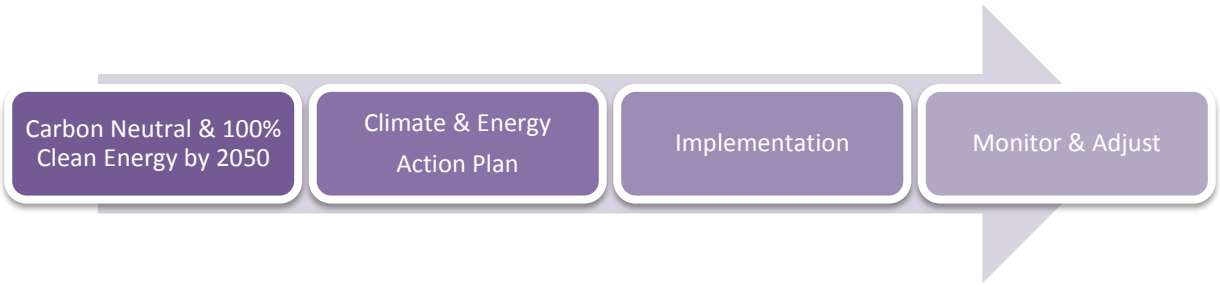
PARIS OBJECTIVE 3: Making finance flows consistent with a path-way towards low greenhouse gas emissions and climate-resilient development.

The City and community have not directly provided funding to assist developing nations to reduce their own greenhouse gases. This last objective accounts for historic emissions and has always been a major point of contention in international negotiations that led up to the Paris Agreement. Since the U.S. and other developed countries have been emitting more GHGs in the past century, and have caused greater global temperature rise and associated impacts, their "Green Fund" contributions would assist developing nations take responsibility/adapt in the short term. An example would be an island nation, at greater risk for sea level rise, building sea walls. The U.S. has already provided one round of financing via taxpayer dollars, but this was halted with the current Administration.

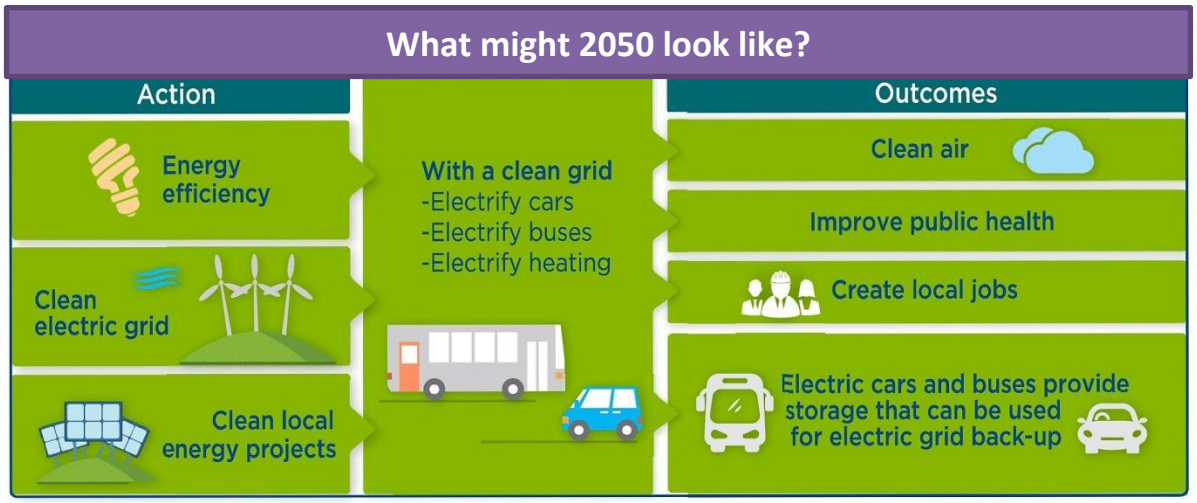
This last objective is not recommended to be addressed since it deals with outflows of federal dollars to developing nations.

Next Steps

Next steps can be seen as adopting by a subsequent resolution the following goals and process. Appendices included in this summary further detail steps to take and will serve as guidance.



What will this achieve for Eau Claire? A path of new economic growth and opportunity that is in alignment with the Paris Agreement's goals and commitment to work together to lessen the negative impacts of climate change. The overall strategy will produce sustainable low-emission development and infrastructure, new jobs and improved resiliency from stressors to the community's social, economic, and environmental assets. It is sensitive to current practices but seeks transformation. **It places ENERGY at center stage; with greater local renewable generation, energy efficiency, and low-emitting transportation being adopted.** The picture below represents only one scenario towards the vision of a renewable carbon-neutral city.[5]



APPENDIX A – RESOLUTION

No. 2017 - 311

RESOLUTION

RESOLUTION DECLARING EAU CLAIRE'S COMMITMENT TO PARTICIPATE IN MUNICIPAL ACTIONS THAT STRENGTHEN THE GLOBAL RESPONSE TO THE THREAT OF CLIMATE CHANGE, RECOGNIZE THE IMPORTANCE OF ENGAGEMENT AT ALL LEVELS OF GOVERNMENT IN THIS ENDEAVOR AND SUPPORT THE OBJECTIVES OF THE PARIS CLIMATE AGREEMENT 2015 [ARTICLE 2].

WHEREAS, in November 2008 the City Council of City of Eau Claire adopted a resolution declaring the City, an Energy Independent Community and pledging to support the State of Wisconsin's vision for energy independence by generating 25 percent of electricity and 25 percent of transportation fuels from renewable resources by 2025, capturing 10 percent of the emerging national bio-industry and renewable energy market by 2030, and leading the nation in making clean energy more affordable; and

WHEREAS, in April 2009 the City Council adopted an amendment to the Eau Claire Comprehensive Plan to incorporate a Sustainability Chapter focused on advancing sustainability policies for the community and providing effective and collaborative leadership within the greater Eau Claire metropolitan region regarding sustainability; and

WHEREAS, in May 2009 the City Council voted to make Eau Claire an eco-municipality - generally defined as a municipality that recognizes that sustainability is key to many decisions made by government and that aspires to develop an ecologically, economically, and socially healthy community for the long term through a democratic and participative community process based on the following key principles:

- Reduce dependence upon extracted fossil fuel deposits, metals, and minerals,
- Reduce dependence on harmful chemicals and manufactured toxic substances,
- Reduce encroachment upon nature and decrease those activities which harm life-sustaining ecosystems,
- Meet the justice, safety, health, and social capital needs of the community; and

WHEREAS, the City of Eau Claire is a member of the Green Tier Charter for Legacy Communities and is committed to reducing the City's carbon emission footprint in accordance with the Sustainability and Health chapters of the Comprehensive Plan; and

WHEREAS, the City of Eau Claire's commitment to reducing greenhouse gas emissions is a community wide effort, many years in the making, requiring many years to attain, involving utilities, businesses, nonprofits and dedicated citizens, and is in keeping with nationwide and worldwide efforts to address the harmful impacts of climate change; and

WHEREAS, the Paris Agreement, ratified by 148 countries to date, resulted in a commitment to take action and enact programs to hold the global average temperature increase to less than 2 degrees Celsius above pre-industrial levels, with an expectation that this goal would be reduced to 1.5 degrees in the future; and

WHEREAS, our Nation's withdrawal from the Paris Climate Agreement is antithetical to sustainability and environmental initiatives the Eau Claire City Council already ratified by legislative action; and

WHEREAS, over 274 US cities and 12 US states, to date, representing 32% of the U.S. population, have joined 194 countries in the Paris Climate Agreement, to ensure that despite our country's absence, critical progress can be made at the local level to reduce greenhouse gas emissions and slow climate change.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Eau Claire supports re-evaluating and strengthening our city government's goals to reduce greenhouse gas emissions through planning, policy making, and municipal practices; and

BE IT FURTHER RESOLVED, that the City Council of the City of Eau Claire is committed to investing in clean and carbon reducing infrastructure when feasible; and

BE IT FURTHER RESOLVED, that the City Council of the City of Eau Claire, affirms our commitment to collaborate in a public-private partnership with Eau Claire's leaders in business, government and nonprofit sectors, to strengthen efforts to implement the policies put forward in the Sustainability Chapter of the Comprehensive Plan 2005-2025, specifically Objective 4 – Atmosphere, to address and reduce greenhouse gas emissions in the city at-large. The City Council requests the help of the Sustainability Advisory Committee in this effort.

BE IT FURTHER RESOLVED that the City Council refers review of the objectives of the Paris Climate Agreement to the Sustainability Advisory Committee and asks that the Committee return to the City Council with an executive summary report regarding how the City is currently addressing Agreement objectives, and for any objectives not being addressed, a list of suggestions the City may consider for action, and amends the committee's work plan to reflect such referral.

