Solar Powering Your Community

Solar and Planning

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U.S. Department of Energy

Agenda

Solar and the Role of Local Governments

- Solar Technologies
- Solar and Local Governments

Visioning and Goal Setting

Solar in Zoning

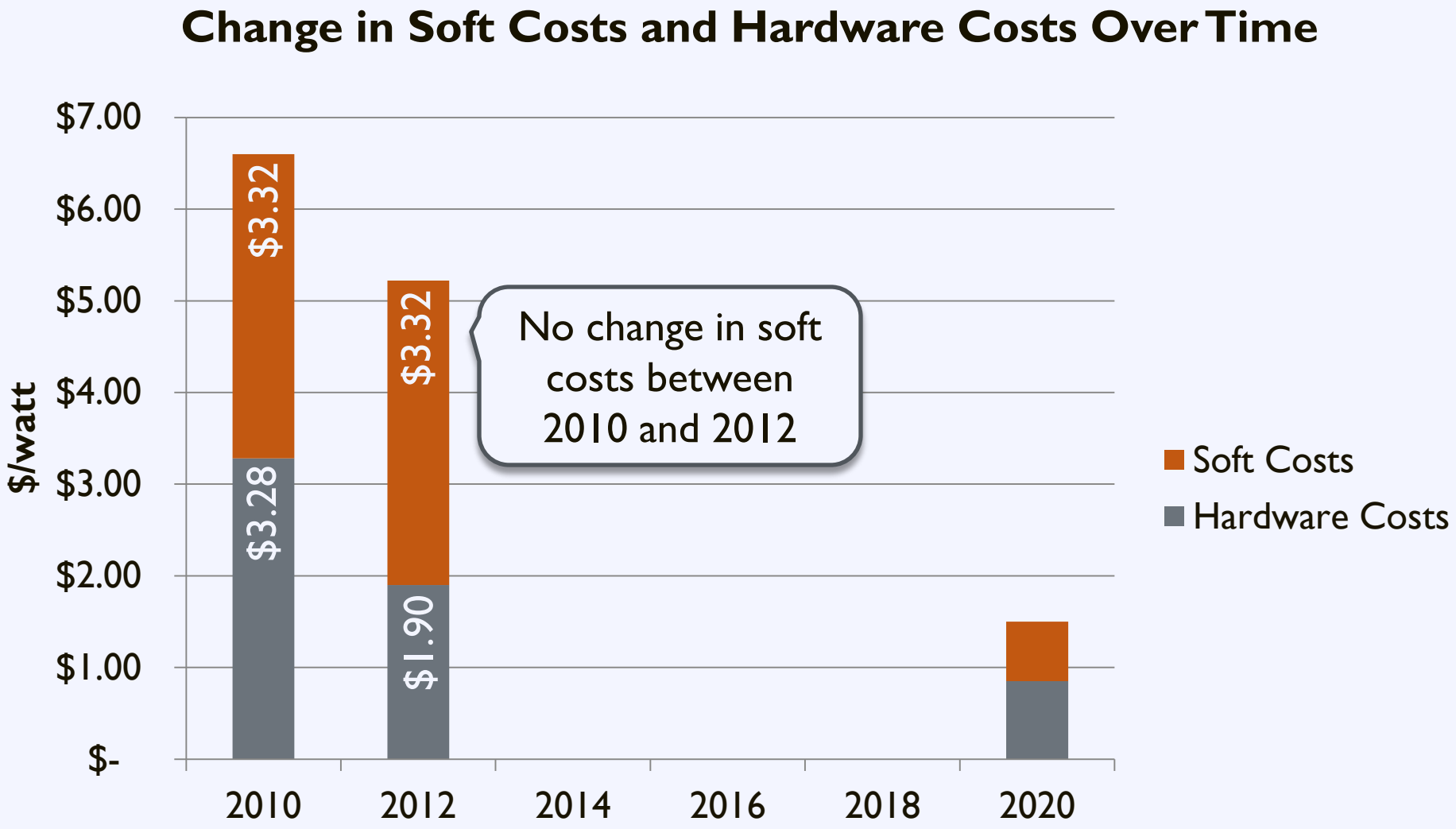
- Introduction
- Walkthrough with Examples from DVRPC Guide

Solar Friendly Planning Audit and Discussion

Solar in Plans

- Overview and Case Examples

The Cost of Solar in the US



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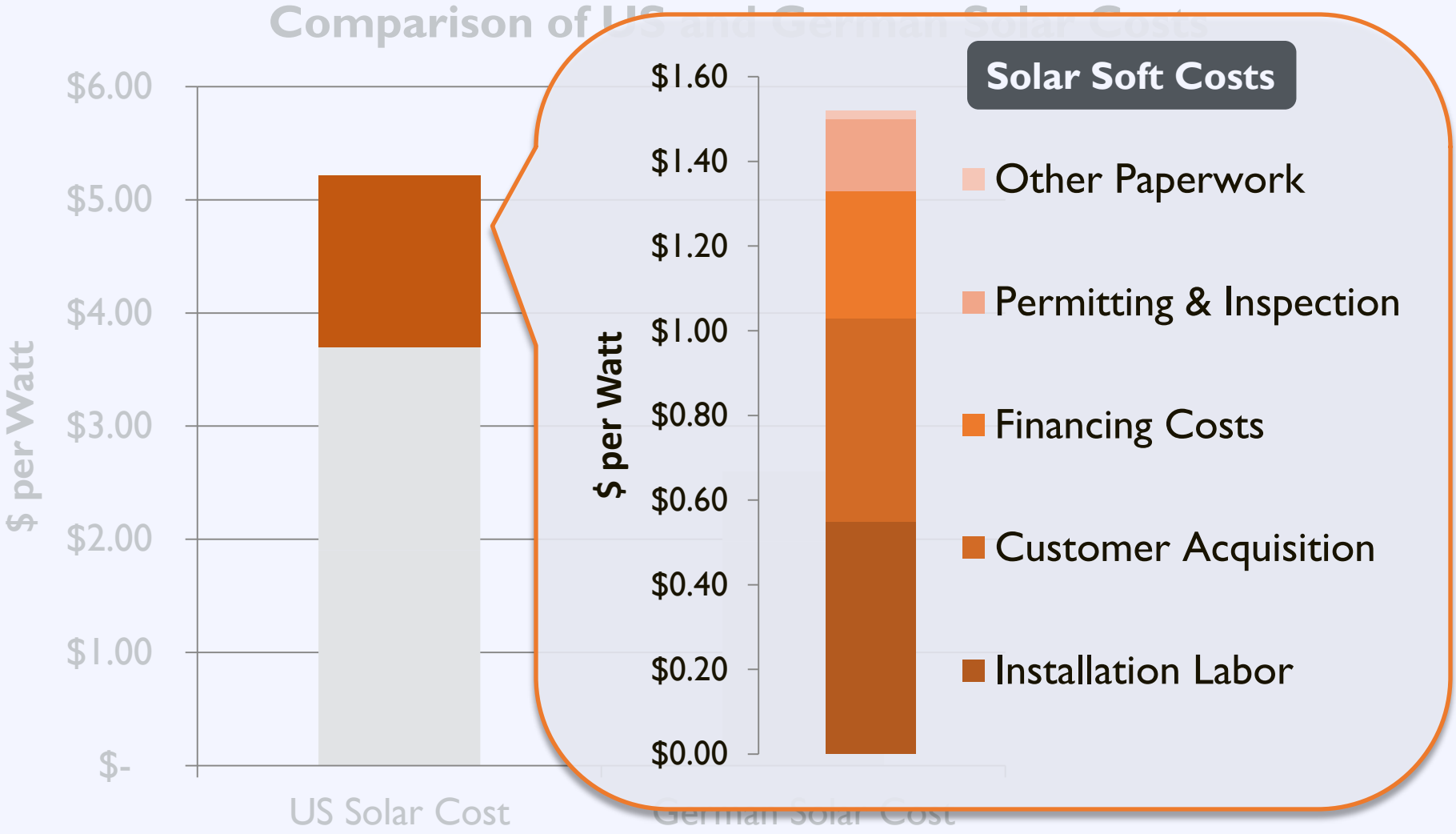
The Cost of Solar in the US



