

So, you want to go solar?

April 19, 2022



Tonight's speakers

- **Bernie Pelletier** Chair, West Hartford Clean Energy Commission
- **Catherine Diviney** Energy Specialist, Town of West Hartford
- **Hannah Savage** Residential Solar Program Manager, Eversource
- **Chamae Mejias** Residential Solar Analyst, Earthlight Technologies

Empowering you to go solar

Over 800 West Hartford residents have gone solar!

- Catherine (Town) will talk about solar in West Hartford
- Hannah (Eversource) will talk about programs for (single family) residents and which may be right for you
- Chamae (Earthlight) will talk about typical project considerations, incentives and financing options, and working with an installer
- Bernie (Clean Energy Commission) will talk about resources available to make you a “savvy solar shopper” and where to start
- We will leave plenty of time for Questions & Answers



Catherine Diviney

Energy Specialist, Town of West Hartford

catherine.diviney@westhartfordct.gov

860-561-7581



WEST
HARTFORD



**WEST
HARTFORD**

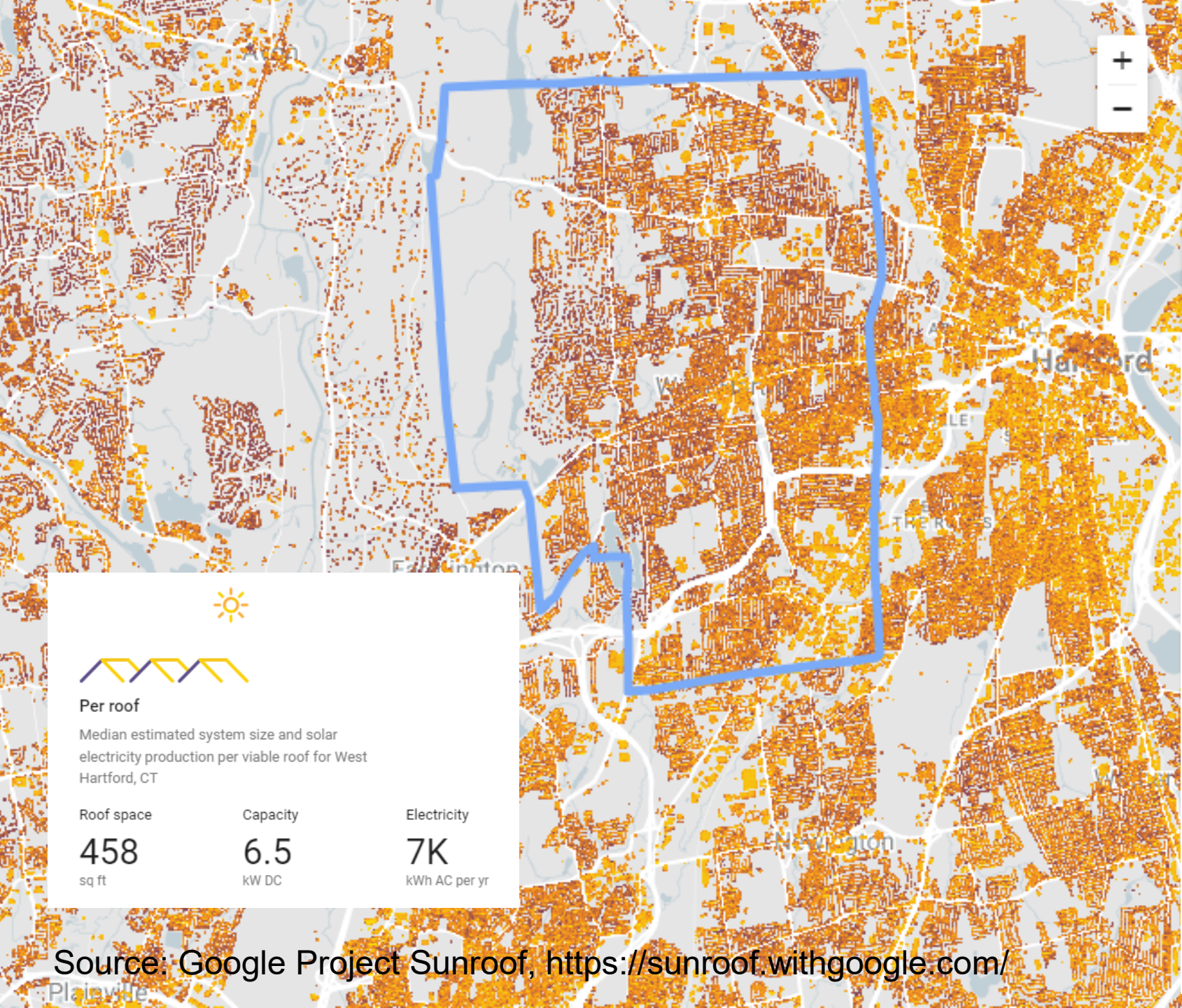


Energy Plan

West Hartford Clean Energy Commission | 2020

We aspire for our **entire** community
to use 100% clean energy by 2050.





Estimated rooftop solar potential of West Hartford, CT

Last updated: 11/2018



ESTIMATED SOLAR INSTALLATION POTENTIAL



Overall
Total estimated size and solar electricity production of viable roofs for West Hartford, CT

Roofs	Roofs
67%	14.1K

70% of WeHa's total electricity use

Roof space	Capacity	Electricity
14.4M sq ft	205 MW DC	228K MWh AC per yr

Per roof
Median estimated system size and solar electricity production per viable roof for West Hartford, CT

Roof space	Capacity	Electricity
458 sq ft	6.5 kW DC	7K kWh AC per yr

Source: Google Project Sunroof, <https://sunroof.withgoogle.com/>

Appendix 3 Town of West Hartford Solar Projects

Year	Site	Size (KW DC)
2006	Town Hall	3 KW (removed)
2008	Hall HS	3 KW
	Conard HS	3 KW
2009	Bristow MS	95 KW
2012	Department of Public Works	102 KW
	Bishops Corner Library	58 KW
	Wolcott ES	11 KW
	Conard Community Green Energy Lab	Demonstration solar and wind
2016	Westmoor Park	5 KW
	Charter Oak International Academy	100 KW (also 64 geothermal wells)
	Conard HS	357 KW
2017	Aiken ES	238 KW
2018	Off-Site (Thompson, CT) – Virtual Net Metering	2,400 KW
2019	Town Hall	129 KW
2020	King Philip MS	527 KW



14 projects
 4 MW capacity
 5 Million kWh



800+ West Hartford residents have solar!






RESIDENTIAL RENEWABLE ENERGY SOLUTIONS

Hannah Savage, Program Manager

Why does Eversource have this program?

