

**Net Zero Project Design Assistance**

**Award Number: 2019-1912-USA-3**

**Final Report For:**



*Prepared by:*

**ICAST**

**International Center for Appropriate & Sustainable Technology**

**7400 W. 14th Avenue, Lakewood, CO 80214**

**303-462-4100**

**[www.icastusa.org](http://www.icastusa.org)**

## Final Report

### I. Grant Award Information

- Project Title: Net-Zero Energy Project Design Assistance
- Award Number: 2019-1912-USA-3
- Award Period : June 19, 2019-Sept 30, 2019
- Specific Progress Reporting Period: June 19-Sept 15, 2019
- Grantee Organization name: ICAST (International Center for Appropriate and Sustainable Technology)
- Grantee Organization primary contact person(s)
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### II. Status Report

**Is the project complete? If not, briefly summarize the purpose and status of your project, including a statement as to whether or not the project is on time, on budget, and achieving the match.**

Yes the project is complete.

The purpose of this project was to perform an energy assessment of a small multifamily affordable housing property located at 1800 Shepherd St. NE, Washington DC, and owned by H Street CDC, and deliver a tailored report with guidelines to help the MF property achieve net zero energy (NZE). ICAST has completed this project on time, on budget and has achieved the match.

### III. Activities/Outputs/Outcomes for Entire Project

To achieve the goal of the project, ICAST performed an energy audit, conducted over multiple site visits by its staff and potential subcontractors including solar PV installers. Using the results of the energy assessment, ICAST completed an energy model using a US Department of Energy (DOE) approved energy modeling software. Simultaneously, ICAST researched funding options including incentives and grants the project might be able to access and any low-cost financing available to the project. ICAST also conducted a cost benefit analysis of each option/recommendation made through the energy model, to inform the options/recommendations provided to the H Street CDC to help them decide on the best energy efficiency and renewable energy (EERE) option for their property. Based on the discussion with the owner, ICAST determined the final design recommendation. ICAST summarized its work into this report to help guide H Street CDC and other MF owners about potential upgrades they can

make to their property and steps needed to achieve NZE at their MF property. Additionally, ICAST conducted an analysis of potential funding sources for the project.

#### **Activity #1-Conduct an energy audit and preliminary energy modeling**

- ICAST conducted an energy audit of the MF property at 1800 Shepherd St. NE, to identify energy efficiency and solar PV opportunities.
- ICAST calculated energy and cost savings plus cost estimates for potential EERE upgrades possible at the MF property. These options were based on the findings of the energy audit and the energy modeling using a DOE approved software.

#### **Activity #2-Conduct a renewable energy analysis**

- ICAST conducted a renewable energy site assessment followed by an analysis for the installation of solar PV on the MF site.
- ICAST integrated the solar PV analysis results into the building energy model to determine a combination of EERE solutions for the property.

#### **Activity #3-Identify and analyze potential funding sources**

- ICAST identified several potential funding sources such as:
  - DC Sustainable Energy Utility (DCSEU) which has several programs to fund energy efficiency and solar projects include grants and pay-for-performance programs are specific to the District.
  - Foundation grants.
  - Funding from the local Green Banks and CDFIs
  - Green Loan incentives from Fannie Mae, Freddie Mac, FHA
  - And other funding options are all detailed in this report and listed as Appendix III.

#### **Activity #4-Complete cost/benefit analysis**

- ICAST completed a comprehensive cost-benefit analysis of various options available to the owner that can convert this property into NZE:
  1. Change nothing, i.e. implement no EERE solutions on the property and buy renewable energy credits (RECs) to offset the energy consumption of the property
  2. Add solar to the property and buy renewable energy credits (RECs) to offset the remaining energy consumption of the property
  3. Convert the property to all-electric, i.e. eliminate gas consumption on the property, plus add solar on the property to the extent possible and purchase renewable energy certificates (RECs) for the remaining consumption
  4. Convert the property to all-electric, i.e. eliminate gas consumption on the property, and install energy efficiency (EE) measures costing less than \$0.10 per kwh plus add solar on the property to the extent possible and purchase RECs for the remaining consumption
  5. Install only EE measures costing less than \$0.10 per kwh and add solar on the property

- to the extent possible and purchase RECs for the remaining consumption
- 6. Install all EE measures without switching gas to electric, plus add solar on the property to the extent possible and purchase RECs for the remaining consumption
- ICAST estimated capital costs and annual operating costs plus any costs for renewable energy credits to demonstrate the net benefits for each option in terms of net present value (NPV). ICAST assumed utility costs will increase at 2.5% per year and an annual cost of capital at 6%.

