Solar Ready Communities Best Practices for Illinois Communities

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Better Energy. Better World.

Our Mission . . .



Transforming the way we produce, distribute and consume energy to be both economically and environmentally sustainable.









Sustainable Communities Transforming the world through community action

- I. Grow Solar Partnership
- 2. GreenStep Cities
- 3. Metro Clean Energy Resource Team (CERT)
- 4. Sustainability Planning and Technical Assistance











Understanding Local Solar Issues

- I. Development trends, policy drivers
- 2. Understanding solar energy resources
- 3. Solar land uses and technologies
- 4. Statutes affecting local options
- 5. Local planning and policy best practices
- 6. Local zoning best practices
- 7. Other tools in the local toolbox
- 8. Questions and Concerns









If you remember one thing ...

Solar energy development is local development

- ✓ Is investment adding value to homes and businesses
- ✓ Creates economic opportunity
- ✓ Uses local resources
- ✓ Poses potential conflicts



Photo credit: U.S. DOE SunShot





If you remember two things ...

Local governments are critical partners in the solar market transformation.

- ✓ Solar development is local
- ✓ Communities determine how local development occurs
- Communities choose to be pro-growth (or not)



Photo credit: U.S. DOE SunShot





Local Government Solar Toolkits

Planning, Zoning, Permitting

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lowa	Wisconsin		Minnesota

http://www.growsolar.org/toolbox/toolkits/



Grow Solar Toolkit

- I. Summary of Statutes that guide or enable local government actions regarding solar development
- 2. Comprehensive Plan guidance and local policy best practices
- 3. Land use regulation guidance and best practices to enable solar development
- 4. Model zoning ordinance
- 5. Permitting guidance and best practices to reduce soft costs
- 6. Model solar building permit

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Model Solar Zoning for Illinois Municipalities

Every Illinois community should have zoning language that addresses solar energy systems. Solar installations are a form of development, and development regulations, including zoning and subdivision or disearcs, need to incorporate the variety of development forms that solar installations can take. Moneover, incorporating solar land uses and development in the ordinances recognizes that the community's solar essures are a valuable asset with eccentration and environmental value that properly owners will want to capture. Solar development regulation can help educate staff and community, as well as allowise potential candidate or combusion.

Illinois state statutes have most solar development regulation to local governments; the State does not pre-empt or guide solar development except for enabling local governments to take certain options. Most importantly, illinois law mostly leaves to local governments the challenge of defining solar "rights," including when property owners have an as-of-right solar development opportunity, when solar rights trump or are trumped by other property rights, and how or whether to protect solar installations from trees or buildings on adjacent properties. State law only protects solar development "rights" in the



Photo Create: Mitsent Researchin Knergy Accordation

context of limiting Home Owners Associations (HOAs) from restricting solar development.

Local development regulations that are "solar ready" will have the following characteristics:

- Address all the types of solar land uses that the community is likely to see
- Result in an as-of-right solar installation opportunity for at least accessory use solar and where
 possible for principal use solar development
- Balance between solar resources and other valuable local resources (trees, solis, historic resources) in the development process

All zoning ontinances include certain basic elements that can, it not considered in the context of solar resources and technologies, create inadvertent barriers to solar development. Basic zoning elements include:

- Use: Which land uses are permitted, which are conditional, which are prohibited in each running district? Should the community allow solar farms in industrial districts, or ground mount accessory solar in the backgoids of revidential districts?
- Dimensional Standards: Where on the lot can solar land uses be placed? If the solar resource is only viable in the front yard, or only available shows the pask of the read heraces of the neighbor's trees, should the

community allow solar development in those locations? Must communities allow some exceptions to height and sethack requirements – does adar most the same standard to qualify for an escention?

a Course and Bulk. How much of the property can be developed consistent with the preferred development patient for that zening district? Should solar panels in the beckgard count as an accessory structure if the community finits the number of accessory buildings in residential neighborhoods? Uses the surface of a solar collector count as impervious surface for storm water standards?

Nie twa

8.50 x 11.00 in



SunShot

Photo credit: Great Plains visitate





Solar Market Development Trends





Source: Bloomberg New Energy Finance



Evolution of Solar Energy ...

