### CITY OF GROSSE POINTE WOODS, MICHIGAN 20025 Mack Plaza Dr. Planning Commission Meeting Agenda February 29, 2012 7:30 p.m.

- 1. CALL TO ORDER
- 2. ROLL CALL
- 3. PLEDGE OF ALLEGIANCE
- 4. ACCEPTANCE OF AGENDA
- 5. RECOGNITION OF COUNCIL REPRESENTATIVE/S

### 6. APPROVAL OF MINUTES:

Planning Commission – 01/24/12

### 7. CONTINUED DISCUSSION: SOLAR ENERGY

- A. PC Excerpt 01/24/12
- B. PC Excerpt 11/22/11
- C. PC Excerpt 10/25/11
- D. Crain's Detroit Business: "Dow's Solar Plan: Reach 12 More States in 18 Months" (pg 11) January 2012
- E. Memo w/Ordinance DRAFT #2 02/24/12 Building Official (Tutag)
- F. Memo w/DRAFT Ordinance 11/09/11 Building Official (Tutag)
- G. Memo 10/19/11 Building Official (Tutag)
  - (1) National Trust for Historic Preservation Design Guidelines for Solar Installations
  - (2) Site Design Strategies for Solar Access
  - (3) Grosse Pointe Shores Sample/Proposed Ordinance Amendment
  - (4) St. Clair Shores DRAFT Ordinance
  - (5) City of Novi Ordinance
  - (6) Birmingham Ordinance
  - (7) Charter Township of Bloomfield Ordinance
  - (8) City of Ferndale Ordinance
  - (9) Eastpointe Ordinance
  - (10) Dundee Township Ordinance
  - (11) Brownstown Township Ordinance
  - (12) Monroe County, PA Ordinance
  - (13) Kent County, MD Renewable Energy Task Force
  - (14) Municipal Guide to Planning for and Regulating Alternative Energy Systems
  - (15) Minnesota Environmental Quality Board Model Environmental Energy Standards

### 8. SCHEDULE A PUBLIC HEARING: PROHIBITED USES (New Section #50-185)

- A. COW Excerpt 02/13/12
- B. Letter 01/14/12 Assistant City Attorney (C. Berschback)

### 9. BUILDING OFFICIAL'S MONTHLY REPORT:

Building Department Report – December 2011

### 10. COUNCIL REPORT:

February - Hamborsky

### 11. **INFORMATION ONLY - COUNCIL REPRESENTATIVE FOR NEXT MEETING:** March - Richardson

### 12. **NEW BUSINESS:**

Sub-Committee Reports: 2020 Plan (Hamborsky/Vitale/Fuller/Gilezan) Special Sign (Vaughn/Evola/Fuller)

### 13. ADJOURNMENT

Submitted by: Gene Tutag, Building Official

313-343-2426

### IN ACCORDANCE WITH PUBLIC ACT 267 (OPEN MEETINGS ACT) POSTED AND COPIES GIVEN TO NEWSPAPERS

Notice: The City of Grosse Pointe Woods will provide necessary, reasonable auxiliary aids and services, such as signers for the hearing impaired, or audio tapes of printed materials being considered at the meeting to individuals with disabilities. All such requests must be made at least five days prior to said meeting. Individuals with disabilities requiring auxiliary aids or services should contact the City of Grosse Pointe Woods by writing or calling the A.D.A. Coordinator or the City Clerk's office, 20025 Mack Plaza, Grosse Pointe Woods, MI 48236 (313) 343-2445; or Telecommunications Device for the Deaf (TDD) (313) 343-9249.

NOTE TO PETITIONERS: Please make every effort to be present at the meeting so that public officials may get the benefit of your input on the matter before them.

6.

PLANNING COMMISSION 01/24/12 - 001

MINUTES OF THE PLANNING COMMISSION OF THE CITY OF GROSSE POINTE WOODS HELD ON TUESDAY, JANUARY 24, 2012, IN THE COUNCIL-COURT ROOM OF THE MUNICIPAL BUILDING, 20025 MACK AVENUE, GROSSE POINTE WOODS, MICHIGAN.

The meeting was called to order at 7:33 p.m. by Chair Vaughn.

Roll Call: Chair Vaughn Dickinson, Evola, Fuller, Gilezan, Richardson, Vitale

Absent: Hamborsky

- Also Present: Building Official Tutag Recording Secretary Babij Ryska
- Also in Attendance: Council Member Ketels, Planning Commission Representative Council Member Koester Council Member Granger (8:13 p.m.)

Motion by Evola, seconded by Fuller, that Commission Member Hamborsky be excused from tonight's meeting.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale

NO: None

ABSENT: Hamborsky

Motion by Richardson, seconded by Evola, that all items on tonight's agenda be received, placed on file, and taken in order of appearance, noting that the January Council Report will be given by Gilezan and that Hamborsky is scheduled to attend the February Council meetings.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale NO: None ABSENT: Hamborsky

Chair Vaughn welcomed Council Member Ketels, as Planning Commission Representative and Council Member Koester for being in attendance at tonight's meeting.

Motion by Dickinson, seconded by Gilezan, regarding **Approval of Minutes**, that the Planning Commission Meeting minutes dated December 15, 2011 be approved.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale NO: None ABSENT: Hamborsky PLANNING COMMISSION 01/24/12 - 002

The next item on the agenda was **Appointments – Election of Chair and Vice-Chair/ Secretary**. Chair Vaughn asked for any nominations.

Motion by Vaughn, seconded by Evola, regarding Appointments, Election of **Chair**, that the Planning Commission nominate and elect Planning Commission Member **Gilezan** as Chair.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale NO: None ABSENT: Hamborsky

Motion by Vaughn, seconded by Vitale, regarding Appointments, Election of **Vice-Chair/Secretary**, that the Planning Commission nominate and elect Planning Commission Member **Richardson** as Vice-Chair/Secretary.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale NO: None ABSENT: Hamborsky

Motion by Gilezan, seconded by Dickinson, that the Planning Commission approve and adopt the **Rules of Order and Procedure** as presented.

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale

NO: None

ABSENT: Hamborsky

Motion by Evola, seconded by Vitale, that the Planning Commission approve the **2011 Grosse Pointe Woods Planning Commission Annual Report** and send the report to Council with the following revisions:

1. pg 4 – "GOALS AND OBJECTIVES FOR 2012" be changed to read "CONTINUED GOALS AND OBJECTIVES"

MOTION CARRIED by the following vote:

YES: Dickinson, Evola, Fuller, Gilezan, Richardson, Vaughn, Vitale NO: None ABSENT: Hamborsky PLANNING COMMISSION 01/24/12 - 003

Chair Vaughn, with consensus of the Commission, scheduled a **Workshop meeting** on Wednesday, February 29, 2012 at 6:30 p.m. to discuss the Planning Commission's tasks of 2012.

The next item on the agenda was **Continued Discussion: Solar Energy**. Building Official Tutag provided a draft of Grosse Pointe Shores' Solar Panels and Shingles Ordinance, which provides a good model. Discussion ensued regarding provisions the Commission wants in a proposed ordinance. Mr. Tutag will amend the Grosse Pointe Shores ordinance to reflect the Commission's discussion and submit it at the February 29<sup>th</sup> meetings. Additionally, Commission Member Vitale will contact Dow Chemical Co. and inquire about the types of solar products available and possibly have a representative attend the meeting with samples.

The next item on the agenda was the **Building Official's Monthly Report.** Mr. Tutag reported the following:

- Cook Road property now owned by DRSN Real Estate Group LLC. Permitting for new construction is underway.
- Code Enforcement will be out on Mack on Saturday to address signs being place in the right of way over weekends.
- Meeting with Administrator and Commissioner Tim Killeen regarding the procedure that Wayne County follows for outdoor café permits. County wants indemnification resolution, which has never been done before.
- Congratulations to new officers.
- Mack Avenue is currently at a 95% occupancy rate.

Hearing no objection, Commission Member Vitale reported the following on the **Mayor's Mack Avenue Business Study Committee** meeting:

- Committee will begin meeting monthly.
- Discussed location of parking meters.
- Discussed possibility of allowing balloons for business grand openings.
- Will continue to report on meetings
- Interested in a Detroit Institute of Arts program "Inside|Out", which places reproductions of art in communities for a designated amount of time.

Commission Member Gilezan gave the January 2012 Council Reports:

- January 9<sup>th</sup> meeting: Nothing that pertained to the Commission.
- January 24<sup>th</sup> meeting: Nothing that pertained to the Commission.

### Commission Member Fuller gave the 2<sup>nd</sup> December 2011 Council Report:

- December 19<sup>th</sup> meeting:
  - Approved Farm Bureau Insurance Colleen Dyer Agency's sign variance.
  - Approved Telly's Place sign variance.
  - Denied Blue Book/Towar Productions sign variance

PLANNING COMMISSION 01/24/12 - 004

Commission Member Hamborsky will attend the February Council Meetings.

The following **Subcommittee Reports** were provided:

**2020 Plan** – Nothing to report. Commission Member Gilezan noted that Commission Member Hamborsky will scheduled a sub-committee meeting prior to the next regular meeting.

Special Sign Ordinance – Nothing to report.

Hearing no objections, the following items were heard under **New Business**:

- Chair Vaughn reminded that due to the Presidential Primary Election the **next meeting** is scheduled for Wednesday, February 29, 2012.
- Commission Member Dickinson stated that he is pleased about the progress with the Mayor's Mack Avenue Business Study Committee. He is also concerned about the acceptability of distasteful signage in surrounding communities.
- Commission Member Evola voiced concern about the signage at DiMaggio Jewelers.
- Chair Vaughn announced that the Commission Appreciation Reception is February 3, 2012 at the Lochmoor Club.
- Commission Member Fuller expressed his appreciation for Chair Vaughn's leadership this past year.

Motion by Evola, seconded by Vitale, to adjourn the Planning Commission meeting at 8:55 p.m. Passed unanimously.

PLANNING COMMISSION EXCERPT 01/24/12

The next item on the agenda was **Continued Discussion: Solar Energy**. Building Official Tutag provided a draft of Grosse Pointe Shores' Solar Panels and Shingles Ordinance, which provides a good model. Discussion ensued regarding provisions the Commission wants in a proposed ordinance. Mr. Tutag will amend the Grosse Pointe Shores ordinance to reflect the Commission's discussion and submit it at the February 29<sup>th</sup> meetings. Additionally, Commission Member Vitale will contact Dow Chemical Co. and inquire about the types of solar products available and possibly have a representative attend the meeting with samples.

PLANNING COMMISSION EXCERPT 11/22/11

The next item on the agenda was **Continued Discussion: Solar Panels**. Building Official Tutag provided a draft Solar Panel / Wind Energy Ordinance. The purpose of the ordinance is to give the City some guidelines to regulate such alternative energy installations. Discussion ensued regarding the content of the draft ordinance. The Planning Commission requested that this item be postponed until the January 2012 meeting with the intent of having an expert in the field make a presentation to the Commission for educational purposes.

### PLANNING COMMISSION EXCERPT 10/25/11

The first item on the agenda was **Discussion: Solar Panels**. Building Official Tutag provided multiple ordinances relating to the topic from various municipalities. He began the discussion by indicating that small wind and solar renewable energy systems are becoming more prevalent.

To be proactive, it is advisable that the city establish regulations that would accommodate this trend while preserving the aesthetics and safety of the community. Discussion among the Commission Members ensued and it was determined that Building Official Tutag will draft an ordinance for the Commission's review.

### CRAIN'S MICHIGAN BUSINESS C )W'S solar plan: Reach 12 more states in 18 months

By MIKE VERESPEJ CRAIN NEWS SERVICE

**Dow Chemical Co.** has begun commercial deliveries of its Powerhouse solar shingles and is ramping up production at its pilot plant in Midland.

The solar shingles went on sale in Colorado in October, and Dow plans to roll them out to 12 more states, including California and Texas, over the next 18 months. Current production is 400 shingles daily, Dow said.

A plant for full-scale commercial production is under construction in Midland. Dow said it expects the plant to employ 1,275 and create \$1 billion in revenue by 2015, when it will have the capacity to make enough shingles for 40,000 to 50,000 homes.

Dow Solar said it launched the solar shingles in Colorado because of the state's "solar-susceptible environment," high energy corts and a state government inc /e program designed to encourage consumers to buy such products.

Luxury homebuilder **D.R. Hor**ton said it will make the shingles standard on the next phase of 50 homes the company plans to build in the upscale Spring Mesa community in Arvada, outside Denver. Each home will have a 3-kilowatt array of the thin-film copper indium gallium diselenide photovoltaic shingles, which are designed to look like conventional roof shingles.

Dow estimates a new solar shingle system, including the shingles and an energy converter box, will cost \$10,000 to \$15,000 in states that offer government solar incentives. The company estimates the solar shingles will reduce energy costs 50 percent, with the shingles paying for themselves in five to 12 years.

Initially, the shingles will be sold through dealers, not big-box retailers, Dow said.

"The early-on focus is going to be with homebuilders and a network of roofing contractors to support new building and reroofing applications," said Dan Pezolt, Dow Solar's marketing director.

The solar cells are integrated by Dow into a proprietary, polymeric-based shingle through injection molding. The interlocking shingles are designed to be used alongside asphalt shingles. They can be installed with standard roofing nails at the same time asphalt shingles are installed.

The three-part solar roofing package includes an array of

shingles, an inverter and an energy-monitoring system. Shingles are arranged to complement a home's style, form and roofline. The solar energy is converted into alternating current and fed to the home's appliances or back to the power grid.

Dow's solar business received \$20 million in funding in 2007 from the **U.S. Department of Energy** to develop new residential solar products.

— From Plastics News

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### **CITY OF GROSSE POINTE WOODS**

### **BUILDING DEPARTMENT**

### **MEMORANDUM**

TO:Planning CommissionFROM:Gene Tutag, Building OfficialDATE:February 24, 2012SUBJECT:Solar Energy Ordinance – DRAFT #2

The first DRAFT of the proposed Solar Energy Ordinance has been reviewed and changes have been made per Planning Commission discussion on January 24, 2012.

DRAFT #2 is attached for your review and discussion.

### DRAFT #2

Solar Panels / Wind Energy Ordinance (discussion only)

### Definitions add to Section 50-1

*Solar Energy System* means an accessory to the main structure and/or use which comprised of a combination of solar collector(s) and ancillary solar equipment used to generate electricity primarily for consumption on the property on which the system is located.

*Ancillary solar equipment* means any accessory part or device of a solar energy system that does not require direct access to sunlight, such as batteries, electric meters, AC/DC converters or water heater tanks.

*Building-integrated solar energy system* means a solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include but are not limited to active photovoltaic or hot water systems that are contained within roofing materials, windows, walls, skylights, and awnings, or passive systems that are designed to capture direct solar heat.

*Solar Installation* means a system such as a photovoltaic or solar thermal system that uses the sun's energy to produce electricity or heat.

Solar Panel means a grouping of photovoltaic cells that produce electricity from sunlight.

*Solar Thermal Collector* means a device that collects heat form the sun and transfers the heat to another location for immediate heating or storage for use later. Solar thermal collectors are typically associated with solar water heating systems.

### New Section 50-539 Solar Energy Systems

It shall be unlawful for any person to install or operate a Solar Energy System unless all of the following conditions are met:

- (1) A Solar Energy System is permitted in any zoning district within the City.
- (2) A building permit and any necessary mechanical, plumbing and electrical permits shall be secured prior to the start of the installation of any Solar Energy System.
   Dimensioned plans are required with the building permit application.
- (3) Rooftop Solar energy system installations
  - (a) Shall be located on the rear elevations or otherwise configured to the degree practicable to have a minimal visual impact as seen from the street. Solar installations that are visible from the street must be either composed of building-

### DRAFT #2

integrated components (such as solar shingles) that are not readily evident, or be designed and mounted to match the shape, proportions, and slope of the roof.

- (b) In all instances, installations of solar equipment, including the rails and panels, are subject to the height limitations of the specific zoning district where they are being installed.
- (c) Solar panels shall not be located within (3 4) three *four* feet of any peak, eave or valley to maintain adequate accessibility.
- (d) Solar panels shall not project more than (1) one foot above the roof deck.
- (e) Solar panels shall be placed and arranged such that reflected solar radiation or glare shall not be directed onto adjacent buildings, properties or roadways.
- (3) Free-standing solar panels shall not be permitted.
- (4) Freestanding Solar Energy Systems
- (a) Shall only be located in a rear yard. ( language regarding small solar panels that serve signs and parking lot lighting can be included here if deemed necessary by the PC)
- (b) Shall meet all setback and height requirements for accessory buildings. The maximum height shall in no event exceed (15) fifteen feet.
- (c) Freestanding solar energy systems shall be included in the maximum permitted lot coverage for the district they are located in.

DRAFT #2 Solar Energy Ord to PC 02/29/12

### CITY OF GROSSE POINTE WOODS BUILDING DEPARTMENT MEMORANDUM

TO:	Planning Commission
FROM:	Gene Tutag, Building Official
DATE:	November 09, 2011
SUBJECT:	Solar Panels / Wind Energy Ordinance Outline

### BACKGROUND

At the meeting on October 22, 2011, the Planning Commission considered the need to establish regulations for solar and other alternative energy installations within the city. During the discussions, the Commission recognized, while the existing standards of the zoning ordinance could be applied to these installations and devices, the unique nature of this technology presents the need for specific standards. Also, the trend toward increasing interest in alternative energy sources warrants new regulations for the various types of equipment and devices that have been uncommon or non-existent in our area in the past.

In developing this outline of proposed regulations many ordinances from jurisdictions across the country were reviewed. The various alternative energy systems that are available were researched. Based on this review, we found that solar is the only type of alternative energy system that is feasible in our area that presents design issues that should be regulated by zoning. The wind resources, existing tree line, and relatively small established lot areas in our community do not make wind power a cost-effective energy source. Any proposals for wind turbines within the City would be regulated by the standard height and setback limitations of the zoning ordinance. Installations of other types of alternative energy systems (i.e. geothermal) are not readily evident and can be treated the same as standard mechanical equipment from a zoning perspective.

The preferred location for mounting solar panels is on the roof of a structure, or within a building-integrated system. When the panels cannot be mounted on a roof due to efficiency or aesthetic considerations, ground mounting may be necessary. Solar panels or solar thermal collectors should be permitted in all zoning districts and standards for their location established. The standards should minimize views of these installations from public streets and residential properties, and afford a degree of safety for first responders that may come in contact with the equipment or need to have access to a roof.

Solar panels are an increasingly common source of power for sign and site lighting. Provisions to allow solar panels up to 20 square feet in size to be used for this purpose could be included.

Discussions included permitting installations that are visible from the street; this should only be allowed when they are designed to match the shape, proportion, and slope of the roof.

Some of the ordinances reviewed are rather lengthy and get into issues addressed elsewhere in the zoning ordinance or in another code (i.e. building or electrical). The attached outline addresses most of the issues discussed and will adequately regulate solar energy systems within the community without becoming overly burdensome that the installation of these systems is discouraged.

### Ordinance Outline (for discussion only):

Definitions add to Section 50-1

*Solar energy system* means an accessory to the main structure and/or use which comprises of a combination of solar collector(s) and ancillary solar equipment used to generate electricity primarily for consumption on the property on which the system is located.

Ancillary solar equipment means any accessory part or device of a solar energy system that does not require direct access to sunlight; such as batteries, electric meters, AC/DC converters or water heater tanks.

*Building-integrated solar energy system* means a solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include but are not limited to active photovoltaic or hot water systems that are contained within roofing materials, windows, walls, skylights, and awnings, or passive systems that are designed to capture direct solar heat.

*Solar Installation* means a system such as a photovoltaic or solar thermal system that uses the sun's energy to produce electricity or heat.

Solar Panel means a grouping of photovoltaic cells that produce electricity from sunlight.

*Solar Thermal Collector* means a device that collects heat form the sun and transfers the heat to another location for immediate heating or storage for later use. Solar thermal collectors are typically associated with solar water heating systems.

### New Section 50-539 Solar Energy Systems

It shall be unlawful for any person to install or operate a Solar Energy System unless all of the following conditions are met:

- (1) A Solar Energy System is permitted in any zoning district within the City.
- (2) A building permit and any necessary mechanical, plumbing and electrical permits shall be secured prior to the start of the installation any Solar Energy System.

- (3) Rooftop Solar energy system installations
  - (a) Shall be located on the rear elevations or otherwise configured to the degree practicable to have a minimal visual impact as seen from the street. Solar installations that are visible from the street must be either composed of buildingintegrated components (such as solar shingles) that are not readily evident, or be designed and mounted to match the shape, proportions, and slope of the roof.
  - (b) In all instances, installations of solar equipment, including the rails and panels, are subject to the height limitations of the specific zoning district where they are being installed.
  - (c) Solar panels shall not be located within (3) three feet of any peak, eave or valley to maintain adequate accessibility.
  - (d) Solar panels shall not project more than (1) one foot above the roof deck.
- (4) Freestanding Solar Energy Systems
  - (a) Shall only be located in a rear yard. (*NOTE: language regarding small solar panels that serve signs and parking lot lighting can be included here if deemed necessary by the PC*)
  - (b) Shall meet all setback and height requirements for accessory buildings. The maximum height shall in no event exceed (15) fifteen feet.
  - (c) Freestanding solar energy systems shall be included in the maximum permitted lot coverage for the district they are located in.



### **CITY OF GROSSE POINTE WOODS**

### **BUILDING DEPARTMENT**

### **MEMORANDUM**

TO:	Planning Commission
FROM:	Gene Tutag, Building Official
DATE:	October 19, 2011
SUBJECT:	Solar Panels / Wind Energy Ordinance

For discussion at the October meeting, included in your packets are ordinances and information regarding the planning for and regulation of solar and wind energy systems. The purpose of the discussion would be to determine if zoning regulations are needed to regulate the installation and operation of small wind and solar renewable energy systems in the city.

Currently there are no installations of this type in the city or applications pending.

The ordinances that are attached give us a glimpse into how other communities are regulating these uses.

The purpose of this ordinance would be to:

- 1. Provide zoning regulations to guide the installation and operation of Small Wind and Solar Renewable Energy Systems in the City of Grosse Pointe Woods.
- 2. Accommodate sustainable energy production from renewable energy sources.
- 3. Preserve the aesthetics of the city in the interest of property values, public health, and welfare.

If the Planning Commission decides to go forward with an ordinance, the language should be presented to the City Council at a COW meeting prior to the scheduling of a Public Hearing.

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### Design Guidelines for Solar Installations

In many cases, historic buildings, structures, and sites can be preserved while also accommodating solar energy installations. Indeed, as the need for renewable energy systems increases, technology evolves, political pressure to remove regulatory barriers mounts, and logistical problems are resolved, precluding the installation of solar energy systems may become indefensible. Moreover, with incentives in place, applications to install solar and other alternative energy systems within historic districts are likely to increase dramatically. Just as state agencies and local preservation boards developed policies and guidelines to address the needs of persons with disabilities, they should



Credit: Adrian Scott Fine

also develop policies that encourage compatible and appropriate installations of solar energy systems.

The following considerations can facilitate preservation boards and commissions in their review of solar panel requests and provide a foundation for the adoption of local guidelines related to solar energy installations. The primary objective of preservation ordinances is to preserve historic properties, so a preservation board should encourage project outcomes that meet solar access requirements while maintaining the integrity of historic resources. Consideration should always be given to solutions that protect historic features, materials, and spatial relationships with the visibility of all solar energy installations – including solar panels – minimized to the greatest extent possible.