“Act Concerning a Green Economy and Environmental Protection,”
created this program to continue the growth of residential renewable
energy in Connecticut

Benefits Include:



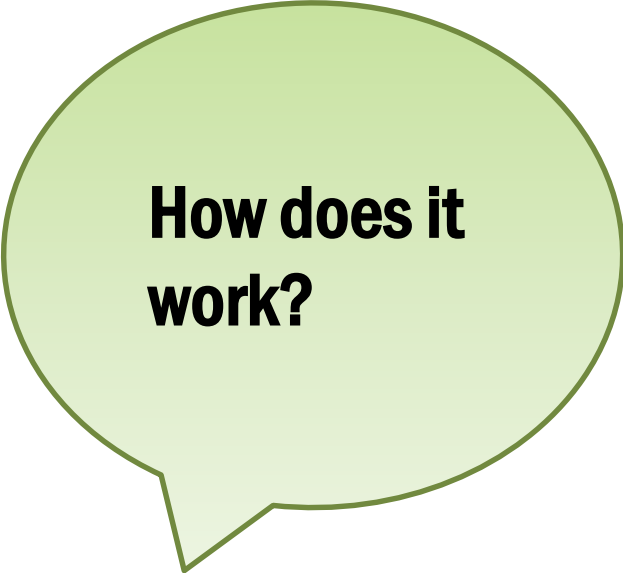
Furthering
CT's Clean
Energy
Goals



Supporting
Local
Clean
Energy
Jobs



Lower
Customer
Energy
Bills



How does it work?

Residential solar incentives via Residential Renewable Energy Solutions (RRES) can help offset the cost of the electricity you buy from Eversource with energy you generate.

Eversource buys the energy and renewable energy certificates (RECs, which are worth \$\$) associated w/ your system from you for a 20-year term.

RRES incentive rates are set by the Public Utilities Regulatory Authority (PURA) & aim to provide customers with a 10% Return

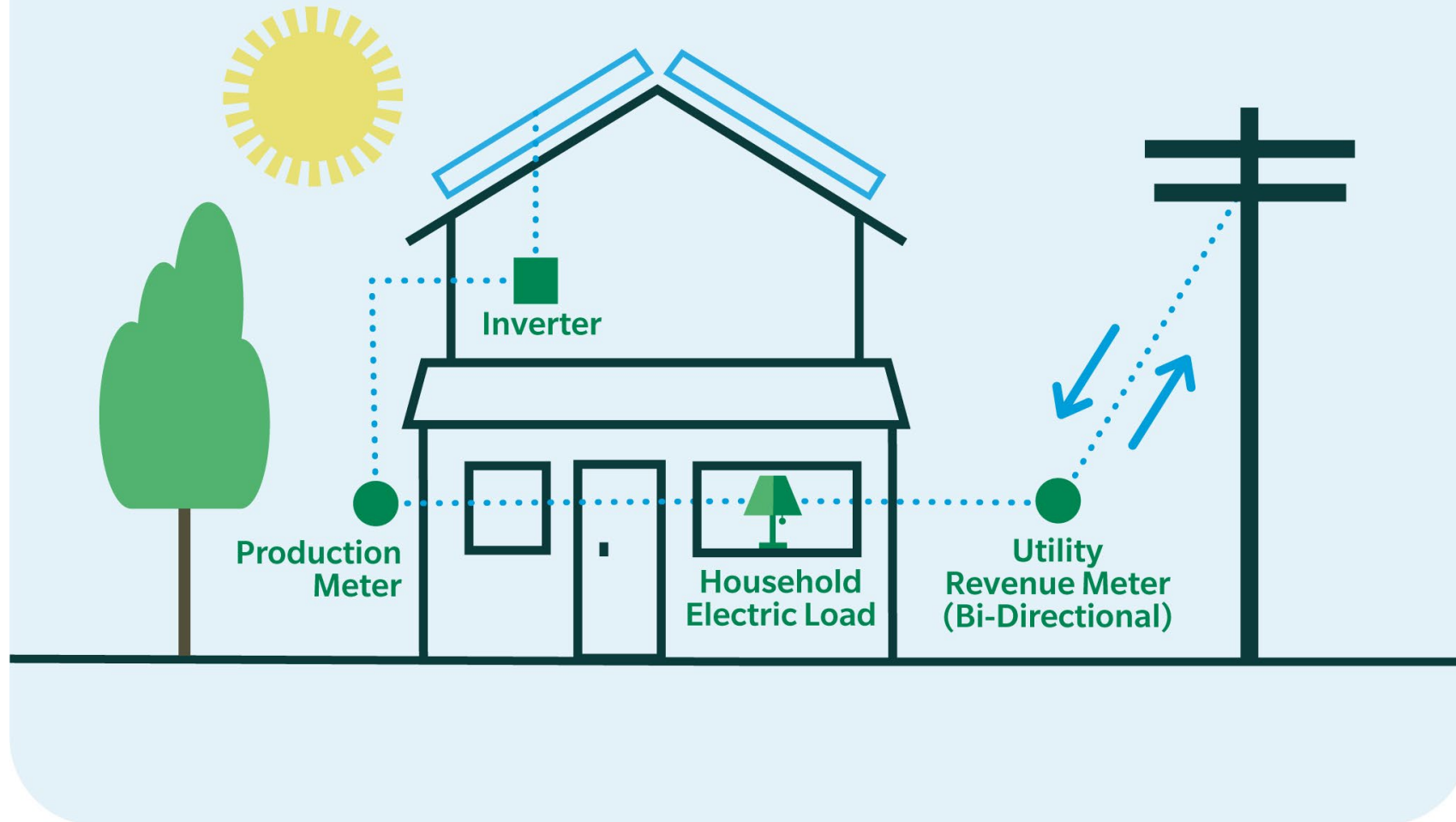


(10% is regardless of which system configuration is chosen...more on that next slide)