2007 - \$4.00/watt \$4.50 The wholesale price of solar \$4.00 photovoltaic (PV) panels (\$/watt) \$3.50 has dropped by 99% since 1977. \$3.00 ✓ More significantly, since 2007, the \$2.50 price has declined by 83% . . . \$2.00 \$1.50 \$1.00 \$0.50 2014 - \$0.67/watt \$0.00

2007 2008 2009 2010 2011 2012 2013 2014



Market Conditions Accessory Solar Development

Since 2008 ...

- > 54% reduction in the installed cost of rooftop solar
- > 800% increase in rooftop installed capacity





Market Conditions Principal Solar Development

On average, Purchased Power Agreement (PPA) prices have fallen by nearly 75% since 2009



BERKELEY LAB	ENERGY TECHNOLOGIES AREA	Project Site: <u>http://utilityscalesolar.lbl.gov</u> EMP DerkeleyLabEMP	SunShot 2	27
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Market Conditions Principal Solar Development

Predictions are for this trend to continue ...



Community Solar



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Solar Resources



Solar Resources ...

Considering your community's solar reserves.



Solar Resources ...

The local landscape defines whether a given site has a solar resource

- ✓ Topography
- ✓ On-site obstructions
- ✓ Obstructions on adjacent land
- ✓ Future obstructions



An adequate solar resource location is unshaded for several hours every day (around solar noon), both now and well into the future.



Solar Resources ...

Considering your community's solar reserves.







What are Energy "Reserves"?

✓ Proved oil and gas reserves -

those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible– from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations.

(SEC definition of proved reserves)









What are Energy "Reserves"?

Proved solar reserves - those quantities of solar energy, which, by analysis of atmospheric and land cover data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known access to direct sunlight, and under existing economic conditions, operating methods, and government regulations.











St. Louis Park



Annual electricity consumed – 498 GWh (Regional Indicators Initiative)

Gross reserves

- ✓ 1,217 GWh of electricity,
- Approximately 940 MW of generating capacity.

- ✓ 216 GWh of electricity (43% of electric use)
- ✓ approximately 170 MW of generating capacity.



Eden Prairie



Annual electricity consumed – 781 GWh (Regional Indicators Initiative)

Gross reserves

- ✓ 4,248 GWh of electricity
- Approximately 3,270 MW of generating capacity.

- ✓ 397 GWh of electricity (51% of electric use)
- ✓ approximately 310 MW of generating capacity.



Maplewood



Annual electricity consumed – 324 GWh (Regional Indicators Initiative)

Gross reserves

- ✓ 2,328 GWh of electricity
- Approximately 1,790
 MW of generating capacity.

- ✓ 219 GWh of electricity (68% of electric use)
- ✓ approximately 170 MW of generating capacity.



White Bear Lake



Annual electricity consumed – 194 GWh (Regional Indicators Initiative)

Gross reserves

- ✓ 942 GWh of electricity,
- Approximately 720 MW of generating capacity.

- ✓ 120 GWh of electricity (68% of electric use)
- ✓ approximately 90 MW of generating capacity.



City of Urbana



Rooftop reserves

- ✓ 238 GWh of electricity
- ✓ approximately 213 MW of generating capacity.
- ✓ Estimated 88% data coverage



Village of Schaumburg



Rooftop reserves

- ✓ 238 GWh of electricity
- ✓ approximately 206 MW of generating capacity.
- ✓ Estimated 67% data coverage





City of Rockford



Rooftop reserves

- ✓ 1,200 GWh of electricity
- Approximately 1,000
 MW of generating capacity.
- ✓ Estimated 67% data coverage



City of Oak Park



Rooftop reserves ✓ 128 GWh of electricity

- ✓ approximately 112 MW of generating capacity.
- ✓ Estimated 97% data coverage



Illinois Coverage



Rooftop reserves

- ✓ 30,400 GWh of electricity
- Approximately 26,100
 MW of generating capacity.
- ✓ Estimated 52% data coverage for buildings





Solar Technologies and Land Uses



Using Solar Reserves











Solar development is not one thing . . .

