



HGA

PROPOSAL PREPARED FOR

City of Northfield, Minnesota Climate Action Plan



September 28, 2018

David Bennett, PE
Public Works Director / City Engineer
801 Washington Street
Northfield, Minnesota 55057

Re: City of Northfield - Minnesota Climate Action Plan

Dear Mr. Bennett and Members of the Selection Committee:

We appreciate the invitation to submit a proposal to be your team of choice for this important project for the City of Northfield. Carbon neutrality is an aspirational statement for the City. Together we'll be "building an idea" with powerful transformative impact. The HGA team offers you:

1. Extensive Experience

From planning at city and campus scale to the district and building level, our national experience will benefit the city of Northfield. We have billions of square feet of completed work and it all starts with planning. Our completed work will inform the planning efforts needed for this project regardless of scale. Cities like Madison, Eau Claire, and Altoona Wisconsin are a few recent examples of similar planning work. We have recently completed other similar projects at campuses across the country — such as Milwaukee Technical College, College of the Desert, University of Minnesota, Winona State University, and many other higher education and healthcare campuses — that are similar in scope and complexity with the work needed at Northfield.

We have helped clients achieve many firsts — first Net Zero Energy building in a college system, first LEED® Platinum Project in the UW system, first Living Building Challenge project in the region, first LEED® Gold Healthcare Certified Hospital in Georgia, first Net Zero Energy high rise in Sacramento (in progress) to name just a few examples.

2. Exceptional Expertise

HGA's in-house team of experts offers a truly integrated team. We live and breathe stewardship for the environment and we are passionate about sustainable living. Our internal resources are nationally recognized for renewable energy design and focus on energy independence and optimization that is critical to achieving your vision.

We are an original signatory to the carbon neutral commitment called AIA Architecture 2030. Plus we have collected nearly 70,000 projects of data from around the country. We understand your needs and are ready to respond.

3. A Proven Process

We'll work with you to achieve valuable insights and develop an aspirational but actionable plan. We have led large groups and communities in various methods and types of engagement processes with positive results. Our team is capable of guiding that transformation by utilizing a proven and successful process of integration and inclusion that fully utilizes the strengths and expertise of team members and key stakeholders.

4. Local Presence

We're right here in Minneapolis, and we can draw on a the national resources of a large firm with 850+ employees nation wide. Our team is dedicated to helping clients achieve real and lasting change for cities and communities across the country, to advance economic and environmental sustainability. Northfield feels like home to us because we have worked in the community on the Mayo Northfield Clinic.

We look forward to the opportunity to work with the Climate Action Plan Advisory Board committee and staff, elected officials, and other stakeholders in creating a Climate Action Plan for your city.

Sincerely,



Patrick Thibaudeau, CCS, LEED FELLOW®, ILFI
Vice President | Sustainable Design

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1.

FIRM OVERVIEW



American Swedish Institute | An Important Community Gathering Place and High Performance Project | Minneapolis, Minnesota

FIRM OVERVIEW

HGA is a national multi-disciplinary design firm rooted in architecture, engineering and planning. Founded in 1953, we believe that enduring, impactful design results from deep insight into the people and passions that animate each unique environment. With offices in Minneapolis and Rochester, Minnesota; Milwaukee and Madison, Wisconsin; Sacramento, San Francisco, San Jose and Los Angeles, California; Alexandria, Virginia and Washington, D.C., we offer specialized services in education, healthcare, corporate, government, arts, community, energy and infrastructure.

HGA'S SUSTAINABLE DESIGN EXPERTISE IS PROVEN BY PROJECT RESULTS:

- 137 LEED® Projects (completed and in progress)
- National Environmental Stewardship Award
- AIA Top Green Design Award
- International Living Building Institute Member
- Regenerative Network - Affiliate Member
- Energy Star Partner
- 4 Living Building Challenge Registered Project
- 12 Net Zero Energy projects
- Top "Zero Energy" Architect by New Building Institute
- 4 Carbon Footprint Studies for Clients
- Climate Action Plans
- ASHRAE Energy Audits
- Consistently top ranked in multiple national surveys
- 319 projects reported to Architecture 2030

2.

PROJECT APPROACH

PROJECT APPROACH

The City of Northfield wishes to develop a citywide Climate Action Plan to serve as a comprehensive strategy for addressing climate change. The Plan will identify targeted policies, programs and projects that will mitigate the City’s contribution to climate change by setting goals for carbon neutrality and reducing your carbon footprint.

CLIMATE ACTION PLAN DEVELOPMENT

HGA has the expertise needed to help the City develop a viable Climate Action Plan and achieve its goals for carbon neutrality. At each step, we recognize that the City’s stakeholders need to be informed and consulted for their insight. The proposed plan with its solutions have to make sense for the city, its core beliefs, its location, and its citizens.

CREATING A HEALTHY COMMUNITY

The Climate Action Plan will be structured to provide integrated, actionable solutions in six core areas in which the City’s baseline studies have identified the greatest opportunities for resilience and emissions reductions. These core areas will take into account

the residential, commercial, industrial and municipal opportunities with the goal of creating a healthy community in all aspects - economic, physical and environmental.

Various sources of carbon will be assessed in the following core areas:

- Materials and Waste
- Energy
- Land
- Food
- Water and Wastewater
- Transportation





PROJECT MANAGEMENT APPROACH

Patrick Thibaudeau, the principal and project manager for this project, will facilitate a close working relationship with the City. He — and others on the team as needed — will be available to meet regularly in Northfield throughout the course of the project, and will identify and document the City's vision.

We will identify the desired outcomes, determine a realistic schedule and well-defined scope, plan for ongoing and clear communication, encourage innovating thinking, develop a strategy to determine synergies and accountability of team members, maximize efficient resource use, provide regular monitoring and feedback, carefully reviewing each milestone, and identify recommended next-steps.

ASKING THE RIGHT QUESTIONS

We will start by asking the right questions. A new question is what if we start at start at zero carbon rather than ending there. This new approach changes the way we think and leads to a much better, more insightful and forward looking plan. Working closely with the Climate Action Plan Advisory Board (CAPAB) subcommittee and staff, HGA will lead the development of the Plan by providing technical expertise, supporting stakeholder engagement, and developing innovative materials.

Public participation and input will come from:

- Climate Action Plan Advisory Board
- Environmental Quality Commission
- Northfield City Council
- Northfield residents and stakeholders

PHASE I: DATA GATHERING

KICK-OFF MEETING AND GREENHOUSE GAS INVENTORY

The team will meet with the CAPAB to initiate the process, set project goals and review expectations, as well as begin gathering information relevant to the preliminary assessment. The first step to developing the Climate Action Plan is to determine the business-as-usual (BAU) baseline. Where data is not readily available, a best estimate will be developed from available sources. We will gather and analyze the following information for each of the six core areas:

- Existing data on city and community emissions
- Baseline data of the Northfield Area's water usage and food consumption habits (general estimate)
- Baseline data of the Northfield Community's forms of transportation

Details of data gathering will be developed in a collaborative manner with the City. The City will provide available reports and data, and it is anticipated each of the six subcommittees for the core areas will contribute information and data pertaining to their area of focus. Data gathering in Phase I is limited to existing data. Projections and modeling, if needed or desired, will occur during Phase II. The fee for this phase is fixed at \$15,000 so the extent of data gathering will be aligned with available fee.

We understand the desire to focus the services on the planning rather than spending a lot of time and fee on data gathering. During our work on other plans we have seen how data gathering can consume a lot of time. We will collaborate with the city to determine priorities during the kick-off meeting. If additional data gathering is desired we would be pleased to add to the scope and fees.

DELIVERABLES

The information will be presented to the CAPAB, the Environmental Quality Commission, and City Council. The deliverable for this phase is an updated GHG inventory for commercial, residential and municipal activities in the City of Northfield. Public outreach is anticipated to begin in February 2019.

