



BECOMING A SOLAR-READY COMMUNITY

**A GUIDE FOR
MICHIGAN LOCAL
GOVERNMENTS**

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For information on the grant, project and/or the MEO Solar Initiative, please contact:

MEDC-Michigan Energy Office
300 N. Washington Square
Lansing, MI 48913
Tel: (517) 241-6223
Email: howardt2@michigan.org



Supporters of the project include:

Bay Future, Inc.

Detroit JATC

Dow Chemical

Michigan Chapter of American Planning Association

Michigan Municipal League

Michigan Townships Association

Midland Tomorrow

Saginaw Future, Inc.



Disclaimer: This document is to be used as a guide. No specific standards or products are recommended, rather a series of guidelines, technical information, and strategies are presented to inform a variety of groups on how to plan for solar energy. This document has neither been written by nor reviewed by an attorney experienced in land use law, and the regulatory language provided here is intended only as examples. Please consult your local government's attorney for legal advice regarding the appropriateness or applicability of any of the recommendations or suggestions contained herein.

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PART 3: TOOLS FOR IMPLEMENTATION

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FINANCING RESOURCES

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TOOL H:
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TOOL I:
OTHER RESOURCES

TOOL B:

SAMPLE RESOLUTION

RESOLUTION NO.

AUTHORIZING A COMMITMENT TO THE ADVANCEMENT OF SOLAR ADOPTION WITHIN THE REGION AND COOPERATIVE EFFORTS BETWEEN _____ IN PURSUIT OF THIS GOAL.

WHEREAS, Because Michigan (or local government if applicable) is home to key solar companies, the community wishes to take leadership on promoting solar energy generation and views supporting advancement in solar adoption an essential contributor to the region's economic prosperity; and

WHEREAS, Becoming a statewide leader in solar adoption will bring positive recognition to _____; and

WHEREAS, The United States, Michigan, and this region import sources of energy, adoption of solar helps localize the energy source, thereby helping our country, state, and region reduce its dependence on imported energy sources; and

WHEREAS, Solar installations help preserve our natural resources and reduce greenhouse gas and other harmful emissions; and

WHEREAS Michigan has reached its 10 percent goal for renewable energy and is well positioned to set higher goals in this area; and

WHEREAS renewable energy resources, such as community solar, offer many potential community, economic, environmental, national security, and societal benefits for the state; and

WHEREAS communities that become *Solar Ready* benefit from enhanced Community Vitality and new Business Investment; and

WHEREAS, Solar is proving to be a viable energy source in Michigan, and

WHEREAS, Encouraging solar adoption helps support the several goals found in local planning documents.

NOW, THEREFORE, BE IT RESOLVED THAT _____ supports the continued exploration of reducing barriers to solar adoption and earnest consideration of new policies and processes that help support solar adoption and becoming a *Solar Ready Community*.

BE IT FURTHER RESOLVED THAT _____ (will work cooperatively with *neighboring jurisdiction name(s)* if applicable) to explore policy and process change and engage in an exchange of information regarding solar adoption in the region.

TOOL C:

SAMPLE PLANNING LANGUAGE

The character of planning documents varies among jurisdictions. The text below provides local governments with sample language that each jurisdiction can tailor to suit local needs. Additional language can also be drawn from the main body of this text (see Introduction). Please consult your local legal counsel for advice on the appropriateness and applicability to your jurisdiction's Master Plan.

SAMPLE REASONING AND BACKGROUND LANGUAGE

1 **Secure Energy Supply:**

A solar-electric infrastructure helps protect the power supply during brownouts, blackouts, power interruptions and price fluctuations.

2 **Stimulate Jobs and Industries:**

Support for and adoption of solar infrastructure will create economic opportunities for Michigan-based manufacturers and suppliers.

3 **Save Our Fresh Water Resources:**

In contrast to other forms of energy, solar installations use no water in the generation of clean, renewable electricity.

4 **Reduce Operating and**

Maintenance Costs: Many rooftop solar-electric installations actually act to insulate the building below. In addition, large photovoltaic installations can shade and protect a rooftop from damaging ultraviolet radiation, slowing the need for rooftop maintenance or replacement.

5 **Reduce Emissions:** Solar energy does not contribute to greenhouse gas emissions and will help reduce emissions by replacing polluting sources of power.

SAMPLE GOAL LANGUAGE

1 Demonstrate Leadership in Public Buildings by holding building public facilities to a higher energy efficient standard and by using on-site renewable energy in new buildings and facilities where technically and economically practical.