Adopted,
June 27, 2017

(SEAL) Kerry J S Kincaid
President Kerry J. S. Kincaid

(SEAL) Dale Peters
City Manager Dale Peters

(ATTESTED) Donna A Austad
City Clerk Donna A. Austad

APPENDIX B – ANALYSIS

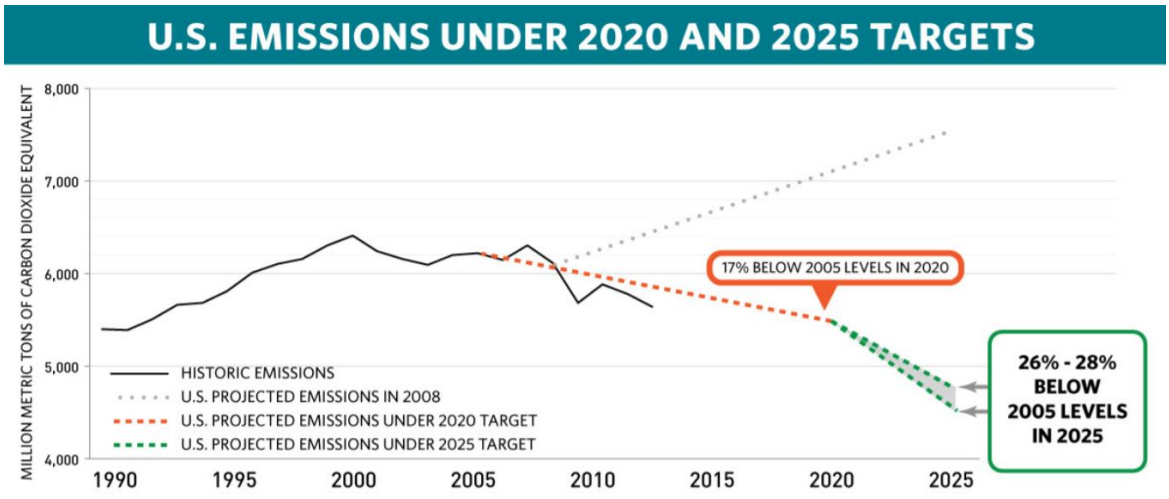
ALIGNMENT

National Determined Contribution

Under the Paris Agreement, each country determined how they would reduce their emissions, depending on their circumstances. These are called National Determined Contributions (NDC). NDCs would then be resubmitted every five years with greater ambition until the global temperature goal is met. Analysts have agreed that the current NDCs will not limit rising temperatures below 2 degrees Celsius by 2100, in fact, it could mean a 3.1 -3.7 degrees Celsius warming.[6]

The U.S.'s initial NDC[7] is to reduce greenhouse gas (GHGs) 26-28% below its 2005 level by 2025 and to make best efforts to reach 28%. This was to be accomplished largely by Federal Climate Action Plan mandates like the EPA's Clean Power Plan for utilities and national standards in agriculture, building codes, transportation fuel economy, appliance efficiency, and refrigerant/landfill emission reductions.

After the U.S. government withdrew, rollbacks have occurred and the fate of many standards remains in jeopardy. Thus, it is unclear if the nation will meet the target by voluntary efforts. It is important to note that under the Agreement, the earliest effective date of withdrawal for the U.S. would be November 2020. This is also the year countries would plan to peak their annual emissions and nations would resubmit more aggressive NDCs. Hence, cities will need to look beyond the 2025 NDC. **For Eau Claire, the recommended carbon neutral goal by 2050 will suffice.**



Comparing Cities

Again, the Paris Agreement does not obligate cities though many are taking the initiative to carry on in the absence of Federal leadership. Cities represent about 70% of global emissions and are home to over

half the world's population, so what cities do matters. The national energy efficiency standards mentioned would have made it simpler for reductions but cities must now create their own paths. However, networks like the Global Covenant of Mayors for Climate and Energy, representing around 7,500 cities to date, seek to create a common vision and framework to equip cities to meet the Paris Agreement. A recent analysis[8] of 22 states, 54 cities and 250 businesses found if their climate commitments are implemented, half of the U.S. NDC can already be met.

Setting Targets

To benchmark the City and city at-large against the U.S. NDC baseline, 2005 emission sources should ideally be compared. There is a problem, however, because the NDC covers GHGs from outside cities (see EPA chart below). It includes agriculture, highways, large power plants, and landfills. Instead, a local government or community may compensate by pursuing more aggressive targets and all feasible sources. This strategy is recommended for Eau Claire.

An analysis[9] by ICLEI on city climate action in 2015 showed that of the 132 cities that reported their commitments to public platforms, 62 had drawdown targets equal to or more ambitious than the national government's NDC. The table represents Midwest cities. Note that the long-term targets of 80% are in line with global commitments to limit warming to less than 2 degrees Celsius.

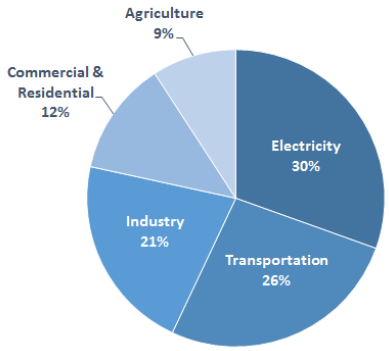
In 2008, a Wisconsin Task Force on Global Warming recommended a return to 2005 levels no later than 2014, a decrease of 22% below 2005 GHG levels by 2022, and a drop of 75% from 2005 levels by 2050. Since the best available baseline year currently for both the municipality and community is 2015, not 1990 or 2005, the recommended goal is carbon neutral by 2050. This goal compensates for the gap.

Reduction Targets of Midwestern Cities (adapted from ICLEI)

Community	Base	Short Term	Medium	Long Term
Ann Arbor, MI	2000	25% by 2025		90% by 2050
Chicago, IL +	1990	25% by 2020		80% by 2050
Cincinnati, OH +	2006	40% by 2028		84% by 2050
Cleveland, OH +	2010	16% by 2020	40% by 2030	80% by 2050
Des Moines, IA	2008	15% by 2015		
*Dubuque, IA +			50% by 2030	
Edina, MN	NA			80% by 2050
Evanston, IL +	2005	13% by 2012	20% by 2016	
Fitchburg, WI	1998	7% by 2012	11% by 2020	
Grand Rapids, MI	1990	1% Annual		
Janesville, WI	2005			75% by 2050
Kansas City, MO	2005	4% by 2010	15% by 2015	30% by 2020
Lawrence, KS	2002	30% by 2020	50% by 2030	80% by 2050
Madison, WI +	1990	20% by 2010	30% by 2020	
Minneapolis, MN +	2006	15% by 2015	30% by 2025	80% by 2050
Mission, KS	2005		20% by 2020	
Northfield, MN +	2005	15% by 2013	50% by 2028	100% by 2033
Oak Park, IL +	2007	30% by 2020		
*Oshkosh, WI	2007	25% by 2025	40% by 2030	80% by 2050
*St. Paul, MN			Carbon neutral by 2050	
St. Louis, MO	1990	7% by 2012		
Urbana, IL +	2007	25% by 2020		80% by 2050

+ Greater than the U.S. target of 26% to 28% below 2005 levels by 2025. *Added cities.

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2014



U.S. Environmental Protection Agency (2014). *U.S. Greenhouse Gas Inventory Report: 1990-2014.*

Economic Development

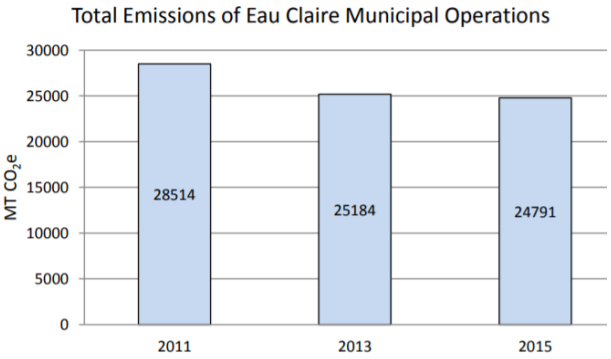
In being mindful about carbon emissions, cities fueled by clean power and energy efficiency open up new economic possibilities. The City Council's current City of Eau Claire Strategic Plan main goal is increased economic development. The City's current 25% by 2025 renewable energy pledge also contained a provision to capture 10% of the clean energy market and bio-industry in the State.

More local renewable projects and energy efficiency technologies mean local job growth, cleaner air and improved quality of life. While 2015-2016 state clean energy employment growth was strong at 6.8% (26,382 jobs), Wisconsin lags all other Midwestern states as percent share of state workforce.[10] There is an estimated 600 clean energy jobs in Eau Claire County. Local renewable generation will also reduce dollars exported to fossil fuel states, recycling the saved money back into the area economy.