Using Solar Reserves



Community-Owned Renewable Energy for Cedar Falls



- 1. Roof-mounted systems. Capturing the rooftop solar resource on buildings as small as a garage and as big as a convention center.
- 2. Ground-mounted accessory systems. Free-standing systems on a pole or rack in the yard.
- 3. Solar gardens. Ground or roof-mounted systems, ranging from 1 to 30 acres in coverage, providing energy to remote homes and businesses.
- 4. Solar farms. Ground-mounted systems that are the principal use and cover 5 1,000 acres.

Solar Technologies

\checkmark Solar Thermal





Photo credit: NREL Phot Xchange



Solar Technologies

✓ Solar Air/Transpired Air



Photo credit: Solar Wall, http://solarwall.com/en/products/uses-andapplications/agriculture.php



Photo credit: RREAL, http://www.rreal.org/wpcontent/uploads/2010/03/Air-heat-Diagram-21.png

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Solar Technologies



Photo credit: CR Planning


✓ Rooftop Solar PV systems







Photo credit: CR Planning



✓ Building Integrated PV



Photo Credit: Powerfully Green



Commercial Rooftop Solar PV systems



Photo credit: Eric Hansen/SolarFlow



Ground mount accessory structures





Photo credit: CR Planning



✓ Large Scale commercial rooftop





✓ Pole-mounted (tracking) solar farm



Photo credit: VTD/Eric Blokland, http://vtdigger.org/2011/07/28/vermont-solar-farm

✓ Ground-mount/racked systems



Photo credit: CR Planning



✓ Utility-Scale Solar Farm



Photo credit: 8minuteenergy, PV Magazine, Nov 2014



✓ Utility-Scale Solar Farm





Photo credit: Evan Frost, MPR News

Photo credit: KARE 11 News





Statutory Context



Statutory Context - Local Impacts

- **Illinois' Future Energy Jobs Bill:**
- ✓ 25% renewable energy standard
- ✓ Solar carve-outs for distributed solar, community solar, solar farms, and brownfield-focused development
- Funding to support market transformation estimated 1,320 MW of solar by 2020



Statutory Context – Local Authority

- Enabling statutes for addressing solar resources
- ✓ Comprehensive Planning (65 ILCS 5/11-12-5)
- ✓ Zoning authority (65 ILCS 5 Article 11, Div. 13-10)
- Planning Commission Authority (65 ILCS 5 Article 11 Div. 12-5)
- ✓ Homeowner Associations (765 ILCS 165/)
- Property Assessed Clean Energy (65 ILCS 5 Art. | Div. | | |)



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Solar Statutes affecting local governments

Illinois State Law 65 ILCS 5/11-12-5 Sec. 11-12-5 gives every plan commission and planning department authority to:

Prepare and recommend to the corporate authorities a comprehensive plan for the present and future development or redevelopment of the municipality.







Solar Statutes affecting local governments

65 ILCS 5 Article 11 Div.12-5 (Plan Commissions) Grants authority to municipalities to establish planning commissions and departments. The power given to these planning bodies includes:

(5) To prepare and recommend to the corporate authorities schemes for regulating or forbidding structures or activities which may hinder access to solar energy necessary for the proper functioning of solar energy systems, as defined in Section 1.2 of The Comprehensive Solar Energy Act of 1977, or to recommend changes in such schemes.



Solar Statutes

affecting local governments

65 ILCS 5 Article 11, Div. 13-10 (Zoning Authority, Solar Access)

Grants authority to municipalities to protect solar resources through zoning:

(10) [...] to regulate or forbid any structure or activity which may hinder access to solar energy necessary for the proper functioning of a solar energy system, as defined in Section 1.2 of the Comprehensive Solar Energy Act of 1977.



Solar Statutes affecting local governments

765 ILCS 165/ (Homeowners' Energy Policy Statement Act)

Prohibits homeowners' associations and similar entities from preventing homeowners from using or installing solar energy systems.

No deed restrictions, covenants, or similar binding agreements running with the land shall prohibit or have the effect of prohibiting a solar energy system from being installed on a building erected on a lot or parcel covered by the deed restrictions [...]



