



Department of
Housing Preservation
& Development

HERE COMES
SOLAR

Solar Where Feasible 101

October 8, 2024

SOLARone



Agenda

- 1 Solar Technology
- 2 LL92/94 & Solar Where Feasible
- 3 Solar Feasibility Analysis Updates V2.5
- 4 Solar Where Feasible Process
- 5 Incentives and IRA
- 6 Q&A

HERE COMES SOLAR

A PROJECT OF SOLAR ONE

- ▶ Here Comes Solar is an initiative of nonprofit **Solar One**, with a mission to make solar accessible to historically high-barrier sectors, particularly affordable housing.
- ▶ We offer free technical assistance at every step to make solar simple and affordable.
- ▶ The New York State Energy Research and Development Authority (NYSERDA) funded a partnership with Solar One & HPD for the **Solar Where Feasible Program**. Solar One provides free technical support to optimize solar in affordable housing across HPD's Portfolio.



Site Assessment



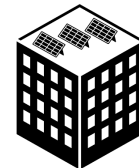
Knowledge building



Financing and incentive consultation



Solar installer selection assistance

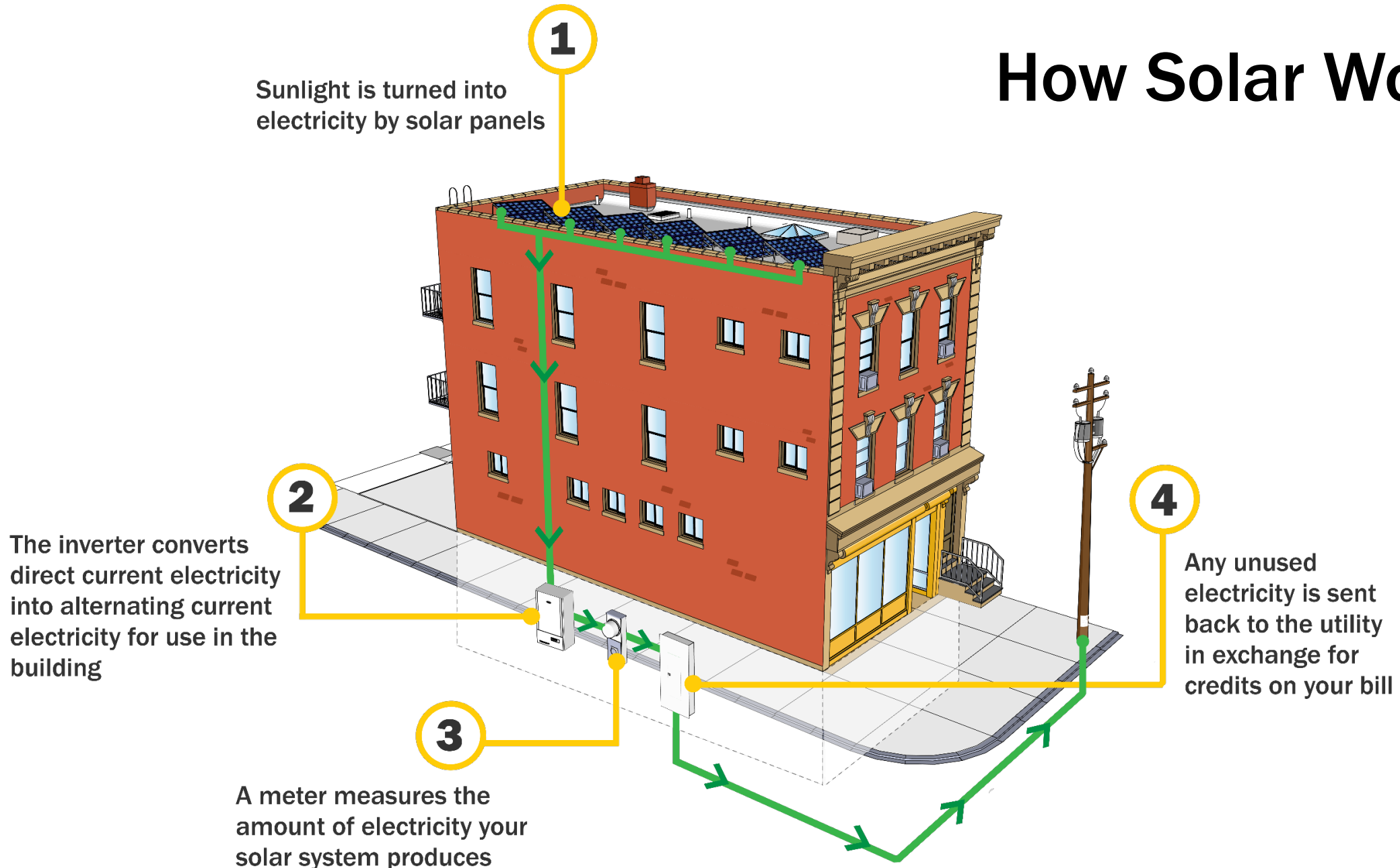


Consumer advocacy during installation



Solar Technology

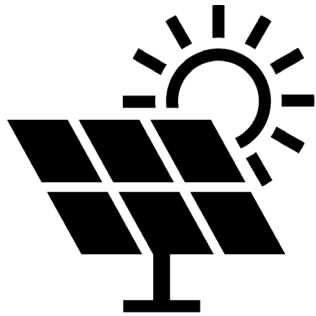
How Solar Works



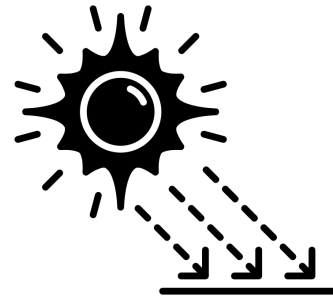
The Basics of Solar Technology



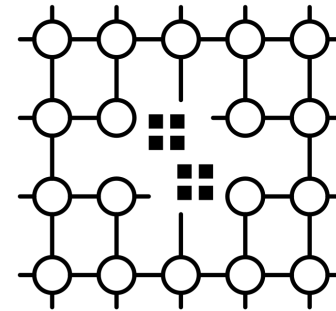
25+ Year Operating Life
best on new roofs



