# Solar PERMITTING & INSTALLATION handbook

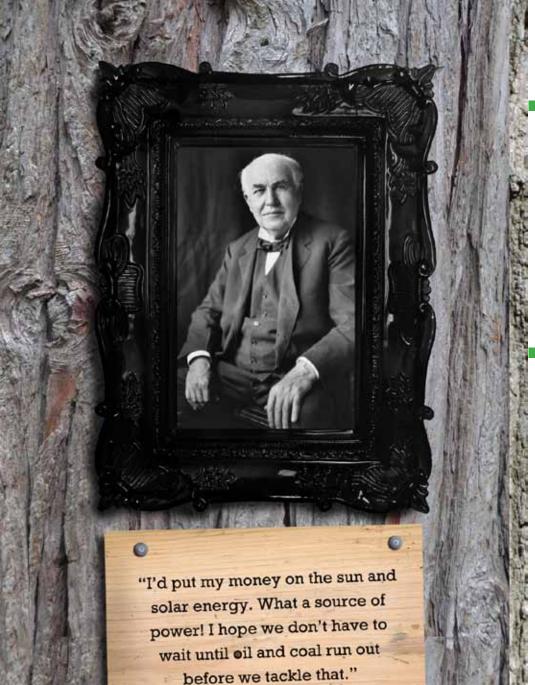
### CAMBRIDGE, MA





### TABLE OF CONTENTS

- 5. Background & Scope
- 6. Pre-Construction Considerations
- 8. Building Permit Application Checklist
- 10. Special Permit Considerations
- 12. Historical Commission Approval
- 14. Engineering Report of Roof Construction
- 15. Electrical Permit—Standard Submittal
- 16. Electrical Permit—Fee Calculation
- 17. Electrical Permit—Required Documents
- 18. Building Permit—Standard Submittal
- 20. Building Permit—Required Documents and Payment
- 21. Construction & Site Inspections
- 21. Enforcement
- 21. Interconnection



- Thomas Edison, 1931

### BACKGROUND

The market for residential solar installations has grown dramatically over the past several years. As prices for residential solar systems drop and electricity rates continue to rise, homeowners have become more interested in renewable energy sources. Demand for residential solar photovoltaic systems is expected to continue grow steadily for the foreseeable future.

### SCOPE

This guide's goal is to provide clear information about the application and review procedures to obtain permits to install solar photovoltaic electric generating systems on residential buildings in the City of Cambridge.

The permitting process includes adding a PV system to an existing structure as an addition or alteration, or installing a system on a new building.

The guide also details zoning considerations and design elements that may require pre-application sign-offs by additional City departments or further plan review. This guide does not cover permitting for commercial installations or for solar water heating.

### PRE-CONSTRUCTION CONSIDERATIONS

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There are sections of the City of Cambridge that cannot be interconnected with the grid. Regardless of the location of the PV project, installers should always contact NSTAR as early as possible in the pre-construction phase to ensure that the PV system can be safely interconnected with the grid.

Only after consulting with NSTAR should one proceed with designing, purchasing and installing PV solar generating equipment. Please visit the NSTAR interconnection website for more information:

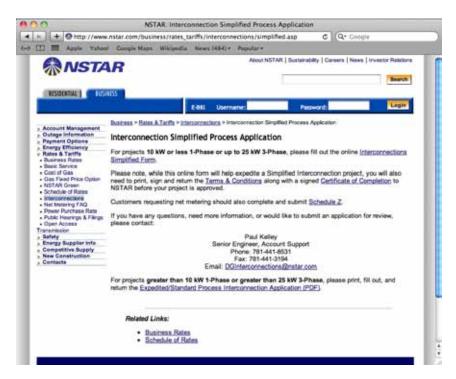
www.nstar.com/business/rates\_tariffs/interconnections

SUN1 noun \'san\

light.

1. a often capitalized : the luminous celestial body

around which the earth and other planets revolve, from which they receive heat and



The primary NSTAR account holder (usually the property owner) should apply for grid interconnection and net metering **as soon as** it is determined that the property is eligible for interconnection.

You will be given a "certification of completion" after your PV system passes final inspections by the building and electrical inspectors.

### BUILDING PERMIT APPLICATION CHECKLIST

The City of Cambridge will only review completed building permit applications. Once the City has accepted your completed building permit application, a review process lasting 30 days or less will begin. Use the checklist to ensure your building permit application is complete to expedite this process.

After submitting your online application for a building permit, the Inspectional Services Department (ISD) will check with other City departments to verify proper sign off (if needed) and verify issuance of an electrical permit. You will receive an email from ISD after each approval or disapproval by relevant departments. You will also be notified by email if further documentation is needed.