Locate solar panels on the site of a historic resource. If possible, use a ground-mounted solar panel array. Consider solutions that respect the building's historic setting by locating arrays in an inconspicuous location, such as a rear or side yard, low to the ground, and sensitively screened to further limit visibility. Care should be taken to respect the historic landscape, including both its natural (i.e. topography) and designed (i.e. materials) features.

Locate solar panels on new construction. In cases where new buildings or new additions to historic buildings are proposed and approvable, encourage the placement of solar panels on the new construction. To achieve overall compatibility with the historic building and its setting, consider solutions that integrate the solar panel system in less visible areas of the new design.

Locate solar panels on non-historic buildings and additions. If the site cannot accommodate solar panels and the project does not include new construction, consider placing solar panels on an existing, non-historic addition or accessory structure. This will minimize the impact of solar installation on the significant features of the historic resource and protect the historic fabric against alteration.

Place solar panels in areas that minimize their visibility from a public thoroughfare. The primary façade of a historic building is often the most architecturally distinctive and publicly visible, and thus the most significant and character defining. To the greatest extent possible, avoid placing solar panels on street-facing walls or roofs, including those facing side streets. Installations below and behind parapet walls and dormers or on rear-facing roofs are often good choices.

Avoid installations that would result in the permanent loss of significant, character-defining features of historic resources. Solar panels should not require alterations to significant or character-defining features of a historic resource, such as altering existing roof lines or dormers. Avoid installations that obstruct views of significant architectural features (such as overlaying windows or decorative detailing) or intrude on views of neighboring historic properties in an historic district.

Avoid solutions that would require or result in the removal or permanent alteration of historic fabric. Solar panel installations should be reversible. The use of solar roof tiles, laminates, glazing, and other technologies that require the removal of intact historic fabric or that permanently alter or damage such fabric must be avoided. Consider the type and condition of the existing building fabric for which solar panels installation is proposed, as well as the method of attachment and future removal. Minimizing the number of points of attachment, including the use of brackets, will avoid damaging historic fabric.

**Require low profiles.** Solar panels should be flush with – or mounted no higher than a few inches above – the existing roof surface. They should not be visible above the roofline of a primary façade.

**On flat roofs, set solar panels back from the edge**. Because they are generally hidden from view, flat roofs can provide an ideal surface for solar panel arrays. To ensure that a solar installation is minimally visible, set the solar panels back from the roof's edge and adjust the angle and height of the panels as necessary.

Avoid disjointed and multi-roof solutions. Solar panels should be set at angles consistent with the slope or pitch of the supporting roof. For example, avoid solutions that would set panels at a 70 degree angle when the roof pitch is 45 degrees. In addition, solar panels should be located on one roof plane (as opposed to scattered among several roofs) and arranged in a pattern that matches the general shape and configuration of the roof upon which they are mounted.

Ensure that solar panels, support structures, and conduits blend into the surrounding features of the historic resource. The overall visibility and reflectivity of solar panels and their support structures can be substantially reduced if elements of the solar installation match the surrounding building fabric in color.

Sustainable Community Development Code cooling.4 In addition to promoting a measurable reduction in energy usage, solar access provisions can also help ensure that While this chapter cites numerous examples of local governments adopting regulations to protect solar access opportunities, Design Manual, the City of San Jose, California found that proper solar orientation of new homes built in the San Jose area Homes that are pre-designed to accommodate solar devices, not only from a site planning standpoint, but from a plumbing, elevate and enhance solar access-related policies. A range of examples are provided to help illustrate how these strategies can be adapted to a variety of situations depending on the level of policy commitment, available staff resources and political Implement protective regulations to ensure that property owner investments in solar technologies are protected the conversion of homes from traditional energy sources to solar energy over time can be accomplished relatively easily. there is still much to be done. This section outlines specific strategies and actions to be taken by communities wishing to KOUAN ANOUN ANY AND ING INVERTER RMLU produced a total energy savings of eleven to sixteen percent-with up to forty percent savings generated from space Remove regulatory obstactes and streamline processes for the installation of solar technologies Provide incentives for the use of solar technologies in new construction and in the wining and structural standpoint can make future installations much easier and less costly. Preserve the opportunity for increased use of solar technologies in the future Promote an overall reduction in energy usage renovation of existing homes GOALS FOR SOLAR ACCESS The primary goals of this chapter are to: ALC: Y untestes Se all A 2 5 1 environment. 

# Site Design Strategies for Solar Access

### INTRODUCTION

A great deal of attention has been placed on the role of sustainable building design and construction techniques in recent years. Many communities have adopted standards that encourage or require compliance with programs such as the Leadership in Energy and Environmental Design (LEED) Green Building Rating Stating Statem.<sup>11</sup> The LEED system has become the nationally accepted benchmark for the design, construction and operation of high performance green building. The thorgarm encourages the use of products and techniques to promote sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.<sup>1</sup> Much less emphasis, however, has been placed on the role of site planning in a sustainable design program—and more specifically, on site design for solar access. The incorporation of bolh active and passive solar techniques are integral to any discussion of green building design, yet in order for either approach to be viable, the systems must have unobstructed solar access for a certain period of each day. Without careful consideration of solar access during the planning stages of new development, future opportunities for the installation of both active and passive features can be dramatically reduced or even eliminated altogether. In order to ensure that the sustainable features are considered in relation to the entire development site, not just what falls within the building envelope, planners and architects must take additional, concerted measures. A pilot program currently being development by the U.S. Green Building Council (USGBC) entitled LEED for Neighborhood Development or "LEED ND"; represents an important step towards broader consideration of solar access. For now, the application of these provisions is findled primarily to individual developers who choose to use them. Zoning regulations play a significant role in the firmined primarity to individual developers who choose to use them. Zoning regulations play a significant role in the firminematizion of solar access to use the row, and when they may be used. Many communities have recognized the importance of addinessing solar access within their zoning regulations and have taken steps to define the degree to which solar energy will be allowed, encouraged, or even required.

## IMPLICATIONS OF NOT ADDRESSING THE ISSUE

The implications of not establishing provisions for solar access at the local level are significant. At the most basic level, the opportunity for a community to reduce its energy consumption is diminished substantially. Without provisions in place to insune of a community to reduce its energy consumption is protected, solar technologies become more difficult and ostly to implement—and therefore, may be passed over by all but the most "green" developers and homeowners. Choosing not to establish solar access provisions may also prove costly to local governments because of increases in the staff time necessary to process variances and other requests.

Some utility companies are also increasingly, though tentatively, supportive of measures that encourage solar access for new and existing development. As they grapple with aging and overburdened power production facilities, utilities are faced with the prospect of having to construct costly new power plants and infrastructure to accommodate the ever increasing demand for power. This cost is in turn transferred to power consumers. Municipalities that choose to enact solar access provisions can, to a certain point, help insulate their constituents from such cost increases without derinmentally affecting utilities.

On the other hand, establishing solar access provisions can be beneficial at a variety of levels. At the site planning level, organizing new development to achieve proper solar orientation can improve the energy efficiency of buildings on the site at little or no additional cost. When combined with other sustainable building techniques, the benefits of requiring and/or protecting solar access can be dramatic. For example, placing a building is long face on an east-west axis with a large percentage of its windows on the south side can reduce fuel consumption by up to twenty-five percent.<sup>3</sup> In its Solar Access

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City of San Jose, California. Solar Access Design Manual

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<sup>&</sup>lt;sup>1</sup>U.S. Green Building Council, LEED Rating Systems. Available online. Last accessed online 10;30:06, <sup>2</sup>U.S. Green Building Council, LEED Rating Systems. <u>Available online</u>. Last accessed online 10;30:08, <sup>3</sup>Guide: Putting Renewable Energy to Work in Buildings. <u>Available online</u>. Last accessed online 10;30:08.

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RENEWABLE ENERGY

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VET STATISTICS:					
<ul> <li>Only about nine percent of electric</li> </ul>	ity in the U.S. is generated from rene	wable sources			1
<ul> <li>Most electricity in the U.S. is gene</li> </ul>	rated by burning nonrenewable tossil	fuels			
<ul> <li>Proper solar orientation of new ho</li> </ul>	mes built in the San Jose area product	ced total energy savings of elever	a to sixteen percent-with up to forty p	percent savings from space cooling	KWLUI
<ul> <li>Placing a building's long face on s</li> </ul>	n east-west axis with a large percents	age of windows on the south side	t can reduce fuel consumption by up to	o twenty-five percent	No. 1999 Acres 1999 Acres 1999
<ul> <li>Between 200,000 and 250,000 U.</li> </ul>	5. homes and businesses have solar	panets today, a number that has	increased by more than forty percent.	a year since Congress passed a federal tax credit for	r solar energy in 2005
SITE DESIGN STRATEGIES	FOR SOLAR ACCESS				
	ACHIEVEMENT LEVELS (Note:	higher levels generally incorpo	urate actions of lower levels)		
	Bronze (Good)	Silver (Better)	Gold (Best)	References/Commentary	Code Examples/Citations
Remove	<ul> <li>Identify provisions that limit solar accessors (e.g., accessory structure limits, historio district regulations to permit solar energy devices</li> <li>Prohibit solar restrictions in new private CC&amp;Rs in subdivision regulations</li> </ul>	<ul> <li>Allow modest adjustments to stide, front and/or rear vari destacts requirements (or other conflicting regulations) that allow applicants to meet solar access requirements</li> </ul>	<ul> <li>Override existing private covenants restricting solar devices</li> <li>Allow solar panels as a by-right accessory use except in special districts (e.g., historic districts)</li> </ul>	<ul> <li>In the last free years, advances in technology have resulted in photovoltaic systems that can be installed in some rostinem that can be installed in some rostinem that can be installed in some rosting systems to make them nearly invisible—providing an alternative to tradition panels in areas where aesthetics are of significant concern (e.g., historic districts). See US bepartment of Energy, Buidring America Best Practices for High-Performance Technologies: Solar Thermal &amp; Photovottaic Systems, Available online. Rethieved February 9, 2011.</li> <li>Rethieve enhanced energy efficiency by creating the optimum conditions for the use of passive and exciton entitled Green Construction &amp; Technology, <u>Available</u>.</li> </ul>	<ul> <li>City of Los Angeles, CA, Historic Preservation Overlay, <u>Available contine</u>. Retrieved February 8, 2011.</li> <li>City of Fort Collins, CO, Land Use Code, Solar Access, Orientation, and Shading. <u>Available online</u>. Retrieved February 8, 2011.</li> <li>City of Gresham, OR, Oregon Development Code, Solar Access Standards. <u>Available online</u>. Retrieved February 8, 2011.</li> <li>Multhomath County, OR, Solar Access Provisions for New Development. <u>Available online</u>. Retrieved February 8, 2011.</li> <li>Multhomath County, OR, Solar Access Provisions for New Development. <u>Available online</u>. Retrieved February 8, 2011.</li> <li>Development Available online. Retrieved February 8, 2011.</li> <li>City of Berkeley. CA, Title 23 (Zoning Ordinance) Section Berkeley. CA, 1760 23 (Zoning Ordinance) Section 23D.04: Lot and Development Standards. <u>Available online</u>. Retrieved February 8, 2011.</li> <li>Teiton County, W. Solar Access Flegulations. <u>Available</u> onlineRetrieved February 8, 2011.</li> </ul>

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	Code Examples/Citations	CO, Efficient Building Code. <u>Available</u> af February 8, 2011. IX, Development Code: Subchapter E: rds and Mixed-Use. <u>Available online</u> , uary 8, 2011. , WA, Development Code, Planned uelopment: Section 17:107 (incentives for <u>Available online</u> . Retrieved February 8,	lins, CO, Colorado Land Use Code, Solar Jany 8, 2011. Jany 8, 2011. , OR, Solar Access Regulations. <u>Available</u> d February 8, 2011. W, Solar Access Regulations. <u>Available</u> d February 8, 2011.
	•	<ul> <li>Eagle County, <u>online</u>. Retrieved City of Austin.</li> <li>City of Pullman Retrieved Febr Residential De solar access).</li> </ul>	<ul> <li>City of Fort Coll</li> <li>Access. Orienti</li> <li>Retrieved Febru</li> <li>City of Portland</li> <li>Oiline, Retrieve</li> <li>Teton County, V</li> </ul>
	References/Commentary	<ul> <li>Database of State Incentives for Efficiency and Renewables (DSIRE). Available confine. Retrieved February 8, 2011.</li> <li>City of Tucson, AZ, offers a fiered Solar Fee Incentive Waker for new construction and February 8, 2011.</li> <li>City of Oadam, CA expedited its solar enovation. <u>Available online</u>, Retheved February 8, 2011.</li> <li>City of Oadam, CA expedited its solar energy use through a 2001 initiative via waived design review requirements for installation of solar production facilities. The installation of solar production facilities on transvelation and part of the continuance.</li> </ul>	Online. Ketmeved February S, 2011. Stardsards Act. Available online. Retrieved Standsards Act. Available online. Retrieved February 8, 2011. U.S. Department of Energy, Building Anancia Best Practices for High- Performance Technologies: Solar Thermal & Photovoltaic Systems. Available online. Photovoltaic Systems. Available online. Retrieved February 8, 2011. Guide: Putting Renewable Energy to Work February 8, 2011.
-	Gold (Best)	<ul> <li>Allow applicants to "earn" additional density or height by incorporating solar concepts into a project's overall design</li> </ul>	<ul> <li>Require a minimum percentage of solar-oriented lots or buildings in new developments Require a minimum percentage of energy in new developments to come from solar</li> </ul>
	Silver (Better)	<ul> <li>Reduce building permit fees for projects that incorporate solar concepts in the overall design</li> <li>Provide staff assistance to homeowners to orient new homes for solar access</li> </ul>	<ul> <li>Require variation in width of lots to maximize solar access an optional or required standard in residential and commercial design guidelines</li> <li>Establish are dispute resolution process and oriteria whereby property owners can resolve issues regarding the obstruction of solar access to a property by a tree or trees on a neighboring property</li> </ul>
	Bronze (Good)	<ul> <li>Reduce or eliminate permit fees for the installation of solar devices on an existing structure</li> </ul>	<ul> <li>Require key features of a development plan to have access to sunshine</li> <li>Enact regulations to preserve solar access</li> </ul>
LAN		Incentives	Standards

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### **RENEWABLE ENERGY**

	Ŕ	onze (Good)	Silver (Better)	Gold (Best)	References/Commentary	Code Examples/Citations	-,
Enact	sp	-	<ul> <li>Require buildings to be solar ready. Key</li> </ul>		U.S. Green Building Council, LEED for Neighborhood Rating System (See Green	<ul> <li>City of Ashland, OR, Municipal Code. <u>Available online</u>. Retrieved February 8, 2011.</li> </ul>	•
			considerations for solar readiness include: orientation for solar		Construction and Technology chapter). <u>Available online</u> . Retrieved February 8, 2011	<ul> <li>City of San Francisco, CA, Tree Dispute Resolution Ordinance. <u>Available online</u>. Retrieved February 8, 2011.</li> </ul>	
			exposure, whing, exposure, whing, plumbing, and roof structures one-designed to		1107	<ul> <li>City of Berkley, CA, Title 23 (Zoning Ordinance) Section 23D.04: Lot and Development Standards. <u>Available online</u>. Retrieved February 8, 2011.</li> </ul>	
			handle solar collectors			<ul> <li>City of Boulder, CO, Solar Access Regulations. <u>Available</u> online. Retrieved February 8, 2011.</li> </ul>	
						<ul> <li>City of San Luis Obispo, CA. Municipal Code: Section 16.18.170, Easements for Solar Access. <u>Available online</u>. Retrieved February 8, 2011.</li> </ul>	
						<ul> <li>Village of Prarie du Sac, WI, Land Use Regulations, Chapter 8: Solar Access. <u>Available online</u>. Retrieved February 8, 2011.</li> </ul>	
						<ul> <li>Clackamas County, OR, Zoning and Development Ordinance, Solar Access Ordinance for New Development. Available online. Retrieved February 8, 2011.</li> </ul>	

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Grosse Pointe Shores Planning Commission Proposed Ordinance Amendment Solar Panels – Green Ordinance April 20, 2011

### Sec. 40-264. Solar Panels and Shingles (or the like).

The use of solar panels and shingles (or the like) for private use shall be subject to special land use approval and the following requirements:

- (1) Freestanding
  - (a) Freestanding solar panels shall not be located in the front or side yard;
  - (b) All freestanding solar panels shall be regulated as an accessory structure and shall meet all applicable accessory building requirements of the ordinance:
  - (c) Solar panels shall be counted as part of the maximum permitted impervious surface/lot coverage ratio requirements of the zoning district in which it is located:
  - (d) No freestanding solar panel shall be permitted to exceed a height of fifteen (15) feet at any point;
- (2) Roof or Structural Mounted
  - (a) Shall not project more than one (1) foot feet above the roof line (Does the Commission want panels to extend above the maximum permitted height of the district?), flat mount panels or solar shingles are preferred:
  - (b) May be constructed on any façade or roof surface of an existing structure. (Does the Commission want to regulate the visibility of roof mounted panels/shingles: this may not provide optimal positioning of the panels).
  - (c) Shall not be located within three (3) feet of any peek, eave or valley to maintain adequate accessibility.
- (3) Requirements for All Panels (Freestanding or Roof Mounted/Integrated)
  - (a) In addition to building and electrical reviews, the solar panels, solar shingles and arrays of panels shall also be reviewed by the Fire Department.
  - (b) The panel array shall be fitted with an automatic shut off or breaker switch as approved by the Fire Department to isolate the panels in case of fire.
  - (c) The Fire Department shall keep on file the type of system that the solar panel array is a part of, either photovoltaic, thermal or other.
  - (d) All panels shall have tempered, non-reflective surfaces.
  - (e) It shall be shown that all panels are adequately secured to the surface upon which they are mounted and that the mounting structure has the capability of supporting
  - the panels.
     (f) The installation of the panels shall not require or be reliant on the clear cutting of trees or other vegetation.
  - (g) All solar panels shall be subject to Planning Commission review and special land use approval. (Does the Commission want solar panels to come before them and City Council and have a public hearing?)



### CARLISLE/WORTMAN ASSOCIATES, INC.

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December 14, 2010

Mr. Elizabeth Koto, AICP City Planner City of St. Clair Shores 27600 Jefferson Circle Drive St. Clair Shores, MI 48081

Re: Renewable Energy and Alternative Fuel Vehicle Zoning Ordinance Amendments

Dear Ms. Koto;

The following series of amendments are designed to create a set of regulations for renewable energy structures and alternative fuel vehicle parking and charging station. They include a series of amendments to Articles II and XIX.

### ARTICLE II

(Amend Section 15.022, inserting new subsections identified below)

### **15.022 DEFINITIONS**

(73.5) PARKING SPACE, ALTERNATIVE FUEL VEHICLE: A parking space specifically set aside for the parking of hybrid or alternative fuel vehicles. Such spaces may or may not be provided with electric automobile recharging equipment.

(80.50) SOLAR ACCESS EASEMENT: A right, expressed as an easement, covenant, condition or other property interest in any deed or other instrument executed by or on behalf of any landowner, which protects the solar skyspace of an actual, proposed or designated solar energy collector at a described location by forbidding or limiting activities, land uses, structures and/or trees that interfere with access to solar energy. The solar skyspace must be described as the three (3) dimensional space in which obstruction is prohibited or limited. Any property owner may give or sell his right to access to sunlight. Such Solar Access Easements shall be recorded and copies shall be kept on file with the St. Clair Shores Community Development Department.

(80.51) SOLAR COLLECTOR: A device or combination of devices, structures, or parts thereof, that collects, transfers or transforms direct solar, radiant energy into thermal, chemical, or electrical energy, and that contributes significantly to a structure's energy supply. In addition to such functions, solar collectors may also serve as a part of a structure's roof, wall, window or

other structural member.

(80.52) SOLAR ENERGY: Radiant energy (direct, diffuse, and reflected) received from the sun.

(80.53) SOLAR ENERGY STRUCTURE, ACTIVE: A structure which utilizes mechanicallyoperated solar collectors to shift positions to optimize its ability to collect, transfer or store solar energy.

(80.54) SOLAR ENERGY STRUCTURE, PASSIVE: A structure which collects, transfers or stores solar energy, but is static.

(80.55) SOLAR SKYSPACE: The space between a solar energy collector and the sun which must be free of obstructions that shade the collector to an extent which precludes its cost-effective operation.

(84.5) TEMPORARY METEOROLOGICAL TOWERS (TMT): A tower of monopole design which is designed and built to hold wind resource testing devices such as anemometers, wind vanes and accessory equipment and which is to remain in place for no more than eighteen (18) months.

(89.5) WIND ENERGY CONVERSION SYSTEM (WECS): Any device such as a turbine, windmill or charger that converts wind energy to a usable form of energy. WECS shall fall within two (2) classifications: on-site or commercial, and shall typically be defined as horizontal-axis or vertical-axis.

- A. ON-SITE WIND ENERGY CONVERSION: A WECS, the energy from which is used only by the primary residence or residences in a cooperative effort, business or agricultural operation and not sold or transferred to the electrical grid for commercial profit. This does not exclude the sale of excess energy sold to a utility through net metering for on-site WECS when the WECS produces more energy than can be stored or used on-site.
- B. COMMERCIAL WIND ENERGY CONVERSION SYSTEM: Any WECS that is exclusively designed and built to provide electricity to the electric utility's power grid as an ongoing commercial enterprise or for commercial profit.
- C. HORIZONTAL-AXIS WIND ENERGY CONVERSION SYSTEMS: Conventionally designed systems that have a main rotor shaft that is parallel to the ground and a series of "blades" that are perpendicular to the ground, as in a traditional agricultural windmill. Horizontal-axis wind energy conversion systems are traditionally mounted on a tower or pole and must be pointed into the wind.
- D. VERTICAL-AXIS WIND ENERGY CONVERSION SYSTEMS: Systems that have a main rotor shaft that is perpendicular to the ground and the system does not need to be pointed into the wind. These systems are more common in areas where wind direction is

variable. These systems often resemble a drum, cylinder, or helix.

### ARTICLE XIX

### (Amend Sections 15.499 and 15.500, inserting the new subsections identified below)

### 15.499 ACCESSORY BUILDINGS/STRUCTURES

(15) Accessory buildings/structures may be provided with 110 volt electrical service. Voltage in excess of 110 volts shall be prohibited, with the exception of service specifically dedicated for electric automobile recharging equipment.