#### **Activity #5-Conduct a planning charrette**

- ICAST conducted a charrette with H Street CDC to review findings, offer recommendations, and gain feedback for implementation.

#### **Activity #6-Create an Implementation guide for HSCDC**

- A guide for H Street CDC and other MF owners interested in converting their property into NZE has been created and is included as Appendix I.
- The value engineering was offered to the owners by providing them various options for consideration.
- Design specifications for the various EE options presented are included in Appendix II.

#### **Activity #7-Reporting**

- ICAST completed a work plan and a progress report approved by DOEE.
- ICAST scheduled and conducted monthly meetings with DOEE staff.
- ICAST completed the this final report reviewed by DOEE.

#### **Outputs Achieved**

- **Work Plan** - ICAST completed and delivered to DOEE on 7/25/19.
- **Revised Budget** - The revised budget was completed and submitted to DOEE on 8/7/19.
- **Energy Audit** - The energy audit was completed in early August 2019.
- **Renewable Energy Audit** - ICAST completed a renewable energy audit in early August 2019. The audit results were used as inputs for the energy modeling to arrive at various options for the property.
- **Energy Modeling** - ICAST completed the energy modeling using DOE approved software which forms the basis of this report and the options analysis presented in the Guide (Appendix I).
- **List of Potential Funding Sources** ICAST created a list of potential funding sources by reaching out to a variety of funders to determine the best path forward to funding. A list of potential funding sources for the project are presented in Appendix III.
- **Progress Report** - ICAST completed the progress report and submitted on 8/16/19.
- **Cost Benefit Analysis** - ICAST completed a cost/benefit analysis for this project which is included in the Guide (Appendix I)

- **NZE Implementation guide** - ICAST developed a guide for H Street CDC and other owners of MF properties in DC. The guide walks through the 1800 Shepherd St. NE. property as a case study to identify and evaluate various options for converting an existing MF property into an NZE property. The guide demonstrates the process starting with a site energy assessment that leads to an energy modeling and value engineering exercise, with the help of a cost-benefit and financial analysis, to prioritize the options that best meet the needs of the property. The guide also provides H Street CDC with design specifications for the various EERE upgrades under consideration to use this information to bid out the work to local contractors if they so desire.

#### **Outcomes Achieved**

- The main outcome achieved from this project is the NZE Guide for H Street CDC and other MF owners in DC.
- Reporting outcomes include the work plan, the progress report, and this final report.

#### **Challenges**

**Community Solar/Renewable Energy.** In assessing the energy use of Shepherd Street, ICAST found that on-site renewable energy generation (i.e., rooftop solar) would only be able to supply a small portion of the building's energy needs. ICAST looked into community solar as a supplemental energy option, but found the vast majority of community solar in DC is tied to the tenant and could not be tied to the building, i.e., when the tenant moves, the community solar moves with the tenant. While this would not preclude tenants from taking advantage of community solar where/when available it would not aide the NZE building goal so it was removed as an option.

**Note:** Additional details /challenges encountered during the NZE design planning process will be added to the Final report.

#### **IV. NEP/LEP**

n/a

- V.** Copies of any materials produced as part of this project (marketing pieces, curriculum, interpretive signage, etc.).

n/a

## VI. Budget Reporting

You may submit an invoice for the remaining amount with this Final Report.

<b>Grant Title: Simplifying and Scaling NZE Design for Multifamily Buildings</b>				
<b>Budget Category</b>	<b>Amounts Awarded</b>	<b>Amount Spent</b>	<b>Current Balance</b>	<b>Notes</b>
<b>Personnel</b>				
Program Manager				In Kind
Project Manager	\$3,500	\$3,462	\$38	
Energy Auditor	\$3,250	\$3,227	\$23	
Local Liaison	\$3,000	\$2,599	\$401	
Energy Engineer	\$3,650	\$3,416	\$234	
Project Advisor	\$1,600	\$1,411	\$189	
Benefits	\$2,750	\$2,146	\$604	
<b>Subtotal Personnel</b>	<b>\$17,750</b>	<b>\$14,115</b>	<b>\$885</b>	
Indirect Costs (10 %)	\$1,750	\$141	\$88	
<b>Total Personnel</b>	<b>\$19,500</b>	<b>\$14,256</b>	<b>\$973</b>	
<b>Direct</b>				
Contractor or sub-grantee fees				
Travel and Training				
Supplies				
Equipment				
Rentals				
Other costs (one item per line)				
<b>Total Direct</b>	<b>19,500.00</b>	<b>16,261</b>	<b>1,489</b>	
<b>Grand Total</b>	<b>19,500.00</b>	<b>17,887</b>	<b>1,613</b>	

