APPENDIX A

Public Service Commission of Wisconsin
Office of Energy Innovation
Energy Innovation Grant Program
Application Cover Page

Wisconsin Office of Energy Innovation

SECTION I - Provide information summarizing the project proposal.		
☐ **Area of Interest 1:** K-12 School Districts	☐ **Area of Interest 2:** Manufacturers	■ **Area of Interest 3** Municipalities and Tribes
Grant Request ($):	**Match Amount ($):** (if applicable)	**Project Total ($):**
$435,694	$115,758	$551,451
Choose one of the two options below for Planning Projects:		
☐ Facility Audit, Fleet Audit, or Feasibility Study	■ Comprehensive Energy Plan	
Choose all of the applicable options below for Implementation Projects:		
☐ Building Energy Efficiency ☐ Renewable Energy ☐ Transportation ☐ Training, Operations (cannot be standalone) ☐ Other		
Project Title:	Coordinated energy planning for seven Wisconsin cities.	
Brief Project Description: (2000 character limit)	The municipalities of Fitchburg, Middleton, Monona, Sun Prairie, Marshall, Waukakee and Stoughton propose to use an Office of Energy Innovation planning grant to develop comprehensive energy plans and actionable strategies for achieving energy goals. While each of the seven municipalities has independently pursued energy and sustainability goals, we envision achieving greater success by developing comprehensive plans that leverage our resources and address our interconnectedness in the metropolitan region. Further, we anticipate this collaboration will identify innovative approaches that are achievable due to economies of scale from a multi-city partnership. Our collaboration views comprehensive energy plans as a critical tool to help us prioritize and maximize the effectiveness of our economic resources to achieve our energy goals and secure a resilient energy future. Further, we see this collaboration as an opportunity to create an information exchange across our seven municipalities to better understand the challenges and barriers that we face individually and collectively; and to develop innovative solutions that address the changing energy landscape in the Dane County region.	

SECTION II - Provide information for your organization, signatory, and primary contact for the project.				
Applicant Type:	■ City	■ Village	☐ Town	☐ County
☐ Tribe		☐ Manufacturer	☐ K-12 School District	

Name (on W-9):	City of Middleton Wisconsin
Address (on W-9):	7426 Hubbard Avenue Middleton, WI 53562
Remit to Address (check payable to): **note:** Additional paperwork may be requested to set up this address in the state payment system.	7426 Hubbard Avenue Middleton, WI 53562
DUNS Number or CAGE Code:	054266010
NAICS Code:	

Authorized Representative/Signatory (Person authorized to submit applications and sign contracts)		**Primary Contact** (if different from Authorized Representative)	
Name:	Mike Davis	**Name:**	Stacie Reece
Title:	City Administrator	**Title:**	Sustainability Coordinator
Phone:	608-821-8358	**Phone:**	608-821-8362
E-mail:	mdavis@ci.middleton.wi.us	**E-mail:**	sreece@cityofmiddleton.us
Signature of the Authorized Representative			

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ELIGIBILITY

The applicants meet all eligibility requirements for the Energy Innovation Grant program.

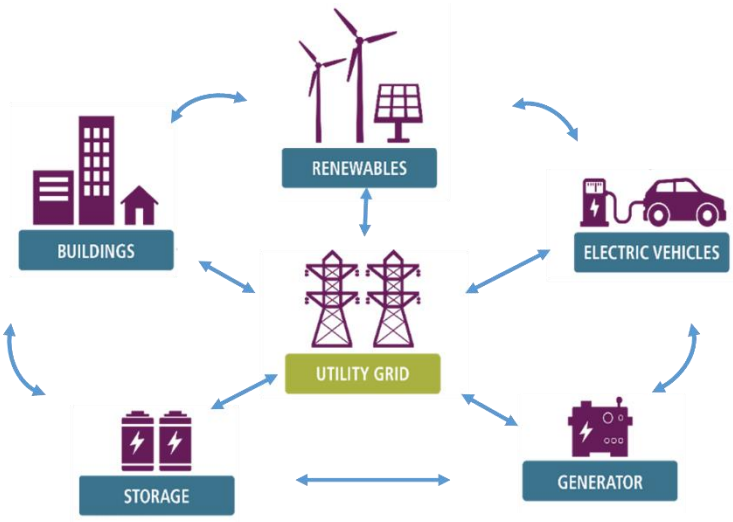
Applicant	Eligibility	Contact	Position
Fitchburg	City	Ellen Geisler	Sustainability Specialist
Middleton	City	Stacie Reece	Sustainability Coordinator
Monona	City	Brad Bruun	Sustainability Director
Sun Prairie	City	Drake Daily	Management Analyst
Stoughton	City	Tim Swadley	Mayor
Marshall	Village	Adam Ruechel	Village Administrator
Waunakee	Village	Todd Schmidt	Sustainability Specialist

DESCRIPTION

The municipalities of Fitchburg, Middleton, Monona, Sun Prairie, Marshall, Stoughton, and Waunakee propose to use an Office of Energy Innovation planning grant to develop comprehensive energy plans and actionable strategies for achieving energy goals. Many of the municipalities have independently pursued energy efficiency and renewable energy projects, but without a comprehensive energy plan. We envision achieving greater success by developing comprehensive energy plans that leverage our resources and address our interconnectedness in the metropolitan region. Further, we anticipate this collaboration will identify innovative approaches that are achievable due to economies of scale from a multi-city partnership. We will deliver a webinar to share our approach and results with other cities and municipalities across the state.

Our collaboration views comprehensive energy plans as a critical tool to help us prioritize and maximize the effectiveness of our economic resources to achieve our energy goals and secure a resilient energy future. We see this collaboration as an opportunity to create an information exchange across our seven municipalities to better understand the challenges and barriers that we face individually and collectively; and to develop innovative solutions that address the changing energy landscape.

This unique partnership will push beyond traditional energy planning efforts, and explore next generation technologies and ideas such as energy storage, demand response, smart buildings, beneficial electrification and approaches for load shifting. These efforts will increase the resiliency of critical infrastructure and provide a roadmap for achieving our energy and resiliency goals.



The outcome of this collaborative comprehensive energy planning process will be actionable plans that each city can use to

both address existing energy goals and to establish additional goals. Each municipality will benefit from sharing best practices and lessons learned from assessing the feasibility of innovative pilot projects and programs designed to provide maximum economic benefit to their communities. Our team has also received support from WPPI Energy and they have indicated that this project will serves as a model for other WPPI member communities throughout Wisconsin.

