



GUIDELINES FOR **Solar Thermal Systems**

FUNDAMENTALS

Pursuant to Section 105.1 of the 2013 DCMR 12A, a building permit, plumbing trade permit, and an electrical trade permit (if applicable) are required when a Solar Thermal system is being installed.

REQUIREMENTS

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 (if applicable)
- ▶ Mechanical and Plumbing Review
- ▶ Fire Protection Review
- ▶ Structural Review

Electrical Trade Permit (if applicable)

Plumbing Trade Permit



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

www.dkra.dc.gov



Find DCRA: 1100 4th Street SW, Washington DC 20024

Permit Operations Center, 2nd floor
Homeowner Center, 2nd floor, (202) 442-9517
Building Plan Review, 3rd floor, (202) 442-8959
Office of the Surveyor, 3rd floor, (202) 442-4984
Office of the Zoning Administrator, 3rd floor, (202) 442-4576
Inspection, 4th floor, (202) 442-9557
Office of the Director, 5th 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 THERMAL PERMIT APPLICATION PROCESS

Solar thermal permits can be walked through Historic, Zoning, Electrical, Mechanical/ Plumbing and Fire Protection Reviews, but the Structural Review will take three (3) days to process for permits under 10 panels. Larger projects may take additional time. Customers are limited to processing a maximum of three (3) permit applications per day.

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 ProjectDox¹ in which case only one copy of the plat needs to be submitted.
2. Copy of the Notification Form to Adjoining Property Owners (if applicable)
3. Applicable Permit Fees
4. Construction Documents² (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. Submit a total of (4) sets required unless submitting via ProjectDox online.

SOLAR PV PERMIT REVIEW PROCESS

INTAKE

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

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

1. Solar Thermal systems should use "Alteration and Repair"

¹http://dcra.dc.gov/sites/default/files/dc/sites/dcra/service_content/attachments/ProjectDox_Applicant_Userguide.pdf

² 12 DCMR A, DC Building Code Supplement, Section 106

2. Under “Description of Proposed Work” include the following information:
 - a. Solar Thermal System
 - b. Number of panels and size of system (#, gallons of storage)
 - c. Type of system (DHW Preheat, Space heating, combo, other?)
 - 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 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

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

DCRA Schedule of Fees ³ for Solar Thermal Systems				
Building Plat	\$55.00 regular pick-up, \$82.50 expedited pick-up			
Building Permit Fee	Fewer Than 10 Panels	10-24 Panels	25-49 Panels	50 Panels and More
	\$250 Res \$300 Comm	\$300 + 25 per add. panel > 10	\$650 + \$15 per add. panel > 25	\$1010 + \$10 per add. panel > 50
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
Plumbing Trade Permit	\$26.00 for first water heater connection; \$20.00 each additional			
Enhancement Fee	10% of total fee			

CONSTRUCTION DOCUMENT REQUIREMENTS

ZONING REVIEW

All solar PV 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.

If the solar arrays are greater than 4 feet in height above the roof/parapet or installed on a pitched roof, they are subject to the requirements of Section 411 of DCMR 11 of the District of Columbia's Zoning Regulations⁴ 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. 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.
 - 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)

³ For full schedule of fees go online to: <http://dcra.dc.gov/publication/building-permit-fees>

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

*** * * 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.

If the applicant is unable to comply with the limitations of roof setback 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

Solar Thermal systems are required to have a dedicated circuit for the pump. Submit a completed Standard Electrical Plan that includes the following:

1. One-line diagram of system or Three-line diagram that provides additional detail
2. Specify grounding/bonding, conductor type and size, conduit type and size, and number of conductors in each section of conduit

Submit a site diagram that includes the following:

1. Arrangement of collectors 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 REVIEW⁵

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.

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.
 - These requirements shall not apply to roofs with slopes of 2:12 or less
4. Layouts on single-ridge roofs shall provide two (2) such 3 ft. wide access pathways on each slope where modules are located.
 - These requirements shall not apply to roofs with slopes of 2:12 or less
5. 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

STRUCTURAL ENGINEERING REVIEW

1. Submit copy of notification letters to adjoining property owners and registered mail receipts (if applicable)
2. Submit one copy of fully completed and signed DC Surveyor's Building Plat or site plan
3. Submit four (4) sets of construction documents (Plans, Sections and Details)
 - a. Drawings shall be stamped and signed by Professional Engineers 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,

⁵ See 2012 IFC Section 605.11

dead loads of modules and their mounting frame and existing roof dead loads both for strength and deflection.

4. Submit collector 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.
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 collectors, 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

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 Chapter 32.

MECHANICAL / PLUMBING REVIEW

Submit a completed, signed and stamped⁶ plumbing plan that includes the following:

1. Protection from potable water supply⁷
2. Type and capacity of solar collectors in (btus/day) and manufacturer's specification.
3. Manufacturer's specifications for heat exchangers and thermal storage tanks.
4. One-line diagram of solar thermal system.
5. Solar thermal system operating parameters.
6. Site diagram showing the arrangement of solar collector orientation on the roof or ground, north arrow, lot dimensions and existing (shading elements), the distance from property lines to adjacent
7. Buildings/structures (existing and proposed)
8. Material Safety Data Sheet (msds) for heat transfer liquids.

BUILDING PERMIT ISSUANCE

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 as well as supplemental permits. Fees are assessed in accordance with the fee schedule in this document.

⁶ By a licensed design engineer; One/two family buildings exempt from signed mechanical plans

⁷ International Mechanical Code 2006, Chapter 14, Solar Systems, Section 1401.3

INSPECTIONS

During construction, DCRA will conduct inspections of solar thermal installations to ensure compliance with the approved plans as well as the D.C. Construction Codes –Final Building Inspections and Final Electrical and Plumbing 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.

TRADE PERMITS

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.dcra.dc.gov/ospi/menu.aspx>

Solar Thermal systems are required to obtain a plumbing trade permit to complete work. If system installation requires electrical hard wiring, such as for any pumps or appliances, a electrical trade permit application will also be required. You can complete the full trade permit application, pay and receive your trade 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 not wish to use the online service, you can download the applications and come to DCRA for the permit. 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.

SOLAR THERMAL AGENCY CONTACTS

Agency	Division	Contact	Phone	Email
DCRA	Office of the Zoning Administrator	Jeanette Anderson	(202) 442-4647	jeannetteb.anderson@dc.gov
DCRA	Green Building	Keith Winston	(202) 442-4416	keith.winston@dc.gov
DDOE	Energy Administration	Emil King Daniel White	(202) 870-7248 (202) 299-2163	Emil.king@dc.gov Daniel.white2@dc.gov