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Nov 10, 2014

To,

The Georgetown University Energy Prize team,

Georgetown University Program on Science in the Public Interest &
McDonough School of Business Global Social Enterprise Initiative &
Georgetown University Environment Initiative

Dear Organizers of the Georgetown University Energy Prize Competition,
Please accept City of Fargo's proposal for entry into the semi-final stage of the
Georgetown University Energy Prize Competition. I am very proud of this effort
that has involved the expertise of several community members contributing tre-
mendous amounts of time in a truly open and inclusive process. I am also humbled
by our findings and how much work remains to be done.

The Georgetown University Energy Prize has given us the opportunity to carefully
examine where we are as a City in comparison to where we would like to be. It has
given us the platform to create an innovative structure to develop the specifics of
and implement the Go2030 energy chapter adopted by City of Fargo as policy. Our
efforts have already received interest from our state and federal legislators to see
how we can take this idea and replicate it to other communities around the state.

We have branded our proposal and our work **efargo**. The **"e"** for **"energy, enter-
prise, efficiency, education, excitement, entertainment, energized, eventful"**
captures many of the ideas and emotions that surround this proposal. We believe
that a strong brand will help us create the awareness within the community that
will be needed to make cultural and behavioral shifts.

Factors such as the cold climate, oil and coal economy, low energy costs, almost-ab-
sent energy incentives, high rate of growth have created a cultural climate where
energy efficiency has negligible investment of human and economic resources to
the detriment of our natural environment. Even though we are determined to car-
ry this work forward into 2015 and beyond, we know that our successful entry into
the two year semi-final phase will provide the magnifier effect, affirmation and
momentum that we need to continue this most-needed effort.

On behalf of the efargo team -

Malini Srivastava, AIA // Certified Passive House Consultant
Principal (Design & Energy Lab) // 2014 Bush Fellow (Archibald Bush Foundation) // Doctoral Candi-
date (Carnegie Mellon)

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Mayor Dennis R. Walaker
200 3rd Street North
Fargo, North Dakota 58102
Phone (701) 241-1310
Fax (701) 476-4136

November 6, 2014

Dr. Francis Slakey, Executive Director
Georgetown University Energy Prize
3700 O Street NW
Washington, D.C. 20057

Re: Georgetown University Energy Prize

Dear Dr. Slakey:

Over the past few years, the Fargo City Commission has increasingly adopted policies to promote community-wide energy efficiency, sustainability and renewable energy production.

Historically, Fargo has succeeded as a community because it has made the most of its strengths. We are a community that was built at a transportation crossroads, and capitalized on diversity of economic, health and educational resources. Fargo's Georgetown University Energy Prize proposal is an extension of that tradition.

Our local utility providers are experienced, our people are thoughtful and compassionate, and the energy market in North Dakota is robust. This Georgetown University Energy Prize proposal calls for us to connect people with improved efficiency and renewable resource opportunities. The ideas within offer a vision to orient our energy systems to provide reliable power, while maintaining affordable prices, as a means to achieve personal well-being and protect the environment.

If Fargo is to succeed in accomplishing its goal of aggressively seeking innovative strategies to increase sustainable implementation of energy efficiency, and the use of renewable and domestic energy resources, we must continue to build on our community strengths. We hope Fargo's Georgetown University Energy Prize proposal will become part of a rich fabric of ideas put forward by policy makers and residents, from across the Fargo metropolitan area and the State of North Dakota.

It is our belief that this kind of systemic change will only be possible with collective and collaborative action between Federal and State agencies, utility and energy companies, educational institutions, local communities, as well as market and service sectors – all of us working together toward a common goal of making the very best use of our energy resources.

Thank you for considering Fargo for the Georgetown University Energy Prize.

Sincerely,

Dennis R. Walaker
Mayor

DRW:se
wr14energyprize

Letters of Support

The Arts Partnership
c. Lizzy's
Cass County Electric Cooperative
The Chamber of Commerce – Fargo, Moorhead, West Fargo
Fargo-Moorhead Convention & Visitors Bureau
North Dakota Department of Commerce
Design and Energy Laboratory
Doubting Thomas Farms
Downtown Community Partnership
Fargo Public Schools
Fargo Water Treatment Plant
Green Ways 2Go
Heritage Homes
Home Builders Association of Fargo-Moorhead
Image Group Architecture & Interiors
JLG Architects (2)
Kilbourne Group (2)
Liberty Middle School, West Fargo
Michael J. Burns Architects
Mike Williams
North Dakota State University – President Dean L. Bresciani
North Dakota State University – Kent Sandstrom, Dean of Arts, Humanities and Social Sciences
North Dakota State University – Michael J. Strand, Associate Professor, Department Head of Visual Arts
North Dakota State University – Kenneth Hellevang, Extension Engineer and Professor
North Dakota State University – American Institute of Architecture Students (AIAS) chapter
North Dakota State University – US Green Building Council, student chapter
North Dakota State University – Residence Hall Association
Plains Art Museum
River Keepers
United States Senator Heidi Heitkamp
United States Senator John Hoeven
North Dakota Senator Tim Mathern
West Fargo High School
Xcel Energy
YMCA of Cass and Clay Counties

Note: To view letters, see Appendix 1.

Refer to Appendix 1.

introduction	9
Since the Quarterfinal	12
Urgent that we Act	14
Efforts so Far	16
goals	23
team	27
Program Management and Partners	29
Proposed Team	30
energy plan	39
Plan Concepts	40
Outline of PACE Strategy	44
Schedule	46
Partnerships & Policies	49
Action	56
Competition	60
Education	62
Innovation	66
Potential for Replication	68
Utility Data Reporting	70
Ongoing Work	76
Likely Future Performance	78
fundraising	85
Funding Strategies	86
Funding Tracker	88
Funding Schedule	90
evaluation	93
conclusion	97
Prize Purse	98
References	100

contents

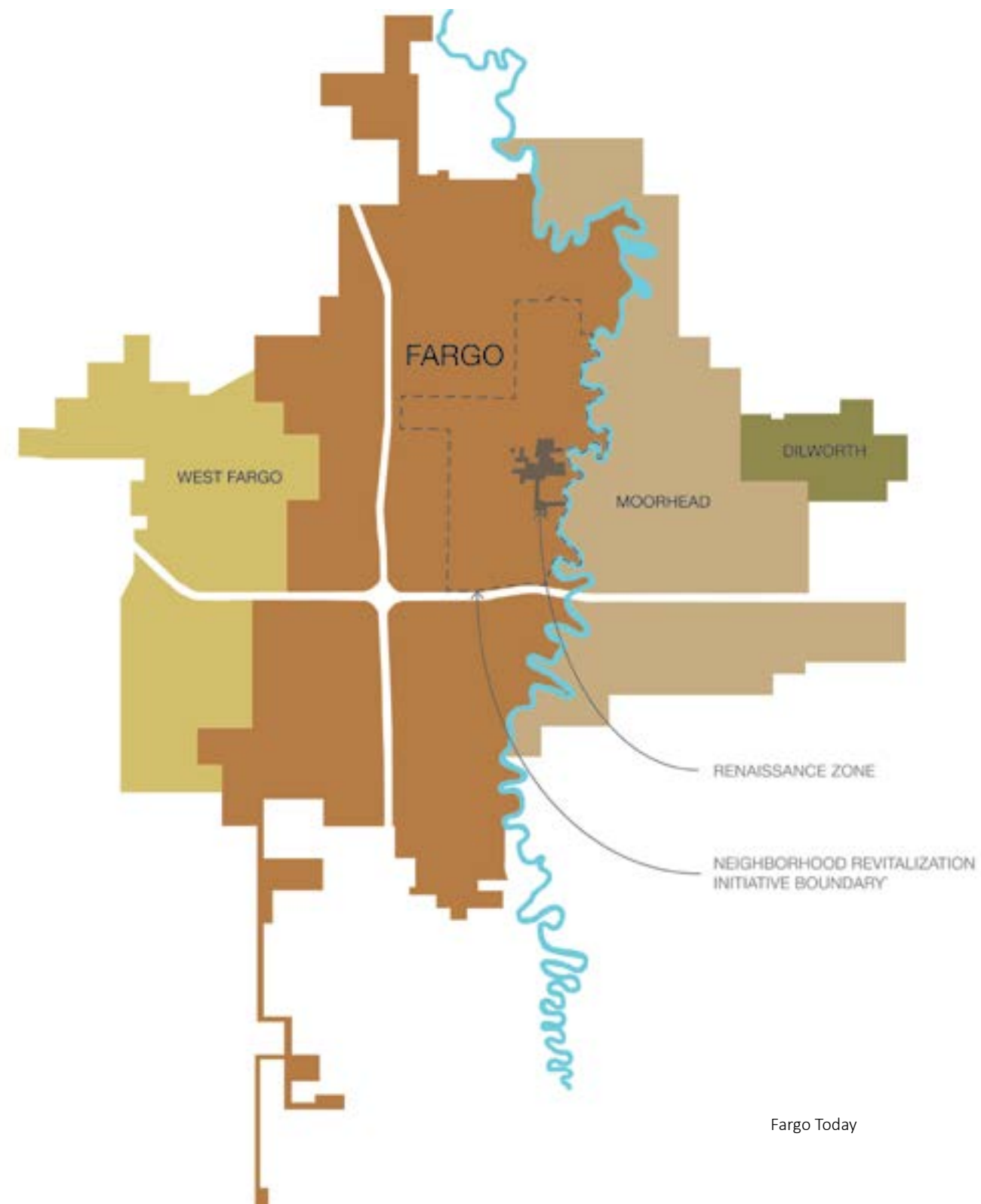
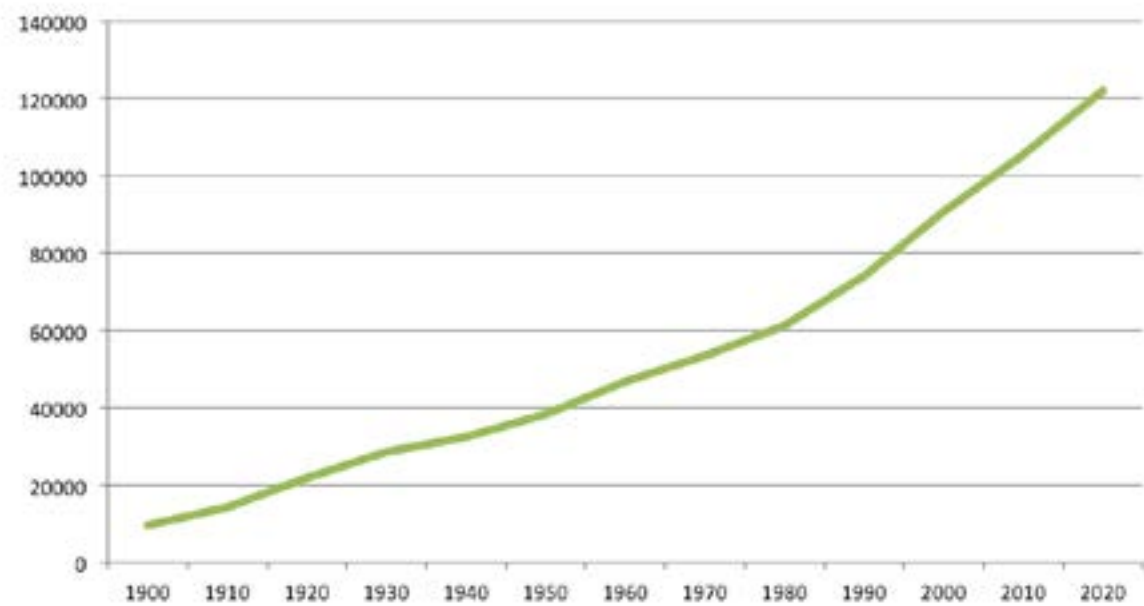


introduction



Fargo in 1884 - Image Courtesy of Dale and Jenny Mackenzie

Fargo's Population Growth



Fargo Today

Since the Quarterfinal

August 7th was a huge day for us!

Even though we were determined to continue working on the efficiency of our City and other Go2030 initiatives, hearing that we had made it into the quarter finals was an affirmation of the effort that we had put in and the directions that we wanted to take. It gave us great impetus to move forward with the process we had outlined.

COLLABORATION RE-CONVENE INTEGRATION IDEATION

Starting in August we have been meeting weekly at our beautiful Main Central Library. We have been able to follow the schedule that we had designed in the quarter final proposal fairly closely. We reconvened in August and went through a process of integrating research from the ACEEE and NREL tools, identifying potential funding resources and developing energy baseline from the Utilities. Based on the research, we developed ideas for strategies and activities while we created a system of feedback from experts, stakeholders and interested community members.

For approximately two hours every Friday, the Dawson Room at the Library is reserved for the efargo core leadership team for their meeting and work session. The core team initially comprised of Mike Williams, Malini Srivastava, Dan Mahli, Tracy Walwatne and Kristina Heggedal. Throughout the month of August and September we worked on expanding our team. We invited community members and guests to join us in brainstorming ideas, sharing knowledge and expertise and strategizing about how we can take the Go2030 Energy chapter goals and implement them for both an impactful start and long term benefits. We met with legislators, North Dakota State University knowledge experts, arts and outreach community members, business organizations, K-12 teachers and community members creating partnerships and gathering ideas. During this period we also had meetings with personnel from the two Utilities that provide Fargo's energy and discussed in detail ideas for energy efficiency, partnership through the competition process and beyond and data collection.

SYNTHESIS COMPILATION

October was a month of synthesis, where our responsibilities had organically emerged and were then formally identified to form a strong team that consisted of several knowledge area experts and the core team which now included Research Assistant Amber Grindeland, a position created with a partnership between the City of Fargo and North Dakota State University. While Mike Williams, City Commissioner and Champion created the support and outreach into the community; Malini Srivastava worked on community outreach, creating a brand identity, vision, mission,

structure and key strategies for the efargo proposal; Rajesh Kavasseri (Electrical Engineer) liaised with Marshall Albright, Scott Handy and Mark Nisbet of the Utilities to collect the data we would need to create our baselines and goals, Amber Grindeland created the document where all the parts and pieces came together and conducted background research; Tracy Walwatne created our networks in the business community; Michelle Weber and Brent Nasset became our advisors on the K-12 efforts; Colleen Sheehy and Karis Thompson advised us on outreach to the community-at-large through the arts organizations; and most importantly Dan Mahli created the structure and proposals through which the City Commission including Mayor Dennis Walaker became strong supporters of the efargo effort. This is a summarized list and description of all the people, conversations, work sessions, meetings that have been synthesized and compiled into the document that we present to you.

See page 25 for the Vision, Mission and Overall Strategic Structure that has been developed in the quarter final phase.

Urgent that we Act

GROWTH

To emphasize the urgency of why this is the right time in our history to act aggressively on environmental measures especially energy efficiency and source energy, we would like to reiterate what we submitted in our quarter final proposal. Tremendous change is occurring throughout North Dakota, and Fargo is no exception. Given North Dakota's cold-climate conditions, its remarkable population growth, the strong presence of the fossil fuels industry, and the near-lowest in the nation energy costs (48th lowest retail price for gas and 51st lowest retail price for electricity per the EIA), it is not surprising that the state ranks fourth-highest in energy consumption per capita (per EIA) and dead last in a ranking of energy efficiency policy and program efforts (per ACEEE scorecard). In April and May of 2014, North Dakota's oil production surpassed 1 million barrels per day, up from 62,780 barrels in 2008, making the state the second-largest producer of oil in the country after Texas (per EIA). Fargo's population, demonstrating a ripple effect from activity in the Bakken oil patch, grew by 17.5% per the 2010 Census and is projected to exceed a quarter of a million people by 2040. Left unplanned, this rate of growth could be detrimental to a long-term sustainable vision and not at all the "worthy city of the future" envisioned by Senior Planner Dan Mahli.

Fargo is a growing, dynamic city. The metro, which includes West Fargo, Moorhead, and Dilworth, is surrounded by some of the planet's most fertile farmland, and the community is just as nurturing for the individuals, families, and businesses that thrive here. Founded in 1891, the City of Fargo now covers 48.82 sq. mi. There is a growing, aging, and increasingly diverse population, which surpassed 105,500 people in 2010. Population projections for 2030 hover around 135,000. The metro population was 223,490 in 2013 with a median age of 31.7. These population changes provide opportunities for the city to incorporate innovative solutions as demands for housing, schooling, and employment rise.

