

Solar America Initiative (SAI) Market Transformation:
Solar America Cities 2008
Funding Opportunity Number: DE-PS36-08GO98003

Milwaukee Shines - Solar City Initiative Proposal

Submitted by the City of Milwaukee, Wisconsin
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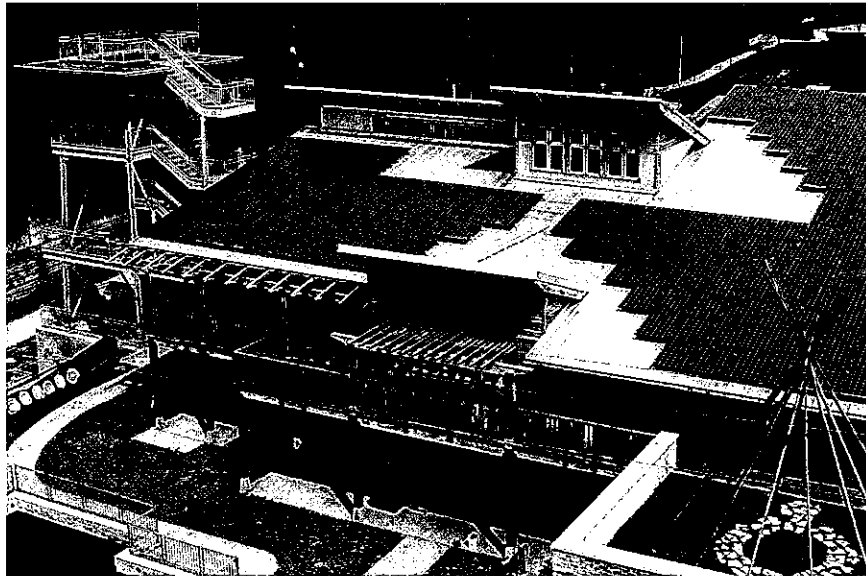


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Milwaukee Shines at Milwaukee Public School

I. Milwaukee's Long Term Goal for Solar Energy

Solar electric and solar thermal systems are a critical component of Milwaukee's energy future. While the City of Milwaukee and its partners have demonstrated commitment and experience in implementing solar technologies, we need to enhance our efforts and make solar a viable alternative throughout the region.

Mayor Barrett has signed the Mayors' Climate Protection Agreement which commits the City to bring greenhouse gas emissions to 7% below 1990 levels by 2012. Shifting electricity production from coal to renewable sources such as solar is key to meeting this goal. Approximately 25 solar electric and eight solar thermal systems have been installed or funded in Milwaukee since 2002. This accounts for about 210 kilowatts (kW) of solar electric systems. Our goal is to have 100 solar electric and 50 solar thermal systems, with a total capacity of 1 megawatt and, installed by 2012. *Milwaukee Shines* will help meet this goal by reducing the area's three major barriers to solar installation: (1) informational barriers; (2) economic barriers; and (3) procedural barriers.

Milwaukee's On-going Commitment to Solar Technology and Improved Energy Efficiency

Milwaukee's elected officials are committed to energy efficiency and renewable fuels. Mayor Barrett created the Office of Environmental Sustainability (OES) on the recommendation of his "Green Team," a group of 80 business, academic, not-for-profit and community representatives charged with identifying actions to make Milwaukee more sustainable. The OES director is a member of the Mayor's cabinet and is the point person for the City's renewable energy and energy efficiency efforts, coordinating efforts of the Department of Public Works, Department of Neighborhood Services (building codes), and Department of City Development (land use planning and permitting).

Mayor Barrett is active in the U.S. Conference of Mayors and has access to a variety of forums where he can share Milwaukee's solar experiences with other cities. For example, he recently spoke to over 100 other mayors about green jobs at the Mayors' Climate Protection Summit.

Milwaukee's Common Council is similarly dedicated to solar technology and energy efficiency. The Council adopted a resolution in December 2007 directing the OES to report on financial incentive options for Milwaukee residents and businesses who install solar technologies. The Common Council has also appropriated \$500,000 in an energy challenge fund for 2008. Although these funds are generally targeted to energy efficiency projects, a special preference is given for installing renewable energy and \$100,000 will be targeted to support solar installations..

In addition to the energy challenge fund, the 2008 budget includes an additional \$1,365,000 for energy efficiency capital measures for the City-owned water utility, the central library, and other Department of Public Works improvements. The City has been purchasing 100,000 kWh/month from We Energies' Energy for Tomorrow program since 2006.