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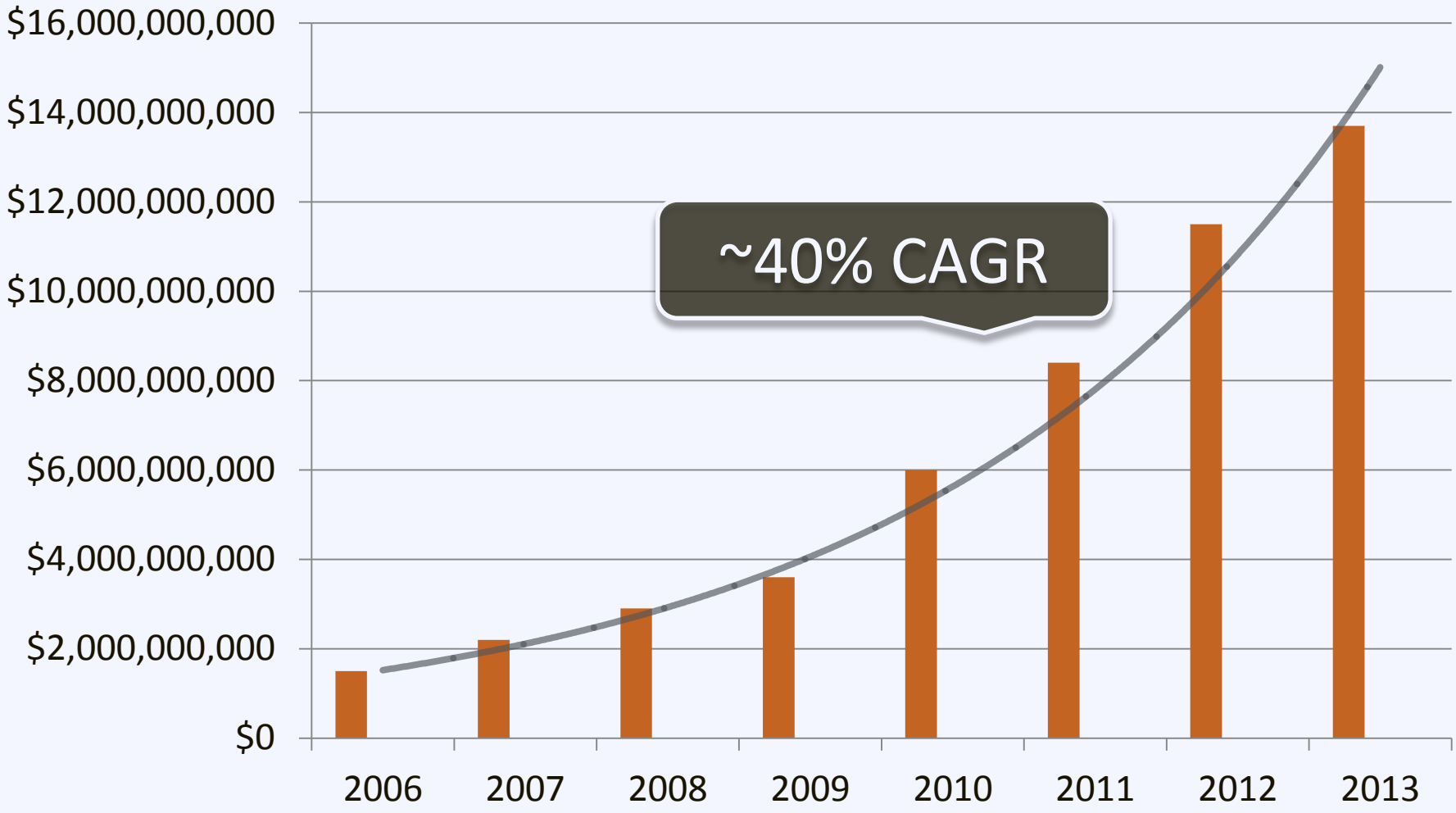
Source: NREL (http://www.nrel.gov/docs/fy14osti/60412.pdf)
LBNL (http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf)(http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf)

Workshop Goal

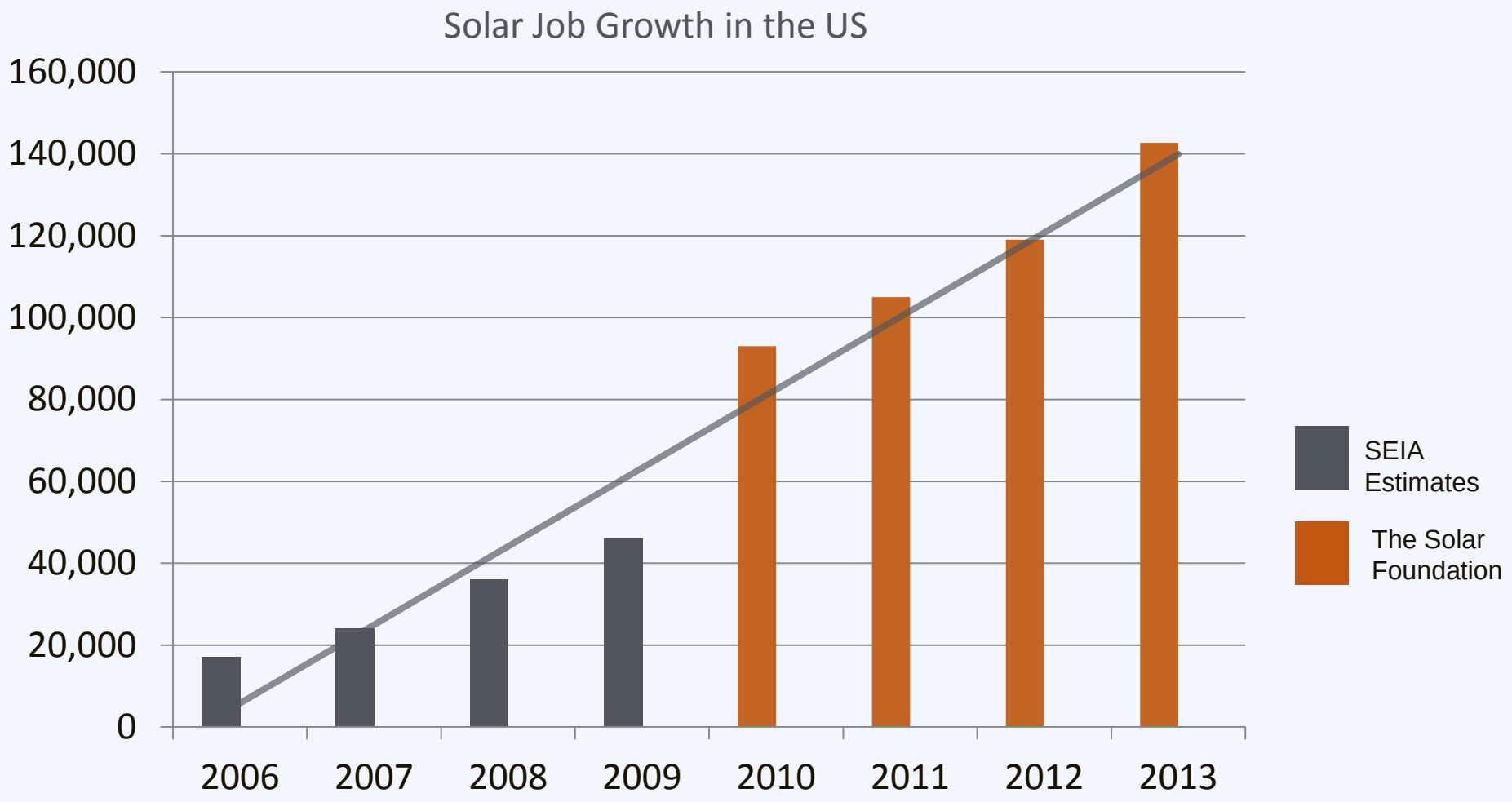
Enable local governments to understand and replicate successful solar practices planning and zoning practices to expand local adoption of solar energy

Solar Economic Growth



Source: SEIA/GTM Research – 2009/2010/2011/2012 Year in Review Report
http://www.seia.org/research-resources/us-solar-market-insight

Solar Job Growth



Source: SEIA Estimates (2006-2009), The Solar Foundation's National Solar Jobs Census 2010 (2010), The Solar Foundation's National Solar Jobs Census 2012 (2011-2012).

Economic Development in PA and NJ

PA	**NJ**
There are currently	*There are currently*
461 solar companies	495 solar companies
that employ	*that employ*
2,800 people	7,200 people

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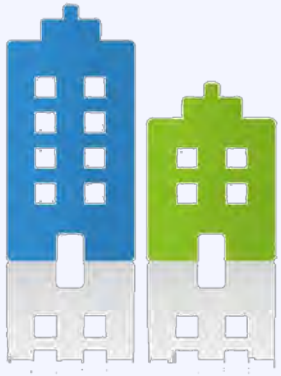
Source: The Solar Foundation, Solar Jobs Report, November 2013