Almost No Maintenance
for solar arrays and
inverters



Requires Direct Sunlight
free from shading
from buildings and
trees



Grid Connected
shuts off in a
blackout

Three Types of Solar Installations in NYC

Ballasted

- Low profile
- Limited roof penetrations
- Least expensive, best on low buildings



Mechanically Attached

- More solar production
- No inter-row spacing
- Best for space-constrained roofs



Canopy

- Raised at least 9' above roof
- Can cover entire roof area
- Most expensive, but has co-benefits



Direct sunlight and
minimal shading

Large available
roof area

New Roof with a
long life ahead

Mechanicals
clustered in North

**What makes a
building viable
for solar?**

Fire paths along
perimeters



Not Viable? Sign up for Community Solar!

- ▶ Subscribe to local installation and save about \$5-10/month on your electricity bill
- ▶ Guaranteed savings
- ▶ 12-month term, auto-renewal
- ▶ Moves with you if you move within NYC
- ▶ No sign-up or cancellation fees
- ▶ Learn more by emailing anapaula@solar1.org, 347-303-7048

SOLARone NYC Department of Housing Preservation & Development

Attention Residents!

Do you want to lower your electric bill?

Subscribing to offsite **community solar** is a great way to save money (especially if you have high electric bills) and save the environment - for free!

Solar One is partnering with HPD's Solar Where Feasible Program to lower your bills with Community Solar. Solar One is a nonprofit, with a mission to make solar more accessible.

How does it work?

- You are matched with a solar energy project
- Solar credits will be applied to your Con Ed bill
- Save money on your electric bill each month!

✓ No Sign-Up Fees
✓ No Cancellation Fees
✓ Guaranteed Savings
✓ Help the Environment

Signing Up is Easy!

Enroll Today: solar1.org/herecomessolar/community-solar/
Questions? enrollment@solar1.org or 212-505-6050 ext. 5624

Scan to Enroll






LL 92/94 & Solar Where Feasible

Local Laws 92 & 94 (LL92/94)

NYC
Buildings

New York City Department of Buildings
280 Broadway, New York, NY 10007
Melanie E. La Rocca, Commissioner



BUILDINGS BULLETIN 2019-010
Technical

Supersedes: None

Issuer: Joseph Ackroyd, P.E., CFM
Assistant Commissioner, Technical Affairs & Code Development

Issuance Date: October 24, 2019

Purpose: This bulletin clarifies the green roof and solar requirements for new and existing buildings under Local Laws 92 and 94 of 2019 (LL 92/2019, LL 94/2019).

Related Code/Zoning Section(s):	AC 28-101.4.3 BC 1511 BC 1502.1	BC 1504.9 FC 504.4 FC 512 FC 318
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Subject(s): Green roof systems, vegetative roofs, solar photovoltaic systems, sustainable roofing zones.

I. APPLICABILITY

Local Laws 92 and 94 of 2019 (LL 92/2019, LL 94/2019), effective November 15, 2019, amend the 2014 Administrative Code and Chapter 15 of the New York City Building Code to require, subject to certain exceptions, new buildings, new roofs resulting from enlargement of existing buildings, and existing buildings replacing an entire existing roof deck or roof assembly to be provided with a "sustainable roofing zone," 100 percent of which must be a solar photovoltaic electricity generating system, a green roof system, or a combination thereof.

Projects with construction documents approved on or after November 15, 2019 are subject to the requirements of LL 92 and 94 of 2019, unless the construction documents have attained BIS job status K (plan exam partial approval) prior to such date.

II. REQUIREMENTS

A. Definitions
"SUSTAINABLE ROOFING ZONE" is defined as areas of a roof assembly where a solar photovoltaic electricity generating system, a green roof system, or a combination thereof, is installed.
"ROOF ASSEMBLY"¹ is a system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof

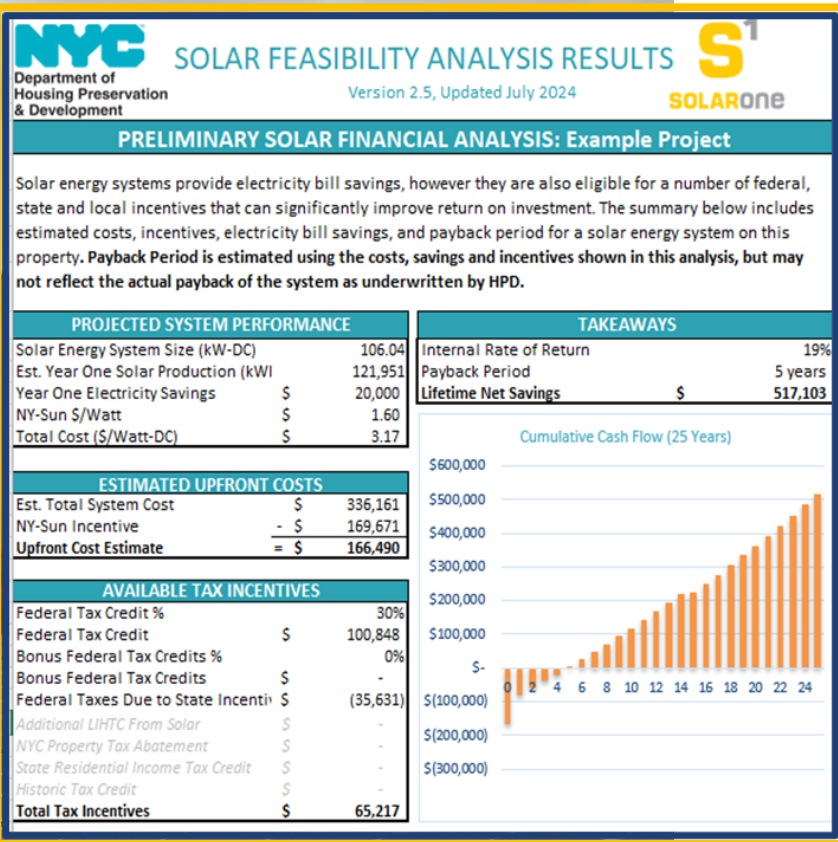
- ▶ Local Laws 92 and 94 of the Climate Mobilization Act **require either green roofs or solar** on all new roofs and new roof assemblies.

V. ALTERNATE COMPLIANCE TIMELINE FOR AFFORDABLE HOUSING

Until November 15, 2024, (i) buildings with one or more dwelling units for which occupancy or initial occupancy is restricted based upon the income of the occupant or prospective occupant as a condition of (A) a loan, grant, tax exemption or conveyance of property from any state or local governmental entity pursuant to the private housing finance law or the general municipal law, or (B) a tax exemption pursuant to section 420-c of the real property tax law, (ii) buildings subject to the alternative enforcement program pursuant to section 27-2153 of the administrative code of the city of New York, and (iii) buildings owned by the Department of Housing Preservation and Development (HPD), need only comply with the requirements of LL 92 and 94 of 2019 to the extent determined by HPD.

- ▶ Starting **November 15 2024**, the affordability exemption will no longer apply and all buildings subject to LL92/94 will need to comply with [DOB's requirements](#)
 - ▶ As of 7/1/2024 **no longer requires New Construction** projects to submit a solar feasibility analysis
 - ▶ New Construction projects are encouraged (but not required) to use the solar feasibility analysis tool to optimize solar design, inform underwriting, etc.

Solar Where Feasible



- ▶ HPD Solar Where Feasible Mandate requires Affordable Housing to go Solar only **when it is financially beneficial** to the building: with a payback of 10 years or less.
 - ▶ **New Construction** projects must comply with LL92/94 and a Solar Feasibility Analysis is no longer required.
- ▶ **NYSERDA funded a partnership with Solar One & HPD** for the Solar Where Feasible mandate to provide free services to HPD New Construction, Preservation, and Asset Management Programs
- ▶ Since 2020, HPD's Solar Where Feasible program has supported **over 12 MW of cost-effective solar** in 169 new buildings and 192 existing buildings. The buildings will save approximately **\$1.9 million** on their annual electric bills and reduce **4,000 tons of CO₂** emissions each year.




Solar Feasibility Analysis Updates V2.5

Version 2.5:


- Updated pricing and incentives
- New buttons

To ensure you're submitting the most up-to-date version, download the solar feasibility analysis from HPD's [SWF webpage](#)



USER INPUTS

Version 2.5, Updated July 2024



BUILDING INFORMATION

Use this tab to complete a preliminary assessment of solar financial viability for a New York City affordable housing property. If you have questions, please contact the Department of Housing Preservation and Development at affordable@solar1.org for assistance or a free solar consultation.

For portfolio projects, skip this tab and proceed to the "Multiple Buildings" tab.

Project Details	
Project Name (per HPD)	Example Project
Address	100 Gold St, NY, NY 10038
Loan Type	Tax Exemption Only, Maintenance Only, or Delegated Loan
Loan Type	For-Profit Rental
Project Completion Year	2025
Wages Required	No
Number of Dwelling Units in Project	100
Roof Height (ft)	100
Usable Roof Area for Solar (sq ft)	30,000
Design Proposed	No
Will the project propose electrification/energy efficiency work that may require roof design?	

Incentives Eligibility	
Is the project eligible for the Federal Solar Tax Credit?	Yes (owner is a taxable entity)
Is the project eligible for the Low Income Housing Tax Credit (LIHTC) Project?	No
Can solar be included in the LIHTC Basis?	
Is the project eligible for NYC Solar Property Tax Abatement?	No
Is the project in a Landmark or Historic District?	No
Is the project in a Qualified Census Tract?	No
Can the project receive funding from a federal housing program?	No

Owner-Paid Electricity Information	
Electricity Utility	Con Edison
Estimated Owner-Paid Electricity Costs	\$20,000.00
Is the project in a Metered Building?	No
Is the project in a Non-Metered Building?	Yes

ADVANCED INPUTS (OPTIONAL)

MULTIPLE BUILDINGS INPUTS

Advanced inputs are completely optional. Providing these additional inputs will increase the accuracy of your financial analysis. Please consult with a solar consultant for more information.

[illegible]



Solar Where Feasible Process

DEP Unified Stormwater Rule

A project may require a DEP Stormwater Construction Permit if the project disturbs 20,000 sf of soil or creates 5,000 sf of new impervious surface.

Projects should assess their DEP stormwater requirements before assessing for solar.

- USWR may require a green roof as part of stormwater management strategy.
- Buildings should assess this early as part of their roof strategy.