The key elements of our approach to developing comprehensive energy plans and actionable strategies include:

- Establishing a seven-city coalition to meet and discuss topics and projects, and establish overall planning framework. The objective for the framework is to link common goals across cities. In this manner we're pooling resources and OEI funding for a greater, or more scalable outcome.
- Conducting analyses to establish an energy profile (for electricity, heating, cooling, transportation, renewable energy, and storage) for each municipality.
- Formulating strategies that address the energy challenges for each profile, possibly including deep energy efficiency, renewable energy, storage, demand response and beneficial electrification. The basic approach for developing those strategies will include:
    - Establish a system to track and benchmark all municipal energy use against quantifiable goals. This may be accomplished by developing custom applications or using existing tools such as Portfolio Manager.
    - Develop energy reduction goals in all city operations with near-term and long-term goals
    - Identify and prioritize near-term and long-term action items for accelerating the transition to clean energy scenarios within each profile.
- Identifying the critical factors to achieve energy system transition including investments at the building, city and county scale and financing mechanisms.
- Reviewing municipal-wide policies and practices that support achieving energy goals.
    - Analyze impacts of advanced building guidelines or outcome-based approaches
    - Identify energy performance targets on existing and new buildings
- Identify critical facilities (e.g. electric utility, water utility, law enforcement, EMS, communications infrastructure, etc.) and vulnerable facilities (health care, senior care, child care, schools, etc.) and analyze the potential for energy security and energy system resilience associated with these facilities.

The coalition proposes to contract with Seventhwave to assist in developing the comprehensive energy plans. Seventhwave will conduct analyses and work with the coalition to develop a comprehensive energy plan for each city. Seventhwave worked with 22 Wisconsin communities in the past as part of OEI's Energy Independent Communities initiative. They provided baseline energy assessments and tools to assist those communities in understanding their energy use and develop energy goals. Seventhwave has extensive experience analyzing energy consumption at all levels—from appliances to buildings to communities—and identifying strategies for reducing energy use. Seventhwave delivers award-winning energy efficiency education programs on behalf of utilities across Wisconsin by training thousands of energy industry professionals every year. We will leverage Seventhwave's online training platform to deliver a webinar and educate cities and municipalities on the results of the project.

The coalition anticipates that energy assessment and planning could involve a mix of planning activities and concepts that are at early stages of market maturity and/or acceptance in the Midwest:

- Critical infrastructure resiliency assessment
- Resiliency action planning

- Energy, health and safety action planning in affordable housing and for underrepresented citizens
- Zero-net energy dairy operations[1]
- Electrifying municipal fleets,
- Development of electrically powered buses that connect communities to each other or Madison
- Grid interactive water heater storage
- Feasibility of new power control solutions for the IoT home.
- Performance-based design assistance and procurement
- Remote-based energy auditing
- Beneficial electrification analysis

We envision four primary phases to accomplishing our project goals. These four phases are broken down as six tasks shown in our budget.

- Phase 1: Stakeholder input of priorities and development of goals, draft of workplan and roadmap
- Phase 2: Detailed concept and project development and approval by local committees
- Phase 3: Data gathering, assessment and evaluation, mid project evaluation
- Phase 4: Integration and dissemination of results, prioritize action steps

The primary goal is to develop comprehensive energy plans that uses each city's resources and opportunities, leverages resources across the seven districts, and enhance actions already underway in each municipality. The municipalities will benefit by sharing best practices and lessons learned by collaborating with each other in this innovative partnership. Following are brief descriptions of the current status of energy planning in each municipality and a statement of interest in this collaborative project.

The City of Middleton will serve as the lead administrator and organizer of the project. Stacie Reece is the Sustainability Coordinator for Middleton and she will work with Abby Attoun, Middleton's Director of Community Development, to organize and coordinate coalition meetings, and meet all grant reporting requirements. Stacie and Abby will be assisted by Seventhwave to ensure success of the project and completion of all deliverables in a timely manner.

Fitchburg

The City of Fitchburg has demonstrated commitment to sustainability in operations and throughout the city through dedicated staff, volunteers, and ongoing initiatives. Two organizations guide sustainability initiatives in the city of Fitchburg: the Resource Conservation Commission and a staff Green Team. The city employs a full-time Sustainability and Healthy Neighborhood Development Specialist to coordinate efforts within municipal operations and across the city. In 2008, the Fitchburg Common Council adopted the US Mayors Climate Protection Agreement, and the following year the city partnered with the State of Wisconsin in pursuit of the 25 x 25 goals for energy independence. Fitchburg joined the Green Tier Legacy Communities Charter in 2010 and committed to taking action and sharing information to achieve superior environmental stewardship by focusing on water resources management and sustainability

[1] Seventhwave helped pioneer these approaches for dairies in a project with the U.S. Department of Energy.

practices. In 2013, a Campus Retro-Commissioning Project was completed followed by a citywide solar initiative to install 362 kW of solar photovoltaics (electric) in 2017. Fitchburg installed solar panels at City Hall, library, West Fire Station, and Public Works Maintenance Facility. The City of Fitchburg Public Library and the West Fire Station are also partially heated/cooled by a geothermal heating and cooling system.

The City of Fitchburg needs a comprehensive energy plan to explore future projects and prioritize initiatives. The city has accomplished the easy energy reduction recommendations from previous studies, and Fitchburg currently has the largest municipal solar array in the state. Fitchburg is interested in energy storage to take advantage of the solar installations and increase resiliency; opportunities to achieve and exceed its 25x25 goals; and initiatives to encourage action across the community. The City of Fitchburg is also very interested in learning successes and challenges from other cities and pooling our respective resources to maximize cost-effectiveness for this grant.

Monona

The City of Monona dedicates much effort toward improving energy efficiency and sustainability of its community and its municipal government operations and facilities. Monona is a member of the Energy Independent Community program and is dedicated to reaching and surpassing its goal of reach 25% energy from renewables for municipal operations by 2025. Monona's participation in this collaborative effort will give the community an opportunity to create a comprehensive energy use plan. The result of which will define a roadmap for Monona to follow in pursuit of reaching its current goals and potential future goals for energy efficiency and sustainable energy production.