Milwaukee Shines Partners (MSP) in Embracing Solar Technology

With the experience and expertise of our core *Milwaukee Shines* Partners (MSP), we will significantly reduce barriers to solar installation.

We Energies – Milwaukee's utility and Wisconsin's largest electric and natural gas provider, We Energies leads the Midwest in promoting and co-funding solar energy and renewable energy installations. We Energies' \$6 million annual renewable energy program budget includes a solar

electric buyback rate, incentives for siting solar electric and solar thermal systems at non-profit and governmental sites, and incentives for siting solar water heating systems at homes with electric water heating systems. A minimum of 2,000 kW will be installed throughout the We Energies service territory including the Solar Buy-Back Rate and the Solar Electric Development Program. Approximately 25% these installations are targeted for the City of Milwaukee. The We Energies renewable energy program also incorporates education and training. In October 2005, the Solar Electric Power Association recognized the We Energies sustainable solar business plan with a “Business Achievement Award.”

Focus on Energy – Since 2002, Focus on Energy (Focus) has helped Wisconsin residents and businesses install cost-effective energy efficiency and renewable energy projects. In the last six years, they have worked with the installers and owners of 300 co-funded solar electric systems and 400 solar thermal systems. Focus on Energy provides funding for approximately 25% of the cost of installing solar electric and thermal systems as well as cost-sharing site assessments, solar business development, and education for professionals and the general public. Focus on Energy’s solar program leads the nation in training and certifying solar site assessors, using expected production based incentives, offering higher incentives to NABCEP (National Association of Board Certified Energy Practitioners) installed systems, and offering a full slate of grants to support the solar market including grants for business and marketing and feasibility studies.

Midwest Renewable Energy Association – The Midwest Renewable Energy Association (MREA) promotes renewable energy, energy efficiency, and sustainable living through education and demonstration. It has more than 3200 active members. The MREA hosts the annual Energy Fair, the world’s largest and longest running energy education event. The MREA expects over 20,000 attendees in 2008. The MREA also provides educational and hands-on workshops for professionals and the general public. The MREA hosts tours of homes and businesses throughout Wisconsin that demonstrate successful solar systems and other sustainable technologies.

In addition to these core partners, *Milwaukee Shines* will work with other organizations as we implement this project.

Institutes of Higher Education – Milwaukee has a number institutions of higher education (IHE) interested in promoting solar energy, including the Milwaukee Area Technical College, University of Wisconsin-Milwaukee, Milwaukee School of Engineering, and Marquette University. These institutions currently have faculty working on projects to promote solar technology. For example, The University of Wisconsin – Milwaukee has submitted a proposal for funding to participate in the 2009 Solar Decathlon in Washington, D.C., to design, build and operate a highly energy efficient,, completely solar-powered house.

Consulting Firms – Milwaukee has a strong base of engineering, architectural and other consulting firms. The URS Corporation, for example, has recently been funded by We Energies and Focus on Energy to complete a GIS survey of Milwaukee’s rooftops for solar suitability and will use the findings to help market solar energy in the city.

Johnson Controls, Inc. – Johnson Controls is a Fortune 100 company (market cap \$20 billion) with its headquarters in Milwaukee. Johnson Controls has been acknowledged as a leader in supplying renewable energy solutions to government organizations worldwide, providing services and capital improvement to reduce the consumption and related costs of energy and water use. They have a dedicated business unit for the design and implementation of renewable projects.

Johnson Controls, Inc. experience includes a 1.1 Mw solar photovoltaic system for Twenty Nine Palms Marine Base.

II. City of Milwaukee’s Installed Solar Capacity

The City of Milwaukee is committed to solar technologies as demonstrated by the *Milwaukee Shines* installation goal. The City has contracted for installation of 10 kW solar photovoltaic system on the Recycling Education Building. This system will generate approximately 12,250 kW annually. The City is partnering with We Energies, Focus on Energy, and Johnson Controls to capitalize on the project’s educational value. Johnson Controls, for example, is providing a customs graphics system and live feed to show “real time” energy production of the photovoltaic system. In 2007, the City budgeted funds for solar hot water systems on four fire stations. This project will be rebid in 2008. We have also conducted solar assessments on several buildings.

In addition to City installations, a number of other entities are embracing solar technology. The following high-profile projects demonstrate the strong interest and growing support for solar energy in Milwaukee.

The Urban Ecology Center is a neighborhood-based, non-profit community center focusing on environmental education and local stewardship. The Urban Ecology Center has a prominent 45 kW system (until recently, Wisconsin’s largest) installed to compliment their environmental education mission. The system will offset facility costs for the next forty years and has great public relations value.