RESILIENCE

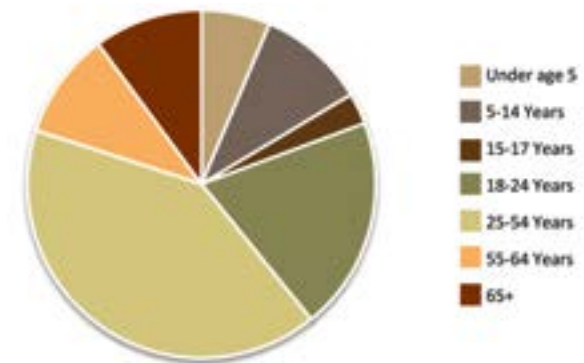
Fargo's economy proved resilient through the economic downturn. The city's average unemployment rate was only 3.4% in 2011. The median income across the metro was \$49,811 in 2010. Based on the concept of S.T.E.A.M (Science, Technology, Engineering, Arts and Manufacturing), the strength of our economy is only elevated by the increasing diversity of industries, led by companies such as Sanford Health, Blue Cross Blue Shield, Case New Holland, US Bank, Microsoft, and John Deere Electronic Solutions. Local school systems and universities are among the leading employers throughout the metro. Health, education, technology, finance, and manufacturing sectors balance our economy and ensure long-term

stability. There is a thriving entrepreneurship community fueled by the city's excitement for and support of new ventures. There are many incentives to expand or create businesses, including seed and venture capital and tax advantages. Local and state governments are committed to growth and innovation and are proving it through their financial support.

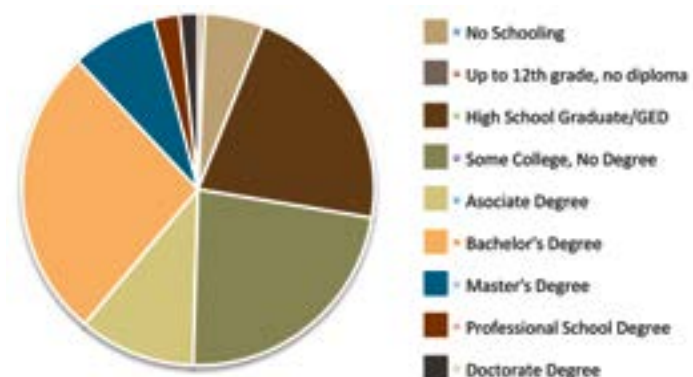
Being a highly educated community, with more than 70% of people having more than just a high school diploma, education quality is important to our community. Students consistently surpass the national averages of ACT and SAT scores, proving the excellence of our education system. There are also many higher education opportunities. Fargo is home to North Dakota State University, and four additional colleges and universities ranging from a four year, private, liberal arts college to a two-year, associates, community and technical school. The nearly 30,000 college students feed our vibrant community new ideas and thoughts. Paired with the excellence of established industries, there is much hope for the future of Fargo.

EDUCATION

Age Demographics



Education Demographics





Efforts so far

RENEWABLE ENERGY & CONSERVATION COMMITTEE

Following are the major efforts that the City of Fargo has completed to ensure that issues of renewable energy and conservation continue to be active considerations in City policy.

1. In 2005, the Renewable Energy and Conservation Committee (RECC) was founded with a mission to pursue, plan and implement policies and/or programs that will foster conservation, utilize and develop renewable resources, and protect the environment. The RECC was also established to serve as an advisory body to the Fargo City Commission.
2. In 2007, Fargo's Mayor signed the US Conference of Mayors Climate Protection Agreement. Under the Agreement, participating cities have committed to dramatically reduce emissions and to work with other communities to advocate for CO2 emission reductions.
3. In 2009, the City of Fargo received an Energy Efficiency and Conservation Block Grant to provide energy efficiency upgrades, municipal building audits, community education, code updates and planning strategies.
4. In May 2012, the Fargo City Commission approved a Comprehensive Plan GO2030 that has a strong focus on community-wide energy efficiency, reduced emissions and renewable energy production.

Recommendations by the committee that have already been implemented

are as follows:

1. Expanded use of biodiesel fuel to all Metro Area Transit buses. The fleet uses 20% biodiesel fuel during summer months and 2% blended biodiesel fuel during the winter.
2. Four hybrid buses in the fleet, which consume 50% less fuel than regular buses.
3. Energy and water saving features of the new garage for Metro Area Transit vehicles. Bus wash water is cleaned and re-used to save water and energy.
4. Methane electrical generation project at the landfill which is sold to a local power cooperative.
5. Transfer station is heated by exhaust and engine heat from the generator that produces electricity from methane gas. The garage power generator reduces pressure on local power grids during peak energy use.
6. New landfill transfer station and baling facility reduces trash scattering by wind and utilizes renewable energy resources that are available at the landfill, including methane gas, solar and wind energy.
7. Replacement program of all traffic lights to LED.
8. Wastewater Treatment Plant sells 2 million gallons of wastewater to a local ethanol plant rather than releasing that water into the Red River, which also diminishes their need to draw water from fresh river or groundwater sources.

RECC'S PROGRAMS

9. Approved a land-lease agreement for property that could house a wind turbine, which the city would generate for sale.

GO2030

In September 2009, the City of Fargo received \$948,900 in an Energy Efficiency and Conservation Block Grant from the U. S. Department of Energy. Excluding time and support provided by City staff and community members, the City invested \$250,000 of its grant funding in formulating a comprehensive plan called the Go2030 plan. Go2030 was a massive, open and inclusive effort to direct the city's unprecedented growth toward a worthy and sustainable future. The City used the balance of its DoE funding for several efficiency initiatives including LED lighting at the Solid Waste Department and downtown area, an energy audit for the Fargo Civic Center, asphalt recycling and other initiatives.

To guide Go2030 the City convened stakeholders from which two leadership teams emerged: a Steering Committee composed of community members and a Technical Committee composed of City staff and representatives from local utilities and universities. With wide-ranging community support and oversight from the Steering and Technical Committees, the City hired Kansas City-based master planning consultants Berkebile Nelson Immenschuh McDowell, Inc. (BNIM).

Following several months of initial planning and research, the Go2030 website, including informational and interactive modules about the comprehensive plan, went live in May 2010. Concurrently, the City sponsored educational events on long-term planning issues and concepts, and offered a speaker series featuring expert-led public presentations and discussions informing citizens on various aspects of a sustainable future. An additional series of workshops, meetings and mind mixers provided opportunities for citizens to generate ideas and actively participate in discussions and planning. Attendance at the speaker series and planning meetings was strong and the website garnered extraordinary interest: during the open commenting period, 8,640 visitors generated 61,159 page views, 467 original ideas, and 2,110 comments. Eventually, the community voted through participation for major guiding principles and key initiatives, which eventually became part of the Go2030 plan.

The City of Fargo, via a City Commission vote, formalized the Go2030 plan as policy on May 24, 2012. Following the acceptance of Go2030 as City policy, work began on an implementation workbook.

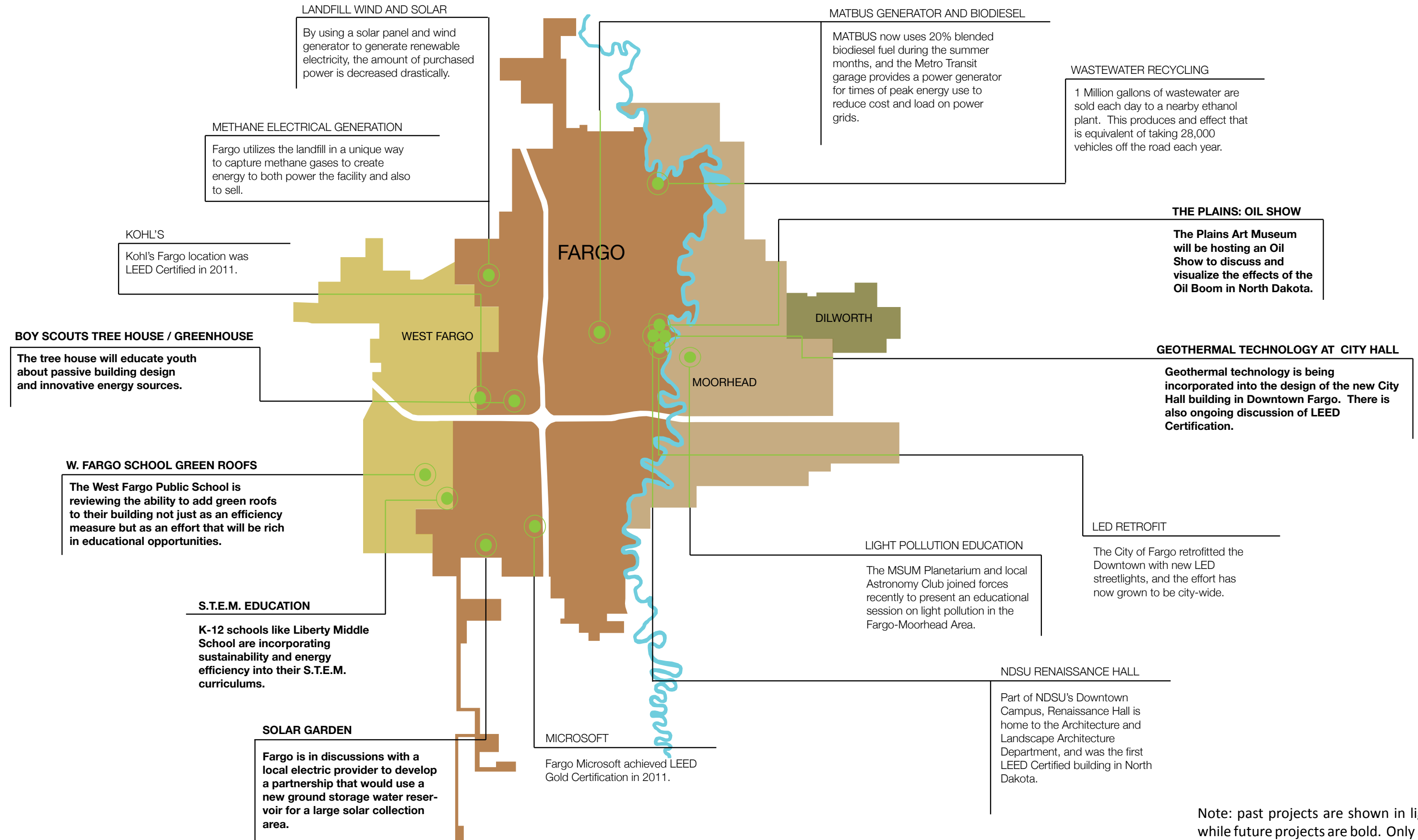
Three of the proposed initiatives include community-wide energy efficiency and renewable energy production, city led energy efficiency and reduced emissions, and a smart grid. The first initiative, Community-Wide Energy Efficiency and Renewable Energy Production, supports energy efficiency improvement for older buildings while ensuring that new construction upholds energy standards from the start by partnering with builders. It includes recommendations to promote education, incentives, and innovative financing for energy efficiency retrofits, strengthen building codes and regulations to promote energy goals, support sustainable transportation options and renewable energy production. The second initiative to increase efficiency and reduce emissions will be accomplished by establishing an energy baseline, conducting energy audits and following them up with assistance to improve consumption levels. This plan becomes feasible through the exploration of various energy sources and the renewability of these sources. A smart grid would incentivize local, clean, renewable power by upgrading the infrastructure that provides energy. Recommendations to collaborate with utility providers and various levels of government will ensure that the project will be supported from multiple angles.

Many of the Go2030 initiatives related to water and the environment indirectly impact energy consumption. Waste and recycling, green storm water infrastructure, drinking water quality and supply, light pollution, and water conservation initiatives all affect energy efficiency and renewable generation. The Go2030 plan also includes multiple catalysts that emphasize development that will reduce vehicular dependency. These projects promote a lifestyle that embraces nature and the outdoors while limiting reliance on energy "eating" buildings and machines.

Participation in the various phases of the Georgetown University Energy Prize will create and strongly incentivize the implementation of the highest-impact ideas for energy efficiency from Go2030. This implementation will catalyze other aspects ideas for responsible growth contained in the comprehensive plan.

Note: Summary of Go2030 guiding principles and key initiatives attached as Appendix 2. Complete version of Go2030 available and can be sent via email upon request.

Past and Future Efficiency Projects



Note: past projects are shown in lighter text, while future projects are bold. Only a sampling of Fargo's LEED certified buildings is shown.



goods

The following are the metrics that we are trying to impact with eFargo goals of 5/5/5 by 2016 and 30/30/30 by 2030:

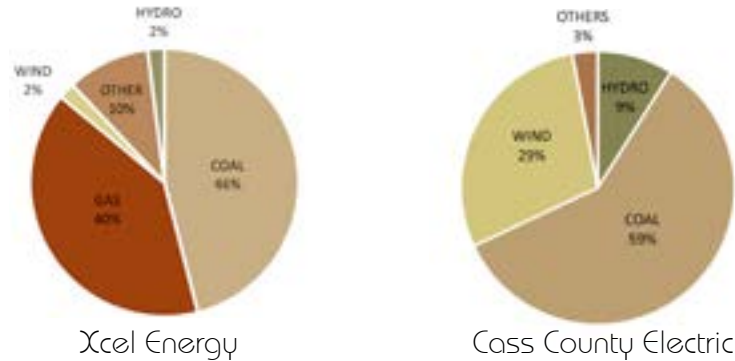
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North Dakota's energy consumption per capita is 778 million BTU - 4th in the country.

2

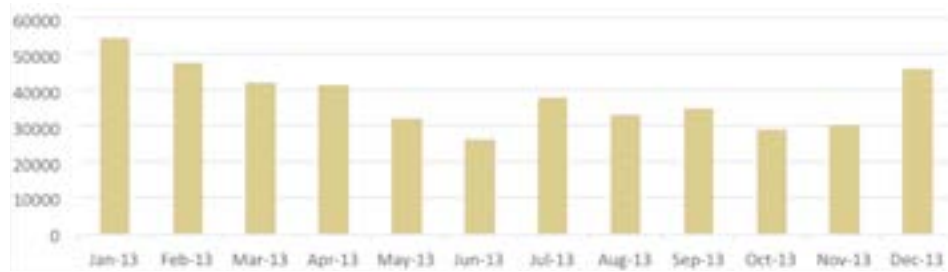
A large majority of North Dakota's energy consumption comes from coal, followed by distillate fuel oil, natural gas and motor gasoline. Only small amounts are consumed from the following sources: jet fuel, LPG, residual fuel, other petroleum, nuclear electric power, hydroelectric power, biomass and other renewables.

TOTAL PRIMARY ENERGY SOURCES FOR UTILITIES THAT SUPPLY ENERGY TO FARGO



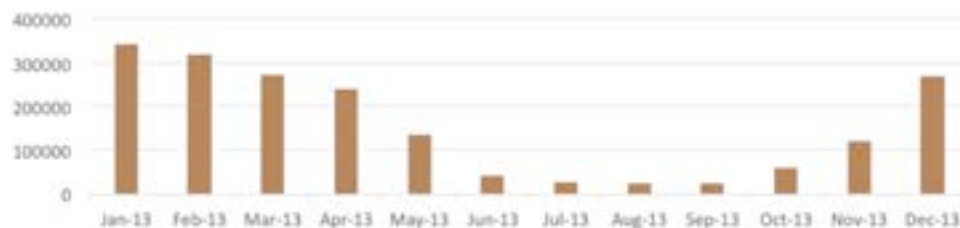
3

TOTAL RESIDENTIAL ELECTRIC USAGE



4

TOTAL RESIDENTIAL NATURAL GAS USAGE



5

NOTE: We are still working on overall municipal loads for the city.

Vision

eFargo will aggressively seek community-wide efficiencies in renewable and non-renewable energy production, distribution and consumption resulting in reduced emissions.

Mission

We have a short term mission for the competition duration called 5/5/5 by 2016.

We have a longer term mission called 30/30/30 by 2030 which was the target year in the Go2030 plan.

All numbers in the goal are percentages. The first number is a percentage reduction in energy use through energy efficiency measures. The second number is the percentage of renewable sources we aim to reach in the energy supply of the City. The last number is a percentage reduction in the energy bills of households (gas and electricity).

We have reviewed our current energy consumption with our Utilities, we have done an overall evaluation of the strategies that we will adopt during the GUEP competition duration and beyond. From this analysis we have arrived at the mission of 5/5/5 by 2015 and 30/30/30 by 2030. The entry into the quarter final phase of the Georgetown University Energy Prize has given our team credibility and our community momentum and press. While challenging, it is necessary that we meet these goals to create a brighter future and clean environment for our community and beyond.

