2019

Village of Oak Park: Community Energy Program Plan (2019)

OPTIONS FOR VILLAGE ENERGY INITIATIVES

VILLAGE OF OAK PARK

Contents

Executive Summary

At the direction of the Village of Oak Park Board of Trustees, Village Staff has evaluated a range of renewable energy and energy efficiency programs that can be supported by a combination of incentives under the Future Energy Jobs Act (FEJA) and funding from the Community Choice Electrical Aggregation Fund (CCA-Fund). Specific guidance concerning program selection was provided by the Environment and Energy Commission (Commission) and included the following:

1. General Objectives for Programs:
   a. Pursue Programs that provide the most Greenhouse Gas reduction, kWh renewable energy production, or energy use reduction (for energy efficiency) per dollar spent.
   b. Levelized the value of financial benefits generated by Programs regardless of whether benefits deliver direct or indirect impact on Village, other Taxing bodies, or residents.

2. Program Scoring Approach:
   a. Apply lower weighting for the Calendar metric (convert from targeting Program implementation in calendar year 2018 to demonstrating clear progress - such as a signed contract)
   b. Apply higher weighting on Sustainability and Economics metrics or replace with a measure of kWh produced or saved per dollar spent.

Figure 1 conveys the guidance received by the Commission and Staff's recommendations for Program options.

Figure 1: Commission Guidance for CCA-Fund Program Options

Program Option	Title	Energy & Environmental Commission & Staff Recommendations	Staff Recommendation
A	Rooftop Solar Array for Village Hall (supply Village Consumption)	Recommended substitution with other Village sites.	Replace with Options A-2 & A-3
A-2 (New)	Solar Canopy for Village Hall Parking Lot (supply Village Consumption)	Proposed in response to Commission recommendation	Pursue
A-3 (New)	Rooftop Solar Array for Public Works (supply Village Consumption)	Proposed in response to Commission recommendation	Pursue
B	Rooftop Solar Array for Village Hall (to Support Community Solar)	Recommended tabling due to low volume of Subscriptions.	Table
C-1	Offsite Community Solar for Village Accounts	Supported by Commission.	Pursue
C-2	Offsite Community Solar for Village CCA Program	Supported by Commission.	Pursue
D	Credit Enhancement for Residential Rooftop Solar Installations	Recommended substitution with PACE program.	Replace with Option D-2
D-2	Property Assessed Clean Energy (PACE)	Proposed by Commission	Pursue
E	Streetlighting Upgrades	Supported by Commission.	Pursue
F	Promote Existing Utility Efficiency Programs	Supported by Commission with annual budget as a % of CCA Fund, and low to moderate household income focus.	Pursue
G	Utility-Scale Solar Array	Recommended evaluating smaller scale solar or wind.	Continue Evaluation

In its review, Staff evaluated each Program option according to key metrics with weighting feedback from the Village Board and the Commission. Figure 2 below provides descriptions and the relative weighting values assigned to each metric.

Figure 2: Key Program Evaluation Metrics

Key Metric	Metric Description	Weighting
Economics	The balance between economic value delivered vs. program cost	25%
Sustainability	The amount of energy use reduction or renewable energy generation resulting from a program	25%
Resources	The level of Village resources will be required to manage the program	10%
Unknowns	The level experience in the market to support the program or related technologies	5%
Longevity	The life cycle duration of the assets supported by the program	10%
Complexity	The level of complexity related to managing the program	5%
Scalability	The level of funding flexibility the program can accommodate	5%
Calendar	The likelihood that the program can commence in calendar year 2018	10%

The results of staff's Program Evaluations for Programs recommended for funding (Items A-2, A-3, C-1, C-2, D-2, E, and F) are presented in Figure 3. Relative to these results, Staff notes the following:

- Three (3) Programs produce net economic benefits: Parking Lot Solar Canopy for Village Hall (A-2), Rooftop Solar Array for Public Works (A-2), Community Solar Subscriptions for Village Municipal Electricity Accounts (C-1), the LED Streetlighting (E), and the Promotion of Existing Utility Energy Efficiency Programs (F).
- One (1) Program produces net economic costs: Community Solar Subscriptions for the Village's CCA Program (C-2).
- One (1) Program with an unknown level of economic benefit but no costs to the Village: Property Assessed Clean Energy Program (D-2).
- One (1) Program produces an unknown level of economic benefit and costs to the Village: Utility scale Wind/Solar Program (G).
- The various programs produced benefits that are realized by different parties (i.e. Village, Developers, Residents).

