

# FIELD INSPECTION CHECKLIST

## New York State Unified Solar Permit

All photos referenced in the checklists below are located in Appendix C of *Understanding Solar PV Permitting and Inspecting in New York State* which can be found at [nysersda.ny.gov/SolarGuidebook](http://nysersda.ny.gov/SolarGuidebook)

### Array

1. Circuit conductors are properly supported and are not touching the roof surface [NEC 338.10(B)(4) and NEC 334.30] (Photo 10)	N	Y	N/A
2. Circuit conductors are same conductor type/size as on plan set	N	Y	N/A
3. Module count matches plan set. If no, investigate stringing configuration (Photo 3)	N	Y	N/A
4. Module manufacturer/model matches plan set. (Photo 4)	N	Y	N/A
5. Modules are effectively grounded using lugs, WEEBs, or a racking integrated grounding method [NEC 690.43] (Photo 9)	N	Y	N/A
6. Modules and racking are properly secured (Photos 5, 6, 7)	N	Y	N/A
7. DC optimizers are properly grounded [NEC 690.43 and NEC 110.3(B)]	N	Y	N/A
8. Wire ties are UV-rated (generally black) (Photo 10)	N	Y	N/A
9. All electrical connections are secured to ensure no arcing	N	Y	N/A
10. Racking system is properly grounded (EGC bonding the rails, [NEC 690.43]) (Photo 8)	N	Y	N/A
11. Conductors are properly identified (ungrounded, grounded, grounding) [NEC 200.7, NEC 200.6, NEC 250.119] (Photo 13)	N	Y	N/A
12. Outdoor components are UL-listed for the environment [NEC 110.3(B)]	N	Y	N/A
13. Roof vents are not covered by the modules (2015 IRC/2015IBC) (Photo 3)	N	Y	N/A
14. DC conduit is labeled "WARNING: PHOTOVOLTAIC POWER SOURCE" every 10 feet, and is reflective, and meets color and size requirements [NEC 690.31(G)(3) and (4)]	N	Y	N/A

### DC Optimizer

1. DC Optimizer chassis is properly grounded per manufacturer's instructions [NEC 690.43, NEC 250 NEC 110.3(B)]	N	Y	N/A
2. EGC is protected if smaller than #6AWG [NEC 690.46 and NEC 250.120] (Photo 9)	N	Y	N/A
3. DC Optimizer GEC is sufficiently sized per manufacturer instructions [NEC 690.47(C), NEC 250.66, NEC 250.122, NEC 250.166]	N	Y	N/A
4. Rapid Shutdown label is present and meets the requirements of NEC 690.56(C).	N	Y	N/A
5. DC Output circuit conductor insulation type is rated for environment (Shall not be type: USE-2, THWN-2, RHW-2) [NEC 310.10].	N	Y	N/A

**Note 1:** Many violations from the "Array" section also apply to the "DC Optimizer" section.

**Note 2:** DC optimizer can have an integrated ground, or not. Bring the specifications sheet to the inspection for quick reference.

### Structural (Roof-Mounted Only)

1. All roof penetrations are properly flashed and sealed 2015 IRC/ 2015 IBC (Photos 6,12)	N	Y	N/A
2. Rafter spacing/material matches construction documents	N	Y	N/A
3. Roof appears to be in good condition, with no signs of leaking or damage. Roof is free of debris. (Photo 3)	N	Y	N/A
4. All racking splices are properly supported per manufacturer requirements (generally splices must be supported on both sides of the joint by a structural attachment)	N	Y	N/A
5. Modules cannot be moved by pushing or pulling with one hand (Photo 7)	N	Y	N/A

## Junction Box

1. Wire nuts and splices are suitable for the environment [NEC 110.3(B), NEC 110.14, NEC 110.28] (Photo 13)	N	Y	N/A
2. Junction box is UL listed for the environment [NEC 110.3(B)] (Photo 14)	N	Y	N/A
3. Junction box is properly grounded [NEC 690.43(A), NEC 250.4, NEC 110.3(B)]	N	Y	N/A
4. Grounding equipment is properly installed (NEC 690.43, NEC 250.8, NEC 250.12) (Photo 13)	N	Y	N/A