### 15.500 OFF STREET PARKING REQUIREMENTS

(14) Alternative fuel vehicle parking spaces shall satisfy the requirements for two conventional parking spaces. Alternative fuel vehicle parking spaces may be provided with the following conditions:

- (a) Alternative fuel vehicle parking spaces shall be given priority with regard to location adjacent to the primary entrance of the building for which they are intended, exclusive of barrier-free spaces provided to meet Americans with Disabilities Act requirements.
- (b) Alternative fuel vehicle parking spaces may be provided at a maximum rate of one space for every 20 provided conventional spaces (or 21 required spaces, given the permitted reduction of required spaces granted by the inclusion of the Alternative fuel vehicle parking space).
- (c) Alternative fuel vehicle parking spaces must be provided with unique identification similar to that provided for barrier-free spaces provided to meet Americans with Disabilities Act requirements, but with distinct color striping and signage to indicate that the space is exclusively reserved for use of hybrid and alternative fuel vehicles. The Community Development Department shall maintain standards for striping, signage, and other conditions relating to alternative fuel vehicle parking spaces. Such standards shall be made available to the public.
- (d) Alternative fuel vehicle parking spaces may or may not have electric automobile charging equipment, but all spaces provided with electric automobile charging equipment shall be designated an alternative fuel vehicle parking spaces, and shall be subject to the provisions of this Section, including priority location.
- (e) Electric automobile charging equipment may be permitted in residential districts. When provided in residential districts, the presence of electric automobile charging equipment shall not mandate the designation of the parking space served

> as an alternative fuel vehicle parking space. All electric automobile charging equipment must be located within an enclosed garage or within a side or rear yard if ground mounted or mounted on a structure.

(f) Electric automobile charging equipment, when provided, shall be permitted in all Districts, provided the owner and operator of the equipment, and owner of the land on which the equipment is located are each responsible for ensuring that the installation, operation, use and removal of the equipment complies with all applicable state, federal and local laws, ordinances and regulations, and shall submit proof of such compliance to the City upon request. Further, such operator and owner shall each defend, indemnify and hold harmless the City from and against any and all loss, liability, cost or expense incurred by the City as a result of any failure or malfunction of the equipment to comply with applicable laws, ordinances or regulations.

### (Insert new Sections 15.511, 15.512, 15.513)

### **15.511 WIND ENERGY CONVERSION SYSTEMS**

- A. Intent. It is the intent of the City to permit the effective and efficient use of Wind Energy Conversion Systems (WECS) by regulating the siting, design, and installation of such systems to protect the public health, safety, and welfare, and to ensure compatibility of land uses in the vicinity of WECS. This Ordinance does not establish or guarantee air or light or wind rights or establish access to the air, light, or wind.
- B. Applicability. It shall be unlawful to construct, erect, install, alter, or locate any WECS or Temporary Meteorological Tower (TMT) within the City except in compliance with the section. A building permit is required for any WECS or TMT pursuant to this Section.
- C. On-Site WECS Permitted. On-site WECS or TMT shall be considered a permitted use in all zoning districts, subject to the provisions of this Section. Applications for an on-site WECS shall include the following:
  - 1. Applicant Information. Name, address and contact information.
  - 2. Project Description. A general description of the proposed project as well as a legal description (property identification number) of the property on which the project would be located.
  - 3. Plot Plan and Documentation. The Plot Plan shall include maps showing the physical features and land uses of the project area, both before and after construction of the proposed project. The plot plan shall include:
    - a. The project area boundaries.

- b. The location, height and dimensions of all existing and proposed structures and fencing.
- c. Distance of proposed structure from all property lines and permanent structures.
- d. The location, grades and dimensions of all temporary and permanent onsite access roads.
- e. Existing topography.
- f. Water bodies, waterways, wetlands, and drainage ditches (county drains).
- g. All new above ground infrastructure related to the project.
- h. The location of all overhead utility wires.
- 4. Additional Documentation.
  - a. Insurance, Proof of the applicant's appropriate liability insurance.
  - b. Sound Pressure Level. Documentation of the manufacturers designed sound pressure levels (decibels) for unit to be installed.
  - c. Certifications. Certification that applicant has complied or will comply with all applicable state and federal laws and regulations.
  - d. Grant of Authority. The applicant shall provide evidence of ownership of the land which the WECS or Temporary Meteorological Tower is to be located and the written consent of the land owner if different from the applicant. If the applicant is leasing land the applicant shall provide a copy of the lease agreement and the land owner's written authorization for the applicant to construct the structure.
  - e. Compliance with Laws and Regulations. The applicant, operator of the WECS or TMT, and owner of the land on which the WECS or TMT is located are each responsible for ensuring that the installation, operation, use and removal of the WECS or TMT complies with all applicable state, federal and local laws, ordinances and regulations, and shall submit proof of such compliance to the City upon request. Further, such applicant, operator and owner and shall each defend, indemnify and hold harmless the City from and against any and all loss, liability, cost or expense incurred by the City as a result of any failure of the WECS or TMT to comply with applicable laws, ordinances or regulations.

- D. Commercial WECS permitted. Commercial WECS and TMT shall be considered a special land use in all zoning districts and shall subject to the provisions of this Section and Article 9. Applications for a commercial WECS or TMT shall require a complete special land use permit application in accordance with Section 15.510, including a complete site plan in accordance with Section 15.509.
- E. Standards and Requirements. All On-site WECS, Commercial WECS and Temporary Meteorological Towers shall meet the following additional standards and requirements:
  - 1. Setbacks.
    - a. The distance between a WECS or TMT and the nearest property line shall be at least the 1 times the height of the WECS or TMT for all zoning districts. This shall include property lines that abut a public right-of-way.
    - b. No part of the WECS or TMT structure, including guy wire anchors, may extend closer than ten (10) feet to the owner's property line.
    - c. The distance between an On-site WECS and any other On-site or Commercial WECS shall be at least 0.5 times the height of the taller of the two On-site WECS. The distance between a Commercial WECS and any other Commercial WECS shall be at least 3 times the height of the taller of the two WECS.
  - 2. Height.
    - a. The height of on-site WECS and TMTs shall be as follows:
      - 1. In the following Districts, on-site WECS and TMTs shall not exceed 30 feet in height:
        - a. R-A One-Family General Residential District
        - b. RA-L One-Family Lakefront District
        - c. R-B Two-Family Residential District
        - d. RM-1 Multiple-Family Residential District (Low Rise)
        - e. RM-2 Multiple-Family Residential District (High Rise)
      - 2. In the following Districts, on-site WECS and TMTs shall not exceed 40 feet in height:

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- a. O-1 Office-Service District
- b. CR Commercial Recreation
- c. B-1 Local Business District
- d. B-2 Planned Community Business District
- e. B-3 General Business District
- f. CLD Central Lakefront Development District

- g. P-1 Vehicular Parking District
- 3. In the following Districts, on-site WECS and TMTs shall not exceed 65 feet in height:
  - a. LI Light Industrial District
  - b. R-F Residential Facilities District
- b. Commercial WECS and TMT shall not have a height limitation, provided all other requirements of this Section have been met.
- c. Height shall be measured from the existing grade to the hub of the turbine blade for a horizontal axis turbine, and to the highest point of a vertical axis turbine.
- d. Height for on-site WECS mounted to a structure shall be measured from grade to the hub of the turbine blade for a horizontal axis turbine, and to the highest point of a vertical axis turbine.
- e. The applicant shall demonstrate compliance with all FAA regulations and the Michigan Tall Structures Act as part of the approval process, if applicable.
- 3. Noise; Sound Pressure Level.
  - a. Audible noise or the sound pressure level of an On-site WECS or Commercial WECS shall not exceed fifty-five (55) dB(A) (A-weighted Decibels) at the property line closest to the WECS. For Commercial WECS, modeling and analysis of sound pressure shall be required in accordance with Section 15.511.E.5.11.04.G.8 below.
  - b. This sound pressure level shall not be exceeded by more than five (5) dB(A) for more than three minutes in any hour of the day.
- 4. Lighting.
  - a. No WECS or TMT shall be artificially lighted, except any lighting required for structures regulated by Federal Aviation Administration requirements, the Michigan Airport Zoning Act (PA 23 of 1950), The Michigan Tall Structures Act (PA 259 of 1959), or any other applicable State or Federal laws or regulations.
- 5. Construction codes, towers, and interconnection standards.
  - a. Every WECS and TMT shall comply with all applicable State construction codes and local building permit requirements.

- b. Every WECS and TMT shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (PA 23 of 1950), The Michigan Tall Structures Act (PA 259 of 1959), and any other applicable State or Federal laws or regulations.
- c. An On-site WECS or Commercial WECS that is tied to the electrical grid shall comply with Michigan Public Service Commission and utility interconnection requirements. Off-grid WECS are exempt from this requirement.
- 6. Safety.
  - a. Design Safety Certification. The safety of the design of every WECS or TMT shall be certified by the applicant's professional engineer registered in the State of Michigan and reviewed by the City. The standard for certification shall be included with the permit application. If WECS or TMT construction is approved, the professional engineer shall certify that the construction and installation of the WECS or TMT meets or exceeds the manufacturer's construction and installation standards, and any applicable State and Federal laws and regulations prior to operation.
  - b. Controls and Brakes. Every WECS or TMT shall be equipped with manual and automatic controls to limit rotation of blades to a speed not to exceed the designed limits of the WECS or TMT. The applicant's professional engineer must certify that the rotor and overspeed control design and fabrication conform to applicable design standards. No changes or alterations from certified design shall be permitted unless accompanied by a professional engineer's statement of certification approved by the City.
  - c. Lightning. Every Commercial WECS or TMT shall have lightning protection.
  - d. Guy Wires. If an On-site WECS or TMT is supported by guy wires, the wires shall be clearly visible to a height of a least six (6) feet above the guy wire anchors. Every Commercial WECS must be of a freestanding monopole design and guy wires shall not be used.
  - e. Grade Clearance. The minimum vertical blade tip clearance from grade shall be twenty (20) feet for any horizontal-axis WECS or from any moving component of a vertical-axis wind energy conversion system.
  - f. Electromagnetic Interference. No WECS or TMT shall be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other

> personal communication systems or emergency broadcast systems would produce electromagnetic interference with signal transmission or reception unless the applicant provides a replacement signal to the affected party that will restore reception to at least the level present before operation of the wind energy system. No WECS or TMT shall be installed in any location within the line of sight of an existing microwave communications link where operation of the wind energy system is likely to produce electromagnetic interference in the link's operation unless the interference is insignificant.

- g. Color. Towers and blades shall be painted a non-reflective neutral color designated on the application and approved by the City or as otherwise required by law.
- h. Climb Prevention. Every WECS or TMT must be protected by anticlimbing devices twelve (12) feet from base of pole.
- F. Removal of Abandoned On-Site WECS or TMT. In the event an On-Site WECS or TMT is abandoned or unused for a period of one hundred and eighty (180) days, or if a WECS or TMT is damaged, the owner of the tower or the land shall promptly remove the tower and all related equipment. Failure to remove the tower and related equipment in accordance with the foregoing shall subject the tower owner and land owner to fines established by the City Council. In addition, by accepting a permit for the On-Site WECS or TMT, the applicant and land owner agree that in the event the tower and equipment is not removed as required, after thirty (30) days notice from the City, the City may undertake such removal and bill the costs to the applicant and land owner plus an administrative fee of fifteen percent (15%) which if not paid within thirty (30) days shall be assessed against the land on which the tower and equipment is located and collected in the same manner as delinquent taxes.
- G. Additional Requirements for Commercial WECS. The following standards and requirements shall apply to every Commercial WECS:
  - Warnings. A visible warning sign of High Voltage shall be placed at the base of every Commercial WECS. The sign must have at least six (6") inch letters with ¼-inch stroke. Such signs shall be located a maximum of three hundred (300) feet apart and at all points of site ingress and egress.
  - 2. Signage. In addition to warning signs and signs required by law, every Commercial WECS shall be equipped with a sign containing owner identification and contact information. No other signs or advertising are permitted.
  - 3. Liability Insurance. The owner or operator of a Commercial WECS shall maintain a current commercial liability and property damage insurance policy with coverage limits acceptable to the City pertaining to installation and operation of the Commercial WECS. The amount and terms of the policy shall be

> established as a condition of conditional use permit approval. The City and land owner shall be named as additional insured. Certificates of insurance shall be provided to the City annually.

4. Security. The application shall include a description of security to be posted at the time of receiving a building permit for the WECS to ensure removal of the WECS when it has been abandoned or is no longer needed, as provided in subsection 10 below. The security shall be the form of: (i) cash; (ii) letter of credit; or, (iii) an escrow agreement, in an amount approved by the City engineer and in a form approved by the City Attorney providing for timely removal of the Commercial WECS as required under this Section, and payment of any costs and attorney fees incurred by the City in connection with such removal.

5. Visual Appearance; Powerlines. The design of the WECS buildings and related structures shall, to the extent reasonably possible, use materials, colors, textures, screening and landscaping that will blend WECS components with the natural setting and existing environment. The electrical collection system shall be placed underground within the interior of each parcel at a depth designed to accommodate any existing land use to the maximum extent practicable. The collection system may be place overhead adjacent to public roadways, at points of interconnection to the electric grid or in other areas as necessary.

- 6. Threatened and Endangered Species. The applicant shall submit an endangered and threatened species survey conducted by a qualified professional, such as an ecologist or zoologist, describing the potential impact of the WECS on any species listed as threatened or endangered by the federal government or the state of Michigan, including but not limited to migratory birds or bats. Permits shall not be issued unless the study determines that there shall be no negative effect on such species. Alternatively, the applicant may submit an endangered species permit from the State of Michigan to fulfill this requirement.
- 7. Annual Inspection; Maintenance. The WECS and surrounding area shall be maintained in accordance with industry standards including painting and landscaping. Every Commercial WECS must be inspected annually by an authorized factory representative or professional engineer to certify that the WECS is in good working condition and is not a hazard to persons or property. Certification records shall be submitted annually to the City.
- 8. Sound Pressure Level. As part of the application and prior to installation of any Commercial WECS, the applicant shall provide modeling and analysis to the City that will confirm that the Commercial WECS will not exceed the maximum permitted sound pressure levels. Modeling and analysis shall conform to IEC (International Electrotechnical Commission) 61400, which establishes structural and performance safety provisions for wind energy conversion systems, and ISO (International Organization for Standardization) 9613, which describes a method for calculating the attenuation of sound during propagation outdoors in order to

> predict the levels of environmental noise at a distance from a variety of sources. After installation of the Commercial WECS, sound pressure level measurements shall be done by a third party, qualified professional according to the procedures in the most current version of ANSI S12.18, which provides an alternative method of measurement of sound pressure levels in the outdoor environment, considering the effects of the ground, the effects of refraction due to wind and temperature gradients, and the effects due to turbulence. All sound pressure levels shall be measured with a sound meter that meets or exceeds the most current version of ANSI S1.4 specifications for a Type II sound meter. Documentation of the sound pressure level measurements shall be provided to the local government within sixty (60) days of the operation of the project.

- 9. Shadow Flicker. The applicant shall conduct a four-season analysis of potential shadow flicker. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify all areas where shadow flicker may affect occupants or users of the structures or properties. The analysis shall describe measures that will be taken to eliminate or mitigate adverse effects.
- 10. Removal. A Commercial WECS shall be removed by the owner of the WECS or land when the Commercial WECS has been abandoned or unused for one hundred and eighty (180) days ("Non-Use Period"). For purposes of this section, the damage, destruction or removal of any part of WECS equipment, or the cessation of operations shall be considered as the beginning of a Non-Use Period. The WECS owner or applicant shall notify the City of the beginning of any Non-Use Period or any removal of equipment. The end of the Non-Use Period may be sooner than one hundred eighty (180) days after commencement if the WECS or any portion of the facility becomes a nuisance or is dangerous to the public health, safety and welfare.
  - a. At the end of the Non-Use Period, the owner of the WECS or the land shall immediately apply for and obtain any applicable demolition or removal permit, and shall immediately proceed with and complete the demolition and removal of the WECS and restoration of the land to the condition existing prior to installation, to the extent reasonably feasible.
  - b. If the required demolition, removal and restoration of the WECS has not been lawfully completed within sixty (60) days after the end of the Non-Use Period, then after fifteen (15) days prior written notice to the land owner and the WECS owner, the City may remove or secure the removal of the WECS and related equipment and the City's costs, expenses, attorneys fees and consultants fees, plus a fifteen percent (15%) administrative charge may be drawn and collected from the security described in (4) above, and any costs and fees in excess of the amount of the security shall constitute a lien on the land on which the WECS is

located and may be collected in the same manner as delinquent taxes.

### 15.512 SOLAR STRUCTURES

- A. Permitted. Active and passive solar energy devices, systems or structures shall be permitted in all zoning classifications by right, subject to administrative approval, except when such solar devices or architectural features project into required front or side yards, or are free-standing elements in a required front or side yard. When a proposed solar energy device is located within a required yard it shall be subject to the review and approval of the Planning Commission in accordance with the site plan review requirements of Section 15.509.
- B. Maximum Height of Structures. Passive solar energy structures, such as flat plate collectors, photovoltaic cells, etc., which are roof-mounted or integrated otherwise into the roof structure shall not be included in the calculation of maximum height. Active solar energy structures, when mounted on either freestanding structural elements or integrated architecturally with a principal or accessory building shall not exceed a height of forty (40) feet.
- C. Lot Coverage. Solar energy structures, regardless of type, when abutting the principal or any accessory structure, or freestanding, shall not be counted in the determination of maximum allowable lot coverage.
- D. Greenhouses. Solar greenhouses and similar heat traps, when designed to be habitable spaces integrated into the primary structure, shall be included in the calculation of lot coverage at one-third (1/3) of their actual square foot area provided that not more than twenty (20) percent of their thermal mass, or transferring medium, is obscured from the radiant energy of the sun by other architectural elements. Such obscuration being calculated at a solar declination of twenty-two (22) degrees, due south.

### **15.513 SOLAR EASEMENTS**

- A. **Permitted**. A landowner may enter into an easement, covenant, condition or other property interest in any deed or other instrument, to protect the solar skyspace of an actual, proposed or designated solar energy structure at a described location by forbidding or limiting activities, land uses, structures and/or trees that interfere with access to solar energy. The solar skyspace must be described as the three (3) dimensional space in which obstruction is prohibited or limited. Any property owner may give or sell his right to access to sunlight. Such Solar Access Easements shall be recorded and copies shall be kept on file with the Macomb County Register of Deeds and the city of St. Clair Shores.
- B. **Process**. A typical form of Solar Access Easement Agreement will be available in the St. Clair Shores Community Development Department, although alternate forms
City of St. Clair Shores DRAFT Renewable Energy and Alternative Fuel Vehicle Zoning Ordinance Amendments December 14, 2010

accomplishing the same purpose may be acceptable. These Agreements shall be entered into by and between private parties. All Solar Access Easement Agreements are to be accompanied by a Plot Plan, prepared by a registered Civil Engineer or Land Surveyor, indicating all structures, trees or other vertical elements by type and height elevation.

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### STATE OF MICHIGAN

### COUNTY OF OAKLAND

### CITY OF NOVI

### ORDINANCE NO. 18.240

### AN ORDINANCE TO AMEND ORDINANCE NO. 97-18, AS AMENDED, THE CITY OF NOVI ZONING ORDINANCE, ARTICLE 25, GENERAL PROVISIONS. SECTION 2520, EXTERIOR BUILDING WALL FACADE MATERIALS AND SECTION 2503, ACCESSORY USES; IN ORDER TO PROVIDE STANDARDS FOR THE USE OF SOLAR COLLECTORS.

### THE CITY OF NOVI ORDAINS:

**Part I.** That Ordinance No. 97-18, the City of Novi Zoning Ordinance, as amended, Article 25, General Provisions, Section 2520, Exterior Building Wall Façade Materials and Section 2503, Accessory Uses are hereby amended to read as follows:

### Article 25, General Provisions

### Sec. 2520. Exterior Building Wall Façade Materials.

- 1. 13. [unchanged]
- 14. Sustainability in design. Promoting sustainability in design is encouraged at the applicant's discretion and façade materials that meet the intent of the LEED (Leadership in Energy and Environmental Design) standards may be utilized. The proposed façade composition must still meet the aesthetic standards set forth by this ordinance and undefined materials will be considered on a case by case basis. Solar structures shall be a permitted use in all districts and not subject to the requirements of Section 2520.

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### Sec. 2503. Accessory Uses.

- 1. [unchanged]
- 2. Accessory Structures.
  - A. F. G.

### [unchanged.]

Solar collectors shall be defined as a device or combination of devices, structures, or parts thereof, that collect, transfer or transform director solar, radiant energy into thermal, chemical or electrical energy and that contribute significantly to a structure's energy supply.

- (1) Freestanding solar collectors shall be defined as solar collectors not attached to and separate from any existing structures on the site. Freestanding solar collectors shall be considered an accessory building and shall be subject to the requirements for such, together with all other applicable building codes and ordinances.
- Structurally attached solar collectors shall be defined (2)as solar collectors attached to an existing structure's roof or wall or serving as a structures roof, wall, window or other structural member. Structurally attached solar collectors shall be a permitted accessory use in all districts and subject to administrative review and approval. Structurally attached solar collectors shall not be subject to the, provisions of Section 2503.2.A and shall not be included in the height requirements listed in Section 2400. Structurally attached solar collectors installed on a building with a sloped roof shall not project vertically above the peak of the roof. Structurally attached solar collectors installed on a building with a flat roof shall not project vertically more than 5 feet above the roof.

### PART II.

<u>Severability</u>. Should any section, subdivision, clause, or phrase of this Ordinance be declared by the courts to be invalid, the validity of the Ordinance as a whole, or in part, shall not be affected other than the part invalidated.

### PART III.

Savings Clause. The amendment of the Novi Code of Ordinances set forth in this Ordinance does not affect or impair any act done, offense committed, or right accruing, accrued, or acquired or liability, penalty, forfeiture or punishment, pending or incurred prior to the amendment of the Novi Code of Ordinances set forth in this Ordinance.

### PART IV.

<u>Repealer</u>. All other Ordinance or parts of Ordinance in conflict herewith are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

### PART V.

Effective Date: Publication. Public hearing having been held hereon pursuant to the provisions of Section 103 of Act 110 of the Public Acts of 2006, as amended, the provisions of this Ordinance shall be published within fifteen (15) days of its adoption by publication of a brief notice in a newspaper circulated in the City of Novi stating the date of enactment and effective date, a brief statement as to its regulatory effect and that a complete copy of the Ordinance is available for public purchase; use and inspection at the office of the City Clerk during the hours of 8:00 A.M. to 5:00 P.M., Local Time. The provisions of this Ordinance shall become effective seven (7) days after its publication.

Made, Passed and Adopted by the Novi City Council this 3<sup>rd</sup> day of May, 2010.

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órnelius, City

### Certificate of Adoption

I hereby certify that the foregoing is a true and complete copy of the ordinance adopted at the regular meeting of the Novi City Council held on the 3rd day of May, 2010.

Maryanne Cornelius, City Clerk

05/03/2010 Adopted: 05/13/2010 Published: 05/10/2010 Effective:

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.2 1.

### CERTIFICATE OF CLERK

I hereby certify that the foregoing ordinance was published by posting a copy at the following time and place within the City of Novi, on the 4<sup>th</sup> day of May, 2010.

Novi City Hall 1.

45175 W. Ten Mile Road

I do further certify that on the 13<sup>th</sup> day of May, 2010 said Zoning Text Amendment 18.240 was published in brief in the Novi News, a newspaper published and circulated in said City.

