



# GUIDELINES FOR **Solar PV Systems**

## FUNDAMENTALS

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Pursuant to Section 105.1 of the 2013 DCMR 12A, a building permit and an electrical trade permit are required when a Solar PV system is being installed.

## REQUIREMENTS

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The following permits and reviews are required when installing a solar photovoltaic system:

### Building Permit

- ▶ Historic Preservation Review Board (HPRB) and Commission of Fine Arts (CFA) Review (if applicable)
- ▶ Zoning Review
- ▶ Electrical Review
- ▶ Fire Protection Review
- ▶ Structural Review

### Electrical Trade Permit



Publications, forms and other useful information can be found online at:



**[www.dkra.dc.gov](http://www.dkra.dc.gov)**

Find DCRA: 1100 4<sup>th</sup> Street SW, Washington DC 20024

Permit Operations Center, 2<sup>nd</sup> floor  
Homeowner Center, 2<sup>nd</sup> floor, (202) 442-9517  
Building Plan Review, 3<sup>rd</sup> floor, (202) 442-8959  
Office of the Surveyor, 3<sup>rd</sup> floor, (202) 442-4984  
Office of the Zoning Administrator, 3<sup>rd</sup> floor, (202) 442-4576  
Inspection, 4<sup>th</sup> floor, (202) 442-9557  
Office of the Director, 5<sup>th</sup> floor, (202) 442-4400

### Hours of Operation

Mon, Tues, Wed + Friday: 8:30 am — 3:30 pm  
Thursday: 9:30 am — 3:30 pm

*This document is available in alternative formats and languages.  
Please call (202) 442-4601, TTY (202) 123-4567 for more information.*

## SOLAR PV PERMIT APPLICATION PROCESS

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Solar PV permits can be walked through Historic, Zoning, Electrical, and Fire Protection Reviews, but the Structural Review can take three (3) days to process for permits under 15kW. Larger projects may take additional time. Customers are limited to processing a maximum of three (3) permit applications per cycle.

Prepare the following submittal documents to bring:

1. DC Surveyor's Building Plat
  - a. A plat is required if the height of the solar system is four (4) feet or more in height above the ground, roof or parapet wall.
    - i. To verify height, provide a building section drawn to scale with dimensions showing the array.
    - ii. If a plat is not required, the project will be required to submit a site plan signed and sealed by an architect licensed in the District.
  - b. If supplying a plat, a total of (4) copies are required unless submitting via ProjectDox<sup>1</sup> in which only one copy of the plat needs to be submitted.

**\* \* \* TIP: To save time, order your plat online before coming to DCRA at \* \* \***

**<http://dcra.dc.gov/service/get-building-plat>**

For regular pick-up, it takes between 3-5 business days.

Expedited pickup can be ready after 2:00 PM the next business day.

2. Copy of the Notification Form to Adjoining Property Owners (if applicable)
3. Applicable Permit Fees
4. Construction Documents<sup>2</sup> (Scaled plans, specs, and details)
  - a. All plans and schematics should be submitted on and scaled to be legible on a minimum page size of 11"x17".
  - b. Site Plan showing north arrow, including the location of all major components including modules, inverter(s), disconnects, main electrical service and meter. For systems over 10 kW (DC), site plan must also indicate lot dimensions and the distance from property lines to adjacent buildings/structures (existing and proposed).
  - c. Architectural plans including roof layout and schematic detailing of the solar modules and roof attachment details.
  - d. Engineering plans including electrical, fire protection and structural with structural calculations
  - e. Building Integrated Photovoltaic (BIPV) products such as photovoltaic shingles are required to have a published ICC ES Evaluation Report or equivalent report.
  - f. Submit a total of (4) sets required unless submitting via ProjectDox online.

At this point, you should also have been in contact with Pepco to complete Part 1 of the Pepco Interconnection Application. For more details on the interconnection application process and to access all the required forms, visit Pepco's NEM and Small Generator Interconnection website at [www.pepco.com/greenpowerconnection](http://www.pepco.com/greenpowerconnection).