The City of Monona has one part-time dedicated staff for sustainability projects, along with a small annual budget of around $10,000. Monona also has a Sustainability Committee which meets monthly. The committee's current dedication is to renewable energy and energy efficiency projects in Monona. The Monona Sustainability Committee is currently discussing potential expansion of its 25% renewable energy use by 2025 goals. Municipal annual budgets are limited and because of this, the costs of expanding solar or other renewable energy production could potentially limit budget money spent on other necessary programs, resources, or staff time. Monona will utilize an energy use plan to implement affordable and innovative ways to meet its goals. The City is thrilled to be included in this unique partnership.

Monona has participated in a rooftop solar program since 2013-2014. The third party financing contract formed during the solar project had a 6-year pilot written into the contract language. Prior to the end of 2019 the City will need to determine whether there is a cost or benefit to purchasing the solar panels.

Monona plans to utilize services provided by Seventhwave via this grant and part of its comprehensive energy plan to examine the feasibility of how the City can meet its renewable energy goals. Monona will utilize Seventhwave's services to generate a cost benefit analysis of its current solar generation program, to prioritize and plan necessary energy efficiency upgrades at current facilities, and to plan for future expansion of renewable energy production.

Sun Prairie

Sun Prairie is committed to improving the sustainability of its operations. In 2009, the Sun Prairie City Council adopted a 25 x 25 resolution to achieve 25% energy from renewable for municipal operations by 2025 and the City is still actively working to achieve that goal. City staff has a "Green Team" that identifies sustainable opportunities and pursues projects to further its sustainability goals.

To assist in achieving its sustainability goals, the City is seeking the development of a Comprehensive Energy Plan. The plan will address the following:

- **Baseline Energy Information**: Level 1 and Level 2 Audits to be conducted on selected City facilities to establish a baseline to measure future progress against. This would also include an inventory of systems (lighting, HVAC, automation, etc.), their expected remaining life, and a recommended replacement date.
- **Renewable Energy Projects:** In fall of 2018, a solar photovoltaic array will be installed on the roof of City Hall that will generate a significant portion of the building's electricity. There is potential for additional renewable energy projects (geothermal, solar, etc.) within the City.
- **Facility Improvements: T**he City is in the design phase of a renovation to its Westside Community Building. The City has enrolled in a design assistance program through WPPI to identify opportunities for green features within that renovation. There are additional opportunities for improvement in City facilities a comprehensive energy plan could assist in identifying and providing recommendations for implementation.
- **Electric Vehicle Infrastructure:** The City dedicates a spot in a downtown municipal lot for an electric vehicle charging station. The City is interested in potentially expanding its electric vehicle infrastructure in strategic locations for the public.
- **Municipal Fleet:** The City's municipal utility recently purchased an electric vehicle for use by utility staff. The City is interested in exploring additional opportunities available for reducing the carbon footprint of the municipal fleet by purchasing alternatively fueled vehicles (CNG, hybrid, electric, etc.).
- **Public Transportation:** The plan will explore the associated costs and funding mechanisms for the establishment of an EV bus route between Madison and Sun Prairie. This would provide sustainable public transportation for individuals living in Sun Prairie but working in Madison or vice versa.
- **Energy Storage and Resiliency:** The plan will explore different options for energy storage to provide backup power to critical/vulnerable facilities.

By developing a comprehensive energy plan, The City will have a "road map" of future projects within the above categories to continue making progress towards its sustainability goals. These projects could include LED lighting conversion, renewable energy projects such as solar or geothermal, system retrofits, replacement of current systems with appliances that are more efficient, fleet upgrades, expansion of electric vehicle infrastructure, electric public transportation options, energy storage, resiliency, etc. with cost estimates, sustainable benefits and potential ROI.

Middleton

Middleton's history in planning for a more sustainable community began with designing compact development and preserving permanent public open space. Middleton formed a Sustainability Committee to establish a sustainability lens for all municipal decisions. A watershed year for Middleton was 2010, when it joined the Wisconsin Green Tier Legacy Communities Charter and adopted its Sustainability Plan, which benchmarks sustainability efforts using a systems approach. The vision for the energy component of the Sustainability Plan was that *"The City of Middleton is a leader in energy efficiency and renewable energy generation and use. Public and private energy users are using innovative technologies to make Middleton a "net zero" City that produces all of its energy needs from renewable sources within the City limits."* This plan lists a variety of indicators, targets, actions, and performance measures pertaining to energy. Notably, the plan calls for 25% of the City's electric power and transportation fuels to be generated from renewable resources by 2025 (goal established through the Energy Independent Communities program).

In 2010, Middleton also supported a large-scale energy efficiency upgrade project using a combination of Energy Efficiency Conservation Block Grant funds and City funds for a total investment of over $300,000 in lighting upgrades, variable frequency drives (VFDs) at two water pumping stations, and streetlight upgrades. Middleton installed its first solar array (16 kW) on a downtown pavilion in 2014. In 2016, the City worked with Madison Gas and Electric to install a 500 kW "shared" solar array at the Middleton Operations Center and a 100 kW solar array at the Middleton Police Station. The police station project powers 25% of the building's energy needs. Currently, Middleton is working to lease 16 acres of land for a 5 MW solar array at the municipal airport. The goal is for a percentage of Middleton's municipal energy needs to be generated by the project.

In the fall 2016 election, Middleton asked voters if the City should become a leader in reducing the risks of severe weather events through its policy decisions and actions, and it passed with 80.6% approval. A second question was the first referendum in the country pertaining to a federal carbon fee and dividend, which passed with 72.3% approval. Middleton residents want the City to be a leader in addressing energy resiliency, and the Sustainability Committee is recommending approval for a resolution committing the City to a 100% renewable energy and zero net carbon resolution. The development of a comprehensive energy plan will provide a road map for achieving the ambitious goals recommended by the Sustainability Committee.

Stoughton

The City of Stoughton is participating in the Energy Independent Communities program and is committed to using renewable resources for 25% of its electricity and transportation fuels by the year 2025. Partnering with fellow communities to develop a comprehensive energy plan will provide the City with actionable strategies for attaining its goals.

In particular, Stoughton is seeking guidance on the feasibility of adding solar to its existing parks buildings. The City has taken the first step in doing that at a new park in the Nordic Ridge development and is interested in learning how to offset 100% of the electrical usage at our parks.

Secondly, Stoughton wants to look at city building energy usage and offset that usage with renewable energy. The City needs help in understanding which buildings are suitable for renewable energy installations, how much could be installed and what is needed to retrofit the existing building to accommodate renewable energy.