Cooper Elementary is a Kindergarten through eighth grade school that installed a 10 kW solar electric system in the summer of 2007 and has already saved \$2,000 in utility costs. The school monitors energy use and solar electric production and the students record and analyze compiled data. Solar energy has been incorporated into K-8 classroom projects and lesson plans.

Table 1 – Focus on Energy Co-Funded Solar Electric and Solar Thermal Systems in Milwaukee

SOLAR ELECTRIC AND SOLAR THERMAL ACTIVITIES IN MILWAUKEE				
Type of System	Number Installed	Number to be Installed (Funds Obligated)	Site Assessments Completed	Workshop Participants
Solar Electric	14	9	27	67
Solar Thermal	4	3	8	40

Focus on Energy estimates the total annual energy production from these projects (funded and obligated) at 210 kW of solar electric systems, generating 266,000 kWh/year and four small solar thermal systems generating 1635 therms/ year.

Table 2 –We Energies Co-Funded Solar Electric Systems in Service Territory

Number of Solar Buy-Back Installed Projects	Solar Buy-Back Participants in the Queue	Number of Non-profit, Government and School Solar Project Applicants	Renewable Energy Workshop Participants
62	29	30 applications	710 in 2006 268 in 2007

The solar buy-back rate allows We Energies customers who install qualifying solar photovoltaic (PV) systems to sell their solar energy output back to the utility. We Energies will buy the energy output of the PV system for up to 10 years at a rate of 22.5 cents per kilowatt-hour. All of the energy purchased from customers through this rate is added to the Energy for Tomorrow power supply mix and provided to the program customers.

III. Milwaukee's Approach to Identifying Barriers to Solar Technology

Milwaukee Shines recognizes that solar systems are rare in our community. Our goal is to make solar commonplace. Focus on Energy, and their team as well as We Energies, have been working to reduce barriers to solar. However, as reflected in the limited number of systems installed in Milwaukee, significant barriers remain. To identify barriers to installing solar technology, the *Milwaukee Shines* team categorized the steps necessary to install a solar system determined what resources are currently available to assist them. The basic steps of solar installation are:

- Step 1: Get educated. Existing resources include those provided by Focus on Energy (call center, fact sheets, site assessments, etc.), Midwest Renewable Energy Association (workshops, energy fair, tour of solar homes and businesses, etc.), We Energies (call center, web site, Education Outreach Program, etc.).
- Step 2: Find an installer and get quote.
- Step 3: Decide to go forward or not.
- Step 4: Get approval. Applications are needed to obtain permits from local government, interconnection to the We Energies distribution system, and incentives offered by Focus on Energy, We Energies and the Federal government
- Step 5: Get system installed. Final installation requires inspection by the city and interconnection testing by We Energies.

Based on this analysis, there are three major barriers to installing solar technology in Milwaukee:

1. Informational barriers (Step 1)

There are still a number of myths about solar technology (e.g., there isn't enough sun in Wisconsin – solar is a California thing...). Basic information is available but many individuals and businesses do not know how to access it. The Focus on Energy marketing budget is very small so marketing channels have been limited.

2. Economic barriers (Step 2)

The high up-front cost of solar systems is perhaps the most significant barrier. The high price of solar panels and modules is a global issue. However, *Milwaukee Shines* believes that we can reduce the cost of labor and by creating local solar manufacturing capacity, decrease the cost of materials. In addition, we will investigate inventive financing methods to reduce the initial outlay for businesses and residents..

A major economic barrier is the lack of solar electric or solar thermal systems installers in the Milwaukee area. The vast majority of Milwaukee solar systems have been installed by Madison-based installers. The cost of travel between Madison and Milwaukee (three hours per day) increases system costs significantly. In addition, Madison-based solar installation firms do not spend marketing funds in Milwaukee.

Of Wisconsin's 12 NABCEP certified solar electric installers, none are located in the Milwaukee area. Two solar electric installers in the Milwaukee area are in the process of getting NABCEP

certification. However they are small firms. One firm in the area has NABCEP solar thermal certification but the firm has only one employee...

3. Procedural barriers (Step 4 and Step 5)

The process for City permitting inspection is time consuming and may be hard to understand. Procedural barriers include installers not knowing the permitting and inspection process for solar systems; building codes not necessarily supporting solar technology; unfamiliarity of City staff being with solar projects; and a lack of professional engineers and architects comfortable with solar design.