In sum, staff recommends that the Board consider funding levels for each program presented in Figure 3. The proposed funding levels are lower than the cumulative balance of the CCA Fund (estimated to stand at $1.2 Million by the end of calendar year 2018) and the new revenues anticipated to flow into the CCA Fund of an average of $400,000 on an annual basis. As such, the budgeted funding levels allow for unforeseen costs associated with program development and implementation.

This report presents the Program options approved by the Commission and recommended by staff (Items A-2, A-3, C-1, C-2, D-2, E, F, and G). As such, the original Program options A and D are excluded from this report.

Figure 3: Evaluation & Recommendations for Program Funding with CCA-Fund Resources

Analysis Elements	Solar Canopy (Village Hall)		Rooftop Solar (Public Works)		Community Solar Subscription for Village Facilities	20% Community Solar Subscription for Village CCA Program	PACE Financing	LED Streetlights	Promote Existing Utility Energy Efficiency Programs	Utility Scale Wind/Solar Power Purchase Agreement
	Capital Purchase Approach	Power Purchase Agreement Approach	Capital Purchase Approach	Power Purchase Agreement Approach						
Program Item Designation	A-2		A-3		**C-1**	**C-2**	**D-2**	**E**	**F**	**G**
Measure Life Expectancy (Years)	20	20	20	20	20	5	10	10	10	20
Proposed Years of Funding	1	20	1	20	20	5	10	2	1	Unknown
Investment ($)										
Investment from CCA Fund	$1,666,667	$572,320	$535,000	$209,960	$0	$1,920,000	$0	$170,000	$220,000	Unknown
Lifetime Cost / (Savings)	-$1,031,749	-$654,080	$158,725	-$239,954	-$516,691	$0	Unknown	-$613,390	-$514,718	Unknown
Net Total Lifetime Cost / (Savings)	***$634,917***	***-$81,760***	***$693,725***	***-$29,994***	***-$516,691***	***$1,920,000***	***Unknown***	***-$443,390***	***-$294,718***	***Unknown***
Total Energy Impact										
Lifetime Clean Generation (MWh)	409	409	150	150	25,835	160,000	Unknown	0	0	Unknown
Lifetime Efficiency Savings (MWh)	0	0	0	0	0	0	Unknown	9,020	3,631	Unknown
Lifetime Energy Impact (MWh)	***409***	***409***	***150***	***150***	***25,835***	***160,000***	***Unknown***	***9,020***	***3,631***	***Unknown***
Energy Impact Cost ($/MWh)										
Net Investment from CCA Fund	$634,917	-$81,760	$693,725	-$29,994	-$516,691	$1,920,000	Unknown	-$443,390	-$294,718	Unknown
Lifetime Energy Impact (MWh)	8,176	8,176	2,999	2,999	25,835	160,000	Unknown	9,020	3,631	Unknown
Lifetime Cost / (Savings) rate per MWh Energy Impact	***$77.66***	***($10.00)***	***$231.29***	***($10.00)***	***($20.00)***	***$12.00***	***Unknown***	***($49.15)***	***($81.17)***	***Unknown***
Party Experiencing Economic Impact										
Party Realizing Financial Impact	Residents	Residents	Residents	Residents	Village	Residents	Developers	Village	Residents	Residents / Village
Staff Recommendation										
Pursue / Do Not Pursue / Other	Do Not Pursue	Pursue	Do Not Pursue	Pursue	Pursue	Pursue	Pursue	Pursue	Pursue	Continue Evaluation
Annual Impact on CCA Fund										
Calendar Year 2019		$28,616		$10,498	$0	$384,000	$0	$170,000	$220,000	Unknown
Calendar Year 2020		$28,616		$10,498	$0	$384,000	$0	$0	$0	Unknown
Calendar Year 2021		$28,616		$10,498	$0	$384,000	$0	$0	$0	Unknown
Calendar Year 2022		$28,616		$10,498	$0	$384,000	$0	$0	$0	Unknown
Calendar Year 2023		$28,616		$10,498	$0	$384,000	$0	$0	$0	Unknown
Calendar Year 2024		$28,616		$10,498	$0	$384,000	$0	$0	$0	Unknown