Finally, Stoughton wants to promote and increase the use of electric vehicles. Along with promoting electric vehicles to community members, the City would like to find the ideal locations to put in electric charging stations for people that shop in downtown Stoughton.

A comprehensive energy plan will help Stoughton understand how to maximize the benefits of electric vehicles for its businesses and identify the best charging rate structure for recouping costs to ensure charging stations remain a viable option for the downtown.

Marshall

The Village of Marshall is a small, rural community of approximately 3,862 residents situated in the northeastern portion of Dane County along the Maunesha River. The Village's involvement in this collaboration will help to expand the clean energy conversation outside of the Madison urban area where a lot of initial sustainable energy efforts have been focused. Additionally, the coalition's work will help all nearby municipalities establish a common understanding of the region's energy needs and planning.

The expected outcomes for the Village are to develop a comprehensive energy plan that will include elements needed to develop a feasibility study detailing economically viable options for a renewable energy (Biogas) implementation project. The inclusion of biogas is unique to this project (although not unique to Wisconsin) and is expected to yield results that other coalition members could use. Our examination of the use of biogas will consider two primary waste streams including agriculture and industrial waste. The Village of Marshall is centrally located within less than a 10-mile radius of seven concentrated animal feeding operations (CAFOs).

Waunakee

In 2009, the Village of Waunakee adopted a 25x25 resolution to achieve 25% of energy from renewables for municipal operations. The Village is dedicated to improving energy efficiency and sustainability of its municipal operations and facilities. In 2017, the Village completed extensive energy efficiency upgrades to their community center with the help of WPPI and Focus on Energy. The new public library has enrolled in the WPPI Energy Efficiency new construction program and solar is being evaluated as an option for that new building.

As part of this grant, the Village of Waunakee is seeking a comprehensive energy plan to maximize energy efficiency at all facilities and operations. The plan would consist of Level 1 and 2 audits of existing buildings except for the community center. The Village is seeking help to evaluate and identify energy efficiency projects to achieve their sustainability goals.

In addition, a comprehensive renewable energy (solar) plan would help identify which buildings are the most viable for renewable energy projects. Lastly, as part of the comprehensive plan, the Village would like to see an electric vehicle plan for their fleet vehicles including approximate costs and feasibility.

BUDGET AND MATCH

The collaboration of seven municipalities requests a total of **$435,694** in funding from the Energy Innovation Grant program. We estimate that the combined total cost of the project will be **$551,451** over 20-month period once the project begins. We expect in-kind funding of **$115,758** which represents almost 21% of the total expected project cost. Below we provide a detailed breakdown of how funds will be allocated.

a) allocation of funds by cost category

	TOTAL			Task 1: Engagement with stakeholders			Task 2: Development of energy profiles			Task 3: Identification and analysis of goals / strategies		
Category	**Grant Request**	**Match**	**Total**	**Grant Request**	**Match**	**Total**	**Grant Request**	**Match**	**Total**	**Grant Request**	**Match**	**Total**
Personnel	$ 409,175	$ 100,946	$ 510,121	$ 21,837	$ 11,220	$ 33,120	$ 72,812	$ 17,734	$ 90,569	$ 138,520	$ 30,587	$ 169,109
Indirect	$ 15,263	$ 3,940	$ 19,203	$ 427	$ 1,015	$ 1,426	$ 488	$ 710	$ 1,189	$ 283	$ 510	$ 792
Fringe	$ 10,682	$ 8,872	$ 19,553	$ 385	$ 2,688	$ 3,019	$ 278	$ 1,135	$ 1,398	$ 226	$ 1,133	$ 1,357
Travel	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Supplies	$ 574	$ -	$ 574	$ 574	$ -	$ 582	$ -	$ -	$ -	$ -	$ -	$ -
Total Direct	$ 409,749	$ 100,946	$ 510,695	$ 22,411	$ 11,220	$ 33,703	$ 72,812	$ 17,734	$ 90,569	$ 138,520	$ 30,587	$ 169,109
TOTAL BUDGET	**$ 435,694**	**$ 115,758**	**$ 551,451**	$ 23,224	$ 14,924	$ 38,147	$ 73,578	$ 19,578	$ 93,156	$ 139,029	$ 32,229	$ 171,258

	Task 4: Development of Implementation plan			Task 5: Reporting and final plan development			Task 6: Adminstrative oversight		
Category	**Grant Request**	**Match**	**Total**	**Grant Request**	**Match**	**Total**	**Grant Request**	**Match**	**Total**
Personnel	$110,335	$24,453	$134,783	$35,320	$12,422	$47,742	$30,350	$4,530	$34,871
Indirect	$2,688	$586	$3,274	$2,066	$684	$2,751	$9,311	$436	$9,756
Fringe	$1,560	$1,240	$2,805	$1,452	$1,843	$3,294	$6,780	$833	$7,613
Travel	$0	$0	$0	$0	$0	$0	$0	$0	$0
Supplies	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Direct	$110,335	$24,453	$134,783	$35,320	$12,422	$47,742	$30,350	$4,530	$34,871
TOTAL BUDGET	$ 114,584	$ 26,279	$ 140,862	$ 38,838	$ 14,949	$ 53,787	$ 46,441	$ 5,799	$ 52,240

b) allocation of funds by municipality

City	TOTAL			Task 1: Engagement with stakeholders			Task 2: Development of energy profiles			Task 3: Identification and analysis of goals / strategies		
	Grant Request	Match	Total	Grant Request	Match	Total	Grant Request	Match	Total	Grant Request	Match	Total
Middleton	**$ 66,560**	**$ 18,380**	**$ 84,940**	$ 4,400	$ 1,500	$ 5,900	$ 12,480	$ 2,880	$ 15,360	$ 21,480	$ 4,680	$ 26,160
Sun Prairie	**$ 63,134**	**$ 15,178**	**$ 78,311**	$ 3,824	$ 1,424	$ 5,247	$ 31,098	$ 7,098	$ 38,196	$ 9,549	$ 2,349	$ 11,898
Fitchburg	**$ 60,000**	**$ 15,960**	**$ 75,960**	$ 3,000	$ 2,400	$ 5,400	$ 6,000	$ 1,920	$ 7,920	$ 24,000	$ 5,520	$ 29,520
Monona	**$ 61,500**	**$ 16,560**	**$ 78,060**	$ 3,000	$ 2,400	$ 5,400	$ 6,000	$ 1,920	$ 7,920	$ 21,000	$ 4,920	$ 25,920
Stoughton	**$ 61,500**	**$ 16,560**	**$ 78,060**	$ 3,000	$ 2,400	$ 5,400	$ 6,000	$ 1,920	$ 7,920	$ 21,000	$ 4,920	$ 25,920
Waunakee	**$ 61,500**	**$ 16,560**	**$ 78,060**	$ 3,000	$ 2,400	$ 5,400	$ 6,000	$ 1,920	$ 7,920	$ 21,000	$ 4,920	$ 25,920
Marshall	**$ 61,500**	**$ 16,560**	**$ 78,060**	$ 3,000	$ 2,400	$ 5,400	$ 6,000	$ 1,920	$ 7,920	$ 21,000	$ 4,920	$ 25,920
TOTAL BUDGET	**$ 435,694**	**$ 115,758**	**$ 551,451**	$ 23,224	$ 14,924	$ 38,147	$ 73,578	$ 19,578	$ 93,156	$ 139,029	$ 32,229	$ 171,258