Option 1 of 2

NETTING

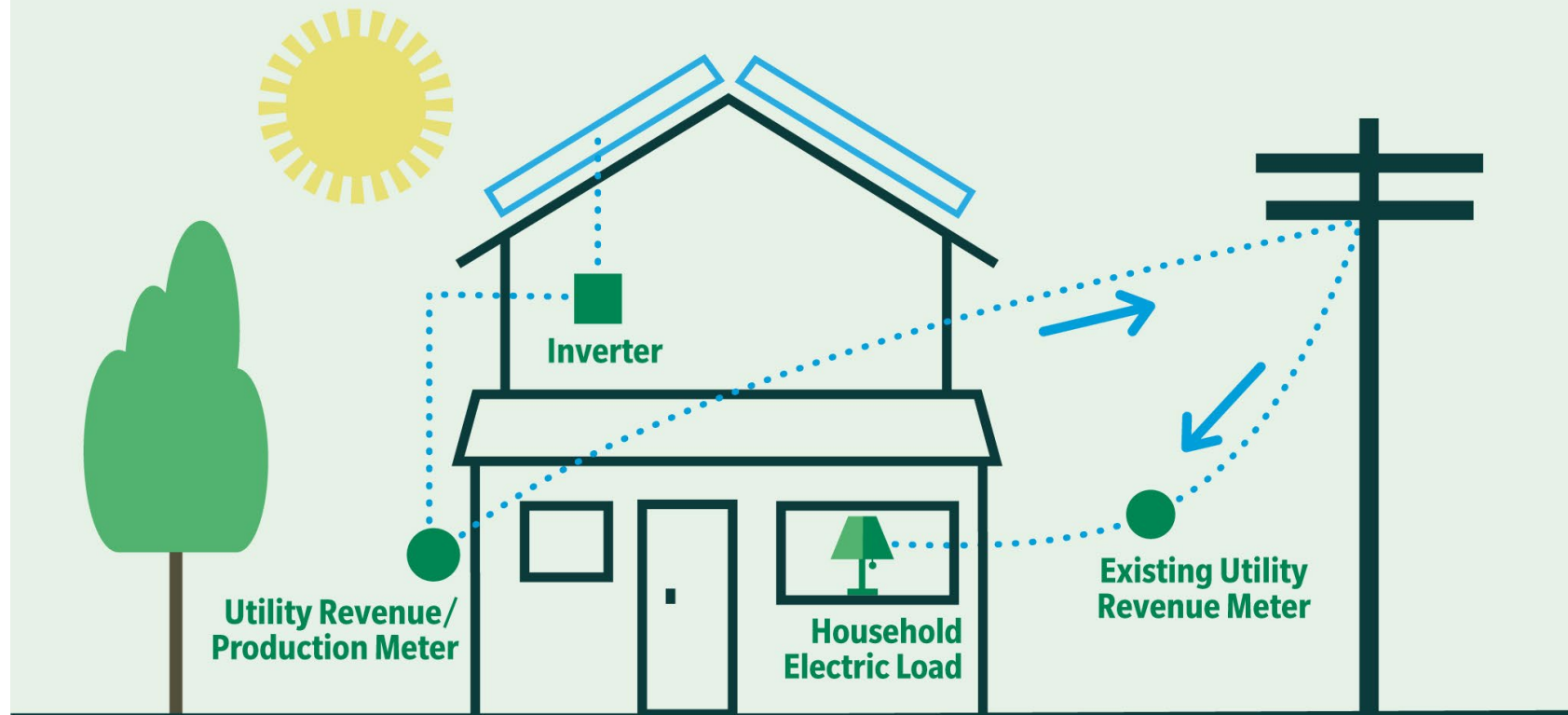
All power production and consumption are metered & billed together



Option 2 of 2

BUY-ALL

Send all production to grid; Purchase all for household load.



You choose between...

Netting

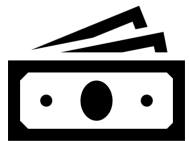
Or

Buy-All

All power production and consumption are metered together.

Energy produced by the PV system, but not consumed within the month, is netted and compensated at customer's retail rate.

Customers enrolling in 2022 also qualify for REC incentive payment paid Quarterly as check or bank deposit



Net energy from the solar sold to Eversource during billing cycle @ retail rate

+ REC Rate: \$.0318 / kWh

Customer exports all power produced by the PV system to the grid without first supplying power to their load.




Customer purchases all power supplying their load from their utility.



**All energy sold to Eversource at: \$0.2943 / kWh
(this is 2022 rate, changes annually)**

Note: Residences w/ existing solar are only eligible for Buy-All when adding generation

Basic eligibility checklist:

Eligibility	Requirement
 Site & Customer Eligibility	<ul style="list-style-type: none"><input type="checkbox"/> Eversource or UI electric customer<input type="checkbox"/> One-to-four family dwelling/premise<input type="checkbox"/> Completed or scheduled in-home Home Energy Solutions
 System Eligibility	<ul style="list-style-type: none"><input type="checkbox"/> System size equal to 25kW<input type="checkbox"/> Has not received Green Bank incentives<input type="checkbox"/> Will not generate more than historic (or expected) home energy needs<input type="checkbox"/> “Add-on” systems restricted to “Buy-All”
 Incentive Adder Eligibility	<ul style="list-style-type: none"><input type="checkbox"/> Income at or below 60% of State Median Income, OR<input type="checkbox"/> Located in a state-defined Economically-Distressed Community

Additional Resources

Website [Link](#)

Program e-mail: [**CTResiRenewables@eversource.com**](mailto:CTResiRenewables@eversource.com)

Chamae Mejias

Solar Energy Analyst



earthlight

SOLAR AND ENERGY SOLUTIONS

Sizing Your Solar Array

105% of Historical Annual Usage, last 5 years

Future Usage Allocation

Electric cars (max 2): 3,285 kWh

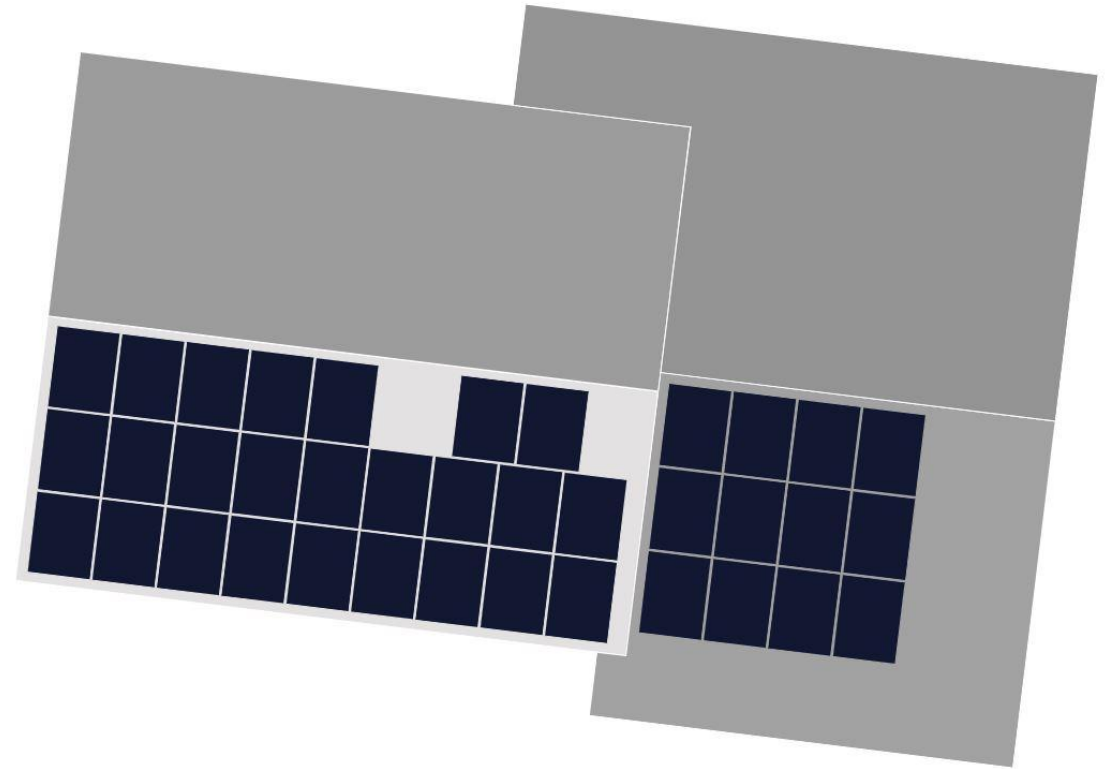
Air-source heat pump: 3,608 kWh

Ground-source heat pump: 2,458 kWh

Pairing solar with batteries

Max total system size of 25 KW

Limitations on number of panels that can be connected to one battery



Equipment: Inverters

Central Inverter

One inverter for all panels
10 or 12-year product warranty
Likely to be replaced over 25-year panel life
Best suited for very sunny homes