The screenshot shows the NYC Environmental Protection website. The header includes the NYC logo, 'Environmental Protection', and a search bar. The main navigation bar has links for Home, Pay My Bills, About, Water, Environment, Recreation, and What's New. The 'Water' link is highlighted. Below the navigation bar, the page title 'Unified Stormwater Rule' is displayed in large blue text. The content area includes a paragraph about the proposed amendments, a list of key changes, and a link to download a list of frequently asked questions and responses.

NYC Environmental Protection 311 Search all NYC.gov websites

Русский Text-Size

Home Pay My Bills About Water Environment Recreation What's New Search

Stormwater Management

Unified Stormwater Rule

Share Print

The proposed Unified Stormwater Rule amendments were publicly reviewed then published as final on February 15, 2022. This Rule includes amendments to Chapter 31 and Chapter 19.1 of Rules of the City of New York, changing requirements for how stormwater is managed on all new and redevelopment sites that discharge to City sewers.

- **Chapter 31** updates stormwater quantity and flow rates for **Site Connection Proposals** and **House Connection Proposals**.
- **Chapter 19.1** expands the **Stormwater Construction Permitting Program**, setting new thresholds for compliance and a new retention-first approach for design of post-construction stormwater management practices (SMPs).
- Chapter 19.1 also includes a new **New York City Stormwater Manual** to provide guidance for permit applicants.

Download a list of **Unified Stormwater Rule Frequently Asked Questions and Responses** compiled during the public comment period.

Updated Process

▶ New Construction:

- ▶ HPD no longer requires projects to submit an analysis and obtain a signed solar approval form
- ▶ Utilize the tool to assess for LL92/94, optimize solar design, maximize incentives, and estimate solar savings for underwriting purposes

▶ HPD Rehabs:

- ▶ Sub Rehab, Gut Rehab, Mod Rehab, Tax-Exemption-Only, Maintenance-Only, or Delegated Loan
- ▶ Submit an analysis, Solar One will review it, and HPD will provide a signed solar approval form

Project Details	
Project Name (per HPD)	Example Project
Site Address/es	100 Gold St, NY, NY 10038
Construction Type	Tax Exemption Only, Maintenance Only, or Delegated Loan
Project Design Phase	New Construction
# of Buildings in Project	Sub Rehab
# of Buildings Proposing Solar	Mod Rehab
Is project subject to DEP Stormwater rules and will need to use a green roof to comply?	Gut Rehab
	Tax Exemption Only, Maintenance Only, or Delegated Loan

Updated Process

PRE-SUBMISSION GUIDANCE

- **All project teams:** should consider how to optimize their roofs for solar
 - **Where applicable,** project teams should consider whether the project will need a green roof to satisfy [DEP's USWR](#)
- **Rehabs only:** Rehab projects in the IPNA phase should submit a Solar Feasibility Analysis to the [Solar Feasibility Analysis Intake Portal](#). Solar One will provide feedback and a revised version. At this stage, the analysis is called a solar screening, since the project's scope is not yet finalized. Be sure to include this solar screening your IPNA submission to HPD.


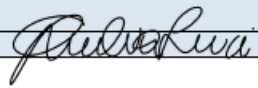
SUBMISSION (after pre-scoping meeting, prior to the HPD Design Consultation)

1. The applicant (typically the Architect or Green consultant) submits a [Solar Feasibility Analysis](#), including a schematic roof plan, via the [Solar Feasibility Analysis Intake Portal](#).
 - Roof plan should show any proposed mechanical equipment, aligned with the SOW

REVIEW & SIGN OFF

2. Solar One reviews the Solar Feasibility Analysis, providing a solar recommendation to HPD.
3. After the Design Consultation, HPD Sustainability or HPD PM provides a signed Solar Approval Form.