City	Task 4: Development of Implementation plan			Task 5: Reporting and final plan development			Task 6: Adminstrative oversight		
	Grant Request	Match	Total	Grant Request	Match	Total	Grant Request	Match	Total
Middleton	$ 12,900	$ 3,120	$ 16,020	$ 6,300	$ 3,150	$ 9,450	$ 9,000	$ 1,050	$ 10,050
Sun Prairie	$ 8,024	$ 2,159	$ 10,182	$ 5,598	$ 1,299	$ 6,897	$ 5,041	$ 849	$ 5,890
Fitchburg	$ 15,900	$ 3,720	$ 19,620	$ 5,100	$ 2,100	$ 7,200	$ 6,000	$ 300	$ 6,300
Monona	$ 19,440	$ 4,320	$ 23,760	$ 5,460	$ 2,100	$ 7,560	$ 6,600	$ 900	$ 7,500
Stoughton	$ 19,440	$ 4,320	$ 23,760	$ 5,460	$ 2,100	$ 7,560	$ 6,600	$ 900	$ 7,500
Waunakee	$ 19,440	$ 4,320	$ 23,760	$ 5,460	$ 2,100	$ 7,560	$ 6,600	$ 900	$ 7,500
Marshall	$ 19,440	$ 4,320	$ 23,760	$ 5,460	$ 2,100	$ 7,560	$ 6,600	$ 900	$ 7,500
TOTAL BUDGET	$ 114,584	$ 26,279	$ 140,862	$ 38,838	$ 14,949	$ 53,787	$ 46,441	$ 5,799	$ 52,240

ENERGY INNOVATION GRANT IMPACT ON PROJECT

As the nation's grid infrastructure moves toward incorporating more distributed energy resources, it is important that communities collaborate on projects, share best practices, and even share energy resources in some cases. Energy innovation in the coming years means that energy and communications need to flow reliably in multiple directions as opposed to the one-way flow of energy characterized by traditional centralized generation and transmission. It is generally accepted that this will require significantly improved collaboration between cities and interoperability among processes and technologies. Pieces of this proposed project may move forward within each separate municipality without Energy Innovation Grant funding, which is why there is substantial match funding, but the combined planning and collaboration as proposed for this project will not occur. Without Energy Innovation Grant funding for a project such as this, what's left are individual, separate projects without the potential for collaborative opportunities and real impact toward grid transformation in the region.

In the table below is provided the expected funding sources for the proposed project.

FUNDING SOURCES			
SOURCE	USE	AMOUNT	% PROJECT
Energy Innovation Grant	Labor/supplies	$435,694	79%
Middleton	Labor	$6,080	1%
Sun Prairie	Labor	$5,160	1%
Fitchburg	Labor	$5,160	1%
Monona	Labor	$5,760	1%
Marshall	Labor	$5,760	1%
Waunakee	Labor	$5,760	1%
Stoughton	Labor	$5,760	1%
Seventhwave	Labor	$76,318	14%
Invited Utility Partners*	Labor	$2,500	0%
TOTAL*		$553,951	100%

* Not presented in the budget tables; $553,951 - $2,500 = $551,451 = total amount in budget tables above

MERIT REVIEW CRITERIA

Eligibility determination and ability to achieve the objectives.

All applicants are municipalities in Wisconsin and eligible for the Energy Innovation Program grant. Additional proof of eligibility can be provided upon request. As already described, the municipalities represent slightly different stages and level of readiness with respect to advanced energy planning. But each has shown a commitment to developing energy planning goals further. All cities will have a dedicated specialist working on the project ensuring that objectives are met.

Seventhwave (subcontractor)

Seventhwave promotes sustainability through research, program design, education and hands-on work in buildings nationwide. A trusted nonprofit source of expertise, Seventhwave was founded in 1989 and has 53 employees with offices in Madison, Minneapolis and Chicago. As an independent nonprofit Wisconsin corporation, we deliver objective energy and sustainability solutions through evidence-based research, rigorous engineering and economic analysis. Studying energy issues and solving energy efficiency problems is not a side-line activity for the Seventhwave—it's what we do. Achieving a sustainable, resilient community requires a collaborative process that engages multiple disciplines and backgrounds. It demands careful integration of systems and technologies and a deep understanding of how they interrelate. We approach buildings, communities and campuses from a holistic perspective. We provide innovative, customized solutions to help stakeholders prioritize visions and objectives. We present the most cost-effective path to achieve sustainability goals and deep energy savings. We believe there's no substitute for human judgment.

Recently, we analyzed the utility efficiency program evaluations in California; developed climate resiliency solutions for building energy planning at one of NASA's space centers; implemented a large-scale (1000 buildings) new construction program for utilities in Illinois; assessed building energy demand impacts on air quality for the National Institutes of Health, and analyzed the effectiveness of the national low-income weatherization program for the U.S. Department of Energy. Our clients include state and federal agencies, utilities, non-governmental organizations, universities and private corporations.

Seventhwave staff has expertise in architecture, engineering, economics, statistics, psychology, policy analysis, and communications. We rely on this diverse skill set to offer a broad variety of services supporting our mission, including characterizing energy use in utility service areas; evaluating energy efficiency programs; gathering primary data on energy use patterns; modeling energy use in buildings; measuring appliance-specific energy use; and educating policymakers, analysts and technicians to help advance energy efficiency. Seventhwave is recognized for its communications abilities and skill at converting large amounts of technical data to useful information.