Strategy

We intend to fulfill the Vision and achieve the outlined Mission goals through a four-part strategic concept called PACE (Policy, Action, Competition, Education) being developed by Malini Srivastava as part of her doctoral research at Carnegie Mellon University. PACE comprehensively address both long term impact and short term initiatives to increase energy efficiency, investment in renewables, and above all awareness in the community. With all four tracks we will target fund-raising, and grant-writing at the local, regional and state levels. We will also monitor and apply for any national fund-raising opportunities that arise.



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Program Management and Partners



Through Go2030 the City of Fargo has worked to envision an energy future where dependence on fossil fuels is minimized, and the community is served by a diverse portfolio of renewable energy sources, an efficient and smart power grid, a system of distributed generation, a diverse and balanced transportation system, and by smart, forward-thinking energy policies and practices. In doing so, the community will realize many positive impacts, including a healthier environment, a more stable and efficient energy system to support local economic activity, reduced dependence on distant sources of energy, a greater proportion of local dollars retained in the local economy, and a healthier population with more equitable access to local resources. We hope to achieve this vision by pursuing the sector-specific goals and strategies outlined in the efargo proposal.

The efargo effort will be guided by a diverse steering team that includes community leadership and representatives from all participating utilities. Mike Williams' commitment as the project champion, longtime elected City Commissioner and advocate for a healthy, safe and sustainable environment is exemplary. The team will work with dedicated community partners (see Appendix 1) to provide expertise, guidance and feedback on the effort, plus a direct connection to the data needed for the competition and information on utility programs or regulatory changes. It is understood that a single point of contact is needed to facilitate the program. The steering team is working with the City, North Dakota State University and partners to fund a position.

Our vision is to continue the partnership between North Dakota State University and the City of Fargo to host the administration of efargo. Within the City, the Renewable Energy and Conservation Committee will be the administrative host, with an ultimate goal of developing a sustainable support model and making community-wide energy efficiency an essential part of how the public is served.

In addition, the City of Fargo's Renewable Energy and Conservation Committee (RECC) will coordinate outreach to the entire community to create energy efficiency awareness and encourage participation in the various efargo events. The RECC will support the work of the team as the team completes the energy usage data collection and analysis, awareness surveying, and the efargo website. Finally, the efargo Policy and Partnerships strategy will focus on energy efficiency policy adoption, code improvements, responsible energy development, incentives, community and K-12 education activities, and energy awareness in specific residential and municipal sectors.

Proposed Team

Champion:

Will have deep knowledge of the City; maintain and expand efargo network within and outside the community; connect the efargo team with organizations, institutions and businesses as needed; develop a donor, grants and fundraising base; conduct community outreach.

Project Lead:

Will have expertise and training in energy efficiency of buildings and design; will provide overall design of efargo and its various components; selection of catalyst projects with municipal lead; structure and schedule various parts of the PACE strategy; partner with the Champion in developing fundraising and grants goals; partner with the Municipal liaison in developing policy and fundraising goals; coordinate the work effort of efargo team including all team members.

Municipal Lead:

Will have in-depth knowledge and experience of working with City government and policy structure; formulate policy in keeping with incentives, policy and fundraising goals within the municipal government; identify and pursue opportunity for grant-making within the municipal structure; identify catalyst project building types in partnership with the Project Lead & Champion; supervise the work of Grants and Fund-raising Team Member.

Knowledge Area Intern 1 (Design and Energy Efficiency of catalyst building projects): Will be responsible for documenting building types identified as catalyst projects within the Neighborhood Revitalization Plan area, work with facilities managers and administrators of catalyst building types to develop benchmarking and commissioning schedules, develop energy efficiency strategies and implementation plans and schedules.

Knowledge Area Intern 2 (Media, Communications & Marketing): Will be responsible for implementing and developing social media, traditional media events and media-related educational goals within the PACE design; assist Project Lead and Municipal Lead in all requirements of the media, communications and marketing related to efargo such as website design, Facebook page, twitter feed and Instagram etc; assist Project Lead in building efargo media networks.

Knowledge Area Intern 3 (Utility / performance dashboards / website / social media): Assist Project Lead in partnering with the utility to collect clean

data as required by the Georgetown University Energy Prize competition; work with dashboard technologies; work with, understand and analyze large amounts of numerical performance data to evaluate which strategies are more successful than others; develop in-depth knowledge of both utilities' efficiency programs; identify a triple bottom line analysis structure for the GUEP effort; complete a quarterly triple bottom line analysis. Work with media, communications and marketing team to provide website, apps, and social media support.

Knowledge Area Intern 4 (Grants & fund-raising):

Research applicable local, regional, state and federal grant opportunities pertaining to various areas of the efargo project. Maintain grant-application schedule. Complete and submit grants per schedule while recruiting any partnerships and expertise needed by grants. Review all grant applications with project / municipal lead. Identify and develop fund-raising opportunities in partnership with local institutions, organizations and businesses and under the guidance of Project Champion, Project / Municipal lead.

Utility Liaison:

Liaison with Utilities to meet all information requirements of the Georgetown University Energy Prize dashboard requirements; understand dashboard technologies to make performance data visible to users in order to evaluate which efargo strategies are more successful than others; develop in-depth knowledge of both utilities' efficiency programs.

Knowledge Area Experts (as needed):

The team will partner with several knowledge area experts in the community such as builders, contractors, rehabilitation experts, energy efficiency experts, architects, artists, community outreach organizations, electrical engineering, computer science and data mining, K-12 administrators and teachers, local, state and federal ND legislators.

Volunteers (as needed):

We have outlined an ambitious agenda for the two year competition and beyond. We intend to keep the team agile by keeping it small, however, we will need many helping hands for the success of these events. Fargo has a strong culture of volunteerism and we will tap into our greatest asset - our community members.



1 Mike Williams // Champion

Fargo City Commissioner

Mike Williams was elected to the Fargo City Commission in 2004 and re-elected in 2008 and 2012. He is the liaison to the Fire Department and Information Services Department as well as many committees, including Metropolitan Council of Governments, Metro Area Transit Coordinating Board, and Renewable Energy and Conservation. He works extensively on Fargo's Comprehensive Growth Plan, where he helps identify goals and strategies to help Fargo grow in a vibrant, safe, efficient, sustainable, and attractive manner. Since 2003, he has worked at Family Mutual Insurance as a risk manager and adjuster to create sustainable rural economic development opportunities and increase efficiency. He is very passionate about community outreach and engagement, outdoor activities, and renewable energy and conservation advocacy.



2 Malini Srivastava // Project Lead

AIA, Certified Passive House Consultant, Bush Fellow

Malini Srivastava is a Certified Passive House Consultant and registered architect in the state of Minnesota. In her roles as a co-Principal of Fargo-based Design and Energy Laboratory and Senior Project Architect on a partnership track with Salmela Architect, she provides complete design and architectural services for projects with challenging conditions related to environmental and efficiency measures. Being well-versed in energy modeling, hydrothermal analysis and certification programs, she brings comprehensive environmental strategies to her projects. Her extensive involvement with projects has led to national and regional awards for design, preservation and efficiency and a Committee on the Environment National Top Ten Environmental building award. Her research work has received recognition through grants and exhibitions and has been published nationally and internationally. Malini has volunteered her time on the Green Team advisory group for the University of Minnesota Itasca Biological Research Station and has served as a founding Board Member for the North Dakota Chapter of the US Green Building Council. Most recently, Malini was awarded a two-year Bush Fellowship. Through the fellowship, Malini is completing doctoral work at Carnegie Mellon University where her research focuses on design-based tools to have mid- and large-scale impacts on energy efficiency improvements.



3 Dan Mahli // Municipal Lead

Community Development Administrator at City of Fargo

Dan Mahli is the Community Development Administrator for the City of Fargo. He is responsible for the development of housing programs, neighborhood initiatives, historic preservation, human relations, as well as administration of the City's Federal and local grants. During times of emergency, the Department of Planning and Development is responsible for logistics and resource support, as well as shelter, volunteer coordination and transportation. In 2010, Dan was awarded Social Entrepreneur of the Year at North Dakota's Marketplace of Ideas. His ability to discover unnoticed or unlikely leaders, possibilities for collaboration, and potential for new directions has helped develop Fargo's dynamic, diverse, and thriving community. Dan has been with the Fargo Department of Planning and Development since 2001.



4 Amber Grindeland // City of Fargo Intern

LEED Green Associate, Graduate Research Assistant

Amber Grindeland is a LEED Green Associate for sustainability and a member of the Tau Sigma Delta Architectural Honor Society. She earned her Bachelor of Science in Architecture Degree in May 2014, and is currently working toward her Masters of Architecture at North Dakota State University. She plans to graduate May 2015. She studied in Brussels, Belgium, and traveled to 9 countries during her time abroad. Amber currently works as a student intern at JLG Architects in Fargo and as a Graduate Research Assistant at NDSU. Previously, she was a Teaching Assistant for the architecture department's graduate level Professional Practice class. Amber is North Dakota's sole Student Licensing Advisor for NCARB and guides students through the steps to licenser. She has been continually active in the United States Green Building Council Student Chapter at NDSU, and has attended numerous conferences with focus on sustainability and energy efficiency including USGBC's Greenbuild Conference in San Francisco and New Orleans.



5 Rajesh Kavasseri // Utilities Expert

Professor at North Dakota State University

Rajesh Kavasseri received his doctorate in Electrical Engineering from Washington State University, Pullman in 2002. Since 2002, he has been a faculty member in the Department of Electrical and Computer Engineering at North Dakota State University, Fargo where he is currently an Associate Professor. Dr. Kavasseri teaches and conducts research in the area of electric power systems. His research interests include system stability and protection at the bulk transmission and generation level, operation and control of microgrids at the distribution level, and renewable energy-interfaced operation of electric grids. In his spare time, he enjoys gardening and mixed-media visual art.



6 Mark Nisbet

Principal Manager at Xcel Energy

Mark Nisbet is the North Dakota Principal Manager for Xcel Energy, the fourth-largest combination natural gas and electricity company in the nation, serving 2.2 million electricity customers and 1.8 million natural gas customers in eight Western and Midwestern states. Mark serves on the Greater Fargo Moorhead Economic Development Corporation executive board. He is on the EmPower North Dakota Commission and a member of the North Dakota Chamber of Commerce. He serves as chairman of the Governor's Centers of Excellence Commission.



7 Scott Handy

CEO at Cass County Electric Cooperative, Inc.

Mr. Scott W. Handy has been the President and Chief Executive Officer of Cass County Electric Cooperative, Inc. in Kindred, ND since February 2002. Mr. Handy serves as the Chairman for the Rural Electric Management Development Council and the Minnkota Power Cooperative Manager's Advisory Committee, and served as chairman for the North Dakota Association of Rural Electric Cooperatives Manager's Advisory Committee. In addition, he serves as the board chairman for Greater Fargo-Moorhead Economic Development Corporation's Growth Initiative Fund, and board member of the North Dakota State University Quentin N. Burdick Center for Cooperatives and board member of the North Dakota State University Alumni Association.



8 Marshal Albright

Vice President Member and Energy Services at Cass County Electric Co-op

Marshal Albright is the Vice President of Member and Energy Services for Cass County Electric Cooperative Inc. A graduate of the National Rural Electric Cooperative Association's Management Internship Program from University of Wisconsin, Marshal has held positions at Cass County Electric Cooperative Inc since 1986, including Load Management Technician, Marketing Manager, and Key Accounts Executive, before taking on his current role. He is also the Director of the Greater Fargo-Moorhead Economic Development Corporation, Chair of the Energy and Environment sub-committee of the FMWF Chamber Public Affairs Committee, Director of the Fargo-Moorhead Electric Industry Association, and Past Director of the Fargo-Moorhead Home Builders Association. Marshal has had the privilege of speaking at various local, state and national events in the electric industry.



9 Colleen Sheehy

CEO at Plains Art Museum

Director and CEO of Plains Art Museum in Fargo, ND, Colleen J. Sheehy holds an M.A. and Ph.D. in American Studies from the University of Minnesota. For nearly thirty years, her museum and scholarly work has been concerned with our shared public culture and ways in which museums play vital roles in civic life. At Plains Art Museum since fall 2008, she has played a leading role in civic conversations among artists, citizens, and public officials about public art and the role of art in creative place-making and urban improvements. Under her leadership, major grant support for capital and programs has been awarded by Kresge and McKnight Foundations, ArtPlace America, and the National Endowment for the Arts, as well as one of the inaugural grant from the Bush Foundation for Community Innovation.



10

Karis Thompson
Community Engagement Liaison

Karis Thompson works with both the Plains Art Museum, Fargo, ND, as the museum’s community engagement liaison, weaving together new networks through creative collaboration, and with Redeemer Center for Life, Minneapolis, MN, as a strategist for community development. She serves on the boards of Luther Seminary, St. Paul, MN, the North Dakota Humanities Council and Wheat Ridge, Chicago, IL. Karis earned an M.A. from Luther Seminary and a B.A. from Concordia College, Moorhead, MN. She has received fellowships through the Creative Community Leadership Institute, Next City Vanguard, and Forum for Theological Exploration along with a Fulbright grant to teach English in South Korea.



11

Michelle Weber
Principal at Liberty Middle School

Michelle was the principal at the West Fargo STEM Center Middle School, the first STEM school in ND, and is currently working as Principal at Liberty Middle School to grow STEM education in West Fargo. She earned a BS in Secondary English Education and a minor in Speech Communications from Moorhead State University and two Master’s Degrees from North Dakota State University in Educational Leadership and Counselor Education. Michelle has been on numerous committees including the district’s strategic planning task force, 21st Century Skills task force, AVID Site Planning, and the middle level transition committee. She has also been a graduate school facilitator for the University of Mary for Guidance, Administration and Consultation, Elementary School Counseling, and Secondary School Counseling, 2011-2012. She has presented at conferences for the ND School Psychologists Association (October 2010), Association for Middle Level Education (AMLE, November 2012 & 2013), STEMwise (March 2012), and was a TEDx presenter (October 2012) and TEDxFargo co-host (August 2013). Michelle was honored with the North Dakota Counselor of the Year in 2009.



12

Brent Nasset
Math Teacher at West Fargo High School

Brent Nasset is a math and engineering teacher at West Fargo High School in West Fargo, ND. Brent is currently in his 3rd year at WFHS and teaches a Civil Engineering/Architecture class along with core math classes. Brent initially received a BS in Civil Engineering in 2004. After working as a civil engineer for a national consulting firm in Chicago and Minneapolis for six years, he decided to pursue a career in education. Brent received his Master’s Degree in Math Education from the University of Minnesota – Twin Cities in 2012. Brent has led efforts at WFHS to bring First Robotics to the school, and worked with several different STEM initiatives, including mentoring a partner school in India to initiate STEM at their school. He also serves on the Counselor Advisory Board at WFHS. In 2014, Brent received a NSF grant to begin a research study on the effectiveness of engineering classes in high school. Brent is also a 12 year veteran of the United States Air Force and currently serves as a 2nd Lieutenant in the 119th Air National Guard in Fargo, ND.



13

Tracy Walvatne
Office Manager at Kilbourne Group

Tracy Walvatne is Office Manager at Kilbourne Group. Tracy graduated from North Dakota State University in 1990 with a major in hotel/restaurant management and a minor in food and nutrition. Tracy started at the Fargo branch of Food Services of America as an intern and eventually worked her way up to the position of district manager. She also was a sales executive for the Coca-Cola Co., for seven years. While employed by Coca-Cola, Tracy and her husband, Randy, bought the downtown Fargo bakery/café, previously known as Cynthia’s Custom Cakes, and reopened it as Josie’s Corner Cafe and Bake Shop in 2003. Tracy became Kilbourne Group’s office manager in May of 2013.



energy plan

Plan Concepts

Economically and climate wise, we have the deck stacked against us in the City of Fargo. We are an oil economy in a very cold climate zone with very few efficiency measures and requirements and almost negligible incentives. However, there are valuable human attributes in our culture that we need to tap into to create a plan that can succeed. We are a frugal people who believe in being careful with how we spend our resources, we have a strong culture of neighbor helping neighbor and living in a climate with extremes, very cold winters and warm albeit short summers we have an expanded comfort zone.