**VII. Certificate**

By signing this report, I certify to the best of my knowledge and belief that the report is true, complete, and accurate, and the expenditures, disbursements and cash receipts are for the purposes and objectives set forth in the terms and conditions of the Federal award. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (U.S. Code Title 18, Section 1001 and Title 31, Sections 3729–3730 and 3801–3812).

*Ravi Malhotra*

9/16/19

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Ravi Malhotra, President, ICAST

Date

## Appendix I

### Resource Guide: Getting to Net Zero Energy (NZE)

#### Property Details

1800 Shepherd St. NE is a two-story with basement, red brick 13-unit apartment building in the northeast part of Washington DC in the Woodridge neighborhood (north of Brookland and south of the Avondale and Michigan Park neighborhoods).

The property has two two-bedroom apartments in the basement, where the boiler and domestic hot water systems are also located. There are two efficiency apartments, one each on the first and second floors. The remaining units are one-bedroom apartments.

The building's electric utility is Pepco and gas is delivered by Washington Gas. The average per kWh cost for electricity is \$0.10 while the average cost per therm of gas is \$1.01.



The property has individual electric meters for each apartment and one house meter, plus one common gas and water meter. The owner pays the gas and water bills, while tenants pay their individual electric bills.

consistent.

Property has sporadic attic insulation currently that can be bolstered and made



Because the building lacks centralized air conditioning, tenants use window air conditioners, which is their largest energy use and cost.

Other electric loads for tenants include a refrigerator, fans, lights, TV, computers, phone chargers. Cooking is done with a gas range.



### EERE Upgrades Considered:

Based on the energy audit and modeling, ICAST evaluated various options to convert the property to NZE, including:



1. Do nothing to the property, i.e. make no EE improvements and simply buy the least expensive RECs available in the market equal to the energy consumption of the property to achieve NZE.
2. Add as much on-site solar as possible. Unfortunately this would not even be close to enough to meet the energy consumption of the entire property. In fact, the roof space (and there is no other space) is not enough to meet even 10% of the need for NZE. This option would entail installing approximately 20kW of rooftop solar and purchasing the least expensive RECs available in the market equal to the remaining energy consumption of the property to achieve NZE.
3. Install 20kW of rooftop solar and convert the property to all-electric, i.e., fuel-switch, heating and domestic hot water (DHW) would move from gas to electric and be made as efficient as possible (within reason) with heat pump technology. Again, the property would still require purchasing the least expensive available in the market equal to the remaining energy consumption of the property to achieve NZE.
4. This is a subset of the previous option: Install 20kW of rooftop solar and convert the property to all-electric, i.e., fuel-switch with heat and DHW moving from gas to electric. However, under this option, only EE measures costing less than 10 cents/kWh (which is the current residential electric rate) would be installed. The logic behind this choice is that it makes no financial sense to install EE upgrades that cost more than what it costs to buy electricity from the grid. -And again, buy the least expensive RECs available in the market equal to the remaining energy consumption of the property to achieve NZE.
5. Install 20kW of rooftop solar and only install EE measures that cost less than 10 cents/kWh (converting the gas rate from therm to kWh). And again, buy the least expensive RECs available in the market equal to the remaining energy consumption of the property to achieve NZE.
6. Install 20kW of rooftop solar and install all possible EE upgrades (with no fuel switch). And purchase the least expensive RECs available, equal to the remaining energy consumption of the property to achieve NZE.

Based on the results of this analysis, ICAST added another theoretical option to verify the conclusions it reached from its analysis. This new option, called Option '0' was to test the scenario if the property had access to a significant amount of additional roof space to install almost 158 kW solar and take advantage of the solar renewable energy credit (SREC) market in DC.

0. Install more than seven times the solar currently possible on-site with another property with available space or access roof space at another location owned by H Street CDC and take advantage of the virtual net metering available in DC.

The results of the options analysis are presented in the following table. Costs are shown as **negative** and income is positive.