Micro-inverters

Each panel has its own inverter
25-year product warranty
Best suited for homes with some shade



Home Energy Solutions

Lower your overall energy bills by combining solar with efficiency measures

Health and safety check

- Gas leaks
- Mold, asbestos
- Carbon monoxide levels
- Exhaust fumes leaving home properly

Gateway to deep energy savings

- Prioritized recommendations
- Rebates: Solar, Insulation, HVAC, Water Heater, Appliances

In-house services

- Blower door-guided air sealing
- Duct sealing
- LED lighting
- Water-saving measures



Warranties: Read the Fine Print

Panel Warranty

12 or 25 years

Inverter Warranty

10, 12 or 25 years

Production Warranty

25 years! But how much power in year 25?

Pay attention to annual panel degradation rate

DC Power Guarantee vs. AC Power Guarantee

Labor Warranty

Usually capped, or not covered at all

Incentives Available

Federal Tax Credit

- 26% federal tax credit installed in 2022
- 22% federal tax credit installed in 2023
- 0% federal tax credit installed in 2024

Sales Tax Exempt

Property Tax Exempt

REC Payments: \$.0318/kWh (netting)

Form **5695**

Department of the Treasury
Internal Revenue Service

Residential Energy Credits

▶ Go to www.irs.gov/Form5695 for instructions and the latest information.
▶ Attach to Form 1040, 1040-SR, or 1040-NR.

OMB No. 1545-0074

2021
Attachment
Sequence No. **158**

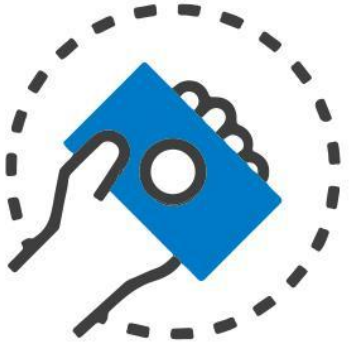
Name(s) shown on return _____ Your social security number _____

Part I Residential Energy Efficient Property Credit (See instructions before completing this part.)

Note: Skip lines 1 through 11 if you only have a **credit carryforward from 2020.**

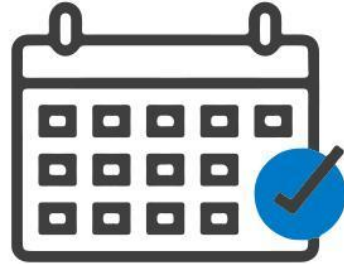
1	Qualified solar electric property costs	1	
2	Qualified solar water heating property costs	2	
3	Qualified small wind energy property costs	3	
4	Qualified geothermal heat pump property costs	4	
5	Qualified biomass fuel property costs	5	
6a	Add lines 1 through 5	6a	
b	Multiply line 6a by 26% (0.26)	6b	
7a	Qualified fuel cell property. Was qualified fuel cell property installed on, or in connection with, your main home located in the United States? (See instructions.) ▶	7a	<input type="checkbox"/> Yes <input type="checkbox"/> No

Solar Payment Options



Purchase

- You own it!
- You may qualify for the Federal Investment Tax Credit
- Greatest long-term savings



Loan

- Go solar for \$0 down
- You own it!
- You may qualify for the Federal Investment Tax Credit
- Flexible payment options with low interest rates