Some Basic Terminology

Residence
5 kW

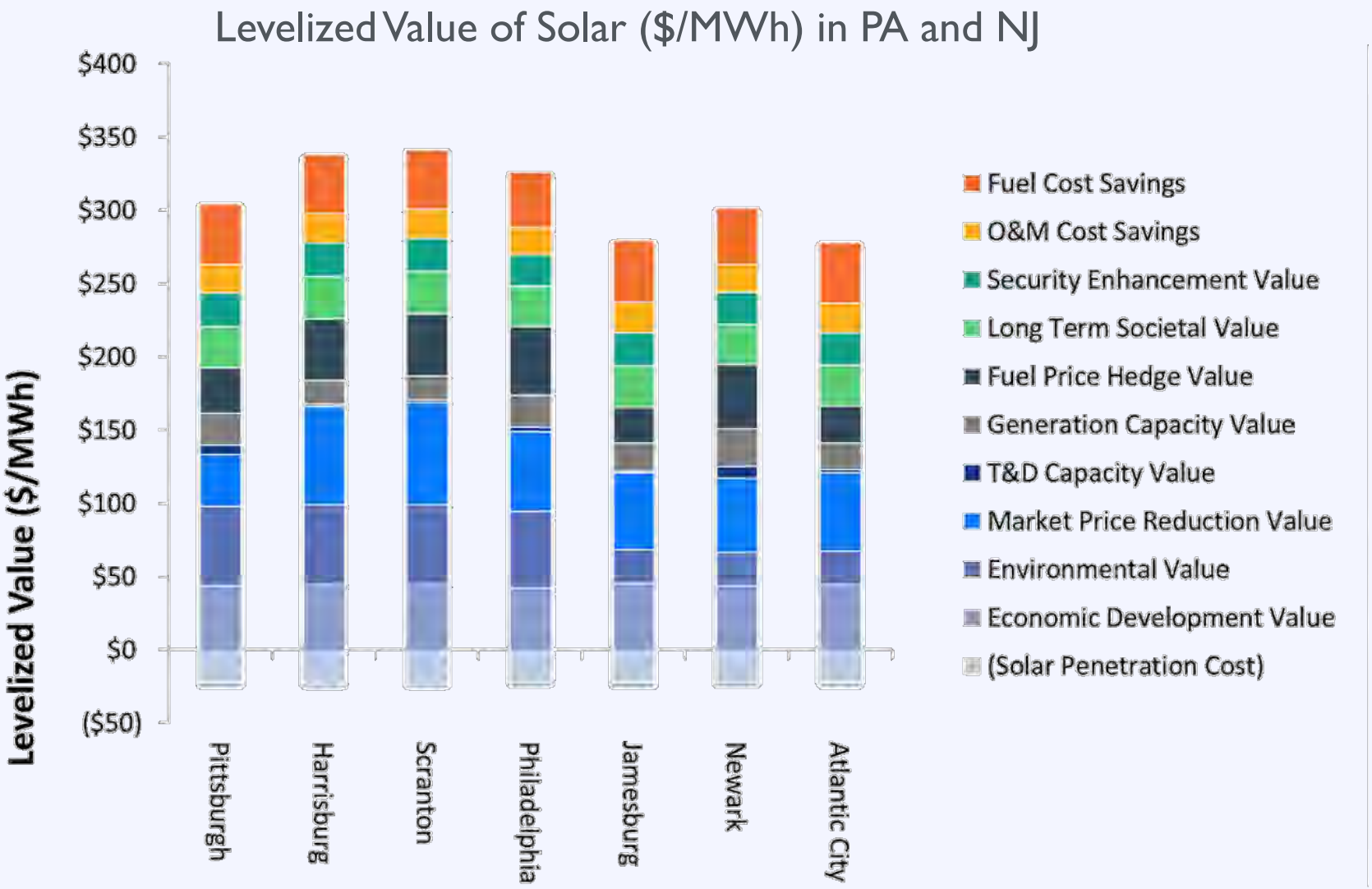
Factory
1 MW+



Office
50 – 500 kW

Utility
2 MW+

Value to Community & Utility



Source: Clean Power Research http://mseia.net/site/wp-content/uploads/2012/05/MSEIA-Final-Benefits-of-Solar-Report-2012-11-01.pdf

Visioning: Goal Setting

Where does solar energy fit into your current community goals?

Visioning: Scales & Contexts

Is solar on residential rooftops appropriate for your community?

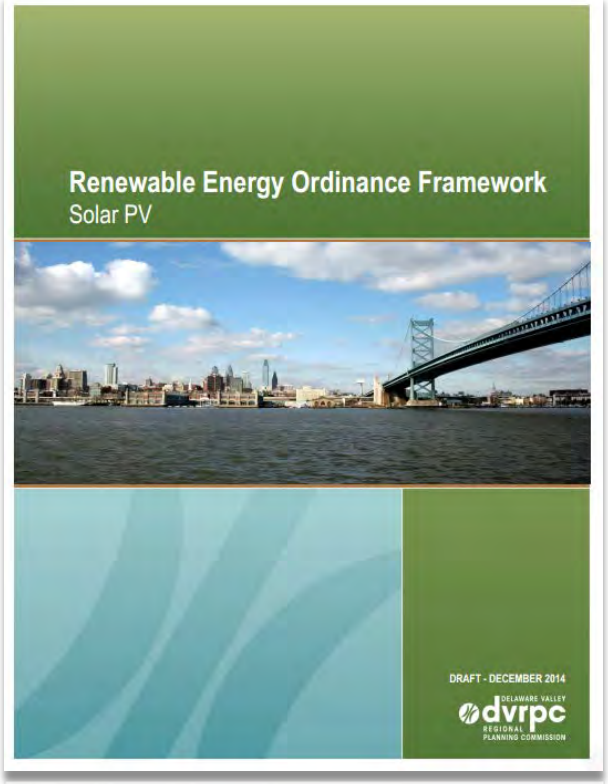
Visioning: Scales & Contexts

Is solar on commercial rooftops appropriate for your community?

Renewable Energy Ordinance Framework (REOF)

Resource **DVRPC Model Renewable Energy Ordinance Framework- Solar PV**

- Menu of language options with accompanying guidance
- Provides background and examples for common factors in zoning for solar



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Zoning Guidance

Section	Topics to Address
Intent/Background	Goals and benefits
Definitions	Define technologies & terms
Applicability	e.g. Primary vs. accessory use
General Regulations	• Height • Size • Setbacks • Lot coverage

Source: American Planning Association

Visioning: Scales & Contexts

Is solar on historic structures appropriate for your community?

Visioning: Scales & Contexts

Is solar on brownfields appropriate for your community?

Visioning: Scales & Contexts

Is solar on greenfields appropriate for your community?

Visioning: Scales & Contexts

Is solar on parking lots appropriate for your community?

Visioning: Scales & Contexts

Is building-integrated solar appropriate for your community?

Further Considerations

- Tree Preservation
- Historic Preservation
- Urban Redevelopment
- First Responder Safety

Tree Preservation

- Solar Access vs. Tree Protection
- How should the two interact?
  - 2008 California Solar Shade Control Act Amendment
- Procedures reflect community priorities

Historic Preservation

- Historic districts boost character and can raise property values
- Prevent permanent loss of "character defining" features
  - Aesthetic and design guidelines

Source: SolarCentury

Urban Redevelopment

- Long-term growth and development strategies
  - Density planning
  - Dispute resolution

Fire and Rescue

Risk

- Shock
- Burns
- Roof Loads

Mitigate

- Setbacks
  - Access
  - Ventilation
- Labeling
- Education

Source: Adapted from the New York PVTN Fire and Rescue Training Program

Engage the Community

- Community members may have their own priorities
  - Involve key stakeholders in visioning before plans are formalized
  - Provides opportunity to prioritize interests and drive leadership

Agenda

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Visioning and Goal Setting

Solar in Zoning

- Introduction
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Solar in Plans

Solar Friendly Planning Audit and Discussion

Regulations: Zoning Standards

Section	Topics to Address
Definitions	Define technologies & terms
Applicability	Primary vs. accessory use
Dimensional Standards	• Height • Size • Setbacks • Lot coverage
Design Standards	• Signage • Disconnect • Screening • Fencing

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Source: American Planning Association

Zoning Standards: Small Solar

Typical Requirements:

- Permitted as accessory use
- Minimize visibility if feasible
- Requirements:
  - District height
  - Lot coverage
  - Setback

Zoning Standards: Large Solar

Typical Requirements:

- Allowed for primary use in limited locations
- Requirements:
  - Height limits
  - Lot coverage
  - Setback
  - Fencing and Enclosure

Intent/Background

- Addresses goals of the ordinance
- Outline benefits of solar and important to community
- Tie it to local plans and MPC

Intent/Background

Language Option	Comments and Guidance
The purpose of this ordinance is to define appropriately cited solar energy systems as an inherently beneficial use of all residential and commercial properties. Solar energy systems preserve the municipality's public health, safety, and welfare by reducing the carbon footprint of each property by creating a clean, renewable energy source. Solar energy systems provide the property owner with the choice for electric supply at a fixed price for electricity for over 20 years, the means to reduce the peak power demand of the utility grid, and the ability to enhance the municipality's electric power reliability and quality.	Calling a solar energy system "inherently beneficial" may be confusing if local governments are planning to restrict where solar energy systems can be placed. If a local government plans to restrict use, this section might specify that despite its inherent qualities, this ordinance will restrict the use of panels so as to promote their compatibility with existing land uses as specified in (name section) of this ordinance.

Definitions

- Clarifies terms used in ordinance
- Can affect allowed end use (e.g. prohibit utility scale)

Definitions

Language	Comments and Guidance
Solar Energy System: *Any solar collector or other solar energy device, or any structural design feature, mounted on a building or on the ground, and whose primary purpose is to provide for the collection, storage, and distribution of solar energy for space heating or cooling, for water heating, or for electricity.*	This definition is **not recommended** because it does not tie the purpose of the power to a specific end use. It could lead to utility-scale installations because it does not define the purpose of the energy.
Solar Energy System: An energy system which converts solar energy to usable thermal, mechanical, chemical, or electrical energy to meet all or a significant part of a structure's energy requirements.	This definition addresses physically what a solar energy system is (can be solar hot water and PV) and the last half of the sentence allows various forms of financing to be implemented (such as a Solar Power Purchase Agreement). This definition would not allow utility scale because it is tied to an end use.
Solar Energy System: Solar panels or solar energy collectors that generate energy, sometimes in excess of the energy requirements of the property, if it is to be sold back to an investor-owned utility in accordance with the law.	This definition is effective at tying in the use of the system, and would be useful when defining a system that is used as an accessory use. This definition limits system size according to what is allowed by net metering laws, which would prohibit larger systems and utility-scale uses.