Energy savings

We estimated total potential savings for each city based on previous studies in Wisconsin and energy planning for Wisconsin cities. Potential savings are estimated from implementing new energy efficiency and renewable energy projects for municipal facilities and operations. We estimate the potential saved for the Villages of Marshall and Waunakee to be about 20% of total village energy use. For Marshall, this could likely be much more if anaerobic digestion is planned.

City	2016 Population	Total Municipal Energy Use* (MMBtu)	Annual Potential Savings from New Energy Efficiency (MMBtu)	Annual Potential Savings from New Renewable Projects (MMBtu)
Fitchburg	28,875	63,200	9,500	14,700
Monona	8,179	29,500	4,400	5,400
Middleton	17,442	44,600	6,700	9,600
Sun Prairie	32,820	69,600	10,400	16,500
Stoughton	13,134	37,600	5,600	7,600

*Fleet, water, buildings, street lighting

Operational and maintenance savings

Our energy planning will include best practice recommendations on facility operations and maintenance such as those found in the Department of Energy's Federal Energy Management Program's *Operations and Maintenance Best Practices* guide. FEMP suggests that an O&M plan can save "5% to 20% on energy bills without a significant capital investment." These comprehensive energy plans are likely to save these communities amounts at the higher end of this range because of the ideas and practices that will be shared as a result of the collaborative networking of 6 municipalities. As indicated earlier, through our partnership with WPPI Energy, we will also work with them on sharing results to all WPPI's 51 community-owned member utilities.

Payback calculation and methodology

Where appropriate, we will conduct a life-cycle cost analysis on each community's measures, using the savings-to-investment ratio (SIR) of the measure as a more discriminating indicator than simple payback. Where simple payback simply relates the installed cost of the measure to the annual cost of energy saved, the SIR uses present-value dollars and can account for periodic non-energy expenses such as maintenance. The general formula for the SIR

$$SIR_{A:BC} = \frac{\sum_{t=0}^{N} S_t /(1+d)^t}{\sum_{t=0}^{N} \Delta I_t /(1+d)^t}$$

$SIR_{A:BC}$	=	ratio of present-value savings to additional present-value investment costs of the mutually exclusive alternative (A) relative to the base case (BC)
S_t	=	savings in year t in operational costs attributable to the alternative
ΔI_t	=	additional investment-related costs in year t attributable to the alternative
t	=	year of occurrence
d	=	discount rate
N	=	length of study period in years[9]

We will use US Department of Commerce energy price indices and discount factors to separately account for inflation and fuel price escalation.

Existing energy planning efforts underway or completed

With the exception of Marshall, each of the applicant cities participates in OEI's Energy Independent Communities program. The cities have varying levels of energy planning underway—from simply identifying projects that affect energy use to more detailed sustainability plans.

Fitchburg

The City of Fitchburg has demonstrated commitment to sustainability in operations and throughout the city through dedicated staff, volunteers, and ongoing initiatives. Two organizations guide sustainability initiatives in the city of Fitchburg: the Resource Conservation Commission and a staff Green Team. The city employs a full-time Sustainability and Healthy Neighborhood Development Specialist to coordinate efforts within municipal operations and across the city. In 2008, The Fitchburg Common Council adopted the US Mayors Climate Protection Agreement, and the following year the city partnered with the State of Wisconsin in pursuit of the 25 x 25 goals for energy independence. Fitchburg joined the Green Tier Legacy Communities Charter in 2010 and committed to taking action and sharing information to achieve superior environmental stewardship by focusing on water resources management and sustainability practices. In 2013, a Campus Retro-Commissioning Project was completed, followed by a citywide solar initiative to install 362 kW of solar photovoltaics (electric) in 2017. Fitchburg installed solar panels at City Hall, library, West Fire Station, and Public Works Maintenance Facility. The City of Fitchburg Public Library and the West Fire Station are also partially heated/cooled by a geothermal heating and cooling system.

Middleton

Middleton has adopted a Sustainability Plan that employs a system approach to benchmark the city's sustainability efforts. To date, Middleton has upgraded lighting and variable frequency drives at two water pumping stations, upgraded streetlights, installed a 16kW solar array on a downtown pavilion, installed a 500kW shared solar array (in partnership with MGE) at the Middleton Operations Center and a 100kW solar array at the Middleton Police Station. Currently the city is working on leasing land at the municipal airport for a five MW solar array.

Monona

The City of Monona is dedicated to improving energy efficiency and sustainability of its municipal government and community operations and facilities. Monona is a member of the Energy Independent Community program and is dedicated to reaching its goal of reach 25% energy from renewables for municipal operations by 2025.

The City of Monona has 1, part-time, dedicated staff for sustainability projects, along with a small annual budget of around $10,000. Monona also has a Sustainability Committee which meets monthly. The committee's current dedication is to renewable energy and energy efficiency projects in Monona. Monona Sustainability Committee is currently discussing potential revisions to its current renewable energy goals. However, the City does not want to declare a formal resolution that would set unreachable goals. Municipal budgets are always stretched and costs of expanding solar or other renewable energy production could potentially limit budget money spent on other necessary programs, resources, or staff time. Monona will need affordable, innovative ways to meet its goals.

Monona has participated in a rooftop solar program since 2013-2014. The third party financing contract formed during the solar project had a 6 year pilot written into the contract language. 2018 is year 5 of the 6 years and prior to the end of year 6 the City will need to determine whether there is a cost or benefit to purchasing the panels.

Stoughton

The City of Stoughton is participating in the Energy Independent Communities program and is committed to using renewable resources for 25 percent of its electricity and transportation fuels by the year 2025.Partnering with fellow Dane County communities to develop a comprehensive energy plan will provide the City with actionable strategies for attaining its goals.

In particular, Stoughton is seeking guidance on the feasibility of adding solar to its existing parks buildings. The City has taken the first step in doing that at a new park in the Nordic Ridge development and is interested in learning how to offset 100% of the electrical usage at our parks.

Secondly, Stoughton wants to look at city building energy usage and offset that usage with renewable energy. The City needs help in understanding which buildings are suitable for renewable energy installations, how much could be installed and what is needed to retrofit the existing building to accommodate renewable energy.

Finally, Stoughton wants to promote and increase the use of electric vehicles. Along with promoting electric vehicles to community members, the City would like to find the ideal locations to put in electric charging stations for people that shop in downtown Stoughton.