PHASE II: ENGAGEMENT AND CAP DEVELOPMENT

ENGAGEMENT AND OUTREACH

The next step will be setting goals and developing strategies for implementation. We have experience using a variety of tools and processes for engagement of groups to get feedback on the plan. For the CAPAB, EQC and City Council we propose to use a BlueBeam mark-up sessions. This method is ideal for reviewing a document with a large team and has been used successfully on other projects. This is a web based tool the allows many people to read and comment on a document and provides and organized record of the comments for easy reference and follow-up.

For public outreach outside of meetings we have experience using online polling sites, electronic survey tools, blogs and social media that can be considered for engaging a the community.

FUTURE CLIMATE SIMULATION AND ANALYSIS

HGA is a national leader in use of future weather information and we are at the forefront of the industry on the topic of future climate change impacts. Using energy modeling and benchmarking data, projections can be made for the future energy consumption. This projected energy consumption will be used to predict the future fuel source needs of the City as well as environmental impacts to the region. We will outline renewable energy targets to change the energy use sources from what they are today to a Carbon Neutral Future.

WORKSHOP I: PHASE II KICKOFF

HGA will present a set of recommended best practices from other plans, and facilitate brainstorming other strategies for further exploration. This workshop will focus on historical data, existing initiatives, community involvement, and future projections. It will include a thorough review of how to include the broader community in the process, and define parameters for forecasting future impacts on the City.

WORKSHOP 2: STAKEHOLDER ENGAGEMENT #1

The second workshop would be opened up to the members of the community. HGA will work with the CAPAB to identify representatives for this workshop. This meeting will be our opportunity to present the draft plan – collecting feedback on potential strategies that would support that goal.

HGA introduce stakeholders to the Climate Action Plan development process. We will facilitate a discussion to identify the City’s strengths, opportunities, and challenges. Our goal is to identify measures that are realistic and feasible given the City’s financial and staff resources. We will use strategic planning techniques for the large group and smaller break-out groups to create a meaningful process and encourage input from all stakeholders. Our team is adept at facilitating large meetings as well as small-group discussions, and we have experience identifying common ground with diverse interest groups.

We recognize that there will be people interested in this Community workshop and CAP process that will not be able to attend the meeting. We will work with the City to create a forum to distribute information about the workshop and to gather input from those stakeholders through electronic means (i.e. social media, online survey, City website, etc.).

WORKSHOP 3: STAKEHOLDER ENGAGEMENT #2

The final workshop will be report back to the community, summarizing what we heard from the previous stakeholder engagement workshop and present the final Climate Action Plan.

DELIVERABLES

The deliverables include:

- 1. Workshop 1: Overview of the data gathered in Phase I, existing initiatives, and future City growth forecasts
- 2. Workshop 2: Summary of community outreach feedback to date and draft of climate action plan
- 3. Workshop 3: Final Plan and report with supporting information

DEVELOP CLIMATE ACTION PLAN

HGA, in collaboration with the CAPAB and key stakeholders, will use the information and goals from developed throughout the process to draft the City’s Climate Action Plan. The Plan will describe the City’s current data, summarize the working group’s analysis of impact areas and describe the proposed methods for achieving carbon neutrality. This will include a comprehensive review of strategies and required actions, including a qualitative comparison of costs, payback, community impacts, and GHG emission reduction potential.

HGA proposes to assess historic and existing energy consumption to identify potential opportunities for improvement. This assessment will include an evaluation of building utility data for City-managed facilities, and reviewing data from the local utilities to understand consumption patterns for in the City.

STRUCTURING THE PLAN

To structure the CAP for the City of Northfield, we anticipate aligning with other cities that have established a precedent, as well as guidance provided by the Statewide Energy Efficiency Collaborative.

We recommend the following content for the plan based on plans written for other communities. During the process we will collaborate to determine the structure of the report.

- Goals and Objectives
- GHG Emission Baseline and Forecasting
- Mitigation Strategies, Analysis, and Feasibility
- Costs and Financing
- Measurement and Tracking

Strategies will be broken down into relevant issue areas such as energy and water, transportation, waste, food supply and agriculture, parks and recreation.

SETTING SUSTAINABILITY TARGETS

Setting short-term, mid-term, and long-term targets with periodic benchmarks is fundamental to ensuring targeted sustainability initiatives are on track. The CAP will include targets around GHG reductions as interim steps on the way to carbon neutrality. All sustainability targets must be measurable and verifiable. The CAP will identify goals and associated strategies as short-term, mid-term, or long-term, with detailed implementation strategies identified for all short-term goals. It is important that current and future leaders are responsible for meeting sustainability objectives. Please see the example below.

MEASUREMENT TRACKING

Once short-term goals are established, HGA will refine the developed list of indicators and metrics to clarify what data will be collected. While data for some indicators will be readily available and reliable, we will need to make assumptions about other data for purposes of establishing a baseline. The Measurement Tracking chapter in the CAP will include recommendations for improving data management and reporting systems, as well as responsible parties for data reporting.

We will further develop priority practices and policies to include key tasks, timelines, responsible parties, possible funding sources, strategies for overcoming typical or potential barriers, and metrics to enable the City to continuously measure, evaluate, and report future results.

PRESENTATION OF THE CLIMATE ACTION PLAN

HGA will support the City in presenting the plan at the City’s desired venue outlined in the RFP to include the general public as desired to incorporate public comment. We will also work with the City to provide an opportunity for people who aren’t able to attend the formal presentation to submit comments electronically. To the extent possible, we will work to get consensus on the Climate Action Plan. Based on information agreed upon through these forums, we will update the CAP and submit it, along with appendices, as a final report to the City.

DELIVERABLES

- Summary of comments for the Climate Action Plan.
- Final Climate Action Plan.

Z7+ START AT ZERO: EXAMPLE FROM RECENT PLANNING PROJECT



This is an example recently completed for a pre-design for a college campus that has a goal to be carbon neutral. This is a summary of the plan addressing comprehensive planning for topics similar to those Northfield has identified. The plan is intended to transform the campus by using this pilot project which in turn is intended to transform the entire statewide college system. It is an example of an actionable plan that has potential transformative impact and involved engagement with a larger campus community.

3.

EXPERTISE AND CAPABILITIES



University of Minnesota-Morris | Biomass Demonstration Facility | Net Zero Energy | Carbon Neutral Campus | Morris, Minnesota



City of Northfield, Minnesota | Northfield feels like home to us because we have worked in the community on the Mayo clinic building.

EXPERTISE AND CAPABILITIES

HGA delivers reliable, resilient, effective and sustainable solutions that are integrated into their environments. From concept to engagement, planning and implementation, HGA is a catalyst for positive change, partnering with clients to secure a renewable and sustainable future.

SECURING A SUSTAINABLE FUTURE

Our work succeeds because it is always built upon a foundation of insight into the unique needs of each organization. The drive for deep understanding shapes the way we collaborate with each client and deploy the diverse resources of our firm. It's how we deliver unexpected solutions that deliver added value.

We enable clients to: **reduce** use of energy and resources, decreasing environmental impact and operating costs; **protect** financial resources by limiting exposure to energy market volatility; and **optimize** current physical resources by assessing them for energy efficiency and reliability.