IV. Milwaukee's Proposed Approach to Addressing Barriers

Milwaukee Shines will build on and coordinate with the efforts already underway by We Energies, Focus on Energy, and MREA, and by the MadiSUN project. *Milwaukee Shines* will target the following areas for barrier busting:

Promoting Solar Energy – Reducing the Information Barrier

Milwaukee Shines will work to dispel common myths about solar installation in Milwaukee and increase solar awareness in the community by developing and distributing general and targeted energy education materials. Resources will be designed for both residential and commercial markets and for K-12 and post-secondary education programs. They will address questions about both solar electric and solar thermal including information on which technology might be best for a particular application.

The project will also involve specific groups like the Metropolitan Builders Association of Greater Milwaukee, so their members understand opportunities to incorporate solar thermal and solar electric systems into new home construction and renovations.

Mayor Barrett, working with the OES, will promote the use of solar within the city. This promotion will be directed towards the general public, and we hope that Milwaukee's early adopters will use the information to move forward with solar projects and business activities.

All outreach activities will link consumers to existing Focus on Energy program and We Energies Renewable Energy program resources. We will also work with US DOE staff to ensure our use of the most accurate, up-to-date information.

Basic educational and promotional activities will include:

- Publishing City of Milwaukee news releases that proclaim a solar challenge to Milwaukee's businesses and residents
- Adding solar content to speeches and presentations on Milwaukee's sustainability efforts
- Developing web based information on the city's webpage with links to and from *Milwaukee Shines* partners' websites
- Integrating solar into the city's overall sustainability and energy efficiency campaigns
- Making information on solar financing option available at the City's permitting center and on the City's website.
- Developing City specific fact sheets and project case studies:
 - Including a "myth busting" document to dispel some of the common misconceptions about solar technology.

- Providing case study information on projects that provide good example of solar applications including information on costs and pay-back periods.
- Providing Solar Tours (coordinated with the American Solar Energy Societies tour of solar buildings):
 - Holding open houses at several highly visible projects that are accessible to the public (including the Urban Ecology Center and the Milwaukee Recycling Education Building) and to demonstrate the potential for power generation with displays of real-time data on energy production.
 - Finding access to sites that show solar systems in residential or office setting.
- Cooperating with We Energies and Focus on Energies to plan and participate in upcoming Solar Decade Conferences (2009 and 2010).
- Building solar energy awareness in schools and the community by offering energy education resources in collaboration with the We Energies Education Outreach Program.
- Marketing solar workshops and the Renewable Energy and Sustainable Living Fair
 - Marketing and participating in the series of solar workshops sponsored by We Energies and Midwest Renewable Energy Association (MREA). (Since 2006, We Energies and MREA have held 49 workshops on solar systems.)
 - Marketing and participating in MREA's annual "Renewable Energy and Sustainable Living Fair" and organizing bus transportation for teachers, students, residents and professionals to attend the fair. (Last year "The Energy Fair" had almost 20,000 participants, 200 exhibitors, and over 150 workshops.)

Reducing Economic Barriers

Milwaukee Shines will employ a three-prong approach to reduce economic barriers: (1) increasing local installer training and certification opportunities, (2) supporting new solar manufacturing businesses, and (3) identifying City-supported solar financing options.

1. Local Installer Training and Certification

As noted in a previous section, most Milwaukee solar installations have been completed by Madison-based installers. By increasing the number of certified installers in Milwaukee, the cost of labor should fall, project delays should decline and new solar business marketing activities should increase. Local installer development will create new job opportunities..

Milwaukee Shines will engage a "Solar Coach," a NABCEP-certified professional for solar electric and solar thermal systems, to oversee installers as they work on projects and to help them through the process of and preparation for NABCEP certification. The City of Milwaukee solar projects will provide projects for installers to work on with their "Coach." *Milwaukee Shines* will also work with existing training programs to ensure that such programs are offered locally, through the Milwaukee Area Technical College or other institution. The "Coach," coordinating with MATC and Midwest Renewables, will assist with training. *Milwaukee Shines* will market We Energies' and the MREA's professional workshops in the Milwaukee area. and will use US DOE technical assistance team members for special training events.

2. Supporting New Solar Manufacturing Businesses

Milwaukee has a long history of manufacturing high quality products. The decline of manufacturing has increased unemployment rates and left the city with brownfield sites.