INVENTORIES

Baseline

In preparation of this report, 2005 baseline data for the city and community inventories were sought. The municipal operations may become completed, but the best baseline for the community is 2015. Thus, using 2015 is the most appropriate to use at this time. If past data is obtained, at either scale, better comparisons can be made and goals perhaps adjusted. **City Council support will be needed to obtain past and ongoing needed data.**

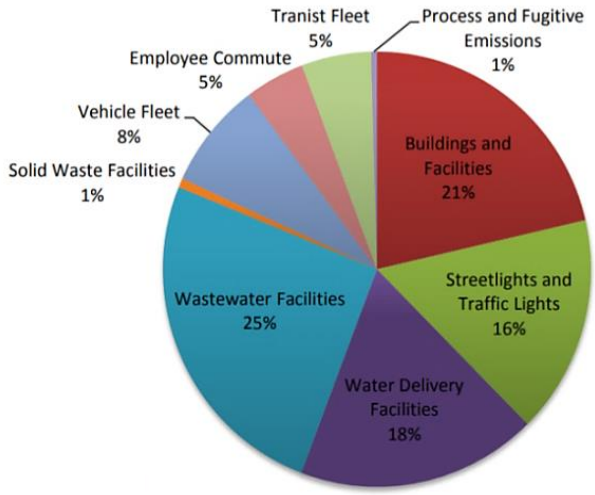


Municipal Scale

For the municipality, greenhouse gas emission years 2011, 2013, and 2015[11] are known. They have been measured in part to track the City's 25% by 2025 renewable energy goal. A reduction of 13% or 3,723 metric tons of carbon dioxide equivalents (CO_2e) has occurred.

It is important to note that interceding year values are not known and could change results. Annual values can be influenced by variables such as weather, prices of fuel, growth and service response. The municipality has been

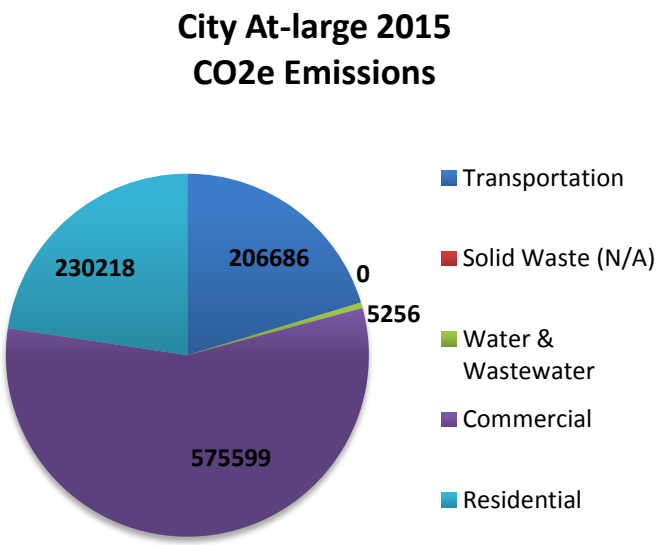
2015 Municipal GHG Emission Sectors



making strides in energy efficiency and renewables (bio-gas and solar) but will need to ramp up actions to meet the suggested target.

Community Scale

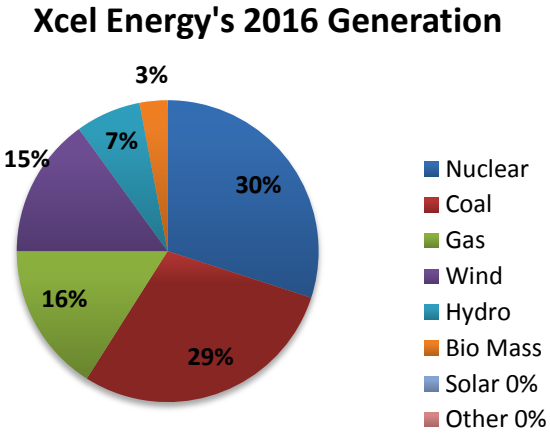
As for the community's (within city limits) GHG inventory, compiling a complete 2005 baseline was not successful. Utility requests were unable to retrieve data this far back. A partial 2015 community wide inventory (>80% complete) was completed to get a sense of total emissions but again a full comparison with the NDC cannot be made. It is also not recommended to add consumption of purchased goods and services (Scope 3 emissions) since it is difficult to accurately account for presently. Some larger cities have begun realizing that it may represent a doubling or more of their baseline.



PARTNERSHIPS

Power Players

The City's main provider of electricity and natural gas, Xcel Energy, is already a leader in transitioning to renewables. Under their strategy "steel for fuel", they are bullish on wind and have been the #1 U.S. wind provider for more than a decade. They are adding over 1,900 Megawatts (MW) of solar by 2021, such as the Sky Park Landfill community solar garden. They have several voluntary customer renewable programs and are looking to add more. In 2016 they provided 25% renewables and by 2030 expect 35%. Also in 2016, Xcel reduced carbon dioxide by 30%, which already meets the Clean Power Plan, and have a target to reduce carbon emissions 60% by 2030.[12]



Although supplying much less of the city's electricity, Eau Claire Energy Cooperative is also investing in natural gas and renewables through parent company Dairyland Power. They are taking coal plants offline and were the first to provide community solar in the Chippewa Valley. They anticipate 21% renewables by 2027. **It will be very important to partner with our local utilities to reach goals.** Their interests in generating more electricity sales will go hand-in-hand with the suggested new economic growth model.

Community Stakeholders

If a GHG target is set for the community, it will be important to work with others. Leading corporations such as Huebsch Laundry, Cascades Tissues, Wells Fargo, are already drawing down GHG emissions and installing/purchasing renewable energy. The University of WI-Eau Claire was the first to set the bar with a pledge to carbon neutrality and is currently finalizing its 2050 climate action plan. Engaging hospitals, the school district, businesses, residents and others will be crucial to achieve goals.

In summary, the City is not obligated to meet the Paris Agreement, but has the discretion to decide how to go about decreasing GHGs and meet its other objectives such as mitigation, adaptation, resiliency, low-emission development, equity and monetary flows. To date, the City has no performance metrics to track these, so the next section in this analysis only generally notes our progress along with detailing recommended actions.

ACTIONS

Commitment

Commitment is vital to see any vision through. The Sustainability Advisory Committee applauds the City Council for its initial resolution to support drawing down GHG emissions. It will open up new pathways for sustainable growth and quality of life. Ultimately, the City Council and City leaders will need to decide what course to chart next. As found in Appendix C, community surveys found there is public support for strong goals and related actions.

According to the International Council for Local Environmental Initiatives (ICLEI), cities might be motivated to take up low-carbon commitments and increase renewable energy goals because they:

- Reduce greenhouse emissions that harm the climate
- Reduce pollution associated with burning of fossil fuels
- Create job opportunities and support local businesses
- Stimulate opportunities for technological and social development
- Keep capital in the region by reducing energy dollars to fossil fuel states
- Generate revenue from the sales of local renewable energy
- Increase resilience of energy supply and urban infrastructure[13]

Global Network

It is also recommended to consider joining the Global Covenant of Mayors for Climate and Energy[14] to follow a resource network of cities committed to change. To participate, within 3 years, the City should make a formal commitment, inventory emissions, set a community-wide target, complete an action plan and begin implementation.

Bipartisan mayors have been stepping up for good reason. Jim Brainard, a republican Mayor of Carmel, an Indianapolis suburb of 91,000 people (and ranked Best Place to Live in the United States in 2012 and 2017) has said, "Eighty percent of Carmel votes Republican, but I have yet to meet a citizen who wants to drink dirty water, breathe dirty air and doesn't want to leave the earth in better condition for their children and grandchildren."[15] This is the essence of a sustainable renewable city.

Planning

The Comprehensive Plan's Sustainability (Objective 4 Atmosphere Policies) and Health Chapters (policy 6.2) propose that a climate action plan be developed. This executive summary report serves only as a guide to help inform what a future plan might contain. **Thus, a major recommendation is to develop this plan in 2018, taking into account both the municipality and city at-large.**

The City has different levers to use at each scale, but to make a real difference, greenhouse gases should be tackled mutually. This will also make the transition easier for all in the community. City and community leadership and resources will need to be behind it with a long-term view. The process should be public and transparent, working with important sectors of the community. Emission baselines will need to be completed, targets set and adopted by resolution.