Applicability

- Define allowable uses for solar
  - By-right/Permitted Use
  - Accessory vs. Primary use
  - Conditional Use

Applicability

Language	Comments and Guidance
Solar Energy Systems as described in this Article are permitted in all zoning districts as an accessory use to a permitted principal use subject to the standards for accessory uses in the applicable zoning district and the specific criteria set forth in this Article.	These two examples are the most permissive options, allowing solar PV in all districts. It is common to define solar energy systems as an accessory use subject to the requirements of that district. Municipalities can tweak underlying regulations (i.e. height, setback, impervious coverage) within the solar ordinance accordingly. See next section, General Regulations, for language options for underlying regulations.
Solar Energy Systems, as defined by this ordinance, are a permitted use in all zoning districts.	
Solar Energy Systems shall be considered an accessory use and permitted by right if mounted to an existing structure and if any percentage of the energy is used for one or more of the principal uses on the same lot.	This language option is **not recommended** because tying the permitted use to using the energy for one or more principal uses on the same lot would effectively prohibit virtual net metered systems, which is allowed by the laws and regulations established by the Pennsylvania Public Utility Commission. Virtual net metering is not currently allowed in NJ. This language could also restrict the viability of community solar programs, which are not currently supported in Pennsylvania, but may be in the future.

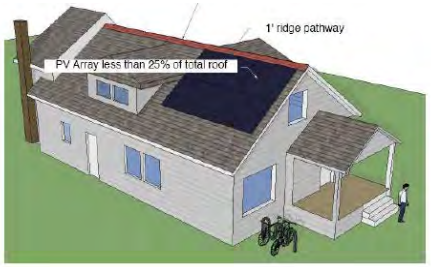
General Regulations: Key Issues

- Height – Flat roof vs pitched
- Setbacks
  - on rooftop for first responder
  - Ground mounted setbacks for nuisance
- Impervious coverage
- Glare
- Trees
- Solar access

Setback – Ground Mounted

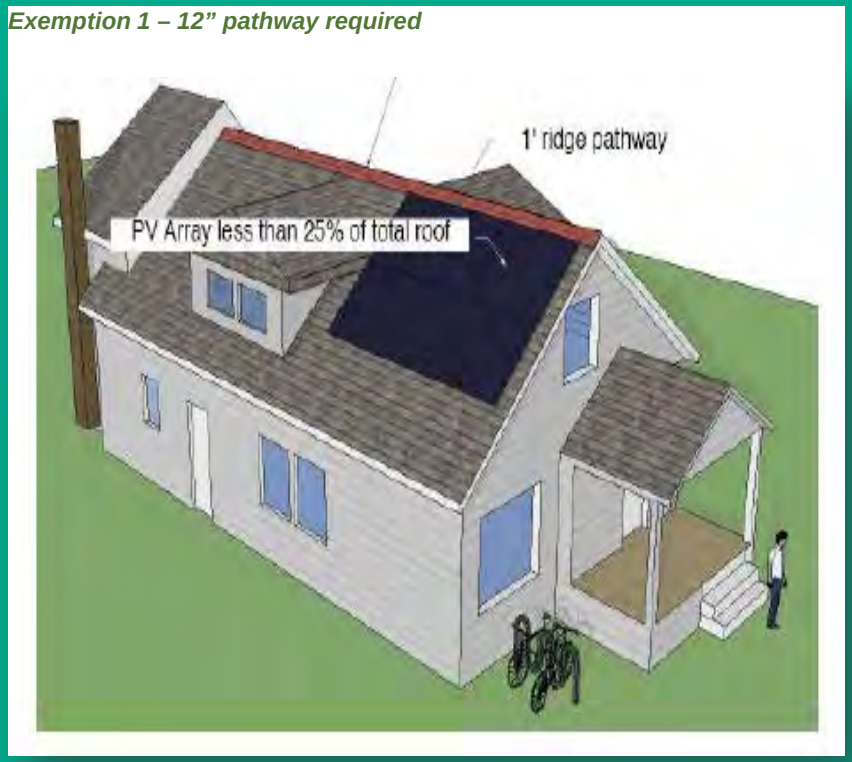
Language	Comments and Guidance
The location of the Ground-Mounted System shall meet all applicable accessory-use setback requirements of the District in which it is located.	Municipalities that treat ground-mounted systems as accessory use structures (this is how they may be permitted) can use accessory use regulations for setback (and also height) of ground-mounted systems
All Ground-Mounted Systems shall be set back a distance of **X** feet from any property line in a residential zoning district or in conformance with the area and bulk standards for accessory structures in commercial districts as provided herein.	If a municipality feels that their accessory use regulations are outdated or would like to have tighter control over setbacks for ground-mounted systems, this language option can be used to apply a specific setback distance applicable to ground-mounted systems.
Ground-Mounted Systems shall not be permitted in a front yard unless the applicant demonstrates that the rear yard locations will not result in acceptable solar access.	Some municipalities may want to prohibit or discourage the placement of PV systems in front yards if they are visible from the public right of way. The first option, to only permit if PV is not able to be sited elsewhere, is recommended. The second option is considered restrictive.
Ground-Mounted Systems shall not be permitted in a front yard.	

Setback – Roof Mounted

Language	Comments and Guidance
All PV installations shall include a 36 inch wide pathway maintained along three sides of the solar roof. The bottom edge of a roof with a slope that exceeds 2:12 shall not be used as a pathway. All pathways shall be located over a structurally supported area and measured from edge of the roof and horizontal ridge to the solar array or any portion thereof. Exceptions: On structures with a PV array area of 1,000 square feet or less installed on a roof with a slope that exceeds 2:12 and with an intersecting adjacent roof and where no section of the solar PV array is larger than 150 feet measured in length or width: 1. Where the PV array does not exceed 25% as measured in plan view of total roof area of the structure, a minimum 12 inch unobstructed pathway shall be maintained along each side of any horizontal ridge. 2. Where the solar array area exceeds 25% as measured in plan view of total roof area of the structure, a minimum of one 36-inch unobstructed pathway from ridge to eave, over a structurally supported area, must be provided in addition to a minimum 12-inch (305 mm) unobstructed pathway along each side of any horizontal ridge Pathways are not required on non-occupied accessory structures. **Flat roofs - We need language for this** Systems that include a solar array section that is larger than 150 feet measured in length or width shall have additional intermediate pathways. An intermediate pathway not less than 36 inches wide separating the array shall be provided for every 150 feet of array including offset modules or angled installations. The maximum square footage of an array shall not exceed 22,500 square feet. without the installation of an intermediate pathway.	This language, based off of a code developed by the State of Oregon, provides a recommended option for regulating setbacks for various roof sizes, configurations, and pitches. Oregon's code standard requires that all installations must maintain a 3-foot pathway along three sides of the roof for access (not including the edge if the pitch is greater than 2:12 (a roof that rises 2' for every 12' of run). However (importantly), Oregon's regulations provide exemptions for smaller systems (<1,000 square feet) that do not cover the majority of a roof surface, and further exemptions for roofs with a flatter pitch (<3:12). These exemptions may work well for municipalities that feel that a three-foot setback along all sides of the panel would be restrictive to apply to all properties. ***Exemption 1 – 12" pathway required***  ***Exemption 2 – 36" pathway required*** 

Setback - Roof Mounted

Exemption 1 – 12” pathway required



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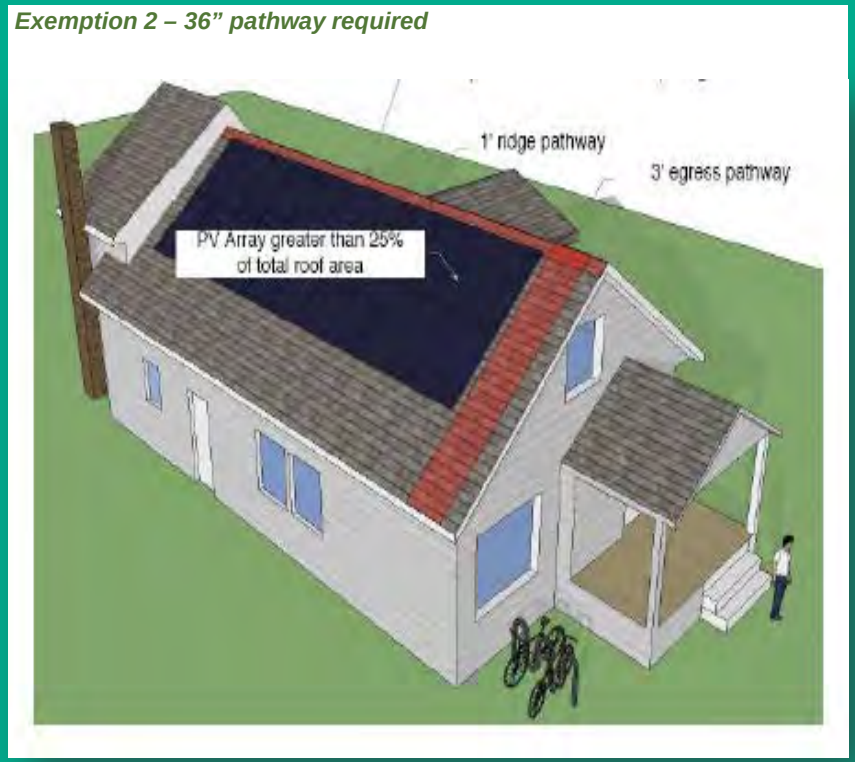


Setback – Roof Mounted

Language	Comments and Guidance
A 3-foot setback from all roof edges shall be provided for roof mounted solar panels to ensure that firefighters may access the roof in a quick and safe manner. *A 3-foot setback along the roof ridgelines shall be provided for roof-mounted solar panels to allow available space for firefighters to penetrate the roof to create ventilation.* *A 1.5-foot setback from all roof hips and valleys shall be provided for roof-mounted solar panels to ensure that firefighters may access the roof in a quick and safe manner if solar panels are installed on both sides of the roof hip or valley.*	This language was developed for the National Fire Protection Association (NFPA) 1: Fire Code (2012 & 2015 versions) and the 2012 International Fire Code (IFC). Many industry experts feel that this standard is too restrictive for all residential roofs because it has the potential to significantly limit the amount of available roof space to site a solar PV system.