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<sup>1</sup>[http://dcra.dc.gov/sites/default/files/dc/sites/dcra/service\\_content/attachments/ProjectDox\\_Applicant\\_Userguide.pdf](http://dcra.dc.gov/sites/default/files/dc/sites/dcra/service_content/attachments/ProjectDox_Applicant_Userguide.pdf)

<sup>2</sup> 12 DCMR A, DC Building Code Supplement, Section 106

# SOLAR PV PERMIT REVIEW PROCESS

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## INTAKE

Complete our online permit application. You can access it by visiting:

<http://cpms.dcrd.dc.gov/OCPI/PermitMenu.aspx>

1. Solar PV systems should use “Alteration and Repair” for permit type
2. Under “Description of Proposed Work” include the following information:
  - a. Solar PV System
  - b. Number of panels and size of system (kW)
  - c. Type of system connection (grid-tied, battery, both)
  - d. Solar Company Completing Work
3. You will receive an FJ number when your application is complete. Present the permit tracking FJ number you received online to the front desk at DCRA.
4. The Front Desk will assign you a Q-matic number. Please listen for your number to be called and report to the counter as directed.
5. The Plan Review Coordinator at the first counter will:
  - a. Review your permit application and documentation to make sure you have all of the appropriate forms and documents,
  - b. Review the project/application and assign mandatory permit reviews to be completed by the appropriate disciplines,
  - c. Update the existing project record as necessary, and
  - d. Route the project to the Historic counter for the first review.

## **Historic Preservation Review Board and Commission of Fine Arts Review**

If applicable, the Plan Review Coordinator will assign the project to the Historic Preservation Review Board (HPRB) and/or Commission of Fine Arts (CFA). The project must be approved by HPRB and/or CFA before it can be reviewed further.

## PERMIT FEES

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All solar PV system fees will be assessed at the following rates:

DCRA Schedule of Fees <sup>3</sup> for Solar PV Systems (eff. 10/1/14)				
Building Plat	\$55.00 regular pick-up, \$82.50 expedited pick-up			
Building Permit Fee	< 15 kW	15-99 kW	100-200 kW	200 kW
	\$250 Res/ \$300 Comm	\$300 + \$11.25/kW >15	\$1250 + \$2.50/kW>100	\$1500 + \$1/kw >200
Electrical Trade Permit	1-200 amps	201-400 amps	401-800 amps	>800 amps
	\$39 first; \$16 each additional	\$52 first; \$24 each additional	\$78 first; \$39 each additional	\$124 first; \$52 each additional
Enhancement Fee	10% of total fee			

## CONSTRUCTION DOCUMENT REQUIREMENTS

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### ZONING REVIEW

All solar projects must be reviewed by the Office of the Zoning Administrator (OZA) which is located in the Department of Consumer and Regulatory Affairs. A building section drawn to scale with dimensions showing the array should be provided to demonstrate that the array will not exceed four (4) feet in height on flat roofs.

If the solar arrays are greater than four (4) feet in height above the roof/parapet, they are subject to the requirements of Section 411 of DCMR 11 of the District of Columbia's Zoning Regulations<sup>4</sup> and must document the following:

1. Set the arrays back from the edge of the roof at a ratio of 1:1 based on the height of the arrays.
2. Screen the arrays in a single enclosure.
3. The roof can contain only one roof structure including the proposed solar arrays.
4. Ensure the DC Surveyor's plats depict the roof of the structure on which the solar installation is proposed in order to verify the setback and screening requirements, including:
  - a. All existing construction on the lot, roads, streets, alleys, easements
  - b. Location of solar panels with setbacks dimensions from the lot lines
  - c. Location of the screen if required by Zoning (see Zoning review for more details)

<sup>3</sup> For full schedule of fees go online to: <http://dcra.dc.gov/publication/building-permit-fees>;  
[http://iims.dccouncil.us/\\_layouts/15/uploader/Download.aspx?legislationid=31515&filename=B20-0750-SignedAct.pdf](http://iims.dccouncil.us/_layouts/15/uploader/Download.aspx?legislationid=31515&filename=B20-0750-SignedAct.pdf)

<sup>4</sup> <http://dcoz.dc.gov/info/reg.shtm>, 11-4, 11-411

5. If a screen is required, a dimensioned section of the proposed screening.

BIPV products will not require a zoning review if used as shingle replacement only. Any work being done to the structure of the roof will reinstate this requirement. Be sure to complete a thorough assessment of the roof condition before submitting your permit.