Program Option A-2: Village Hall Parking Lot Solar Canopy (to Offset Village Consumption)

Description. Parking lot solar canopies with installed generating capacity of less than 2,000 kW can receive substantial financial incentives under FEJA. By connecting a parking lot solar canopy to a building's electrical system, the solar energy generated can replace some or all the electricity purchased from the local utility. Financing the construction of solar arrays typically depends on revenues from multiple sources: federal tax incentives, the sale of Renewable Energy Credits (SRECs) to local utilities, direct capital investment by the property owner, and the avoided cost savings resulting from reduced electricity purchases from the local utility. The Village could install series of solar canopies in the Village Hall parking lot, and utilize the electricity generated to offset electricity deliveries from Commonwealth Edison to that facility.

Sector. Renewable Energy for Municipal Facilities

Goal. To supply a portion the electricity consumption of the Oak Park Village Hall with electricity generated by a parking lot solar canopy asset. Because the Village Hall is a franchise account, the monthly utility costs for the Village Hall are transferred to Village residents through ComEd Rider FCA. As such, offsetting a portion of electricity consumption at the Village Hall will ultimately result in reductions in Rider FCA charges for Village residents. Therefore, installing solar PV to reduce electricity consumption at Village Hall will benefit Village residents over the long term.

Approach. The Village can solicit bids from solar installation companies to design and build a solar array on the Village Hall parking lot. Typically, parking lot solar canopies projects are financed through power purchase agreements, equipment leases or cash payments plus utility and tax incentives. To reduce the impact on the CCA Fund, staff recommends that the parking lot solar canopy be financed through a Power Purchase Agreement (PPA) with a solar developer. Under a PPA arrangement, the Village would simply purchase the electricity output from the solar canopy system at a set price over a 20-year contract.

Operational Assessment. Staff's evaluation of the Parking Lot Solar Canopy for Village Hall according to key operational characteristics is found in Figure 4. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according to guidance from the Commission.

Figure 4: Village Hall Parking Lot Solar Canopy (Program Option A-2)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	0.50
Economics	Level of economic value vs. cost	0.25
Resources	Level of Village resources required to create and manage program activities	0.30
Unknowns	Level of market experience with approach or technology	0.25
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.40
Scalability	Level of ability to increase or decrease funding levels as needed	0.10
Calendar	Ability to facilitate the approach in 2018	0.20
	Total Score	**2.50**

Staff Recommendation: Staff recommends that the Parking Lot Solar Canopy for Village Hall be considered by the Board. The recommendation is supported by the high visibility the project would have for residents and businesses that are considering their own solar projects. As a tax-exempt organization, the Village cannot

monetize the substantial federal tax benefits that would be generated by the proposed solar array. Additionally, staff recommends that the Village utilize a Power Purchase Agreement to support the development of the proposed Solar Canopy in order to allow a private developer to capture the federal tax benefits associated with the installation and pass those incentives to the Village in the form of discounted pricing, and to reduce the impact on the CCA Fund.

Economic Benchmarking. As noted above, installing a Parking Lot Solar Canopy for Village Hall will not directly reduce electricity supply costs for the Village as the Village Hall receives unbilled electricity supply service from Commonwealth Edison through the Village's utility franchise agreement. However, the reduction in billed electricity consumption at Village Hall resulting from the operation of the solar resource will reduce ComEd collections from Village residents through Rider FCA (the tariff that transfers the costs of franchise accounts to residents). As such, the economic benchmarking assessment of a Parking Lot Canopy Solar Array for Village Hall assumes savings for Village residents and presents a net positive value. The table below conveys the preliminary economic analysis of the Parking Lot Solar Canopy for Village Consumption option. Staff can continue to refine the economic analysis at the direction of the Board.