#	Options	Capital Cost		1st Year Utility Bill		Annual REC Payment	Annual SREC Income
		EE	Solar	Electric	Gas		
1	Do Nothing - Buy RECs	\$0	\$0	(\$5,173)	(\$5,711)	(\$989)	\$0
2	Add solar on Roof + Buy RECs	\$0	(\$66,028)	(\$2,473)	(\$5,711)	(\$866)	\$10,800
3	Add solar on Roof + Convert to all-electric & Efficient + Buy RECs	(\$449,014)	(\$66,028)	(\$3,070)	\$0	(\$140)	\$10,800
4	Add solar on Roof + Convert to all-electric and Install EE measures costing under \$0.1/kWh + Buy RECs	(\$169,144)	(\$66,028)	(\$4,531)	\$0	(\$206)	\$10,800
5	Add solar on Roof + Install EE measures costing under \$0.1/kWh + Buy RECs	(\$46,644)	(\$66,028)	(\$1,246)	(\$3,011)	(\$464)	\$10,800
6	Add solar on Roof + Install All EE measures w/o fuel switch + Buy RECs	(\$326,514)	(\$66,028)	(\$952)	(\$1,811)	(\$284)	\$10,800
0	Add sufficient solar	\$0	(\$470,780)	(\$5,173)	(\$5,711)	\$0	\$77,004

To evaluate the long-term benefit, ICAST ran a financial pro forma on these options with the estimated costs and savings (income).

Year one costs, comprised of the capital costs incurred for any EE and solar upgrades plus the annual utility costs for year one (assuming all upgrades were implemented quickly at the start of year one) plus the cost of any REC payments made in year one to reach NZE, were totaled and the income generated from any SREC payments on the solar system was subtracted, to arrive at annual spending for year one. Year two spending was modeled similarly, except a 2.5% annual inflation rate was added to the utility costs.

As expected, the capital cost of installing 158kW of solar (Option 0) was high, as was the cost of converting the property to all-electric and as efficient as possible (Option 3). The lowest capital cost was to do nothing (Option 1) or just add 20kW of solar (Option 2).

The results were analyzed using net present value (NPV) for each option as an NPV analysis presents the ideal criteria to evaluate the options on a level footing. Financials were created for a 15-year period, even though most of the EE upgrades and solar have a EUL (estimated useful life) longer than 15 years, simply as the value of any income or expense, presented as NPV makes little impact past 15 years. The financial analysis is presented on the table on the following page.

#	Options	NPV @ 6%	Annual Expenses/Income by Year														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	Add sufficient solar	\$74	(\$404,659)	\$65,849	\$65,570	\$65,284	\$64,991	\$64,690	\$64,383	\$64,067	\$63,744	\$63,412	(\$13,932)	(\$14,280)	(\$14,280)	(\$14,637)	(\$15,003)
5	Add solar on Roof + Install EE measures costing under \$0.1/kWh + Buy RECs	(\$79,241)	(\$106,592)	\$5,973	\$5,864	\$5,752	\$5,638	\$5,520	\$5,400	\$5,276	\$5,150	\$5,020	(\$5,913)	(\$6,049)	(\$6,049)	(\$6,188)	(\$6,332)
2	Add solar on Roof + Buy RECs	(\$83,363)	(\$64,278)	\$1,546	\$1,336	\$1,121	\$901	\$675	\$444	\$206	(\$37)	(\$286)	(\$11,342)	(\$11,604)	(\$11,604)	(\$11,872)	(\$12,147)
1	Do Nothing - Buy RECs	(\$132,157)	(\$11,872)	(\$12,145)	(\$12,423)	(\$12,709)	(\$13,002)	(\$13,303)	(\$13,610)	(\$13,926)	(\$14,249)	(\$14,581)	(\$14,921)	(\$15,269)	(\$15,269)	(\$15,626)	(\$15,992)
4	Add solar on Roof + Convert to all-electric and Install EE measures costing under \$0.1/kWh + Buy RECs	(\$195,397)	(\$229,109)	\$5,949	\$5,833	\$5,714	\$5,592	\$5,467	\$5,339	\$5,208	\$5,073	\$4,935	(\$6,006)	(\$6,151)	(\$6,151)	(\$6,300)	(\$6,452)
6	Add solar on Roof + Install All EE measures w/o fuel switch + Buy RECs	(\$324,704)	(\$384,789)	\$7,684	\$7,613	\$7,541	\$7,466	\$7,390	\$7,312	\$7,232	\$7,150	\$7,065	(\$3,821)	(\$3,909)	(\$3,909)	(\$4,000)	(\$4,093)
3	Add solar on Roof + Convert to all-electric & Efficient + Buy RECs	(\$442,326)	(\$507,452)	\$7,514	\$7,435	\$7,354	\$7,272	\$7,187	\$7,100	\$7,011	\$6,920	\$6,826	(\$4,070)	(\$4,168)	(\$4,168)	(\$4,268)	(\$4,372)