Maryanne Coffielius, City Clerk

### Essential Services Standards (ES)



### 4.09 ES-01

This Essential Services Standards section applies to the following districts:

PP RIA RI RZ R3 R4 R5 R6 R7 R8 01 02 P 61 62 628 620 63 (2/ ())

The following essential services standard applies:

- A. Essential Services: Essential services shall be permitted as authorized and regulated by law and other ordinances of the city and are exempt from the application of the Zoning Ordinance.
- B. Roof-Mounted Solar Electric Systems:
  - Roof-mounted solar panels are permitted on buildings and structures in all zoning districts and may include integrated solar panels as the surface layer of the roof structure with no additional apparent change in relief or projection, or separate flush mounted solar panels attached to the roof;
  - Separate, non-integrated flush-mounted solar panels shall be located on a rear- or side-facing roof, which do not front any street, unless such installation is proven to be ineffective or impractical. If installation is not practical on a rear- or side-facing roof, any other placement in all zoning districts shall be subject to a Design Review by either the Planning Board (non-historic properties) or the Historic District Commission (historic properties);
  - 3. Separate flush-mounted solar panels installed on a building or structure with a sloped roof surface shall not project vertically above the peak of the roof to which it is attached, or project vertically more than five (5) feet above a flat roof installation; and
  - 4. No solar panels shall ever project higher than the permitted building height in any zoning district.

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Definitions

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Zoning Districts

### 42-4.35 FULLY ENCLOSED INDUSTRIAL **OPERATIONS**

Such uses involving the manufacturing, processing, assembling or packaging of finished or semifinished products from previously prepared material are subject to the following conditions:

1. Industrial developments shall be permitted only as part of a "planned industrial park," consisting of at least fifteen (15) acres and being platted and developed in at least five (5) individual sites having an internal service road system with the following setback considered as minimum:

Yard	Minimum Setback (in feet)
Front or Side yard (abutting internal street or major thoroughfare)	40 (See Section 3.6.2.K)
Side Yard (internal between buildings)	Equal to building height (See Section 3.6.2.K)
Rear Yard (external abutting residence)	50 (See Section 3.6.2.L)

- 2. The industrial operation shall not include any stamping or grinding in the preparation of the product unless it is incidental to the primary use.
- 3. The processing of material for shipment in bulk form, to be used in an industrial operation at another location, shall not be permitted.
- 4. Open storage shall not be permitted.
- 5. A twenty (20) foot greenbelt shall be provided on those sides of the property abutting land zoned for residential use and shall be set aside as a dedicated easement for greenbelt purposes. The greenbelt shall be reviewed and approved by the Planning Commission in conformity with the requirements of Section 42-5.6.
- 6. Accessory structures and uses customarily incidental to the above permitted uses may be permitted.

### 42-4.36 WAREHOUSING, MANUFACTURING, COMPOUNDING, AND REPAIR USES

Such uses are subject to the following:

1. Uses shall be conducted wholly within a completely enclosed building, or within a



designated area enclosed on all sides with a six (6) foot fence or solid wall. Said wall or fence shall be completely obscuring on those sides where abutting or adjacent to districts zoned for residential, business or research park uses.

2. For auto repair centers, all motor vehicles repaired and waiting to be repaired shall be stored in a building or obscured from view with a six (6) foot obscuring masonry wall. The open storage of junk or auto parts shall be prohibited.

### 42-4.37 WINDENERGY SYSTEMS<sup>™</sup>

- 1. In the R-1, R-2 and R-3 Districts, such uses are subject to the following:
  - A. One residential wind energy system shall be permitted for the primary purpose of serving the residential lot.
  - B. The commercial sale of surplus energy is prohibited.
  - C. The minimum site area for a residential wind energy system shall be five (5) acres.
  - D. The maximum residential wind energy system shall be the minimum height necessary or reasonable to serve its intended function or no more than one hundred (100) feet, whichever is less.
  - E. A residential wind energy system shall be set back from any property line a minimum distance equal of six (6) times the height of the wind energy system.
  - F. A residential wind energy system shall comply with all of the conditions as set forth in Section 42-4.37.2 as applicable, unless otherwise noted in this Section.
- 2. In the ML District, such uses are subject to the following:
  - A. There shall be a limitation of one (1) residential wind energy system, intended to primarily serve the needs of the site, unless otherwise provided.
  - B. Sufficient wind resources. The proposed site shall have documented annual wind resources sufficient for the operation of the proposed wind energy system provided, however, this standard shall not apply to an anemometer tower. No wind energy system shall be approved without submission of a wind resource study documenting wind resources on the site over a minimum of one (1) year. Said study







CHARION TOWNSHIP OF BLOOMFIED <u>Jehan 9 Township of Bloomhald (</u> Cclearzoning





**3** Zoning Districts



b Site Standards

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shall indicate the long-term commercial

- C. Minimum site area. The minimum site area for a wind energy system shall be a minimum of five (5) acres, subject to meeting the required setbacks and any other applicable standards of this Section.
- D. Setbacks. Each proposed wind energy system shall meet the following applicable setback requirements:
  - Each wind energy system shall, in all i cases, be set back from property lines, public or private road right-of-way, or easement, a minimum distance of six (6) times the height of the wind energy system, or greater if data provided by the applicant and prepared by a qualified professional demonstrates any potential blade and ice throw may cross the property line. The data shall also demonstrate sound levels will not exceed sixty five (65) decibels on the dB(A) scale at the property line from the proposed setback. Data provided shall be specific to the proposed tower in the proposed location taking into consideration prevailing winds, topography, existing vegetation, and other relevant factors.
  - ii. Adjacent wind energy system locations must be spaced at least one-half ( $\frac{1}{2}$ ) mile apart.
- E. Maximum height.
  - The maximum wind energy system height shall be one hundred fifty (150) feet.
  - ii. The Planning Commission may approve an increased height for a wind energy system, not to exceed two hundred (200) feet, if the increased height will result in the preservation of a substantial stand of trees, existing land forms or structures that would otherwise be removed to increase wind velocity.
  - iii. The increased height will not result in increased intensity of lighting on the

tower due to FAA (Federal Aviation Association) requirements.

- F. Minimum rotor wind vane or blade clearance. The lowest point of the arc created by a rotating wind vane or blade on a wind energy system shall be no less than twenty (20) feet. The Planning Commission may require additional clearance if potential safety concerns are identified.
- G. Maximum noise levels. Any proposed wind energy system shall produce sound levels that are no more than sixty five (65) decibels as measured on the dB(A) scale at the property lines of the site in question. A noise report shall be submitted with any application for a wind energy system. A noise report shall be prepared by a qualified professional and shall include the following, at a minimum:
  - A description and map of the project's noise producing features, including the range of noise levels expected, and the basis of the expectation.
  - ii. A description and map of the noise sensitive environment, including any sensitive noise receptors, i.e. residences, hospitals, elder care developments, libraries, schools, places of worship, parks, areas with outdoor workers and other facilities where quiet is important or where noise could be a nuisance within two (2) miles of the proposed facility.
  - III. A survey and report prepared by a qualified engineer that analyzes the preexisting ambient noise (including seasonal variation) and the affected sensitive receptors located within two (2) miles of the proposed project site. Potential sensitive receptors at relatively less windy or quieter locations than the project shall be emphasized and any problem areas identified.
  - iv. A description and map of the cumulative noise impacts with any problem areas identified.
  - A description of the project's proposed noise control features and specific measures proposed to mitigate noise impacts for sensitive receptors as identified above to a level of insignificance.





other agency of the state or federal government with the authority to regulate a wind energy system or other tall structures in effect at the time the special use permit

Michigan Public Service Commission,

National Electric Safety Code, and any

is approved.

- M. Soil conditions. A proposal for any wind energy system shall be accompanied by a report of the soils present on the site based on soil boring, and a description of the proposed foundation size, materials. and depth. Such foundation shall be installed below plow depth to allow for feasible future reuse of the land unless the applicant provides a financial assurance that the foundation will be removed in the event that the tower is removed. Stormwater runoff and soil erosion measures shall be installed in conformance with the Township Code.
- N. Aesthetics and lighting. Any proposed wind energy system shall meet the following requirements:
  - Each wind energy system shall either i. maintain a galvanized steel finish or, subject to any applicable standards of the FAA, be painted a neutral color so as to reduce visual obtrusiveness.
  - ii. Each wind energy system, including turbine generator and all accessory structures, shall, to the extent possible, use materials and colors that will blend them into the natural setting and surrounding buildings. A medium gray shade is the preferred color for any wind energy system; however, the Planning Commission may approve an alternate color if the facility is suspected to be located within an avian migratory route or if an alternate color would otherwise benefit the community.
  - iii. Each wind energy system shall not be artificially lighted, unless required by the FAA or other applicable governmental authority. If lighting is required, the lighting alternatives and design chosen:
    - a. Shall be the lowest intensity allowable under FAA regulations.
    - b. Shall not be strobe lighting or other intermittent white lighting fixtures, unless expressly required









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H. Maximum vibrations. Any proposed wind energy system shall not produce vibrations humanly perceptible beyond the property on which it is located.

- Transmission lines. The on-site electrical 1. transmission lines connecting the wind energy system to the public utility electricity distribution system shall be located underground.
- J. Interference with residential reception. Any wind energy systems shall be constructed and operated so that they do not interfere with television, microwave, navigational or radio reception to neighboring areas.
- K. Landscaping. Each proposed wind energy system shall meet the following landscaping requirements; provided. however, the Planning Commission may reduce such requirements if it finds that because of the remote location of the site, or other factors, the visual impact of the wind energy system would be minimal.
  - i, For any wind energy system, a landscaping strip shall be provided along the property perimeters adjacent to roadways. Such landscaping shall be designed to obscure year-round the view of the wind energy system from the roadway. Where deemed appropriate by the Planning Commission, additional landscaping along the property perimeter shall be provided to screen the wind energy system from existing or future residential land uses. Existing natural vegetation may fulfill this requirement in whole or in part upon Planning Commission approval.
  - ii. Existing natural land forms on the site which effectively screen the wind energy system from adjacent residential property used for residential purposes shall be preserved to the maximum extent oossible.
  - iii. To ensure compliance with these landscaping standards, the Planning Commission may require additional landscaping on the site after the installation of the wind energy system.
- L. State or federal requirements. Anv proposed wind energy system shall meet or exceed any standards and regulations of the FAA (Federal Aviation Association), the





nd Site Standards

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by the FAA. Such intermittent lighting shall be alternated with steady red lights at night if acceptable to the FAA.

- c. May be a red top light that does not pulsate or blink. All tower lighting required by the FAA shall be shielded to the extent possible and acceptable to the FAA to reduce glare and visibility from the ground.
- d. Where acceptable to the FAA, the Township will approve white lights over red lights, and steady lights over strobed or intermittent lights.
- e. Each wind energy system shall be sited on the property in a location that reduces to the maximum extent possible any adverse impacts on significant view corridors from adjacent properties, while at the same time maintaining contact with economically viable wind resources. A visual simulation model is required to assess the visual impacts. Each wind energy system shall be a monopole or monotube-style construction (as distinguished from a lattice-style tower) and shall not utilize guy wires.
- The Planning Commission may require design changes in order to lessen the visual clutter associated with the siting of a wind energy system.
- O. Sign. A sign no more than four (4) square feet in area displaying an address and telephone number for emergency calls and informational inquiries shall be posted at the wind energy system erected prior to a wind turbine generator. The emergency telephone number shall allow a caller to contact a responsible individual to address emergencies at any time during or after regular business hours, on weekends or holidays. No wind energy systems or site shall include any advertising sign.
- P. Shadow flicker. The applicant shall provide a shadow flicker model for any proposed wind energy systems. The model shall:
  - Map and describe within a one (1) mile radius of the proposed project site the topography, existing residences and

location of their windows, locations of other structures, wind speeds and directions, existing vegetation and roadways. The model shall represent the most probable scenarios of wind constancy, sunshine constancy, and wind directions and speeds.

- Calculate the locations of shadow flicker caused by the proposed project and the expected durations of the flicker at these locations, calculate the total number of hours per year of flicker at all locations.
- iii. Identify problem areas where shadow flicker will interfere with existing or future residences and roadways and describe proposed measures to mitigate these problems, including, but not limited to, a change in siting of the facility, a change in the operation of the facility, or grading or landscaping mitigation measures.
- iv. The facility shall be designed such that shadow flicker will not fall on, or in, any existing dwelling. Shadow flicker expected to fall on a roadway or a portion of a residential parcel may be acceptable under the following circumstances:
  - a. The flicker will not exceed thirty (30) hours per year; and the flicker will fall more than one hundred (100) feet from an existing residence.
  - b. The traffic volumes are less than five hundred (500) vehicles per day on the roadway.
- Q. Hazard planning. An application for a wind energy system shall be accompanied by a hazard prevention plan. Such plan shall address the following at a minimum:
  - Certification that the electrical wiring between the wind energy system and the utility right-of-way does not pose a fire hazard.
  - II. The landscape plan accompanying the application shall be designed to avoid spread of fire from any source on the wind energy system; such preventative measures may address the types and location of vegetation below the wind energy system and on the site.



- iii. The following shall be submitted with the application for a special use permit for a wind energy system:
  - A listing of any hazardous fluids that may be used on site shall be provided.
  - b. Certification that the turbine has been designed to contain any hazardous fluids shall be provided.
    A statement certifying that the turbine shall be routinely inspected to ensure that no fluids are released from the turbine.
  - c. A hazardous materials waste plan shall be provided.
- R. Removal of abandoned or unsafe wind energy system. Any wind energy system that is not operated for a continuous period of twelve (12) months shall be considered abandoned. Any tower found to be unsafe or not in compliance with the special land use conditions related to noise or shadow flicker placed upon it by the Planning Commission, shall be found to be in violation of the special land use permit. The owner of any wind energy system that is abandoned or in violation of the special land use permit shall remove the same within ninety (90) days of receipt of notice from the Township of such abandonment or violation. In addition to removing the wind energy system, the owner shall restore the site of the wind energy system to its original condition prior to location of the wind energy system, subject to reasonable wear and tear. Any foundation associated with a wind energy system shall be removed to a minimum depth of five (5) feet below the final grade and site vegetation shall be restored. Failure to remove an abandoned wind energy system within the ninety (90) day period provided in this subsection shall be grounds for the Township to remove the wind energy system at the owner's expense. Any expenses incurred by the Township including costs and reasonable attorneys' fees shall be reimbursed at the owner's expense. The Planning Commission shall require the applicant to file a bond equal to the reasonable cost of removing the wind energy system and attendant accessory structures as a condition of a special use permit given pursuant to this Section.
- These regulations S. New technology. pertaining to wind energy systems are intended to respond to equipment available at the time of adoption. The Township recognizes that this is an emerging technology and that new means of collecting wind energy are under development. The Township, therefore. reserves the right to withhold approval on any wind energy system utilizing technology and equipment not widely in use as of October 8, 2007, and not addressed in this Section, pending appropriate study and, if necessary, alteration of these regulations pursuant to Section 42-7.6.

### 42-4.38 SPECIAL ACCOMMODATIONS USES

- 1. Purpose. This Section is intended to authorize the grant of relief from the strict terms of this Chapter in order to provide equal housing opportunities particularly suited to the needs of persons entitled to reasonable accommodation under law and to encourage innovation in land use and variety in design and layout. In the event state or federal law, e.g., The Federal Fair Housing Amendments Act of 1988, requires the Township to make "reasonable accommodation" for a particular proposed user of property, the Township Board, following public hearing before and recommendation of the Township Supervisor, under the authority of MCL 125.3502, may administratively approve a special accommodation use, subject to and in accordance with this Section.
- Applicant to comply with terms and conditions. As a condition to approval of a special accommodation use, the applicant must comply with all of the terms of this Section, and must demonstrate all of the following:
  - A. The ultimate residential user or users of the property shall be persons for whom state or federal law mandates the Township to make reasonable accommodations in connection with proposed uses of land; and
  - B. Taking into consideration the needs, facts, and circumstances which exist throughout the community, and within the population to be served by the use, including financial and other conditions, making the proposed reasonable accommodation shall be necessary to afford such persons equal opportunity to the proposed use and enjoyment within the community; and



Definitions









7 Admin and Enforcement



### City of Ferndale Zoning Ordinance

3. Accessory buildings located on double frontage (through) lots shall observe front yard setback requirements on both streets.

### C. Energy Uses

- 1. Wind Energy Conversion Systems (WECS). WECS designed to service the energy needs of the property where the structure is located shall be allowed as an accessory structure in all districts, subject to the following requirements:
  - (a) Only one (1) WECS shall be permitted per lot.
  - (b) The height of the overall WECS with the blade in the vertical position shall not exceed eighty (80) feet above ground level.
  - (c) All towers shall be set back a distance at least equal to the height of the overall WECS from all lot lines. The height shall be measured to the top of the blade at its highest point.
  - (d) Blade arcs created by a WECS shall not interfere with any structure, utilities or vegetation. The minimum blade or rotor clearance above ground level shall be at least twenty (20) feet.
  - (e) All towers used to support the wind generating equipment shall be adequately anchored.
  - (f) The WECS shall be equipped with both a manual and automatic braking device capable of stopping the WECS operation in high winds within eighty percent (80%) of design limits of the rotor.
  - (g) Noise emissions from the operation of a WECS shall not exceed forty-five (45) decibels on the DBA scale as measured at the nearest lot line or road.
  - (h) To prevent unauthorized climbing, the WECS must include an anti-climb device.
  - (i) Any WECS not used for one (1) year or longer shall be deemed to be abandoned and shall be promptly dismantled and removed from the property by the owner of the WECS.
- 2. Solar Energy Systems. Solar energy systems designed to service the energy needs of the property where the structure is located shall be allowed as an accessory structure in all districts, subject to the following requirements:
  - (a) Solar energy systems shall meet the requirements of this Section and all other applicable construction codes.
  - (b) The design of the solar energy system shall conform to applicable industry standards.
  - (c) Solar energy systems shall be screened per the discretion of the Community Development Department.
  - (d) Solar energy systems shall meet height and setback requirements of the zoning district in which they are located.
  - (e) Solar energy systems shall be securely anchored to the ground or a permanent structure.
  - (f) A ground-mounted solar energy system shall comply with the accessory structure restrictions contained in the zoning district where it is located.
  - (g) All exterior electrical and/or plumbing lines must be buried below the surface of the ground in compliance with current code.
  - (h) Any solar energy system not used for one (1) year or longer shall be deemed to

### City of Ferndale Zoning Ordinance

be abandoned and shall be promptly dismantled and removed from the property by the owner of the solar energy system.

- (i) Waiver. Upon request, the Planning Commission may grant waivers of the setback or height requirements, provided that the waiver will not present any undue hardships on adjoining properties. The Planning Commission shall take into consideration the support or opposition of adjacent property owners in granting waivers of setback or height requirements.
- D. **Outdoor Display, Sales and Storage.** Outdoor display, sales, or storage accessory to an approved principal use may be approved by the Planning Commission if deemed compatible with surrounding land uses and found to be compatible with the character of the area in accordance with the following:
  - 1. In General
    - (a) Goods and materials shall not be piled or stacked higher than the height of the screening wall. Vehicles, truck trailers, implements, and recreational vehicles may exceed the height of the screening wall provided that they are set back from the screening wall a distance equal to their height.
    - (b) The outdoor display, sales and storage of fertilizers, pesticides, and other hazardous materials is prohibited.
    - (c) Soil, sand, mulch, and similar loosely packaged materials shall be contained and covered to prevent it from blowing into adjacent properties.
    - (d) All areas shall be paved with a permanent, durable, and dustless surface and shall be graded and drained to dispose of all surface water.
    - (e) The applicant shall demonstrate there will be adequate parking for the existing uses as well as the proposed outdoor sales, display or storage.
    - (f) The location shall not interfere with public passage or the otherwise normal flow of pedestrian or vehicular traffic.
    - (g) Lighting for security purposes may be required as determined by the Planning Commission.
    - (h) Temporary uses that occur for less than two (2) weeks in any calendar year are exempt from these regulations.

### 2. Display or Sales

- (a) Outdoor display or sales is permitted in all Mixed-Use, Commercial, and Office Districts.
- (b) Outdoor display or sales areas may occupy up to fifteen percent (15%) of each front, side, and rear yard respectively, provided all setbacks are met.
- (c) Outdoor display or sales areas shall be screened from view by a masonry wall where the display area abuts a Residential District

### 3. Storage

- (a) Outdoor storage is permitted in all Industrial Districts.
- (b) Screening of outdoor storage areas shall consist of any combination of fences, walls, berms and landscaping that are at least eight (8) feet in height that in the

### Eastpointe, MI Code of Ordinances

### 1265.11 ACCESSORY USES.

(a) <u>Accessory Buildings</u>. Accessory buildings, except as otherwise permitted in this Zoning Code, shall be subject to the following regulations:

(1) Where the accessory building is structurally attached to a main building, it shall be subject to, and must conform to, all regulations of this Zoning Code applicable to the main building.

(2) Accessory buildings shall not be erected in any minimum side yard setback nor in any front yard.

(3) In the single and two family districts one or more accessory buildings shall be permitted per residential lot. No accessory building or combination of accessory buildings on a lot shall occupy more than 25 percent of the rear yard of a single family residential lot, or contain more than 900 square feet in total floor area, whichever limitation is the more restrictive.

(4) No detached accessory building shall be located closer than ten feet to any main building unless it is attached thereto, nor shall it be located closer than three feet to any side or rear lot line, except as otherwise provided for in the individual use districts. In those instances where the rear lot line is coterminous with an alley right of way, the accessory building shall not be closer than one foot to such rear lot line. In no instance shall an accessory building be located within a dedicated easement or right of way.

(5) No detached accessory building in the R-1, R-2, R-T, RM-1 and RM-2 Districts shall exceed 15 feet in height, measured form the ground at the base of the building to the ridge line of the roof. Accessory buildings in all other districts may be constructed to equal the permitted maximum height of structures in such districts.

(6) On corner lots, detached garages shall be placed two feet from the lot line opposite the side street line or, on lots exceeding 40 feet in width, the entrance to the garage shall be not less than 18 feet from the side street line. Garages attached to and made structurally a part of the principal building shall not extend beyond the side of the building on the side street line.

(7) An accessory garage may be constructed prior to a principal use building when necessary for construction purposes, subject to the review and approval of the Board of Zoning Appeals.

(b) <u>Accessory Structures</u>. Accessory structures except where otherwise permitted and regulated in this Zoning Code shall be subject to the following regulations:

(1) Except where otherwise permitted in this section, accessory structures shall be located in the rear yard and shall meet the setback requirements of an accessory building.

(2) Flag poles may be located within any required front or exterior side yard. Such poles shall be located no closer to a public right-of-way than one-half the distance between the right-of-way and the principal building.

(3) Canopy or canopies covering gasoline pump islands may extend into the required front or

exterior side yards to a point ten feet from the street right-of-way line.

Ground mounted private communication antennas shall be located in the rear yard, except (4)when it can be found such antennas will not be highly visible from a street, they may be located in a non-required interior side yard. No private communications antenna, including extendable antennas. shall exceed the height limitations of the district in which it is located when fully extended and shall be placed so that a horizontal distance at least equal to the vertical height of the antenna shall be provided between the base of the antenna and the nearest property line. Except, in those instances where an antenna extending upward from the ground is also securely attached elsewhere to a building, the required distance to the nearest property line may be measured from the building attachment to the top of the antenna. All such antenna may be attached to a pole, a tower or to a rooftop of a principal or accessory building, provided all applicable structural and electrical code requirements are met. Dish antennas located on the ground shall observe all setbacks pertaining to an accessory building. Wiring between a ground mounted antenna and a receiver shall be placed at least eight inches beneath the ground within conduit. In residential districts, no roof, pole or tower mounted antenna shall exceed a dimension of 8 feet by 8 feet or a diameter of 8 feet and shall not project more than 8 feet above the roof on which it is located, or above the maximum height limitations of the district, whichever is less. Ground mounted antenna shall not exceed a dimension of 12 feet by 12 feet or a diameter or 12 feet. In nonresidential districts, no roof, pole or tower mounted antenna shall exceed a dimension of 12 feet by 12 feet or, a diameter of 12 feet. Ground mounted antenna shall not exceed a dimension of 16 feet by 16 feet, or a diameter of 16 feet.