Example HPD Solar Approval Form

		HPD SOLAR APPROVAL FORM	
Project Details¹			
Project Name	MET COUNCIL PORTFOLIO.GHPP.FY24		
Site Address/es	See Multiple Buildings tab		
Project Design Phase	Scoping	Submission Date	7/29/2024
Construction Type	Mod Rehab	Eligible for Federal Solar Tax Credit	Yes (owner is a 501c3 - can get tax credit via Elective/Direct Pay)
# Buildings in Project	7	IRS pre-filing registration and filing required for Elective/Direct Pay	
# Buildings Proposing Solar	2	LIHTC Project	No
# Dwelling Units	179	Includes Solar in LIHTC Eligible Basis	No
Projected System Details		Estimated Costs²	
With multiple buildings, the below numbers are totals and weighted averages for buildings viable for solar. See Roof Layout for details			
System Design Type	6.3	Est. Total System Cost	\$ 134,064.00
System Size (kW)	21.28 kW-DC	NY-Sun Incentive	- \$ 34,048.00
Est. Cost (\$/Watt-DC)	\$6.30	Est. Upfront Cost After NY-Sun Incentive	= \$ 100,016.00
Est. Y1 Production (kWh)	24,472	Estimated Available Tax Incentives	
Estimated Savings		Federal Solar Tax Credit	\$ 40,219.20
Est. Y1 GHG Reduction	7.1 mtCO2e	BONUS Federal Solar Tax Credit*	\$ -
Est. Annual Owner-Paid Electricity Costs	\$ 14,865.00	Additional LIHTC from Solar	\$ -
Est. Y1 Electricity Savings (\$)	\$ 4,013.41	NYC Property Tax Abatement*	\$ -
Est. Lifetime Net Savings	\$ 128,345.66	State Residential Income Tax Credit*	\$ -
% of Savings Underwritten	50%	Historic Tax Credit*	\$ -
Annual Underwritten Savings	\$ 2,006.70	Total Tax Incentives	\$ 40,219.20
Est. Payback Period	14 years	* Tax incentive not typically recognized as a source in the HPD budget.	
Applicant Information		HPD Information	
Applicant Company	Met Council	HPD ID	74278
Applicant Name	Dena Johnson-Herre	HPD PM	Emily Phillips
Applicant Email	djohnson@metcouncil.org	HPD Email	PhillipE@hpd.nyc.gov
Owner/Developer Name	Met Council	HPD Program	HRP
Owner/Developer Email	djohnson@metcouncil.org		
HPD Approval			
¹ All projects must be signed by HPD Sustainability Office.			
² Costs are based only on the inputs and assumptions in this tool, including any Advanced inputs. Estimated total cost of system does not include GC markup. Final costs (and payback) may be different than shown in this analysis. This analysis can be re-run if there are changes to the design or if bid costs are significantly higher than estimated and it is necessary to re-calculate the payback (e.g., project is over budget and needs to be value engineered).			
³ Any waivers or DOB Exemptions noted here are for HPD's Solar Where Feasible requirement only and should not be construed to exempt a project from a DEP stormwater requirement. Note that as of November 15 2024, DOB will no longer accept HPD Exemption letters and projects subject to LL92/94 will be required to comply with the DOB's requirements.			
HPD Determination	Solar Recommended - see comments		
HPD-issued letter for DOB LL92/94 Exemption Required? ³	No - project not subject to LL92/94		
HPD Comments:			
Solar is recommended, but not required, on two buildings: 332 East 22nd St and 351 E 54th St which can host 11.02 kW-DC and 10.26 kW-DC canopy systems respectively. The other 5 buildings are not viable for solar due to limited roof space, nearby building shade, and large center bulkheads. The analysis assumes \$6.3/W as the EPC pricing due to the size of the system and installation type. Also, it is assumed that the non-profit owner can take the 30% federal investment tax credit via Direct Pay, which requires IRS pre-filing registration and filing. The estimated payback period is 14 years, so solar is not required, but the Applicant is interested in including canopy solar on the two buildings.			
HPD Approval Signature		Date	9/6/2024

Updated Process



DESIGN

4. For projects where solar is required the architect will develop a Preliminary Design for solar that will be used for bidding purposes.
5. If the Preliminary Design is significantly different than the signed Solar Feasibility Analysis (e.g. different number of panels and/or different estimated production), the applicant should resubmit the Solar Feasibility Analysis, including the Preliminary Design, to Solar One to recalculate the cost and payback.

BIDDING, COST REVIEW & CONSTRUCTION

6. Solar bids must include the full installation cost and note the estimated NYSERDA NY-Sun incentive.
7. Solar One can assist architect/owner with the bidding process (for the solar portion only).
8. Solar One can assist project team during construction, closeout and completion, if necessary.

Have Questions? Contact affordable@solar1.org for free technical assistance.



Solar Costs, Savings, and Incentives

What is included in a solar contract?

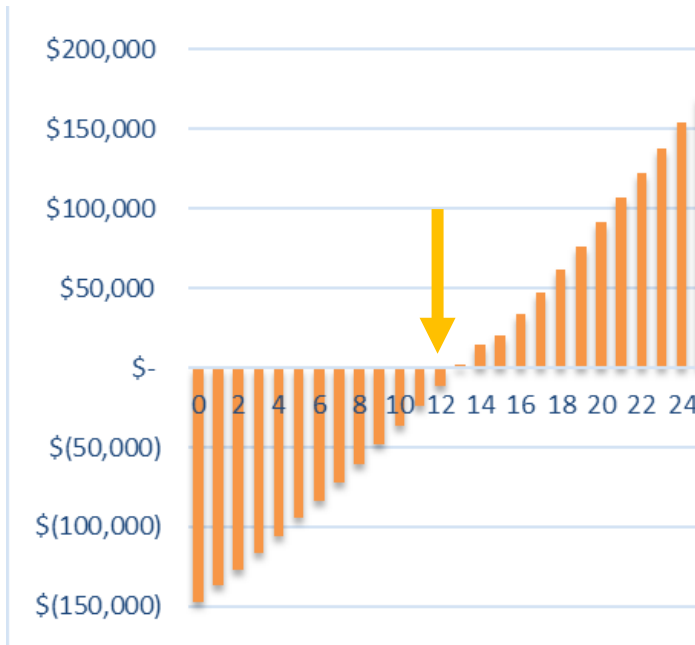
- ▶ Contract and Screening
 - Site Visit
 - Contract Creation & Signing
- ▶ Final Design and Application Submission
 - System Design, Structural Analysis & Engineering
 - ConEd, NYSERDA, FDNY, LPC submissions
- ▶ Permit Submission
 - NYC DOB and Electrical Permit submissions
 - Construction and Electrical Permit Approvals
- ▶ System Installation
 - Equipment Procurement
 - Installation & ConEd Interconnection Approval
- ▶ Final Project Inspection and Sign-Off