Height – Sloped Roof

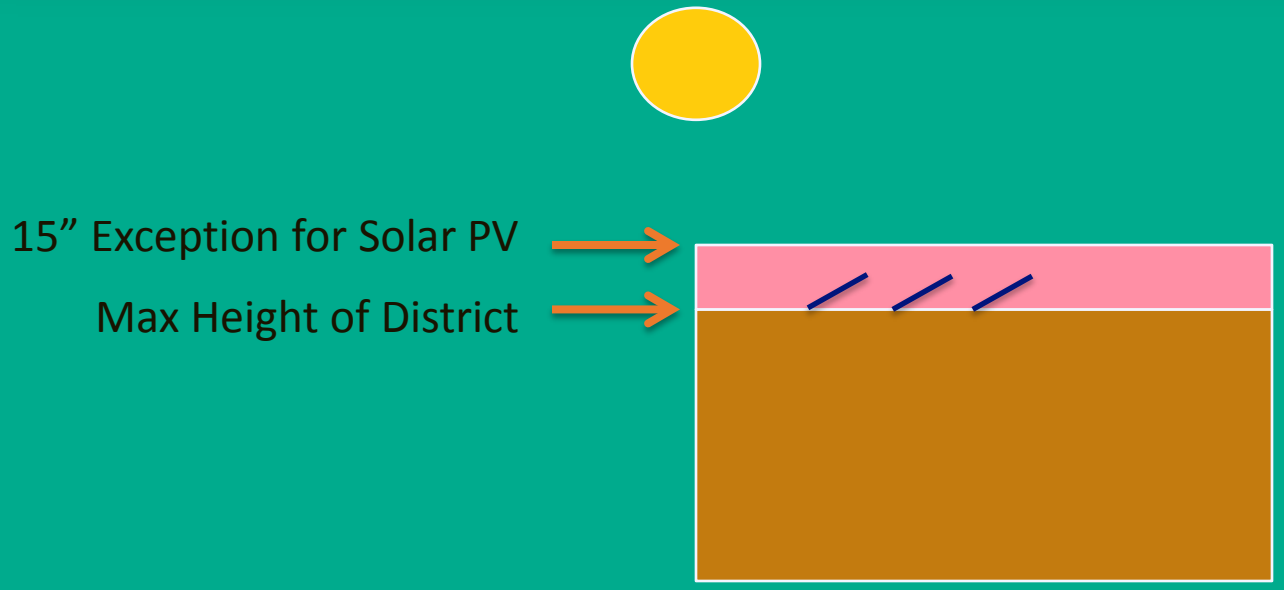
Language	Comments and Guidance
For a roof-mounted system installed on a sloped roof, the highest point of the system shall not exceed the highest point of the roof to which it is attached as allowed by setback requirements.	It is appropriate to not allow panels to exceed the height of the roof on a pitched roof to ensure adequate setback from the ridgeline and to protect the system from wind loading.
Solar Energy Systems shall not exceed a height of eight inches from the rooftop surface. In no event shall the placement of the solar panels result in a total height including building and panels than what is permitted in the zoning district.	This language is **not recommended** because it would prohibit the ability to tilt systems. Some systems will be designed with a 10 to 34 degree tilt to maximize solar access. A restriction of distance from the roof surface may prohibit this.

Yes

No

Height – Flat Roof

Language	Comments and Guidance
For a roof-mounted system installed on a flat roof, the highest point of the system shall be permitted to exceed the district's height limit of up to fifteen (15) feet above the rooftop to which it is attached.	**It is important to allow PV systems to exceed maximum height of building structure because the building may have already met maximum height. Additionally, as mentioned, some PV systems will be designed with a tilt to maximize solar access. The language option provided here gives a 15 foot flexibility above maximum height. Municipalities can be more restrictive than this, though it is not recommended that they limit to less than six (6) feet above the rooftop surface.**



Impervious Coverage

Language	Comments and Guidance
For purposes of determining compliance with building coverage standards of the applicable zoning district, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, arrays, inverters, shall be considered pervious coverage so long as pervious conditions are maintained underneath the solar photovoltaic cells, panels, and arrays.	Ground-Mounted Solar as **Pervious Coverage.** This language options is recommended, and is the most permissive option.
For purposes of determining compliance with building coverage standards of the applicable zoning district, the total horizontal projection area of all ground mounted and freestanding solar collectors, including solar photovoltaic cells, panels, arrays, inverters and solar hot air or water collector devices, shall be considered impervious coverage. For a tracking array or other moveable system horizontal projection area shall be calculated at a 33 degree tilt angle.	Ground Mounted Solar as **Impervious Coverage.** This language option is not recommended because it would be restrictive for systems that are sited on properties that have already met the allowed impervious coverage limit. :
For purposes of determining compliance with building coverage standards of the applicable zoning district, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, arrays, inverters and solar hot air or water collector devices, shall be considered ___% impervious coverage. For example, if the total horizontal projection of a solar energy system is 100 square feet, XX square feet shall count towards the impervious coverage standard. For a tracking array or other moveable system, the horizontal projection area shall be calculated at a 33 degree tilt angle	Ground-Mounted Solar as **both Impervious and Pervious Coverage**. This language is provided for municipalities that wish to classify the system as partially but not fully impervious.

Glare, etc.

- Glare, aesthetics – perception

Language	Comments and Guidance
The design of Solar Energy Systems shall, to the extent reasonably possible, use materials, colors, textures, screening, and landscaping that will blend the facility into the natural setting and existing environment.	These language examples are **not recommended** because they are considered very restrictive and hard to interpret. Municipalities may find these restrictions appropriate for Historic Districts. If so, however, these regulations are not typically included in zoning. HARBs and historic review committees are encouraged to codify restrictions for historic districts.
Solar energy equipment shall not be conspicuous from adjacent streets. For example, solar panels directly facing adjacent streets will be considered to be conspicuous.	
Solar panels shall be positioned to prevent solar glare upon any neighboring properties or any public or private street, and to prevent additional heat load upon neighboring properties.	This language is **not recommended** - glare regulations are considered restrictive. Not only is the causation of glare difficult to prove, but PV systems are designed to absorb radiation, not reflect it. Solar PV panels are constructed of dark-colored (usually blue or black) materials and are covered with anti-reflective coatings. Modern solar PV panels reflect as little as 2 percent of incoming sunlight, about the same as water and less than soil or wood shingles.

Trees

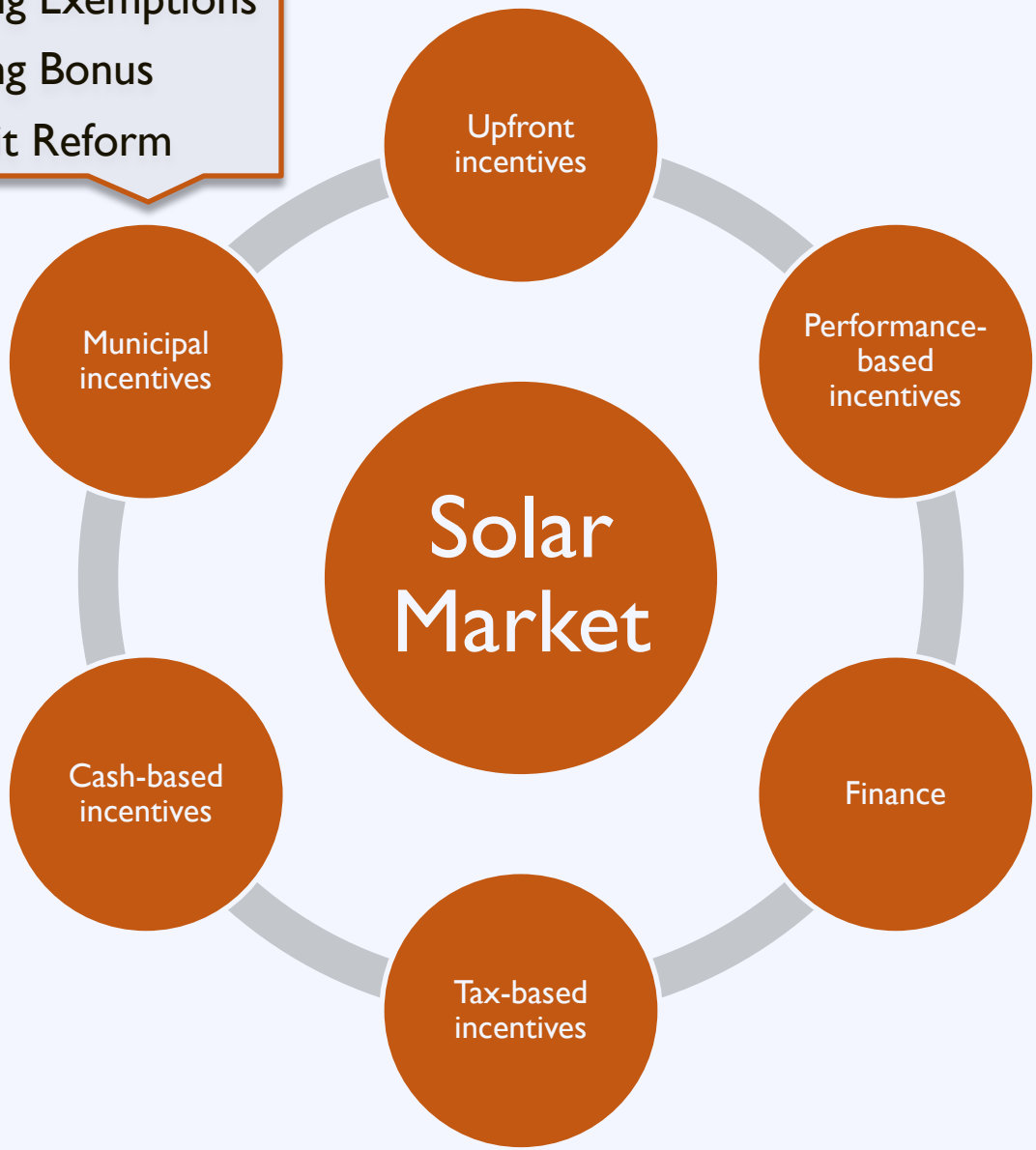
Language	Comments and Guidance
Any trees to be removed shall be accompanied by a plan demonstrating the need to remove living trees and replacement of the trees.	While it is true that shade of any kind interferes with solar energy systems' ability to operate, removing trees to install solar technology is generally not recommended. If tree removal is allowed, it is strongly recommended that replanting of an equivalency of lost trees/foliage be required in a solar ordinance. If in the same area of the solar panels, the foliage should be of a type that will not be expected to shade the panels.
An applicant shall locate a Solar Energy System so that tree removal is not required to the extent practical.	

