



SOLAR ROOF INSTALLATION

RESIDENTIAL Photovoltaic Permit Application Supplement

SCOPE:

The residential permitting process for solar residential roof installations is for projects that are over 25 kw, ground mounted and or large roof mounted arrays. The installation of solar photovoltaic on a roof of a structure can be simple to complex. There are several items needed when submitting for a solar photovoltaic roof permit to determine that the finished project complies with the minimum requirements of the 2012 International Residential Code (2012 IRC) and 2014 National Electrical Code (2014 NEC).

PRE-SUBMITTAL CHECKLIST

1. Items for consideration when submitting for a photovoltaic panel array on a roof.

- ✓ No shadows will be cast on the array from trees, other buildings, etc. The trimming or removal of trees in order to provide an area that affords you direct sunlight must involve the Arborist Division of Office of Buildings.

The Arborist Division may be reached at (404) 330-6874 or via email:

arborist.dpcd@atlantaga.gov

- ✓ Roof decking is solid sheathing of ½” or greater thickness;

NOTE: Structures have more than one-layer of roofing materials will require a re-roof permit independent of this application

- ✓ The array is mounted on a code-compliant structure;
- ✓ The mounting structure is an engineered product designed to mount photovoltaic modules with no more than an 18-inch gap beneath the module frames;
- ✓ The array has a distributed weight of less than 5 lbs./ft. and less than 45 lbs. per attachment;
- ✓ The mounting hardware shall indicate that it is rated for 90-mph wind speeds and can resist a minimum of 40 lbs. of uplift;

RESIDENTIAL PERMIT PROCESS

Submit to:

- Residential Lane – Monday through Friday, 8:15 AM to 4:00 PM.

Required approvals, as applicable to your scope of work:

- Zoning
- Building
- Electrical
- Arborist – If no trees are destroyed or impacted, submit a completed Arborist Photovoltaic Tree Affidavit. If trees are destroyed, impacted or need to be pruned more than 20% of the live canopy, follow the requirements in #8 below.

Required Inspections:

- Final Electrical
 - Structural modifications and attachments to roof system; PRIOR to panel placement
 - Provide line of sight for inspection of attachments
 - All conduit in place, with all junction boxes open
 - Installation complete. The roof properly flashes and sealed to prevent water intrusion
 - Photovoltaic System complete, with all signage required by the 2012 International Fire Code and 2014 National Electrical Code in place.

Permits required:

- Electrical Permit: Permit fee will be a minimum of \$175. Fee is based on valuation of the project.

PERMIT SUBMITTAL REQUIREMENTS:

The customer must provide a minimum of two (02) complete plan sets, with the following:

1. Submit an Arborist Photovoltaic Tree Affidavit:

- This form is notarized and affirms that the contractor recognizing that no tree will be removed and/or that no more than 20% of the live canopy will be removed as part of the installation. For a copy of this form, please see the last sheet within this packet.

2. Plan Cover Sheet, with:

- Project Address;
- Homeowner's name and contact information;
- Scope of project in the form of a brief narrative;
- Applicable codes, as adopted and amended by the State of Georgia;
- Contractor's name and contact information;

3. Architectural Diagrams

a) Roof Plan showing the layout of the photovoltaic panel array, with the following:

- Indicate the roof pitch (Ex: 4:12, 6:12, etc.)
- Indicate the roof sheathing type and thickness
- Indicate if the roof is convention framing or pre-engineered trusses
- Dimension the separation distance between panels
- Show location of any roof mounted disconnecting means

NOTE: Pre-engineered trusses may require plant details from a Georgia licensed Professional Engineer for structural modifications to the roof system.

b) Site plan show the layout of the photovoltaic panel array, with the following:

- Indicate the location of the array on the site
- Indicate the members and system supporting the panel array
- Indicate lot lines and setbacks
- Provide a foundation detail for ground mounted systems

4. Electrical One-Line Diagram – This is a line drawings, which shows the components of the system, and their relationship to each other in the installation. This is not a scaled drawing, but is merely a conceptual representation of the system design used to verify compliance.

Include the following:

- The photovoltaic panels make and model,
- Conduit sizes and types,
- Conductor sizes and types
- Over Current Protection Device (OCPD) type rating and size (circuit breaker, fuse, etc.)
- The inverter type and rating;
- The type and size of all system batteries, if provided

NOTE: Indicate if the photovoltaic panels will be wired in series (voltage multiplied – individual module multiplied by the voltage) or parallel (circuit multiplied – individual module multiplied by the ampere). If this information is not provided, staff will assume that modules are wired in parallel.

5. Provided a Load Calculation of the total ampere and voltage generated by the photovoltaic array.

NOTE: A 125% short circuit increase is required on the photovoltaic array, and a further 125% increase is required on the conductor size. (2014 NEC 690.8)

6. Provide a minimum of two (02) complete bound or stapled sets of the Manufacturer's Specifications for:

- AC Voltage electrical equipment and/or panels,
- Inverter
- Photovoltaic,
- DC Voltage equipment and/or panels
- Over Current Protection Devices (OCPD)
- Panel mounting hardware.

NOTE: Photovoltaic Systems on buildings shall include a rapid shutdown function that controls specific conductors, Once the rapid shutdown is initiated, the conductors shall be limited to not more than 30 Volt – Amperes within 10 – seconds (2014 NEC 690.12)

7. A minimum of two (02) sets of structural design details, sealed by a Georgia licensed Professional Engineer for any required structural modifications to the existing roof system _ IF REQUIRED.