*S*un Prairie

Sun Prairie adopted a 25 x 25 resolution in 2009. The city has two major projects in the works for 2018: installing a solar array on the roof of City Hall to generate a significant portion of the building's electricity and a sustainable re-design of its Westside Community Building.

Marshall

The Village of Marshall has done little energy planning but currently has three solar panels installed at the Village of Marshall Wastewater Treatment Plant. Participation in this project and development of a comprehensive energy plan will be greatly beneficial to Marshall's energy planning efforts. Marshall envisions several elements and benefits from focusing on biogas development including:

- Piping of liquid manure along roadways from CAFOs to a centrally located digester
- Piping of digestate along highways from a centrally located digester to strategically placed valves that farmers and land owners can tap as a fertilizer source
- Metering and environmental monitoring of liquid inputs and outputs to and from the digester
- Ease of implementing aerial manure irrigation based on piped distribution of fertilizer
- Positive impact to nearby bodies of water if aerial irrigation is adopted
- Potential reduction in road maintenance cost due to reduced traffic from heavy machinery

Wherever practical, the would ideally document the benefits for each potential stakeholder of value creation – Municipality, Tax Payers, Farmers, Watersheds, etc. Since some of these CAFOs are producing Biogas currently, another consideration would be expansion of an existing facility and transportation of waste from one location to another. Potential co-digestion partnerships with nearby industries also exist.

Bailey Farms is a stock removal, rendering, and pet food company located in Marshall. Not only could the company's waste be utilized for Biogas production, but doing so could also benefit the community of Marshall as a means of odor reduction/elimination.

Briess Malt & Ingredients Co. is located in nearby Waterloo with a potential abundance of high yield biogas feedstock.

Village of Waunakee

In 2009, the Village of Waunakee adopted a 25x25 resolution to achieve 25% of energy from renewables for municipal operations. The Village is dedicated to improving energy efficiency and sustainability of its municipal operations and facilities. In 2017, the Village completed extensive energy efficiency upgrades to their community center with the help of WPPI and Focus on Energy. The new public library has enrolled in the WPPI Energy Efficiency new construction program and solar is being evaluated as an option for that new building.

Financial leverage and impact

Using estimated city-wide fuel savings per end use and standard rates for electricity, natural gas, and fuel, we estimate that the seven municipalities collectively could save between $1.5M and $2.2M annually in energy and fuel costs by implementing new energy efficiency and renewable energy projects. This translates to about $45 per year per household.

It is well established that energy efficiency and renewable energy programs promotes local jobs. The U.S. Department of Labor reports that renewable energy jobs are among the fastest growing job segments in the U.S.

Urban, rural, or underrepresented areas of the state

Our project area primarily consists of the suburban and rural areas surrounding Madison. Energy planning is an important issue for these communities and collectively they represent some of the fastest growing areas in the Wisconsin. This grant will greatly augment current efforts and, perhaps more importantly, prepare the region for sustainable energy growth. It is not efficient for one community, particularly those in this region, to approach energy and sustainability planning alone. For example, as a rural area, the Village of Marshall would benefit greatly from exposure the activities of the other coalition members. This grant will help this cities pool planning resources and develop consistent plans across the region.

Education

The project is not paired with behavior modification or curriculum development explicitly. However, project activities and outcomes are expected to enhance current energy and sustainability efforts for each city which in turn should increase the awareness and the educational value of these efforts. We plan to offer a free webinar at the end of the projects to share results statewide.

Innovation

The key innovation with our approach is that each community may examine closely a different advanced strategy. The outcome of doing so is that the results will be shared and incorporated, to the extent possible, into each community's plan. For example, if one community wants to examine the benefits of a community-wide energy storage program using electric vehicles, the project can incorporate those findings into the energy planning of the other communities. As another example, one community has been considering the benefits and costs associated with installing solar photovoltaic arrays over public parking stalls. Some businesses in the region have recently done this over their employee parking lots. Our project could study those projects and scale results for each city on the project.

Energy resiliency

Energy resiliency has become an important strategy in sustainability and disaster response planning for communities, and the implementation of energy efficiency and renewable energy is often included as an important plan element. However, there are no standardized methods for estimating the impacts of extreme weather events to building systems and design, for example. Recent research suggests that an aggressive approach that includes the prioritization of location specific energy efficiency, renewable energy and other distributed resources can significantly lessen the impacts of events that may cause severe strain or outages on the energy system. While our project does not target energy recovery after an event, there is mounting evidence that appropriate energy preparedness will be less costly (and more resilient) than investments in energy recovery strategies alone. Furthermore, our project involves a number of cities in close proximity to one another and some that share municipal resources. For that reason we believe our project is well poised to share resiliency strategies that benefit all citizens of the Dane County area. In looking for opportunities for clean energy resources, we will pay special attention to the critical facilities and vulnerable facility mapping included in the energy assessments/profiles produced for each city.

LETTERS OF SUPPORT

136 North Monroe Street
Waterloo, WI 53594
Phone: (920) 478-3025
Fax: (920) 478-2021
www.waterloowi.us

June 19, 2018

Public Service Commission of Wisconsin
4822 Madison Yards Way
P.O. Box 7854
Madison, WI 53705-7854

To whom it may concern:

It is with great enthusiasm that I write this letter in support of an anaerobic digester feasibility study for the Village of Marshall. I represent the City of Waterloo, which is located 4 miles east of Marshall. Our towns share many similarities, and as the former chairperson of our city's renewable energy committee and as a local pediatrician, please allow me to detail the importance of your support of our sister city's feasibility study.

There is no question that energy innovation is crucial to the future of humankind; however, the speed with which it occurs and the ability for small towns to keep up with this innovation remain important considerations. The Village of Marshall is exploring anaerobic digestion as a way of using a carbon neutral technology to supply some of its energy needs. In rural locations where organic material is in abundance, a close look into ways of recycling this waste to fill energy needs is meaningful in a number of ways: 1) a viable project would allow the municipality to play a part in reducing fossil fuel consumption; 2) it raises local awareness about the importance of energy efficiency and renewable energy to a public that may feel disenfranchised from these topics due to a partisan political climate; 3) it has the potential of generating a new revenue stream, which is paramount for small towns that frequently lack funds to support internal operations; 4) it carries the possibility of cleaning-up common pollutants in our communities, especially with respect to nitrates in well water due to large and small agricultural operations; 5) it may create a precedent plan that will allow other small communities to engage in similar projects.