An exact plan could be achieved in various ways from a stand-alone plan to a comprehensive approach. A holistic example could be a "CLEAR" action plan or a Climate, Land, Energy, Adaptation, Resiliency strategy that advances sustainable development. The plan could incorporate "systems thinking" (how things are interconnected), linking development decisions together. For example, how may a proposed building and its uses strive for low-emissions, net energy outcomes, maximize public returns, and mitigate concerns of potential man-made and natural hazards? The Sustainability Chapter of the City's Comprehensive Plan already provides possible steps.

This approach fits with the City Council's 2009 The Natural Step "Eco-municipality" resolution[16] to follow system conditions that yield to a more sustainable community. To date, these principals have not been integrated into the way the City does business. Based on scientific principles, they seek to:

- Reduce dependence upon extracted fossil fuel deposits, metals, and minerals
- Reduce dependence on harmful chemicals and manufactured toxic substances
- Reduce encroachment upon nature and decrease those activities which harm life-sustaining ecosystems
- Meet the justice, safety, health, and social capital needs of the community

Mitigation & Adaptation

Briefly, it is important to understand the difference between mitigation and adaptation concepts in climate change planning. Mitigation deals with actions to lessen overabundance of GHGs, such as using more renewable energy. Many mitigation strategies can be found in the City's Sustainability Chapter (specifically page 15-12 Atmosphere Objective, Policy 2).[17] Adaptation focuses on the present day and future risk from climate change. Raising levees for city protection is one example.

Resources

With the City as the lead, allocation of human, financial, technical, and data resources will be needed to develop an action plan, explore feasibility and implement actions. Staff has some capacity and talent can be leveraged from UWEC, CVTC, or Xcel Energy. The City's Sustainability Advisory Committee and or a community technical committee can assist. Dollars from grants, rebates and partnership donations may help undertake the planning and to hire a consultant in 2018. This was done with the City's Energy Independence Plan in 2010 with a state grant of $50,000 that produced a plan for the City, County and Altoona. It included consultants performing building energy audits and site assessments for renewables.

Implementation

The following tables describe municipal and community actions. Progress is indicated by up arrows (positive), down arrows (negative), and sideways arrows (neutral/unknown). Listed thereafter are non-exhaustive solutions that could help the City and community reduce GHG emissions. These are represented by light bulb icons. **Items in bolded purple text represent focus strategies that will accelerate drawdowns of emissions.** Renewable energy is a major goal because solar and wind prices are dropping globally and related jobs are growing. The International Energy Agency, in their *World Energy Outlook 2017* report, found solar is poised to become the cheapest leading new source of energy.[18] Specific ideas for meeting GHG reductions and increased renewables should be evaluated during the action planning process. Pathway and cost-benefit scenarios can be explored at that time.

The City's Gold Solsmart award is an example of how community stakeholders increased solar in the city. Photo: Xcel Energy

Energy Supply

Energy is the main source of global greenhouse gas (GHG) emissions and a principal source of air pollution linked to severe human health/environmental impacts. A transition to cleaner renewable energy (RE), especially via electricity, is needed. A major emphasis on developing more local RE generation promotes job creation and resiliency to the electric grid.

Action Ideas	Progress	Comments
Grid mix by Xcel Energy	⇧	Utility is transition from coal to natural gas/renewables.
City 25% electric goal	⇧	Completed mainly thanks to Xcel.
City 25% transportation fuel goal	⇩	Approx. 2% only offset by hybrid electric buses.
Behind meter solar -municipal	⇔	Opportunities exist at large facilities. Feasibility & RFP.
Behind meter solar - community	⇧	Greater installations in the last two years.
Solar-friendly community status	⇧	Gold award to enable marketplace (city is in top 10 in U.S.).
Solar group-buys	⇧	Chippewa Valley Group Buy 85kW. Another recommended.
Community solar	⇧	First 1 MW array built in city.
Xcel's Windsource Program	⇧	Strong participation in city (UWEC, Mayo, etc.)
Property Assessed Clean Energy	⇔	County enacted, but no local uptake on PACE financing yet.
Greater Renewable goal of 100%	💡	**TOP recommendation. More cities are pledging 100%.***
Renewable Energy/Net Zero Plan	💡	Master plan for city facilities.
Advocate for higher State RE policies	💡	Portfolio standard out of date. Increase incentives for RE.
Explore Energy District	💡	UWEC new event center, YMCA, Mayo, City, etc.
Utility scale solar	💡	Dairyland Power project nearby in Lake Hallie.
Xcel's RE Connect Program	💡	Possible future option. Voluntary in MN and CO already.
Community owned renewables	💡	Community owns a solar array and sells power to utility.
Explore Community Choice Aggregation	💡	Not allowed in WI, but Illinois. Cities contract for more RE.
Gov't/business anchor solar gardens	💡	Like MN program. For larger users & economic dev.
Solar powered street lights	💡	Beyond just remote locations. Common in New Jersey .
Micro-grids for resiliency and R&D	💡	Possible Utility/Gov't/business partnerships.
Battery Storage	💡	Possible Utility/Gov't/business partnerships.
Dells Dam community hydro	💡	Could local hydro plant be earmarked for EC customers?

*Among other solutions, geothermal, biomass, biogas, and wind are worthy options to consider.

Energy Demand

Using less energy and using it less wastefully is fundamental to reducing GHGs. Energy conservation and efficiency (EE) is paramount in neighborhoods, buildings, vehicles, operations and infrastructure.

Action Ideas	Progress	Comments
Energy conservation/EE programs	⇔	**Need more participation (tap FocusOnEnergy rebates)**
Energy audits	⇔	More progress can be made. Focus has a program.
Rebates on smart meters & thermostats	⇧	FocusOnEnergy provided rebates on smart thermostats.
Load management response	⇧	Many participate in gov't, business and residential.
Real-time billing software	⇧	City uses and other business to understand usage patterns.
Energy Star Portfolio Manager tracking	⇧	City and County uses EPA energy accounting database.
Energy performance contracts (ESCOs)	⇩	City has not pursued lately. Community unsure.
Energy Star labeled purchases	⇔	Sustainable Procurement Policy would help.
Energy efficiency building codes	⇔	New 2015 Code should be adopted soon.
Weatherization & EE for low-income	⇔	Need is greater than resources.
Rental efficiency requirement	⇩	Required at sale. No enforcement of State Law
LED streetlights	⇧	LED retrofit of Xcel streetlights in 2016. City adding more.

Water efficiency (reduces pumping)	⇧	More low-flow fixtures and residential flat rate adopted.
Water bans during droughts	⇧	When enacted typically saves energy costs.
Municipal Internal Energy Fund	💡	Use project savings to fund further energy projects.
Building Energy Score ordinance	💡	Time of sale energy notice (like a mpg rating for houses)
Better Building Challenge (save energy)	💡	Energy Star contest for commercial, Gov't, other sectors.
HVAC Commissioning	💡	Policy/resources to design buildings with optimal HVAC.
Air-source heat pumps (ASHPs)	💡	Technology is available in cold climates now.
Low Carbon Diet neighborhood teams	💡	Handbook to lower carbon intensity at work and homes.

Land Use & Buildings

Residential, commercial, industrial and public lands are within city boundaries. The way these lands are built on, arranged, scaled and used can reduce energy demands and promote walking and biking.

Action Ideas	Progress	Comments
Infill development	⇧	Downtown/neighborhoods are getting redeveloped.
Mixed use development	⇧	See more downtown and in other higher traffic areas
Transit oriented development (TOD)	⇧	Certain corridors are densifying for more ridership.
Neighborhd. revitalization/preservation	⇔	Lot of focus but more projects needed. Landmarks help.
Compact development	⇔	No metric has been developed to know what this means.
Sprawl in townships	⇩	Large lot homes continue to consume land.
Preserve prime AG lands	⇔	County analysis should be completed to determine areas.
Urban tree canopy reserves	⇔	Net canopy is compromised when development occurs.
Energy efficiency building codes	⇔	Hampered by State to raise the bar.
Net-zero emission/energy buildings	⇩	Not aware of any building.
On-site filtration	⇧	Continue requirements for stormwater capture
Support local foods	⇧	Community gardens, farmers market, food access, etc.
Sustainable Development	💡	**Policy/criteria for Low Emission Development (LEDS).**
Walkable neighborhoods	💡	Plan land uses so residents can walk under 20 mins.
LEED for neighborhoods	💡	Use the checklist to create green neighborhoods.
LEED rating systems for buildings	💡	"Certifiable" or just use standard for City and private sector
Develop Eco-building design guidelines	💡	Similar to Milwaukee's. TIF incentives for LED projects.
Develop a green business park	💡	SkyPark or Gateway could be rebranded with solar.
Require solar ready buildings	💡	Gold award to enable marketplace (in top 10 in U.S.)
Grey water reuse strategies	💡	Promote reusing water for non-potable needs.
Require more carbon sinks/buffers	💡	Save trees in the city by reserve/ordinance/best practices.
Plant more trees & vegetation in parks	💡	Evaluate public land where trees could hold more carbon.
Explore reduced pesticides/fertilizers	💡	Parks Div. has a policy but city wide action is unclear.