ATTRIBUTES

Keeping the realities of our economy, climate and culture in mind we identified central attributes that we wanted our strategic PACE (Partnerships/Policy, Action, Competition, Education) plan to reflect:

- A. Use the ACEEE self-scoring tool as a guideline to create the strategic initiatives.
- B. Create an agile structure that can respond to actualities.
- C. Specify and implement the policies adopted in the Go2030 plan.
- D. Make education and awareness a central part of our effort.
- E. Create a structure that allows every person or groups of people such as neighborhood and citizen groups to contribute towards winning the competition and increasing the efficiency.
- F. Use social media tools, traditional media and events to build excitement and sense of pride about achieving a common goal.
- G. Work in close partnership with the Utilities so that the work being implemented for the competition is mutually beneficial to the people and the utility.
- H. Engage various sectors of the built environment even those not being measured, such as educational institutions (University campuses), commercial and manufacturing building owners (businesses), cultural and religious institutions, and non-profit organizations.
- I. Create and adopt long term municipal policies with specific performance goals and incentives.

AGILITY

Keeping these attributes central to our implementation plan, we have created an agile structure in terms of time and content where we are evaluating our performance, examining what is successful so that we can respond to the actuality even as we are implementing ideas towards reaching our goals.

Since we have several ideas in each strategic area, we have prioritized one or two catalyst projects to kick off the competition period. We have carefully chosen the catalyst projects to be exemplary in each specific strategic area to spur several other initiatives within that subject area towards greater and more stringent efficiency goals.

We have created a quarterly timeline of implementation and evaluation. The competition period will be divided into eight quarters, each with specific high level goals of performance, fund-raising, strategy implementation and evaluation. Most efforts will straddle more than one quarter but the quarterly period allows us to have the agility to rethink ideas and implementation as necessary. For more detail on Schedule see page 44.

Our team analyzed the first three of five areas in the ACEEE Self-Scoring Tool (Local Government Operations, Community-wide Initiatives, and Building Policies). The other two areas (Utility Policies and Transportation Policies) will be completed in Quarter 1 of our schedule. Our analysis (summarized below) shows that the Community-wide Initiatives are the best performing, Local Government Operations are the poorest performing, and Building Policies have the most room for improvement:

A. Community-wide Initiatives (best performing). Following are the suggested areas of improvement and other actions possible for a more involved and better informed community:

- a. Annual public reporting
- b. Public education
- c. Access to information
- d. Develop incentive-based group action concepts

B. Local Government Operations (poorest performing). Following are the suggested areas of improvement and action:

- a. Performance Management & Reporting
- b. Building Benchmarking
- c. Comprehensive Energy Management Strategy

Local government energy efficiency targets
Progress towards efficiency goals
Third party EM&V
Departmental/Staff incentives

CATALYST CONCEPT

SCHEDULE CONCEPT

ACEEE SELF-SCORING TOOL

Fleet Efficiency and vehicle infrastructure
Above code requirements for municipal buildings
Comprehensive retrofit strategy
Fix-it-first or life cycle cost policy

C. Building Policies (most room for improvement). Following are the suggested areas of improvement and action:

- a. Improve access to energy usage information
- b. Upfront code support
- c. Energy audit requirements
- d. Commercial benchmarking and disclosure policies
- e. Residential benchmarking and disclosure policies

STRATEGIC CONCEPT

Taking into account the analysis from the ACEEE self-scoring tool and other background research (see Page 103 Research Tracker & Appendix 3), we intend to fulfill the Vision and achieve the outlined Mission goals through a four-part strategic concept called PACE (Partnerships & Policies, Action, Competition, Education). PACE comprehensively addresses both long term impact and short term initiatives to increase energy efficiency, investment in renewables, and above all awareness in the community.



Outline of PACE Strategy

POLICIES

- | | |
|---------------------------|--|
| CATALYST PROJECTS | 1. City Hall Performance Standards |
| YEAR 2 POTENTIAL PROJECTS | 2. Loan or Tax Credit or Incentives program |
| YEAR 3 POTENTIAL PROJECTS | 3. Performance standards for buildings receiving public funding |
| YEAR 4 POTENTIAL PROJECTS | 4. Benchmarking and Commissioning for existing municipal buildings |
| YEAR 5 POTENTIAL PROJECTS | 5. Renewable energy programs |
| | 6. Fast-track permitting for green buildings |
| | 7. Incentives to home builders |
| | 8. Incentives and innovative financing for energy efficiency retrofits |
| | 9. Incentives for rental housing, affordable housing, renaissance zone |

PARTNERSHIPS - UTILITIES

- | | |
|---------------------------|--|
| CATALYST PROJECTS | 1. Utility Publicity Program |
| YEAR 2 POTENTIAL PROJECTS | 2. efargo dashboard |
| YEAR 3 POTENTIAL PROJECTS | 3. Individual dashboards |
| | 4. Home Energy Score |
| | 5. Municipal dashboards, especially K-12 |

PARTNERSHIPS - UNIVERSITY

- | | |
|---------------------------|-------------------------------------|
| CATALYST PROJECTS | 1. Expertise and team collaboration |
| YEAR 2 POTENTIAL PROJECTS | 2. Partnered grant activities |
| | 3. Space sharing |
| | 4. efargo DEMONSTRATION |

PARTNERSHIPS - LENDERS

- | | |
|---------------------------|---|
| CATALYST PROJECTS | 1. Creative financial models (ESA, PACE, OBF, ESCO) |
| YEAR 2 POTENTIAL PROJECTS | 2. Real Estate credits for energy efficiency |
| | 3. Programs like METRUS and NAESCO |
| | 4. Low interest retrofit loans for HVAC |

PARTNERSHIPS - ORGANIZATIONS

- | | |
|---------------------------|---|
| CATALYST PROJECTS | 1. Employee education programs |
| YEAR 2 POTENTIAL PROJECTS | 2. Fund-raising and employee incentives |
| YEAR 3 POTENTIAL PROJECTS | 3. Innovative financing for retrofits of multi-structure campuses |
| | 4. Federal aid for University campus retrofits |
| | 5. Training programs for builders and contractors |

PARTNERSHIPS - ARTS

- | | |
|---------------------------|---|
| CATALYST PROJECTS | 1. Oil Show collaboration |
| YEAR 2 POTENTIAL PROJECTS | 2. efargo MOBILE |
| | 3. Partner with K-12 as a building typology |

ACTION

- | | |
|---------------------------|--|
| CATALYST PROJECTS | 1. efargo CAMPAIGN |
| YEAR 2 POTENTIAL PROJECTS | 2. efargo CHALLENGE |
| | 3. Demonstration |
| | 4. Solar Park |
| | 5. Full cut-off LED lighting for the entire city |
| | 6. efargo COMMUNITY |



COMPETITION

- | | |
|---------------------------|--------------------------------------|
| CATALYST PROJECTS | 1. Let' play efargo! |
| YEAR 2 POTENTIAL PROJECTS | 2. efargo K-12 COMPETITION |
| | 3. Annual repetition of competitions |

EDUCATION

- | | |
|---------------------------|--|
| CATALYST PROJECTS | 1. efargo CATALOGS |
| YEAR 2 POTENTIAL PROJECTS | 2. efargo CLASSES |
| | 3. K-12 curriculum consultancy and partnership |
| | 4. efargo APPS |
| | 5. Boy Scouts of America environmental greenhouse facility |
| | 6. West Fargo public schools green roofs |

Schedule

CATALYST PROJECT 
 YEAR 2 POTENTIAL PROJECT 

	QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8
P Policy	Design and Construct City Hall to meet LEED Certification and eFargo's 30/30/30 Goal							
		Propose Loan, Tax Credit/Exemption or Incentive Program				Apply Performance Standards to any publically funded building		
				eFargo Utilities Campaign		Institute a schedule for benchmarking and commissioning all municipal buildings.		
		Utility Dashboards						
P Partnership	Partner with NDSU Students							
	Partner with NDSU and the City of Fargo for Grant Activities						eFargo Dashboard	
		Research & Implement Financial Programs for the Community						
					Create an Efficiency Standard Among Local Agents, Brokers, Appraisers, Lenders			
			Partner With Local Businesses to Provide Employee Education Programs					
					Fundraising Programs with Local Businesses, Organizations & Institution		Provide assistance to multi-building, large organizations to institute energy efficiency measures.	
		Oil Show Workshops						
				eFargo Mobile Museum				
A Action		eFargo Campaign						
			eFargo Challenge					
						Identify other demonstration projects in each building typology in the Neighborhood Revitalization Zone		
		Complete the ACEEE self-scoring analysis						
		Design & Build a Solar Park				eFargo Community Demonstration		
C Competition					Let's Play eFargo! (Serious Urban Game)			
				K-12 eFargo Competition			K-12 eFargo Competition	
E Education		K-12 Planning						
			eFargo Community Educational Classes					
					K-12 Curriculum Partnership			
			Design a Web App for the Urban Game					
		Boy Scouts of America Treehouse/Greenhouse					West Fargo Public Schools Greenroof Project	

Partnerships & Policies

Partnerships and Policies will help us involve all the major stakeholders in this effort and create long term impacts via municipal policy to shape an environmentally conscious future for the place that we would like to see prosper and grow in our lifetime and beyond.

We will approach the City Commission that consists of four Commissioners and a Mayor with policy proposals that if adopted will establish performance standards for existing and new municipal buildings and also provide homeowners with incentives to improve energy efficiency. In addition to identifying funding sources within the municipal structure, throughout the competition period we will identify grants and funds that we can use to implement policy-based energy incentives in our City. We are also very mindful that with this strategic track we are not only targeting improvements during the competition phase but targeting long term impact.

1. Minimum Silver / Gold / Platinum LEED certification OR equivalent certification AND 30/30/30 energy performance standard for City Hall Design & Construction as a pilot test case. 30/30/30 performance standard would ensure that the new City Hall has 30% better efficiency performance than a national benchmark (weather normalized) for the same building type. It will also ensure that at least 30% of the energy sources for the City Hall are from renewable resources. Lastly, the energy operations costs for the new City Hall are 30% lower per sqft than the old city hall.

2. North Dakota's Renewable Energy Tax Credit (Corporate) and Geothermal Tax Credit (Personal) are about to expire in 2014. Institute either a Loan Program or a Tax Credit/Exemption or an Incentive program for energy efficiency and renewable energy retrofits or construction for the City of Fargo (Personal and Corporate). Partner with ND Department of Commerce for this effort.

3. Apply performance standards to any building that receives public funding.

4. Institute a schedule for benchmarking and commissioning all municipal buildings to identify better use of existing systems and deteriorating systems.

5. City of Fargo has a track record for innovative renewable energy programs including landfill methane generator, bio-digester. Create ongoing five year plans for investment in large scale renewables.

6. Fast-track permitting for green buildings including residential.

MUNICIPAL POLICIES

CATALYST PROJECTS

YEAR 2 POTENTIAL PROJECTS & BEYOND



- 7. Provide incentives to home builders to design/build above 2009 energy code standards.
- 8. Incentives and innovative financing for energy efficiency retrofits
- 9. Incentives to targeted high need groups such as affordable housing, renaissance zone (historical housing/structures).

PARTNERSHIPS WITH UTILITY

Fargo’s energy needs are fulfilled by two Utilities -- Xcel Energy and Cass County Electric Cooperative. Both Utilities have been intrinsic and important partners in this effort. We had their commitment of support in the first submittal and since then have worked with them to understand the energy usage of the City. Both Utilities already have several efficiency rebates and programs that are not very well known. By forming a mutually beneficial partnership it is our intention to help them in their efforts to shave peak loads while they work with us in making information available and increasing efforts to provide renewable energy to Fargo customers.

1. efargo UTILITY PROGRAMS: Raising awareness of energy-usage is the first step and the team will work closely with the two utilities to increase the adoption of tools for residential and municipal energy monitoring, assessment, and analytics. Through efargo social media and traditional media, publicize the efficiency programs at both Cass County and Xcel Energy. Emphasize that these programs are available to customers for free or for very small cost and can have great impacts on the energy savings especially in residential. Our team will also work with the arts community for educational efforts.

2. Individual DASHBOARDS

Partner with the Utilities to provide online dashboard service for individual accounts for customers in the City of Fargo. Cass County Electric Cooperative already provides this service to residential accounts in the City of Fargo. Xcel Energy provides My Energy service which has the potential for more interactivity.

CCEC has installed a system called Smart Hub which allows the utility to uniquely identify customer accounts and to collect and manage their energy usage statistics. The tool is freely available for all customers. Nearly 80 % of all service accounts have been upgraded to this technology and the remainder (20 %) is expected to be complete by the end of this year. With Smart Hub, we will have fine-grained access to residential load patterns. We will use the data, first, to establish a base-case energy consumption

for individual users and second, to bundle personalized recommendations on energy efficiency improvement tips with potential benefits at every access of the App. This will allow us to measure the effectiveness of energy conservation measures initiated by either the utility or the customer.

The system allows residential customers to review and evaluate their own energy consumption. The system is accessible via mobile App that is freely available on the Android and iOS markets. This technology records energy usage statistics into hourly, daily, weekly, monthly, or annual consumption in a non-intrusive way, i.e., the meter does not identify the specific appliances that are using the energy, but simply reports just how much energy is being used.

We expect the tool to have several immediate benefits for customers.

- a. First, it will raise awareness of energy consumption in a very easy-to-understand format, unlike electricity bills which are hardly read by customers.
- b. Customers can intuitively examine their own usage patterns to detect periods of high/low consumption and to correlate that with their lifestyles.

3. efargo DASHBOARD

Partner with the Utilities to create efargo community-wide Dashboard for energy analytics. The dashboard will provide a transparent means to monitor energy (gas + electricity) utilization. City of Fargo currently has a dashboard that tracks the energy production at the methane gas generator every 15 minutes on the City of Fargo website. This dashboard would be a similar idea except it would make visible the energy use as well as the source of the energy provided. The comparison baseline of 2013 and 2014 will also be visible on the Dashboard site along with energy savings goals. As a result the past use, current use and future goals will be visible to any community member who wants to track progress.

4. Programs such as Home Energy Score (DOE) that allow an assessment of the typical home energy use and assistance in prioritizing cost-effective energy improvements with the greatest returns.

5. Municipal Dashboards that allow municipal energy use to be publicly visible. Of these, K-12 dashboards would have the greatest educational impact.

CATALYST PROJECTS
 Note: for a list of utility programs, see Appendix 4.

YEAR 2 POTENTIAL PROJECTS & BEYOND

PARTNERSHIPS WITH UNIVERSITY

North Dakota State University (NDSU) is located in the City of Fargo. Given the range of University Colleges and Departments that are engaged in community outreach, education, arts, energy research, engineering and design there are lot of potentials for partnership between the City of Fargo and NDSU for the efargo effort.

CATALYST PROJECTS

1. Shared Expertise:
Exemplary of these potential partnerships if the involvement of faculty like Rajesh Kavasseri, Scarlet Gray Bernard and Amber Grindeland on the current project team. While Grants Coordinator Bernard and Prof Kavasseri volunteer their time to the efargo group, Amber Grindeland is a paid intern with NDSU and City of Fargo both investing in her involvement in the efargo effort. In our proposed project team we have included at least four such positions held by Graduate Research Assistants/Interns that will be help jointly between NDSU and City of Fargo.

2. Partnered grant activities:
In collaboration with Scarlet Gray Bernard (College of Arts, Humanities & Social Sciences / NDSU /Grants Coordinator), we have identified several grant opportunities that we will be targeting over the course of the competition period and beyond. Some of these grant applications will be greatly strengthened by the presence of experts from the City and NDSU on the project teams. We will work collaboratively on grant applications where possible.

YEAR 2 POTENTIAL PROJECTS & BEYOND

3. NDSU administration has made the tentative offer to provide space to house the efargo effort. This will allow the idea to have a permanent place at least for the duration of the competition which can be a great boost to the identity and performance of the team.
4. When the efargo housing demonstration projects (such as high efficiency home or affordable-efficient home) get funded and implemented the City of Fargo, NDSU and efargo team can work on designing and structuring classes that will provide educational and service-learning opportunities for students.
5. Create partnerships with students, faculty and staff from neighboring educational institutions such as Concordia University, MSUM Moorhead, and Technical College.

PARTNERSHIPS WITH LENDERS

Buildings consume 49% of the primary energy produced and 75% of electricity produced in the United States and are responsible for 40% of the world’s emissions per the EIA. According to the Rockefeller Foundation

(2012 Retrofits report), the energy efficiency retrofits can have strong financial returns while creating jobs and substantial energy use savings. As a result financial institutions, mortgage and construction lenders and City policies need to consider models such as Energy Service Agreements (ESAs), Property Assessed Clean Energy (PACE) bonds, On-Bill Finance (OBF), Energy Services Companies (ESCOs) and Low interest loans or leases. These would allow financing retrofits rather than building Owners utilizing equity which can be cost prohibitive.