## Inverter

1. The number of strings match the plan set. (Photo 18)	N	Y	N/A
2. The conductors have sufficient ampacity for each string.	N	Y	N/A
3. DC conductors in metal when on or inside a building [NEC 690.31(G)] (Photos 11, 12)	N	Y	N/A
4. Conduit penetrations are properly sealed between conditioned and unconditioned space [NEC 300.7(A)]	N	Y	N/A
5. Conduit is properly supported e.g., [LFMC NEC 350.30, EMT NEC 358.30, PVC NEC 352.30] (Photo 15)	N	Y	N/A
6. Conduit is not being used as conductor support [NEC 300.11(B)] (Photo 15)	N	Y	N/A
7. The enclosure is properly grounded [NEC 690.43, NEC 250.8, NEC 250.12] (Photo 16)	N	Y	N/A
8. Grounding equipment is properly installed [NEC 690.43, NEC 250.8, NEC 250.12] (Photos 16, 19)	N	Y	N/A
9. Enclosure is labeled as a PV disconnect [NEC 690.13(B)]	N	Y	N/A
10. DC characteristics label is present [NEC 690.53]	N	Y	N/A
11. The ungrounded DC conductors are properly identified (shall not be white, gray, or white striped) [NEC 200.7(A)] (Photo 16)	N	Y	N/A
12. Max string voltage below inverter max [NEC 110.3(B) and NEC 690.7]	N	Y	N/A
13. Inverter string fuses are rated for use in application [NEC 690.9]	N	Y	N/A
14. DC and AC disconnecting means are located within sight of or in each inverter [NEC 690.15 (A)] (Photos 15, 18)	N	Y	N/A
15. AFCI protection is present and enabled [NEC 690.11]	N	Y	N/A
16. System is equipped with Rapid Shutdown [NEC 690. 12]	N	Y	N/A
17. System is marked with a permanent label with the following wording: "PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN" [NEC 690.56(C)]	N	Y	N/A

## Microinverter

1. Microinverter chassis is properly grounded per manufacturer's instructions [NEC 690.43(A), 250.4, 110.3(B)]	N	Y	N/A
2. EGC is protected if smaller than #6 AWG [NEC 690.46 and 250.120(C)] (Photo 5)	N	Y	N/A
3. Microinverter GEC is sufficiently sized per manufacturer instructions [NEC 690.47(C), NEC 250.66, NEC 250.122, NEC 250.166]	N	Y	N/A
4. Rapid Shutdown label is present and meets the requirements of [NEC 690.56(C)]	N	Y	N/A

**Note 1:** Many items from the "Array" section also apply to the "Microinverter" section.

**Note 2:** Microinverters can have an integrated ground, or not. This information is found on the specification sheet.

**Note 3:** As long as the microinverters are listed, they are inherently equipped with rapid shutdown, which is required by NEC Article 690.12. This does not negate the label requirement in 690.56(C).

## AC Combiner

1. The number of branch circuits match the plan set. (Photo 20)	N	Y	N/A
2. The conductors have sufficient ampacity for each branch circuit.	N	Y	N/A
3. The Overcurrent Protective Device (OCPD) for the conductors have a rating sufficient to protect them [NEC 240.4] (Photo 20)	N	Y	N/A
4. Conduit penetrations are properly sealed between conditioned and unconditioned space [NEC 300.7(A)]	N	Y	N/A
5. Conduit is properly supported e.g., [LFMC NEC 350.30, EMT NEC 358.30, PVC NEC 352.30] (Photo 15)	N	Y	N/A
6. Conduit is not being used as conductor support [NEC 300.11(B)] (Photo 15)	N	Y	N/A
7. The enclosure is properly grounded [NEC 690.43, NEC 250.8, NEC 250.12] (Photo 20)	N	Y	N/A
8. Grounding equipment is properly installed [NEC 690.43, NEC 250.8, NEC 250.12] (Photo 20)	N	Y	N/A
9. Enclosure is labeled as a disconnect [NEC 690.13]	N	Y	N/A
10.AC characteristics label is present (voltage and amperage), [NEC 690.54]	N	Y	N/A
11.“Multiple Sources” indication label is present [NEC 705.12(D)(3)]	N	Y	N/A
12.The sum of all overcurrent devices (excluding main) do not exceed the rating of the buss bar [NEC 705.12(D)(2)(3)(c)]	N	Y	N/A
13.The enclosure is labeled “Do Not Add Loads” [NEC 705.12(D)(2)(3)(c)]	N	Y	N/A
14.The main breaker is fastened in place [NEC 408.36(D)]	N	Y	N/A
15.Grounded conductors are isolated from enclosure [NEC 250.24(A)(5)] (Photo 20)	N	Y	N/A