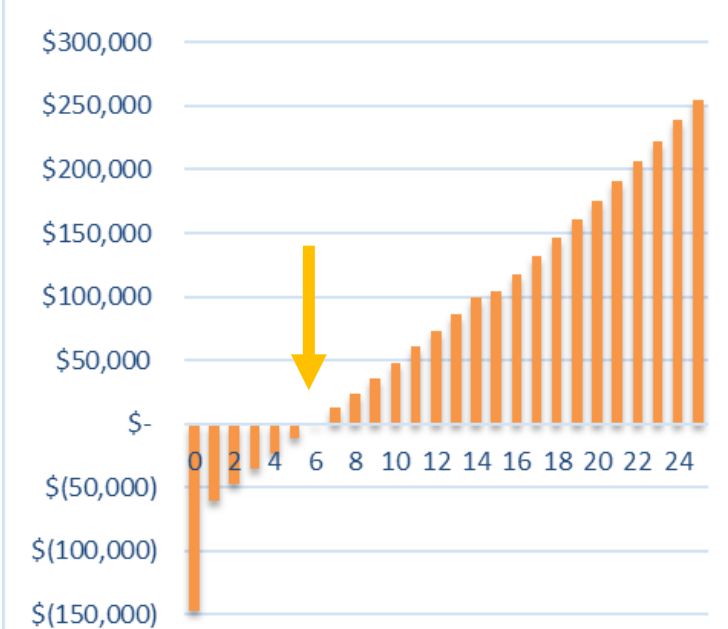
Saving Money with Solar

- ▶ Multifamily solar projects in New York City typically have a **5–12-year payback period**, depending on costs and incentive eligibility
- ▶ **Tax Incentives** can make a major impact in payback period
 - ▶ Investment Tax Credit (ITC)
 - ▶ Property Tax Abatement
 - ▶ Low Income Housing Tax Credit
- ▶ Solar projects typically continue to provide savings **even after the 25-year** period

No Solar Tax Incentives

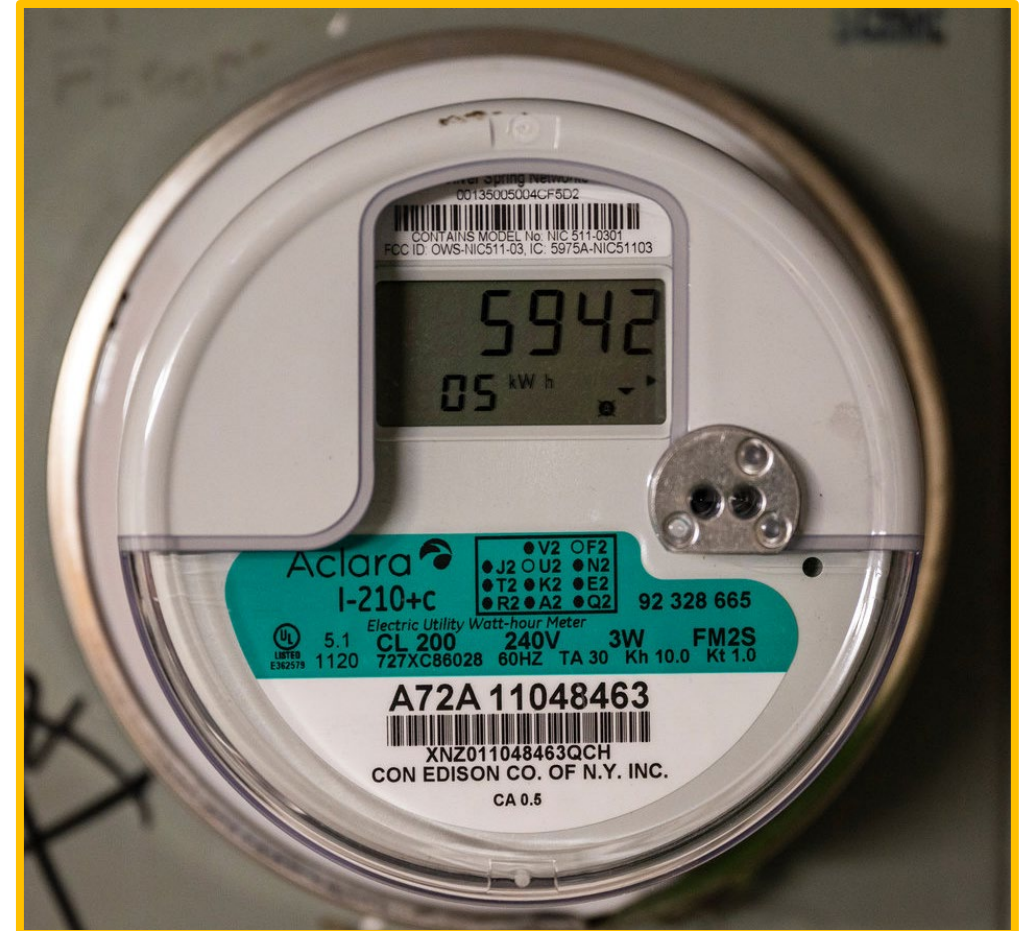


With Solar Tax Incentives



Saving Money with Solar on Utility Bills

- ▶ Rooftop solar projects can directly and reliably reduce owner-paid electricity bills.
 - ▶ ~50% common area electricity usage offset for EL9
 - ▶ ~100% common area electricity usage offset for EL2
- ▶ Utility bill savings vary based on:
 - ▶ Owner-paid electricity rate - Large Commercial vs Small Commercial vs Master-Metered
 - ▶ Metering configuration
 - ▶ System size, which is based on usable roof space and annual electricity consumption



Solar Rebates and Tax Incentives

Building Type	NYSERDA NY-SUN Incentive (paid directly to installer)	Federal Tax Credit* (30%+ of system cost)	State Tax Credit (25% of system cost)	Property Tax Abatement (30% of system cost)
OWNER-OCUPIED COOP/CONDO	\$1.60-\$2/Watt-DC for affordable housing	Either distributed to shareholders or taken by the building entity	Must be distributed to shareholders	Only eligible if taxes are owed, not compatible with some other abatements
FOR-PROFIT RENTAL	\$1.60-\$2/Watt-DC for affordable housing	Commercial Tax Credit can be taken	N/A (homeowners only)	Only eligible if taxes are owed, not compatible with some other abatements
NON-PROFIT RENTAL	\$1.60-\$2/Watt-DC for affordable housing	Tax Credit is refundable to nonprofits or can be taken by LIHTC investor for additional benefits	N/A (homeowners only)	No tax liability

* Federal Investment Tax Credit is 30% + adders for certain buildings in low-income census tract or projects benefiting low-income tenants.