If the applicant is unable to comply with the limitations on the number of roof structures, setback, or screening requirements, relief from the zoning regulations may be sought from the Board of Zoning Adjustment (BZA).

If BZA relief is required, the applicant may apply to the BZA in one of two ways:

1. The applicant can hire an architect or attorney licensed to practice in the District of Columbia to file a self-certified application with the Office of Zoning (a separate District agency not part of DCRA).

- OR -

2. The applicant may seek a referral memo from the OZA, which will prepare a memo within 30 business days that identifies the relief required. To request a memo, the applicant would submit two sets of the building plans and plats and one copy of the building permit application to the OZA, which will prepare the memo free of charge and contact the applicant when it is ready to be picked up and taken to the Office of Zoning.

If you have already obtained BZA approval, please provide one copy of the order (published in the register) and one certified copy of the exhibits (plans and other documents reviewed by the BZA during the hearing process) along with all other documents.

#### **ELECTRICAL ENGINEERING REVIEW**

Submit a completed Standard Electrical Plan that includes the following:

1. Locations/position of main service or utility disconnect.
2. Total number of modules, number of modules per string, and the total number of strings.
3. Makes and models of inverter(s) and combiner box(es) if used.
4. One-line or Three-line diagram of system.
5. Specify grounding/bonding connections & hardware, conductor type and size, conduit type and size, and number of conductors in each section of conduit.
6. Equipment cut sheets including inverters, modules, AC and DC disconnects and combiners.
7. Intended labeling of equipment as required by NEC sections 690 & 705, and
  - a. Service Breaker size
  - b. Panel or Bus Bar rating
  - c. Calculations showing compliance with NEC 705.12(D) for systems that backfeed a panel

Submit a Site Diagram that includes the following:

1. Arrangement of panels on the roof or ground
2. North arrow
3. Lot dimensions and existing shading elements
4. Distance from property lines to adjacent buildings/structures (existing and proposed).

#### **FIRE PROTECTION ENGINEERING REVIEW<sup>5</sup>**

Markings (signs) are required on both interior and exterior direct current (DC) conduits and other circuit components and located per code. Conduits, wiring systems and raceways shall run as close as possible to ridges, hips or valleys to avoid tripping and shall take the shortest runs in pathways. Conduits shall run along the underside of load bearing members. DC wiring shall be installed in metallic conduit or raceways if located within enclosed spaces in a building. All wires and cables shall be rated for the use they are put to.

For single and two family dwellings:

1. Each array shall be no greater than 150 ft. in either axis.
2. Locate roof access points, so that access ladders are not placed in the plane of wall openings like doors or windows, or conflict with overhead obstruction.
3. Layouts on hip roofs shall provide a 3 ft. wide clear access pathway, capable of supporting the live load of fire fighters, from eave to ridge on each roof slope where modules are located.
  - a. Provide two (2) such 3 ft. wide access pathways on each slope where modules are located on buildings with a single ridge.
  - b. These requirements shall not apply to roofs with slopes of 2:12 or less
4. Verify compliance with 2012 IFC for facilitating smoke ventilation between arrays

For other than single and two family dwellings:

1. Each array shall be no greater than 150 ft. in either axis (systems are not limited to one array).
2. Locate roof access points, so that access ladders are not placed in the plane of wall openings like doors or windows, or conflict with overhead obstruction.
3. Provide 6 ft. min. clear perimeter around the edge of roof, or 4 ft. where either axis of building is not greater than 250 ft.
4. Access pathways should be capable of supporting the live load of fire fighters.
5. Verify compliance with 2012 IFC for facilitating smoke ventilation between arrays.
6. Note that a small commercial installation may qualify to meet residential code requirements as per 2012 IFC 605.11.3.3 Exception.