In Fargo, an example of such a program is the low interest loan available from Gate City Banks for improvements to existing buildings. This is only a start and the City can form partnerships with financial institutions to offer creative retrofit financing.

According to the Council on Environmental Quality at the White House these are the three primary barriers in the home energy upgrade market:
- Lack of access to clear and reliable information
- Lack of financing
- Lack of skilled workers to perform Home Energy retrofit.

1. Partner with lender organizations to see which creative financial models might apply to market like Fargo and the process to implement them (ESA, PACE, OBF, ESCO, etc).
2. Partner with real estate agents, brokers, appraisers and lenders to create common understanding of retrofit and energy efficiency features such that these can make a positive impact on the value of a property thus encouraging other Owners to follow suit.

3. Business opportunities exist for construction and construction financing experts modeled after companies like Metrus Energy and NAESCO. Create education program for business representatives such as the Chamber of Commerce and the Downtown Community Partnership.
4. Loan programs can encourage high-impact technologies for retrofits. For example retrofitting high efficiency boilers and air handlers could make a large impact in climates like Fargo.

Even though businesses, institutions and organizations are not part of the baseline and competition measurement, partnership with these institutions can have a large impact on the residential and municipal measures. Community members who work in or are members of organizations,

CATALYST PROJECTS

YEAR 2 POTENTIAL PROJECTS & BEYOND

PARTNERSHIPS WITH ORGANIZATIONS

businesses and institutions are mini-communities. Education programs, incentives, awards, fund-raising and other such activities targeted towards these mini-communities can be effective ways of improving energy efficiencies of residences.

CATALYST PROJECTS

1. Partner with organizations, businesses and institutions to provide education program to their employees to improve their own energy efficiency at home. Institute and sponsor awards for the most energy efficient employee within the organization.
2. Partner with organizations, businesses and institutions to create sponsorship or fund-raising programs for various efargo strategies. For example corporate sponsorship of the efargo K-12 competition prizes.

YEAR 2 POTENTIAL PROJECTS & BEYOND

3. Provide assistance to multi-building, large organizations to institute energy efficiency measures. In Fargo, Microsoft Business Services has led by example by designing in several environmental features in to their campus.
4. Federal aid is available to federal buildings such as courthouses or public buildings such as the campus of NDSU (land grant University) to improve energy efficiency on their multi-building campus.
5. Addressing the #3 barrier above about a lack of skilled workers can be addressed with training and education models offered through business associations like the Homebuilders Association, Chamber of Commerce or NDSU Extension Services or arranging online programs such as DOE's National Weatherization Training Program. Some of these programs include training for marketing of retrofit strategies which include canvassing campaigns, social media, blogs, email lists, traditional media and partnerships with affiliated groups and contractors.

PARTNERSHIPS WITH ARTS AND COMMUNITY OUTREACH ORGANIZATIONS

Fargo has a thriving arts community with considerable experience of educational programs and community outreach efforts. The efargo team will partner closely with the arts organizations such as the Plains Art Museum to create educational and awareness programs.

CATALYST PROJECTS

1. Oil Show - workshops:
The Plains Art Museum is going to have an Oil Show where they exhibit artists' perspective on the North Dakota Oil Boom. As part of this effort, Malini Srivastava has been invited to co-lead a series of workshops that will teach community members ways of solving large problems such as those created by the Oil Boom through design process.

2. efargo MOBILE:

For a metro area of almost a quarter million people Fargo lacks a Science Museum or hands-on educational facility for its children in spite of the emphasis on the knowledge economy. The efargo MOBILE is an idea to create a traveling museum that has demonstration artifacts, hands-on tools created by designers, artists and architects to educate children about the production, consumption and impacts of energy. Till we have an energy think-tank/museum/living laboratory the efargo MOBILE will be our place where children and adults in our community can learn about energy issues.

Educational, curricular aspects of the K-12 community are discussed in the Education section of PACE. K-12 as a building typology provides great potential for energy improvements.

1. Partnership with Utilities to create K-12 dashboards that can encourage friendly competition to increase energy savings as an added component of the K-12 COMPETITION (See page 60).
2. Based on ideas that emerge from efargo COMPETITION, the efargo team can provide grant and fund-raising advice and support to implement innovative ideas.

3. Research has shown that increasing daylighting, comfort (individual class temperature controls) can have direct impacts on the performance of students and increase the energy efficiency of school buildings. Creating to-do lists of such measures to recommend to the K-12 administrators will be a first step in improving the built environment of our schools and increasing their efficiency.

4. Providing benchmarking and commissioning services to K-12 schools as a first step to impact the municipal efficiency performance.

YEAR 2 POTENTIAL PROJECTS & BEYOND

PARTNERSHIPS WITH K-12 AS A BUILDING TYPOLOGY

CATALYST PROJECTS

YEAR 2 POTENTIAL PROJECTS & BEYOND

Action

Using the momentum of the GUEP, we will create awareness campaign and events about energy issues during 2015-2016 in an effort to involve, energize and even entertain community members from all walks of life including businesses and non-profits. In addition, we will implement retrofit and new construction demonstration projects in the City as examples of energy efficiency from low-high investments ranges.)

CATALYST PROJECTS

eFARGO CAMPAIGN

1. efargo CAMPAIGN:

The CAMPAIGN will consist of creating a presence and awareness of Fargo's participation in the Georgetown University Energy Prize Competition on digital media (Internet, website), traditional media (newspapers, newsletters, magazines, billboards, radio, TV) and through social media (Facebook, twitter, Instagram). This will be an ongoing effort.

eFARGO CHALLENGE

2. efargo CHALLENGE:

The kick-off event for the efargo CAMPAIGN will be the efargo CHALLENGE. The challenge will involve community members creating simple one-minute videos to inform and educate the public about creative and simple ways of improving energy efficiency. Participants will film, on their own, a video (no longer than a minute) completing an energy efficiency task, which will allow them to nominate another two people or organizations via social media. With enough promotion, it is the hope of the Fargo Team that the energy video challenge will "go viral", and spread throughout the Fargo-Moorhead area, as well as outside of the city.

At the kick-off event we hope to ask local leaders and celebrities to play their one-minute efargo CHALLENGES. We hope to unveil the efargo social media presence through the efargo website, twitter and Facebook. We hope to align this event with other community events such as Streets Alive etc.

YEAR 2 POTENTIAL PROJECTS & BEYOND DEMONSTRATION

3. Create and implement at least one demonstration project from a choice of various building types in the Neighborhood Revitalization Zone. Energy Efficiency has been called the cheapest energy source by the Rocky Mountain Institute. For a 65°F base, Fargo has 9,254 Heating Degree Days and 537 Cooling Degree Days. As is evidenced in the charts shown in the Utility Reporting Section (see pages 72), there is a peak energy usage in the winter months as the temperatures drop and the days are short. An Integrated Design Strategy such as Passive House or similar can increase energy efficiency by using simple passive measures, targeting the high energy use equipment such as space heating and water heating for

efficiencies, and at the very least targeting low investment strategies such as programmable thermostats, weather stripping, timers on heaters (in residences), efficient lighting, daylighting, motion detectors/timers etc can aggregate to energy savings.

Traditionally in the housing typology, rental, affordable and historical homes can be the largest energy users. For Fargo's DEMONSTRATION project the selected house needs to incorporate at least two of these qualities so it can be educational for a large range of community members:

a. Rental homes

Fargo has an inordinately large percentage of rental homes (54%) of all occupied homes. As such this is a very important opportunity area for City of Fargo. According to the HUD "multifamily housing stock could feasibly become 26.8% more energy efficient by 2020." Due to split incentives, multiple users who do not have any long term investment in the rental apartments, developers who try to capture every small return on investment in the design and construction phase, and managers who might not have control or incentive to implement efficiency measures, the rental building efficiency is a difficult problem. In our demonstration project, we will partner with owners, managers and residents of a rental /multi-unit and rental/single unit home to create guidelines, grants and implementation plans. We will aim to demonstrate that through efficiency efforts there are cost-savings to be realized for all parties involved and due to their design and age, multi-family and rental housing can actually be the "low-hanging fruit" among building types for energy savings.

Some of the research materials that we will reference in this effort are as follows:

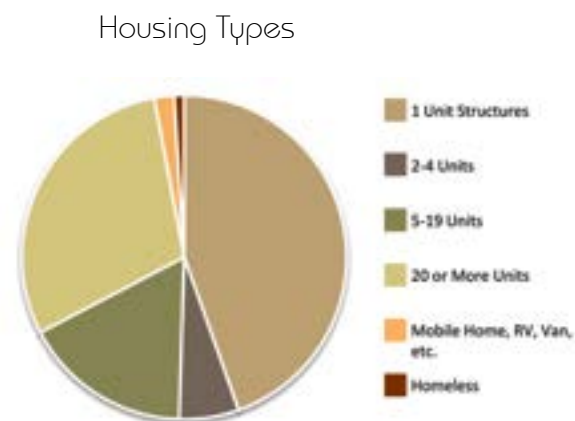
- The ACEEE Multifamily Energy Savings Project
- Energy Efficiency in Rental Housing (2011 report from the Minnesota Community Action Partnership)
- Quantifying Energy Efficiency in Multifamily Rental Housing (Department of Housing and Urban Development)
- Tips for Renters and Property Owners (Department of Energy)
- Overcoming Barriers to Energy Efficiency for Rental Housing (DSpace at MIT)
- Sensible Incentives: Enabling Energy Efficiency in Rental Housing (MN 2020)

b. Affordable housing

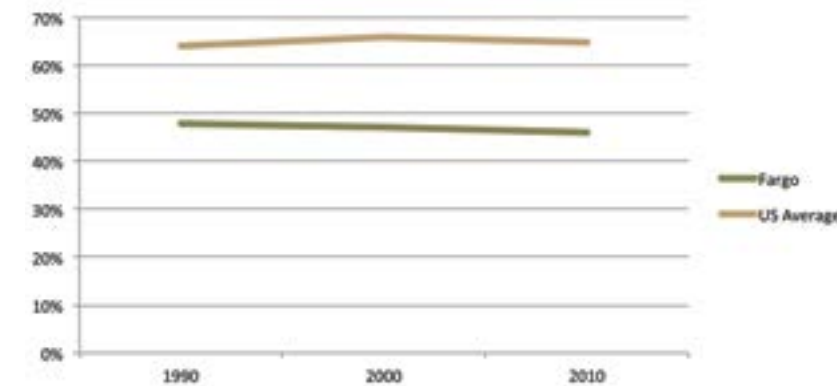
The City of Fargo has two housing programs that foster the rehabilitation and preservation of existing affordable homes. The first, Fargo's Neighborhood Revitalization Initiative (NRI), provides low-interest loans to homeowners to make significant home improvements, ranging in value from \$10,000-\$50,000. In addition, the Neighborhood Revitalization Initiative also works with neighborhood groups to develop better lines of communication between citizens and local government by planning and empowering residents to take an active role in the development of Fargo's neighborhoods. The City routinely plans for growth and change on the community's fringes; however, it is equally important to plan for growth and change in the City's established neighborhoods. Another affordable housing incentive, the Fargo Housing Rehab program, uses up to \$25,000 in Federal funding to rehabilitate homes of low-to-moderate income households to make health and safety code improvements. Each of the programs target houses that are at least 40 years old, so the opportunity to improve the energy efficiency definitely exists. As such, eFargo will provide a means to emphasize and enhance energy efficiency improvements in Fargo's older, affordable housing stock.

c. Historical homes in the Renaissance district and Aging housing stock in the Neighborhood Revitalization Zone might not fall in the affordable or rental housing category but are a strong target for energy efficiency improvements.

d. Demonstration of high performance, affordable, new and infill housing



Percentage of Homeownership



The above graph shows the percentage of homeownership in Fargo and the US average. The US overall seems to be fairly steady, whereas Fargo appears to be declining.

in the Neighborhood Revitalization Zone using high performance strategies such as stringent Passive House performance criteria.

SOLAR PARK

3. New solar park

Fargo is in discussions with one of our local utilities to develop a partnership that would use the land for a new ground water storage reservoir for a large solar collection area. The eFargo project will create the impetus for Utility and City to implement this idea.

4. Identify other demonstration projects in each building typology in the Neighborhood Revitalization Zone such as schools, commercial buildings, institutional and municipal buildings

5. Partner with various organizations around the city to expand the full cut-off LED light fixtures program. So far this program has been implemented in the downtown areas.

6. eFargo COMMUNITY (One block at a time demonstration as a catalyst). Create and provide organizational and incentive structures for neighborhood groups to identify themselves as a client block for energy retrofits. Research shows that large percentage of costs in the US renewables and retrofits is in soft cost such as marketing and business development. By creating multi-client business blocks that are adjacent to each other green-construction businesses can provide competitive bids for energy efficiency related retrofit work which provides marketing and construction set up discounts.

Competition

CATALYST PROJECTS LET'S PLAY eFARGO!

Engage the residential community and K-12 schools in tailored, incentivized mini-competitions that build upon the idea of purposeful play to encourage community pride in being energy efficient and reducing energy bills for residential and municipal buildings.

1. Let's play efargo! (Serious Urban Game)
efargo will design, promote, implement and measure a Serious Urban Game, consisting of neighborhoods competing against each other to save energy, and of course money on their energy bills.

The game, itself, is an ideal tool to involve entire communities in learning about and implementing energy-saving tactics. There are both digital and physical aspects of this game. The City itself is the gaming board and the neighborhoods are the players. The game will allow groups to identify themselves as teams online and post their progress in a way that it is visible on a comparison dashboard with other player-groups around the City. The Serious Urban Game will give people the ability to create their own energy saving ideas, implement them for sponsored prizes based on their success with cutting back energy use. Prizes will be in the form of corporate- or city-sponsored efficiency components such as LED bulbs, smart thermostats, timer switches etc. Online rules, suggestions and simple "to-do" lists provided to homeowners will allow them to make educated decisions about energy efficiency and their level of commitment to the game as a whole. efargo education component (efargo CLASSES) will provide suggestions of to-do lists and simple tasks that will make saving energy an easy and affordable task. An online resource similar to green button and a phone app, and media update will inform players of their progress and rank against other neighborhoods to create a sense of friendly competition.

eFARGO COMPETITION

2. efargo COMPETITION (K-12 competition, energy fellow and energy mentors)

Modeled after the Georgetown University Energy Prize competition and in collaboration with teachers and administrators in Fargo and West Fargo Public Schools, efargo will create the structure, timeline and Prizes for efargo COMPETITION, a K-12 energy efficiency competition. In this competition, efargo will request the schools interested in participating to create teams comprising of students, student lead (efargo fellow) and lead

teacher (efargo mentor). These teams will work towards creating proposals for making their school energy efficient and reduce energy use. As a way to start efargo CLASSES will provide easy to-do lists and suggestions for improving the energy efficiency of school buildings. At the end of the competition period teams will be awarded corporate-, business- and city-sponsored prizes for innovation, thoroughness and implementability. Based on the ideas and results that emerge, efargo will work with administrators of the school districts to create implementation resources.

3. Repetition

It is our intention to repeat the proposed competitions annually. Each year we will have the chance to re-design and improve the competition structure for greater impact.

YEAR 2 POTENTIAL PROJECTS & BEYOND

Education

Education is a core part of the PACE strategy and as such included in the main project plan. As we met with K-12 teachers, Utilities, Businesses, Organization, arts community, the one consistent issue that we have heard is the dire need to create an awareness and education effort not just in the K-12 system but also in higher education and the community-at-large. Fargo has a thriving arts community with considerable experience of educational programs and community outreach efforts. The efargo team will partner closely with the arts organizations such as the Plains Art Museum and various administrators, teachers and staff from the K-12 schools to create these programs. As a result, out of all strategic sections the “E” from PACE has the greatest amount of catalyst programs.

CATALYST PROJECTS

1. efargo CATALOGS:

Through this program efargo team shall through a deep literature search create top ten to-do lists for various building types such as single family homes (urban /suburban/rental/affordable/historic), multi-family homes, industrial, institutional, cultural, retail and corporate building types. These would be distributed through digital and physical media to the Fargo community.

2. efargo CLASSES:

- Classes such as Energy 360 (created by Rajesh Kavasseri), offered online to create awareness of the production, consumption and impacts of energy use.

- We need to create a one-stop-learning and training shop for our construction industry. Ever since City of Fargo adopted the 2009 Energy Code, the need for training our builders and construction groups in advanced building techniques has become urgent and obvious. We will partner with community experts, University extension programs, construction management programs and the community college to create these teaching/learning opportunities. The efargo Demonstration projects will also be a great venue to fulfill this need.