We have extensive experience in the following areas:

- Climate Action Planning
- Group Engagement Process
- Sustainability and Energy Master Planning
- Facility Optimization and Commissioning
- Ongoing Operations Monitoring
- High Performance Buildings and Sustainability
- Renewable Energy and Power Generation
- Combined Heat and Power Plants
- Central Utility Plants and District Energy
- Steam, Natural Gas and Electric Distribution
- Infrastructure Upgrades

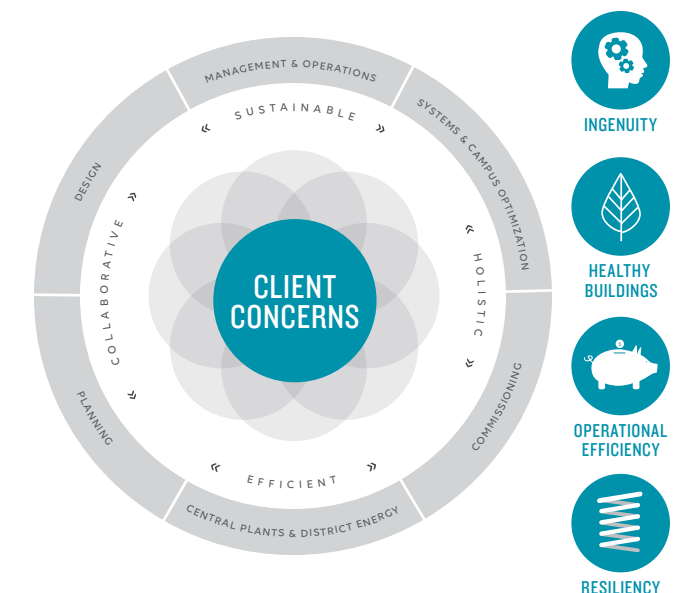
MITIGATING CLIMATE CHANGE

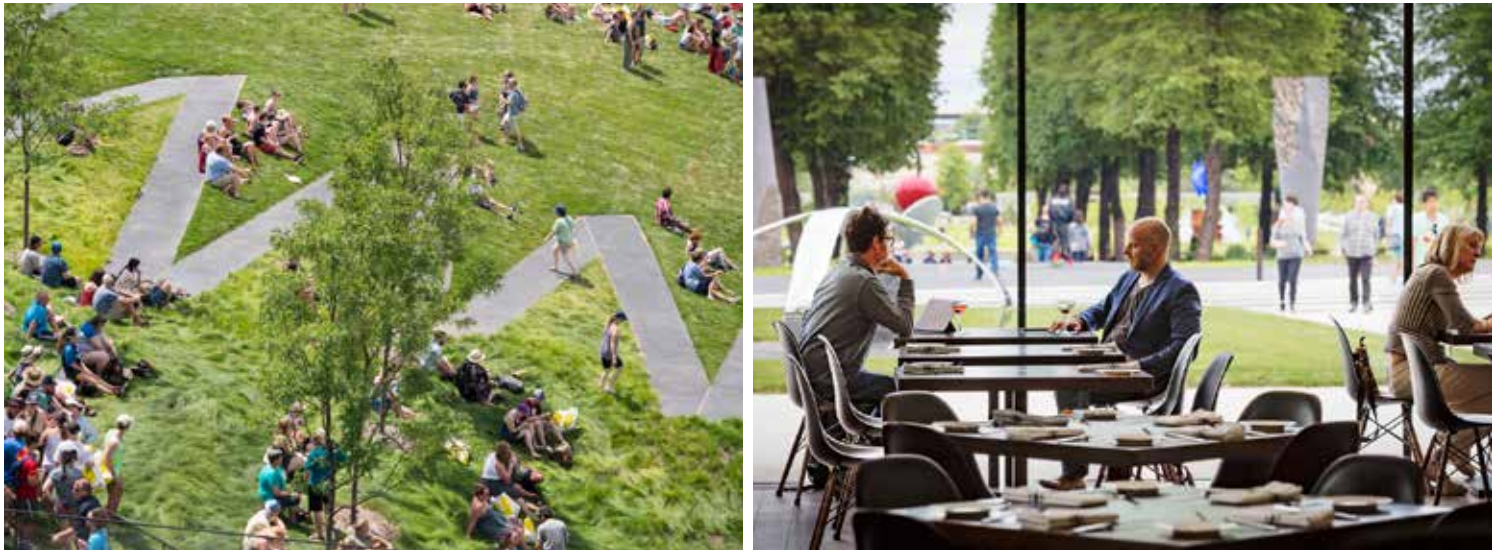
We bring focus to energy projects by asking the right questions. Our approach improves an organization's understanding of its economic, technical and social objectives, allowing us to help identify opportunities to mitigate emissions that contribute to climate change.

SHAPING SUSTAINABLE ENVIRONMENTS

Communities are facing great pressure to reduce emissions. HGA's vision is to "shape a vibrant, sustainable environment; where our clients and communities can thrive."

We bring expertise and pioneering ideas to a broad range of clients, including healthcare, higher education, corporate and government. Client concerns are at the center of our process. By approaching each project through your eyes, we seek to understand the needs and standards for success, and develop solutions that reflect your values.



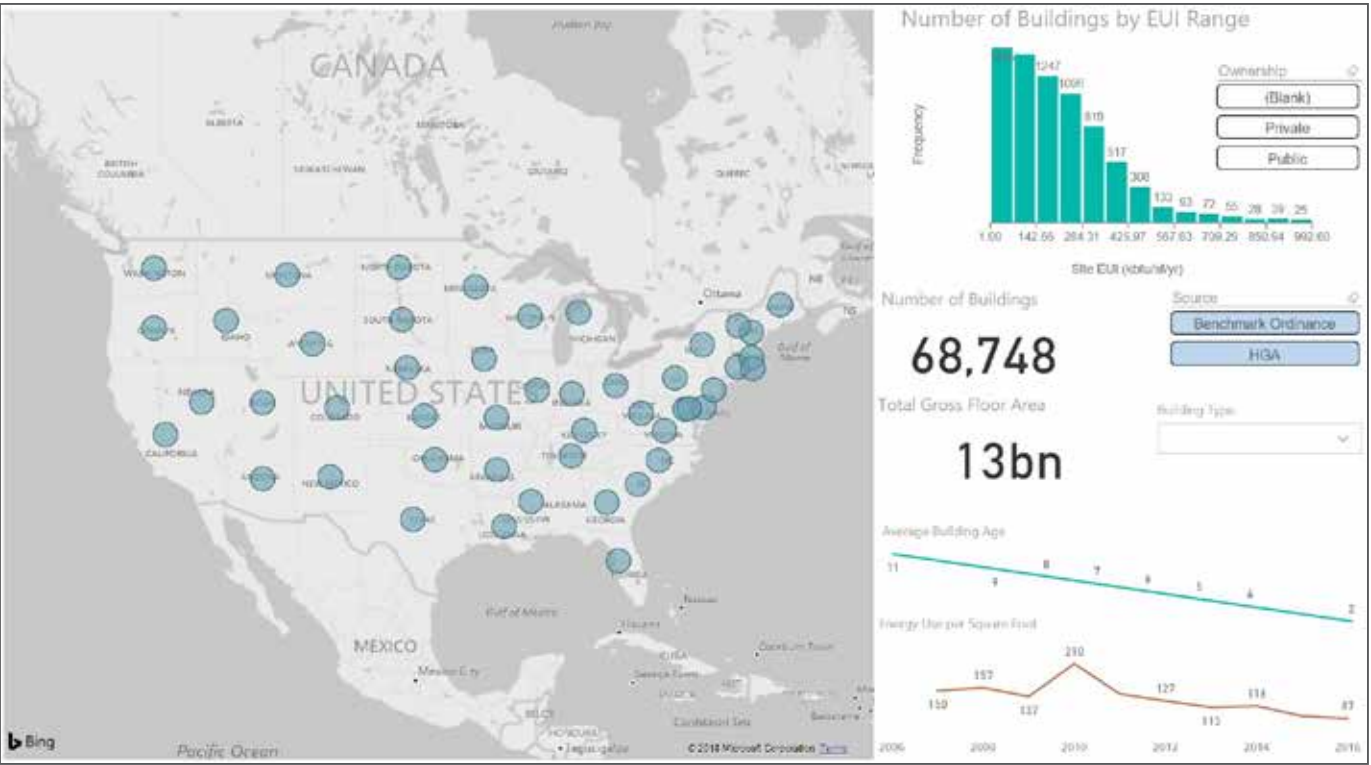


DATA COLLECTION EXPERTISE

HGA is a national and regional leader in data collection and we have extensive experience visualizing it and using it for high performance planning. We have the expertise and capabilities to perform the data collection and climate action planning services needed to conduct an engaging public outreach process. All of our work—whether projects are big or small — involves aspects of data collection, planning and group engagement.