Solar Statutes affecting local governments

35 ILCS 200 Title 3 Art. 10 Div. I (Property Taxes, Valuation for Special Properties, Solar Energy Systems)

Illinois offers a special assessment of solar energy systems for property tax purposes. When a claim is filed, the assessment must ascertain two values: the value of the improvements as if equipped with a conventional heating or cooling system and the value of the improvements as equipped with the solar energy system. The alternate valuation is the lesser of these two values.

- \checkmark Both active and passive solar energy systems are eligible.
- Only the solar equipment is eligible (not valid for equipment that is equally usable in a conventional energy system or components that serve non-solar energy generating purposes.



Solar Statutes

affecting local governments

65 ILCS 5 Art. | Div. |-|| (Property Assessed Clean Energy)

Enables municipalities to enter into voluntary agreements to finance renewable energy and energy efficiency and affix to real property (as an assessment)

- Does not use "PACE" label, but effectively enables PACE mechanism
- ✓ No current programs in Illinois





Solar as Development



Solar Land Uses

Accessory Uses

- When the solar installation serves or compliments the existing principal or primary land use on the parcel
- Typically a "net metered" installation but includes some community shared solar installations
- \checkmark Can be a large or small installation,
- Can be any type of solar technology; ground or roof, electric or thermal,



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Solar Land Uses

Accessory Uses

- Characteristics? Has some similarities with other accessory uses, but also some important differences
- Visual impact? Can change the appearance of the principal structure
- Location? To be functional, needs to be located where the solar resource is located
- Conflicts and nuisances? Design and aesthetics, shade trees, other accessory uses









Solar Land Uses

Principal Uses

- ✓ When solar land uses are the primary use on the lot or parcel
- ✓ Defines the land use on the parcel for the next 25 – 30 years
- Technology limited to ground-mount solar electric systems (solar farms and gardens)







Photo credit: 8minuteenergy

Solar as Principal Use

Solar farms and gardens ...

- Permitted? If not listed, then it is not permitted ...
- Which districts? Do you want solar farms competing for land in industrial or commercial districts? Agricultural districts?
- Conflicts and nuisances? Agricultural protection (soils, fragmentation), airports, natural resource areas, urban reserves
- Solar farms as "interim" use brownfields, aggregate reserves, closed landfills







Photo credit: 8minuteenergy





Solar-Ready Local Government Best Practices



Solar Development is Development

Typical Local Government Roles in Development Activities

- Regulator policy, zoning, permitting.
- Financier or Assembler EDA type role, providing financing tools, development preparation, assembly of resources for private sector investment
- Developer HRA or public housing authority type role, owning and managing development for private sector use
- Consumer developing solar for public sector use







Five Principles for Solar Ready Communities...

- I. Comprehensive Plans that describe solar resources and encourage development
- 2. Development Regulations that explicitly address solar development in its varied forms
- 3. Permitting Processes that are predictable, transparent, and documented
- 4. Public Sector Investment in the community's solar resources
- 5. Local Programs to limit market barriers and enable private sector solar development



A. Comprehensive Plans that:

- ✓ Identify and define solar resources,
- Acknowledge solar development benefits and desired co-benefits
- Identify solar development opportunities and conflicts in the community.



Photo credit: Fresh Energy/Giving Tree



B. Development Regulations that:

- explicitly address the different forms/uses of solar development,
- creates as-of-right installation opportunities,
- ✓ set clear and predictable standards for balancing solar resources with other resources
- Ensures capture of desired co-benefits.