3. K-12 curriculum consultancy and partnership:

We heard from more than one K-12 teacher about their efforts to incorporate energy and science related to energy in their STEM classes. efargo can partner with schools to find knowledge area experts to present material to their classes. If partnerships are feasible, knowledge area experts can provide assistance in creating curricula that can be taught in the K-12 system.

4. efargo APPS:

Children from the 7th grade classroom of our STEM schools participate in a national competition to create web apps. Children working in collaboration with artists and designers would create apps around the efargo energy efficiency ideas for the competition.

5. STEM area schools are teaming up with the LEED certified Boy Scouts of America building to create an environmental greenhouse facility to teach kids hands-on about environmental issues and food production. efargo team will provide knowledge area expertise to these efforts.

6. West Fargo public schools is reviewing the ability to add green roofs to their school building not just as an efficiency measure but as an effort that will be rich in educational opportunities. efargo team will provide knowledge area expertise to these efforts.

YEAR 2 POTENTIAL PROJECTS & BEYOND

Innovation

We have incorporated several tried and tested ideas in our proposal, such as incentives for green building and retrofitting. While these are important components of a successful energy saving program, these strategies lack the general education and behavior modification elements necessary to produce a large-scale cultural shift. The most success will result from not only additional government policy and incentives, but from a strong program that builds community excitement and involvement to create cultural shift. We have several innovations in our plan that create that energy and excitement and allow participation and creativity from our community.

BRANDING Currently efargo has an innovative identity/branding that is already picking up steam in our community. It represents the entire effort and embodies the excitement and energy surrounding the City of Fargo’s participation in the Georgetown University Energy Prize. Graphically, it is iconic and memorable.

STRUCTURE The structure of our proposal, PACE (Partnership & Policy, Action, Competition and Education) allows us an innovative framework to implement ideas that are both long term and short term, educational entertaining, incentivized and impactful. Though we identify catalyst projects that are a priority for us, the structure allows room for shifting directions based on ongoing evaluations of which strategies are succeeding. It also allows various tracks that tap into the diverse community of local talent to make creative contributions. There is a place in the structure for anyone who wants to participate. See page 44.

FUND-RAISING Through the efargo challenge we have innovative fund-raising strategy that is both educational and entertaining and through the use of social media allows people from every walk of life to make a contribution. We have modeled this on the Ice Bucket Challenge and 1-minute science videos. See page 56.

COMPONENTS Lastly we have innovative components in our Project Plan listed as follows that work with the idea of “purposeful play”, education and voluntary participation.

efargo CAMPAIGN: Digital, social and physical media awareness campaign See page 56.

efargo CHALLENGE: Educational social media and fund-raising effort See page 56.

“Let’s play efargo” : Serious Urban Game (digital and physical) See page 60.

efargo CATALOGS : To-do lists for various building types with different levels of monetary investment created by efargo team for various building typologies See page 62.

efargo CLASSES: Digital and in-person educational offerings for children and adults See page 62.

efargo COMPETITION: K-12 energy efficiency competition See page 60.

efargo MOBILE: Mobile science museum about energy production, consumption and impact See page 55.

Potential for Replication

In a state that is ranked fourth-highest in energy consumption per capita, and dead last in a ranking of energy efficiency policy and programs, North Dakota is in desperate need of widespread change. Using Fargo as an example, cities across the state, big or small, will be able to implement parts or the entirety of the proposed energy plan. With existing support from ND state and federal legislators the Fargo Team's proposal is likely to be replicated in other cities across North Dakota. Senator Heidi Heitkamp in her strong letter of support talks about the need and applicability of the efargo programs nation-wide while State Senator Mathern is looking forward to introducing policy proposals through the Appropriations Committee that will impact the state as a whole (see page XX).

eFARGO: E-ANY-CITY

The PACE (Partnership & Policy, Action, Competition, Education) strategic plan and the quarterly evaluation schedule provides a flexible structure that can have diverse impacts while maintaining the agility to shift directions depending upon what is successful for that specific city or community. The specific programs created within the PACE structure for Fargo can be easily applied to other cities across North Dakota, the Upper Midwest and even other parts of the United States.

DIVERSE COMMUNITY ENGAGEMENT & EDUCATION

Engaging and fun strategies such as the efargo challenge, Serious Urban Game or the efargo K-12 competition with a focus on education and behavioral change can be implemented anywhere, and can be shared via accessible systems, such as apps and web pages. Strategies such as efargo catalogs which supply occupants, owners and managers of different building types with simple, accessible information like green checklists can be applicable in all cold climates.

PARTNERSHIPS

PARTNERSHIPS

The strength of PACE is the inherent structure of partnerships with diverse community organizations such that the community-at-large has a stake in the success of the plan. The key requirement to PACE is the availability of energy use data through interactive and understandable formats. This idea of establishing baselines and achievable goals is imperative to the effort. For this any city wanting to adopt the efargo ideas will need to create close working partnerships with their utilities.

eFARGO CENTER

The central requirement of any endeavor is the people, resources and place to complete the day to day work behind large ideas. efargo CENTER is an idea that can be replicated in any community. Once further developed it will provide the structure to formulate the team of people with expertise

and experience to lead such efforts, to provide the place and resources for the team to succeed in achieving their goals.

Given the strong support we enjoy from our government representatives, the efargo steering team will actively work with state and federal legislators to assist in policy formulation. After November 10th, we plan to share the PACE structure and policy ideas publicly in an effort to help our legislators prepare for the next legislative session. The work of replication and ideas sharing will begin even before the start of the semi-final phase of the competition. Acceptance into the semi-final phase will lend emphatic credibility to our ideas.

NORTH DAKOTA AND BEYOND



Utility Data Reporting

The electric load for the City of Fargo is served by two entities: Xcel Energy (Xcel) – a major utility and Cass County Electric (CCEC) – a small local cooperative. The gas needs for the city are exclusively met by Xcel. The eFargo team will work in close partnership with these entities to assist with the data reporting requirements.

XCEL ENERGY

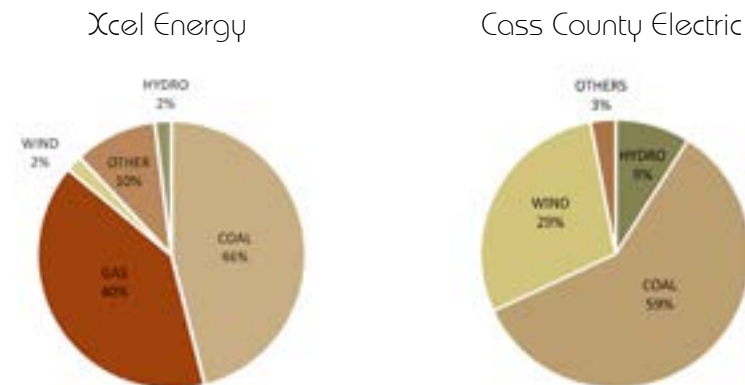
Xcel Energy is a major U.S. electric and natural gas company, with annual revenues of \$10.9 billion. Based in Minneapolis, Minn., the utility has regulated operations extending to eight Midwestern and Western states, and provides a comprehensive portfolio of energy-related products and services to approximately 3.5 million electricity customers and 1.9 million natural gas customers through four operating companies.

Xcel's generation assets (in MW) are noted in the graph below. Nearly 15 % (about 2400 MW) of its generation comes (16700 MW) from non-fossil resources, with a gradually increasing contribution from wind and solar resources. Xcel currently accommodates about 5000 MW of wind generation which includes 380 MW of its own generation from wind. It is currently the nation's number one provider of wind generation and the city of Fargo is fortunate to receive service from such a progressive utility.

CASS COUNTY ELECTRIC CO-OP

Cass County Electric Cooperative (CCEC) is a not-for-profit, member owned electric distribution system, serving more than 35,000 consumers in a 10-county area in southeastern North Dakota.

CCEC purchases all of its power from Minnkota Power Co-Op and does not own any generation. However, its renewable energy footprint is commendable – including nearly 30 % from wind resources and 9 % from hydroelectric.



Our team has established partnerships with both these utilities and will work closely with them on two tasks:

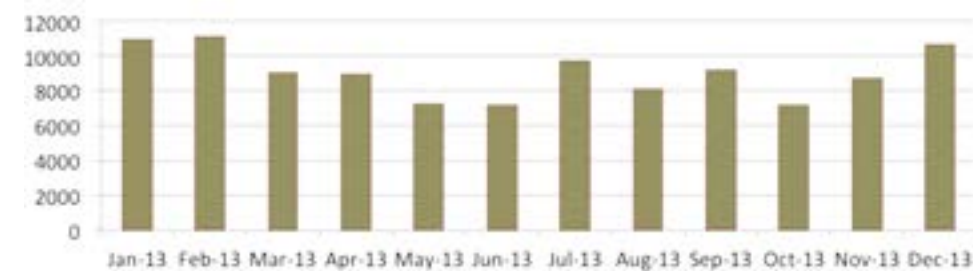
Promotion: Increased adoption of energy efficiency measures – for residential and municipal facilities. These measures are detailed in the Partnerships: Utilities Section, Page 50.

Energy Analytics: Providing our team with energy usage statistics - electricity and gas at periodic intervals (monthly) to closely monitor and assess project performance. See Partnerships: Utilities Section, Page 50.

The proposed team will incorporate a knowledge area expert and an intern to serve as liaison to the utilities.

The aggregate energy consumption of all residential customers from both utilities (CCEC and XCEL) electric and gas are shown below. The utility aggregated all residential accounts into this data collection. This includes multi-units. The eFargo team is working with Xcel Energy to ensure that multi-unit residential buildings are not included in the non-residential data. The data clearly shows the electric load peaks during the winter months (shorter daylight hours) and troughs in the summer months. The trend is more pronounced for gas usage with very high peaks during the winter months.

CCEC: Residential Electric Usage



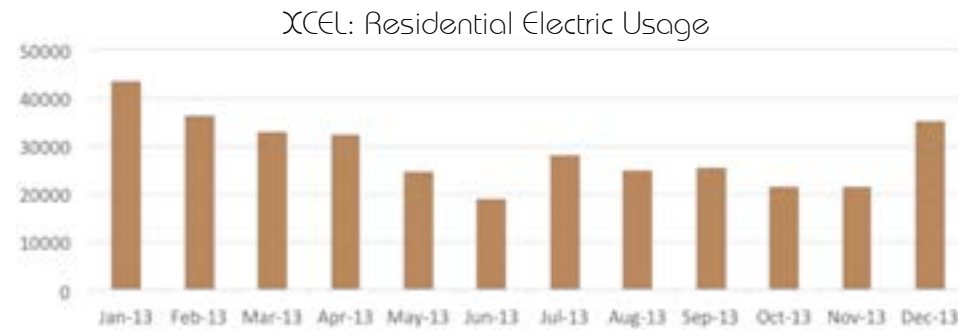
CCEC: Utility provided aggregate electricity usage in MW-hr (Mega-watt hours) for residences over a 12 month recording period: Jan-13 through Dec-13. The system loading peaks during the winter months (Jan/Feb) and troughs in May/June - just before the onset of summer.

PARTNERSHIPS

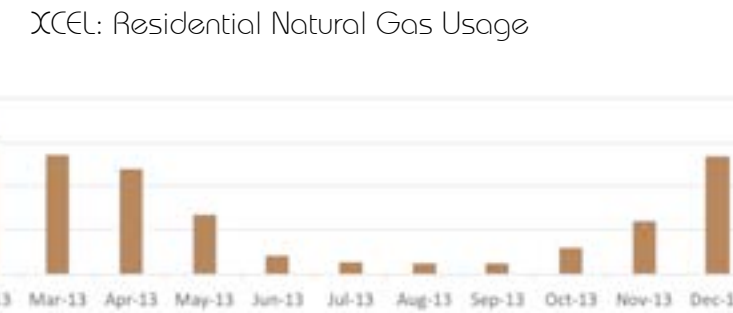
RESIDENTIAL

Note: For utility raw data, see Appendices 5 & 6.

RESIDENTIAL ELECTRIC



XCEL: Utility provided aggregate electricity usage in MW-hr (Mega-watt hours) for residences over a 12 month recording period: Jan-13 through Dec-13. The system loading peaks during the winter months (Jan/Feb) and troughs in May/June - just before the onset of summer.

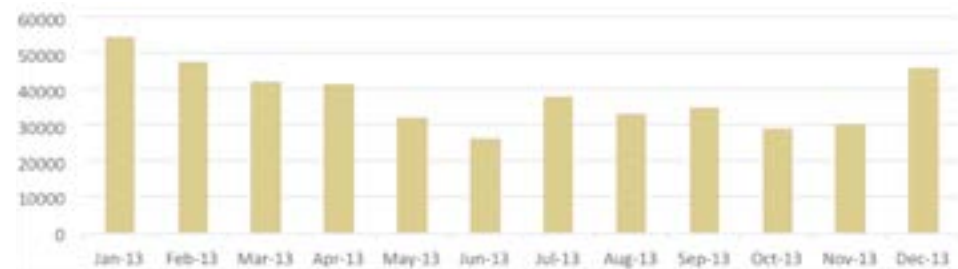


Residential natural gas consumption in Dekatherms (DTH). Data provided by XCEL energy.

The City of Fargo provided a list of all municipal buildings to the utilities. The utilities used this listing and aligned their municipal accounts with this listing. Cass County Electric provided data separated by category for ease of use. The eFargo team is still working with Xcel Energy to separate non-municipal accounts from the aggregated data they have provided.

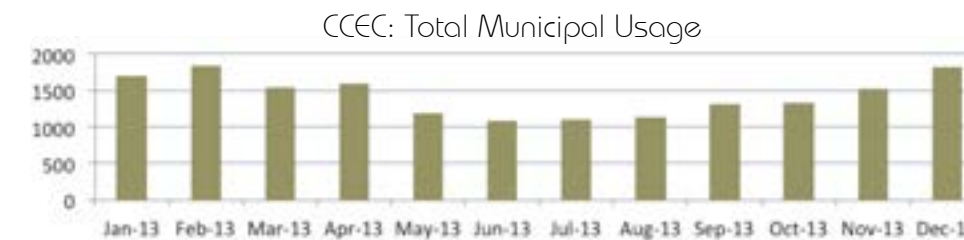
MUNICIPAL
 Note: For utility raw data, see Appendices 5 & 6.
 For list of municipal facilities, see Appendix 7.

TOTAL RESIDENTIAL ELECTRIC USAGE



RESIDENTIAL TOTAL electric energy consumption in MWhr over a 12 month recording period: Jan-13 through Dec-13.

Cass County Electric Co-op's municipal accounts have been organized into three major categories: (1) K-12 schools, (2) Municipal buildings used by the City of Fargo, and (3) Parks and recreational facilities. Aggregate energy usages for these three sectors and total municipal energy are shown in the figures below.



CCEC provided aggregate energy usage in MW-hr (Mega-watt hours) for all municipal accounts over a 12 month recording period: Jan-13 through Dec-13.

CASS COUNTY MUNICIPAL - ELECTRIC

RESIDENTIAL NATURAL GAS

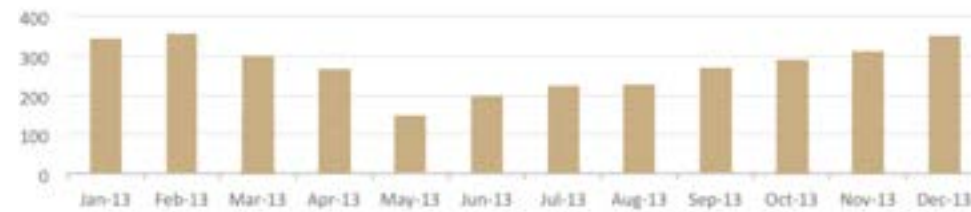
Nearly 60 percent of households use natural gas for heating, cooking or other activities. The American Gas Association (www.aga.org) reports that residential use of natural gas accounts for nearly a quarter of the energy consumed in the country. Besides, utilities use an additional another 33 percent of natural gas supplies to produce electricity.

The residential consumption of natural gas provided by Xcel is shown below. Notice the distinct peaks during the winter months. The winter-peak grows nearly 17 fold from its minimum during summer.