A low-angle photograph of a multi-story brick building with a light-colored facade and red brick accents. A black metal fire escape is attached to the side, with a rainbow flag hanging from it. The building has several windows and a flat roof with some structural elements visible. The sky is a clear, solid blue.

Inflation Reduction Act (IRA)

Major Solar Incentives in the IRA

30% Federal Tax Credit
+ Bonuses



Elective Pay for
501(c)(3)s



Solar Federal Tax Credit “ITC” Base Credit



30% base tax credit for all solar projects

- ▶ ITC started to sunset in 2021, but the IRA increases and extends the ITC to 2032, then steps down gradually after that
- ▶ Available in the taxable year in which installation of the solar property is complete

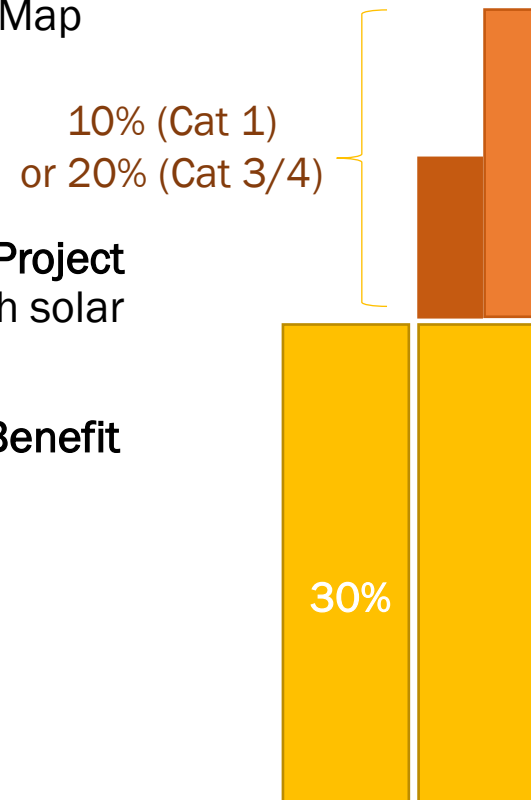


ITC Bonus for LMI Communities & Buildings



Bonus Tax Credit Categories

- ▶ **Category 1** (10% bonus): Located in a Low-Income Community, determined by New Market Tax Credit Map
or
- ▶ 20% bonus for either
 - a) **Category 3: Low-income Residential Building Project** - federal funded affordable rental building with solar benefits allocated equitably to residents
 - b) **Category 4: Qualified Low-Income Economic Benefit Project** – community solar project where 50% subscribers have incomes below 80% of AMI
- ▶ 1.8 GW allocated annually for these
- ▶ Require application and allocation



Category 1: Located in a Low-Income Community (10% bonus)

Eligibility:

- Solar facility located within a census tract determined by the [New Market Tax Credit Map](#)

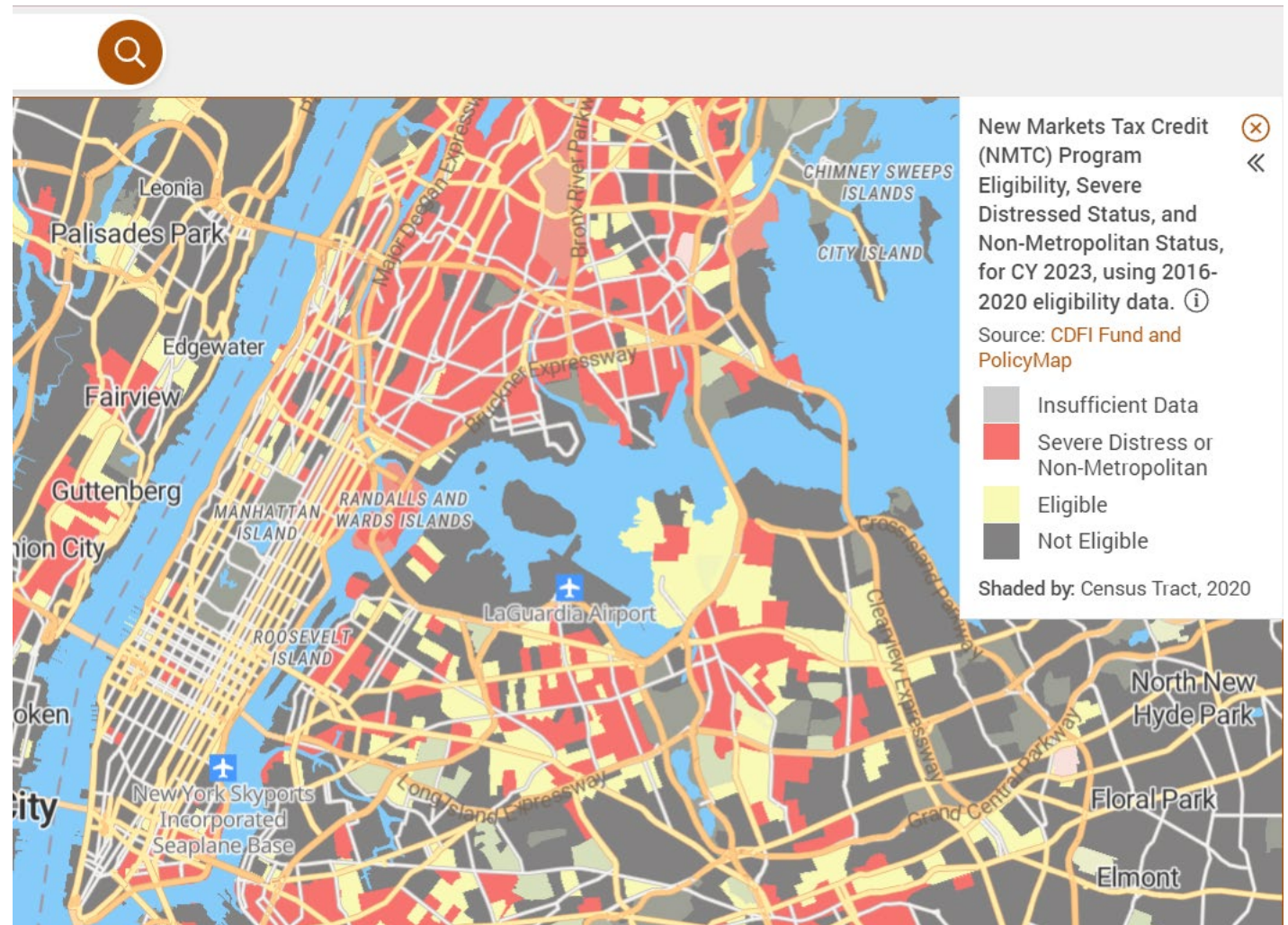
Process:

- You must apply, receive a capacity allocation, and then place your facility in service to claim this bonus.

Final guidance available [here](#)

Application platform [here](#)

DOE program overview [here](#)



Category 3: Qualified Low-Income Residential Building Project (20% bonus)

Eligibility:

- Solar facility on federally funded affordable housing with **“financial benefits are distributed equitably to low-income tenants.”**

Process:

- You must apply, receive a capacity allocation, and then place your facility in service to claim this bonus.

Final guidance available [here](#)

Application platform [here](#)

DOE program overview [here](#)



Direct Pay



- ▶ Federally exempt nonprofits can receive tax credits as cash payment from the US Treasury
- ▶ Direct Pay also available to state and tribal governments and rural cooperatives
- ▶ Appears as a tax refund as if the organization had made excess payments
- ▶ Joint ventures/partnerships with for-profit entities are not eligible for Direct Pay

FAQ [here](#)

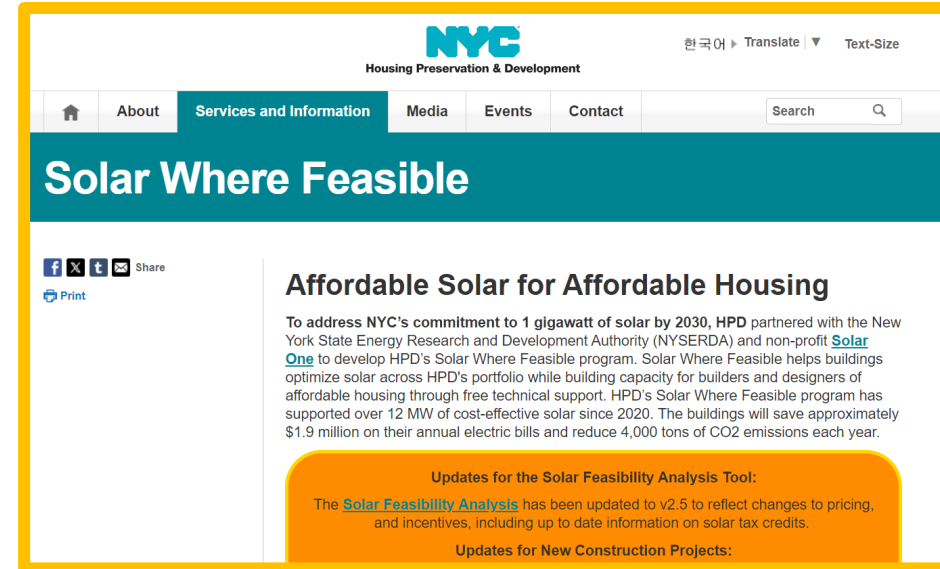
User Guide & Instructions [here](#)

Elective Pay [final guidance here](#)



Resources on [HPD SWF Webpage](#)

- ▶ Solar Feasibility Analysis
 - ▶ Solar 1 Intake Page
- ▶ Resources
 - ▶ Solar Technical Requirements
 - ▶ Past Workshops
 - ▶ Solar for Development Teams
 - ▶ Solar 101 Brochure
 - ▶ Solar Owner's Guide
 - ▶ Solar Incentive Matrix
- ▶ Free technical assistance from Solar 1 is available upon request. Contact affordable@solar1.org for more information



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- ▶ Learn more by emailing anapaula@solar1.org, 347-303-7048

SOLARone NYC Department of Housing Preservation & Development

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✓ No Cancellation Fees
✓ Guaranteed Savings
✓ Help the Environment

Signing Up is Easy!

Enroll Today: solar1.org/herecomessolar/community-solar/
Questions? enrollment@solar1.org or 212-505-6050 ext. 5624

Scan to Enroll





Questions?

affordable@solar1.org