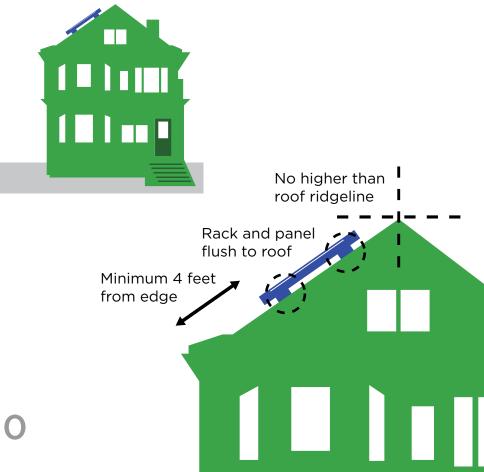


If necessary:
<ul> <li>Special Permit/Board of Zoning Appeals (BZA) Approval</li> </ul>
Historical Commission Approval
Required:
Engineering Report of Roof Construction
Electrical Permit issued in Conjunction with the Project
2 Sets of Plans in Digital Format
Contractor's License & Home Improvement Contractor Registration
Signed Contract between Property Owner & Contractor in Digital Format
Homeowner or Condo Association Affidavit
Building Permit Fee (1.5% of total project contract)

### SPECIAL PERMIT CONSIDERATIONS

#### **Pitched Roofs**

PV systems mounted to pitched roofs typically will not require approval from the Board of Zoning Appeals (BZA), so long as the system does not exceed the height of the building (roof ridgeline) and the racking system is mounted flush to the surface of the roof. Additionally, panels may not be mounted less than 4 feet from the lowest edge of the roof.



### Flat Roofs

PV systems mounted to flat roofs are considered mechanical equipment and typically will not require BZA approval. Racking systems for a flat roof installation should extend no higher above the roof than is necessary to access necessary solar radiation.



Panel no higher existing equipment Panel no higher than the parapet

Plans or drawings for a residential PV solar installation that do not meet the criteria for pitched and flat roofs will most likely require a special permit or zoning variance from the BZA before a building permit can be issued. Please contact the Inspectional Service Department for more information.

> Inspectional Service Department 831 Massachusetts Avenue Cambridge, MA 02139 Phone: (617) 349-6100 Fax: (617) 349- 6132

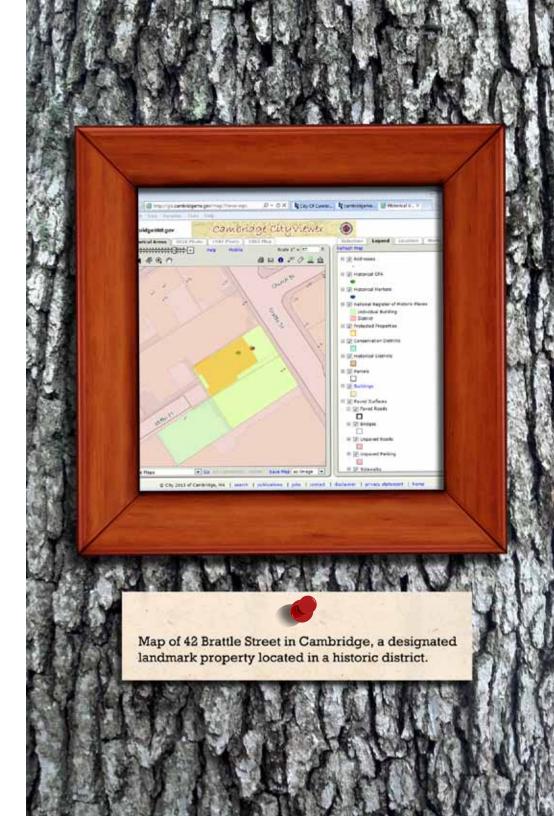
### HISTORICAL COMMISSION APPROVAL

Installation of a PV system on structures located in historic districts, designated as landmarks, or subject to preservation restrictions will require approval from the Cambridge Historical Commission. You can use the City of Cambridge CityViewer to determine whether the project site or structure is located in a historic preservation district or is a designated historical landmark by mapping the project address at:

#### www2.cambridgema.gov/GIS/search.cfm? applicationid=historicalpub

However, we strongly encourage you to contact the Cambridge Historical Commission directly to determine whether or not the project will be subject to historical review.