Milwaukee Shines will investigate and promote Milwaukee's solar manufacturing potential. Methods to develop new solar manufacturing businesses may include:

- Working with a metal fabricator to make ballasted pans for roof mounted solar systems
- Working with existing businesses, such as Johnson Controls, to assess market capacity.
- Bringing a European manufacturing of solar electric tracking systems to license a Milwaukee-based firm to build their product for U.S. markets
- Encouraging the production of solar thermal panels in Milwaukee
- Working with a group of investors to site a solar panel production facility on a brownfield site in Milwaukee
- Pursuing Johnson Controls' interest in supporting local manufacturing and helping them form partnerships.
- Assisting entrepreneurs with business model development and implementation.
- Marketing the City's solar manufacturing potential and incentives on a German trade mission.

Milwaukee Shines will rely on technical assistance from the DOE as well as assistance from the State of Wisconsin, Department of Commerce. We Energies' renewable energy program is likely to be active in this area and could co-fund some of the *Milwaukee Shines* business development efforts in 2008 and 2009.

3. City Supported and Promoted Financing Options

Milwaukee's Common Council has directed the City's Office of Sustainability to review options for City solar project financing, including low interest rate loans, and to present these options to the Common Council for their consideration. Solar advocates in communities across the U.S. have been fascinated by new business models for siting solar systems on homes and businesses. These business models include: SunEdison's power purchase agreement model, Berkeley, California's low interest loan funds that are repaid through property taxes, and other models of longer term third party ownership.

With technical support from US DOE, *Milwaukee Shines* will:

- Investigate the economics of solar electric and solar thermal systems in Milwaukee given existing incentives through We Energies, Focus on Energy, federal energy, low income and historical building tax credits, etc.
- Determine which market segments are most viable for different business models (e.g., the Berkeley model) and determine how the Milwaukee can support these business models.
- Incorporate non-financial benefits into solar projects such as accelerated project permitting, reduced permit fees, and feebates...
- Work with the City Council to incorporate both financial and non-financial incentive programs into City policy and budget proposals.

Reducing Procedural Barriers

The City of Milwaukee will work with our partners to better understand the procedural barriers to installing solar technologies. We will work with the City of Madison to learn from their experience as a 2007 Solar Cities grant recipient regarding code requirements that hinder solar installation. We will determine if the code issues are subject to local revision or if we need to

work with Madison and the State to adjust state building code requirements. We will then work to make Milwaukee's code solar-friendly.

Milwaukee Shines will also design a program for local permitting and inspection staff to educate them about solar technologies and to help them adjust their procedures to make it easier to get a solar project permitted and installed. As part of the City's effort, we will work with individuals who have already installed solar systems to determine what barriers they faced and what other steps we can take to simplify the process. Our "Solar Coach," described above, will help interview project managers, review City procedures and help train City staff on solar technology and permitting issues.

Milwaukee Shines will complete the following tasks:

- Interview solar firms active in Milwaukee to determine the permitting and inspection issues that hinder solar projects and ask for possible solutions. Interview permitting and inspection staff to understand their needs and their suggested solutions. This could be accomplished through a meeting with city staff, installers, We Energies representative, US DOE technical assistance team members, and appropriate MadiSUN Solar City team members.
- Develop a solar permitting and inspection document outlining the common solar system technologies and their best application, including project case studies.
- Ensure the new city policies are implemented and updated, and that city staff are properly trained.
- Link city staff to the appropriate training efforts offered by US DOE (including efforts in Madison), MREA and We Energies professional training activities, and solar electric inspector training offered by the Wisconsin Distributed Resources Collaborative and the Wisconsin Technical College System.
- Invite other groups that may be interested in the professional training including: architects, engineers, solar installers and distributors, etc.

V. *Milwaukee Shines* Project Implementation Timelines

This section describes the major implementation steps and timeline as well as a preliminary budget to reduce each of the three barriers to solar energy. Although the timeline reflects only the grant period, many of these activities would continue after 2010. In the section entitled "Responsible Party," the first party listed will lead the effort.

Removing Informational Barriers – One goal of this task is to provide information to the general public through various means (press releases, websites, and tours) to dispel myths about solar installation. Another goal is to provide special training to identified groups (e.g., local homebuilders) to help them understand solar technology and to become advocates for installation.