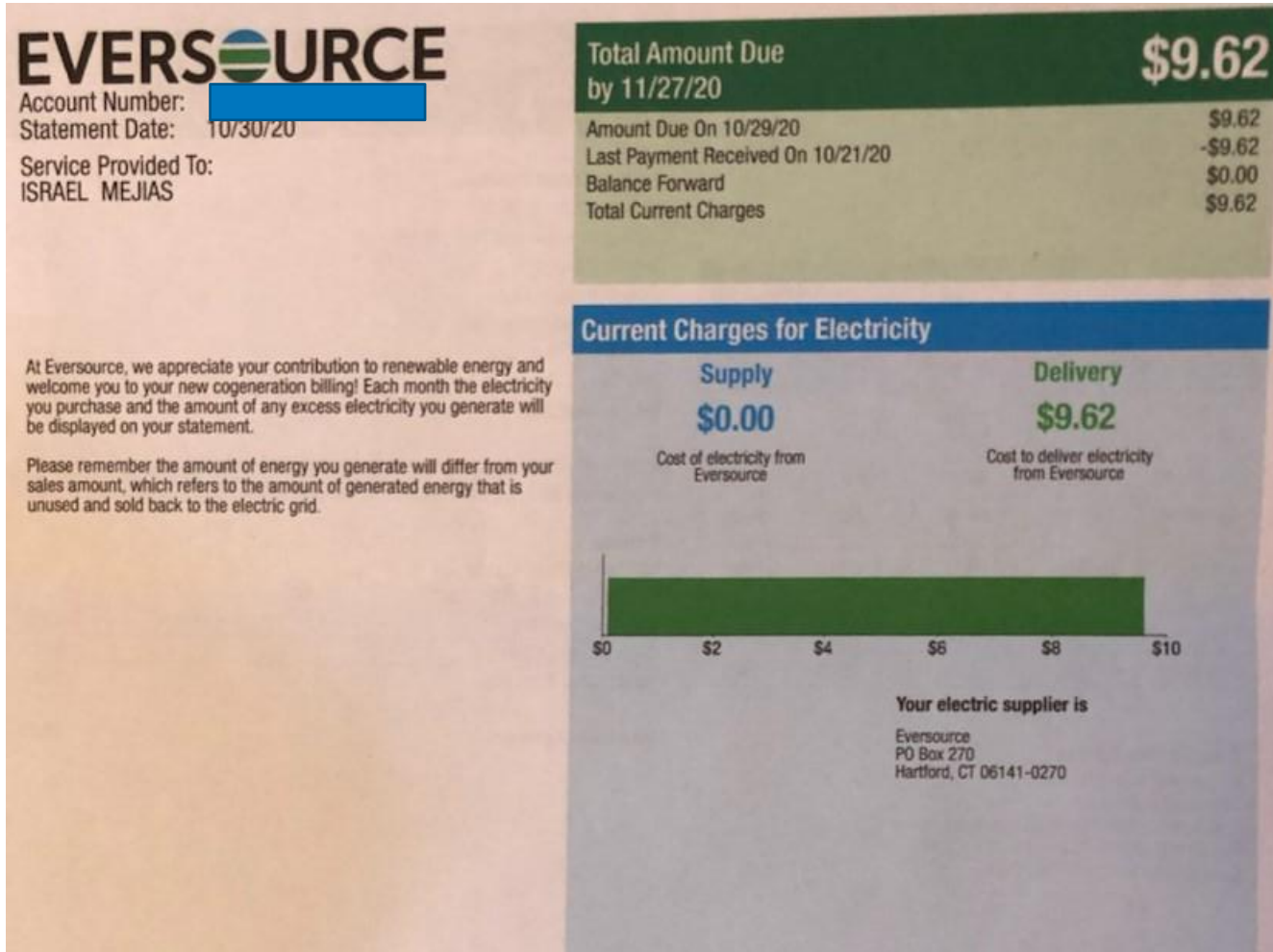


Lease

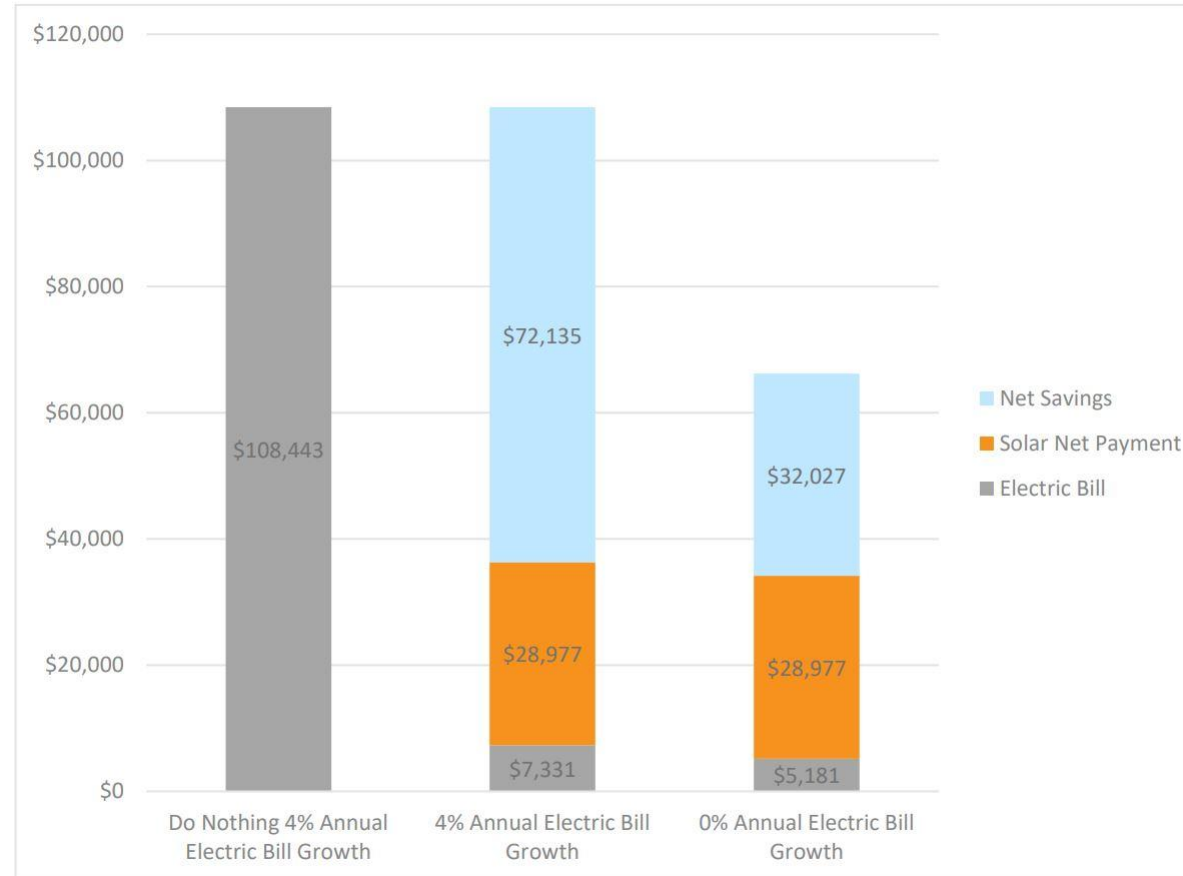
- Go solar for \$0 down
- Begin saving from the day your system is energized
- Predictable monthly payments
- Performance guarantee

PPA

- Go solar for \$0 down
- Start off with lower kWh rate than utility rates



Electricity Cost Savings Potential with Solar



Selecting an Installer



National solar company or local solar installer

Where are they headquartered? How long have they been in business?



Who does the installation?

Does the company handle everything in-house from start to finish?
Do they use subcontractors?



Commitment to servicing your array

Will they likely be around if you need assistance 15 years down the line?



Questions? I'm happy to help

- **Solar Experience:** Working in the CT solar industry for the last 10 years
- **Connection to the Community:** Lifelong CT resident, started off doing solar educational workshops in communities
- **Personal Overview:** Have solar on my own home to power heat pumps and electric car
- **Email, text or call:** chamae@earthlighttech.com, 860-331-1041



Chamae Mejias
Solar Energy Analyst

Bernie Pelletier

Chair, West Hartford Clean Energy Commission
wh-cec@westhartfordct.gov



Resources as you think about solar

- This webinar (recording will be available)
- Talk to someone with solar or the West Hartford Clean Energy Commission
- [Energize CT](#) - includes database of installers
- [Eversource: Residential Renewable Energy Solutions Program](#)
- [Eversource: Learn About Solar Energy](#)
- [EnergySage](#) - a one-of-a-kind online marketplace, developed with funding from the U.S. Department of Energy, to make solar and other renewable energy options affordable and accessible to all Americans.
- [Project SunRoof](#) (Google)