Wind powered generators shall be permitted provided: (5)

- They are located in the rear yard only; Α.
- They do not exceed the height limitation of the district; Β.

They are so located on the premises that a distance at least equal to the height of the С. generator blades at their apogee is provided to the nearest property line; and

They meet all applicable structural and electrical codes. D.

(6) Solar energy panels when located on the ground shall observe all applicable electrical codes and all applicable requirements pertaining to an accessory building. When roof mounted they shall be mounted either flat against the roof surface or, shall not project more than four feet outward from the roof measured from the surface of the roof where so affixed, to the farthest outward projection of the panel.

(Ord. 913. Passed 7-3-01; Ord. 926. Passed 5-6-03.)

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### ORDINANCE NO. 09-10-01

### DUNDEE TOWNSHIP ZONING ORDINANCE AMENDMENT

### THE TOWNSHIP OF DUNDEE ORDAINS:

### Section 1: Article V, General Provisions, is amended to add the following new Section 5.44 regulating solar panels, to read as follows:

### SECTION 5.44 SOLAR PANELS

Solar panels shall be allowed in all zoning districts either attached to permitted principal or accessory buildings or as accessory structures subject to the following regulations:

- 1. Attached to building. Where attached to a building, the solar panels shall be subject to the same regulations as the building in terms of height and setbacks. Solar panels may be attached to the roof or the building wall, but not both.
  - a. Roof mounted panels shall include solar panels integrated as the surface layer of the roof structure with no additional apparent change in relief or projection (the preferred installation), or separate flush-mounted solar panels attached to the roof surface.
    - (1) Solar panels integrated as the surface layer of the roof structure may be located on any part of the roof.
    - (2) Separate flush-mounted solar panels may only be located on a rear- or side-facing roof.
    - (3) Separate flush-mounted solar panels installed on a building or structure with a sloped roof surface shall not project vertically above the peak of the roof to which it is attached.
    - (4) Solar panels mounted on a flat roof shall not project vertically higher than the height of the parapet wall surrounding the roof or shall be screened by architectural features in accordance with Section 11.6.2.
  - b. Flush-mounted solar panels on the building wall may only be attached to one (1) side or rear building façade and shall not face a street.
- 2. Free-standing. Solar panels that are not attached to a building shall be permitted as accessory structures subject to the following regulations:
  - a. Free-standing solar panels shall be permitted in the rear yard only.
  - b. Free-standing solar panels shall be setback six (6) feet from the side and rear lot line.
  - c. Free-standing solar panels shall not exceed a height of four (4) feet.
  - d. The surface area covered by a free-standing system shall not exceed two percent (2%) of



the lot or three hundred sixty (360) square feet, whichever is less. Area covered shall be included in the lot coverage calculations for the lot.

- e. All power transmission lines shall be underground.
- f. Free-standing solar panels shall not be visible from adjacent property and shall be screened by landscaping where necessary.
- 3. Glare. Solar panels shall be placed and arranged such that reflected solar radiation or glare shall not be directed onto adjacent buildings, properties or roadways.
- 4. **Building permit.** Solar energy systems shall conform to applicable industry standards. A building permit shall be obtained for a solar energy system in accordance with the Building and Electrical Codes.

### Section 2. SEVERABILITY

If any provision of this Ordinance is found to be invalid, the remaining portions of this Ordinance shall remain enforceable.

### Section 3. EFFECTIVE DATE

This Ordinance shall take effect seven (7) days following the date of its publication.

On the question: "SHALL THIS ORDINANCE NOW PASS?" the following vote was recorded:

Yeas:

Nays:

I hereby approve the adoption of the foregoing Ordinance this \_\_\_\_\_ day of \_\_\_\_\_, 2010.

Tira J. O'Lone Township Clerk Joanna C Uhl Township Supervisor





(5) Covered and enclosed structures intended for use residential year-round (e.g. sunroom, screened porches, enclosed gazebos) are also subject to the building setback applicable to the principal structure and in the applicable zoning district.

### (d) Second Story Decks

- (1) Second story decks, including any walkway or stairwell connecting the second story deck to a first story deck, a ground-level deck, or a deck located above a walk-out basement, may extend into the rear yard setback, provided it does not extend more than fourteen (14) feet from the rear of the dwelling.
- (2) The area of a second story deck shall not count toward the permitted lot coverage for accessory buildings and structures.
- (3) If covered or enclosed, a second-story deck is subject to the minimum setbacks that apply to the principal structure on the property, as set out the applicable zoning district.

Section 13.06	Solar Panels	
AAAMALI IAMAA		

Freestanding solar panels (i.e. not attached to the principal building) shall be considered an accessory building and shall be subject to the requirements for such, together with all other applicable building codes and ordinances.

### Section 13.07 Swimming Pools and Hot Tubs

### (a) Location

- Swimming pools, spas, hot tubs and similar devices shall not be located in any front yard.
- (2) Swimming pools, spas, hot tubs and similar devices shall not be located in any easement.
- (3) A minimum distance of six (6) feet shall be maintained between any swimming pool and property line and/or any accessory structure.
- (4) Swimming pools shall be setback in accordance with *Table 13.07*.
- (5) Spas, hot tubs and similar facilities shall be setback at least ten (10) feet from the rear lot line and meet the side yard setback of the applicable zoning district.

		Table 13.07
Swimming Pool Setbacks		
	Feature	Minimum Setback
1.	Rear Lot Line	6 ft.
2.	Interior Side Lot Line	6 ft.
3.	Corner Side Lot Line	Front yard setback of applicable zoning district
4.	Principal Building Wall	10 ft.
5.	Easement	1 ft.
6.	Private Well	25 ft.
7.	Sewer	3 ft.
8.	Septic Tank	10 ft.

(b) **Security Fencing.** Swimming pools, spas, hot tubs and similar devices that contain twentyfour (24) inches or more of water in depth at any point shall meet the security requirements of the Building Code.

### MONROE COUNTY, PENNSYLVANIA MODEL ORDINANCE FOR ON-SITE USAGE OF SOLAR ENERGY SYSTEMS

### Township/Borough of [*Municipality name*] Monroe County, Pennsylvania

### ORDINANCE NO. -----

### AN ORDINANCE TO AMEND THE ZONING ORDINANCE OF [*MUNICIPALITY NAME*], BY AMENDING [*ARTICLE/SECTION*], DEFINITIONS, BY ADDING DEFINITIONS FOR SOLAR ENERGY SYSTEMS AND BY AMENDING [*ARTICLE/SECTION*], ADDING A NEW SECTION TO PERMIT SOLAR ENERGY SYSTEMS AS AN ACCESSORY TO PERMITTED, CONDITIONAL AND SPECIAL EXCEPTION USES IN ANY ZONING DISTRICT.

BE IT HEREBY ENACTED AND ORDAINED by the [*Governing Body*] of [*Municipality name*], Monroe County, Pennsylvania, that the [*Municipal*] Zoning Ordinance, shall be amended in the following respects:

<u>Section 1.</u> The Zoning Ordinance of [*Municipality name*] [*Section/Article*], Definitions, shall be amended to include the following definitions:

<u>Mechanical Equipment:</u> Any device associated with a solar energy system, such as an outdoor electrical unit/control box, that transfers the energy from the solar energy system to the intended on-site structure.

<u>Solar Access</u>: A property owner's right to have sunlight shine on the owner's land. (*The enforcement of this right is through the zoning ordinance that establishes height and setback requirements.*)

<u>Solar Energy System</u>: An energy conversion system, including appurtenances, which converts solar energy to a usable form of energy to meet all or part of the energy requirements of the on-site user. This definition shall include the terms passive solar and active solar systems.

<u>Solar Glare:</u> The effect produced by light reflecting from a solar panel with an intensity sufficient to cause annoyance, discomfort, or loss in visual performance and visibility.

Section 2. Applicability:

1. This ordinance applies to solar energy systems to be installed and constructed after the effective date of the ordinance.

- 2. Solar energy systems constructed prior to the effective date of this ordinance shall not be required to meet the requirements of this ordinance.
- 3. Any upgrade, modification, or structural change that materially alters the size or placement of an existing solar energy system shall comply with the provisions of [Section/Article].

<u>Section 3.</u> The Zoning Ordinance of [*Municipality name*], [*Section/Article*], Accessory Regulations, shall be amended by adding [*Section/Article#*] as follows:

### SOLAR ENERGY SYSTEMS

It is the purpose of this regulation to promote the safe, effective and efficient use of solar energy systems installed to reduce the on-site consumption of utility supplied energy and/or hot water as a permitted accessory use while protecting the health, safety and welfare of adjacent and surrounding land uses through appropriate zoning and land use controls. A solar energy system shall be permitted in any zoning district as an accessory to a principal use herein and subject to specific criteria as set forth below. Where said general standards and specific criteria overlap, the specific criteria shall supersede the general standards.

- 1. The installation and construction of a solar energy system shall be subject to the following development and design standards:
  - A. A solar energy system is permitted in all zoning districts as an accessory to a principal use.
  - B. A solar energy system shall provide power for the principal use and/or accessory use of the property on which the solar energy system is located and shall not be used for the generation of power for the sale of energy to other users, although this provision shall not be interpreted to prohibit the sale of excess power generated from time to time to the local utility company.
  - C. A solar energy system connected to the utility grid shall provide written authorization from the local utility company to the [*Township/Borough*] acknowledging and approving such connection.
  - D. A solar energy system may be roof mounted [*attachment* #1] or ground mounted [*attachment* #2].

- E. A roof mounted system may be mounted on a principal building or accessory building. A roof mounted system, whether mounted on the principal building or accessory building, may not exceed the maximum principal building height or accessory building height specified for the building type in the underlying zoning district. In no instance shall any part of the solar energy system extend beyond the edge of the roof.
- F. A ground mounted system shall not exceed the maximum building height for accessory buildings.
- G. The surface area of a ground mounted system, regardless of the mounted angle, shall be calculated as part of the overall lot coverage.
- H. A ground mounted system or system attached to an accessory building shall not be located within the required front yard setback.
- The minimum solar energy system setback distance from the property lines shall be equivalent to the building setback or accessory building setback requirement of the underlying zoning district. [Please note that some municipalities have less stringent accessory structure setbacks, e.g. 10 foot side yard setback for sheds. If accessory structure setbacks are less stringent than the primary structure setback, it is recommended that the municipality require solar energy systems to have the setback requirements of the primary structure in the underlying zoning district.]
- J. All mechanical equipment associated with and necessary for the operation of the solar energy system shall comply with the following:
  - a. Mechanical equipment shall be screened from any adjacent property that is residentially zoned or used for residential purposes. The screen shall consist of shrubbery, trees, or other non-invasive plant species which provides a visual screen. In lieu of a planting screen, a decorative fence meeting the requirements of the Zoning Ordinance may be used.
  - b. Mechanical equipment shall not be located within the minimum front yard setback of the underlying zoning district.
  - c. Mechanical equipment shall comply with the setbacks specified for accessory structures in the underlying zoning district. [Please note that some municipalities have less stringent accessory structure setbacks, e.g. 10 foot side yard setback for sheds. If accessory structure setbacks are less stringent than the primary structure setback, it is recommended that the municipality require

solar energy systems to have the setback requirements of the primary structure in the underlying zoning district.]

- K. Solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways.
- L. Solar panels shall not be placed in the vicinity of any airport in a manner that would interfere with airport flight patterns. Acknowledgement from the Federal Aviation Administration may be necessary.
- M. All power transmission lines from a ground mounted solar energy system to any building or other structure shall be located underground.
- N. A solar energy system shall not be used to display advertising, including signage, streamers, pennants, spinners, reflectors, ribbons, tinsel, balloons, flags, banners or similar materials. The manufacturers and equipment information, warning, or indication of ownership shall be allowed on any equipment of the solar energy system provided they comply with the prevailing sign regulations.
- O. A solar energy system shall not be constructed until a building/zoning permit has been approved and issued.
- P. The design of the solar energy system shall conform to applicable industry standards. A building permit shall be obtained for a solar energy system per the Pennsylvania Uniform Construction Code (UCC), Act 45 of 1999, as amended, and the regulations adopted by the Department of Labor and Industry. All wiring shall comply with the applicable version of the National Electric Code (NEC). The local utility provider shall be contacted to determine grid interconnection and net metering policies. The Applicant shall submit certificates of design compliance obtained by the equipment manufacturer from a certifying organization and any such design shall be certified by an Engineer registered in the Commonwealth of Pennsylvania. [Please note that the existing roof structure and the weight of the solar energy system shall be taken into consideration when applying for a solar energy system permit].
- Q. The solar energy system shall comply with all applicable [*Township/Borough*] Ordinances and Codes so as to ensure the structural integrity of such solar energy system.
- R. Before any construction can commence on any solar energy system the property owner must acknowledge that he/she is the responsible party for owning and maintaining the solar energy system.

- 2. If a ground mounted solar energy system is removed, any earth disturbance as a result of the removal of the ground mounted solar energy system shall be graded and reseeded.
- 3. If a ground mounted solar energy system has been abandoned (meaning not having been in operation for a period of six (6) months) or is defective or is deemed to be unsafe by the [*Township/Borough*] Building Code Official, the solar energy system shall be required to be repaired by the owner to meet federal, state and local safety standards, or be removed by the property owner within the time period allowed by the [*Township/Borough*] Building Code Official. If the owner fails to remove or repair the defective or abandoned solar energy system, the [*Township/Borough*] may pursue a legal action to have the system removed at the owner's expense.

<u>Section 4.</u> All other portions, parts and provisions of the Zoning Ordinance of [*Municipality name*], as heretofore enacted and amended, shall remain in force and effect.

Section 5. This Ordinance shall take effect five (5) days after the date of its enactment.

DULY ORDAINED AND ENACTED the \_\_\_\_\_day of \_\_\_\_\_, 20\_\_, by the [Governing Body] of the Township/Borough of [Municipality name], Monroe County, Pennsylvania, in lawful session duly assembled.

[Governing Body] of [Municipality name]

ATTEST:



ROOF MOUNTED SOLAR ENERGY SYSTEM (ATTACHMENT #1)

GROUND MOUNTED SOLAR ENERGY SYSTEM (ATTACHMENT #2)



### KENT COUNTY, MARYLAND



### RENEWABLE ENERGY TASK FORCE Established 9 March 2010

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### Solar Energy Systems

### Discussion

The RETF members discussed solar energy systems during 6 meetings. This section captures the evolution and end result of that discussion. Unlike wind energy systems which prompted many jurisdictions to address parameters of small and utility scale use through ordinances, solar energy systems are as not commonly addressed in local codes. The task force reviewed a Solar Access Guide produced by the City of Boulder, Colorado and design guidelines from the American Planning Association's *Zoning Practice*. In addition, a solar panel installer Robert Busler addressed the committee (See Appendix B: Solar for a synopsis of guest speaker information and background information).

### Considerations

There was very little model solar energy language available from Maryland counties for the RETF to consider. Therefore, the committee built its dialogue from the manner in which they studied wind energy in the previous weeks, beginning with an examination of residential use versus utility scale use of solar energy technology.

The committee set about defining the parameters of each type of system. Commercial, or utility scale, systems were established as those containing any device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for generating energy primarily for use off site. It was also decided that the energy generated by this system could be used to serve on site power needs.

Residential systems were defined as those containing a device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for generating energy or heating hot water for use on site. However, the energy output could be delivered to a power grid to offset the cost of energy on site.

Notably, the committee quickly came to a consensus on utility scale solar energy, deciding that it should be permitted in the Industrial with clear standards and site plan review.

RETF members discussed the land available in the Industrial District (approximately 1,100 acres) and its main geographic concentration in the County which is located along the Route 301 corridor adjacent to Massey (with additional areas in Worton and near Chestertown). While the committee felt that utility scale solar energy was an appropriate use of that land, they remained concerned about the availability of land zoned Industrial for other desirable permitted uses. Therefore, the RETF decided that only 50 percent of land zoned Industrial should be used to accommodate solar power. Once 25 percent of the land zoned Industrial is occupied by solar energy systems, the County should be directed to re-evaluate this policy.

The committee heard a presentation on the use of solar panel arrays designed to provide electricity to chicken houses. Members agreed that small solar energy systems should be permitted accessory uses on farms. However, members were divided on locating utility scale solar energy systems in the Agricultural district. It was ultimately decided that, with clear conditions, utility scale solar energy systems should be permitted as *special exceptions* in not only the Industrial but also the Agricultural, Commercial, and Commercial Critical Area zoning districts on a limited scale.

### Solar Easements

The RETF discussed solar easements and issues of solar access involve neighboring air space, including the height and setback of adjacent buildings and trees. Solar easements seek to create adequate protections for property owners who install solar energy systems while not creating hardships for adjacent property owners. The RETF decided that the County should not adopt solar access protection provisions but rather encourage property owners installing solar energy systems to coordinate with adjoining property owners to obtain solar access protection.

### Safety

The committee discussed fire safety and emergency response issues for solar energy systems. It was decided that an emergency shut off mechanism should be required and notice of its location should be submitted to emergency services.



### Visual Aesthetics

Mindful of keeping the balance between the promotion of solar energy systems and the preservation of the County landscape, the RETF decided that, while roof-mounted systems should be permitted as accessory uses or as *special exceptions*, towers should be more closely reviewed. A roof mounted system must meet zoning district height requirements and not extend more than 10 feet from the top of the roof.

To further address aesthetics, the committee established that a solar collection device or combination of devices should be designed and located to avoid glare or reflection onto adjacent properties and roadways and shall not interfere with traffic or create a safety hazard. Also, screening, capable of providing year-round screening, should be provided along all sides of the system that do not actively collect energy.

### Kent County solar regulations

Currently, the Land Use Ordinance does not address solar energy panels or systems directly. The few applications that have been submitted to the County for solar panels have been treated as uses customarily accessory to primary uses, such as a single family dwelling or an agricultural operation. All setback and height restrictions in each zoning district would apply to a solar panel/system application. Commercial/utility scale systems are not permitted.

### **RETF Recommendation:**

The task force defined the following terms which apply to proposed zoning text amendments: small solar energy systems and commercial solar energy systems. These terms as defined help to establish the parameters against which small and large solar energy system applications are to be reviewed. The task force felt that it was important to specify that energy production associated with a small solar energy system is to be used on site or to qualify for a utility company credit (aside from output delivered to a power grid to offset on site energy cost).

Following is a summary of the task force recommendations regarding solar energy system uses:

- Permitted Uses, Utility Scale, in the Industrial and Employment Center Districts: Conditions of approval (5) were established to include installation and design specifications which reduce impact on neighboring properties, height limit set at 10 feet above top of roof and set by zoning district (45 foot limit), and registration with the Department of Emergency Services. Site plan review is required.
- <u>Permitted Uses, Small Scale, in Commercial and Commercial Critical Area:</u> Conditions of approval (5) were established to include installation and design specifications which reduce

impact on neighboring properties, height limit set at 10 feet above top of roof and set by zoning district (45 foot limit), and registration with the Department of Emergency Services. Site plan review is required.

- <u>Permitted Uses/Special Exception</u>, Utility Scale, in Agricultural and Resource Conservation <u>Districts:</u> Conditions of approval (13) were established to include installation and design specifications which reduce impact on neighboring properties and sites of significant public interest, height limit set at 10 feet above top of roof and set by zoning district (38 foot limit), and registration with the Department of Emergency Services. In addition, the solar collection system shall be incidental to the use of the farm with no alteration of utility infrastructure to accommodate system. Area of use may not exceed 5 acres onsite with no aggregation of solar collection panels on adjacent properties which exceed 5 acres. Area developed by utility scale solar energy system is considered development and counted toward the maximum percentage of the property in lots. Site plan review is required.
- <u>Permitted Uses/Special Exception</u>, Utility Scale in Commercial and Commercial Critical Area <u>Districts:</u> Conditions of approval (6) were established to include installation and design specifications which reduce impact on neighboring properties and sites of significant public interest, height limit set at 10 feet above top of roof and set by zoning district (45 foot limit), and registration with the Department of Emergency Services. Site plan review is required.
- <u>Permitted Accessory Uses, Small Scale, in Industrial District:</u> Conditions of approval (5) were established to include installation and design specifications which reduce impact on neighboring properties, height limit set at 10 feet above top of roof and set by zoning district (45 foot limit), and registration with the Department of Emergency Services.
  - Permitted Accessory Uses, Small Scale, in Agricultural, Resource Conservation, Rural Character, Rural Residential, Critical Area Residential, Community Residential, Village, and Marine Districts: Conditions of approval (3) were established to include a restriction on tree removal, registration with the Department of Emergency Services, and a height limit established by zoning district.

### Solar Energy Systems: Proposed Land Use Ordinance Language

### **Definitions:**

Solar Energy System, Utility Scale: Any device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for generating energy primarily for use off-site. Energy generated may be used to serve on site power needs.

Solar Energy System, Small: Any device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for generating energy for use onsite. However, the energy out put may be delivered to a power grid to offset the cost of energy on site.

### **Permitted Uses**

Solar Energy Systems, Utility Scale in EC and I provided:

- a) A solar collection device 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.
- b) Screening, capable of providing year round screening, is provided along the non-reflective axis of the solar collection device or collection of devices.
- c) Roof mounted solar collection devices shall not extend more that 10 feet from the top of the roof. The total height of the building including the solar collection devices shall comply with the height regulations.
- d) Solar collection devices shall not exceed 45 feet in height.

e) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.

Solar Energy Systems, Small in C and CCA provided:

- a) A solar collection device 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.
- b) Screening, capable of providing year-round screening, is provided along all sides that do not collect energy.
- c) Roof mounted solar collection devices shall not extend more that 10 feet from the top of the roof. The total height of the building including the solar collection devices shall comply with the height regulations.
- d) Solar collection devices shall not exceed 45 feet in height.
- e) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.

### Special exceptions

Solar Energy Systems, Utility Scale on farms in the AZD and RCD provided:

- a) A solar collection device 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.
- b) Screening, capable of providing year-round screening, is provided along all sides that do not collect energy.
- c) Roof mounted solar collection devices shall not extend more that 10 feet from the top of the roof. The total height of the building including the solar collection devices shall comply with the height regulations established for each zoning district.
- d) Solar collection devices shall not exceed 38 feet in height.
- e) The solar collection system shall be incidental to the use of the farm.
- f) Installation of the solar collection system shall not adversely impact adjacent properties.
- g) All structures associated with the solar collection system shall be neither visually intrusive nor inappropriate to their setting.
- h) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.
- i) Other than wire size, there shall be no alteration of utility infrastructure to accommodate system.
- j) Area of use may not exceed 5 acres onsite. Adjacent properties shall not aggregate solar collection panels to achieve an area exceeding 5 acres.
- k) In AZD, area developed by utility scale solar energy system is considered development and counted toward the maximum percentage of the property in lots.
- 1) Tree removal shall be minimized and any removal shall be mitigated in accordance with the Critical Area program requirements.
- m) The applicant shall demonstrate that a utility solar energy system shall not unreasonably interfere with the view of, or from, sites of significant public interest such as public parks, a national or state designated scenic byway, a structure listed in the Kent County Historic Site Survey, an historic district, or of the Chesapeake Bay and its tributaries.