2 Protect Unobstructed Sunlight in planning and development processes to promote the use of solar energy.

3 Work with Developers to consider renewable energy resources in the layout and construction of new development.

4 Provide Information and Education to help property owners easily navigate permitting processes as they relate to solar.

5 Update Regulations to help support solar adoption and keep current with technologies.

6 Share Information to help other local governments interested in supporting solar successfully prepare for future demand.

7 Become a Solar Ready Community to send the message to developers, homeowners, and businesses that they can rely on us to help them through a successful, cost-effective installation process.

TOOL D: SAMPLE ZONING LANGUAGE

The character of zoning ordinances varies among jurisdictions. The text below is based on several, primarily Michigan based, existing solar ordinances, and provides local governments with sample language that each jurisdiction can customize to suit local needs. *Please consult your local legal counsel for advice on the appropriateness and applicability to your jurisdiction's zoning ordinance.*

As a guideline, the different scale of solar collection devices would be suitable for the following:

- Attached: All zoning districts
- Small Freestanding: Medium to low-density districts
- Large Freestanding: Industrial and possibly Agriculture

PURPOSE

The purpose of this ordinance is to add provisions to the Zoning Ordinance to address the permitting of small, medium, and large solar energy systems. The Ordinance recognizes the potential need for solar energy systems, while also supporting agricultural and habitat conservation. These changes are also necessary and appropriate to improve and enhance public welfare and safety, and to implement the Master Plan.

SAMPLE DEFINITIONS

GENERAL DEFINITION

Solar Collection Devices–General: Solar collection devices are designed to capture and utilize the energy of the sun to generate electrical power. A solar collection device is the actual material(s) used to collect solar rays and all associated ancillary and structural devices needed to support and convert/transmit the energy collected. These devices may be either freestanding or attached to a structure and are sized to meet the various user needs and/or utility requirements.

SMALL

Solar Collection Devices–Attached: An array of solar collection materials secured to the exterior walls or roof of a principal or accessory building and generate up to but not exceeding the manufacturer's rating of 20kW.

Solar Collection Devices–Small Freestanding: An array of freestanding (not attached to a principal or accessory structure) solar collection materials that generate up to but do not exceed the manufacturer's rating of 20kW.

MEDIUM

Solar Collection Devices – Medium Freestanding: An array of freestanding (not attached to a principal or accessory structure) solar collection materials that exceed the manufacturer's rating of 20kW, but do not occupy more than 10 acres of land.

Large Solar Collection Devices – Large Freestanding: An array of freestanding (not attached to a principal or accessory structure) of utility-scale solar collection materials that exceed the manufacturer's rating of 20kW and occupy more than 10 acres of land.

SAMPLE GENERAL REGULATIONS

Abandonment: Any **Freestanding** solar collection site or device which is not used for six (6) months shall be deemed to be abandoned. The applicant/permit holder will be so notified in writing by the municipality and requested to dismantle the site and return it to its original state. If there are mitigating circumstances as to why the site has not been used, the applicant/permit holder may contact the municipality and request a three-month extension. If a site has been deemed abandoned and no request for an extension is received, the applicant/permit holder will again be notified to dismantle the site and return it to its original state. If the applicant/permit holder does not do this, the municipality will have the removal and restoration done at the owner/applicant's expense (note that this last provision in particular should be reviewed by local legal counsel). Removal shall include removing posts, equipment, panels, foundations and other items so that the ground is restored to its preconstruction state and is ready for development as another land use.

Agricultural Land Preservation: Freestanding solar devices proposed in agricultural and open space zones are encouraged to locate on predominantly (more than 60 percent) non-prime farmlands. If they do not meet this standard, the use shall be deemed a Special Land Use, which requires a public hearing. The Application for a Special Land Use permit shall include an analysis of the potential for agricultural use on the subject site by expert in agriculture or soil science, as determined by the Planning Commission.

Height: Attached solar panels or Building Integrated Photovoltaics installed on a sloped roof of a building shall not project vertically above the peak of the roof. Solar panels attached to a flat roof shall not project vertically more than 10 feet above the roof. Solar panels attached to the side of a structure shall not project vertically above the building height allowed for that zoning district.

Small Freestanding solar devices, where the solar panels are attached to the ground by a pole, metal frame or other similar support structure, shall comply with existing regulations for accessory structures but in no instance shall the panels exceed twenty (20) feet in height in residential zones.