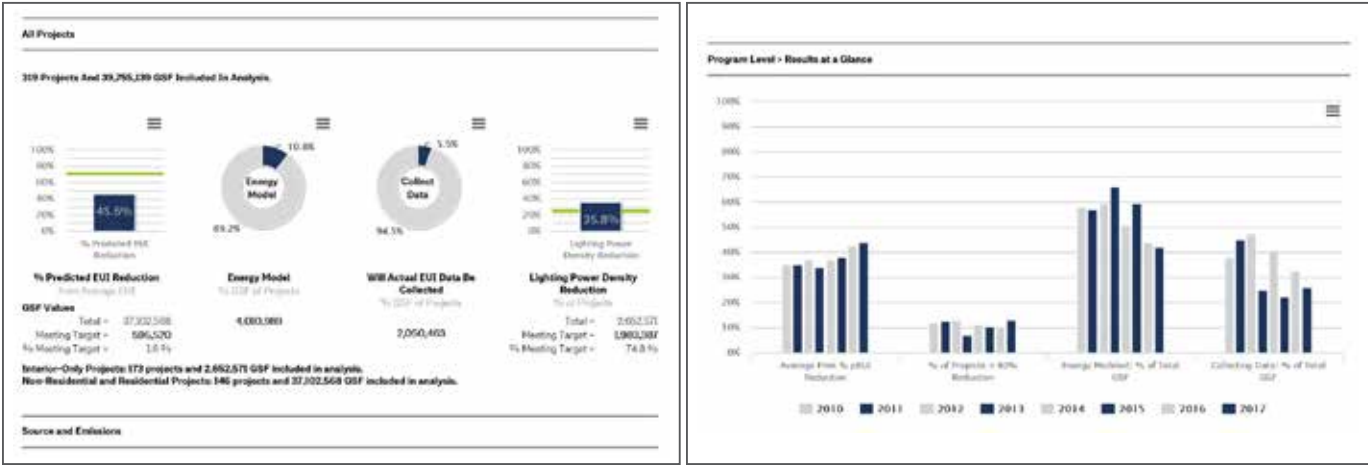
We have gathered data to deeply study cities, campuses and individual building sites. We have collected data for over 68,000 buildings around the country or all kinds from public sources. In addition we have been doing post occupancy data collection and evaluation of selected HGA projects. Below are examples of both sets of data. This process has been valuable and experience from this effort will be applied to the Northfield data collection phase.

HGA is a founding signatory of the AIA effort to promote the carbon neutral goals of Architecture 2030 initiative which is a industry wide goal to achieve carbon neutral design by the year 2030. We have been instrumental in leading the design and building industry to do better, collect data and report results. HGA has reported 319 collected data for 319 projects totally nearly 40 million SF. The total program for all firms reporting has about 14 billion SF since 2010.

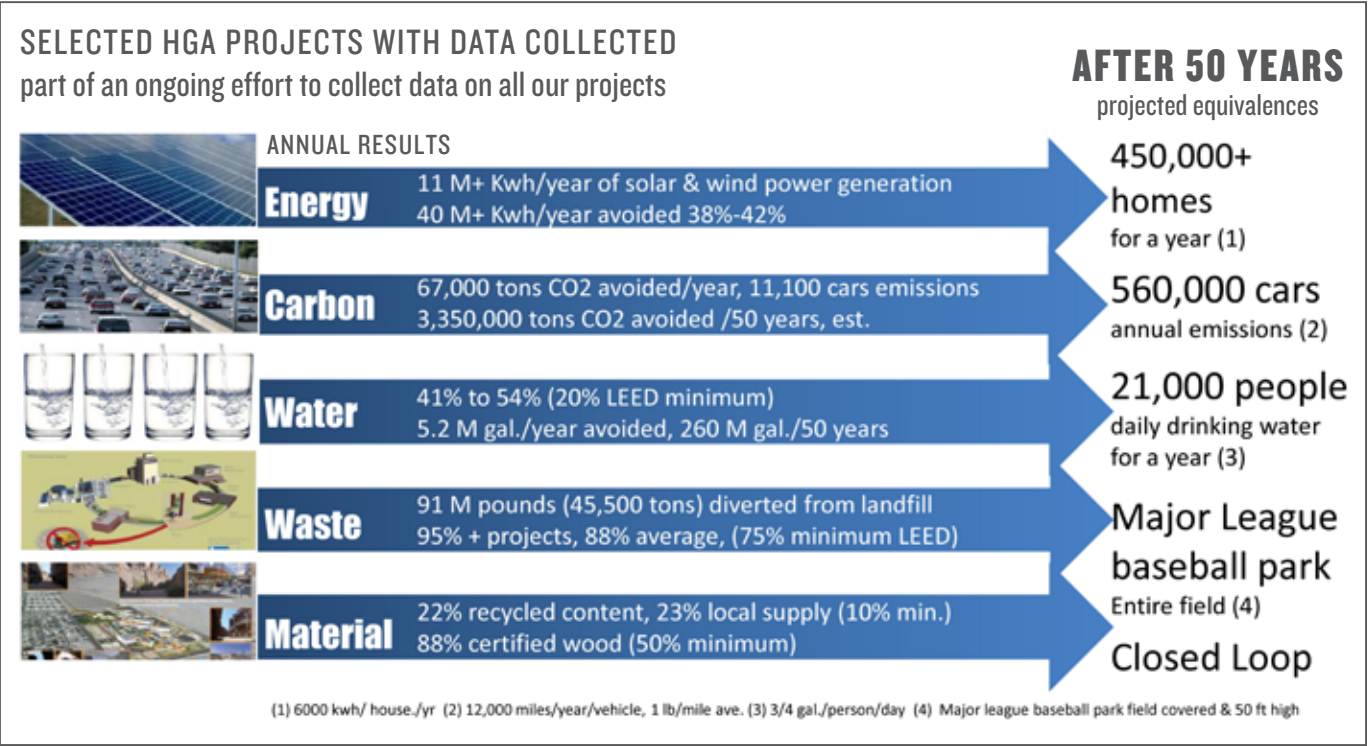


Data Collection Example Using Microsoft Power BI for Visualization

As the desire for sustainability grows, so does the focus on collecting, analyzing and using sound data to plan the future and measure progress.



Architecture 2030 Data Reporting Summary



(1) 6000 kwh/ house./yr (2) 12,000 miles/year/vehicle, 1 lb/mile ave. (3) 3/4 gal./person/day (4) Major league baseball park field covered & 50 ft high



College of the Desert | New West Valley Campus Master Plan | Carbon Neutral Plan | Palm Springs, California

PLANNING EXPERTISE

A well-designed plan brings together a set of principles and goals into a unified solution that is strong and flexible, meeting current needs while envisioning the future. We recognize the significant opportunity to create lasting impact for people, organizations and communities. Our goal is to enable our clients to be proactive, instead of reactive, in the long term. Enduring impact comes from comprehensive, high-value planning solutions that serve strategic, operational and business needs.

INTEGRATED PLANNING STRATEGIES

Our multi-disciplinary teams have experience across the country and across industries. Previous projects have ranged from cities and campuses to single buildings for healthcare, corporate, government, cultural and higher education. Working closely with clients to understand their unique needs and business goals, we develop fresh insight that informs integrated planning strategies.

We have a successful track record of developing and implementing ambitious and forward-thinking climate action and clean energy plans for cities and communities, often with the ultimate goal of reaching carbon neutrality or 100% renewable energy. Our extensive experience performing this type of work has helped us gain unique skills in working in a

cold-weather climate to improve energy efficiency in buildings and to understand the regulatory framework for energy generation as it relates to achieving carbon neutrality and reducing your carbon footprint.

ENERGY PLANNING

We consider energy supply in the context of energy demand from a client's facility needs - present and future - and explore opportunities for renewable and higher efficiency systems. Our team is experienced in evaluating the feasibility for traditional and alternative energy systems, including combined heat & power (cogeneration), biomass based district energy systems, solar photovoltaic, solar thermal, geothermal, wind generation and landfill gas. We utilize this experience to analyze the production potential of traditional and alternative energy systems.