Solar Energy Systems, Utility Scale in C and CCA provided:

- a) A solar collection device 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.
- b) Screening, capable of providing year-round screening, is provided along all sides that do not collect energy.
- c) Roof mounted solar collection devices shall not extend more that 10 feet from the top of the roof. The total height of the building including the solar collection devices shall comply with the height regulations.
- d) Solar collection devices shall not exceed 45 feet in height.
- e) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.
- f) The applicant shall demonstrate that a utility solar energy system shall not unreasonably interfere with the view of, or from, sites of significant public interest such as public parks, a national or state designated scenic byway, a structure listed in the Kent County Historic Site Survey, an historic district, or of the Chesapeake Bay and its tributaries.

### Permitted Accessory Uses

Solar Energy Systems, Small in I provided:

- a) A solar collection device 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.
- b) Screening, capable of providing year round screening, is provided along the non-reflective axis of the solar collection device or collection of devices.
- c) Roof mounted solar collection devices shall not extend more that 10 feet from the top of the roof. The total height of the building including the solar collection devices shall comply with the height regulations.
- d) Solar collection devices shall not exceed 45 feet in height.
- e) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.

Solar Energy Systems, Small in the AZD, RCD, RC, RR, CAR, CR, V, M provided:

- a) Tree removal shall be minimized and any removal shall be mitigated in accordance with the Critical Area program requirements.
- b) All solar collection devices shall register with the Department of Emergency Services and shall submit a map noting the location of the solar collection devices and the panel disconnect.
- c) The total height of solar collection systems shall comply with the height requirements.

### Appendix B: Background Information for Solar Energy

### Guest Speaker

Robert Busler discussed his experiences as a representative of the solar energy company Standard Solar. He shared examples of roof mounted solar panels on a wide variety of residences and shared his own experience with the roof mounted solar panels installed on his residence in Chestertown's historic district.

In addition to leading a discussion on the aesthetics of solar panel installation, Mr. Busler shared the following topics for the task force's consideration:

- Roof Mounting (left)
  - Alignment with existing roof slope
  - Color of panels
  - Appearance of cell pattern
  - Mounting systems



Figure 9: Roof mounting

- Ground Mounting (right)
  - Height of system
  - Views from neighboring property
  - Glare at 30 degree tilt none

### Background

The most common solar technologies used on buildings in the United States are solar photovoltaic (PV) panels that generate electricity and solar thermal systems that heat water or air. Solar PV produces electricity through the conversion of direct sunlight to energy. The semiconductor materials in the PV cell interact with the sunlight to generate electric current. The most electricity is produced when the sun's rays are directly perpendicular to the PV panels. Since PV only works with sunlight, most systems are also connected to the utility grid to guarantee around-the-clock electricity. The orientation of a PV system affects its performance; usually the best location is on a south-facing roof. Flat roofs allow the panels to be tilted in the optimal direction.

PV systems work best without any obstructions from trees or structures. Because the sun is higher in the summer and lower in winter, placement of the PV involves an assessment of these factors. In any specific location, as the surface area of a PV system exposed to sunlight increases, the amount of electricity produced also increases. Depending on site conditions and economic constraints, residential-scale PV systems can range

Figure 10: Ground Mounting

### Appendix B: Background Information for Solar Energy continued

from 100 to 1,000 square feet. ("Balancing the Solar Access Equation", Gail Feldman and Dan Marks, aicp, Zoning Practice 4.09).

### Two Sources of Energy: Light and Heat

- Light
  - Photovoltaics (PV) direct conversion of sunlight to electricity.
- Heat
  - Active solar thermal heats water.
  - Passive solar thermal heats a building through design (windows, orientation, etc.)

### **Components of Solar PV Systems**

- Solar panels mounted on roof, pole, ground, or other structure
- Inverter DC to AC
- Balance of System (BOS)
  - Charge Controller (battery systems)
  - Disconnect switch (usually *inverter*-integrated)
  - Circuit breaker box
- Backup System add batteries, different *inverter*, second breaker box, move circuits

### Solar Energy Information

Solar energy can be captured and converted into heat or electricity by a number of devices. For example, a result of the fuel shortages in the 1970's, many homes and buildings in the U.S. were fitted with flat collectors that captured solar energy because of the dark color of the collector. This energy was then used to heat water (most often by running a thin film of water directly through the hot panel) to replace conventionally produced hot water. In some cases the energy was used to heat or help heat the home.

There are many methods of collecting solar energy and converting it to electrical power, but in general most systems can be classified as belonging to either of two main groups. The first group is made up of photovoltaics (PV), as discussed above. There is also Concentrating Solar PV (CPV) which uses a lens to increase the available sunlight onto a much smaller but more efficient PV cell, but the system must be mounted on a two axis tracker to constantly and accurately point the lens at the sun. The second main group is comprised of concentrating solar power (CSP) in which parabolic troughs are used to concentrate sunlight onto a central pipe filled with oil which absorbs the energy as heat. This oil is then circulated to a heat exchanger which then is used to ultimately generate steam to drive a turbine and generator (much like fossil fuel electrical production). Most small-scale solar power systems employ photovoltaics.

The most common form of PV is the rigid silicon crystal solar cell. One of these PV cells is manufactured by arranging many thinly cut layers of silicon crystal in large flat rigid, glass covered sheets called cells, which in turn are arranged in collections called arrays. These arrays are often seen on roofs of residences, businesses, and public buildings; covering large areas of usually southern exposures, supported by racks that hold them at varied angles aimed at the sun.

Sometimes these same arrays are ground mounted on racks or poles. They can be rigidly mounted, or on poles that let the arrays move to follow the sun from East to West, or from the horizon to the high noon for

### Appendix B: Background Information for Solar Energy continued

cost considerations, they are rigidly mounted at an average angle, usually an angle in degrees equal to or near position, or both simultaneously. Efficiency is improved when the panels can track the sun. Most commonly, the geographical latitude of the array (39 to 40 degrees for Kent County). Usually they are mounted facing south as near as possible, given other considerations such as roofline layout or landscaping.

These cells turn sunlight into electricity due to the unique ability of the specially treated silicon to shed an electron that will then follow a circuit the manufacturer laid out in the construction of the cell. Electrons excited by the sunlight falling on the surface of the cell can move about, creating an electrical current which travels from the cell to a load (such as the electrical devices in a home) and back to the cell.

Generally, the trip goes first to an *inverter*, which changes the DC current from the cell to AC current (which can be used in the home or business), then on to a distribution panel, such as the one that houses the circuit breakers for your house.

If you are connected to the electrical grid, the power you do not use for your household loads at the very instant the current is created will flow backwards through your electrical meter to the rest of the grid, turning your meter backwards if you have one meter, or registering on your "watts produced" meter if you have two.

If you are not connected to the grid, the current may go directly from the PV array to a bank of batteries for storage, from which it is later taken and either used directly to power DC lights and appliances or converted into AC. A system of this type that is also connected to the grid must have either an automatic or manual disconnect switch that allows connection to only one source (grid or solar array) at a time.

Other types of less common solar collectors include thin cell PV and concentrating solar PV collectors. Thin cell solar is just that: a very thin and flexible cell structure printed on a plastic scrim with an adhesive backing that can be applied as a building material on roofs or external walls of buildings. It is a less efficient collector of solar energy than silicon crystal, but many times cheaper, and its flexibility allows it to be incorporated into the structure rather than being an add-on.

Concentrating solar is a PV cell that has its own concentrating device looking like a reverse Fresnel lens (like those used to concentrate the beams in lighthouses) which concentrates the solar energy many times, allowing for a smaller but more efficient solar cell. This cell must have a two-axis pointing device so that the cell is always pointed directly at the sun.

Researchers are also searching for materials other than silicon that can be used in PV. Suitable materials will decrease the cost of solar panels by either increasing efficiency (more sunlight captured) or decreasing the cost of manufacture, or both.

The unit of measure of how much electrical power a solar array produces is the *kilowatt hour* (kWh) which is the number of *kilowatts* (kW) produced in one hour of time. The size of an array is rated by how many kWh's it can be expected to produce, in perfect solar conditions, in one hour. An array that can be expected to produce 5 kW's in one hour is rated as a 5kW system. Larger commercial systems are measured in *Megawatts* (mW), with a *megawatt* being equal to 1000 *kilowatts*.

Solar Energy Standards

### INTRODUCTION

some retail electric and natural gas costs is likely within the next 8 to 10 years. issue. Solar energy components continue to improve in efficiency and decline in price, and "cost parity" with energy has rapidly increased such that many communities have had to address solar installations as a land use creasing number of solar energy installations have been installed in Minnesota. Since 2005, the interest in solar many parts of Florida. As solar energy system components have become more efficient and less costly an in-In spite of its cold and dark reputation, Minnesota has good solar potential, as good as Houston, Texas and

ciency. Volatility in natural gas prices makes free solar fuel look attractive as a price hedge. businesses wanting to reduce their carbon footprint see solar energy as a strong complement to energy effable more to the non-economic benefits than as an economic substitute for the electric utility. Households and symbol of energy self-sufficiency and environmental sustainability. The growth in solar installations is attribut-But solar energy is much more than an alternative (or supplement) to utility power. Solar energy has become a

### Solar energy issues

future. Three primary issues tie solar energy to development regulations: Local governments will need to address solar energy installations in their development regulation in the near

- 1) Climate protection goals. Local governments that have committed to meeting climate protection goals can meet incentives in development regulations to spur solar investment some of their commitment by removing regulatory barriers to solar energy and incorporating low or no-cost
- 2 Nuisance and safety considerations. Solar systems have few nuisances, but visual impacts and safety concerns designed 1970s solar installations, have resulted in unnecessary regulation or outright prohibitions can answer most concerns. But the misperception that solar systems are ugly and unsafe, rooted in poorly by neighbors sometimes create opposition to solar installations. Good design and attention to aesthetics
- <u>د</u> Solar aways considerations. In fully built-out communities and large lot suburban or exurban areas, solar access buildings or in developing communities where subdivisions should incorporate solar access provisions. is of limited concern. Solar access is, however, an important consideration in zoning districts that allow tall

Model Solar Energy Standards This ordinance is based primarily on the model solar energy ordinance created for Solar Minnesota, under a Million Solar Roofs grant from the U.S. Department of Energy

# Components of a solar standards ordinance

Solar energy standards should consider the following elements:

- Remove regulatory barriers and create a clear regulatory path to approving solar energy systems.
- Limit aesthetic objections by setting reasonable design standards for solar energy in urban neighborhoods, historic districts, and new subdivisions.
- Address solar access issues in subdivisions and zoning districts that allow taller buildings on smaller (urban density) lots.
- Encourage solar-ready subdivision and building design.
- Incorporate regulatory incentives that can spur private-sector solar investment.

## **Urban and Rural Communities**

urban density areas, where lot sizes are almost always greater than one acre. Counties and townships can address ordinance is directed to situations seen in cities. potion of the model ordinance can also be applied in rural areas. However, most of the language in this model development areas, where homes are closer together or protected trees might limit solar access. The incentive in all districts. Aesthetic issues or solar access issues might come into play in lakeshore areas or conservation most barriers by simply stating in their development regulations that solar systems are an allowed accessory use Issues of solar access and nuisances associated with solar systems are generally of little consequence outside The model ordinance language addresses concerns that are primarily in cities rather than counties or townships

## Primary and Assessory Uses

as seen in the desert southwest. These land uses have different issues and need to be addressed in a substantially or thousands of kilowatts of ground or pole-mountd sytems, or in the case of solar thermal powerplants, such different manner than discussed in this model. ban area. Solar systems are also sometimes the primary use, on "solar farms" that are large arrays of hundreds This ordinance addresses solar energy as an accessory use to the primary residential or commercial use in an ur-
Solar Energy Obandands

- I. Scope This article applies to all solar energy installations in Model Community.
- II. Purpose Model Community has adopted this regulation for the following purposes:
- A Comprehensive Plan Goals - To meet the goals of the Comprehensive Plan and preserve the health. the Comprehensive Plan: safety and welfare of the Community's citizens by promote the safe, effective and efficient use of acelectric energy. The following solar energy standards specifically implement the following goals from tive solar energy systems installed to reduce the on-site consumption of fossil fuels or utility-supplied
- Goal Encourage the use of local renewable energy resources, including appropriate applications for wind, solar, and biomass energy.
- $\mathbf{\dot{b}}$ Goal - Promote sustainable building design and management practices in residential, commercial, and industrial buildings to serve the needs of current and future generations.
- çı, Goal - Assist local businesses to lower financial and regulatory risks and improve their economic, community, and environmental sustainability.
- 4: Goal - Efficiently invest in and manage public infrastructure systems to support development and growth
- μ Climate Change Goals - As a signatory of the Cool Cities program, Model Community has commit the use of conventional energy sources dence on nonrenewable energy resources and decrease the air and water pollution that results from and nonpolluting energy resource and that its conversion to electricity or heat will reduce our depented to reducing carbon and other greenhouse gas emissions. Solar energy is an abundant, renewable,
- Õ Infrastructure - Distributed solar photovoltaic systems will enhance the reliability and power quality of the power grid and make more efficient use of Model Community's electric distribution infrastructure.
- Q Local Resource - Solar energy is an underused local energy resource and encouraging the use of solar energy will diversify the community's energy supply portfolio and exposure to fiscal risks associated with fossil fuels.

in the findings section.

μ Improve Competitive Markets - Solar energy systems offer additional energy choice to consumers and will improve competition in the electricity and natural gas supply market.

Model Suscainable Development Ordinances

**Comprehensive Plan Gods** Tying the solar energy ortinance to Comprehensive Plan goals is particularly important when the solar standards include regulatory incentives or solar requirements as described in the last section of this ortinance. If the Comprehensive Plan does not include goals that could address solar energy, and the community does not have some of policy foundation for encouraging prinate investment in solar energy (such as vitmate protection goals) the community should consider creating a local energy plan.

**Climate Protection Strategies** Solar energy should be part of every community's portfolio for addressing climate change or energy transitions (also known as "peak oil") considerations. Local governments that are participating in the Cities for Climate Protection program, Mayor's Climate Protection signatories, or the Cool Climate Protection signatories, or the Cool Climate Protection signatocan use private solar investment as a vehicle for meeting goals. Additional community benefits that improve sustainability are also spelled out

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### III. Definitions

medium using mechanical, electrical, or chemical means forming solar energy into another form of energy or transfering heat from a collector to another Active Solar System - A solar energy system whose primary purpose is to harvest energy by trans

skylights, and awnings. to photovoltaic or hot water solar systems that are contained within roofing materials, windows, tural or structural component of the building. Building-integrated systems include but are not limited accessory building, rather than a separate mechanical device, replacing or substituting for an architec-Building-integrated Solar Systems - An active solar system that is an integral part of a principal or

Grid-intertie Solar System - A photovoltaic solar system that is connected to an electric circuit served by an electric utility company.

system are not electrically connected in any way to electric circuits that are served by an electric utility Off-grid Solar System - A photovoltaic solar system in which the circuits energized by the solar company

it to another form of energy or transferring the energy via a heat exchanger Passive Solar System - A solar energy system that captures solar light or heat without transforming

Photovoltaic System - An active solar energy system that converts solar energy directly into electricity.

devices may change the exterior appearance of

ing local goals. For instance, solar daylighting

tectural changes.

the building, and the community may choose to distinguish between these denices and other archi the concepts defined here may be helpful in meet-

Not all these terms are used in this model ordinance, nor is this a complete list of solar definitions. As a community develops its own design standards for solar technology, many of

Solar Definitions

over the burdened land. tion, or both, for the purpose of providing access for the benefited land to wind or sunlight passing location, or both, of permissible development on the burdened land in terms of a structure or vegeta-Renewable Energy Easement, Solar Energy Easement - An easement that limits the height or

not include passive systems that serve a dual function, such as a greenhouse or window. Renewable Energy System - A solar energy or wind energy system. Renewable energy systems do

but not exclusively expressed in twelfths such as 3/12, 9/12, 12/12. Roof Pitch - The final exterior slope of a building roof calculated by the rise over the run, typically

solar collector is located, between the hours of 9:00 AM and 3:00 PM Standard time on any day of any vegetation, building, or object located on parcels of land other than the parcel upon which the Solar Access - A view of the sun, from any point on the collector surface, that is not obscured by

the year.

Model Stream of Step Stephestry Ordina

Solar Energy Standards

is to transform solar radiant energy into thermal, mechanical, chemical, or electrical energy Solar Collector - A device, structure or a part of a device or structure for which the primary purpose

mounting hardware. collector's energy transformation process. Collector surface does not include frames, supports and Solar Collector Surface - Any part of a solar collector that absorbs solar energy for use in the

in lieu of artificial lighting. solar spectrum, while controlling the infrared portion, for use in illuminating interior building spaces Solar Daylighting - A device specifically designed to capture and redirect the visible portion of the

light by a solar collector. Solar Energy - Radiant energy received from the sun that can be collected in the form of heat or

utilization. Passive solar systems shall clearly be designed as a solar energy device such as a trombe active or passive means. Such systems may also have the capability of storing such energy for future cooling, electrical power, mechanical power, solar daylighting or to provide any combination of the wall and not merely a part of a normal structure such as a window. foregoing by means of collecting and transferring solar generated energy into such uses either by Solar Energy Device - A system or series of mechanisms designed primarily to provide heating,

energy for space heating or cooling, electricity generating, or water heating provide daylight for interior lighting or provide for the collection, storage and distribution of solar Solar Energy System - A device or structural design feature, a substantial purpose of which is to

one substance to another, either liquid or gas. Solar Heat Exchanger - A component of a solar energy device that is used to transfer heat from

south-facing wall. ing conditioned building air. The most efficient performance typically means vertically mounted on a that includes a solar collector to provide direct supplemental space heating by heating and re-circulat-Solar Hot Air System - (also referred to as Solar Air Heat or Solar Furnace) - An active solar system

needs, including residential domestic hot water and hot water for commercial processes tor and a heat exchanger that heats or preheats water for building heating systems or other hot water Solar Hot Water System (also referred to as Solar Thermal) - A system that includes a solar collec-

or the ground Solar Mounting Devices - Devices that allow the mounting of a solar collector onto a roof surface

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electricity or heat for later use. Solar Storage Unit - A component of a solar energy device that is used to store solar generated

- IV. below. Active solar energy systems that do not meet the visibility standards in C. below will require a zoning classifications where structures of any sort are allowed, subject to certain requirements as set forth conditional use permit, except as provided in Section V. (Administrative Variances). Permitted Accessory Use - Active solar energy systems shall be allowed as an accessory use in all
- A. Height Active solar systems must meet the following height requirements:
- <del>ب</del>سم Building- or roof- mounted solar systems shall not exceed the maximum allowed height in any ed systems shall be considered to be mechanical devices and are restricted consistent with other zoning district. For purposes for height measurement, solar systems other than building-integratbuilding-mounted mechanical devices
- $\mathbb{N}$ Ground- or pole-mounted solar systems shall not exceed 20 feet in height when oriented at maximum tilt.
- ġ Set-back - Active solar systems must meet the accessory structure setback for the zoning district and primary land use associated with the lot on which the system is located.

**Building Integrated PV** 

Building integrated solar systems can include

for every 10 sq. ft. of reduction of surface area.

loned, for instance, an additional foot of height

systems if the size of the panel is less than al-

height for every additional two feet of setback. Communities may also consider allowing higher may want to consider allowing taller systems if set back farther, for instance, an extra foot of summers a standard that is higher than typical height lamits for accessory structures, but well

lower than the principal structure. Communities

Height - Ground or Pole Mounted

This ordinance sets a 20-foot height limit, as-

- <u>`</u> Roof-mounted Solar Systems - In addition to the building setback, the collector surface and systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure of the building on which the system is mounted or built. Exterior piping for solar hot water mounting devices for roof-mounted solar systems shall not extend beyond the exterior perimeter
- $\mathbb{N}$ Ground-mounted Solar Systems - Ground-mounted solar energy systems may not extend into the side-yard or rear setback when oriented at minimum design tilt.
- Ô tor is not required to be consistent with other roofing materials. screened from routine view from public right-of-ways other than alleys. The color of the solar collec-Visibility - Active solar systems shall be designed to blend into the architecture of the building or be
- <del>:</del> shall be allowed regardless of whether the systemis visible from the public right-of-way, provided Building Integrated Photovoltaic Systems - Building integrated photovoltaic solar systems performance standards for the district in which the building is located the building component in which the system is integrated meets all required setback, land use or

than the finished roof pitch change the appearance of the roof, and are exposed to additional

safety considerations in regard to the wind and drift load on structural roof components. that they be no more than 5% steeper than the

This ordinance sets a threshold for solar panels

finished roof pitch. Mounted systems steeper

**Mounted Solar Systems** 

solar systems built into roofing (existing technology encludes both solar shringles and solar roofing tiles), into anomage, skylights, and walls. This ordinance only addresses building integrated PVA but examples of building integrated solar thermal applications may also be available.

 $\mathbf{N}$ mount solar systems shall not be restricted if the system is not visible from the closest edge of Solar Systems with Mounting Devices - Solar systems using roof mounting devices or ground-

Viodel Suetainable Pevelopment: Ordinancee

Solar Energy Standards

which the system is mounted, and shall be no higher than twelve (12) inches above the roof. frontage right-of-way shall not have a highest finished pitch more than five (5) percent steeper than the roof pitch on any public right-of-way other than an alley. Roof-mount systems that are visible from the nearest edge of the street

ပ္န edge by a minimum of one (1) foot. The surface area of pole or ground mount systems shall not exceed half the Coverage - Roof or building mounted solar systems, excluding building-integrated systems, shall not cover more than 80% of the south-facing or flat roof upon which the panels are mounted, and shall be set back from the roof

building footprint of the principal structure.

- 4. **Historic Buildings** Solar systems on buildings within designated historic districts or on locally designated historic buildings (exclusive of State or Federal historic designation) will require an administrative variance, as provided in this ordinance.
- D. Approved Solar Components Electric solar system components must have a UL listing and solar hot water systems must have an SRCC rating.
- E. **Plan Approval Required** All solar systems shall require administrative plan approval by Model Community zoning official.
- . **Plan Applications** Plan applications for solar systems shall be accompanied by to-scale horizontal and vertical (elevation) drawings. The drawings must show the location of the system on the building or on the property for a ground-mount system, including the property lines.
- a. **Pitched Roof Mounted Solar Systems** For all roof-mounted systems other than a flat roof the elevation must show the highest finished slope of the solar collector and the slope of the finished roof surface on which it is mounted.
- b. Flat Roof Mounted Solar Systems For flat roof applications a drawing shall be submitted showing the distance to the roof edge and any parapets on the building and shall identify the height of the building on the street frontage side, the shortest distance of the system





means to allow this, or will have a conditional the building. Some communities will have other would judge screening or visual integration with the building), and the metrics by which staff as a lack of solar access except on the front of use to judge if the system genuinely could not to get Planning Commission approval or pay ad to use the property for generating renemable enbe designed consistently with Section IV. (such dards spell out the conditions that staff would efficient harvest of solar energy, mithout having departures are necessary in order to allow for considerations and the building opner's choice ditional fees. The administrative variance standepartures from the design standards when such ergy. Administrative variances allow staff to ance process to balance between aesthetic design Administrative Variance This model language uses an administrative part

Restrictions on solar systems One of the most common barriers to solar energy in developing areas are restrictive covenants in new subdivisions. The covenants are intended to maintain on the appearance of bornes, property natures, and saledvilly. If, however, the head gov oriment provides solar design standards that proted against poor design of solar accessory uses, if it reasonable to prevent the developer or homcovert's association from creating unwarranted restrictions on a sustainable source of energy.

some additional regulation.