Medium and Large Freestanding solar devices shall meet the height limit requirements for the zone in which they are located.

Impervious Surface/Stormwater: If more than 8,000 square feet of impervious surface will be located on the site, the application shall include a drainage plan prepared by a registered civil engineer showing how stormwater runoff will be managed and demonstrating that runoff from the site will not exceed the agricultural runoff rate or otherwise cause undue flooding. If detergents will be used to clean solar panels, details on the type of detergent, frequency and quantity of use, and stormwater quality protection measures shall be provided. Any necessary permits from outside agencies for off-site discharge shall be provided.

Inspection: The municipality shall have the right, upon issuing the required permit for an **Attached** or Building Integrated solar system, to inspect the premises on which the solar collection devices are located at all reasonable hours.

The municipality shall have the right upon issuing the required permits to inspect the premises on which a **Freestanding** solar collection device is located at all reasonable times. The municipality, within its reasonable discretion, may retain the services of a recognized professional in the area of solar conversion systems to assist and/or advise it in the review of the application or site if deemed necessary. The expense thereof shall be the responsibility of the applicant/permit holder. The Planning Commission or Council/Board may request the applicant to post a deposit or secure a bond for such contingency.

Reflection/Glare: Attached, Building Integrated or Freestanding solar collection devices, or combination of devices, are designed and located to avoid glare or reflection onto adjacent properties and adjacent roadways and shall not interfere with traffic or create a safety hazard. This may be accomplished by both the placement and angle of the collection devices as well as human-made or environmental barriers. Glare intensity is considered an issue if it measures more than 20% of the incident sun intensity. Plans to reduce glare may be required in the initial materials submitted.

Responsibilities/Permits: Attached solar collection devices must be installed in compliance with the electrical code adopted by the local jurisdiction and the manufacturer's specifications. A copy of the manufacturer's installation instructions must be submitted to the local jurisdiction. If the applicant's intent is to install a customer-owner system that will be interconnected to the power grid, written evidence that the area's electrical utility provider has been notified will be required. Off-grid systems are exempt from this requirement.

Freestanding solar collection devices require a site plan to be secured for each site requested and should contain the following specific information in addition to all general information required: exact placement of the collection devices on the property; height, length, and angle of collection devices, lot size, zoned district setback requirements, detailed description of all land/timber clearing that is proposed; percent of prime farmland being used; site access roads for development and service; and provisions for mitigating reflection/glare and details on site security. The height of the solar collection device must not exceed the height allowed for accessory buildings in the zoned district where the collection devices are located.

Screening: Screening capable of providing year round screening for **Freestanding** devices, is provided along the back of the panel of the solar collection device or collection of devices.

Small Freestanding solar devices shall be screened from view from any public street, residential district, or agricultural district by use of a masonry screen wall, evergreen vegetation or other screening of a similar effectiveness and quality, as determined by the Planning Commission.

Setbacks: Freestanding solar devices shall meet the front, rear, and side yard setback requirements for the zone in which they are located, with the following exception: In all zones abutting a residential district (including Agriculture Zones) or residential use, the setbacks shall be at least 50 feet from all property lines adjoining said district(s) or use.

TOOL E:

SAMPLE PERMITTING PROCESS CHECKLISTS FOR CUSTOMERS

EXAMPLE 1: SIMPLE CHECKLIST FOR PERMITTING PROCESS AND REQUIREMENTS

SOLAR PERMITTING PROCESS CHECKLIST FOR JURISDICTION NAME

(Text in green is to be filled out by jurisdiction.)

Applicant Information:

Applicant Address:

Installation Address, if different:

Installer Name:

Contact Information:

GENERAL INFORMATION

System size:

- ☐ Less than 5kW
- ☐ More than 5kW but less than 14kW
- ☐ More than 14kW but less than 20kW
- ☐ Greater than 20kW

Grid connection intentions:

- ☐ Off-grid system
- ☐ Grid-tied system
(See [<insert website of utility provider>](#) for interconnection arrangement)

System location:

- ☐ Ground-mounted
- ☐ Roof-mounted

EXPEDITED PROCESS

As a Solar Ready Community, we have established a streamlined process for approving the most common residential solar PV installations. Your system may qualify for this expedited process if it meets all of the following criteria:

- An array composed of 4 or fewer series strings.
- An inverter with rated output of 13.44 kW or less.
- Use of an engineered mounting system on a code-compliant roof and a rooftop distributed weight of less than 5 lb/sq. ft. and less than 40 lbs. per attachment.