Solar Access

Language	Comments and Guidance
Owners of solar energy systems are encouraged but not required to obtain solar access easements from neighboring landowners to ensure solar access. The municipality does not guarantee and will not protect any individual property rights with respect to solar access.	Municipalities can encourage applicants for solar energy systems (at the time of permit) to obtain a solar access easement with neighboring/adjacent properties.
When an applicant owns two or more adhacent lots, and at least one of those lots is proposed to utilize solar energy collection devices, the applicant is requested to consider establishing a solar access easement or a similer legal mechanism to make sure that structures or vegetation on one lot does not unreasonably obstruct solar acces for the solar energy collection devices in the adjacent lot.	This lanaguge is recommended especially in locations where several adjacent lots will likely be redeveloped by the same owner/developer (communities that have vacant or underutilized parcels). Easements are likely much more feasible from a signle owner. This way, when the parcels are sold, the easement will stay with the property.

Incentives

- Zoning Exemptions
- Zoning Bonus
- Permit Reform



Regulations: Building Code

Solar Ready Construction:

Preparing a building for solar at the outset can help make future solar installations easier and more cost effective.

Regulations: Building Code

Require builders to:

- ✓ Minimize rooftop equipment
- ✓ Plan for structure orientation to avoid shading
- ✓ Install a roof that will support the load of a solar array
- ✓ Record roof specifications on drawings
- ✓ Plan for wiring and inverter placement

Regulations: Solar Access

Solar Access Laws:

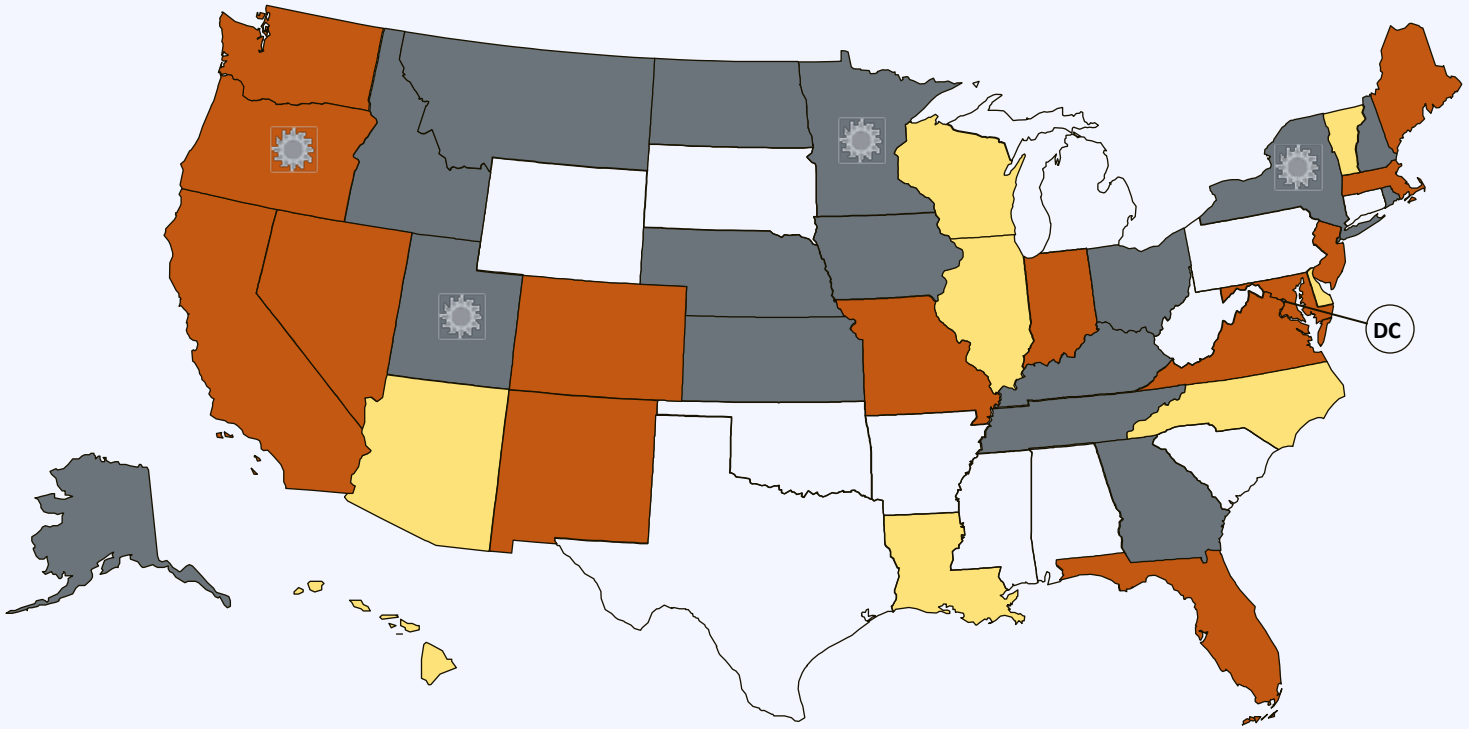
1. Increase the likelihood that properties will receive sunlight
2. Protect the rights of property owners to install solar
3. Reduce the risk that systems will be shaded after installation

Regulations: Solar Access

A landowner does not have any legal right to the free flow of light and air across the adjoining land of his neighbor

Source: Google Earth

Regulations: Solar Access



Solar Easements Provision

Solar Rights Provision

Solar Easements and Solar Rights Provisions

U.S. Virgin Islands

Local option to create solar rights provision

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Source: DSIRE

New Jersey Timeline

1978

Allows for solar easements and requires inclusion of:

-Dimensions

-Terms and Conditions

-Compensation

2007

Prohibits HOAs from banning rooftop solar. Allows for minimal aesthetic regulations.

Regulations: Solar Access

Solar Access Laws:

1. Solar Easements (State Law)

   - Can encourage residents to negotiate

2. Solar Access Permits (Local Ordinance)

3. Solar fences (Zoning Provision)

4. Solar mandates (New construction)

Suggested PA Language

"Owners of solar energy systems are encouraged but not required to obtain solar access easements from neighboring landowners to ensure solar access. The municipality does not guarantee and will not protect any individual property rights with respect to solar access."

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Source: DVRPC Renewable Energy Ordinance Framework- Solar PV

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Planning for Solar Development

Communitywide Comprehensive Plan

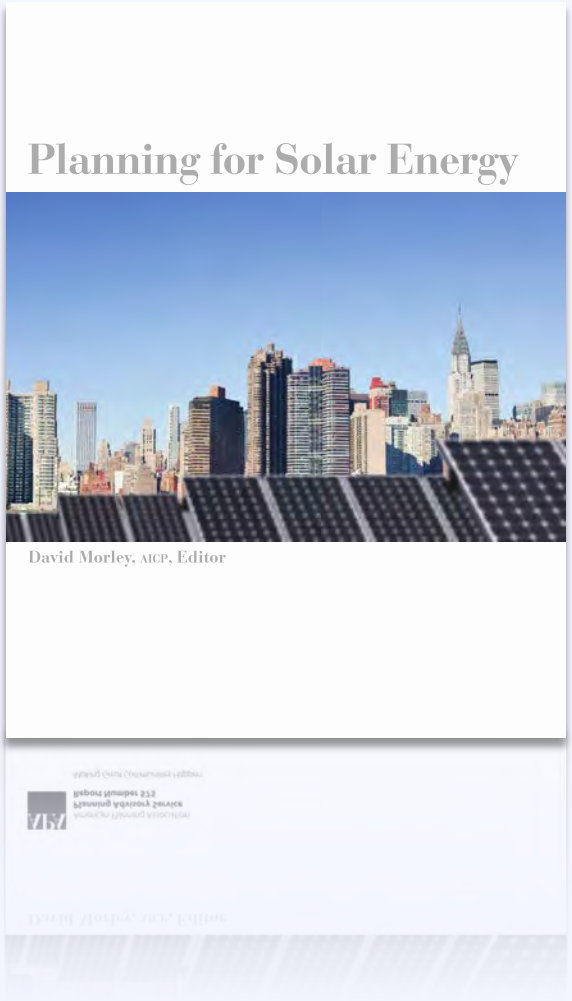
Neighborhood Plans	Corridor Plans	Special District Plans
Green Infrastructure Plans	Energy Plan	Climate Action Plan

Source: American Planning Association

Integrating Solar in Plans

Areas Identified by the APA:

1. Purpose
2. Existing Conditions
3. Goals and Objectives
4. Action Steps



ENERGY

INTRODUCTION

Energy is an important factor for the economic, environmental, and social well-being of our community. Practically every decision we make and action we take affects energy use and production. And, in turn, energy use and production affect our future decisions and actions.