Transportation

Improving fuel economy and reducing tailpipe emissions are critical. In 2016, the transportation sector surpassed the electric utility sector in GHGs. Shifting to low/no emission electric vehicles is key.

Action Ideas	Progress	Comments
Fed/State CAFE standards-fuel economy	⇔	Slow improvements over time, but progress looks dim.
Anti-idling policies	⇔	Enforcement key. Not at community level.
Transit Demand Mgmt. strategies	⇔	Traffic signal synchronization, ride share, etc.
Transit Service	⇩	Ridership has been dropping.

New Transit Center/Transit Shelters		Marginal. TIGER grant submitted for improvement.
Hybrid vehicles		Sales remain strong for market segment.
Electric vehicle (EV)		**Slow adoption to range anxiety, but 200+ mile EVs next.**
EV chargers		**Weak infrastructure. Possible chargers in parking garages**
EV highway corridors		Tesla superchargers and possibly more in 2018.
EV education		Hold event next year with WI Clean cities Coalition.
EV incentives		Not enough locally to overcome price and range anxiety.
25% city fleet renewable fueled goal		Largely unmet due to cost & fuel strategy.
GPS routing		Route efficiency for fleets (City, UPS, etc.).
Snow plowing protocol		Reduced plow truck fuel miles per routing practices.
Road diets/ traffic calming		S. Hastings Way.
Complete Streets		No policy but in practice being done.
Bike and Pedestrian Plan/Infrastructure		Many projects complete + bike racks. Plan being updated.
Bike Share		Nothing to date but a pilot may start.
Percent using alternative modes		No major change from census data.
Passenger Rail		No state commitment to our area. Local Coalition plus.
Explore unbundle parking/prkg districts		Urban dwellers agree to no stall/tax funded off-site prkg.
Reduce surface parking by maximum #s.		Adjust code in some areas to induce more transit demand.
Study mirco-transit routes		Undertake planning study to service the system better.
Advocate Regional Transit Authority		Repealed but would create new revenue for mass transit.
New municipal fleet renewable goal		Re-evaluate how the fleet can transition to cleaner power.
Add more EVs to the fleet		Life cycle costs need to be evaluated for the transition.

Waste Management

Landfilled consumables need to be reduced to abate stronger GHGs like methane. A close-loop life cycle product stewardship model needs adoption. A "circular economy" is one where waste = new inputs.

Action Ideas	Progress	Comments
Recycling		Good range of materials. Improvement for bins needed.
Biogas		Waste water treatment plant/landfill (7Mile offline now).
Land application of bio-solids		Continue program for natural fertilizers.
Road projects		Millings reused and some asphalt has recycled content.
Street sweepings/urban trees reused		Good programs in place.
Construction & Demolition recovery		City policy but end markets need to expand.
Required capture of compostables		**Divert this waste stream since haulers have proven it.**
Waste tonnage data		Require data on licenses for emission tracking.
Establish a solid waste diversion goal		This will help motivate action.
Zero Refrigerant leak goal		Hydrofluorocarbons have high global warming potential
Higher tipping fees for out-state waste		Explore mechanisms to reduce Twin City waste at 7mile.
Sustainable Procurement Policy		Purchasing policy to buy more green products and services.
Methane Flaring		Burning should be a last resort.
Pay-as-you-go waste service		Reduces consumption by rewarding behavior.

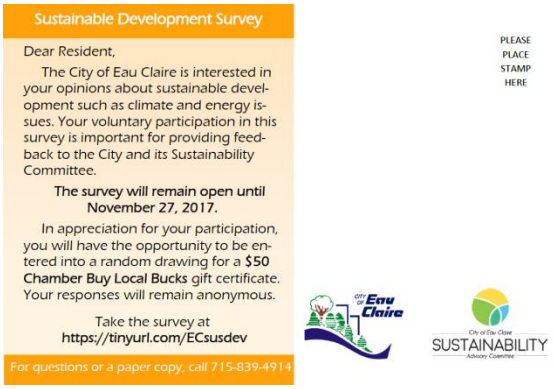
APPENDIX C – SURVEY RESULTS

Introduction

The purpose of this sustainable development survey was to gather public opinion if the City and community should reduce greenhouse gas (GHG) emissions. Deciding whether to reduce emissions is one decision; the next is deciding how exactly to reduce them. The survey was completed in compliance with the 2017 Sustainability Advisory Committee's work program that was approved by City Council.

Survey Development & Deployment

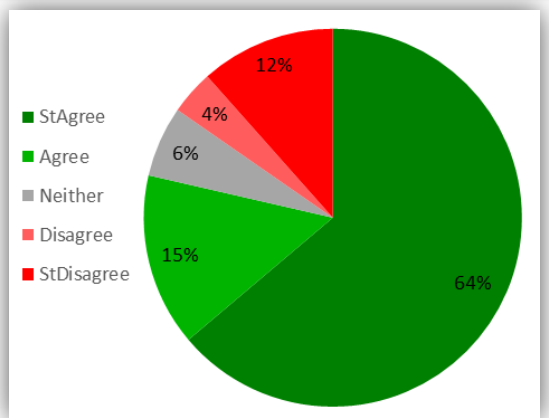
Two methods were used to deploy the survey. The first involved sending 4,000 postcards (sample below) to randomly selected residences along postal routes within the city of Eau Claire, provided by a third-party mailing company. The second method involved media outreach through the City webpage and Facebook, along with other news outlets. There were 164 responses from those who received postcards and 401 responses from the media outreach for a total of 565 responses; 528 of which were from residents of the city of Eau Claire. This response rate is statistically acceptable for a city the size of Eau Claire. A comparison between the two survey methods yielded significant similarities, so the residents' responses were able to be combined. The results reflect this aggregation.



Results

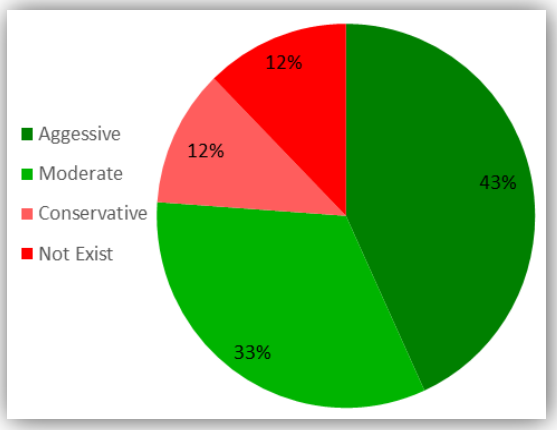
Generally, the community supports aggressive goals regarding greenhouse gas emissions and clean energy, aligning with the recommendations in the executive summary report for carbon neutrality and 100% renewable energy. Furthermore, there is a willingness to pay for initiatives to reach such goals, as indicated in the last graph. The graphs that follow display the questions and the results for both municipality and community-scaled initiatives.

The City of Eau Claire should set a goal to reduce greenhouse gas emissions for ***local government operations***.



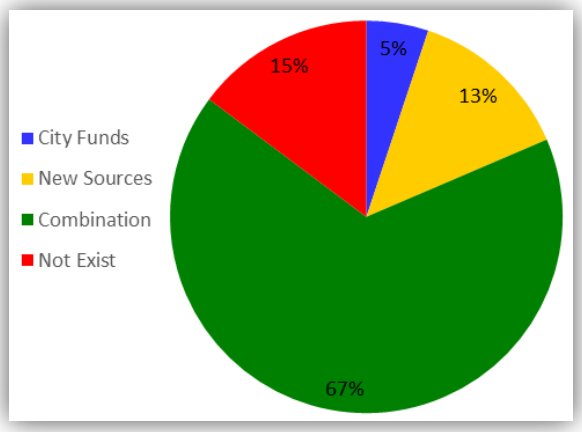
StAgree = Strongly Agree; Agree = Somewhat Agree; Neither = Neither agree nor disagree; Disagree = Somewhat disagree; StDisagree = Strongly disagree

A goal to reduce greenhouse gas emissions should:



Aggressive = do as much as possible as soon as possible; Moderate = begin with a little and increase intensity over time; Conservative = do a little at a time; Not Exist = Not exist at this time