\$

use permit process that does not create burdon-

from the street frontage edge of the building, and the highest finished height of the solar collector above the finished surface of the roof.

- $\frac{2}{2}$ and shall not require Planning Commission review. Plan approval does not indicate compliance require an administrative variance, shall be granted administrative approval by the zoning official Plan Approvals - Applications that meet the design requirements of this ordinance, and do not with Building Code or Electric Code.
- Ħ code officials, consistent with the State of Minnesota Building Code, and solar thermal systems shall Compliance with Building Code - All active solar systems shall meet approval of local building comply with HVAC-related requirements of the Energy Code.
- ဂ္ဂ State Electric Code Compliance with State Electric Code - All photovoltaic systems shall comply with the Minnesota
- Έ Compliance with State Plumbing Code - Solar thermal systems shall comply with applicable Min nesota State Plumbing Code requirements
- Ŀ, systems are exempt from this requirement. company of the customer's intent to install an interconnected customer-owned generator. Off-grid given to the Planning and Zoning Department that the owner has submitted notification to the utility Utility Notification - No grid-intertie photovoltaic system shall be installed until evidence has been
- sought from the zoning official. An administrative variance shall be granted if the administrative variance stanadards are met. below, the minimum reasonable performance of the solar system, an administrative variance may be resources. Where the standards in Section IV. A., B., or C. cannot be met without diminishing, as defined considerations and the reasonable desire of building owners to harvest their renewable energy energy systems and recognizes that a balance must be achieved between character and aesthetic Administrative Variance - Model Community encourages the installation of productive solar
- A Minimum Performance Design Standards - The following design thresholds are necessary for efficient operation of a solar energy system
- Fixed-Mount Active Solar Energy Systems Solar energy systems must be mounted to face with 45 degrees of south (180 degrees azimuth).
- $\mathbb{N}$ Solar electric (photovoltaic) systems must have a pitch that is within 20 degrees of latitude, a pitch of between 20 and 65 degrees.

Nodel Suevalnable Pevelopment: Ordinand

- دري Solar Hot Water Systems - Solar collectors need to be mounted at a pitch between 40 and 60 degrees
- Ψ applicant demonstrates that the following safety, performance and aesthetic conditions are met Standards for an Administrative Variance - A variance shall be granted by the zoning official if the
- <u>بر</u> Aesthetic Conditions - The solar system must be designed to blend into the architecture of maximum extent possible while still allowing the system to be mounted for efficient performance the building or be screened from routine view from public right-of-ways other than alleys to the
- Ņ Safety Conditions - All applicable health and safety standards are met.
- ŝ Non-Tracking Ground-Mounted Systems - Pole-mounted or ground-mounted active solar systems must be set back from the property line by one foot.
- VI. nity shall restrict or limit solar systems to a greater extent than Model Community' solar energy standards community, or other contract between multiple property owners within a subdivision of Model Commu-Restrictions on Solar Systems Limited - No homeowners' agreement, covenant, common interest
- VII. Solar Access Model Community encourages solar access to be protected in all new subdivisions and allows for existing solar to be protected consistent with Minnesota Statutes.
- Δ Model Community has elected to allow solar easements to be filed, consistent with Minnesota Stat. to protect access to sunlight. The easement is purchased from or granted by owners of neighboring properties and can apply to buildings, trees, or other structures that would diminish solar access Chapter 500 Section 30. Any building owner can purchase an easement across neighboring properties
- В permit, as specified in Section 8 of this ordinance Model Community may require new subdivisions to identify and create solar easements when solar energy systems are implemented as a condition of a PUD, subdivision, conditional use, or other

(e) Any provisions for compensation of the (d) Any terms or conditions under which the (c) A description of the vertical and horizontal easements protecting access to solar and wind (b) For solar easements, a description of the (a) A description of the real property subject to Required Contents - Any deed, will, or other energy. The easement must specify the following instrument that creates a solar or wind easement Minnesota allows the purchase and holding of shall include, but the contents are not limited to: information: Solar Easements of the owner of the real property subject to enjoyment of the easement, or compensation easement in the event of interference with the owner of the real property benefiting from the easement is granted or may be terminated. fines the three dimensional space, or the place which an obstruction to the winds is prohibfrom the site of the wind power system in angles, expressed in degrees, and distances direct sunlight is prohibited on limited; and times of day in which an obstruction to extends over the real property subject to the lar energy system, at which the solar easement nertical and borizontal angles, expressed in property benefiting from the solar or wind the easement and a description of the real ited or limited; easement, or any other description which dedegrees and measured from the site of the so easement; and Solar Energy Standards

Source: Minnesota Stat. 500.30 Subd. 3.

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Any other provisions necessary or desirable to

the easement for maintaining the easement;

execute the instrument.

## Bolar Energy Standards

CUP was to make the building solar-ready, this munity's PUD ordinance, or if a condition of a ordinance notes these opportunities for consid pervent section of the ordinance. would need to be included in the conditional use tar energy would need to be included in the cominstance, a provision that PUD's incorporate soinserted into the community's ordinances. For additional ordinative language would need to be other discretionary permits to encourage private erution by local governments. In most cases, investment in solar energy systems. This model tools such as conditional use permits, PUDs, or The community can use traditional development (previous page **Renewable Energy Conditions** 

### ate some other incentive that encourages solar ation of the incentive, so that staff can assist the ning or economic development staff in the cre ment of creating the incentive is to engage plan energy). As with any incentive, an important ele make the most sense in their community (or cre all these incentives, but should select which ones solar energy. Communities will not mant to use can be used to encourage private investment in in development. These same tools and incentives ensure that certain public amenities are included development regulation. Most cities and many counties make requirements or use incentives to series of incentives that can be incorporated into This section of the model ordinance includes a Solar Roof Incentives

# VIII. Renewable Energy Condition for Certain Permits

- A Condition for Rezoning or Conditional Use Permit - Model Community may, in an area where the utility has documented a near-term need for additional distribution substation or conductor capacity, require on-site renewable energy systems as a condition for a rezoning or a conditional use permit. local electric distribution system was installed more than twenty years ago, or where the local electric
- The renewable energy condition may only be exercised for new construction or major reconstruction projects.
- Ņ or wind energy access, and for which the renewable energy system can reasonably meet all perfor-The renewable energy condition may only be exercised for sites that have 90% unimpeded solar mance standards and building code requirements.
- В <del>د</del>... site renewable energy systems as a condition for approval of a PUD permit, in order to mitigate for: Condition for Planned Unit Development (PUD) Approval - Model Community may require on-
- Risk to the performance of the local electric distribution system,
- $\dot{\mathbf{b}}$ Increased emissions of greenhouse gases,

ω

- Other risks or effects inconsistent with Model Community's Comprehensive Plan.
- IX. Solar Roof Incentives - Model Community has identified the following incentives for development applications or subdivisions that will include buildings using active solar systems
- $\geq$ Density Bonus - Any application for subdivision of land in the \_\_\_\_\_ one kilowatt of PV or 64 square feet of solar hot water collector installed for each new residence. with the increased density, if the applicant enters into a development agreement guaranteeing at each lots by 10% or one lot, whichever is greater, provided all building and wastewater setbacks can be met development of at least four new lots of record shall be allowed to increase the maximum number of \_ Districts that will allow the
- μ post a bond for the amount of the bid preference granted awarding the bid. The bidder must also meet all land use and dimensional requirements, and must for every kilowatt of solar capacity that is to be incorporated into the fully-built out parcel, when Vacant Lot Preference - When Model Community disposes of vacant parcels of land that are under City ownership through auction, Model Community shall award a 10% bid preference up to \$5,000
- ņ Combined Building Code Permit - On an existing building that is being retrofit with a solar

developer in taking advantage of the provisions.

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Dolar Energy Ocandanda

system, Model Community shall charge no more than one permit fee for a solar system that meets the administrative approval requirements of this ordinance.

- Ģ Solar Access Variance - On a site where the solar access standards of the subdivision ordinance administrative exception from the solar access standards provided the applicant meets the following are difficult to meet due to topography or road connectivity, the zoning administrator shall grant an conditions:
- نسبز Solar Access Lots Identified - At least \_\_% of the lots, or a minimum of as solar development lots. <u>lots</u>, are identified
- 2 and solar thermal systems must have at least 64 square feet of collector area. must include an active solar system. Photovoltaic systems must be at least one (1) KW in capacity Covenant Assigned - Solar access lots are assigned a covenant that homes built upon these lots
- 3. Additional Fees Waived Model Community will waive any additional fees for filing of the covenant.
- μ solar energy substitution is made: up to 50% of the affordable housing requirement. For each unit of affordable housing for which a may substitute a requirement for grid-intertie photovoltaic systems or active solar thermal systems for Affordable Housing Offset - On a site where 90% of the potential solar access is unimpeded, and the local electrical distribution system was installed more than twenty years ago, Model Community
- solar access The photovoltaic system must have at least 2 kilowatts (KW) of capacity with 90% unobstructed
- $\mathbf{P}$ the estimated domestic hot water load for a family of four. The active solar thermal system must be sized and have sufficient solar access to generate 75% of
- Ħ Commercial Parking Requirement Offset - On a site where 90% of the potential solar access is space for which a solar energy substitution is made: systems for up to 50% of the parking requirement, up to a maximum of 5 spaces. For each parking munity may substitute a requirement for grid-intertie photovoltaic systems or an active solar thermal an approved Travel Demand Management (TDM) plan, or which has entered into a shared parking arrangement with another commercial business that has distinct peak parking profiles, Model Comunimpeded, and which has access to mass transit within a block of the development site or which has
- ÷ The photovoltaic system must have at least one (1) kilowatt (KW) of capacity with 90% unobstructed solar access; or

### MUNICIPAL GUIDE TO PLANNING FOR AND REGULATING ALTERATIVE ENERGY SYSTEMS

Lancaster County Planning Commission

October 2010

- <u>ACCESSORY ANAEROBIC DIGESTER</u> An anaerobic digester used to convert biogas into electricity, heat, and water and is intended to primarily reduce on-site consumption of utility power. A system is considered a small anaerobic digester only if it supplies electrical or thermal power for on-site use, except that when a property upon which the facility is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for on-site use may be used by the utility company. Small anaerobic digesters use livestock and poultry manure generated on-site from one (1) farm, and is designed and intended solely to generate power to off-set utility costs. Small anaerobic digesters may include -eo-digestion" in which the livestock and poultry manure (primary catalyst) may be mixed with other organic materials (secondary catalysts).
- 2. ACCESSORY SOLAR ENERGY SYSTEM A solar collection system consisting of one or more roof and/or ground mounted solar collector devices and solar related equipment, which has a rated capacity of less than or equal to ten (10) kilowatts (for electricity) or rated storage volume of the system of less than or equal to two hundred forty (240) gallons or that has a collector area of less than or equal to one thousand (1,000) square feet (for thermal), and is intended to primarily reduce on-site consumption of utility power. A system is considered a small solar energy system only if it supplies electrical or thermal power solely for on-site use, except that when a property upon which the facility is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for on-site use may be used by the utility company.
- 3. <u>ACCESSORY WIND ENERGY SYSTEM</u> A wind energy conversion system consisting of a wind turbine, tower, and associated control or conversion electronics, which has a rated capacity of less than or equal to hundred (100) kilowatts and is intended to primarily reduce on-site consumption of utility power. A system is considered a small wind energy system only if it supplies electrical power solely for on-site use, except that when a parcel on which the system is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for on-site use may be used by the utility company.
- 4. ACIDITY(BASICITY) the amount of acid present in a solution
- 5. <u>APPLICANT</u> The person or entity filing application under this ordinance.
- 6. <u>ANAEROBIC DIGESTER</u> A facility which main purpose is to use anaerobic digestion processes to convert livestock manure (primary catalyst) and feedstock into biogas, which is generally burned on-site to produce electricity, heat, and water; as well as to manage livestock and poultry manure. Anaerobic digesters may include –eo-digestion" in which

the livestock and poultry manure (primary catalyst) may be mixed with other organic materials (secondary catalysts). Types of anaerobic digesters include covered anaerobic lagoons, plug-flow, and/or complete mix (or continually stirred tank reactor), along with other appurtenant sites, structures and buildings, electrical infrastructure, transmission lines and other appurtenant structures and facilities.

- 7. <u>ANAEROBIC DIGESTION</u> is a series of processes in which microorganisms break down biodegradable material in the absence of oxygen, used for industrial or domestic purposes to manage waste and/or to release energy.
- 8. ANSI The American National Standards Institute
- 9. APCA Air Pollution Control Act
- 10. <u>APPURTENANCES</u> The visible, functional, or ornamental objects accessory to and part of buildings.
- 11. <u>ASTM</u> The American Society for Testing and Materials
- 12. <u>BIOGAS</u> A fuel consisting of methane, carbon dioxide, and small amounts of water and other compounds produced as part of anaerobic digestion processes.
- 13. BUILDING CODE The Municipal Uniform Construction Code Ordinance
- 14. <u>CLEAN WOOD</u> Natural wood that has that has been seasoned to reduce its water content and provide more efficient combustion. The term clean wood does not include wood:
  - a. Coated with paint, stain, oil, resin or any other preservative. fire retardant or decorative materials:
  - b. Impregnated with preservatives or fire retardants:
  - c. Exposed to salt water; nor
  - d. Manufactured with use of adhesives, polymers or resins, such as strand, particle and veneer lumber and recycled lumber.
- 15. EPA United States Environmental Protection Agency

### 16. GEOTHERMAL TERMS -

a. <u>Closed Horizontal Loop Geothermal System</u>: A mechanism for heat exchange which consists of the following basic elements: underground loops of piping; heat transfer fluid; a heat pump: an air distribution system. An opening is made in the Earth. A series of pipes are installed into the opening and connected to a heat

exchange system in the building. The pipes form a closed loop and are filled with a heat transfer fluid. The fluid is circulated through the piping from the opening into the heat exchanger and back. The system functions in the same manner as the open loop system except there is no pumping of groundwater. A horizontal closed loop system shall be no more than twenty (20) feet deep.

- b. <u>Closed Vertical Loop Geothermal System</u>: A borehole that extends beneath the surface. Pipes are installed with U-bends at the bottom of the borehole. The pipes are connected to the heat exchanger and heat transfer fluid is circulated through the pipes.
- c. <u>Geothermal Boreholes</u>: A hole drilled or bored into the earth into which piping is inserted for use in a closed vertical loop geothermal system.
- d. <u>Geothermal Energy System</u>: An energy generating system that uses the Earth's thermal properties in conjunction with electricity to provide greater efficiency in the heating and cooling of buildings.
- e. <u>Open Horizontal Loop Geothermal System</u>: Water is pumped from a water well or other water source into a heat exchanger located in a surface building. The water drawn from the Earth is then pumped back into the ground through a different well or in some cases the same well, also known as —a-injection". Alternatively, the groundwater could be discharged to a surface water body also known as a —pump and dump". In the heating mode, cooler water is returned to the Earth, and in the cooling mode, warmer water is returned to the surface water body or well.
- 17. <u>HUB HEIGHT</u> The distances measured from the surface of the tower foundation to the height of the Wind Turbine hub, to which the blade is attached.
- 18. <u>METHANOGENS</u>—bacteria found in anaerobic environments such as animal intestinal tracts or sediments or sewage and capable of producing methane.
- <u>NET METERING</u> A mechanism that provides a simplified approach for interconnecting and metering on-site renewable generating facilities, such as a solar PV system. It allows customers to use excess solar electric generation to offset utilitypurchased electricity on a monthly or annual basis.
- 20. <u>OCCUPIED BUILDING</u> means a residence, school, hospital, church, public library or other building used for public gathering that is occupied or in use when the permit application is submitted.
- 21. <u>OUTDOOR WOOD-FIRED BOILER (HYDRONIC HEATER)</u> A fuel-burning device, also known as an -outdoor hydronic heater". -outdoor wood-fired furnace", and -outdoor wood-burning appliance". designed:

- a. to burn clean wood or other fuels specifically tested and listed for use by the manufacturer:
- b. by the manufacturer specifically for outdoor installation or installation in structures not normally intended for habitation by humans or domestic animals (e.g., garages); and
- c. to heat building space and/or water via distribution, typically through pipes, of a fluid heated in the device, typically water or a water/antifreeze mixture.
- 22. <u>PHASE 2 OUTDOOR WOOD-FIRED BOILER (HYDRONIC HEATER)</u> An outdoor wood-fired boiler that has been certified or qualified by the EPA as meeting a particulate matter emission limit of 0.32 pounds per million British Thermal Units (BTU) output and is labeled accordingly, with a white -hang<sup>+</sup> tag.
- <u>PHOTOVOLTAIC (PV)</u> The technology that uses a semiconductor to convert light directly into electricity.
- 24. <u>PRINCIPAL ANAEROBIC DIGESTER</u> An anaerobic digester principally used to convert biogas into electricity, heat, and water. Large anaerobic digesters accept both livestock manure (primary catalyst) and feedstock, generated off-site or from more than one (1) farm. Large anaerobic digesters may include -eo-digestion" in which the livestock and poultry manure (primary catalyst) may be mixed with other organic materials (secondary catalysts).
- 25. <u>PRINCIPAL SOLAR ENERGY PRODUCTION FACILITY</u> An area of land or other area used for a solar collection system principally used to capture solar energy and convert it to electrical energy. Large solar energy production facilities consist of one or more free-standing ground, or roof mounted solar collector devices, solar related equipment and other accessory structures and buildings including light reflectors, concentrators, and heat exchangers, substations, electrical infrastructure, transmission lines and other appurtenant structures and facilities, which has a rated capacity of more ten (10) kilowatts (for electricity) or rated storage volume of the system of more than two hundred forty (240) gallons or that has a collector area of more than one thousand (1,000) square feet (for thermal).
- 26. <u>PRINCIPAL WIND ENERGY PRODUCTION FACILITY</u> An area of land or other area used for a wind energy conversion system principally used to capture wind energy and convert it to electrical energy. Large wind energy production facilities consist of one or more wind turbines, tower, and associated control or conversion electronics and other accessory structures and buildings including substations, electrical infrastructure, transmission lines and other appurtenant structures and facilities, which has a rated capacity of more than one hundred (100) kilowatts.
- 27. <u>RESPONSIBLE OFFICIAL</u> Person designated by the municipality to be responsible for the administration and enforcement of this ordinance.

- 28. <u>SOLAR COLLECTION SYSTEM</u> A solar photovoltaic cell, panel, or array, or solar hot air or water collector device, which relies upon solar radiation as an energy source for collection, inversion, storage, and distribution of solar energy for electricity generation or transfer of stored heat.
- 29. <u>SOLAR RELATED EQUIPMENT</u> Items including a solar photovoltaic cell, panel, or array, or solar hot air or water collector device panels, lines, pumps, batteries, mounting brackets, framing and possibly foundations used for or intended to be used for collection of solar energy.
- 30. <u>STACK</u> Any vertical structure enclosing a flue(s) that carry off smoke or exhaust from a furnace or other fuel-burning device, especially that part of a structure extending above a roof.
- 31. <u>WET STAMP- A from-scratch calculation performed by a structural engineer of the tower's integrity.</u>

### Municipal Guide to Planning for and Regulating

### Alternative Energy Systems

The production of alternative forms of energy, either for individual or utility consumption, is a land use not often addressed in most comprehensive plans or zoning ordinances in Lancaster County. However, some municipalities in recent years have often been faced with decisions regarding the appropriate scale and location of these uses in their community. The Pennsylvania Municipalities Planning Code gives local municipalities the authority through comprehensive plans and ordinances to set provisions regulating the placement, construction, operation and maintenance of alternative energy projects. (MPC Sections 105, 301.4.1, and 707.4.viii.1)

The types of alternative energy systems most commonly seen in Lancaster County currently are wind, solar, manure digesters, outdoor wood-fired boilers, and geothermal. Some of these systems, particularly wind, solar, and manure digesters, can vary in the size of the system, the amount of energy produced, and whether that energy is produced primarily for consumption by the property owner or is intended to be transmitted to and sold for the electrical grid.

Before adopting zoning or subdivision and land development ordinance regulations for alternative energy systems, municipalities should first examine and decide the proper location for these uses. The elected and appointed officials should review the land use goals and objectives identified in their comprehensive plan, and the purpose statements for specific zoning districts in their zoning ordinance. These planning documents provide a context to evaluate the appropriateness of specific uses in specific areas of the municipality.

The following is a list of policy points that municipal officials should address in determining the appropriate location and scale of these uses. The list addresses both smaller scale accessory-type applications most typically seen in residential and in some non-residential zoning districts, as well as more land-consumptive and impact-intensive uses typically seen in rural and agricultural zoning districts. A second part of this guide (beginning on page 10) will provide examples of specific zoning ordinance language.

### Smaller-scale alternative energy uses

Municipalities should first decide how to allow these types of uses. It is recommended that an alternative energy system, designed primarily to provide energy for a home or business, be allowed as other accessory structures and buildings are. Most often these structures and buildings are permitted by right.

The primary consideration in the approval process for almost all accessory uses, especially in residential zoning districts, is the impact on neighboring properties. These include appearance, odor, noise, increased traffic, and others. Most alternative energy systems pose minimal impacts.

One exception are outdoor wood-fired boilers which because of the emissions produced are usually not permitted in residential zoning districts. The following list examines potential impacts from specific alternative energy systems. The second part of this report will provide examples of zoning ordinance language municipalities have adopted to address these impacts:

- 1. Height- This is almost exclusively a concern for wind energy systems. These systems will almost always be among the highest structures within a residential, and even a commercial or industrial, zoning district. One wind energy association report recommends that that the bottom of the wind turbine rotor should clear the highest wind obstacle within a 500 foot radius by at least 30 feet. The higher the tower height the more wind power will be produced. Therefore, a municipality must balance neighborhood aesthetics with the energy efficiency of the unit. Although there is no ideal height that balances these concerns, municipal officials should look at the maximum height of similar structures, such as cell tower, flagpoles, and antennas that are allowed in these zoning districts.
- 2. Setbacks- Most municipalities have required these systems, like other accessory uses, to be located in side or rear yards. Setback distances should be the same as other accessory structures. Because wind turbines have generally been designed to withstand hurricane force winds, requiring an applicant to submit the manufacturer's engineering specifications should be sufficient proof to determine that the system will not fall onto a neighboring property.
- 3. Signage- Signage should not be permitted on any alternative energy system other than the manufacturer's label or sign.
- 4. Screening and fencing- Most municipalities do not require applicants to screen or fence these systems. In many instances, especially for solar systems, screening will reduce the energy efficiency of the unit.