Iowa Local Government Solar Toolkit

- IV. Permitted Accessory Use Active solar energy systems shall be allowed as an accessory use in all zoning classifications where structures of any sort are allowed, subject to certain requirements as set forth below. Active solar energy systems that do not meet the visibility standards in C. below will require a conditional use permit, except as provided in Section V. (Conditional Accessory Uses).
 - A. Height Active solar energy systems must meet the following height requirements:
 - Building- or roof- mounted solar energy systems shall not exceed the maximum allowed height in any zoning district. For purposes for height measurement, solar energy systems other than building-integrated systems shall be given an equivalent exception to height standards as buildingmounted mechanical devices or equipment.
 - Ground- or pole-mounted solar energy systems shall not exceed 20 feet in height when oriented at maximum tilt.
 - B. Set-back 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- or Building-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, unless the collector and mounting system has been explicitly engineer to safely extend beyond the edge, and setback standards are not violated. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure. Solar collectors mounted on the sides of buildings and serving as awnings are considered to be building-integrated systems and are regulated as awnings.
 - 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, except as otherwise allowed for building mechanical systems.
- C. Visibility Active solar energy systems shall be designed to blend into the architecture of the building or be screened from routine view from public right-of-ways other than alleys. The color of the solar collector is not required to be consistent with other roofing materials.

Height - Rooftop System

This ordinance notes exceptions to the height standard when other overplaces are granted in the ordinance. Communities should decetly reference the exception language, rather than size the alreachater kinguage here.

Height - Ground or Pale Mounted

This overflowers esters a 20 floot height limit, assuming a standard that is higher then synical height limits for accessing villactures, but invert thin the principal structure. An effernative is to balance height with satback, allowing table synitams of set back farther, for instance, an extra floot of height for every additional two feet of setback. In rural/ior impack for mess satur resources are untilled to be constrained by these or balatilitys on adjacent toos, and the lat is filely to have adjacent toos.

Building integrated PV Building integrated John energy systems can inchare sider energy systems built into roading jexisting technology includes both solar shingles and solar roading bles, into avenings, skylights, and with. This aveningene and addressen halding integrated PV, but evaluations of building integrated.

ermol applications may also be av

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C. Permitting practices that:

- Reduce time spent on acquiring permits and conducting inspections
- Make the permit process transparent and predictable to both staff and applicants
- Ensure the permit process reflects industry best practices
- Establish a permit fee that appropriately covers local government review and inspection costs



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D. Public Sector Investment in the community's public solar resources to demonstrate viability, community commitment, technological elements.





Photo credit: Bruce Schnaak Photography, City of Saint Paul, City of Minneapolis



E. Implementation of Local Programs to remove or limit market barriers (lack of information, financing, workforce) preventing capture of the economic, environmental, and social value of the community's solar resources.





Comprehensive Plans that

- ✓ address solar resources
- acknowledge solar
 development benefits and
 opportunities in the
 community.
- Guide decision making for when resources are in conflict





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Solar Development Economic Benefits

- ✓ Job creation
 ✓ New markets for local contractors
 ✓ Diversity of income to land owners
- ✓ Import substitution



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Solar Development Economic Benefits

 ✓ Job creation
 ✓ New markets for local contractors
 ✓ Diversity of income to land owners

✓ Import substitution



Capacity thru Q3 2015 (MW)

57.0

Companies**

274

Source: 2015 Solar Jobs Census, Solar Foundation



Solar Development Conflicts

- acknowledge perceived nuisances or potential conflicts between solar development and other resources;
 - Agricultural practices
 - Urban forests
 - Historic resources
 - Airports
 - Natural areas



2. Development Regulations that:

- explicitly address solar development in its varied forms,
- create as-of-right installation opportunities, and
- ✓ set clear and predictable standards for balancing solar resources with other resources.

roduction

trary to what many assume, Illinois has a good solar energy burce. The resource value has grown more apparent as solar rgy system components have become more efficient and less thy: Illinois has seen an increasing number of solar energy allations over recent years. The interest in solar energy has rapidly eased such that many communities have had to address solar allations as a land use issue. Solar energy components continue to rove in efficiency and decline in price; the U.S. Department of rgy forecasts that solar energy will start to reach widespread onal cost parity with retail electric costs before 2020, and many ritions, including some in Illinois, have already reached retail parity.

