

# What is “Solar Ready”?



Often, the initial cost of PV and solar thermal systems prevents them from being included in new construction. However, with better incentives, technological improvements, and rising conventional power prices, energy from solar sources will become more cost competitive. New construction that is solar ready will be in a position to take advantage of an environment more favorable to renewable energy.

## What is Solar Ready?

Planning for the eventual installation of a solar system when designing a building can significantly improve the economics of the investment.



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Without the forethought to make buildings solar ready, solar installation may not be technically possible or the added costs of making infrastructure changes may make solar applications economically prohibitive.

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**NOTE: On May 16, 2017, the state of Massachusetts (MA Board of Building Regulations and Standards (BBRS)) finalized the next (9th) edition of the forthcoming MA building code. It is based on the 2015 I-codes, but the energy portion includes Solar ready roof requirements for residential new construction and new commercial buildings and additions of 3 stories or less.**

Citigroup Center, formerly Citicorp Building, NYC. Was designed to accommodate solar array, but the technology at the time (1977) was not advanced enough and the plan was scrapped. Could it still accommodate solar? (It does face due south!)

## What is Solar Ready?

Installation efficiency can be maximized and costs minimized by understanding these systems' requirements and accounting for them during the design and construction of the building.



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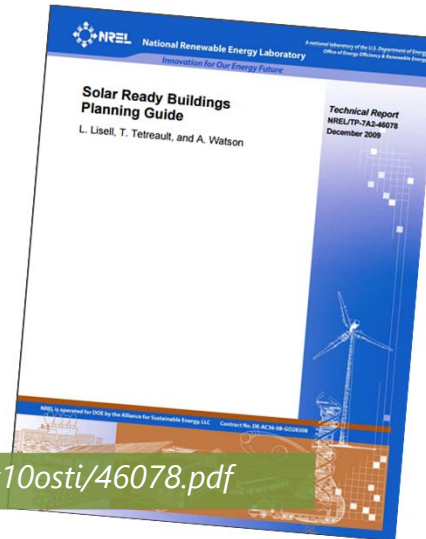
It's a good idea to design "solar ready" and in the future it may be required.

## Solar Ready Checklist

### Solar Ready Building Planning Guide

- By the National Renewable Energy Laboratory

Source: [www.nrel.gov/docs/fy10osti/46078.pdf](http://www.nrel.gov/docs/fy10osti/46078.pdf)



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The National Renewable Energy Laboratory produced a solar ready guide which is available at: <http://www.nrel.gov/docs/fy10osti/46078.pdf>

Included in the report, is a checklist with each of the measures needed to be taken to make a building solar ready.

(Much more comprehensive than requirements in the IECC, which we will cover later.)

## Solar Ready Checklist

- ✓ Avoid shading from trees, buildings, etc.



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## Solar Ready Checklist

- ✓ Check the zoning laws for the proposed site to ensure that future neighboring construction will not cast shadow on the array



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## Solar Ready Checklist

✓ Determine where a future solar array might be placed



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Determine where a future solar array might be placed

## Solar Ready Checklist

- ✓ If the roof is sloped, the south-facing section will optimize the system performance



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## Solar Ready Checklist

- ✓ Minimize area dedicated to rooftop equipment to maximize available open area for solar panel placement



Photo credit: CSE

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## Solar Ready Checklist

- ✓ The type of roof installed can greatly affect the cost of later solar PV installation



The type of roof installed can greatly affect the cost of installing later

## Solar Ready Checklist

- ✓ The roof must be capable of carrying the load of the solar equipment



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The roof must be capable of carrying the load of the solar equipment

## Solar Ready Checklist

- ✓ The wind loads on rooftop solar must be analyzed to ensure that the roof structure is sufficient



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## Solar Ready Checklist

- ✓ Add additional safety equipment for solar equipment access and installation



Photo credit: ASI Hastings

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Add additional safety equipment for solar equipment access and installation, such as personal safety lanyard attachment points and access pathways.

## Solar Ready Checklist

- ✓ Decide whether the solar panels will be mounted, and consider the different mounting strategies available



Photo credit: Baker Electric

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Decide whether the solar panels will be mounted, and consider the different mounting strategies available

## Solar Ready Checklist

- ✓ If the panels will be placed on the roof, consider how installation might affect the roofing warranty

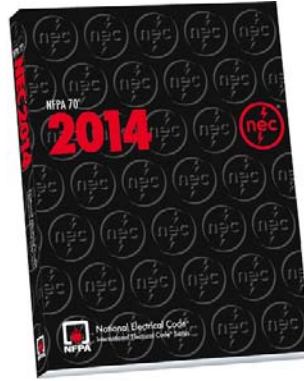


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If the panels will be placed on the roof, check if the roof carries a warranty

## Solar Ready Checklist

- ✓ Make sure all equipment is in compliance with the current version of the National Electrical Code



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Make sure all equipment is in compliance with the current version of the National Electrical Code. International Fire Code requirements should also be considered.



## Solar Ready Checklist

- ✓ Provide conduit or duct for access to electrical service



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Provide conduit or duct for access to electrical service.



## Quiz & Discussion



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## Question 1

**Solar PV is most cost-effective when partnered with:**

- a) Building integrated PV technology
- b) Passive design and energy efficiency
- c) Unimproved existing buildings
- d) Solar thermal systems

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## Question 2

**Shade on just a corner of one module can significantly reduce production of an entire array.**

- a) True
- b) False

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- a) True
- b) False

### Question 3

**A standard PV module can be used for which of the following applications?**

- a) Sun screen or awning
- b) Rooftop system
- c) South-facing vertical surfaces
- d) All of the above

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- d) **All of the above**



## Question 4

**Solar-ready design would NOT need to consider:**

- a) Locations of chimneys, vents and rooftop equipment
- b) Type of inverter required
- c) Capacity of main electrical panel
- d) Future neighboring development

## Question 4

**Solar-ready design would NOT need to consider:**

- a) Locations of chimneys, vents and rooftop equipment
- b) **Type of inverter required**
- c) Capacity of main electrical panel
- d) Future neighboring development