### Larger-scale alternative energy uses

These types of systems are designed to produce greater levels of energy, either for consumers with higher energy demand levels such as farms or industrial uses, or designed primarily to produce energy to be supplied directly to the electrical grid. Municipalities must look not only at the operational impacts of these uses but also locational concerns as well.

Developers of utility-scale alternative energy systems, especially those designed primarily to produce energy for the electrical grid, often require relatively large parcels of land to locate their facility. Similar to other land-consumptive uses such as school campuses and recreational uses, applicants usually wish to locate these uses in rural areas where it is easier to assemble the required land and the per acreage cost of the land is lower than within a Designated Growth Area. In determining whether to permit these uses, municipalities must first review their land use objectives in their comprehensive plan and the purpose statement of the specific zoning districts.

Most often, the great majority of land in rural areas of Lancaster County is zoned agricultural. Most local and regional comprehensive plans recommend that only agricultural uses, or uses that support the agricultural industry, be allowed. <u>Balance: The Growth Management Element of the Lancaster County Comprehensive Plan</u> also recommends that only land uses that support the agricultural economy be permitted in agricultural areas. Therefore, the Lancaster County Planning Commission has recommended that only electricity produced from manure digesters be permitted as the primary use in the agricultural zoning district. Solar, wind, and other alternative energy sources can be allowed but only as an accessory use. Some municipalities have limited the total amount of land dedicated to this use as a percentage of the total acreage of the farm, oftentimes no more than one or two per cent of the total.

Because most alternative energy uses are not recommended to be the primary land use for properties within the agricultural zoning district, municipalities whether this should be allowed in other zoning districts. However, a municipality may determine that this type of use is also not appropriate in an industrial district because of the large land needs and the lack of employment provided. In these circumstances, larger-scale alternative energy systems may only be permitted as an accessory use.

The following is a list of operational impacts to be considered when permitting larger-scale alternative energy uses:

- 1. Large-scale, or regional manure digesters bring manure to a site by truck. The municipality should review the number and schedule of truck traffic with the applicant to minimize impacts.
- 2. Screening of alternative-energy systems in rural areas is generally less of a concern than in residential zoning districts. However, the municipality should look at the proximity of the proposed system to neighboring residences and road frontages and determine whether screening would be appropriate.
- Outdoor wood-fired boilers should only be allowed in rural or agricultural areas because of the potential airborne impacts from emissions. The PA DEP has produced a Model Ordinance for Outdoor Wood-Fired Boilers that addresses many of the land use issues involved with these uses.

### ACCESSORY SOLAR ENERGY SYSTEMS

### How Accessory solar energy systems Work

There are two major forms of solar energy technology: photovoltaic (PV) systems and solar thermal systems.

### **Photovoltaic Systems**

Solar electric systems, also known as photovoltaic (PV) systems, convert sunlight into electricity. Photovoltaic power generation employs solar panels comprising a number of cells containing a photovoltaic material. When sunlight is absorbed by these materials, the solar energy knocks electrons loose from their atoms. This phenomenon is called the "photoelectric effect." These free electrons then travel into a circuit built into the solar cell to form electrical current. Only sunlight of certain wavelengths will efficiently create electricity. PV systems still produce electricity on cloudy days, but not as much as on a sunny day.

The basic PV or solar cell typically produces only a small amount of power. To produce more power, solar cells (about 40) can be interconnected to form panels or modules. PV modules range in output from 10 to 300 watts. If more power is needed, several modules can be installed on a building or at ground-level in a rack to form a PV array.

PV arrays can be mounted at a fixed angle facing south, or they can be mounted on a tracking device that follows the sun, allowing them to capture the most sunlight over the course of a day.



(References: U.S. Umbertment of Sourgy Princips Fifturency and Researching Princips, Ph. Sour. Monicord Source

Illustration from U.S. Department of Energy



Illustration from U.S. Department of Energy





illustration from U.S. Department of Energy

### Solar Thermal Systems

Solar thermal systems use solar energy to typically heat a fluid, such as water or an antifreeze solution, or heat a gas, such as air. Solar thermal systems are most commonly utilized for heating residential hot water systems, though they are also used for space heating, spas or swimming pools, and even space cooling.



Illustration from PA Solar Energy Guide

### **Municipal Authority**

The Pennsylvania Municipalities Planning Code gives municipalities the authority to adopt comprehensive plans (MPC Sections 301a.4.1 and 301.1) and ordinances (MPC Sections503.6 and 604.1) to ensure solar and other alternative energy access, including solar access ordinances, development guidelines requiring proper street orientation, and zoning ordinances that contain building height restrictions to avoid shading neighboring solar panels.

### Restrictive Covenants

Despite the recent surge for renewable energy development at the state and local levels, many consumers still face local ordinances and homeowner's association rules that prohibit, restrict, or drastically increase the cost of installing a solar energy system. More than half of U.S. States have solar rights laws that protect consumers from any restrictive covenant. Pennsylvania is not one of the states that have a solar right's or access law.

(References: Outubase for linte conservation declarations and diperative service)

### Model Zoning Language

As solar energy systems become increasingly commonplace in local communities, zoning and subdivision ordinances can provide significant legal structure for ensuring that the integration of solar systems into new and existing building construction and land development aligns with the regulations, goals and expectations of a specific municipality.

Here is an example of model zoning language for solar energy systems:

- ACCESSORY SOLAR ENERGY SYSTEMS: Permitted by right as an accessory use in all zoning districts where structures of any sort are allowed, as long as it meets the requirements of this Chapter and all other applicable construction codes as set forth below:
- Applicability
  - A system is considered an accessory solar energy system only if it supplies electrical or thermal power primarily for on-site use, except that when a property upon which the facility is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for on-site use may be used by the utility company. The owner of the accessory solar energy system shall provide written confirmation that the public utility company has been informed of the customer's intent to install an interconnected customer-owned generator and also approves of such connection. Off-grid systems shall be exempt from this requirement.
  - This ordinance applies to Solar Energy Systems to be installed and constructed after the effective date of the ordinance, and all applications for Solar Energy Systems on existing structures or property.
  - Any upgrades, modifications or changes that materially alter the size or placement of an existing Solar Energy System shall comply with the provisions of this Chapter.
- Design and Installation

- To the extent applicable, the Solar Energy System shall comply with all applicable building and construction codes as amended and any regulations adopted by the Department of Labor and Industry.
- The design and installation of accessory solar energy systems shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI), Underwriters Laboratories (UL), the American Society for Testing and Materials (ASTM), or other similar certifying organizations, and shall comply with the Municipal Building Code and with all other applicable fire and life safety requirements. The manufacturer specifications shall be submitted as part of the application.
- All exterior electrical and/or plumbing lines must be buried below the surface of the ground and be placed in a conduit.
  - Whenever practical, all accessory solar energy systems shall be attached to a building, or located on an impervious surface. If not designed to be attached to the building, the applicant shall demonstrate by credible evidence that such systems cannot feasibly be attached to a building due to structural imitations of the building.
  - Accessory solar energy systems shall be designed and located in order to prevent reflective glare toward any inhabited structure on adjacent properties as well as adjacent street rights-of-way.
  - No portion of an accessory solar energy system shall be located within or above any front yard, along any street frontage, nor within any required setback of any property.

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- Height Restrictions— Active solar energy systems must meet the following requirements:
  - Building- or roof- mounted solar energy systems shall not exceed the maximum allowed height in any zoning district. For purposes for the height measurement, solar energy systems other than building-integrated systems shall be considered to be mechanical devices and are restricted consistent with other building-mounted mechanical devices
  - Ground- or pole-mounted solar energy systems shall not exceed the minimum accessory structure height within the underlying district.

- Setback Active solar energy systems must meet the accessory structure setback for the zoning
  district and primary land use associated with the lot on which the system is located.
  - Roof-mounted Solar Energy Systems In addition to the building setback, the collector surface and mounting devices for roof-mounted solar energy systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.
  - Ground-mounted Solar Energy Systems Ground-mounted solar energy systems may not extend into the side-yard or rear setback when oriented at minimum design tilt.
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- Plan Approval Required All solar energy systems shall require administrative plan approval by municipal zoning officials
  - Plan Applications Plan applications for solar energy systems shall be accompanied by to-scale horizontal and vertical (elevation) drawings. The drawings must show the location of the system on the building or on the property for a ground-mount system, including the property lines. Applicants must use an installer who is on DEP's approved list
    - Pitched Roof Mounted Solar Energy Systems For all roof-mounted systems other than a flat roof the elevation must show the highest finished slope of the solar collector and the slope of the finished roof surface on which it is mounted.
    - Flat Roof Mounted Solar Energy Systems For flat roof applications a drawing shall be submitted showing the distance to the roof edge and any parapets on the building and shall identify the height of the building on the street frontage side, the shortest distance of the system from the street frontage edge of the building, and the highest finished height of the solar collector above the finished surface of the roof.
  - Plan Approvals Applications that meet the design requirements of this ordinance, and do not require a conditional use permit, shall be granted administrative approval by the zoning official and shall not require Planning Commission review. Plan approval does not indicate compliance with Building Code or Electric Code.

 Utility Notification - The owner of the small solar energy system shall provide written authorization that the public utility company has been informed of the customer's intent to install an interconnected customer-owned generator and also approves of such connection. Offgrid systems shall be exempt from this requirement.

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 Restrictions on Solar energy systems Limited (Optional) - No homeowners' agreement, covenant, common interest community, or other contract between multiple property owners within a subdivision shall restrict or limit solar energy systems to a greater extent than solar performance standards.

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### PRINCIPAL SOLAR ENERGY SYSTEMS

### What Are Principal solar energy systems?

Principal solar energy systems or concentrated solar power (CSP) systems use lenses or mirrors to focus a large area of sunlight onto a small area. Electrical power is produced when the concentrated light is directed onto photovoltaic surfaces or used to heat a transfer fluid for a conventional power plant. Large solar energy production facilities consist of one or more free-standing ground, or roof mounted solar collector devices, solar related equipment and other accessory structures and buildings including light reflectors, concentrators, and heat exchangers, substations, electrical infrastructure, transmission lines and other appurtenant structures and facilities, which has a rated capacity of more ten (10) kilowatts (for electricity) or rated storage volume of the system of more than two hundred forty (240) gallons or that has a collector area of more than one thousand (1,000) square feet (for thermal). There are two types of large solar electric generating technologies: photovoltaic panels and solar thermal systems.

(References: 7.5 Department of Georgy Joseph Affection and Backwords Frenzy Durabase for Store to another for Removality and African y Marines)

### Photovoltaic Systems

Photovoltaic (PV) systems employ sunlight concentrated onto photovoltaic surfaces for the purpose of electrical power production. Solar concentrators of all varieties may be used, and these are often mounted on a solar tracker in order to keep the focal point upon the cell as the sun moves across the sky.



illustration from U.S. Department of Energy

### Solar Thermal Systems

Solar-thermal electric generation technology uses the sun's energy to power a steam turbine. Solar-thermal systems use lenses or mirrors and tracking systems to focus a large area of sunlight onto a small area. The concentrated light is then used as heat or as a heat source for a conventional power plant.

(References: 2.5. Department of Eastern Sourcey (Historics and Renewatine Source). Commune in Ability or entry (Environmental Source).



Illustration from U.S. Department of Energy



illustration from U.S. Department of Energy

Power Tower Systems — Policies Report of R&C Leng fore write poles (Strakes), our that are relevant to beliostatis, relevant, and overall systems issues for meanal receiver uses points.



Illustration from Exenewable website of Solar Farm in Puertollano, Spain

### Pervious or impervious

With the recent trend to build solar energy plants, new land use questions concerning solar energy projects have been raised. One of the main questions local governments must deal with is: Do these ground-mounted solar panels constitute impervious coverage or not? This is an important question to consider if one of these large-scale projects is built on prime agricultural land or near a major water resource. Opinions on this issue vary. Professionals in the solar industry don't consider solar panels as a solid surface because of their slanted positions and the spacing between each panel, thereby they are not impervious. In April 2010, the State of New Jersey passed a law that exempts solar panels from the calculation of impervious cover under a number of state laws. Mount Joy and RaphoTownships, Lancaster County, PA consider solar panels as impervious cover. Currently, we are not aware of any studies proving either side.

### Model Language

The following example is a summary of model zoning language from the model ordinance for energy projects written by the Oregon Department of Energy:

**Use:** A Solar Energy Production Facility shall be considered a permitted use in the industrial and commercial zones, and a special exception use in the agricultural district.

Acreage: The proposed solar energy project would occupy less than [ ] acres on land zoned for commercial or industrial use or for agricultural zoning districts less than [ ] acres on land zoned for agricultural use.

Height and Setback: For purposes of determining compliance with lot coverage standards of the underlying zone, the total surface area of all ground-mounted and freestanding solar collectors including.

solar photovoltaic cells, panels, arrays, and solar hot air or water collector devices shall be considered impervious. Panels mounted on the roof of any building shall be subject to the maximum height regulations specified within each the underlying zone.

### Design and Installation:

- All on-site utility and transmission lines shall, to the extent feasible, be placed underground.
- All large solar energy production facilities shall be designed and located in order to prevent reflective glare toward any inhabited buildings on adjacent properties as well as adjacent street rights-of-way.
- A clearly visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
- The proposed solar energy project is not located adjacent to, or within, the control zone of any airport.
- Whenever practical, all principal solar energy systems should be attached to a building; or if ground mounted and/or freestanding, the applicant shall demonstrate by credible evidence that

   the area proposed for the principal solar energy system does not predominantly consist of Class I, II and/or III soils, as identified in the soil survey, and is generally unsuitable for agricultural purposes: and 2)such facilities cannot feasibly be attached to a building due to structural limitations of the building.
- All mechanical equipment of principal solar energy systems including any structure for batteries or storage cells, shall be completely enclosed by a minimum eight (8) foot high fence with a selflocking gate, and provided with screening in accordance with the landscaping provisions of the municipal subdivision and land development ordinance.

Use of Public Roads: The applicant has secured, or can secure, all necessary approvals from the local government or the State Highway Division of access points for project roads and parking areas at the project site.

Liability Insurance: There shall be maintained a current general fiability policy covering bodily injury and property damage with limits of at least \$1 million per occurrence and \$1 million in the aggregate.

Decommissioning: The applicant agrees to the following as conditions of the land use permit:

- If the applicant ceases operation of the energy project or begins, but does not complete, construction of the project, the applicant shall restore the site according to a plan approved by the planning authority.
- The Large Solar Energy Production Facility owner is required to notify the [municipality] immediately upon cessation or abandonment of the operation. The owner shall be responsible for the removal of the facility within six (6) months from the date the applicant ceases use of the facility or the facility becomes obsolete. The owner shall then have twelve (12) months in which to dismantle and remove the Large Solar Energy Production Facility from the property. At the time of issuance of the permit for the construction of the Large Solar Energy Production Facility, the owner shall provide financial security in form and amount acceptable to the [municipality] to secure the expense of dismantling and removing said structures.

The next item discussed was regarding **Medical Marijuana**. The City Attorney provided an overview of the moratorium and discussed the proposed land use ordinance.

Motion by Granger, seconded by Bryant, regarding **ordinance – Medical Marijuana**, that the Committee-of-the-Whole make a recommendation to City Council to approve this ordinance forward the proposed ordinance to the Planning Commission for scheduling a public hearing.

Motion carried by the following vote:

Yes: Bryant, Granger, Ketels, Koester, McConaghy, Novitke No: None Absent: Shetler

Administration was directed to place the ordinance – Medical Marijuana on the City Council Meeting for February 27, 2012, then on the Planning Commission agenda for February 29, 2012.

### CHARLES T. BERSCHBACK

ATTORNEY AT LAW 24053 EAST JEFFERSON AVENUE ST. CLAIR SHORES, MICHIGAN 48080-1530

> (586) 777-0400 FAX (586) 777-0430 bibwław@yahoo.com February 14, 2012

CHARLES T. BERSCHBACK

DON R. BERSCHBACK OF COUNSEL

Planning Commission City of Grosse Pointe Woods 20025 Mack Plaza Grosse Pointe Woods, MI 48236

RE. 2-29-12 Agenda Item / Scheduling of Public Hearing / Zoning Ordinance

Dear Planning Commission:

The City Attorney's office has been keeping the Mayor and Council up to date regarding the Michigan Medical Marijuana Act ("MMMA"). For purposes of zoning and land use within the City, a moratorium has been in affect since August 16, 2010. Council has recently granted another extension from February 16, 2012 through August 16, 2012.

I have recommended to the Council that the attached ordinance be enacted which would prohibit any uses in districts "that are contrary to federal, state or local laws or ordinances of Grosse Pointe Woods".

At the Committee of the Whole on February 13<sup>th</sup> the Council unanimously recommended that this ordinance be forwarded to you for the scheduling of a public hearing.

I will provide an oral report to the planning commission at the February 29<sup>th</sup> meeting. Thank you.

Very truly yours,

in Berschback

CHIP BERSCHBACK

CTB:gmr Enclosures cc: Al Fincham Lisa Hathaway Gene Tutag

### **ORDINANCE** #

### AN ORDINANCE AMENDING CHAPTER 50 ZONING, ARTICLE III DISTRICT REGULATIONS, BY ADDING SECTION 50-185 PROHIBITED USES, TO PROVIDE THAT ANY USE CONTRARY TO STATE, FEDERAL OR LOCAL LAWS IS PROHIBITED

### THE CITY OF GROSSE POINTE WOODS ORDAINS:

### Sec. 50-185 Prohibited Uses.

Each District, as created in this Article, shall be subject to the regulations contained in this Ordinance and Chapter 50 Zoning. Uses not expressly permitted are prohibited. Uses in each of the enumerated districts that are contrary to federal, state, or local laws or ordinances of Grosse Pointe Woods, are prohibited.

### SO WHAT SHOULD YOUR COMMUNITY DO RIGHT NOW ABOUT REGULATING MEDICAL MARIHUANA FACILITIES?

- Keep up-to-date. Continue to stay abreast of court cases and pending legislation regarding medical marihuana.
- 2. Do not continue moratoria for more than a year. Except in narrow extenuating circumstances (which are unlikely to apply in very many municipalities), do not continue moratoria for more than one year (in total). Cooley Law Professor (and former municipal attorney for many years) Gerald Fisher was asked about this at his MMMA update at the Michigan Association of Planning Annual Conference on October 21st. Fisher noted; there is no statutory authority for a moratorium. He reviewed the old case law in Michigan allowing a moratorium for only a limited period of time, and for a specific purpose. None of those old cases have permitted moratoria for longer than a year. Plus the US Supreme Court in Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency, 535 U.S. 302 (2002) examined a land use moratoria that had been in place for two years and eight months while a master plan was prepared. Professor Fisher noted that the Court in Tahoe distinguished two types of "taking" cases: those involving a claim that the mere enactment of the moratorium in the particular case results in a taking (which was the claim in the Tahoe case), and those in which it is claimed that there is a taking based on the application of the moratorium to the particular claimant (this latter claim was not applicable in the Supreme Court's Tahoe decision). Considering the effort by the federal government, two states, and several local governments to save Lake Tahoe, it was clear that the moratorium involved the protection of a very unique resource. Thus, the Court refected the claim that the mere enactment and continuation of a moratorium that remained effective for such a long time caused a taking. However, the Court made it clear it's decision was not a blanket authorization to adopt any moratorium for that long, indicating that a moratorium that lasts for more than one year should be viewed with special skepticism. Finally, the Professor cautioned that the ruling in the Tahoe case does not provide protection against a lengthy moratorium when a property

By Mark A. Wyckoff, FAICP, Editor

owner makes the claim that, as applied to him or her, the moratorium results in a taking. Normally, moratoria are not defensible for more than 3-6 months in the face of a legitimate public health or safety threat. After that, citizens may have a right to sue municipalities to protect their rights. Please consult your municipal attorney for more advice.

- 3. Take some regulatory action soon. If your community has any significant population and/or is located with good transportation access and has not yet adopted any approach to regulating medical marihuana and does not wish to permit medical marihuana dispensaries, then for the time being, consider adopting the simple approach used in Livonia. This approach has been used in many jurisdictions. It makes dispensaries and cooperatives illegal based on the argument the MMMA is superceded by federal law. This approach has been upheld by several circuit courts and is on appeal to higher courts. This will buy some time as the community waits for the current cases (like Lott v Livonia) to play their way out (appeals will probably take another 12-24 months). While this time elapses, consider if you want to use a different approach. Read Gerald Fisher's white paper on the topic prepared for the MTA and MML and available to download at http://www.michigantownships.org/ downloads/final white paper 8510. pdf. It provides guidance on a variety of approaches and on many legal issues.
- Do not do nothing. That will put your community on the defensive and leave it completely unprepared in the event of a lawsult, or clarifying court opinion or new legislation which may require quick action. By getting well-informed, you will be best prepared to act quickly. Because it held that a patient may not sell marihuana to another patient, the Court of Appeals decision in People v McQueen places a significant hurdle in the way for medical marihuana dispensaries (pending the outcome of an appeal to the Michigan Supreme Court). The more recent decision of the Court of Appeals in People v Bylsma also places significant limitations on the amount of marihuana a caregiver may "possess." So following the Livonia reg-

ulatory approach (see point #3 above) should keep the wolves at bay until the situation is clearer. Besides, the feds are starting to crack down on dispensaries in California, where medical marihuana has been legal for 15 years (see Associated Press report by Don Thompson at <u>http://www.sfgate.com/</u> cgi-bin/article.cgi?f=/n/a/2011/10/06/ national/a132031D55.DTL&ao=all). The State Attorney General has also made It clear he does not want dispensaries established in Michigan and will likely keep the legal heat on stateside.

- 5. <u>Contact vour Congressman about</u> legislative action.
  - If you support federal declassification of marihuana as a Schedule
  - 1 drug and subsequent regulation by the State, then contact your Congressmen about supporting the Frank/Paul bill entitled "Ending Federal marihuana Prohibition Act of 2011."
  - If you support medical marihuana as a prescription drug (which requires its removal as a Schedule 1 drug and makes it subject to the Federal Drug Administration) where it could be prescribed by doctors and sold by pharmacists, then contact your Congressmen to support this approach.
  - If you want the feds to enforce existing federal law and close down dispensaries, but want to permit home grown marihuana plants per the MMMA, then ask your Congressmen to support new federal law to allow this to happen.
  - In any event, the most important legislation as relates to the big picture on this topic must come at the federal level.
- <u>Contact your state legislators</u>. If there is a state legislative approach already proposed, or new legislation introduced after this issue of *PZN* is distributed, then do not sit on the sidelines, let your legislators know what you support and why you think that approach is best for your community.
- <u>Stav up-to-date</u>. Continue to stay abreast of court cases and pending legislation regarding medical marihuana. *PZN* will provide periodic updates.

### City of Grosse Pointe Woods BUILDING DEPARTMENT Monthly Financial Report – January 2012

Permits Issued:	115		
Rental Certificates:	16	Total Amount:	\$ 21,982
Vacant/Foreclosure:	4		

### **CODE ENFORCEMENT**

Abandoned/Foreclosure Compl. Notices Issued:		
# of Complaints Investigated by Code Enforcement:	21	
Closed Due to Compliance:	14	
Open for Longer Compliance Time:	7	
Citations Issued:	1	
Early Trash Notices:	17	
Code Violation Notices to Residents:	21	
Tall Grass Notices Issued:	0	
Stop Work notices to Contractors (working w/o permit):		
Outside Storage:	5	

### NEW BUSINESS

None