UW Milwaukee | Energy Master Plan | Milwaukee, Wisconsin



MetroHealth | EcoDistrict | Campus Master Plan | Cleveland, Ohio

4.

SAMPLE WORK



Los Angeles Harbor College Science Complex | First Net Zero Energy Lab in LACCD College System | Wilmington, California

SAMPLE WORK

In the Appendix and the printed versions of this proposal, we have included a consolidated version of a completed final report, including the table of contents, which is similar in scope to this project. Due to the size of the files, we have included additional examples of final reports on the flash drive that is included with this submittal.

PROJECTS	STATUS	SUSTAINABILITY PLANNING	RENEWABLE ENERGY	AGGRESSIVE ENERGY EFFICIENCY	CREATIVE WATER CONSERVATION	WASTE REDUCTION	CARBON EMISSIONS AVOIDED
Erie County Industrial Development Agency Net Zero Feasibility Study	C	●	●	●	●	●	●
City of Madison Net Zero Carbon Emissions Master Plan*	C	●		●	●	●	●
Appleton Airport Sustainability Master Plan*	C	●	●	●	●	●	●
Milwaukee Area Technical College Integrated Energy Master Plan*	C	●		●	●	●	●
City of Eau Claire City of Altoona County of Eau Claire Path to 25 x 25*	C	●		●	●	●	●
Winona State University Campus Plan for Carbon Neutral Achievement	D	●	●	●	●	●	●
Washtenaw Community College Climate Action Plan and campus-wide facility energy audits	C	●	●	●			●
Luther College Energy Conservation Program, Measurement & Verification and Alternative Energy Feasibility Study	C	●	●	●			●
University of California, Davis Betty Irene Moore School of Nursing Health Sciences Education Building, Phase	D	●	●		●	●	●
Wolf Ridge Environmental Learning Center Sustainability Plan	Co	●	●		●	●	●
Milwaukee County Zoo Clean Energy Plan	C			●			●
University of Minnesota, Morris Biomass Research and Demonstration Facility campus energy plan	O	●	●	●	●		●
University of Minnesota Science Teaching and Student Services Center	Oc			●	●	●	●
Northeast Georgia Medical Center New Market Hospital	Oc	●	●	●	●	●	●
Sunnylands North Campus Administrative Office Complex	D	●	●	●	●	●	●
College of the Desert West Valley Campus Master Plan	C	●	●	●	●	●	●
Kaiser Permanente Antelope Valley Specialty MOB Master Plan and Renewable Energy Plan	C	●	●	●	●	●	●
Los Angeles Harbor College Sciences Complex	Oc	●	●	●	●	●	●

C; Completed | D; Design | Co; Construction | O; Operating | Oc; Occupied

* Project was completed by SEG prior to being acquired by HGA.



HELPING COMMUNITIES MEET THEIR SUSTAINABILITY GOALS

NET ZERO CARBON EMISSIONS MASTER PLAN | CITY OF MADISON | MADISON, WISCONSIN

With goal of 100% renewable energy and zero net-carbon emissions by 2030, the City of Madison and the Sustainable Madison Committee laid the groundwork to catalog energy and sustainability options for the City to consider. A team of policy makers was assembled with the expert analysis necessary to enable the City to take cost-effective and strategic action.

ENERGY SOLUTIONS FOR CITIES

Energy solutions for cities need to be founded on more than just location. The team closely engaged the City and its diverse set of stakeholders to gain a deep understanding of their core beliefs and what is critical to the quality of our work with them. Through meticulous research and ongoing engagement, HGA's team delivered the solutions needed to accomplish the City's goals for renewable energy and net zero carbon emissions.

PRELIMINARY ASSESSMENT

An extensive energy and carbon assessment was performed for (53) municipal buildings, vehicles, traffic signals, water distribution pumps and other equipment controlled by the City. Using this data, the team established a baseline of energy and carbon consumption to compare to as energy efficiency measures are implemented and renewable energy systems are brought online.

STAKEHOLDER AND COMMUNITY ENGAGEMENT

Working with the city, the team interviewed key stakeholders to gather input, then held a public meeting to gather feedback from the community on the City's renewable energy and net zero emissions goals. The meeting also served a promotional purpose, as an opportunity to provide information and expert insight to build public support. The initiative proved highly successful - it was very well attended, leaving standing room only, and was covered by the local Madison television station. The station's weatherman, a local TV celebrity, presented his thoughts on what he's been seeing with weather patterns, confirming an alarming increase in global warming and its effects on the planet.

The team worked closely with many local stakeholder groups, from non-profit environmental advocates to business organizations. Collaborating with City staff and a steering group committee, they helped facilitate additional public outreach meetings to gather feedback, and maintained an active website to keep residents up-to-date with the progress of the effort.

EXPLORING ENERGY OPPORTUNITIES

The team identified and explored various opportunities for achieving the City's energy goals. They performed extensive research into opportunities for clean energy with the local utility companies and with third party energy vendors, and analyzed how to gradually electrify the City's bus and fleet vehicles - considering costs, carbon impact and longevity of equipment. Working closely with Dane County's Sustainability staff, the team provided oversight to make sure the work done for the City of Madison was closely coordinated, with potential partnerships explored and pursued.

FINAL REPORT AND PRESENTATION

The team developed and presented an implementation plan that includes options which would allow the City to meet its renewable energy and net zero emissions goals. The final report describes the full research process including stakeholder interaction, development and sources of key inputs, the structure of the data gathering and analysis, results of the analysis, and the timeline options.



Note: This project was completed by SEG prior to being acquired by HGA.



PLANNING FOR THE FUTURE

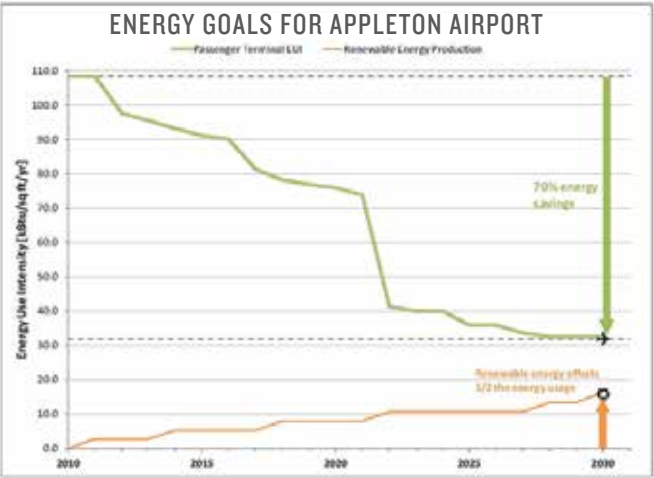
ENERGY MASTER PLANNING | APPLETON AIRPORT | OUTAGAMIE COUNTY, WISCONSIN

Energy efficiency and renewable energy planning expertise was provided as part of the Appleton Airport Sustainable Master Plan. As part of this work, the team worked closely with airport committee members to present early ideas and concepts of various strategies that could be employed to achieve the airport campus’s goal of Net Zero Energy.

The members of the committee we interacted with were non-technical, which required us to break down any complex technical items into easy to understand concepts that could be fairly easily understood by the committee. A major component of this effort was visual communication to convey our messages. This was well received by the committee members and resulted in the buy-in and successful delivery of the final Sustainable Master Plan.

Early in the process, the conducted an energy usage/ system assessment by capturing historic and current data and reviewing the facilities’ energy usage for the past five years. Next, the team performed a walk-through of existing buildings to determine the longevity of major equipment and assess operating conditions. The team issued a final report with information related to energy components of the project and strategies for meeting their energy goals, which was ultimately incorporated into the final Sustainability Master Plan.

The measures recommended in the Master Plan are being implemented by the County and the Campus is on track to meet its Net Zero Carbon goals. HGA continues to be closely involved in both the implementation of these measures and the monitoring of results.