Hartford relies heavily on fuels imported from outside our region. Therefore, most of the money spent on energy is exported from our local economy and does not return to create jobs or buy goods locally. In addition, foreign fuel sources are insecure and unstable and so are subject to huge price swings and supply shortages beyond our control.

Environmentally, air, soil, and water quality are affected by our energy use. On the global scale, energy production and use have caused large-scale environmental problems, such as large quantities of radioactive waste from nuclear power plants, contamination of ocean waters and land from oil spills, and global warming, which threatens to drown the world's coastal cities, reduce the productivity of agricultural zones, and subject many ecosystems to foundational change and possible extinction.

Hartford is impacted environmentally by energy used in other parts of the nation. Acid rain, a pollution brought to us from Midwestern coal plants, affects our lakes and forests. Though Hartford has no comparable heavy industry, our energy production and use affect not only our area, but surrounding areas as well. Responsible handling of energy decisions must, therefore, concern not only the needs of our immediate township but all regions affected by our energy production and use, not only for this year but for many generations to come.

Hartford's energy future is linked to energy policies and economic forces at the state, federal, and international levels. Though the Town has limited abilities to affect a national energy policy, the Town government can influence the local population. The Town is the unit of government closest to the citizens, and is, therefore, most accessible to the participation of every individual. By adopting and implementing this Town Energy Plan, the Town makes a public policy statement regarding energy issues and acknowledges the importance of energy planning in the overall development of the community and country.

This chapter and its recommendations will promote the creation of a sustainable energy future: one that minimizes environmental impact, supports our local economy, and emphasizes energy conservation, efficiency, and the increased use of local and regional renewable energy resources.

Introduction and purpose: To create a sustainable energy future for Hartford, VT including conservation, efficiency and local renewable energy

Sustainability and energy trends and progress in Lowell building the case for solar.

ENVIRONMENT

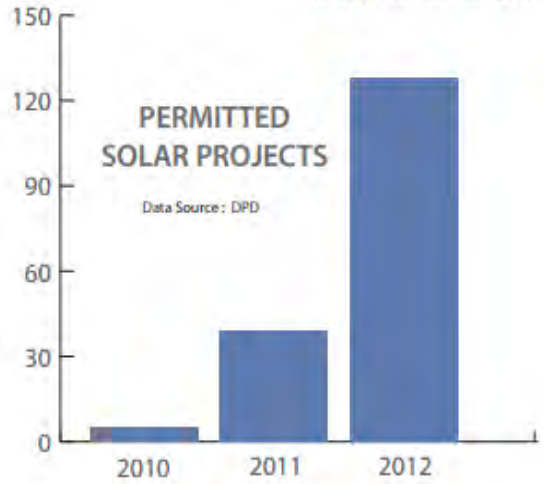
In the past ten years, Lowell has successfully modeled ways that older, industrial cities can integrate historic preservation with environmentally sustainable development. In 2011, the City received accolades from the State's Department of Energy Resources as a 'Leading by Example' award recipient, and continues to serve as a leader in renewable energy and energy efficiency investments, brownfields redevelopment, and transit-oriented development. Improvements to water quality and increasing support for local food access have also contributed to Lowell's emerging identity as a sustainable community.

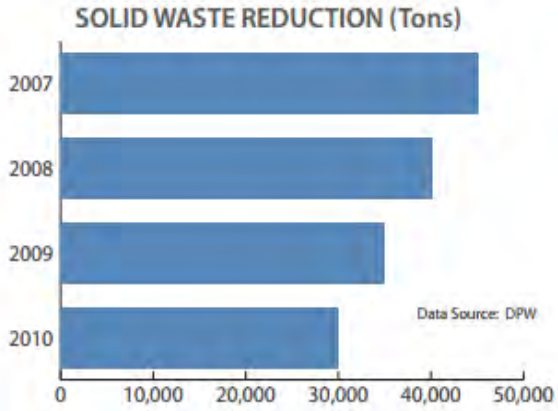
Consistent with its heritage, Lowell continues to be a leader in the production of renewable energy, with nearly 30 Megawatts of solar- and hydropower production capacity. Public and private investment in solar technologies in particular has increased tremendously in recent years. As a component of Lowell's $21 Million performance contract, the City has made renewable energy and energy efficiency enhancements in 47 city owned buildings, including installing solar arrays on four public schools and the Lowell Memorial Auditorium. The number of privately funded solar projects has also grown significantly, leaping from 5 projects in 2010 to over 125 in 2012.

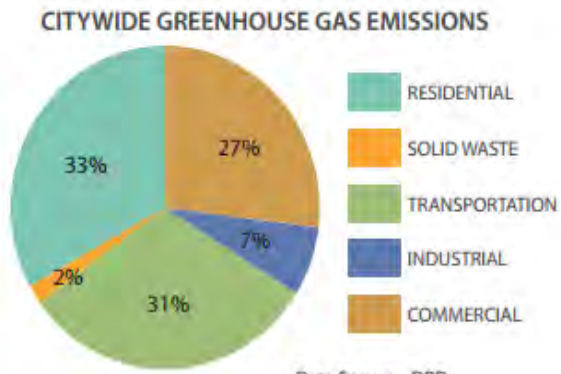
Since the City transitioned to a new bin collection system in 2008, the annual tonnage of solid waste being collected citywide has been reduced from 45,000 to 30,000, and recycling has increased proportionally.

Although Lowell has made great strides over the past decade to better preserve and protect its natural environment, further reduction of greenhouse gas emissions still remains a high major priority. A Greenhouse Gas Analysis conducted in 2008 by the Department of Planning and Development found that the majority of emissions were generated by transportation uses and commercial and residential properties. By implementing the goals and objectives laid out in this plan, however, the City is confident that Lowell will continue to reduce its emissions and leave its environment in a better condition for future generations.

Lowell, Massachusetts







Evanston Climate Action Plan

		array	
★	b) Encourage residents to consider and install solar thermal panels for hot water heating at their homes.	6,048 $MTCO_2E$ (3-panel systems)	COE Community Development
	c) Investigate the feasibility of purchasing solar power through a solar energy service provider as a way to finance solar electricity generation at City facilities.	1,951 $MTCO_2E$	COE Facilities
	d) Encourage businesses and institutions to install solar PV systems as feasible.	40,604 $MTCO_2E$	COE Community Development
	e) Consider the installation of solar thermal panels at City facilities that use large quantities of hot water, such as fire stations.	11 $MTCO_2E$	COE Facilities, IL DCEO, IL CECF
★	f) Address zoning and permitting barriers to the installation of renewable energy applications in the residential and commercial building sectors.		City Council, COE Community Development

★	**Reduce emissions related to electric and gas use in buildings through the use of renewable energy.**	**91,789-128,993 $MTCO_2E$**

Recommendation 2:

Design Municipal Solar Financial Incentives

Design municipal incentives that encourage residential and business installation of solar energy systems. Work in concert with the developing Ann Arbor Property Assessed Clean Energy program, DTE Energy incentives and the Michigan Saves program to maximize financial assistance. As most incentives are created at the state level and by utilities, advocating for best practices at these levels will also be an important strategy to encourage adoption of effective incentives.

Objective

WHY: Upfront and ongoing financial incentives have proved to be one of the most effective ways to encourage quick solar energy adoption.

Goal

HOW:

- *Promote and expand Property Assessed Clean Energy Program (PACE).* Build upon Ann Arbor's PACE program, expanding eligibility, available funds, and maximizing community education opportunities [SEE 4.3 E].
- *Advocate for state level policy change.* Strengthening the Renewable Portfolio Standard and offering incentives such as feed-in tariffs are two particularly effective ways to increase solar adoption [SEE RECOMMENDATION 4].
- *Offer an incentive for installation of solar hot water or solar PV systems.* Specifically incentivize types of installations that meet multiple goals, including the use of local products and installers, installations on energy efficient buildings, and the utilization of green jobs program trainees. Specific types of installation locations can also be incentivized, including nonprofits that are not eligible for federal tax credits, and low-income housing [SEE 4.3 A].
- *Add solar to property tax exemption.* Exempt solar thermal and solar PV from property taxes in Ann Arbor [SEE 4.3 D].
- *Continue exploring the viability of creating a municipal utility.* As a municipal utility would have the authority to implement innovative incentives like feed-in tariffs, an Ann Arbor municipal utility would be most able to aggressively pursue Ann Arbor's renewable energy goals.

Actions

See Appendix E: Financial Incentive Priorities for more information.