Parks & Recreation	Municipal Facilities	K-12 Facilities
Anderson Ball Fields Anderson Field East Anderson Field West Courts Plus Fargo Youth Initiative Dr. Rose Creek Ball Hut South West Ice Arena Scissors	Anderson Lift Station Emergency Pump Station Emergency Control Center GSR Pump Station Methane Burner Osgood Fire Station Trash Compactor	Bennett Elementary Centennial Elementary Davies High School Discovery Middle School Kennedy Elementary

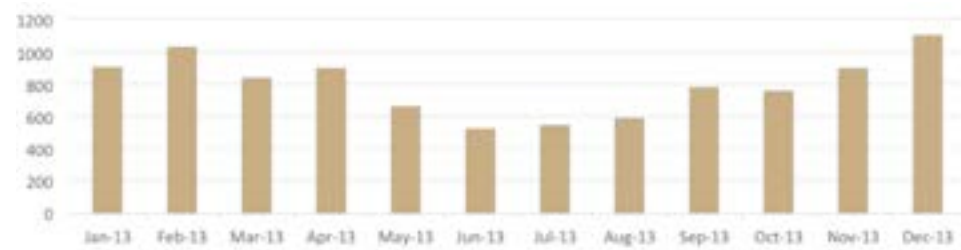
List of municipal buildings serviced by Cass County Electric Co-op.

CCEC: Parks and Recreation Usage



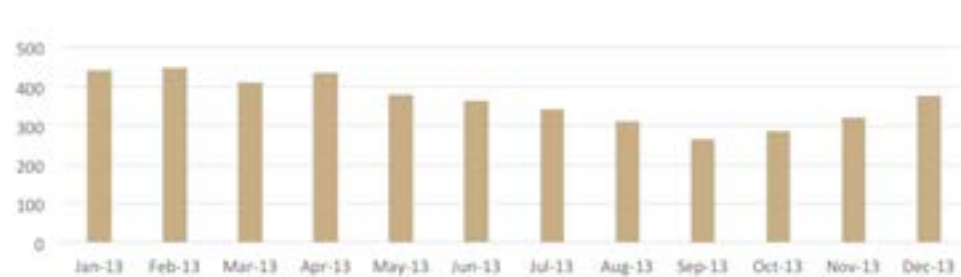
CCEC provided aggregate energy usage in MW-hr (Mega-watt hours) for area parks and recreational facilities over a 12 month period.

CCEC: K-12 Usage



CCEC provided aggregate electricity usage in MW-hr (Mega-watt hours) for K-12 facilities over a 12 month recording period: Jan-13 through Dec-13.

CCEC: City of Fargo - Facilities

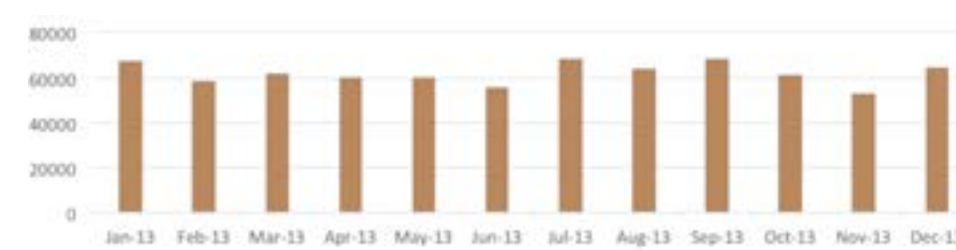


CCEC provided aggregate electricity usage in MW-hr (Mega-watt hours) for city owned municipal facilities over a 12 month recording period: Jan-13 through Dec-13.

XCEL energy bears a substantially larger share of the electric load compared to CCEC. While the data provided below includes all municipal facilities served by Xcel, it also includes certain non-municipal facilities. Our team is diligently working with Xcel to strip the non-municipal loads off this data set for consistency and clarity in our baseline calculations. The team understands that this step is crucial to accurately assess the effectiveness of energy improvement measures over the performance period. This applies to the dataset showing natural gas usage as well.

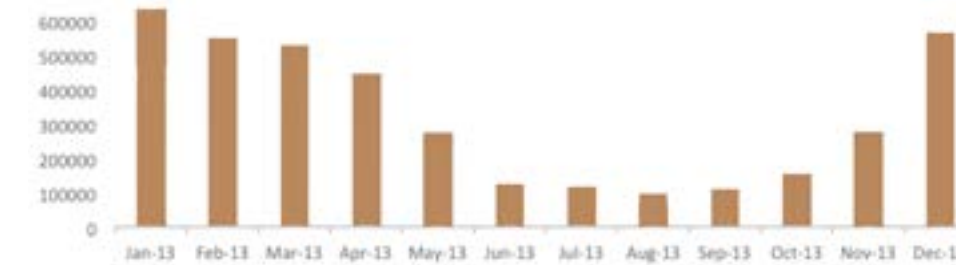
XCEL ENERGY MUNICIPAL - ELECTRIC

XCEL - Non-Residential Electric Usage



XCEL provided aggregate electricity usage in MW-hr (Mega-watt hours). The data INCLUDES city owned municipal, parks and recreation, K-12 schools and other non-municipal loads over a 12 month recording period: Jan-13 through Dec-13.

XCEL - Non-Residential Natural Gas Usage



XCEL provided aggregate gas usage in Dekatherms (DTH). The data INCLUDES city owned municipal, parks and recreation, K-12 schools and other non-municipal loads over a 12 month recording period: Jan-13 through Dec-13.

XCEL ENERGY MUNICIPAL - NATURAL GAS

Ongoing Work

1

Work with Xcel Energy to separate municipal from non-municipal energy usage.

2

Ascertain that all the municipal buildings listed from City of Fargo are tested and accounted for.

3

Ensure that city-owned affordable multi-unit housing is not being double counted in both residential and municipal.

4

Ensure that all multi-unit housing buildings are accounted for.

5

Ensure that if there are any partial ownership accounts in the municipal section they are accounted for accordingly.

6

Create a final listing of all municipal accounts.



Likely Future Performance

PERMANENCE & DIVERSITY

We strongly believe that the energy savings achieved during the competition period will be permanent for several reasons. Through the innovative PACE structure we are using a diversity of approaches that impact people from all walks of life. Within these spectrum of concepts and strategies each person, organization, institution can find avenues to realize long term benefits.

POLICY

Through Policy (based on ACEEE evaluations) we hope to make long-term permanent changes in how we build our publicly funded buildings and create long-term incentives for community members who are looking for some help in making their homes energy efficient. We are creating

PARTNERSHIPS

Partnerships with a very diverse group of stakeholders such as utilities, University, financial institutions, businesses, arts community, neighborhood groups and community members at large. We are not just restricting

ACTION

our approach to those sectors of our City that are being measured for the Georgetown competition. Through our Action items, we are creating excitement and sense of competitive spirit via the efargo Campaign and Challenge that will involve media from diverse sectors to bring home the message to the people that we are in the game! Progress and game scores (through dashboard) will be made public through billboards, digital media, traditional media and social media. These combined with the Urban

COMPETITION

Game Competition (let's play efargo! and K-12 competition) will open the doors for community members from any walk of life to display their creativity and tap into that community pride that Fargoans display for the Bisons' homecoming and turn out in droves to fill downtown with their celebrations.

EDUCATION

Fargoans as a people care deeply for their city and community and the future of their children. We have included educational plans to teach "students" of all ages including K-12 students about energy efficiency and the efforts we can make daily without much cost to save energy. Once the concepts, training and education about energy saving principles and practices enter into the community knowledge base, these will be here to stay and shared. The deep-seated care for community has been demonstrated time and time again during the 500-year floods that we have had in the past 10 years. People have come out in the harshest of conditions and filled over a million sand bags and built several hundred lineal feet of temporary dikes to protect the city and their neighbors.

CONSERVATION

Lastly, Fargoans are a frugal people who care deeply about the great outdoors. Conservation and efficiency is all about being frugal with your

fuel resources and caring about the natural environment. Our project champions two themes: (1) energy conservation and (2) increasing the percentage of renewable resources concurrently. Once Fargoans start to see the cost-savings and economic benefits of energy saving measure, we believe, there will be no turning back.

In conclusion, we are confident that the savings that we realize in the competition period will be permanent because of our diversity of approaches which calls into action a very diverse group of stakeholders and directly involves our community members.

We have completed a partial analysis of our City's performance via the ACEEE self-scoring tool. We plan to complete the rest of the analysis in the first quarter of our schedule. Through this analysis, the NREL guidelines and several other resources we have developed a very robust Policy adoption agenda that we will pursue over the next several years. We have chosen to begin this effort with the projects that are already underway such as the design of the future City Hall and extending programs for incentives that are about to expire. By starting with ideas that are already underway we hope to introduce an annual cycle of energy savings related policy adoption.

- | | |
|----------|--|
| Policies | Catalyst Projects |
| | 1. City Hall Performance Standards |
| | 2. Loan or Tax Credit or Incentives program |
| | Year 2 Potential Projects |
| | 3. Performance standards for buildings receiving public funding |
| | 4. Benchmarking and Commissioning for existing municipal buildings |
| | Year 3 Potential Projects |
| | 5. Renewable energy programs |
| | 6. Fast-track permitting for green buildings |
| | Year 4 Potential Projects |
| | 7. Incentives to home builders |
| | 8. Incentives and innovative financing for energy efficiency retrofits |
| | Year 5 Potential Projects |
| | 9. Incentives for rental housing, affordable housing, renaissance zone |
| | And so on..... |

LONG TERM IMPACTS VIA MUNICIPAL POLICY CHANGES

LONG TERM IMPACTS OF DATA ACCESSIBILITY

eFARGO CENTER

We will ensure this work for many years into the future through our use of the prize money, if awarded. Through the efargo CENTER (see page 96) we will create the ability to endow a permanent place and position which will sustain this effort and focus on energy savings.

COLLABORATION

By conceptually and organizationally, placing this work as a collaborative effort between the City and University and community members, we are ensuring that even as personnel changes occur there are always stakeholders, knowledge area experts and policy makers working hand-in-hand to accomplish long term goals.

Energy efficiency reigns supreme for our area’s service providers. As remarked earlier, unlike several other regions in the country, utilities in our community face very special challenges because of extreme weather conditions and load diversity. For example, temperatures plummet to -40 F during winter (spiking a demand for heating loads) and rise well up to 100 F during summers (spiking the demand for air conditioner loads). Further, the prospects of snow-laden winters in low lying areas increase the accumulated precipitations and cause a spike in pumping loads (especially during the spring months). It is commendable to note that despite the absence of a binding renewable portfolio standard (RPS) in North Dakota, both our electricity providers are stepping up efforts to increase the percentage of generation sourced with non-fossil resources. Combined with several environmental upgrades at primary generation plants, these efforts have led to drastic reductions in environmental pollution indices.

efargo adopts two primary efforts for the partnership with the utilities to realize its stated goals for energy efficiency improvement.

A) Demand Side Management (DSM): The main goal of this program is to minimize the peak system load by shaping end-user electricity usage by carefully designed incentive schemes and policies. efargo will strive to publicize the utility incentives through their diverse media efforts. Here is a listing of some of the programs that the Utilities made available (See Appendix 4 - details of all the utility programs) :

XCEL ENERGY

1. Back-up relief
2. Saver’s switch
3. Time of Day
4. Several Rate Incentives

5. Several rebates
6. Several subsidized audit schemes

CASS COUNTY ELECTRIC:

1. Dual-heat program
2. Rebate Incentives for DSM subscribers as follows:
 - i. \$20/kW of energy credit for installation of off-peak electric heating systems
 - ii. \$100/ton of air-source based heat pumps
 - iii. \$200/ton of ground-source based heat pumps
 - iv. \$250 replacement credit for backup heat systems
 - v. \$150 credit towards each of: air-sourced, ground-sourced heat pumps and water heaters over 100 gallons put on active-long-term control.

B) Awareness: Raising awareness of energy-usage is the first step and the team will work closely with the two utilities to increase the adoption of tools for residential and municipal energy monitoring, assessment, and analytics. Our team will work with community through educational efforts, and partnerships with the design and arts community to create dashboards with interactive, easy to use and understand interfaces. The dashboard will provide a transparent means to monitor energy (gas and electric) utilization at the community scale across the residential and municipal sectors. We expect the tool to have several immediate benefits for customers.

1. First, it will raise awareness of energy consumption in a very easy-to-understand format, unlike electricity bills which are hardly read by customers.
2. Customers can intuitively examine their own usage patterns to detect periods of high/low consumption and to correlate that with their lifestyles.

Through the “My Energy” link customers can access energy usage data on the Xcel Energy website. Customers can toggle between Graph and Table views by clicking the icons to the right of the Services drop-down menu. Both views display the energy consumption. Customers can toggle between Average Monthly Temperature and Total Charges. The usage information on the graph is displayed by calendar month.

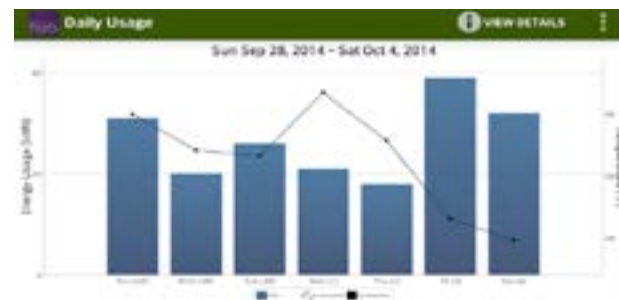
XCEL ENERGY

For a more interactive interface, customers can also utilize Xcel’s My Energy and Green Button online tools available through My Account to understand and control energy consumption. Customers will need to allow data to be transferred from their accounts to the third party website. Green button

will allow access to features such as energy usage detail, energy planning and goal setting tools, personalized list of household appliances that use the most energy, energy savings tips with links to relevant programs, bill comparison, and access to Green Button where customers can view and download up to 24 months of energy use data in an easy to use format.

CASS COUNTY ELECTRIC

Members can subscribe to a system called Smart Hub which allows the utility to uniquely identify customer accounts and to collect and manage their energy usage statistics. The tool is freely available for all customers. Nearly 80 % of all service accounts have been upgraded to this technology and the remainder (20 %) is expected to be complete by the end of 2014. With Smart Hub, members will have fine-grained access to residential load patterns and evaluate their own energy consumption. The system is accessible via mobile App that is freely available on the Android and iOS markets. This technology records energy usage statistics into hourly, daily, weekly, monthly, or annual consumption in a non-intrusive way, i.e., the meter does not identify the specific appliances that are using the energy, but simply reports just how much energy is being used.



An example of weekly energy usage statistics in kWh and temperature profile.

Billed Usage for 2014		
January, 2014 - October, 2014		
Usage		
Peak Usage:	1,219 kWh	(5°F)
Low Usage:	759 kWh	(4°F)
Average kWh Usage:	822	
Total kWh Usage:	8,199	
Weather		
Average Temperature:	43°F	
High Temperature:	53°F	
Low Temperature:	-24°F	
	Jan	1,219 kWh (5°F)
	Feb	1,055 kWh (4°F)
	Mar	878 kWh (16°F)
	Apr	880 kWh (37°F)
	May	832 kWh (53°F)
	Jun	894 kWh (68°F)
	Jul	839 kWh (70°F)

An example annual energy consumption (noted monthly) with summary statistics.





Fundraising

Funding Strategies

We have developed a four-part plan to pursue funding for efargo efforts. These funding efforts are coordinated and targeted based on funder deadlines and where strategic efforts are scheduled on our two-year quarterly timeline and beyond.

GRANTS

North Dakota State University grant coordination and grant writing personnel have assisted us in building a roster of targeted grant-writing. In addition, we have been working with our legislators at the local city level, state level and federal level, community members and financial institutions to identify grant opportunities. These range from \$10,000 grants from the local FM Area Foundation to large grants from the Department of Energy. Each of these grant applications will be targeted towards specific strategic efforts.

FUND-RAISING

Throughout the efargo effort we will seek out donors, sponsors and advertisers for specific strategic efforts. Fargo has a thriving financial, healthcare and technology industry. We will work with these to sponsor events, specific strategic efforts or incentives/prizes related to competitive efforts. For example we will seek sponsors for the Serious Urban Game Prizes, or the Prizes for the K-12 competitions etc.

SMALL CONTRIBUTIONS ADD UP

The remarkable success of small contribution campaigns relies on grass-roots efforts with effective social media and traditional media campaigns to get the audience community involved. Example such as the Ice Bucket Challenge, Kickstarter, President Obama's campaign are exemplary of this philosophy. An engaged community can make a big difference with small contributions that add up. Through the efargo Challenge we will conduct our own small contributions community fund-raiser. See the Project Plan for a description of the efargo Challenge.