Outagamie County Regional Airport

Sustainable AIRPORT MASTER PLAN

prepared for:

Outagamie County Airport Authority
Appleton, WI

September 2012

Chapter 3

SUSTAINABILITY BASELINE INVENTORY

The purpose of this chapter is to place past, current, and potential future ATW sustainable efforts within a broader context. This context was formed by first examining the Airport’s mission statement and past and current sustainability initiatives. Armed with this information, the Master Plan Advisory Committee (MPAC) was asked to comment on these elements as well as propose potential future areas of focus. As these activities progressed, a variety of baseline sustainability inventories were compiled. These included:

Airport-Controlled Building Energy Usage

Operational Emissions Inventory

Airfield Energy Analysis

Water Quality Analysis

Environmental Resources Inventory

After examining the Airport’s track record, considering the MPAC’s input, and analyzing the results of the inventory, the Project Team felt that a Master Plan focus on reducing energy usage in airport controlled buildings fit in well with the Airport’s sustainable track record. It matched input from the committee and attacked by far the largest source of Airport-area emissions that were directly under airport control. See Chapter Six for more information regarding sustainable energy usage and renewable energy initiatives.

This focus on energy did not mean that other areas were ignored – this chapter also contains information that can be used to measure other future sustainable efforts. Finally, the MPAC repeatedly commented on how important “human sustainability” was. This generally refers to creating facilities that foster happy and healthy health human environments and people. This input was incorporated into terminal reconfiguration alternatives. See Chapter Five for more information regarding these alternatives.

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Outagamie County Regional Airport Sustainable Master Plan
(September 2012) i

Note: This project was completed by SEG prior to being acquired by HGA.

Chapter 6

SUSTAINABLE INITIATIVES

The focus of this Sustainable Master Plan is on improving the energy efficiency of Airport buildings, and enhancing the Airport’s on-site portfolio of renewable energy sources such as solar and geothermal. Improved energy efficiency and on-site renewable energy sources will have real long-term economic benefits for the Airport, as money currently spent on purchased electricity and natural gas can be invested elsewhere. It will also have commensurate environmental and social benefits, including reduced air pollution and decreased consumption of non-renewable energy sources such as coal. Both globally and nationally, commercial and residential buildings account for more total energy consumption and greenhouse gas emissions than any other sector of the economy. Therefore improving the energy efficiency and renewable resource portfolio of new and existing buildings has the greatest potential for conserving energy resources, and for combating global climate change and its negative effects on society.

Chapter 3 provided baseline energy data for Airport buildings against which future energy use can be measured. This chapter establishes measurable goals for minimizing future energy use and enhancing on-site renewable energy sources, and identifies a phased set of initiatives for achieving these goals. The sustainable goals and initiatives for Airport building energy use are presented in the following sections:

Sustainable Initiatives Evaluation Factors

Relationship between Energy Usage and Emissions

Passenger Terminal Energy Goals

Energy Use Reduction Initiatives

Renewable Energy Initiatives

Outagamie County Regional Airport | Sustainable Master Plan | Page 6-1



UTILIZING 25% OF ENERGY CONSUMPTION FROM RENEWABLE SOURCES BY 2025

PATH TO 25 BY 25 | CITY OF EAU CLAIRE | CITY OF ALTOONA | COUNTY OF EAU CLAIRE | WISCONSIN

In an effort to mitigate their contribution to climate change, The City of Eau Claire, City of Altoona and the County of Eau Claire, a strategy was developed to utilize at least 25% of their building and vehicle energy consumption from renewable sources by 2025.

HGA reviewed over 20 municipal buildings and the vehicle fleet utilized by the City of Eau Claire, City of Altoona and Eau Claire County to identify strategies to reduce energy consumption and increase renewable energy sources. Each building underwent a detailed audit to identify energy efficiency and renewable energy opportunities, including site assessments for solar PV, solar hot water and on-site wind.

An extensive assessment of the vehicle emissions was performed and analyses of alternative options were presented that included biofuel and hybrid vehicles to show how they could help reach their goal. The team presented a summary of findings and various strategies that can be implemented. Ultimately, our recommendations identified a path towards the 25% by 2025 objective.

ENERGY EFFICIENT TECHNOLOGIES

Energy efficient upgrades, renewable energy and alternative fueling strategies included the following technologies:

- Solar electric
- Solar hot water
- Geothermal heating and cooling
- Heat recovery
- Wind turbines
- Biomass energy production
- Biogas fueling
- Hybrid conversions

ONGOING SUCCESS

The City of Eau Claire was able to reach their 25% renewable electric in 2017 and is currently working on expanding their renewable electric portfolio further. They have also implemented methane recapture at their wastewater plant as well as installed a community solar garden at their closed landfill.

Please see the Appendix for an excerpt of the final report for this project. The flash drive contained with our submittal includes the full version.

LOCATION	ENERGY USE		ENERGY USE NEEDED BY (25% BY 2025)		RENEWABLES IDENTIFIED		COST	INCENTIVE
	ELECTRIC (KWH)	GAS (THERMS)	ELECTRIC (KWH)	GAS (THERMS)	ELECTRIC (KWH)	GAS (THERMS)		
CITY OF EAU CLAIRE	10,252,475	275,044	2,563,119	69,511	151,552	21,674	\$3,170,335	\$458,595
COUNTY OF EAU CLAIRE	4,654,992	237,248	1,167,748	59,312	238,783	29,21	\$2,465,700	\$375,773
CITY OF ALTOONA	721,828	33,139	180,457	8,285	40,664	134	\$836,600	\$97,280
TOTAL	15,629,295	548,431	3,911,324	137,108	430,999	24,729	\$6,472,635	\$931,647

Note: This project was completed by SEG prior to being acquired by HGA.



ASHE ENERGY TO CARE AWARD WINNER

UW HEALTH SYSTEM | ENERGY ANALYSIS | RETRO-COMMISSIONING | MEASUREMENT AND VERIFICATION | MADISON, WISCONSIN

We have been working closely with UW Health on a variety of energy efficiency projects over the last nine years. Our services have included energy benchmarking, retro-commissioning, commissioning, energy modeling and verification of energy consumption. System-wide, UW Health is currently realizing 27% annual energy savings over the baseline consumption prior to our involvement.

Our team also takes part in the monthly UW Health Sustainability Group meetings, presenting energy usage and milestone updates. Communication and messaging has been an important reason for the success of the energy efficiency effort for UW Health. We have used various ways to express energy savings that are more widely understood by the greater community (see example below for savings realized at one of the main hospital buildings – equates to a \$486,000 annual energy cost savings).

PROJECT ENERGY IMPACT EQUIVALENT TO THE FOLLOWING:

 **903**
passenger vehicles
taken off the road
10,211,657 miles/year driven by an average car

482,603
gallons of gasoline


 **391**
homes' energy
use for one year

 **5.5** square
miles
of U.S. forests of
equivalent carbon
avoided

 **236**
Americans' average
annual carbon footprint

Note: This project was completed by SEG prior to being acquired by HGA.





CLEAN ENERGY PLANNING

MILWAUKEE COUNTY ZOO | MILWAUKEE, WISCONSIN

Meeting their commitment to the future of clean energy, the Milwaukee County Zoo hired HGA to develop a Clean Energy Plan that identifies and prioritizes policies, programs and projects to reduce energy use and costs and increase renewable energy resources on the Zoo's 200-acre site comprising 516,030 SF of facilities. The team evaluated historical energy data provided by local utilities, including electric, natural gas and water for each building, as well as vehicle fuel.

We focused primarily on the most recent 3 years, which had the most complete data and reflected current operations. Further statistical analysis was performed to determine the correlation between energy use and weather conditions downloaded from the NOAA.