## Load-Side Connection

1. Circuit conductors have sufficient ampacity [NEC 690.8, 310.15]	N	Y	N/A
2. The OCPD is sufficient to protect the circuit conductors [NEC 240.4]	N	Y	N/A
3. Grounded conductors properly identified [NEC 200.6(A)&(B)]	N	Y	N/A
4. The GEC is present and sufficiently sized [NEC 690.47(C), NEC 250.66, NEC 250.122, NEC 250.166]	N	Y	N/A
5. The GEC is continuous (or irreversibly spliced) [NEC 250.64(C), 690.47(C)]	N	Y	N/A
6. Ferrous conduit and the enclosure are appropriately bonded to the GEC [NEC 250.64(E), NEC 250.4(A)(5)]	N	Y	N/A
7. PV breakers are properly identified [NEC 408.4(A)] (Photo 23)	N	Y	N/A
8. AC characteristics label is present and suitable for the environment (voltage and amperage) [NEC 690.54, NEC 110.21]	N	Y	N/A
9. Dissimilar metals are separated and will not cause a galvanic reaction [(NEC 110.14, RMC NEC 344.14, EMT NEC 358.12(6)]	N	Y	N/A
10.Inverter directory present [NEC 690.15(A) and NEC 705.10]	N	Y	N/A
11.Backfed breaker sized to protect circuits [NEC 690.8(B)(1) and/or NEC 310.15]	N	Y	N/A
12.Source breakers follow 120% rule [NEC 705.12(D)(2)(3)(b)]	N	Y	N/A
13.Backfed breaker properly located in panel [NEC 705.12(D)(2)(3)(b)] (Photo 23)	N	Y	N/A
14.Clearances maintained/live parts secured [NEC 110.27(A) and NEC 110.26] (Photo 18)	N	Y	N/A

## Supply Side Connection

1. Disconnect is service-rated and has a current rating of at least 60 Amp [NEC 230.79(D)] (Photo 22)	N	Y	N/A
2. Circuit conductors have sufficient ampacity [NEC 690.8, NEC 310.15]	N	Y	N/A
3. New service entrance conductors are less than 10 feet [NEC 705.31] (Photo 18)	N	Y	N/A
4. The OCPD is sufficient to protect the circuit conductors [NEC 240.4] (Photo 21)	N	Y	N/A
5. The disconnect utility conductors are on LINE terminals [NEC 110.3(B), NEC 240.40(if fusible)]	N	Y	N/A
6. There is no OCPD in the grounded conductor [NEC 230.90(B)] (Photo 21)	N	Y	N/A
7. The AIC rating on the OCPD meets, or exceeds the rating of other main OCPD on the premises [NEC 110.9, NEC 110.10]	N	Y	N/A
8. The neutral is bonded to the PV disconnect enclosure/GEC [NEC 250.24(C)]	N	Y	N/A
9. The GEC is present and sufficiently sized [NEC 690.47(C), NEC 250.66, NEC 250.122, NEC 250.166] (Photo 24)	N	Y	N/A
10. The GEC is continuous (or irreversibly spliced) [NEC 250.64(C), NEC 690.47(C)]	N	Y	N/A
11. Ferrous conduit and the enclosure are appropriately bonded to the GEC [NEC 250.64(E), NEC 250.4(A)(5)] (Photo 24)	N	Y	N/A
12. AC characteristics label is present and suitable for the environment (voltage and amperage) [NEC 690.54, NEC 110.21]	N	Y	N/A
13. Power source directory is present, denoting all locations of power sources and disconnects on premises, at each service equipment location [NEC 110.21, NEC 690.56, NEC 705.10]	N	Y	N/A
14. AC disconnect label is present and suitable for the environment (NEC 690.13(B), NEC 110.21]	N	Y	N/A
15. Dissimilar metals are separated and will not cause a galvanic reaction [NEC 110.14, RMC NEC 344.14, EMT NEC 358.12(6)]	N	Y	N/A

## General

1. Work is done in a neat and workmanlike manner [NEC 110.12] (Photos 5, 10, 13, 28)	N	Y	N/A
2. Working clearances are observed per NEC 110.26 (Photo 18)	N	Y	N/A