Removing Informational Barriers – Project Responsibility and Implementation Timeline

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
1. Issue City-wide challenge to install solar technology	OES, Mayor’s office, Focus, WE		■		■		■		
2. Install and update solar content and links on web sites	OES, City, Focus, WE, DOE	■	■	■	■	■	■	■	■
3. Develop Milwaukee-specific marketing materials and education resources for the public and schools	OES, Focus, WE, market providers, DOE		■						
4. Host solar tours	MREA, OES, WE, market providers						■		
5. Participate in Solar Decade Conference planning	OES, Focus, WE, MREA, DOE	■	■			■	■		
6. Conduct workshops for target audiences	OES, WGBA, MREA			■	■	■	■		

 core activity period
 ongoing or updating activities

Removing Economic Barriers – The three key components to reducing economic barriers are to train and certify installers, to assess opportunities for solar financing and to develop proposals on financial and non-financial incentives that can be provided by the City of Milwaukee to support solar installations.

Training and Certifying Installers -Project Responsibility and Implementation Timeline

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
Scope, bid and select solar coach(es)	OES, City Budget & Contracting, Focus, MREA	■	■						
Develop solar installation training activities	City, MREA, IHE, WE	■	■						
Market installation training activities	City, MREA, Focus, WE, IHE		■	■	■	■	■	■	■
Conduct installation training	Coach(es), MREA				■	■	■	■	■
Install City Solar projects	City, Coach(es), trainees				■	■	■	■	■
Ongoing technical support to trainees	Coach(es), trainees, city				■	■	■	■	■

Solar Business Development Installers -Project Responsibility and Implementation Timeline

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
Assess and report on city's solar manufacturing potential	City Economic Dev., WI Dept of Commerce, WE, DOE	■	■						
Develop City's business & financial resources for solar entrepreneurs	City Economic Dev., WI Dept of Commerce, WE, DOE		■						
Market the city's solar manufacturing potential	City of Milwaukee, WE, Focus			■	■	■	■	■	■
Conduct possible solar trade mission to Germany ¹ or other solar manufacturing hub	City Economic Dev., WI Dept of Commerce, WE, DOE				■				
Assist entrepreneurs with solar business development & implementation	City Economic Dev., WI Dept of Commerce, WE, Focus, DOE			■	■	■	■	■	■

City Supported Financing -Project Responsibility and Implementation Timeline

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
Identify and evaluate financing strategies	City, Comptroller, DOE	■	■						
Report to City Council for 2010 budget	OES		■						
Identify existing financing for private solar installation	City, DOE, WE, Focus								
Package and market information about financial assistance	City, WE, Focus, market providers			■	■	■	■	■	■

Removing Procedural Barriers – This task involves identifying and removing barriers in current permitting requirements that increase cost and delay installation of solar projects.

¹ Milwaukee has a very strong German Heritage. In the early twentieth century more residents spoke German than English. The city's phonebook has more than forty pages of Schmitts or Schmidts.

Removing Procedural Barriers – Project Responsibility and Implementation Timeline

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
Review findings of MadiSUN on solar barriers	City, OES, MadiSUN team	■							
Interview City's solar installers to identify barriers	City, market providers, solar coach(es)	■	■						
Evaluate existing City solar permitting/inspection procedures	City, OES, Depts. of Neighborhood Services, and City Development		■	■					
Develop & conduct solar training for key City staff	City, Solar Coach(es), MadiSUN, and key city staff			■	■				
Report to Mayor and City Council on strategies to reduce procedural barriers and policy measures for support solar	City, OES, other City Dept., Solar Coach(es), Focus on Energy, DOE			■					

Project Oversight and Coordination with US DOE and Other Solar Cities

Activities	Responsible Party	Implementation by quarter							
		1	2	3	4	5	6	7	8
On going communications with US DOE	OES	■							
Solar City interactions and meetings	OES			■				■	
Reporting	OES		■		■		■		■

Milwaukee Shines proposes to use Solar City Initiative Funds for the following activities:

Support for development and distribution of information materials. The City will use resources for a “Solar Myth Busting” campaign to help educate residents and businesses about the potential for solar technology and the role of solar thermal systems.

Support for specific developing and conducting training targeted to specific audiences. US DOE funds will be used to help fund development of training on solar technology for area homebuilders and other key information providers.

Support for a solar technology Coach – This innovative position, filled on a contract basis, would help new installers in the Milwaukee area to get through the certification process. The Coach will also improve the process for all potential installers by reviewing and improving existing training materials and by reviewing and improving permitting procedures.

Support for review of existing ordinances and procedures to identify potential barriers to solar installation. This review and recommended policy and ordinance changes would be shared with appropriate City staff and managers with the understanding that staff would work with the Common Council to make necessary policy change

A complete budget narrative and SF-424 worksheet are attached.