Model Solar Energy Standar This ardinance was developed based on work completed und the Department of Energy's Pho Rooflop Solar Challenge progra m Minnesota, and updated for it three state Grow Solar initiativ funded by Rooftop Solar Challen Phase 2, This version was less updated lane, 2015.

solar energy is much more than an alternative (or supplement) to utility power. Solar energy has ome a symbol of energy self-sufficiency and environmental sustainability. The growth in solar allations is attributable as much to the non-economic benefits as to it being an economic substitu electric utility power. Households and businesses wanting to reduce their carbon footprint see so rgy as a strong complement to energy efficiency. Volatility in natural gas prices and retail electric kets makes free solar fuel look attractive as a price hedge.

ar Energy Issues

al governments in Illinois are seeing growing interest by property owners in solar energy allations, and are having to address solar land uses in their development regulation. Given the tinuing decline in cost, and increasing value of clean energy, solar development will increasingly b il development issue. Three primary issues tie solar energy to development regulations:

- Lond use conflicts and nuisance considerations. Solar energy systems have few nuisances but some types of solar development can compete for land with other development options, and visual impacts and safety concerns by neighbors sometimes create oppositit to solar installations. Good design and attention to aesthetics can answer most nuisance visual concerns. But large scale development (solar farms or gardens) are becoming more common and raise the issue about whether and where such land uses are appropriate, ju like other types of development.
- Protecting access to solar resources. Development regulations can inadvertently limit a
 property owner's ability to access their solar resource. Solar access can also be limited by
 buildings or vegetation on adjacent lots. Communities should consider how to protect an
 develop solar resources in zoning and subdivision processes.
- Encouraging appropriate solar development. Local governments that have set climate
 protection or sustainability goals can meet some of their commitment by removing
 regulatory barriers to solar energy and incorporating low or no-cost incentives in
 development regulations to spur solar investment.



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Basic Solar Energy Zoning – Accessory Uses

Do your basic zoning tools - uses, setbacks, heights, coverage – create barriers for home and business owners to capture solar resources?

- ✓ Uses Are accessory solar land uses allowed?
- Dimensional standards What exceptions does your ordinance allow for height and setback standards?

Coverage - Is a ground-mount solar energy system the same as a shed or garage?

Does your ordinance define an "as-of-right" installation for accessory uses?



Basic Solar Energy Zoning – Principal Uses

Do your basic zoning tools set clear standards for solar farm or garden development?

- Uses Are principal solar land uses allowed? Are clear land use priorities set in districts, overlays?
- Submittal requirements What information do you need from solar farm developers?
- Coverage How should solar collector surfaces be counted in coverage or impervious surface ratios?
- Conditional use or Interim use?

Are solar principal uses treated equivalently as other industrial or natural resource based uses?



Advanced Solar Zoning

Does your zoning use advanced regulatory concepts that can affect solar development?

- Design standards Are community aesthetic or character standards part of local regulations?
- Solar easements or cross-property protection Does local regulation protect the long-term solar resource when someone makes a long-term investment in solar infrastructure?
- Home Owners Associations Does the community have an interest in ensuring solar development rights in common interest communities?

 Integrating with other processes – agricultural protection, municipal utility, historic preservation, etc.

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Advanced Solar Zoning

Homeowner solar rights – Limitations on HOA restrictions regarding solar installations

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VII. Restrictions on Solar Energy Systems Limited. Consistent with 765 ILCS 165/, no homeowners' agreement, covenant, common interest community, or other contract between multiple property owners within a subdivision of Model Community shall prohibit or restrict homeowners from installing solar energy systems. No energy policy statement enacted by a common interest community shall be more restrictive than Model Community's solar energy standards.

Homeowner Installation Rights Protected No deed restrictions, covenants, or similar binding agreements running with the land shall prohibit or have the effect of prohibiting a solar energy system from being installed on a building erected on a lot or parcel covered by the deed restrictions [...]

Source: Illinois Statutes, 765 ILCS 165/20



Risks to Agricultural Practices

Agricultural protection is designed to address several development-related risks

- ✓ Loss of prime agricultural soils
- ✓ Loss of local productive capacity
- \checkmark Fragmentation of land
- ✓ Secondary development impacts
- Nuisances impacting agricultural practices





Source: Scott County Prime Farmland Mapping Project, 2009



Model Ordinance -Agricultural Protection

(7) Agricultural Protection -

Solar farms must comply with site assessment or soil identification standards that are intended to protect agricultural soils.