As expected, doing no EE upgrades and buying RECs from the open market yielded a net negative NPV because of the cost of the RECs and the annual payments to the utility for energy consumed at the property. Adding some solar on the roof and buying RECs, i.e. spending some capital upfront, yielded a lower NPV than doing nothing, implying that the solar RECs were a net positive cash flow solution.

### Conclusions:

- Without the very generous solar SREC subsidy provided by DC, the least expensive and easiest way to achieving NZE would be to buy wind power RECs. Conversely, the worst payback option is to convert the property to all-electric and make it as efficient as possible.
- With generous SRECs, especially for MF properties with lots of space to add solar, the property can actually earn money by installing solar and it is actually less profitable for them to implement EE upgrades. They are better off leaving the property inefficient so they can add more solar and earn more.
- If property does not have sufficient space for solar but can access space elsewhere, they are still better off following the option listed above, i.e. leave the property “as is”, which is inefficient, and the owner should try to install as much solar as possible both on- and off-site.
- If the property does not have sufficient space for solar and cannot access space elsewhere, they should install as much solar as feasible and buy RECs to meet NZE requirements and either leave the property inefficient, or install the most cost-effective EE upgrades (those that cost less than 10 cents/kWh).
- With the SRECs, the most uneconomical option is to convert the property to all-electric and install as much efficient equipment as possible.

## Appendix II

Specifications for Full Package of Energy Efficiency Measures								
Potential EEM	Specifications	Estimated Cost	Annual Savings		Payback Years	Cashflow \$/Year	Imp. Life Years	SIR in Package
			MMBtu	\$				
Replace 10+ year old refrigerators (325 kWh yr)	GTE16DTH GE® ENERGY STAR® 15.5 Cu. Ft. Top-Freezer Refrigerator	\$3,750	8.0	\$243	15.5	\$41	15	0.96
Mini Split Heat Pump 20 SEER [AC]	Carrier Performance Series Indoor 40MAQB12B/C/D/F	\$5,000	10.6	\$280	17.8	\$11	15	0.83
Mini Split Heat Pumps 10.5 HPSF	Carrier Performance Series Outdoor 38MAQB12R-3	\$70,000	175.0	\$1,563	44.8	(\$2,209)	20	0.44
Heat Pump Water Heaters EF 3.2	Rheem Professional Prestige® Hybrid Electric	\$9,500	62.7	\$23	418.0	(\$489)	15	0.04
Exterior Door Replacement U Value .2		\$3,000	1.3	\$14	211.4	(\$147)	20	0.09
Smart Thermostat	Nest Thermostat E	\$3,000	64.6	\$552	5.4	\$390	15	2.71
Triple Pane Passive House Windows (U .18 shgc .2)	9800 EUROTEK Windows	\$88,800	7.2	\$148	601.6	(\$4,637)	20	0.03
R-25 Wall Insulation Interior Applied		\$184,320	81.9	\$861	214.1	(\$9,071)	40	0.18
Attic Insulation increased to R-60	AttiCat® PINK® Blown-In Insulation	\$7,040	8.4	\$105	67.0	(\$274)	40	0.57
Reduce Infiltration to 5 ACH50	AeroBarrier X1	\$35,000	81.7	\$847	41.3	(\$1,039)	20	0.47
T-8 to LED (64 watts reduced to 25)		\$650	2.6	\$88	7.4	\$53	20	2.65
Incandescent Bulbs to LED (43 watts to 9 watts)	A19 E26 Bulb 9W Spec	\$954	21.9	\$742	1.3	\$690	10	7.69
Replace Gas Range w/ Induction	Frigidaire FFIF3054T D/S	\$13,000	10.6	(\$321)	N/A	(\$1,022)	15	N/C
<b>Total EEM Package</b>		<b>\$424,014</b>	<b>536.5</b>	<b>\$5,415</b>	<b>78.3</b>	<b>(\$17,433)</b>	<b>N/A</b>	<b>0.39</b>