MUNICIPAL & UNIVERSITY PARTNERSHIP

Other than project Champion (Mike Williams) and Municipal Lead (Dan Mahli) who are elected and salaried employees of the City of Fargo respectively, the only other paid position dedicated to this effort is held by efargo intern, Amber Grindeland. Rest of the team are volunteer community members. City of Fargo and North Dakota State University formed a partnership under the sponsorship of the City's Planning Department and Professor Mike Christenson at North Dakota State University to select a student from the Architecture and Landscape Architecture department for the Graduate Research Assistant position /Intern position to work on the efargo effort. Part of the funding for time and fringe benefits comes from the City while the graduate student tuition is paid for by the University. We

hope to create other such positions in the future for faculty and assistants who will provide the expertise to the efargo effort where University personnel time is paid for by the City while tuition and is paid for by the University.



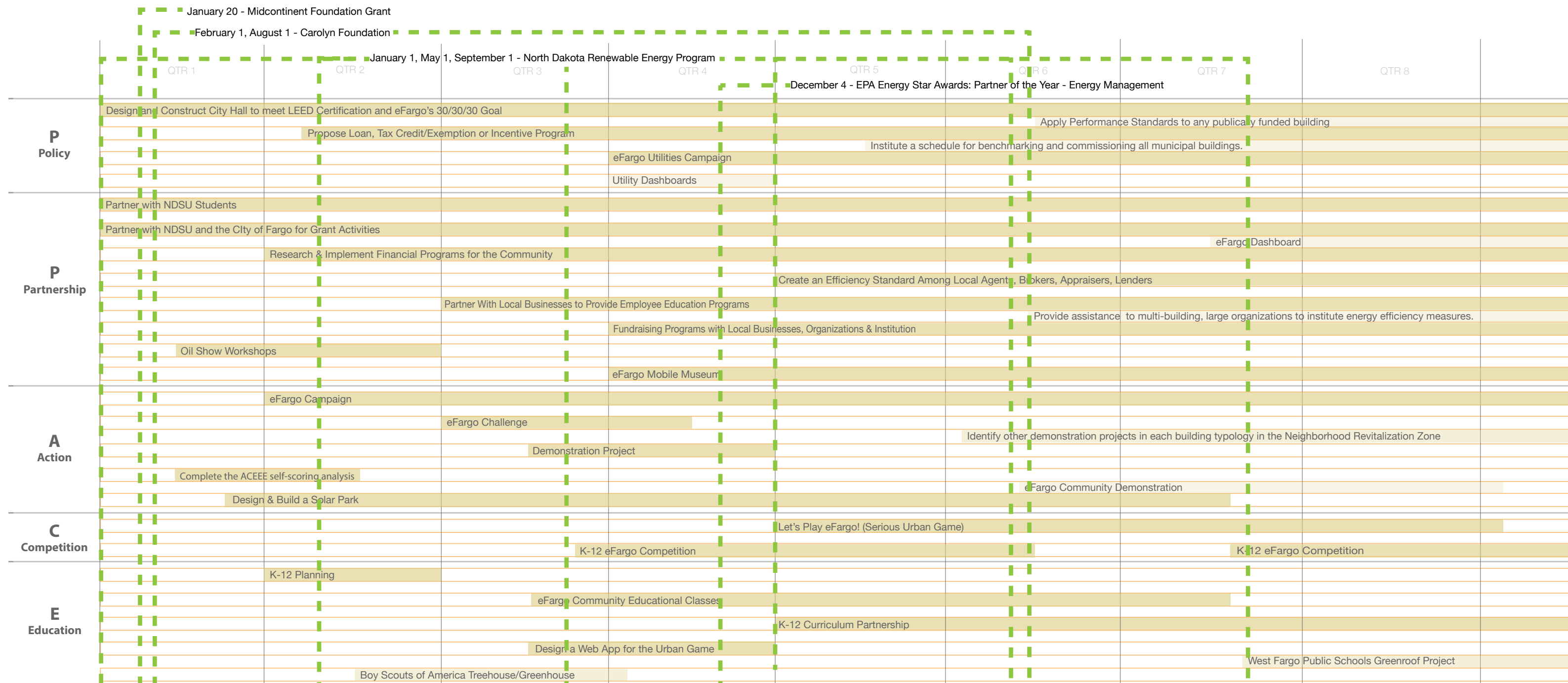
Funding Tracker

Below is a detailed spreadsheet that the eFargo team has been using to track any applicable funding for the Catalyst Projects and the Year 2 Potential Projects. These include both local, state and national opportunities.

Name	Organization/Agency	Min Amount	Max Amount	Deadline
Alex Stern Family Foundation				To Be Announced
Building America Industry Partnerships for high performance housing innovation	DOE			To Be Announced
Building Blocks for Sustainable Communities	Environmental Protection Agency			To Be Announced
Carolyn Foundation, Environmental Grantmaking				Feb 1, Aug 1
Community Improvement, Capacity Building, Environmental Quality, Protection, and Beautification, Health	Environmental Protection Agency		30,000	12/15/14
Delivering Efficient Local Thermal Amenities	ARPA-E			9/18/14
Deploying Solutions to Improve the Energy Efficiency of U.S. Commercial Buildings	EERE			To Be Announced
EERE Commercialization	EERE			To Be Announced
Energy Assurance	ND Department of Commerce		\$258,858	To Be Announced
Energy Conservation Grant	ND Department of Commerce, DCS	10,000	100,000	To Be Announced
FM Area Foundation		\$0	\$25,000	4/18/14
Lexus Eco Challenge	Lexus		\$10,000	12/8/14
Midcontinent Foundation		\$1,000	\$3,000	1/20/15
ND Community Services Block Grant	ND Department of Commerce / DHHS			Ongoing
North Dakota Weatherization Assistance Program for low income	ND Department of Commerce / DOE			Rotating
Otto Bremer Foundation				Jan 7, April 8
Renaissance Zones	ND Department of Commerce			To Be Announced
Renewable Energy Program	ND Department of Commerce		500,000	Jan 1, May 1, Sept 1
Rural Energy for America Program - Renewable Energy System and Energy Efficiency Improvement Guaranteed Loan and Grant Program	USDA			To Be Announced
Smart Growth Implementation Assistance			75,000	Ongoing
State Energy Program	ND Department of Commerce			To Be Announced
Unsolicited Proposals	DOE			To Be Announced
Community Grant Program	Walmart	\$250	\$2,500	12/31/14
Verizon Foundation Grant	Verizon Foundation			Continuous
ENERGY STAR Awards: Partner of the Year - Energy Management	EPA			yearly 12/4/2014

Funding Schedule

Note: This chart shows application deadlines for four specific funding opportunities. The other grants on the previous page have application dates which have not yet been announced. When these dates become available, they will be added to the schedule to coordinate.





EVALUATION

MONTHLY PERFORMANCE EVALUATIONS

As the PACE Strategy is successfully implemented we will perform quarterly evaluations. These evaluations will be in addition to the energy data collection that will be collected to comply with the GUEP requirements. The monthly data will be an important point of evaluation to identify high-performing strategies. If certain catalyst projects are showing a high level of success we will evaluate whether secondary projects in that subject area should be planned and implemented. We will also evaluate for those strategies that are not successful so that we can transfer human and financial resources to those strategies that are working.

We will be working with the utilities to gather data that is required by the competition structure on a monthly basis. However, we will also work with the Utilities to specifically evaluate our catalyst projects on a quarterly basis. Some of this will be difficult to do with a high degree of precision. For example the impacts of the Urban Game Project will be distributed over the entire City and the monthly residential data will be useful to evaluate progress. However, catalyst projects like the demonstration building types can be tracked as a singular building to a much greater level of detail. We will compare this data to our 5/5/5 competition goal, normalized for weather and other circumstances.

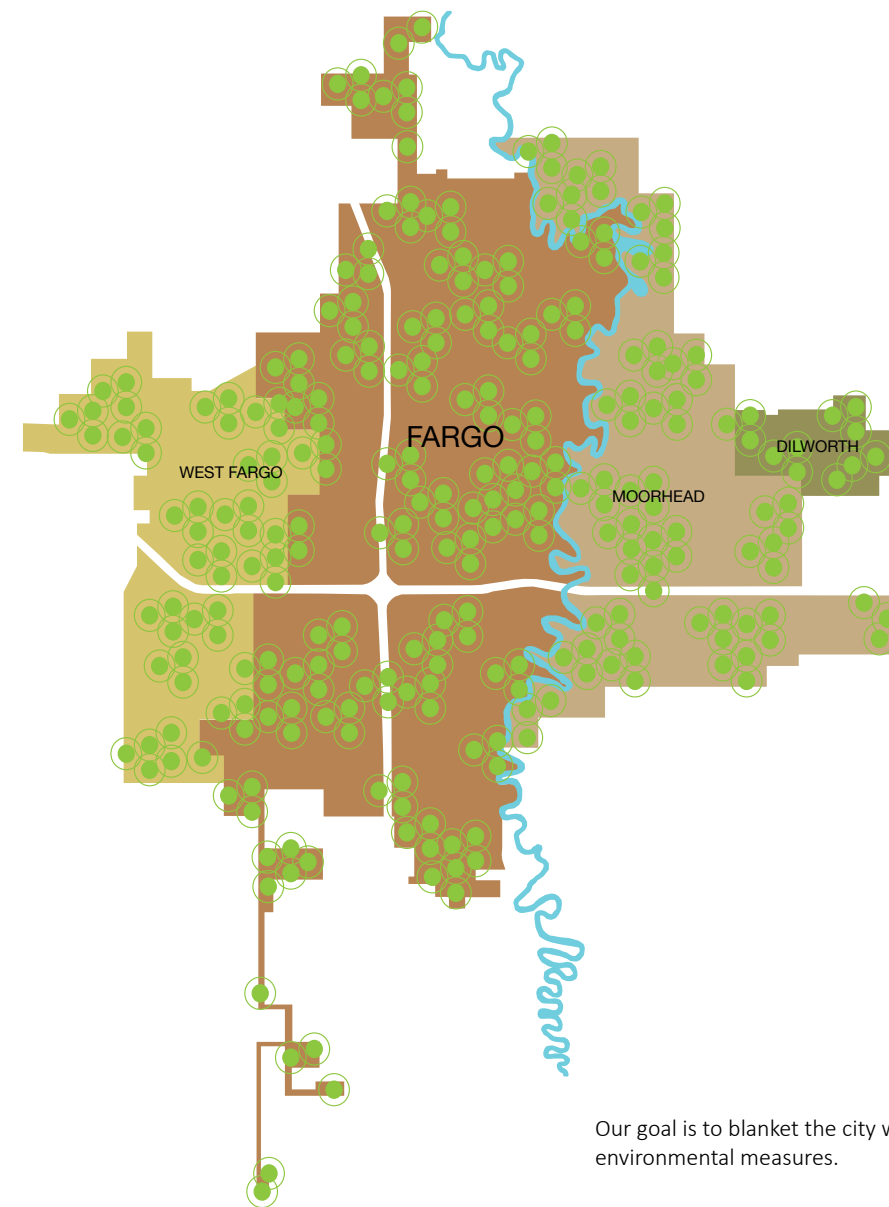
TRIPLE BOTTOM LINE ANALYSIS

The second part of the evaluation that we will conduct is the triple bottom line analysis. The triple bottom line analysis is based upon the following interrelatedness of three criteria: Human capital (Equity), Financial capital (Economy), and Natural capital (Environment).

We are working on defining the human capital measurements. For example in office buildings, benefits of efficiency through strategies such as daylighting and natural ventilations can be tied to wellness and less absenteeism and therefore higher productivity. Some of our current research indicates that level and quality of real time participation can be a measure of human capital benefit in large scale efficiency measures. Long term human impacts such as contributory growth factor due to improvements in environmental quality are very long term returns that might not show substantive change during the competition period. We are defining this criteria through detailed literature search and outcomes of parallel projects. The environmental impact will be measured through the data we gather from utilities and converting it to a carbon measure based upon source energy that was saved. The financial capital analysis will be based on costs and benefits assessments. We will measure the investments against estimated returns over time.

Eventually the quarterly analysis will be a determining factor in which programs are most impactful and where we need to make improvements. The analysis will help us maintain agility.

AGILITY



Our goal is to blanket the city with environmental measures.



conclusion



Prize Purse

There are several ways in which we could use the \$5M to improve the energy efficiency of our City. We have several ideas and we have several dire needs. We have debated between incentive programs, loan programs, grants, sub-grants, funding for demonstration projects etc.

The one thing that everyone on our team agrees on is that we want to use the prize in a manner that anything we do can have a long term cycle of replication and that the work of improving the efficiency of the City can be sustainable. In other words, we would like to use a large part of the money as an endowment to sustain the work of efficiency in energy production, transportation and consumption.

THE WORK OF INCREASING ONGOING SUSTAINED EFFORTS

We believe that the best way to do this is to ensure that the PACE framework based work continues aggressively beyond the competition period and beyond 2030. We do not want our focus on efficiency, renewables, cost savings and ultimately emissions to stop at 30/30/30. We want to set up the conditions such that eventually as a City we can reach for and make possible a really ambitious goal of net-zero.

eFARGO CENTER

To that end we will use the \$5M prize purse to endow a position/team and a place. We strongly believe that unless an idea has a home and a dedicated personnel it will lose momentum. The home-place for eFargo would organizationally and ideally be a partnership between City of Fargo and North Dakota State University. Physically, it would be a structure that is a living lab exemplary of all our long term goals in terms of net zero

energy, minimal if not zero emissions. Conceptually, the work charter of the endowed team and place would be to use the PACE framework to propose and implement increasingly ambitious markers for energy efficiency improvements, energy use reductions, clean energy production and smart energy distribution in our City, our state and our region year after year.

The eFargo center would be a combination **think-tank** about energy issues in our region, **living laboratory** where research allows bold energy goals to be realized, **educator** about science related to energy production, consumption and distribution for our children through **interactive displays, museum** of North Dakota's **energy history** and a much more environmentally friendly energy future, **demonstration/education** of smart energy use concepts for members of the community such as homeowners and business owners, trainer for people wanting to start energy market ventures such as green building.

Ultimately, we believe that eFargo center would be "ALL THINGS ENERGY" for our community and it will be the place and people who would make Fargo Net Zero happen in the future.

We hope that we will have the opportunity to move into the semi-finals and further develop this idea.

References

#	TYPE <small>(Website, magazine article, journal article, conference paper, presentation etc)</small>	TITLE <small>(name of article, paper, presentation, etc.)</small>	SOURCE <small>(website link, google scholar link, name and volume of publication, page numbers if applicable etc)</small>	Author(s)	Keyword #1	Keyword #2	Keyword #3	Notes
1		City of Irvine Energy Plan	http://www.cityofirvine.us/assets/downloads/CityofIrvineEnergyPlan20080624.pdf		Guide to Planning	Case Study		Case study for Irvine. Good ideas. See Research document.
2	Website	Guide to Community Energy Strategic Planni	http://www1.eere.energy.gov/wip/solutioncenter/strategic_energy_planning_guide.html#panel6	US Department of Energy	Guide			
3	Website	Better Buildings Residential Network	http://energy.gov/eere/better-buildings-residential-network/about-better-buildings-residential-network		opportunity	organization		
4	Website	USGBC Resources	http://guep.org/usgbc		many resources			
5	Website	Cadmus	http://www.cadmusgroup.com		webinars			
6	Website	DSIRE	http://www.dsireusa.org		incentives	ND specific		
7	Website	Sustainable Cities Institute - National League	http://www.sustainablecitiesinstitute.org/cities/saint-paul-minnesota		case studies			
8	Website	SRP M-Power Price Plan	http://www.srpnet.com/payment/mpower/default.aspx		utility company	pre-paid energy		
9	Website	Green Impact Campaign	http://greenimpactcampaign.org		student/volunteer involvement			Awesome! USGBC Students can do this in Fargo!
10	Website	1000 Home Challenge	http://www.thousandhomechallenge.com		residential	case studies	retrofits	
11	Website/Videos	Power Watch Program	http://www.cityofames.org/index.aspx?page=116	City of Ames	utility company	videos		
12	Website	Better Energy (Be.) Program	http://www.sustainablecitiesinstitute.org/topics/buildings-and-energy/energy-conservation-and-efficiency/better-energy-(be)-program-apple-valley-minn		case studies	apple valley	residential	Great case study in similar climate.
13	presentation	Retrofitting Existing Buildings for Demand Re	http://www.aashe.org/files/documents/webinars/Retrofitting_Existing_Buildings.PPT_.pdf	Cypress EnviroSystems	case studies	statistics	retrofits	Retrofits for commercial and industrial plants. Good Statistics.

Census-based information provided by the City of Fargo.