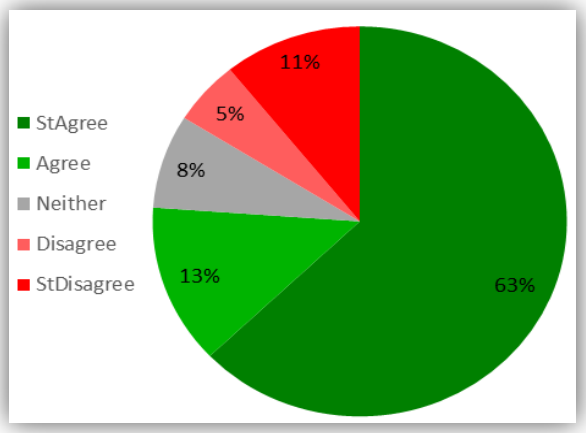
Funding for [City] actions to meet a greenhouse gas reduction goal should:



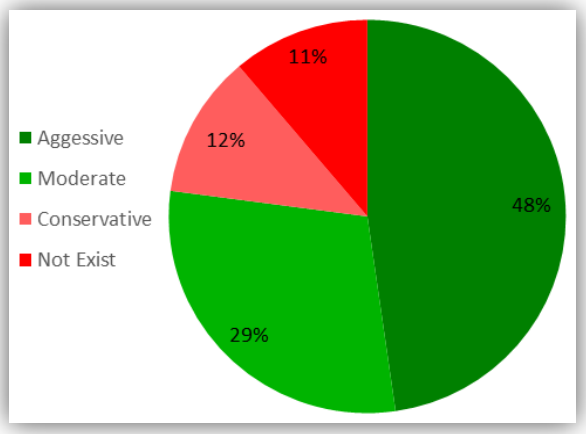
City Funds = Come from City funding; New Sources = Come from new sources of revenue (i.e. grants, partnerships, donations); Combination = Come from a combination of existing City funds and new revenue sources; Not Exist = Not exist at this time

In 2008, the City became an Energy Independent Community seeking to use 25% of its electricity and transportation fuels from renewable sources by 2025. The City of Eau Claire has already met this goal for electricity for ***local government operations***, but has not for transportation fuels.

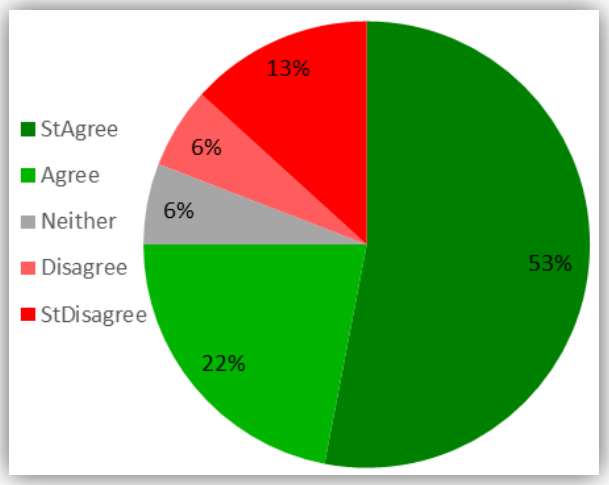
The City of Eau Claire should increase its renewable electric energy goal for ***local government operations***.



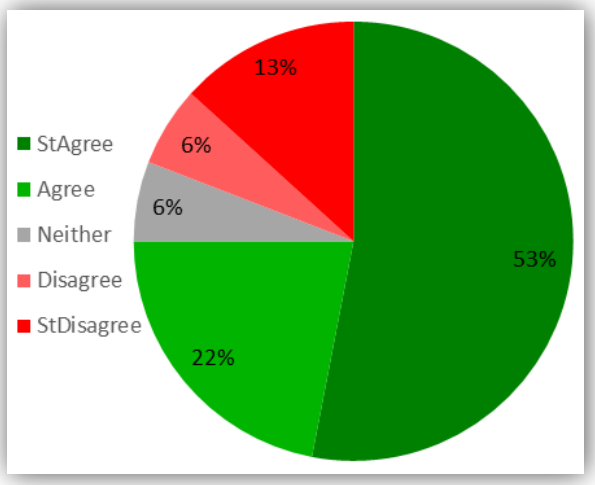
A new goal for renewable electric energy should (be):



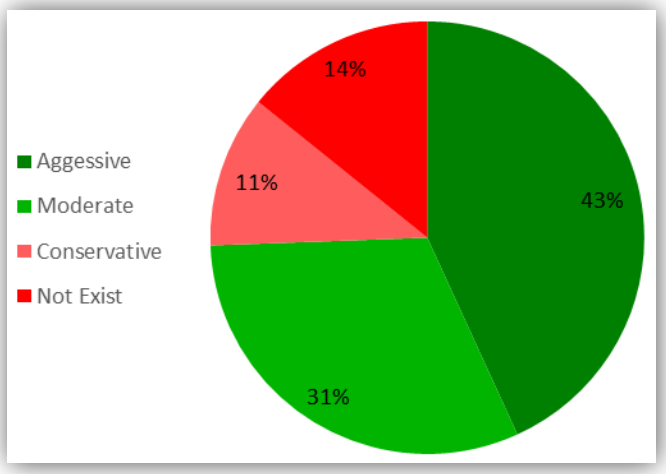
The City of Eau Claire should invest more financially in renewable fueled vehicles (i.e. electric, ethanol, hydrogen, bio-diesel, or biogas) for City operations to reach the renewable transportation fuel goal.



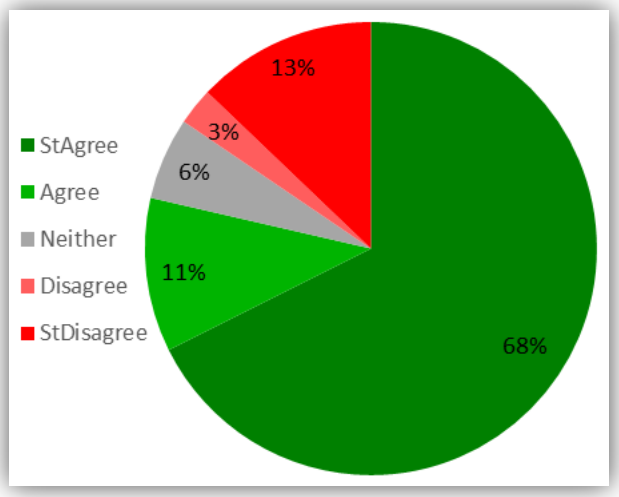
The City of Eau Claire should set a ***community-wide*** goal to reduce greenhouse gases.



A goal to reduce greenhouse gas emissions should (be):

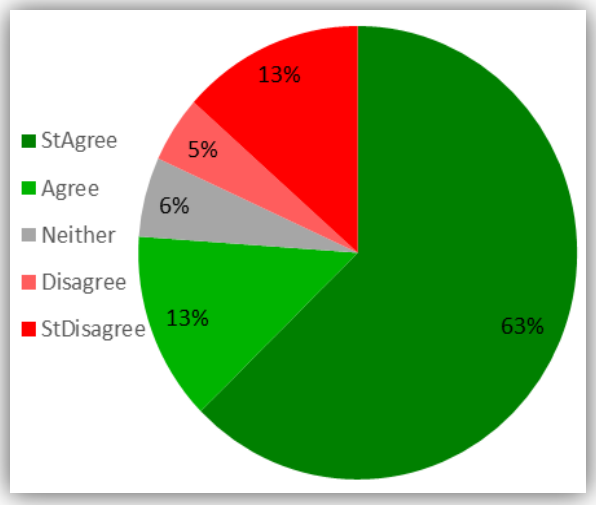


The City of Eau Claire should work with energy providers to establish a ***community-wide*** renewable energy goal.