Buildings

Sector Plan

The Plan promotes compact and street oriented development that emphasizes the public realm and the pedestrian experience. Compatibility with adjacent residential neighbors is required. The Plan recommends:

- Development with front doors facing the street.
- Setting back upper floors from the street on buildings over 60 feet in height (4 – 5 stories) to reduce mass and bulk.
- Building setbacks to frame the sidewalk.
- Locating tallest buildings at transit stations with step downs towards existing residential communities.
- Achieving minimum building height of 3 stories, where feasible.

Guidelines

The guidelines further promote an urban character and a walkable environment with detailed guidance on building form, massing and height, facades and retail storefronts. The guidelines apply to all properties with the final location of buildings, size and architecture to be determined through regulatory review. Unique uses such as hospitals will need flexibility to ensure that their special functional needs are met.

Building Form

Evolve existing development patterns into an urban form with buildings lining streets and parking located to the rear or mid-block.

- Locate buildings to create building walls that define the street and sidewalk.
- Locate primary entrances at sidewalk level.
- Develop blocks with alleys for service areas and loading.

Massing and Height

Germantown's seven districts should each have an identifiable center created by locating density in a core area.

- Cluster development around transit stations.
- Arrange buildings to define gathering places and urban plazas.
- Design buildings at street corners to facilitate pedestrian movement.
- Set back taller, high-rise towers to reduce shadows and mitigate building height.
- Design slender floor plates for buildings over five stories to avoid massive, bulky forms and shadows.
- Design buildings to disperse winds, avoid accelerating drafts, and protect pedestrians.
- Provide tall floor ceiling heights to accommodate a range of uses.
- Develop two to three story buildings, where feasible, if market conditions do not result in buildings using the allowable density.
- Vary building heights along a street.
- Step down building heights adjacent to residential communities to 35 feet (50 feet maximum including bonus density) to achieve compatible transitions unless the Plan identifies specific heights.
- Design for solar orientation.

Design standards and guidelines emphasizing solar orientation and walkability

Agenda

Solar and the Role of Local Governments

- Solar Technologies
- Solar and Local Governments

Visioning and Goal Setting

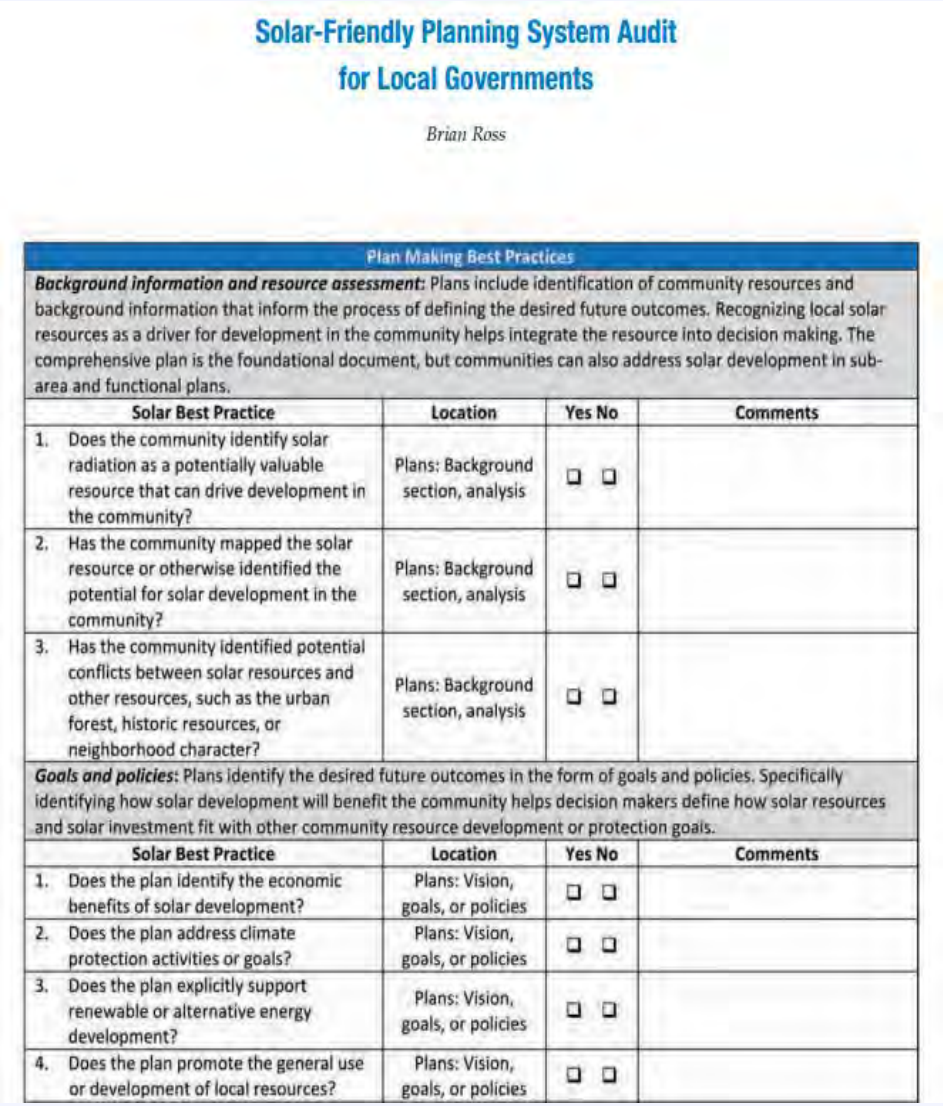
Solar in Zoning

- Introduction
- Walkthrough with Examples from DVRPC Guide

Solar in Plans

Solar Friendly Planning Audit and Discussion

Solar-Friendly Planning Audit



Solar-Friendly Planning System Audit for Local Governments

Brian Ross

Plan Making Best Practices			
Background information and resource assessment: Plans include identification of community resources and background information that inform the process of defining the desired future outcomes. Recognizing local solar resources as a driver for development in the community helps integrate the resource into decision making. The comprehensive plan is the foundational document, but communities can also address solar development in sub-area and functional plans.			
Solar Best Practice	**Location**	**Yes No**	**Comments**
1. Does the community identify solar radiation as a potentially valuable resource that can drive development in the community?	Plans: Background section, analysis	❑ ❑	
2. Has the community mapped the solar resource or otherwise identified the potential for solar development in the community?	Plans: Background section, analysis	❑ ❑	
3. Has the community identified potential conflicts between solar resources and other resources, such as the urban forest, historic resources, or neighborhood character?	Plans: Background section, analysis	❑ ❑	
Goals and policies: Plans identify the desired future outcomes in the form of goals and policies. Specifically identifying how solar development will benefit the community helps decision makers define how solar resources and solar investment fit with other community resource development or protection goals.			
Solar Best Practice	**Location**	**Yes No**	**Comments**
1. Does the plan identify the economic benefits of solar development?	Plans: Vision, goals, or policies	❑ ❑	
2. Does the plan address climate protection activities or goals?	Plans: Vision, goals, or policies	❑ ❑	
3. Does the plan explicitly support renewable or alternative energy development?	Plans: Vision, goals, or policies	❑ ❑	
4. Does the plan promote the general use or development of local resources?	Plans: Vision, goals, or policies	❑ ❑	

- Please take a copy of the solar-friendly planning system audit
- Complete to identify priority areas
- Reach out to your RPC to continue the discussion!

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Group Discussion

Key Topics

- Solar in community plans
- Zoning and permitting standards for solar
- Encouraging solar in community

- Discuss the results of the planning audit in groups of five for 10 minutes.
  - Which aspects of encouraging solar development and planning to solar are you most interested in pursuing?
  - Has your town or municipality already implemented some of these options?
  - How difficult do you believe it will be to implement the actions you chose? What assistance might you need?
- We will call on a few groups to report out.

Key Takeaways

- Solar energy is a local resource
- Local solar markets are sensitive to policy
- Local plans guide solar energy use and deployment
- Regulatory silence is not the same as support
- Partnerships can expand local solar opportunities.

Follow-up Technical Assistance

DVRPC

Sign Up for Technical Assistance on Permitting and Zoning for Solar Energy Systems

Name	Organization	E-mail address	Phone

Delaware County Planning Department

ENERGY SMART DELCO
Solar Ordinance Update Program

APPLICATION

Municipal / Point of Contact Information

Municipality_____ Address_____
Municipal Contact_____ Title_____
Phone _____ Email_____

☐ Check this box if a municipal representative attended the "Training Opportunities for Permitting and Zoning Solar Energy Systems" session in Radnor Township on March 19.

Multi-Municipal Collaboration

☐ Check this box if your municipality would accept multi-municipal task force meetings with adjacent or nearby municipalities.

Current Ordinances

1. Has your municipality adopted or drafted any following ordinances? Please note **A for Adopted** and **D for drafted** (but not adopted):

_____ *Comprehensive Alternative Energy Ordinance* _____ *Stand-alone Solar Ordinance (in zoning code)*

2. If an ordinance has been drafted or adopted, does a digital copy exist?

Microsoft Word _____ Adobe PDF_____ Hard copy only_____

Committee / Task Force

1. Has your municipality previously addressed the regulation of solar PV systems in a municipal committee or special task force? (yes/no) _____.

2. If so, please list any committee, task force, local organization or stakeholder that has worked with the municipality to address solar PV systems:

_____ _____
_____ _____

This form must be completed and received by the County on or before April __, 2015, to be eligible for assistance.

PLEASE MAIL, EMAIL or FAX to:
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Delaware County Planning Department
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Montgomery County Planning Commission

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www.dvrpc.org/EnergyClimate/aeowg.htm

www.narc.org/solarready