ENERGY GOALS

Through this analysis, the Clean Energy Plan establishes target goals for the year 2020:

- Reduce electric consumption 20%
- Reduce gas consumption 20%
- Reduce water consumption 30%
- Reduce vehicular fuel consumption 50%
- Increase renewable energy resources 20%

BENEFITS OF THE CLEAN ENERGY PLAN

- Reduce energy use and costs associated with operation, with an anticipated cost saving of approximately \$475,000 annually based on implementation of recommendations
- Increase use of renewable energy
- Enhance planning and budgeting efforts, including but Operating Budget, Five-Year Capital Improvements Program, and Comprehensive Master Plan
- Conserve natural resources and minimize the environmental footprint
- Serve as a model for sustainability among U.S. zoos and aquariums



GUIDING CAMPUS GROWTH

ENERGY MASTER PLAN | UNIVERSITY OF WISCONSIN-MILWAUKEE | MILWAUKEE, WISCONSIN

As part of an overall master planning effort, HGA completed a campus energy, utility and infrastructure plan to guide the campus's growth. The plan addresses the challenges and opportunities on campus, and identifies an implementation sequence to help the University accomplish compliance with EO 145 through reductions in energy use and greenhouse gas emissions.

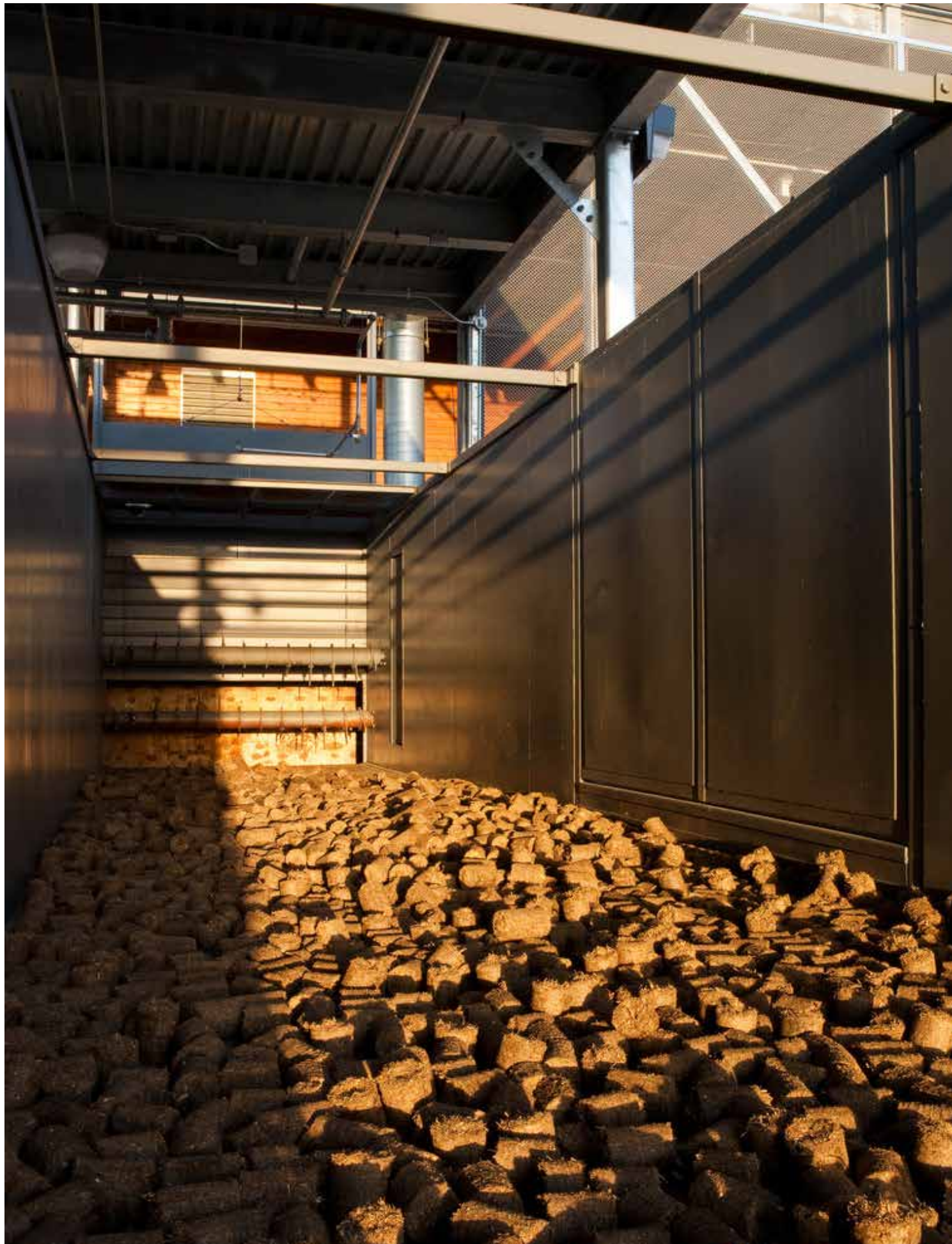
HGA outlined various implementation options, including a combined heat and power system with heat pumps serving selected loads that could save an estimated \$900,000 annually for the approximately 3.2 million SF campus, with an anticipated 1 million SF growth over the next 20 years.

HGA evaluated opportunities for the University to reduce energy and greenhouse gas emissions through conservation efforts in the existing buildings and exploration of renewable and higher efficiency systems. The master plan team worked with Honeywell, the University's Energy Performance Contractor. It was determined that significant savings could be achieved by implementing energy-conservation measures in five of their existing buildings.

ENERGY SAVINGS

- Electrical Energy: 3,802,946 kWh - 27.1%
- Steam: 20,103 lbs. of steam - 31.7%
- Chilled Water: 38,551 tons/day - 37.8%

HGA also evaluated renewable energy sources, including solar photovoltaic, solar thermal, wind, biomass, and geothermal and performed a cost benefit analysis for each of these systems, and recommended a district heat pump system using a combination of Lake Michigan and waste heat water as the University's most viable renewable energy source. When coupled with a combined heat and power system, the University has the potential to increase efficiency, reduce their carbon footprint, lower operating costs, reduce fossil fuel used as source energy, and reduce on-site electrical generation line losses.



BEYOND CARBON NEUTRAL

BIOMASS RESEARCH AND DEMONSTRATION FACILITY | UNIVERSITY OF MINNESOTA-MORRIS | MORRIS, MINNESOTA

The Biomass Research and Demonstration Facility addition to an existing energy plant represents the University's first foray into sustainable-fuel sourcing, in which corn stalk (stover) is converted to syngas to produce clean energy for heating and cooling.

HGA's task was to plan the capital outlay and forecast operating expenses. Meeting the challenge, HGA surveyed current and future energy requirements for the campus and other nearby buildings. The team used a consultant to evaluate the available fuel supply and sifted through a range of technical solutions to meet the goals. To mitigate problems associated with planned corn-stover fuel, gasification technology is used to process the fuel and generate heat. The heat is used in a steam district energy system to heat the campus in the winter and chill water in the summer for campus cooling.

The design of the new components integrates with the old plant to improve the overall reliability of both the steam and chilled water systems. The result of

the effort is a steam plant designed to operate at pressures similar to the equipment already in place, and an absorption chiller that diversifies the energy sources not only for heating but cooling.

Today, the facility meets approximately 80 percent of the campus demand for heat, using up to 9,000 tons of corn cobs or wood chips each year for fuel. This keeps approximately \$500,000 in the local economy and reduces greenhouse gas emissions associated with heating the campus by about the same 4,500 tons per year. Together with wind turbines and a small back pressure steam turbine that is driven from the gasification system, the campus has gone beyond carbon neutral to generate carbon credits that can be sold.



PARTNERING WITH GREEN INDUSTRIES

COLLEGE OF THE DESERT | WEST VALLEY CAMPUS MASTER PLAN | PALM SPRINGS, CALIFORNIA

HGA performed master planning, programming, and building design of a self-sustaining campus for the College of the Desert. The new West Valley Campus emphasizes conservation, energy efficiency, waste recovery and bio-mimicry in partnership with green industries and educational initiatives.

The master plan addresses the desert environmental forces of sun, wind, and blow sand through biomimicry along an Arroyo, or dry riverbed, that winds through campus as the main organizing element. HGA is researching and testing integrated systems to improve building performance, including facades that minimize heat gain, energy-efficient mechanical systems, photovoltaic solar panels, storm-water reservoirs for irrigation, shading and day lighting techniques,

wind protection, and desert landscaping with seasonal plantings.