Agricultural Protection

If the community has ordinances that protect agricultural soils, practices, or land uses, this provision applies those same standards to solar development. Communities should understand, however, that solar farms do not pose the same level or type of risk to agricultural practices as does housing or commercial development.



Model Ordinance -Agricultural Protection



Agricultural Impact Mitigation Agreements

The Bureau of Land and Water Resources (BLWR) works with the various utility companies on projects (i.e., wind farms, pipelines and electric transmission lines) that impact agricultural land. Under this effort, the BLWR negotiates an Agricultural Impact Mitigation Agreement (AIMA) with utility companies to ensure that the land affected by those projects is restored to its pre-construction capabilities. These documents help landowners to mitigate the many agricultural impacts that result from the construction of large cross-country oil/natural gas pipelines, electric transmission lines and wind farm projects. A copy of the executed AIMA is also provided to landowners to assist them in their negotiations with utility companies on their individual easement agreements. Wind Farm AIMAs are developed under the Wind Energy Facilities Agricultural Impact Mitigation Act.

AIMAs focus on the restoration aspect of impacts that result from major utility projects being constructed across a landowner's productive farmland. AIMAs are negotiated with the various utility companies prior to any construction in order to protect landowner's interests and address problems that result from the project's construction and/or subsequent restoration.

Standards for:

- ✓ Wind farms (greater than 500 KW)
- ✓ Pipelines
- ✓ Electric lines



Ground Cover/Pollinator Standards

Ground around and under solar arrays and in project site buffer areas shall be planted and maintained in perennial vegetated ground cover, and meet the following standards:





Ground Cover/Pollinator Standards

Stearns County (MN) Solar Farm Ordinance

Vegetation requirements and management. The following provisions shall be met related to the clearing of existing vegetation and establishment of vegetated ground cover. Additional requirements may apply as required by the Board...

(2) The project site design shall include the installation and establishment of ground cover meeting the beneficial habitat standards consistent with Minnesota Statutes, section 216B.1642, or successor statutes and guidance as set by the Minnesota Board of Water and Soil Resources.

- (a) Beneficial habitat standards shall be maintained on the site for the duration of operation, until the site is decommissioned.
- (b) The applicant shall submit a financial guarantee in the form of a letter of credit, cash deposit or bond in favor of the County equal to one hundred twenty-five (125) percent of the costs to meet the beneficial habitat standard. The financial guarantee shall remain in effect until vegetation is sufficiently established in accordance with the requirements set forth in Section 6.51.2H(1) of this Ordinance.



Photo credit: KARE 11 News

Nuisances and Conflicts

Solar land uses can have conflicts with other land uses ...

- ✓ Character visual or aesthetic conflicts
- Opportunity costs what else might happen on the site?
- ✓ Agricultural or natural resource protection
- Glare nuisance (homeowners) or safety (airports, highways)
- \checkmark Safety Electric generation, fire risk

Some conflicts are real, others are perceived but actually pose little risk.







Incentives and Requirements

Does your development regulation use incentives? Do you have economic development tools?

- ✓ Density bonus for solar development
- Protect solar resources when subdividing
- \checkmark **Identify** preferred areas for solar farms
- Financial incentives and programs
 Planned Unit Development
 conditions
- ✓ "Solar ready" construction
- Development RFPs, land assembly, information clearinghouse





Solar Ready Communities

Permitting Processes with predictable and clear submittal requirements, review timeframes, and permit fees.



Expedited Permit Process for PV Systems A Standardinal Process for the Restor of Seals-Scale PV Systems

Study Report Overview

Solar America Board

for Codes and Standards

EXPEDITED PERMIT

A Studenticed Process for the Review of

and Scale PV Systems

Bill Breeks

Thods Engraphie

ROCESS FOR PV SYSTEMS

Thurlast, sheet summarises the findings and recommendations of a new multi-report from the bolar America Roard for Dioles and Istantiants biote ARCIE, governed America Roard for PU Sperses – A disorderdine? Proceed for the America of the Bond-Bone PU Spethers. The participation of the generated an this report was created to meet the models of the generating simularizing processing ePU matcher in the USE and is applicable instruments. It takes advantage of the many common characteristics interem in more of the employment participation of the generate both the opposition and avoid of permits.