- These may on 8-1/2 x 11 paper, showing the necessary structural design changes to the pre-engineered trusses.
- Foundation detail for ground mounted systems

8. Arborist Review Requirements

- Location of proposed ground mounted or roof mounted array.
- Survey of all trees on property whose critical root zone is impacted by limits of land disturbance.
- Show the critical root zone (CRZ) of trees which extend into the limit of disturbance. Calculate the % of impact to CRZ.
- Tree inventory plan – label species (hardwood or pine) of existing trees, indicate diameter at breast height.
- Place an X on the tree symbol for each tree to be destroyed.

- Tree Replacement Plan – minimum 2.5” caliper, shown and labeled as to species (from COA recommended tree list). Overstory and mid-canopy trees are required until tree density requirements, per zoning district are met. Spacing requirements are measured from existing and proposed trees and to be spaced as follows: Overstory-35ft., Mid Canopy-25ft., Ornamental, Understory, and Screening trees - 15ft.
- Show and label 4 ft. orange tree protection fences which must be located at the edge of critical root zone or work limits.
- Existing topography at 2ft contour intervals
- Existing and Proposed underground utilities.
- Show and label construction material staging area
- Limit of land disturbance
- If lot is greater than one acre, wetlands, flood plains, streams, mature stands of trees, and other significant aspects of the natural environment to be shown on plan.
- If no trees are in or around the area of the proposed work provide two different photos of the site which clearly shows no trees will be impacted and “No Trees Impacted Statement”.
- If trees in the public right of way are impacted or destroyed, then approval from the Office of Parks Arborist is required. The approved plans should be submitted to the Office of Buildings, Arborist division. For additional information contact the Office of Parks at 404-546-6813.
- Go to Department of City Planning’s Arborist Division for the complete checklist of requirements. <http://www.atlantaga.gov/index.aspx?page=339>



City of Atlanta

Department of City Planning

OFFICE OF BUILDINGS - ARBORIST DIVISION

55 Trinity Avenue, Suite 3800

Atlanta, Georgia 30303

Phone: (404) 330-6874

Email: arborist.dpcd@atlantaga.gov

Website: www.atlantaga.gov/index.aspx?page=339

Date: _____

Property Owner(s): _____

Project Address: _____

Please check or initial each of the following:

_____ I certify that no trees will be removed or pruned for the installation of PV system.

_____ I understand that the COA Tree Ordinance allows no more than 20% (twenty percent) of the live canopy may be pruned. Pruning/removing up to 20% (twenty percent) of the live canopy must not make the tree lopsided or unbalanced, proper pruning cuts must be made in accordance to ANSI standards.

NOTE: The City of Atlanta Ordinance Section 158-26, which regulates trees, requires a permit for the removal of hardwood trees 6" (six inches) DBH and/or pines 12" (twelve inches) and larger. The tree ordinance prohibits injury to a protected tree. To find out more about the City of Atlanta tree ordinance go to: <http://www.atlantaga.gov/index.aspx?page=339>, or call the Arborist Division at (404) 330-6874.

I understand that if I provide false or misleading information in this form, I will be in violation of the Atlanta Tree Protection Ordinance and will be subject to the payments and penalties set forth therein.

Signature: _____

Print your name: _____

Relationship to project (Check One): () Property Owner () Contractor () Architect



City of Atlanta

Department of City Planning

OFFICE OF BUILDINGS — EXPRESS PERMITTING

55 Trinity Avenue, Suite 3900

Atlanta, Georgia 30303

(404) 330-6907

SOLOR ROOF INSTALLATION - Inspection Checklist

Plan Review and Inspection Checklist for Photovoltaic Systems:

NOTE: This is not an all-inclusive list of items inspected. These items may or may not apply to your project. This list is to be used as a guide only.

1. Arrays are to be 5 lbs./sf or 45 lbs./attachment
2. Modules, inverters and combiners shall be listed and labeled
3. Maximum of 4 series strings per inverter
4. AC connection point shall be on load side of service disconnect.
5. Inverters and combiners shall be listed per UL 1741
6. NMC is to be stapled every 4'-6" and within 12" of boxes, cabinets, conduit or terminations.
7. Bending radius of USE-2 or PV cable should be no less than 5x the cable diameter.
8. Minimum #8 copper shall be used for the grounding conductor
9. Grounding rod shall be as close to the array as possible.
10. All stainless steel shall be bonded to aluminum
11. Adjustment factors shall be used for sunlit raceways more than 10' or 10% of length.
12. All Bonding/grounding materials and methods shall be listed, labeled and identified in accordance with UL 2703.
13. Operating current signage should read, "System Maximum Power Current"
14. Operating voltage signage should read. "System Maximum Power Voltage"
15. PV with battery backups should be marked with, "Maximum Operating Voltage," equalization Voltage and polarity of grounded conductors.
16. The inverter maximum operating voltage rating shall be as high as maximum voltage of the PV system.
17. The source circuit over current protection for the PV system shall be sized per the minimum fuse rating

***** Electrician or authorized representative of the contractor must present at the time of the inspection. Homeowners authorized by the contractor may serve as that representative. *****

Related Code Sections:

- 2014 NEC Article 690
- 2012 IBC 1505.8 and 1507.17
- 2012 IRC Chapter 23 mirrors the IBC requirements
- 2012 IFC 605.11.1, 605.11.2, 605.11.3 and 605.11.4