VI. City of Milwaukee Resources

The City of Milwaukee is committed to investing in solar technology. Several projects are already funded for the upcoming year and additional projects will be considered during the project period. These projects will serve as opportunities for new installers to get the experience they need to become certified. During the project period, the City of Milwaukee will install 4 solar-thermal systems at fire stations and evaluate 50 other facilities for solar thermal. The City of Milwaukee will identify 2 new solar electric project sites and begin installation during the project period.

The City has budgeted \$500,000 for an energy challenge fund to support energy efficiency and renewable technology in City facilities in 2008. Of this, \$100,000 will be directed to solar electric and solar thermal installation. City of Milwaukee staff are also available to participate in this effort. The Director of the Office of Environmental Sustainability will be the project manager. Professionals from the City Budget Office and Department of Public Works will be instrumental in project delivery. Staff from the relevant departments will help draft policy and ordinance language changes to address barriers. Resumes of key personnel are attached. The Office of Sustainability has already been tasked by the City Council to evaluate the feasibility of providing financial incentives to homeowners to install solar technology.

The City of Milwaukee has long-standing relationships with We-Energies, our local utility and Focus on Energy. We also cooperate with our local educational institutions. Many of these partnerships are described above. Support from the Solar Cities Initiative would help us to coordinate our efforts. Specifically, We Energies, Focus on Energy and other partners would:

- Provide project design assistance
- Serve on project advisory teams
- Identify existing financial resources
- Identify existing educational materials

VII. Milwaukee Shines Will Benefit Other Jurisdictions

Many small and large communities face barriers that are similar to Milwaukee's in installing solar technology. In general, Milwaukee, like many other cities, has taken a conservative approach to installing solar technology. This project is designed to help mainstream solar technology – not just to capture the early adopters and those “predisposed” to new technology. Milwaukee, like many other Midwestern cities has lost manufacturing jobs and has a surplus of former industrial land and trained workforce available to work on solar technology.

Milwaukee Shines will provide a model for other communities. Our “Coach” position and curriculum, our process for reviewing procedural barriers, and our educational materials will all be easily adopted by other jurisdictions. Several of the solar projects already installed in Milwaukee have built-in monitoring components to track solar energy production and reduced

energy costs. The City of Milwaukee would be pleased to work with these organizations to make data available to other communities.

Milwaukee Shines will likely have its strongest impact in neighboring communities. Milwaukee is the center of economic and academic activity in Southeastern Wisconsin. The Milwaukee 7, launched in September 2005, was formed to create a regional, cooperative economic development platform for the seven counties of southeastern Wisconsin: Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Waukesha and Washington. Its mission is to attract, retain and grow diverse businesses and talent. Together, these seven counties have a wealth of corporate headquarters, a pool of highly skilled workers and world-class amenities. The seven-county area, centered on Milwaukee has recognized the benefits of working together, sharing resources and learning from each other. The Milwaukee seven-county region provides a great platform for replicating *Milwaukee Shines* successes in promoting solar technology. Moreover, newly-trained installers in Milwaukee can easily serve neighboring communities.

Milwaukee has been a leader of sustainability and the Mayor and senior staff have many opportunities to share our successes. We will look for opportunities to promote *Milwaukee Shines* to both national and local audiences.

VIII. Milwaukee Shines' Technical Assistance Needs

Milwaukee Shines will use DOE's technical assistance to access best practices from other jurisdictions. These would include examples of training, financing and public outreach materials. We hope the DOE could help us keep up to date on the latest improvements to solar technology as well as keeping us informed about market trends. *Milwaukee Shines* will rely on DOE to:

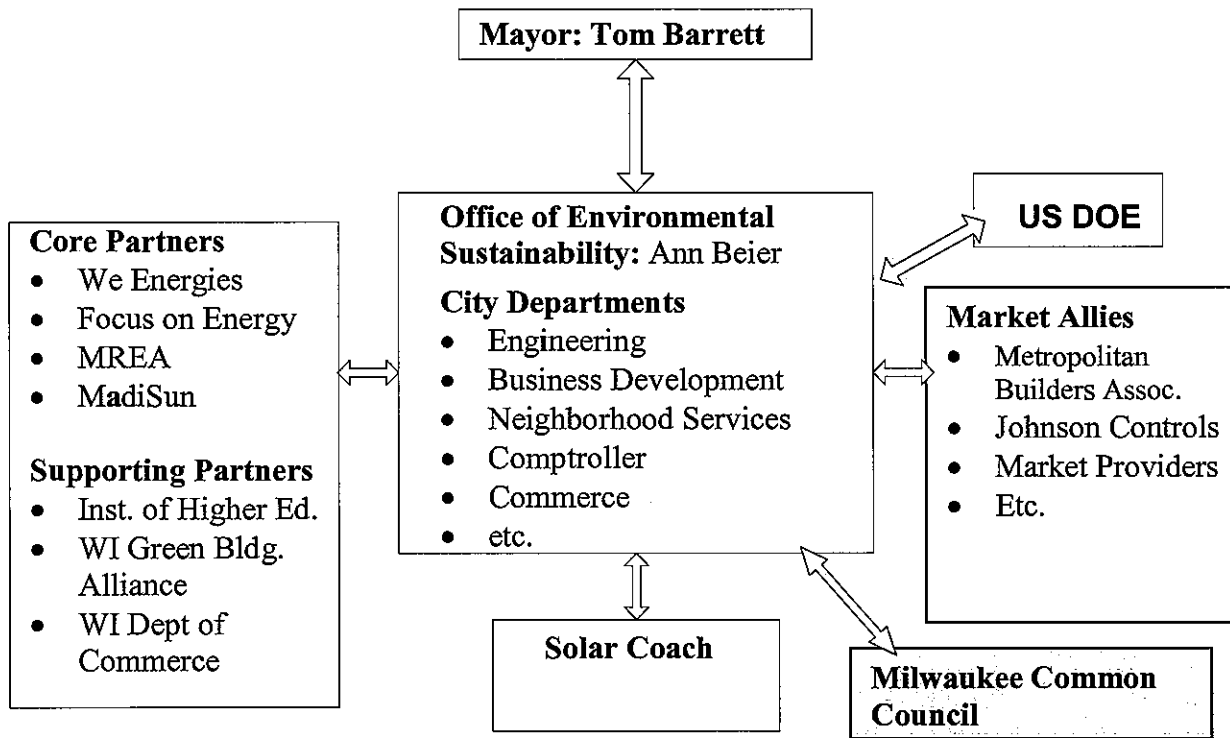
- Provide ongoing oversight and advice
- Transfer lessons learned from other solar city efforts
- Help identify best practices for public outreach, solar permitting and inspection training and financing efforts
- Provide expertise for and help scope training efforts for: city staff, solar contractors, building professional training efforts, and solar entrepreneurs
- Review and comment on program documents, as needed, including: outreach materials, reports, City council recommendations, entrepreneur resource directory,
- Provide speakers for the Solar Decade Conference
- Help select the solar job coach and provide support as needed
- Identify and evaluate possible manufacturing niches for Milwaukee area businesses
- Identify and evaluate alternative business models to build solar manufacturing capacity
- Help scope and review the solar manufacturer potential study
- Attend a trade mission to Germany (or help bring together WI and European firms) to encourage solar manufacturers to team with Milwaukee firms
- Assist with the development of city financing solar models

IX. Roles and Responsibilities in Implementing Milwaukee Shines

Milwaukee Shines is a partnership among the City of Milwaukee, We Energies, Focus on Energy and others. Ann Beier, Director of Mayor Barrett's Office of Environmental Sustainability will be the project leader. This is a cabinet level position that reports directly to the Mayor. She will be assisted by the City Budget Office, and Departments of Public Works (including the City's Buildings and Fleet Division), City Development and Neighborhood Services.

The City of Milwaukee has long-standing relationships with We-Energies, our local utility and Focus on Energy. We also cooperate with our local educational institutions. Many of these partnerships are described above. Support from the Solar Cities Initiative would help us to coordinate our efforts. Specifically, We Energies, Focus on Energy and other partners would:

- Provide project design assistance
- Serve on project advisory teams
- Identify existing financial resources
- Identify existing educational materials



Demonstration of City Commitment to Renewable Energy and Energy Efficiency

As mentioned above, Milwaukee aims to reduce emissions to 7% below 1990 levels by 2012 and considers renewable energy key to meeting emission reduction goals.

Milwaukee is making great strides in energy efficiency. We have set a goal of reducing energy use in all City buildings by 15% by 2012. In 2006, initial work on Milwaukee’s City Hall complex (3 building) resulted in 9% savings in electric use. We have conducted energy audits on 6 buildings and will conduct additional audits in 2008 to identify the most cost effective energy efficiency expenditures.

Milwaukee Shines is will succeed based on the support of our Team. Letters of support from our core partners are attached. This includes financial support that far exceeds the minimum match amount as well as in-kind services.