Data on residential solar projects in CT

<https://www.gosolarct.com/get-into-solar/connecticut-solar-market-data/>

Old website but good data

	Completed_Date	kW_STC	Incentive_Amount	Total_System_Cos	Expecte	Contractor	System_Financing_Type	Utility_Company	Municipality	Ho
46566	11/24/2021	12.25	\$2,371.00	\$57,085.00	13,950	Venture Solar	Other Homeowner Purchase	Eversource Energy	West Hartford	We
46642	8/25/2021	7.92	\$1,320.27	\$19,707.00	9,019	Sunrun	Lease	Eversource Energy	West Hartford	We
46697		6.46	\$1,240.65	\$20,155.20	7,357	Momentum Solar	PPA	Eversource Energy	West Hartford	WI
46718	7/21/2021	6.3	\$1,136.00	\$28,791.00	7,174	Venture Solar	Other Homeowner Purchase	Eversource Energy	West Hartford	We
46852	9/23/2021	10.08	\$2,124.00	\$32,760.00	11,479	Earthlight Technologies	Other Homeowner Purchase	Eversource Energy	West Hartford	WI
46968	9/15/2021	6.8	\$1,492.00	\$26,520.00	7,744	SunPower Capital	Other Homeowner Purchase	Eversource Energy	West Hartford	We
47093	8/11/2021	4.91	\$1,119.42	\$17,461.00	5,592	SunPower Capital	Lease	Eversource Energy	West Hartford	We
47111	9/20/2021	7.4	\$1,549.00	\$22,200.00	8,427	PlugPV	Other Homeowner Purchase	Eversource Energy	West Hartford	WI
47134	9/17/2021	6.46	\$1,467.66	\$21,915.00	7,357	Momentum Solar	PPA	Eversource Energy	West Hartford	WI
47205	9/13/2021	19.8	\$3,732.00	\$55,250.00	22,548	Sunrun	Other Homeowner Purchase	Eversource Energy	West Hartford	We
47310	10/26/2021	11.9	\$3,788.00	\$54,859.00	13,552	Venture Solar	Other Homeowner Purchase	Eversource Energy	West Hartford	We
47496		8.16	\$2,624.00	\$16,400.00	9,293	SolarCity	Other Homeowner Purchase	Eversource Energy	West Hartford	WI
47535		12.24	\$2,405.00	\$33,417.50	13,939	SolarCity	Other Homeowner Purchase	Eversource Energy	West Hartford	WI
47547		8.83	\$1,647.03	\$29,665.00	10,056	SunPower Capital	Lease	Eversource Energy	West Hartford	WI
47585	10/4/2021	14	\$3,072.00	\$65,100.00	15,943	Venture Solar	Other Homeowner Purchase	Eversource Energy	West Hartford	We
47731	11/17/2021	4.94	\$835.86	\$12,991.20	5,626	Momentum Solar	PPA	Eversource Energy	West Hartford	We
47797	10/19/2021	7	\$1,937.00	\$25,200.00	7,972	Venture Solar	Other Homeowner Purchase	Eversource Energy	West Hartford	WI
47822	10/29/2021	11.1	\$3,687.00	\$35,520.00	12,641	EcoSmart Home Services	Other Homeowner Purchase	Eversource Energy	West Hartford	We

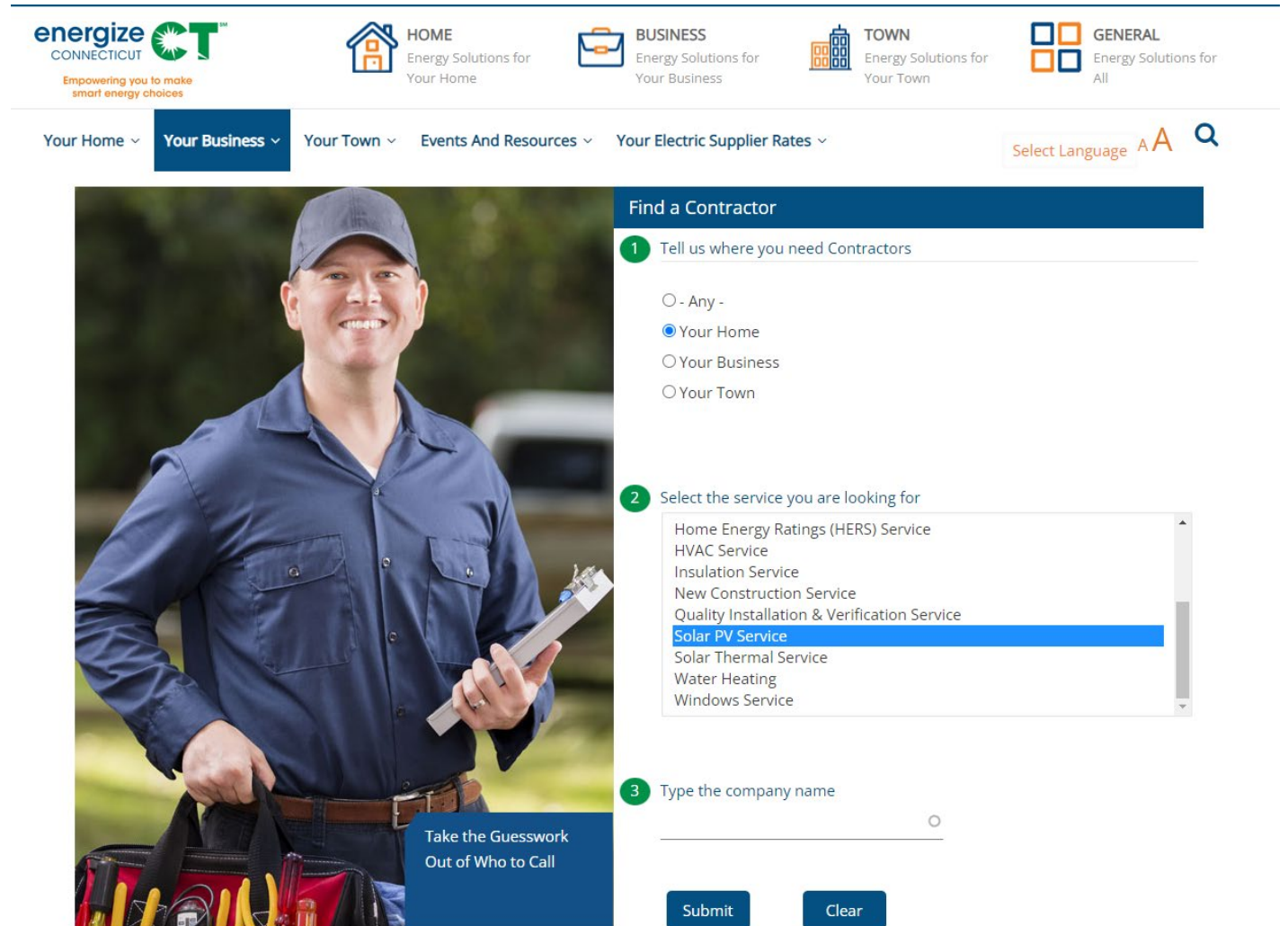
RSIP-Web-Report-1-13-2022

Read 818 of 48782 records found

Installers

<https://energizect.com/find-a-contractor>

- Find the right installer
- Town cannot recommend an installer
- Ask your neighbor
- Look at other West Hartford installs
- Get multiple quotes



The screenshot shows the 'Find a Contractor' form on the Energize Connecticut website. The page header includes the Energize Connecticut logo and navigation links for HOME, BUSINESS, TOWN, and GENERAL. The main navigation bar has dropdown menus for 'Your Home', 'Your Business', 'Your Town', 'Events And Resources', and 'Your Electric Supplier Rates'. A search bar and language selector are also present.