- ☐ **YES**, my system qualifies for the expedited permitting process.
- ☐ **NO**, my system does not meet these requirements—proceed to next section
(provide information and link application form for non-expedited systems)

...Continued

1 Additional Information Requirements

- a. For ground-mounted systems:
 - i. Site plan (describe what you want the applicant to include in site plan)
- b. For roof-mounted systems:
 - i. Roof information (describe what you want the applicant to include—this request can include roof plan diagram, type of structural roof deck type, condition of roof, roofing material)
- c. For all systems:
 - i. Electrical diagram
 - ii. Installation manuals
- d. OTHER: (if there are other requirements that your jurisdiction has)

2 Permits Required

- a. You will be directed to the permits required for your system; all permits can be found here (insert URL or location for each jurisdiction)
- b. When completed, permit(s) should be submitted to (who/where) for review. The review process may take up to three business days.

3 Fees

- a. Fees are based on the type of permit(s) required for your system. The standard fee schedule for (jurisdiction) is:

(List your permit fees here)

4 Inspections

- a. Completed installations will require inspections based on the types of permits that were required by the system. In most cases, only one final inspection is required; if your system is specialized and requires in-process inspections in addition to a final inspection, you will be notified at the time of application.
- b. Inspection appointments are scheduled by contacting (who/where). Appointments will be scheduled for 1-3 days out, and will be given in appointment windows of 2-3 hours.
- c. Inspections will confirm compliance for health, safety, and code requirements. Although not an exclusive list, the following are common requirements that will be addressed during a final solar inspection:
 - Number of PV modules and model number matches plans, and specification sheets.
 - Array conductors and components are installed in a professional manner.
 - PV array is properly grounded.
 - Electrical boxes are accessible and connections are suitable for environment.
 - Array is fastened and sealed according to attachment detail.
 - Conductors ratings and sizes match plans.
 - Appropriate signs are properly constructed, installed, and displayed.
 - Equipment ratings are consistent with application and installed signs on the installation.

(Add contact information for your jurisdiction)

EXAMPLE 2: SOLAR AMERICAN BOARD FOR CODES AND STANDARDS (SOLAR ABC'S) SAMPLE EXPEDITED PERMITTING PROCESS CHECKLIST

(For more information on this template, sample worksheets and other Solar ABC resources, visit <http://www.solarabcs.org/>)

EXPEDITED PERMIT PROCESS FOR PV SYSTEMS

The information in this guideline is intended to help local jurisdictions and contractors identify when PV system installations are simple, needing only a basic review, and when an installation is more complex. It is likely that 50 %-75 % of all residential systems will comply with these simple criteria. For projects that fail to meet the simple criteria, resolution steps have been suggested to provide as a path to permit approval.

Required Information for Permit:

1. Site plan showing location of major components on the property. This drawing need not be exactly to scale, but it should represent relative location of components at site (see supplied example site plan). PV arrays on dwellings with a 3' perimeter space at ridge and sides may not need separate fire service review.
2. Electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and ac connection to building (see supplied standard electrical diagram).
3. Specification sheets and installation manuals (if available) for all manufactured components including, but not limited to, PV modules, inverter(s), combiner box, disconnects, and mounting system.

Step 1: Structural Review of PV Array Mounting System

Is the array to be mounted on a defined, permitted roof structure? ☐ Yes ☐ No

If No due to non-compliant roof or a ground mount, submit completed worksheet for the structure WKS1.

Roof Information:

1. Is the roofing type lightweight (Yes = composition, lightweight masonry, metal, etc...) _____
If No, submit completed worksheet for roof structure WKS1 (No = heavy masonry, slate, etc...).
2. Does the roof have a single roof covering? ☐ Yes ☐ No
If No, submit completed worksheet for roof structure WKS1.
3. Provide method and type of weatherproofing roof penetrations (e.g. flashing, caulk). _____

Mounting System Information:

1. Is the mounting structure an engineered product designed to mount PV modules? ☐ Yes ☐ No
If No, provide details of structural attachment certified by a design professional.
2. For manufactured mounting systems, fill out information on the mounting system below:
 - a. Mounting System Manufacturer _____ Product Name and Model# _____
 - b. Total Weight of PV Modules and Rails _____ lbs
 - c. Total Number of Attachment Points _____
 - d. Weight per Attachment Point (b ÷ c) _____ lbs (if greater than 45 lbs, see WKS1)
 - e. Maximum Spacing Between Attachment Points on a Rail _____ inches (see product manual for maximum spacing allowed based on maximum design wind speed)
 - f. Total Surface Area of PV Modules (square feet) _____ ft²
 - g. Distributed Weight of PV Module on Roof (b ÷ f) _____ lbs/ft²
If distributed weight of the PV system is greater than 5 lbs/ft², see WKS1.