The City of Waterloo and the Village of Marshall have partnered on projects in the past, and we are happy to continue to provide support for their community. There are several businesses and industries in Waterloo that may also support the Village of Marshall in pursuing energy from anaerobic digestion. Our city may help to provide contact information and guidance as Marshall reaches out for additional partnerships. As part of this partnership, the City of Waterloo would also benefit. Talk does carry quickly in small towns, and the citizens of Waterloo will undoubtedly take interest in the steps that Marshall is taking. As Waterloo is also pursuing an implementation grant from your office, combined support will help to raise awareness in our communities of the importance of energy efficiency and sustainability of energy resources.

While some of our citizens and elected officials recognize the importance of responsible energy production, it is difficult for small towns to allocate tax revenues for sustainable energy feasibility studies for a variety of reasons. As such, a grant from the Office of Energy Innovation would be very helpful in making those projects a reality. Thank you for considering the grant application for the Village of Marshall. Do not hesitate to reach out to me should you have any questions or concerns. I look forward to reading about Marshall's awarded grant money in "The Courier," our local newspaper.

Sincerely,

Andrew Lewandowski, DO
Pediatrician
Community Development Authority Member
Former Renewable Energy Committee Chairperson
City of Waterloo, WI

June 22, 2018

Jason Pitzer
Village Hall
130 s. Pardee Street
PO Box 45
Marshall, WI 53559-0045

RE: Letter of Support for the Village of Marshall's application for the inaugural grant round of the Energy Innovation Grant Program

Dear Mr. Pitzer,

I am writing to proudly express my support for your application to the inaugural grant round of the Energy Innovation Grant Program offered by the Public Service Commission of Wisconsin (Commission) to fund a feasibility study related to a Renewable Energy (Biogas) project. BIOFerm™ Energy Systems Inc., provides turnkey gas upgrading and anaerobic digestion systems as well as project development and consulting engineering services to North America's biogas market.

Based in Madison, Wisconsin, our company offers experience from nearly 500 anaerobic digestion and over 900 pressure swing adsorption (including gas upgrading) installations as North America's exclusive provider of Viessmann Group biogas technologies. These systems include: Carbotech pressure swing adsorption (PSA) gas upgrading, BIOFerm™ dry fermentation anaerobic digestion, and Schmack COCCUS® wet fermentation anaerobic digestion and EUCO®/EUCOlino plug-flow anaerobic digestion. Additionally, we offer a top industry performance guarantee and warranty.

Our projects include dry and wet digestion technology, production of biogas of for electricity or pipeline quality gas. North America's first industrial-scale dry fermentation installation, the BIOFerm™ Oshkosh, WI dry digestion facility, processes over 8,000 tons per year of mixed food wastes and yard waste, resulting in 370 kW of electrical production. Our systems processing manures or municipal sludge can be found in WI and OH where complete mix wet digestion processes are in use. At the Allen Farms (Oshkosh, WI) installation, assorted mixed wastes create 64 kW of electrical production utilizing our unique EUCOlino containerized digester.

BIOFerm™ Energy Systems
info@biofermergy.com
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440 Science Dr, Ste 300
Madison, WI USA 53711
608-467-5523

BIOFerm™ is committed to making Dane County as sustainable as possible and supports the Village of Marshall's grant application to conduct a feasibility study. We look forward to seeing the Village of Marshall take the first steps towards making our home a better place.

Given the Village of Marshall's goal of converting their aerobic digestion system to an anaerobic digestion system for biogas production, the feasibility study is vital. BIOFerm™ Energy Systems is well positioned to assist you in cost and logistical analysis during your study. Along with our current gas upgrading project at the Dane County Landfill, there will be an offloading station provided by Dane County for local biogas producers to transport their renewable natural gas for pipeline injection; this will provide the Village of Marshall with an additional end-use opportunity for their biogas.

The proposed outcome of completing a feasibility report detailing the economically viable options for implementation of a Renewable Energy (Biogas) Project is, as we are aware, a crucial first step to upgrading Biogas and certainly complements our current business activities. In summary, we strongly support the grant application by the Village of Marshall and look forward to watching the project progress. If you have any further questions, please do not hesitate to call me.

Sincerely,
BIOFerm™ Energy Systems, Inc.

Nadeem Afghan
President and CEO
BIOFerm™ Energy Systems
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608-229-6502

WPPI energy
The way energy should be

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July 25, 2018

Public Service Commission of Wisconsin
Wisconsin Office of Energy Innovation
oei@wisconsin.gov

SUBJECT: Energy Innovation Grant Program

Dear PSCW OEI:

On behalf of WPPI Energy, I am writing to express support for the Energy Innovation Grant Application from the cities of Fitchburg, Middleton, Monona, Stoughton and Sun Prairie in conjunction with Seventhwave. The analyses and deliverables in this multi-city energy plan that will be implemented by Seventhwave will be extremely valuable in advancing the energy resiliency of these cities, as well as serve as a model for other WPPI member communities.

Our 51 community-owned member utilities, located throughout Wisconsin, Iowa, and Upper Michigan, have a long-standing relationship with Seventhwave and rely on their nationally-recognized expertise to further our own program, demonstration, and training initiatives. In particular, WPPI worked with Seventhwave on the Energy Independent Communities project. They provided baseline energy assessments and tools to assist several cities in understanding their energy use and develop energy goals. WPPI Energy also works with Seventhwave on our highly successful New Construction Design Assistance that has benefitted over 100 buildings. Through these endeavors, we have found that Seventhwave is well positioned to assist with developing innovative solutions that address a rapidly changing energy landscape.

The goals of the Energy Innovation Grant and the objectives of this proposal are consistent with our vision of supporting positive changes to energy consumption and its costs to cities and businesses in our member communities. This innovative multi-city partnership views comprehensive energy planning as a critical tool to collaboratively achieve energy reduction goals while securing a resilient energy future. Each city will also benefit from sharing best practices and lessons learned by collaborating with each other in this effort.

WPPI is fully committed in supporting our customers and helping them reduce their energy consumption with cost-effective solutions. WPPI is willing to assist the communities and Seventhwave in gathering energy usage data to support the comprehensive energy plans. We are also happy to collaborate and join meetings when possible to support the energy planning efforts.

We look forward to partnering with the cities to help them reach the goals identified in this proposal.

Thank you,

Jake Oelke

Jake Oelke, P.E.
Vice President – Energy Services