## Appendix III

### Funding Options Available for Multifamily Affordable Housing

Program Name	Admin Agency	Target Population	Funding/ Grant Amt	RFP - Due/Last Release	Program Summary
<a href="#">Small Buildings Grant Program</a>	DHCD/DFD	Low- to Moderate Income: MF Rental Properties with 5-20 units	Up to \$25K per unit; Max \$200K/project	Last released July 2018	Funds limited systems replacement and repairs to MF rental housing of five to 20 units. Repairs are expected to improve sub-standard housing conditions to address <b>property code violations</b> outlined in DCRA Inspection Report Notice of Violation or Notice of Infraction or a substantially similar inspection report such as a Housing Quality Standard Report issued by DCHA.
<a href="#">LIHTC/Bonds</a>	DHCD/DFD	Low Income			Funds 9% and 4% LIHTC from IRS set aside for DC.
Workforce Housing Fund	??		\$20 M/year		Still being developed? Funding is in Mayor's 2020 budget
<a href="#">Building Green DC</a>	DHCD/DFD	Low- to Moderate Income	POTENTIALLY DEFUNCT		\$5K Grant to support Charettes required under Enterprise Green Communities Criteria, i.e., standard all residential projects in DC must meet (link to funding page no longer works)
<a href="#">Housing Preservation Fund</a>	DHCD	Low- and very-low up to moderate income	\$10mm (\$5mm to each Fund Mgr)	<b>No Online Dates/RFP Found</b>	Allocates funds toward preserving affordable housing units for residents with low-to-moderate income across the District. Units were previously subsidized through federal housing programs, and as the subsidies expire, homeowners will be able to maintain affordability in their communities. Preservation Fund applications should be directed to: Capital Impact ( <a href="mailto:asuares@capitalimpact.org">asuares@capitalimpact.org</a> ) and LISC ( <a href="mailto:rjacobson@lisc.org">rjacobson@lisc.org</a> )

Program Name	Admin Agency	Target Population	Funding/ Grant Amts	RFP - Due/Last Release	Program Summary
<a href="#">Housing Production Trust Fund</a>	DHCD	<p>≥ 40% for HH 30% AMI or lower</p> <p>≥ 40% HH 30% to 50% AMI</p> <p>Remaining Balance/ Up to 20% HH 80% AMI.</p> <p>≥ 50 percent dedicated to rental</p>	<p>Fund = \$10M/year (\$15M in 2019)</p> <p>Currently has \$100M+ in Fund Grant/ Funding. amts varies</p>	<p><b>NEXT DUE DATE: Sept 18 2019</b></p> <p>NOFA Released 2X/Year.</p> <p>Release as consolidated RFP with CDBG, HOME and other local Funds</p>	<p>Funds projects supporting preservation and develop of housing affordable to low and extremely-low income HH. HPTF Supports projects that improve buildings, neighborhoods, or whole communities through energy efficiency. Eligible Projects include: multifamily properties, shelters, or clinics that serve low- to moderate-income District resident.</p> <p>Fall funding supports programs looking to install AC equipment; Spring funding supports heating upgrades. All measures installed and final invoices due to DCSEU. FY 2020 IQEF Information Session will be held at the DCSEU in late-July or early-August. Submitted request to be notified of release.</p>
<a href="#">Income-Qualified Efficiency Fund</a>	DCSEU	LMI (80% AMI or lower) or 60% of the State AMI	2018 Overall Budget (ALL LIMF): ~\$4MM.	8/1/2019 - FY 2020 IQEF Opens for applications <b>11/5/2019- Applications due by 5pm 1/30/2020</b>	<p>Supports projects that improve buildings, neighborhoods, or whole communities through energy efficiency. Eligible Projects include: multifamily properties, shelters, or clinics that serve low- to moderate-income District resident.</p> <p>Fall funding supports programs looking to install AC equipment; Spring funding supports heating upgrades. All measures installed and final invoices due to DCSEU. FY 2020 IQEF Information Session will be held at the DCSEU in late-July or early-August. Submitted request to be notified of release.</p>