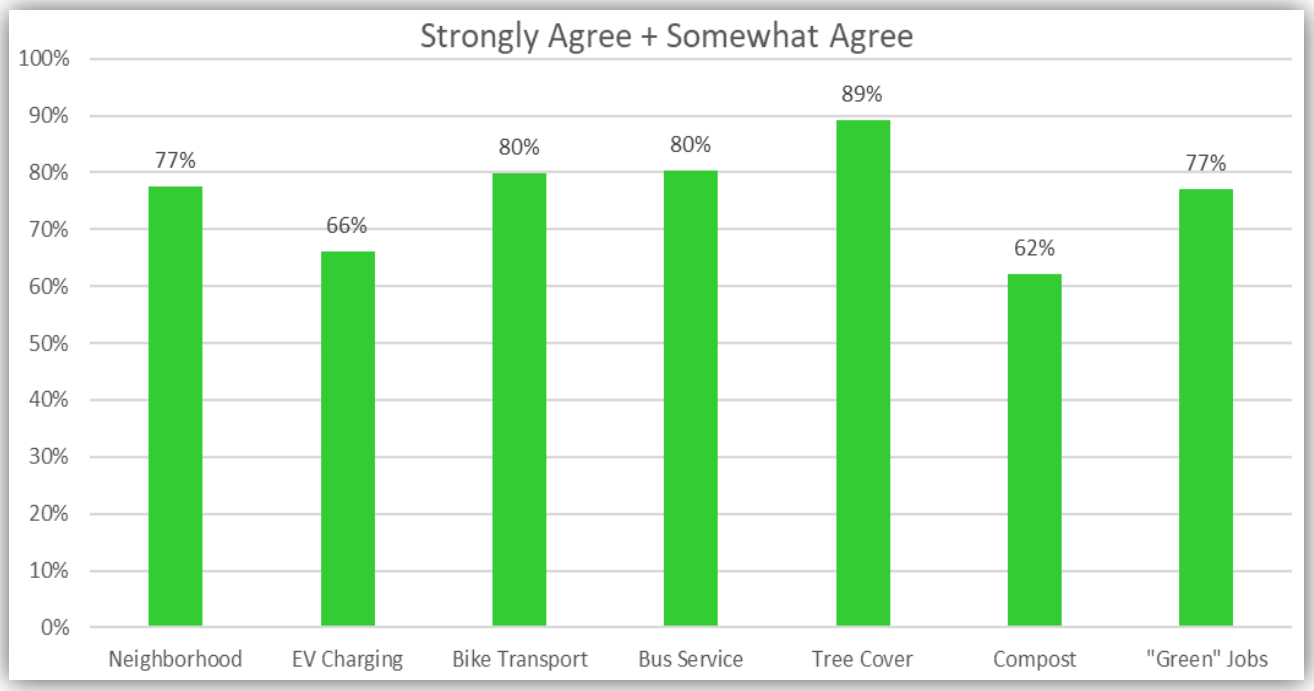
The main energy provider in Eau Claire, Xcel Energy (NSP-WI), currently provides 25% of its energy from renewable resources. Xcel Energy currently has a plan to provide 35% renewable energy by 2030.

The City of Eau Claire should work with Xcel Energy to provide options for the community to obtain increased amounts of renewable energy faster than Xcel Energy's current plans will provide.



Xcel Energy's Community Solar Garden at the City-owned Sky Park Landfill

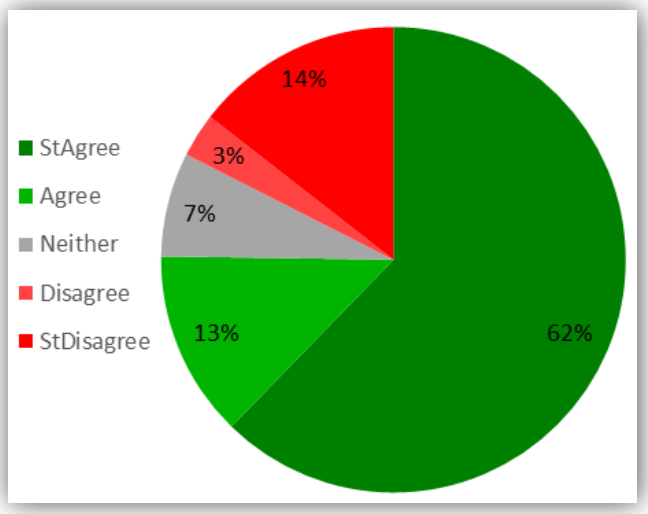
Please indicate your level of agreement for the following initiatives to prevent, reduce, or capture greenhouse gas emissions within the Eau Claire community.



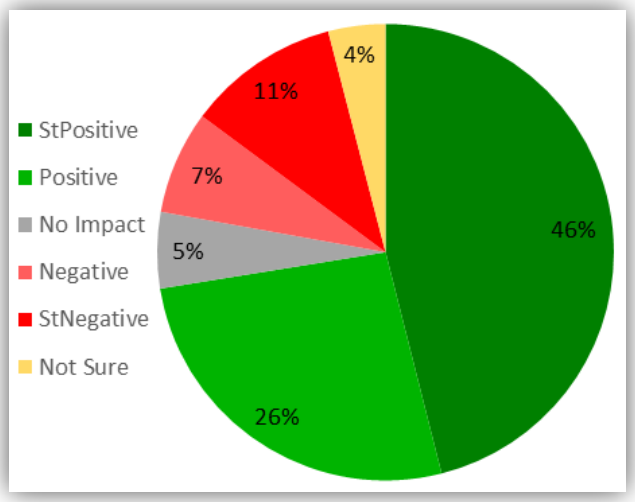
The above graph shows the percentage of both "Strongly agree" and "Somewhat agree" to the statements below. The remaining percent (up to 100%) include "Neither agree nor disagree", "Somewhat disagree", and "Strongly disagree" responses.

Neighborhood = Design neighborhoods and buildings to emit fewer greenhouse gas emissions
EV Charging = Invest in electric vehicle charging stations
Bike Transport = Continue to improve biking transportation
Bus Service = Continue to improve bus services
Tree Cover = Optimize tree cover within the community
Compost = Require waste haulers to off curb-side pickup to compost food waste
"Green" Jobs = Be more active in attracting "green" jobs in industries such as renewable energy and sustainable products/services

The City of Eau Claire should work with community stakeholders to develop a Climate and Energy Action Plan to implement local government and community-wide strategies to reduce greenhouse gas emissions.

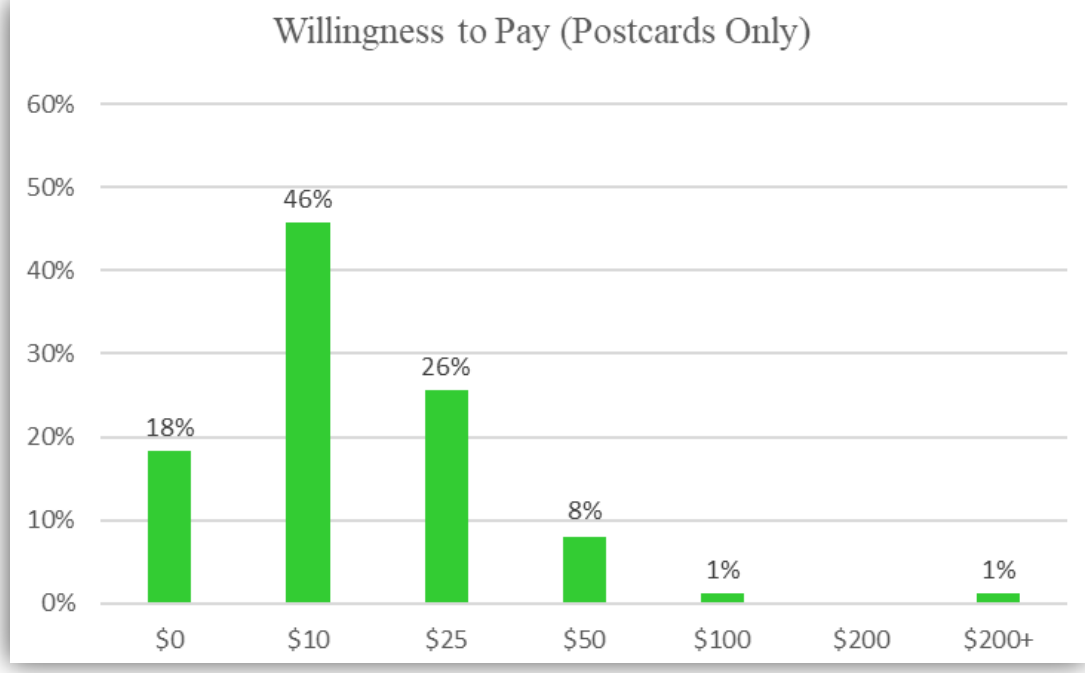


Do you think additional efforts by the City of Eau Claire to reduce greenhouse gas emissions will have a positive or negative impact on the local economy?



StPositive = Strongly positive; Positive = Somewhat positive; Negative = Somewhat negative; StNegative = Strongly Negative

Implementing initiatives to reduce greenhouse gas emissions could increase consumer expenses, such as the amount of your monthly energy bill(s). How much more per month would you be willing to pay to implement such initiatives to reduce greenhouse gas emissions?



Only responses from postcard respondents are presented because of inconsistences with how this particular question was presented in the postcard and media outlet surveys. Results were similar but not exactly comparable.

$10 = Up to $10
$25 = Up to $25
$50 = Up to $50
$100 = Up to $100
$200 = Up to $200
$200+ = More than $200

What does this mean?