This study report describes a process that has advantages throughout the permuting cycle. One of this process implifies the technical requirements for W contractions submitting the application for constraints of a new IV system while into historing the difficient severe of the application's electrical and attraction context by the local particulture, averaging the permit.

Key Findings

Local jumilations are responsible for establishing the permitting requirements for new VP system constraints and bitshalism an their remarks. While jumilations receively expenses that the new with VP bis left many to implement unreceived the VP system, respectness with VP bis left many to implement unreceived with VP system, and monitoring procedures in these cases, binners of the and permittenent permitting procedures in these cases, binners of the aure application severity indust the unrely and efficient construction of new VP systems.

At this same raries the majority of residential-sized PV systems installed in the United States share many similarities of design. It is the similarity and commonality of these designs that would allow for a nationally standardunel expected permit process for small-scale PV systems.

Solar ABCs Recommendation

The solution is to begin with a constitute stating point and using the nationally standardized Expedied Nerror Process: "periodicions can be togeted that they are constantion is three applications of codes and standards," Construct can also be aimered that the requirementation permitting will not vary dimensiscally among parabolistics. Both of these autoranoes much in adis, cast effective multiple accelerate PV indensity are.

The term "supporting provides" reflect to an opportunity generating process by which a region of annual RV generator can be permitted quickly and each by a is most intended to apply to all types of RV systems: The primary need and use for this process is for systems of lass than 1.6MV maximum power expan. The expected power is process as intended to dimply the maximal and decision review of a small PV system cellect and in maintains the need for foculty expressions and processing values.

The majority of PV systems installed in the U.S. meet the elegibility requirements outlined in this process and will benefit from the

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Solar Ready Communities

Permitting best practice goals

- A. Reduce time spent on acquiring permit conducting inspections
- B. Make the permit process transparent and predictable to both staff and applicants
- C. Ensure the permit process reflects practices
- D. Establish a permit fee that appropriately covers local government review and inspection c



Standardizing Permitting

Structural engineering study on Minnesota residential rooftop solar installations. http://mn.gov/commerce/energy/ images/FINAL-Standardized-Load-Table-Report.pdf





Standardizing Permitting

Structural engineering study on Minnesota residential rooftop solar installations. Report of Findings for Development of Standards for Rooftop Solar Thermal Retrofits on Minneapolis and Saint Paul Residential Buildings

> Minneapolis Saint Paul Solar America Cities Management and Operating Contractor for the National Renewable Energy Laboratory (NREL)

Subcontract No. LGG-1-11883-01 Under Prime Contract No. DE-AC36-08GO28308 with BKBM Engineers 5930 Brooklyn Boulevard Minneapolis, MN 55429 BKBM Project No. 11130.20

April 27, 2011







SolSmart

Certifying Solar Ready Communities

- National Department of Energy (DOE) Certification program for "solar ready" cities and counties.
- Technical assistance available from the National Renewable Energy Lab (NREL) upon entering the program.
- Opportunity to work with a full time solar "advisor" staff person to tailor best practices to your community.



coff the actions your community has , attach or link to relevant mentation, indicate the actions like to take, and hit submit! Your nart team will update your progress u move toward designation.





HE FIRST 35 DESIGNEES RN A SOLSMART PANEL

ir community is among the first 35 hieve SolSmart designation at the ce, Silver, or Gold level, you will ve a SolSmart Panel to display in lic building for bragging rights and lp spread the word that your nunity is open for solar ness!

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ACCESS CUSTOMIZED TECHNICAL ASSISTANCE

Submitting even a partially complete Intake Form qualifies your community to receive nocost technical assistance immediately. Our team of experts will help your community take actions on its path to designation.



A SolSmart Advisor is a programfunded temporary staff member hosted in a community for up to six months. An Advisor's sole job is to help the community achieve designation. If you believe your community could benefit from an Advisor, complete the Host Community Application!





SolSmart is about improving solar market conditions in communities nationwide – making it faster, easier, and more affordable for residents and businesses to choose solar. National recognition and media opportunities are available to all communities, and special awards are available for superlative achievements.



Thank You!

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