The 'Find a Contractor' form is divided into three steps:

- 1 Tell us where you need Contractors**
 - Any -
 - Your Home
 - Your Business
 - Your Town
- 2 Select the service you are looking for**
 - Home Energy Ratings (HERS) Service
 - HVAC Service
 - Insulation Service
 - New Construction Service
 - Quality Installation & Verification Service
 - Solar PV Service**
 - Solar Thermal Service
 - Water Heating
 - Windows Service
- 3 Type the company name**
 -

At the bottom of the form are 'Submit' and 'Clear' buttons. A blue banner at the bottom of the image reads 'Take the Guesswork Out of Who to Call'.

Eversource “learn about solar” page

<https://www.eversource.com/content/ct-c/residential/save-money-energy/clean-energy-options/learn-about-solar-energy>

Learn About Solar Energy

We stand ready to help you to connect your solar power safely into Eversource's electric grid to produce clean energy for your home or business.



Why Solar?

Solar and other renewable energy sources can help you reduce your energy bill and your carbon footprint. Start here to learn the basics of solar energy.

[Benefits of solar energy →](#)



Choosing a Solar Installer

You'll need to hire a licensed contractor to install solar on your home.

[How to choose →](#)



Is Solar Right for You?

Learn how to determine if your property is appropriate for solar energy.

[What to consider →](#)



Solar Incentives

Learn about incentive programs that help offset the cost of electricity you buy from Eversource with the energy you generate with solar.

[Sell your solar generation →](#)



Paying for Solar

Financing plans and incentives help make going solar an affordable option.

[What's available? →](#)

EnergySage

https://www.energysage.com

energysage  Smarter energy decisions

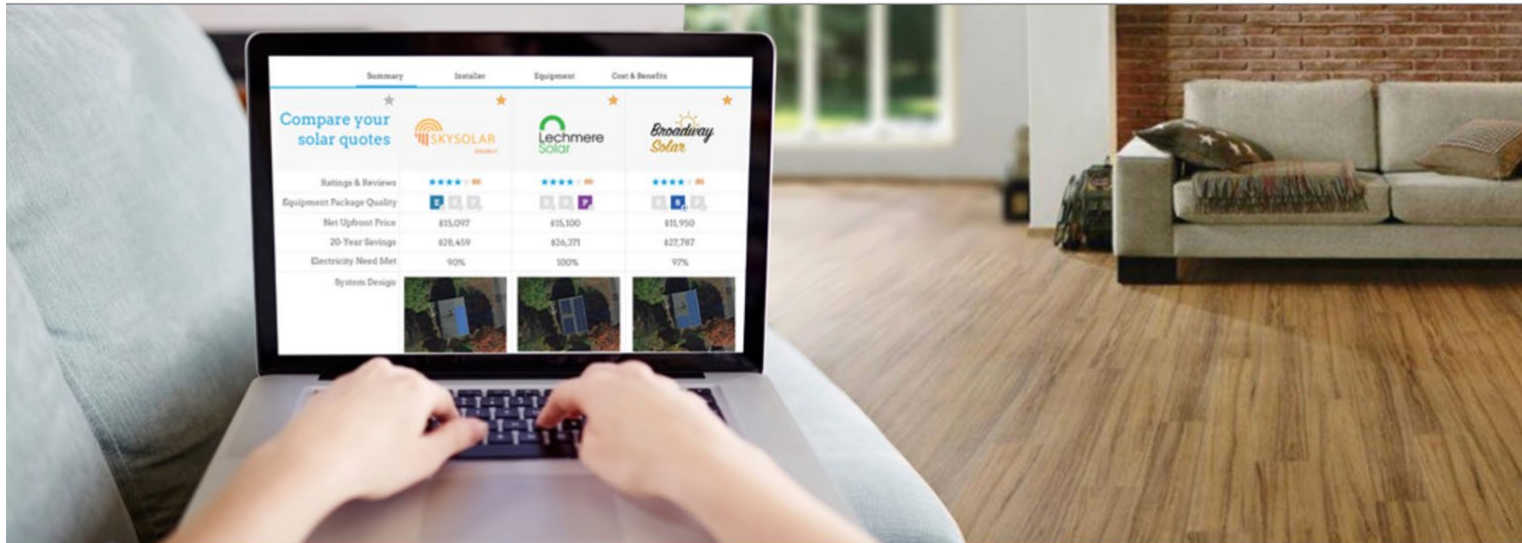
888.838.4638

[Sign In](#)

[How It Works](#) [Research Solar](#) [Solar Calculator](#) [Community Solar](#) [Energy Upgrades](#)

Get Competing Solar Quotes Online





Get competing solar quotes online

Enter your zip code

[Get started](#)

Analyze your own roof

<https://sunroof.withgoogle.com/>

105 Hillcrest Ave, West Hartford, CT 06110, USA

GO



Analysis complete. Your roof has:



1,310 hours of usable sunlight per year

Based on day-to-day analysis of weather patterns



1,145 sq feet available for solar panels

Based on 3D modeling of your roof and nearby trees

\$23,000 savings

Estimated net savings for your roof over 20 years

Wrong building? [Click another roof to view details.](#)

YOUR RECOMMENDED SOLAR INSTALLATION SIZE



This size will cover about 97% of your electricity usage. Solar installations are sized in kilowatts (kW).

7.5 kW
(529 ft²)

Shady Sunny

While you're at it...

Additional programs to consider that may pair nicely with solar

- Energy Storage / Battery Backup
 - [Eversource: Energy Storage Solutions](#)
- Electric Vehicles & Charging
 - [Eversource: Electric Vehicle home charging rebates](#)
 - [CT DEEP: CHEAPER vehicle rebates](#)
- Energy Efficiency & Heat Pumps
 - [HeatSmart West Hartford](#)



Easy way to get an HES assessment!

<https://heatsmartct.org/westhartford>



[About HeatSmart](#) [Heat Pumps](#) [For Installers](#) [Our Towns](#) [FAQs](#) [Video Gallery](#)



West Hartford

Home Energy Prices Are On The Rise in CT. HeatSmart West Hartford Can Help.

Sign up now for HeatSmart West Hartford, a free program sponsored by the town of West Hartford and PACE (a local energy education nonprofit), and we'll help you find the resources that you need to improve your home's energy efficiency and comfort.

Ready to Get HeatSmart?

Call (860) 580-9076 — Mention HeatSmart West Hartford

[CLICK HERE TO GET STARTED](#)

Questions & Answers

- Type ? in chat (preferred)
- Raise your hand

FAQs

- **Federal Tax Credit:** There is federal tax credit of 26% for systems installed in 2022 and 22% for systems installed in 2023. The federal tax credit is set to expire in 2024 unless Congress renews it. See [Federal Tax Credit for Solar Photovoltaics](#) (U.S. DOE)
- **Property Tax:** Residential solar (and geothermal) installations are EXEMPT from local property tax under State of Connecticut Public Act No. 07-242. You need to submit a [tax exemption application](#) with Town of West Hartford's Assessment Office.
- **Historic Districts:** If you live in one of the three town-designated Historic Districts in West Hartford, you will need approval from town's [Historic District Commission](#) to install solar.
- **Zoning:** Alternative energy systems, including solar photovoltaics, are covered under [§177-37.3](#) of the town's code. In certain zones in West Hartford, ground-mounted solar is restricted. (However, carports may be allowed.)
- **Homeowners Insurance:** Check with your own insurance company.