Step 2: Electrical Review of PV System (Calculations for Electrical Diagram)

In order for a PV system to be considered for an expedited permit process, the following must apply:

1. PV modules, utility-interactive inverters, and combiner boxes are identified for use in PV systems.
2. The PV array is composed of 4 series strings or less per inverter, and 15 kWSTC or less.
3. The total inverter capacity has a continuous ac power output 13,440 Watts or less
4. The ac interconnection point is on the load side of service disconnecting means (690.64(B)).
5. The electrical diagram (E1.1) can be used to accurately represent the PV system.

Fill out the standard electrical diagram completely. A guide to the electrical diagram is provided to help the applicant understand each blank to fill in. If the electrical system is more complex than the standard electrical diagram can effectively communicate, provide an alternative diagram with appropriate detail.

TOOL J:

OTHER RESOURCES

Solar Energy Overview

Michigan Energy Office:

http://michigan.gov/documents/mdcd/Solar_Overview_365723_7.pdf

Solar Viability Calculators

Salt Lake City:

<http://solarsimplified.org/>

Weather Underground:

<http://www.wunderground.com/calculators/solar.html>

Solar Planning Documents & Programs

City of Ann Arbor:

http://www.a2gov.org/government/publicservices/systems_planning/energy/solarcities/Documents/Final_Solar_Plan_7-7-10.pdf

Salt Lake City:

http://www.utahcleanenergy.org/our_work/solar_salt_lake_project

Boston:

<http://www.cityofboston.gov/environmentalandenergy/conservation/solar.asp>

Solar Zoning and Permitting

American Planning Association:

<http://www.planning.org/research/solar/faq.htm>

Solar ABC's:

<http://www.solarabcs.org/>

Michigan Energy Office Resource listing:

http://www.michigan.gov/documents/mdcd/Solar_Zoning_and_Permitting_392576_7.pdf

City of Boston Permitting Guide:

http://www.cityofboston.gov/images_documents/Solar%20Boston%20Permitting%20Guide%20NEW%20Sept%202011_tcm3-27989.pdf

Boulder County Solar Permitting Checklist:

<http://www.bouldercounty.org/doc/landuse/b46solarphotovoltaicchecklist.pdf>

Solar Websites and Mapping Applications

American Planning Association:

<http://www.planning.org/research/solar/briefingpapers/solarmapping.htm?print=true>

Salt Lake City:

<http://solarsimplified.org/>

Boston:

<http://gis.cityofboston.gov/solarboston/#>

New York City:

<http://nycsolarmap.com/>

National Renewable Energy Laboratory's Open PV Project:

<https://openpv.nrel.gov/>

Public Information and Brochures

Salt Lake City:

<http://solarsimplified.org/>

City of Berkeley:

<http://www.ci.berkeley.ca.us/solarpvpermitguide/>

Los Alamos County brochure:

http://www.losalamosnm.us/utilities/DPUDocuments/DPU_BR100701SolarResidentialPrimer.pdf

Training

Northwestern Michigan Community College:

<https://www.nmc.edu/resources/extended-education/find-a-class/energy-construction/>

Detroit JATC:

<http://www.greencareersguide.com/detroit-jatc-photovoltaic-systems-course-photovoltaic-seminar.html>

Cost Calculator

Solar Estimate:

<http://www.solar-estimate.org/?page=solar-calculator>

Sample Permit Applications

Marion County, Oregon:

<http://www.co.marion.or.us/NR/rdonlyres/CF9354BD-E35D-42E8-9EFD-A41FCE74B4BC/37676/B01SSolarPrescriptiveInstallationApplication4.pdf>

Installed Solar In Michigan

The National Renewable Energy Laboratory Open PV Project:

<https://openpv.nrel.gov/gallery>

Solar Energy Business Development

Michigan Office of Energy:

http://michigan.gov/documents/mdcd/Solar_Business_Devel_9-29-11_365729_7.pdf

Solar Energy Employment and Education

Michigan Energy Office Resource Listing:

http://michigan.gov/documents/mdcd/Solar_Business_Devel_9-29-11_365729_7.pdf

Comprehensive Initiatives

Solar America Cities:

<http://solaramericacities.org/>

Milwaukee Shines:

<http://city.milwaukee.gov/milwaukeeeshines>

Salt Lake City:

<http://solarsimplified.org/>

City of Madison, MadiSUN Solar Energy project:

<http://www.cityofmadison.com/sustainability/city/madisun/>

Solar Survey

City of San Diego:

<http://www.sandiego.gov/environmental-services/sustainable/pdf/090925SOLARCITYSURVEYREPORT.pdf>

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- ^{iv} <http://placemaking.mml.org/>
- ^v <http://www.dleg.state.mi.us/mpsc/reports/energy/energyoverview/>
- ^{vi} Vote Solar, Solar Growth Trends. [online]
- ^{vii} Vote Solar, Solar Cost Trends. [online]
- ^{viii} <http://www.nrel.gov/docs/fy12osti/54738.pdf>
- ^{ix} <http://mibiz.com/news/energy/item/20599-utility-co-op-offers-community-based-approach-to-access-solar-energy>
- ^x Average monthly residential electricity consumption, prices, and bills by state (2011), EIA, <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>
- ^{xi} <http://www.cherrylandelectric.com/content/community-solar>
- ^{xii} http://www1.eere.energy.gov/solar/pdfs/solar_timeline.pdf
- ^{xiii} <http://www.gosolarcalifornia.ca.gov/about/gosolar/california.php>
- ^{xiv} For a more detailed history of Solar Energy, please see: Ken Butti and John Perlin, A Golden Thread: 2500 Years of Solar Architecture and Technology, 1980 and Amory B. Lovins, Reinventing Fire: Bold Business Solutions for the New Energy Era, 2012.
- ^{xv} <http://www.dowpowerhouse.com/>
- ^{xvi} <http://cleantechnica.com/2013/08/19/germany-breaks-monthly-solar-generation-record/>
- ^{xvii} <http://www.njcleanenergy.com/renewable-energy/programs/solar-renewable-energy-certificates-srec/new-jersey-solar-renewable-energy>
- ^{xviii} <http://www.seia.org/sites/default/files/resources/ZDgLD2dxPGYIR-2012-ES.pdf>
- ^{xix} <http://www.energymanagertoday.com/more-than-6-4-gw-solar-electric-capacity-installed-in-us-087753/>
- ^{xx} 1.7 Billion Rooftop PV Systems (sized for a moderate house or commercial roof; 49,000 Concentrated Solar Power Plants (300 MW); and, 40,000 PV Power Plants (300 MW).
- ^{xxi} <http://www.seia.org/sites/default/files/resources/ZDgLD2dxPGYIR-2012-ES.pdf>
- ^{xxii} <http://www1.eere.energy.gov/solar/pdfs/47927.pdf>
- ^{xxiii} <http://www.planning.org/research/solar/briefingpapers/localdevelopmentregulations.htm?print=true>
- ^{xxiv} http://www.pewenvironment.org/uploadedFiles/PEG/Newsroom/Press_Release/Innovate,%20Manufacture,%20Compete.pdf
- ^{xxv} http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MI15R
- ^{xxvi} http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MI15R
- ^{xxvii} MPSC interconnection website: http://www.michigan.gov/mpsc/0,4639,7-159-16393_48212_58223--,00.html
- ^{xxviii} http://www1.eere.energy.gov/solar/pdfs/47927_chapter4.pdf
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- ^{xxx} <http://www.nrel.gov/docs/fy12osti/54574.pdf>
- ^{xxxi} http://www.michigan.gov/documents/mpsc/NetMeteringReport_Aug2012_396259_7.pdf
- ^{xxxii} <http://www.nrel.gov/docs/fy12osti/54574.pdf>
- ^{xxxiii} <http://www.dteenergy.com/pdfs/pilotProgramReport.pdf>
- ^{xxxiv} http://www4.eere.energy.gov/solar/sunshot/resource_center/sites/default/files/solar-powering-your-community-guide-for-local-governments.pdf
- ^{xxxv} <http://www.sbir.gov/about/about-sbir>
- ^{xxxvi} <http://www.sbir.gov/about/about-sttr>
- ^{xxxvii} <http://www.mietf.org/Default.aspx>
- ^{xxxviii} <http://www.mietf.org/Guidelines.aspx>