The campus considers the site's unique ecology and natural resources to create a national model for sustainable research and teaching that supports the local economy and educational needs in the Coachella Valley. The buildings are designed to address sun, shade, wind and topography along an Arroyo, or dry riverbed, that winds through campus.



5.

RESUMES



PATRICK THIBAudeau,

CCS, LEED FELLOW, ILFI

PRINCIPAL | PROJECT MANAGER

Patrick leads visioning and planning efforts around the country for a variety of client. He helps clients identify and achieve high performance results. His passion is helping individuals, groups and organizations find they can do something they did not know they could do. He does ground breaking work around the country and has led many firsts. Patrick has more than 25 years of diverse experience helping clients envision, and plan and design high performance buildings. He takes an inventive approach to planning. He is passionate about building ideas the have transformative impact and have long lasting legacy. He is a frequent speaker and author and is active in national organization seeking to make major changes to how we do things including a national group of large architecture firms that supports the AIA's 2030 Goals for Carbon Neutral Buildings.

SELECT EXPERIENCE

University of Minnesota-Morris | Biomass Boiler and Wind Turbine | Net Zero Energy Campus
Morris, Minnesota

Wolf Ridge Environmental Learning Center | Living Building Challenge
Finland, Minnesota

Los Angeles Harbor College | Science Building | LEED® Platinum (pending), Net Zero Energy
Los Angeles, California

College of the Desert | East Valley Campus | Career Technical Education Center | LEED® Registered, Gold Goal
Palm Springs, California

College of the Desert | Master Plan West Valley Campus | Zero-PlusSM
Palm Springs, California

Kaiser Permanente | Antelope Valley Master Plan | Zero-PlusSM
Lancaster, California

Sunnylands Administration Complex | Living Building Challenge | LEED® Platinum Goal
Palm Springs, California

EDUCATION | AFFILIATIONS

Master of Architecture
University of Minnesota

Bachelor of Environmental Design
University of Minnesota

LEED® Fellow

Certified Construction Specifier

U.S. Green Building Council®
National and Local Member

International Living Future Institute | AIA Large Firm Roundtable Sustainability Leaders | Regenerative Network Affiliate | Construction Specifications Institute Member

CSI Technical Committee | ASTM Subcommittee
Past Chair



MANUS MCDEVITT,

PE, CCP, CPMP, HPBDP, LEED AP®

CARBON MASTER PLANNING SPECIALIST

Manus is a founding principal of Sustainable Engineering Group, recently acquired by HGA, and brings a diverse array of engineering skills to our clients' projects. He has more than 24 years of experience in HVAC design, retro-commissioning, energy efficiency engineering and building commissioning. He has strong expertise in sustainable design, in particular the design of geothermal systems, making him a leading geothermal design and commissioning expert within the Midwest. Manus also has extensive energy master planning experience, including net zero carbon planning for numerous municipalities and institutions.

SELECTED EXPERIENCE

City of Madison | Zero Emissions Master Plan
Madison, Wisconsin

Milwaukee Area Technical College | Integrated Energy Master Plan
Milwaukee, Wisconsin

Appleton Airport | Sustainability Master Plan
Appleton, Wisconsin

EDUCATION | AFFILIATIONS

Master of Science, Construction Management
University of Bath (Bath, England)

Bachelor of Science, Building Services Engineering (Honors)
Heriot Watt University (Edinburgh, Scotland)

Registered Professional Engineer
Wisconsin

High-Performance Building Design Professional | Commissioning Process Management Professional | Certified Commissioning Professional | Certified Geothermal Designer | LEED AP®

American Society of Heating, Refrigeration and Air-Conditioning Engineers | Wisconsin Geothermal Association Board Member

Wisconsin Green Building Alliance
Education Committee



JASON GARVENS,

CEM, NCEES

DATA ANALYSIS

Jason is a Certified Energy Manager with extensive experience in the commissioning and retro-commissioning processes. He is passionate about helping clients find potential for energy savings within their facilities, improving overall efficiency and reducing their carbon footprints. A new hire in 2017, his previous experience includes working as a technical reviewer for the Wisconsin Focus on Energy: Agriculture, Schools, & Government program, evaluating energy efficiency projects from around the state. Jason also has experience as a manufacturing test engineer and designing layouts for manufacturing test equipment.

SELECTED EXPERIENCE

Milwaukee Area Technical College | Integrated Energy Master Plan
Milwaukee, Wisconsin

Madison Municipal Sewer District | Measurement & Verification | LEED Platinum®
Madison, Wisconsin

Appleton International Airport | Solar Feasibility Study
Appleton, Wisconsin

City of Madison Municipal Buildings | Energy Modeling
Madison, Wisconsin

EDUCATION | AFFILIATIONS

Bachelor of Science, Electrical Engineering
University of Wisconsin-Platteville

Certified Energy Manager
Association of Energy Engineers

Fundamentals of Engineering Exam
NCEES

American Society of Heating, Refrigeration and Air-Conditioning Engineer | Association of Energy Engineers
Member

6.

FEES



Sustainable Engineering Group | Recently Acquired by HGA | Net Zero Energy | Middleton, Wisconsin

PROPOSED FEE STRUCTURE

HGA proposes fee structure based on Stipulated Sum plus reimbursable expenses. The total amount of the Stipulated Sum will be negotiated based on the desired scope items to be included. The scope items proposed herein are scalable, and HGA welcomes discussion with the selection committee.

PHASE	FEE
PHASE I	\$15,000
PHASE II	\$60,000
TOTAL	\$75,000

Additional fees may apply based on the finalized scope for Phase II, which is to be developed during work of Phase I.

7.

REQUESTED CHANGES
TO CONSULTANT
SERVICE CONTRACT

REQUESTED CHANGES TO CONSULTANT SERVICE CONTRACT

HGA respectfully requests that the following changes be made to the City’s contract:

- I.D.CONSULTANT shall be responsible for costs, delays or damages arising from unreasonable delays in the performance of its duties to the extent caused by CONSULTANT’s breach of its obligations under this Contract.
- I.E E. [Optional, include as applicable: Guarantee. CONSULTANT further agrees to guarantee all materials and parts supplied under this Contract against inferiority as to specifications, such guarantee to be unconditional.]
[HGA Note: this clause is highlighted yellow, and the City indicates that this language may be deleted when appropriate. We will need to have this deleted for this contract to be insurable.]
- I.F.4. CONSULTANT agrees to procure and maintain, at CONSULTANT’s expense, professional/Technical (Errors and Omissions) Liability Insurance. The required policy will provide coverage to for all claims CONSULTANT may become legally obligated to pay resulting from any ~~actual or alleged~~ negligent act, error, or omission in the performance of related to CONSULTANT’s professional services required under the contract. CONSULTANT is required to carry the following minimum limits: \$2,000,000 [~~\$1,000,000~~] – per ~~claim~~ wrongful act or occurrence; \$4,000,000 [~~\$2,000,000~~] – annual aggregate; or as specified in the applicable insurance certificate(s), or as required by law, whichever is greater....
- I.F.7. Any insurance limits in excess of the minimum limits specified herein above shall be available to respond to covered claims or losses arising out of or relating to CONSULTANT’s negligent acts and omissions ~~CITY~~.
- I.F.11.11. CONSULTANT shall ~~ensure~~ require that all subcontractors comply with the insurance provisions contained in this Contract and such insurance is maintained as specified. It is understood that some subcontractors may not carry the limits required under this Contract. In such event CONSULTANT shall notify CITY and obtain its consent to such lower limits, which consent shall not be unreasonably withheld.
- VI.N. Compliance with Laws. CONSULTANT, subject to the standard of professional care, shall abide by all Federal, State and local laws, statutes, ordinances, rules and regulations now in effect or hereinafter adopted pertaining to this Contract or to the facilities, programs and staff for which CONSULTANT is responsible.

8.

APPENDIX



HGA

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