> Cambridge Historical Commission 831 Massachusetts Avenue, 2nd Floor Cambridge, MA 02139 Phone: (617) 349-4683 Fax: (617) 349-3116



## ENGINEERING REPORT OF ROOF CONSTRUCTION

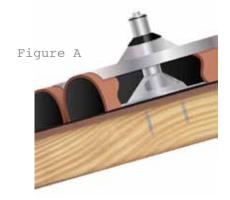
## A structural conditions report made by a registered structural engineer is required.

The building inspector will require the project design and specifications to be certified by a registered structural engineer. The building permit application and plans will not be accepted without this report.

In addition, it may be helpful to include photographs of the project roof that illustrate the spacing between joists and overall condition of the roof. A detailed drawing or description of the rack mounting system, roof penetration and flashing method is also strongly recommended.



ROOF



### ELECTRICAL PERMIT-STANDARD SUBMITTAL



### An electrical permit issued by the City of Cambridge in conjunction with the PV system project is required.

Electrical permits are issued to Massachusetts licensed electricians only. Homeowners and contractors who are not licensed electricians cannot pull their own electrical permits. Electrical permits are issued in accordance with Massachusetts General Laws (MGLs); MGL 143-3L.

After logging in and selecting "electrical permit" from the permit menu list, you will be directed to the electrical permit application. All information marked with a "!" is required.

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Both the licensed builder and the licensed electrician should establish a user name and account with the City of Cambridge ISD online permitting system.

Digital copies of your license and proof of insurance is necessary to complete permit applications.

NEXT

Cancel Previous

### ELECTRICAL PERMIT-FEE CALCULATION

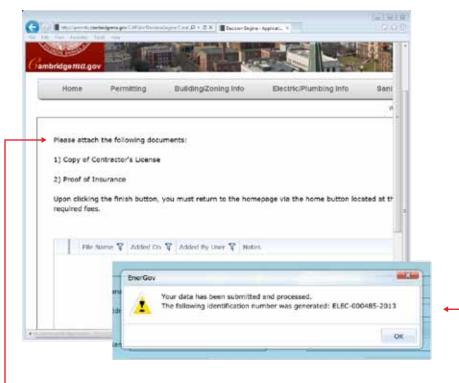


### ELECTRICAL PERMIT-REQUIRED DOCUMENTS



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Electrical permitting fees are calculated separately from building permit fees. The electrical permit fee for each solar array (a group of solar PV modules connected to the same inverter) is \$100. This does not include electrical permitting fees for additional electrical work that may be required.



Upload a digital copy of both your electrical license and proof of insurance.

Once the permit fee is paid, the system will generate a reference number for the application.

### BUILDING PERMIT-STANDARD SUBMITTAL



Assemble all relevant department approvals and required documentation for your building permit application in digital format. You will be required to upload these documents to submit your application and pay your fee.

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Enter the address of the project. This is the address that will be used by all City departments to review the building permit application. Make sure you enter the street address used by the City. No matter if you select Building 1&2 or Building Multi, rooftop PV system installation requires an "addition/alteration" permit.

	What Type of Permit? Addition / Alternation *	
	Condeminium Instructions 2 unit condeminium buildings may submit information using	
	Building 1 & 2.	
	3 units or greater must use Building Multi.	
⊢	IMPORTANTI - The applicant must choose "Addrow Alteration" if any of the fatiguing work a included in a rooting or slong project:	
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	(2) Attanton of coof dramage.	
	(3) Roof Top Soler Pictels	

### BUILDING PERMIT-REQUIRED DOCUMENTS AND PAYMENT

Home	Permitting	Building/Zoning Info	Electric/Plumbing Info	Sani
-				
	h the following doc	uments:		
REQUIRED C	OCUMENTS:			10
* Plans (digi	tal .PDF Format)			
= Contractor				
* HIC Regist				
* Signed cor	stract between pro	perty owner and contractor		
IF APPLICAE	LED			
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Upload required documents for your building permit application.

Once the permit fee is paid, the system • will generate a reference number for the application. The building permit fee is 1.5% of the total contract cost as enumerated in the signed contract between the property owner and the contractor.

## CONSTRUCTION & SITE INSPECTIONS

The building and electrical inspectors determine the frequency of inspections to be made during the construction process. There are typically 3 inspections:

- 1) Electrical rough
- 2) Electrical final
- 3) Building final

### ENFORCEMENT

All code requirements shall be in accordance with the applicable permitting and inspections procedures.

### INTERCONNECTION

After passing final building and electrical inspections, the electrical inspector will issue a certificate of completion to the utility. The installer is then responsible for contacting the utility and securing the interconnection of the PV system with the grid.