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<sup>5</sup> See 2012 IFC Section 605.11

## STRUCTURAL ENGINEERING REVIEW

1. Submit copy of notification letters to adjoining property owners and registered mail receipts (if applicable – required when parapet walls are being utilized).
2. Submit one copy of fully completed and signed DC Surveyor’s Building Plat or site plan.
3. Submit four sets of construction documents (Plans, Sections and Details)
  - a. Drawings shall be stamped and signed by a Professional Engineer licensed in the District of Columbia.
  - b. Verify existing structural members are in compliance with current building code under change in snow load pattern caused by the modules (drifting and sliding snow), wind loads, earthquake loads, dead loads of modules and their mounting frame and existing roof dead loads both for strength and deflection, as applicable.
4. Submit panel manufacturer’s technical specifications, structural design criteria and installation instructions for the panel and module racking showing that module and the racking can withstand a 90 MPH, three (3) second gust wind generated pressure, suction and uplift not less than +/- 30 PSF. Ground snow loads in Washington DC are 25 psf Residential and 30 psf Commercial.
5. Submit additional construction materials specifications for the following:
  - a. Specification sheets, installation manuals (if available) for all manufactured components including, but not limited to, solar modules, inverter(s), combiner box, disconnect and mounting system.
  - b. All module connections should have a minimum factor of safety value of 2 against uplift/pull out.

BIPV products will not require a structural review if used as shingle replacement only. Any work being done to the structure of the roof will reinstate this requirement. Be sure to complete a thorough assessment of the roof condition before submitting your permit.

Any proposed structures that encroach on lot lines or building restriction lines shall be subject to further compliance review of projection provisions in DCMR 12-A Chapter 32

## BUILDING PERMIT ISSUANCE

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After the assigned reviews have been completed, the customer is given an invoice, pays at the cashier’s desk, and is issued a building permit. Fees are assessed in accordance with the fee schedule in this document.

## TRADE PERMITS

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After the building permit is approved trade permits are required for work. Only licensed DC contractors for each specific trade may apply for these permits.

To obtain a trade permit, please visit: <https://ospi.dcrd.dc.gov/ospi/menu.aspx>

Solar PV systems are required to obtain an electrical trade permit to complete work. You can complete the full trade permit application, pay and receive your supplemental permit all online unless:

1. The work address is in a historic or fine arts district.

2. You cannot pay the full fee by credit card.
3. You cannot save an Adobe PDF file on your computer and print it.

If you do not wish to use the online service, you can download the applications and come to DCRA. After verification of the base building permit and DC licensure of contractor, the customer is given an invoice, pays at the cashier’s desk, and is issued the trade permits.

## INSPECTIONS

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Following construction, DCRA must conduct inspections of Solar PV installations to ensure compliance with the approved plans as well as the D.C. Construction Codes – such Final Building Inspections and Final Electrical Inspections must be scheduled by phone by the client on the IVR system, 202-442-9557. More information is available at <http://dcra.dc.gov/service/schedule-construction-inspection>. On larger projects intermediate inspections might be required.

After inspections, you will be required to submit a copy of your DCRA inspection job card to Pepco along with Part II of your Pepco Interconnection Application and a signed Certificate of Completion. For more details on the interconnection application process and to access all the required forms, visit Pepco's NEM and Small Generator Interconnection website at [www.pepco.com/greenpowerconnection](http://www.pepco.com/greenpowerconnection).

## SOLAR PV AGENCY CONTACTS

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Agency	Division	Contact	Phone	Email
DCRA	Office of the Zoning Administrator	Jeanette Anderson	(202) 442-4647	<a href="mailto:jeannetteb.anderson@dc.gov">jeannetteb.anderson@dc.gov</a>
DCRA	Green Building	Keith Winston	(202) 442-4416	<a href="mailto:keith.winston@dc.gov">keith.winston@dc.gov</a>
DDOE	Energy Administration	Emil King Daniel White	(202) 870-7248 (202) 299-2163	<a href="mailto:emil.king@dc.gov">emil.king@dc.gov</a> <a href="mailto:daniel.white2@dc.gov">daniel.white2@dc.gov</a>
Pepco	Green Power Connection	Team	(202) 872-3419	<a href="mailto:gpc-south@pepco.com">gpc-south@pepco.com</a>