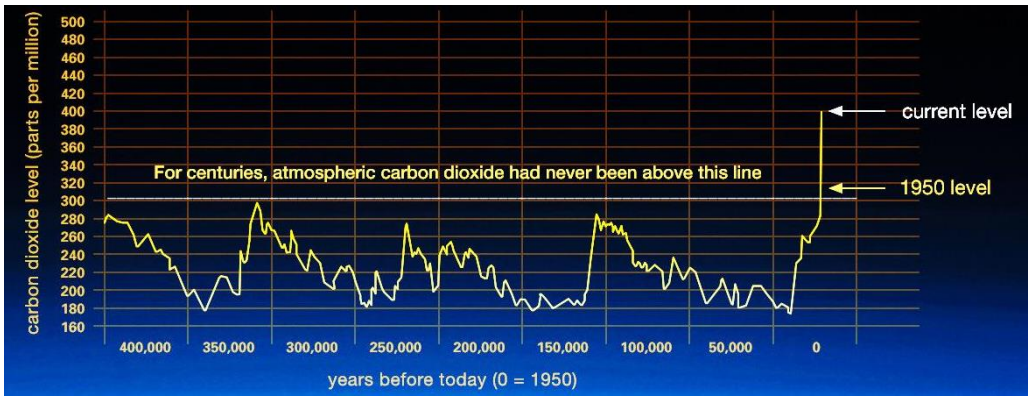
On average, a person in Eau Claire is willing to pay $16.36 per month, or $196.30 per year, to implement initiatives that reduce greenhouse gas emissions.

To put this in perspective, Xcel Energy offers renewable energy offsets with 100 kWh blocks of wind energy for an additional $1.41 per month. With the average household using approximately 800 kWh per month, a household would spend an additional $11.28 per month to obtain 100% renewable wind electricity.

APPENDIX D – ISSUE BACKGROUND

What is the Issue?

According to the Intergovernmental Panel on Climate Change (IPCC) "[a]nthropogenic [man-made] greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely [95-100%] to have been the dominant cause of the observed warming since the mid-20th century."[19] The graphic illustrates this major change. Current levels are over 400 parts per million (ppm).



Data: NASA & National Oceanic and Atmospheric Administration. Some description adapted from the Scripps CO2 Program website, "Keeling Curve Lessons."

What are the Impacts?

The IPCC's 5th Assessment found "many aspects of climate change and associated impacts will continue for centuries, even if anthropogenic emissions of greenhouse gases are stopped. The risks of abrupt or irreversible changes increase as the magnitude of the warming increases." While greenhouse gases (GHG) are necessary for life, an atmosphere holding extra heat will change land, ocean and climatic conditions. Glacier and sea ice melting, coastal sea level rise, western droughts and fires and Gulf and Atlantic superstorms grab major U.S. headlines, but there are local concerns as well.

In Eau Claire County, the observed average annual temperature has warmed 2.8° F from 1950 to 2010 and is projected to reach 50.1° F by 2050 and 55.3 ° F by 2090 (11.5 ° F change)[20]. According to the Wisconsin Initiative on Climate Change Impacts[21], our state has already seen agricultural change, flora and fauna variations (trout habitat demise and tick surge carrying Lyme's Disease), warmer summers, more extreme weather events, and drops in lake levels (Michigan and Superior). State climatologists predict by 2050 the warmer weather will increase state precipitation by +2" per year.

The frequency and intensity of rain events will increase, including more extreme rainfall events (more than 6" in 24 hours).[22] Since our state economy is very tied to natural resources, there is long-term concern. Water-intensive manufacturing, Great Lakes shipping, forestry, agriculture, tourism and recreational business all stand to be impacted. Public welfare is also at stake. Downed essential services, for example, might affect groups disproportionately such as low-income elderly.

Beyond Fossil

Over one hundred years of running a global economy on fossil fuels has achieved remarkable growth in food production, population, development and quality of life. The success we enjoy today was never first imagined to create the kind of environmental and, therefore, societal challenges we now face.

Under the Clean Air Act, the U.S. found carbon dioxide a pollutant since it leads to ocean acidification, and greater levels in the atmosphere has been the main gas responsible for global warming. Oil, coal, and natural gas emissions released from smokestacks and tailpipes produce chemical reactions that cause pollution. Ground level ozone (O_3) or smog, nitrogen dioxide (NO_2) and sulfur oxides (SO_x) lead to acid rain, and particular matter (PM) can harm ecosystems and human health.

Despite decades of reluctance to change, the good news is there are now cost-effective technologies to choose a cleaner path. Energy economics have changed. Many utilities have been getting off coal and moving to lower priced natural gas baseload generation and investing in renewables. They have made these major capital decisions with the long view, not because of one administration over another. In 2015, the EIA found CO_2 emissions associated with U.S. coal fell by a record 231 million metric tons[23]. Shifting generation coincides with employment. In 2016, there were 374,000 solar-related jobs compared to 160,000 for coal. Construction workers and installers represent the largest solar share.[24]

Speaking of his investor owned utility's move to a renewable-centric grid, "If I were talking to you 10 years ago, I don't think I'd be telling you that I think solar is competing with fossil," said Ben Fowke, CEO of Xcel Energy. "I wouldn't tell you that wind is beating fossil. I am telling you that now."[25]

Conclusion

Climate change is a complex issue, yet the greenhouse effect is fairly straightforward science. More molecules that trap solar heat will warm up air, land and sea. This is what the earth has been experiencing more rapidly over the past few decades. The Paris Agreement is meant to stabilize the climate system by unified action. The risks, costs and impacts are too great for nations and cities to turn a blind eye. It would be irresponsible risk management. In light of all the present solutions, and more to be developed, there is an increasingly feasible road ahead. The recommended 2050 carbon neutral and 100% renewable energy goals are the needed steps for Eau Claire to do its part globally and locally.

SOURCES

[1] http://unfccc.int/paris_agreement/items/9485.php (See English version of Paris Agreement)
[2] http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch13-ens13-3-3-3.html (climate stabilization goals)
[3] http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14 (Emission lifetimes)
[4] http://eauclairewi.gov/home/showdocument?id=547 (City Energy Independence Plan)
[5] https://www.eqb.state.mn.us/sites/default/files/documents/CSEO_EQB.pdf (Climate Solutions & Economic Opportunities in Minnesota)
[6] http://climateactiontracker.org/assets/publications/briefing_papers/CAT_2017-11-15_Improvement-in-warming-outlook.pdf (Current actions/policies insufficient to meet Paris Agreement)
[7] http://www4.unfccc.int/ndcregistry/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf (U.S. National Determined Contribution)
[8] https://newclimate.org/2017/09/13/states-cities-and-businesses-leading-the-way-a-first-look-at-decentralized-climate-commitments-in-the-us/ (Analysis of 342 commitments towards U.S. National Determined Contribution)
[9] http://icleiusa.org/wp-content/uploads/2015/08/Measuring_Up_2015.pdf (Study of cities with climate goals)
[10] https://www.cleanjobsmidwest.com/state/wisconsin (Clean energy job rankings)
[11] http://eauclairewi.gov/home/showdocument?id=18649 (2015 City of Eau Claire Carbon Footprint Report)
[12] https://www.xcelenergy.com/company/corporate_responsibility_report/2016_highlights (Xcel Energy's plans)
[13] http://www.iclei.org/activities/agendas/low-carbon-city/iclei-100re-cities-regions-network.html (100% clean energy cities)
[14] http://www.globalcovenantofmayors.org/ (Global city network addressing climate change)
[15] https://www.usmayors.org/2017/06/02/mayors-undeterred-by-paris-climate-accord-withdrawal/ (U.S. Mayors network on climate change)
[16] http://eauclairewi.gov/home/showdocument?id=550 (City Resolution using The Natural Step Framework)
[17] http://eauclairewi.gov/home/showdocument?id=10541 (Comprehensive Plan, Sustainability Chapter)
[18] https://solarindustrymag.com/iea-solar-poised-become-cheapest-leading-source-new-energy?utm_medium=email&utm_source=LNH+11-15-2017&utm_campaign=SI+Latest+News+Headlines
[19] http://ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (IPCC's 5th Assessment)
[20] http://climatewisconsin.org/story/temperature-change (Wisconsin specific impacts)
[21] https://www.wicci.wisc.edu/publications.php (Wisconsin specific impacts)
[22] https://www.wicci.wisc.edu/resources/ClimateWI2050-Communites%20August%202016.pdf
[23] https://www.eia.gov/todayinenergy/detail.php?id=33712 (U.S. 2015 coal and carbon reductions)
[24] https://energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf (U.S. energy job report)
[25] https://www.utilitydive.com/news/steel-for-fuel-xcel-ceo-ben-fowke-on-his-utilitys-move-to-a-renewable-c/446791/ (Xcel Energy's renewable plans)

City of Eau Claire SUSTAINABILITY Advisory Commitee

Submitted by: The City of Eau Claire's Sustainability Advisory Committee (Approved December 19, 2017)
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