Appendix Slides



State Median Income

Household Size	2021-2022 60% State Median Income
1	\$39,027.14
2	\$51,035.50
3	\$63,043.85
4	\$75,052.20
5	\$87,060.55
6	\$99,068.90
7	\$101,320.47
8	\$103,572.04

Source:

<https://uwc.211ct.org/connecticut-state-median-income-2013/>;

2021 DECD Distressed Municipalities

Ansonia	Norwich
Bridgeport	Plainfield
Chaplin	Putnam
Derby	Sprague
East Hartford	Sterling
East Haven	Stratford
Griswold	Torrington
Groton	Voluntown
Hartford	Waterbury
Meriden	West Haven
Montville	Winchester
New Britain	Windham
New London	

Source:

https://portal.ct.gov/DECD/Content/About_DECD/Research-and-Publications/02_Review_Publications/Distressed-Municipalities

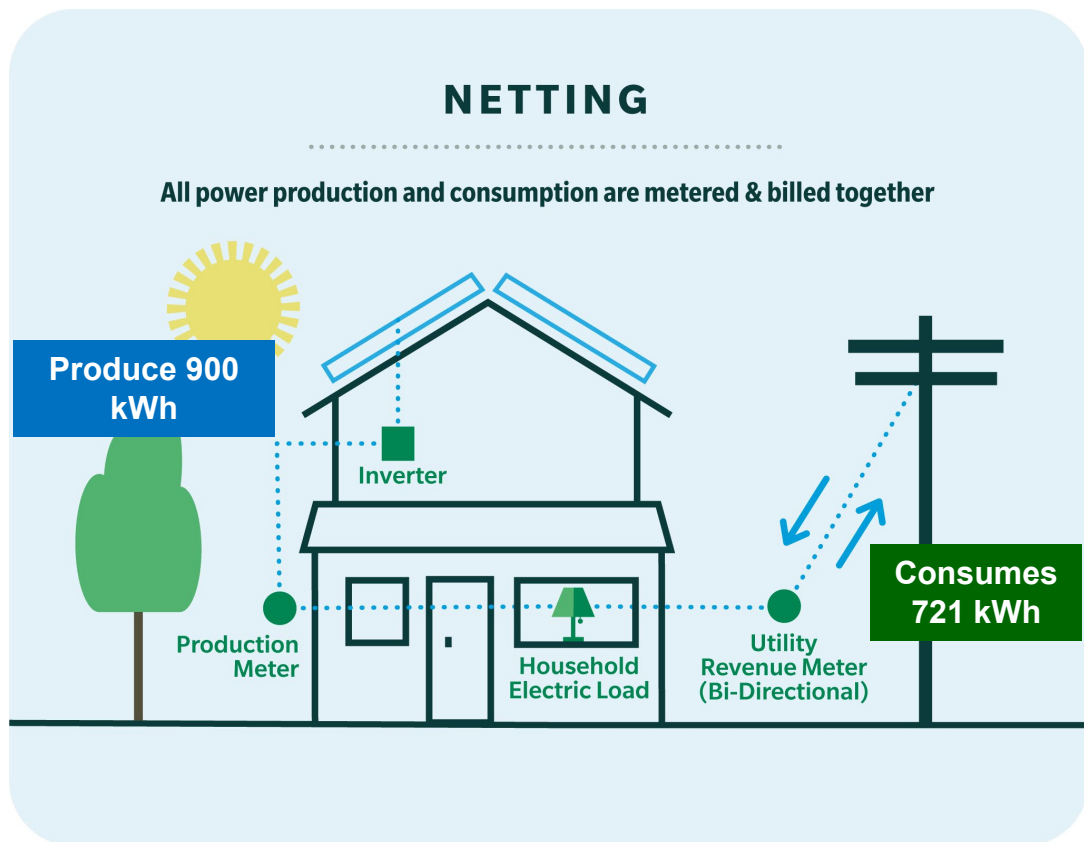
Incentive Details – Netting

	Form of Incentive	Entity or Individual Receiving Incentive	Percentage of Incentive	Frequency of Incentive
REC Incentive Payment	Cash payment	Tariff Payment Beneficiary as designated by the System Owner. Beneficiary may be Customer of Record.	100%	Eversource only: Once every quarter
Monetary On-Bill Credits	Dollar denominated bill credits	Customer of Record	100%	Monthly on the customer's electric bill for the premises. (Can be cashed out only when Customer of Record closes the account.)

Incentive Details – Buy-All Tariff

	Form of Incentive	Entity or Individual Receiving Incentive	Percentage of Incentive	Frequency of Incentive
Direct Payment	Cash payment	Tariff Payment Beneficiary as designated by the System Owner. May not be Customer of Record.	0%-100%	Eversource: Once every quarter United Illuminating: Monthly
Monetary On-Bill Credits	Dollar denominated bill credits	Customer of Record	0%-100%	Monthly on the customer's electric bill for the premises. (Can be cashed out once annually.)

Netting Incentive Example



Assume customer's retail rate = \$0.22 / kWh

On-bill Credits

Netted production paid to Customer on bill at retail rate

$$900 \text{ kWh} - 721 \text{ kWh} = 179 \text{ kWh} * \$0.22 = \$39.38$$

Regular Bill including Production Credits (on-bill)

kWh	-721+900 = +179
Bill Accrual	\$ 39.38

Customer carries forward a bill credit to the next month

REC Payment*

Direct cash payment to Customer or other Tariff Payment Beneficiary

$$900 \text{ kWh} * \$0.0318 = \$28.62$$

Cash Payment (Quarterly)

kWh	+900
Bill Accrual	\$ 28.62

*Eversource only REC payment paid quarterly. 2022 UI REC incentive = \$0.0/kWh due to higher retail rate in UI territory

Buy-All Incentive Example



On-bill Credits

Customer wants 80% as on-bill credits

Cash Payment

Customer wants 20% as cash pmt to 3rd party

$$900 \text{ kWh} * \$0.2943/\text{kWh} = \$264.87$$

Buy-All Rate = \$.2943/kWh

$$80\% * \$264.87 = \$211.90$$

$$20\% * \$267.87 = \$52.97$$

	Regular Bill
kWh	-721
	\$ -158.62

	Production Credits (on-bill)
	+900
	\$ 211.90

	Cash Payment (Monthly or Quarterly*)
	+900
	\$ 52.97

$$-\$158.62 + 211.90 = \$53.28$$

Customer carries forward a bill credit to the next month

*UI: Cash pmt monthly
Eversource: Cash pmt quarterly