Program Name	Admin Agency	Target Population	Funding/ Grant Amt	RFP - Due/Last Release	Program Summary
<a href="#">Pay for Performance (C&amp;I P4PX Pilot)</a>	DCSEU	Commercial and Institutional Bldgs ≥ 100K sqft		Posted Date: 10/2018. Applications accepted on Rolling Basis until funding runs out	Designed for <b>commercial and institutional (C&amp;I) buildings larger than ~100,000 square feet</b> that have completed or are undergoing complex, multi-measure, behavioral, and/or operational changes. Incentivizes energy reduction measures using pre- and post-project metered data to determine actual energy saved. SP submits project for consideration where baseline energy data is available (i.e., before upgrades) and where they have influenced changes (i.e., upgrades) that resulted in energy savings.
<a href="#">Building Green DC</a>	DHCD/DFD	Low- to Moderate Income	POTENTIALLY DEFUNCT		\$5K Grant to support Charrettes required under Enterprise Green Communities Criteria, i.e., standard all residential projects in DC must meet (link to funding page no longer works)
<a href="#">Newsome Pre-Development Loan Assistance Fund</a>	DHCD/DFD	Non-Profit Developers of LI Housing			\$2mm fund to help non-profit developers secure capital for pre-development soft costs. Developers can receive loans of up to \$100,000/project. Created with funds from Housing Production Trust Fund (HPTF) and DC Housing Finance Agency's (DCHFA) McKinney Act Fund. Helps meet application requirements of DHCD's consolidated request for proposals (RFP) for affordable housing projects. Funds are available on rolling basis, subject to fund availability.



Program Name	Admin Agency	Target Population	Funding/ Grant Amts	RFP - Due/Last Release	Program Summary
<a href="#">Safe and Healthy Homes</a>	DHCD	Not specified	Varies		<p>Three Programs:</p> <p>1) Single Family Residential Rehabilitation (SFRRP) - geared toward addressing code violations or deficiencies as well as mods or seniors and/or disabled</p> <p>2) Lead Safe Washington (LSW): primary goal - create lead safe AH for low-to-moderate income families with children under the age of six. (SERVES SGL and MF);</p> <p>3) Safe at Home: focuses on providing housing modifications to improve the safety and quality of life for seniors and disabled.</p>
<a href="#">DC Green Bank</a>	DOEE	Non Specific		Not yet operational as of September 2019	<p>Not Yet Operational</p> <p>Finance tool DC residents and businesses can use for sustainable projects; provides loans &amp; leases, credit enhancements and other financing services to close funding gaps for clean energy projects and energy efficiency improvement.</p>
<a href="#">Solar for All</a>	DC SEU	Low- to moderate income households			<p>Program goal is to deliver solar to 100,000 low-income households to reduce energy bills by 50% by 2032. Solar installation costs are covered by the DCSEU. Applying for the program does not guarantee eligibility to receive a solar system - program operates on a first-come, first-served basis and fulfillment is dependent on funding availability. Established by the RPS Expansion Amendment Act of 2016 and funded by Renewable Energy Development Fund (REDF).</p>

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<a href="#">Rebate Programs</a>	DCSEU	Income Qualified MF	Limits rebate by technology e.g. HVAC to \$100K/year per site	on-going	EE rebate program for lighting, HVAC. Appliances, motors and custom measures. Custom measures range from \$60 to \$75/megawatt hour saved in whole building retrofit, but only specific measures qualify and may be counted toward energy savings. Includes no measures considered “weatherization” i.e., insulation, exterior sealing.
Green Loan Programs	Fannie, Freddie and FHA	All MF	unlimited	on-going	Requires property to achieve certain energy saving targets to access a lower mortgage rate. FHA requires property to achieve EnergyStar certification to avail of a 40 bsp reduction in MIP (mortgage premium reduction) down to 25 bsp. Fannie requires a 25% reduction in energy consumption for a 20 bsp to 40 bsp reduction in refi rate.
Various Energy Financing	Private or DC Govt	All MF	unlimited	on-going	Energy Financing using PACE is available to all MF whose First mortgage holder is willing and able to allow PACE (Agencies do not allow it). Energy Performance Contracting (EPC) is available to public housing but not any other subsidized properties. EPC is available to all other MF. Purchase Power Agreements (PPA) for solar and other renewable energy is available to all non-subsidized properties.

**Glossary of Agencies/Organizations**

- DHCD DC Department of Housing and Community Development
- DFD DC Development Finance Division
- DC SEU DC Sustainable Energy Utility
- DOEE DC Department of Energy and Environment
- PEPCO PEPCO/Exelon (Electric Utility)