Figure 5: Village Hall Parking Lot Solar Canopy (Program Option A-2)

Variables		Calcs	Values
Annual City Hall Electricity Consumption			
A	Annual City Hall Electricity Consumption (kWh)	A	2,238,000
Canopy Solar Project Capacity			
B	Available Canopy Space (Square Feet)	B	25,000
C	Potential Solar Generating Capacity (kW)	C	333
D	Solar Capacity Factor*	D	14%
E	Hours in a Year	E	8,760
F	Annual Solar Generation Potential (kWh)	F = C * D * E	408,800
G	Annual Consumption (kWh)	G = A	2,238,000
H	Solar Offset to City Hall Consumption (%)	H = F / G	18.3%
I	Unit Value of Solar Generation ($/kWh)	I	$0.0800
J	Lifetime for Solar Resource (years)	J	20
K	Lifetime Value of Solar Generation	K = F * I * J	$654,080
Net Results for Capital Purchase of Solar Canopy Project			
L	Potential Solar Generating Capacity (kW)	L = C	333
M	Estimated Unit Cost of Solar ($/kW)	M	$5,000
N	Estimated Total Cost of Solar Project	N = L * M	$1,666,667
O	Estimated SREC Incentives (15-year contract, payment in 1st 4 years)	O	($294,336)
P	Estimated Inverter Incentives ($250/kW, 1-time payment, year 1)	P	($83,333)
Q	Net Solar Project Capital Cost	Q = N - O - P	$1,288,997
Net Results for Power Purchase Agreement of Solar Canopy Project			
R	Power Purchase Agreement Price ($/kWh)	R	$0.0700
S	Annual Solar Generation Potential (kWh)	S = F	408,800
T	Annual Cost for Solar Project with Power Purchase Agreement	T = R * S	$28,616
U	Term of Power Purchase Agreement (years)	U	20
V	Total Cost for Solar Project with a Power Purchase Agreement	V = T * U	$572,320

***Capacity Factor is the ratio of energy generated over 1-year, divided by the installed capacity.**

Program Option A-3: Public Works Building Rooftop Solar (to Offset Village Consumption)

Description. Rooftop solar with installed generating capacity of less than 2,000 kW can receive substantial financial incentives under FEJA. By connecting a rooftop solar array to a building's electrical system, the solar energy generated can replace some or all the electricity purchased from the local utility. Financing the construction of rooftop solar arrays typically depends on revenues from multiple sources: federal tax incentives, the sale of Renewable Energy Credits (SRECs) to local utilities, direct capital investment by the property owner, and the avoided cost savings resulting from reduced electricity purchases from the local utility. The Village could install rooftop solar at the Public Works Building and utilize the electricity generated to offset electricity deliveries from Commonwealth Edison to that facility.

Sector. Renewable Energy for Municipal Facilities

Goal. To supply a portion the electricity consumption of the Oak Park Public Works Building with electricity generated by a rooftop solar asset. Because the Public Works Building is a franchise account, the monthly utility costs for the Public Works Building are transferred to Village residents through ComEd Rider FCA. The electric heat costs are not covered by the Rider FCA and are paid directly to ComEd. As such, offsetting a portion of electricity consumption at the Public Works Building will ultimately result in reductions in electricity purchased for heat and Rider FCA charges for Village residents. Therefore, installing solar PV to reduce electricity consumption at the Public Works Building will benefit Village residents over the long term.

Approach. The Village can solicit bids from solar installation companies to design and build a solar array on the roof of the Public Works Building. Typically, rooftop solar projects are financed through power purchase agreements, equipment leases or cash payments plus utility and tax incentives. To reduce the impact on the CCA Fund, staff recommends that the parking lot solar canopy be financed through a Power Purchase Agreement (PPA) with a solar developer. Under a PPA arrangement, the Village would simply purchase the electricity output from the solar canopy system at a set price over a 20-year contract.

Operational Assessment. Staff's evaluation of the project according to key operational characteristics is found in Figure 6. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according to guidance from the Commission

Figure 6: Public Works Building Rooftop Solar (Program Option A-3)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	0.50
Economics	Level of economic value vs. cost	0.50
Resources	Level of Village resources required to create and manage program activities	0.30
Unknowns	Level of market experience with approach or technology	0.25
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.40
Scalability	Level of ability to increase or decrease funding levels as needed	0.10
Calendar	Ability to facilitate the approach in 2018	0.20
	Total Score	**2.75**

Staff Recommendation: Staff recommends that the rooftop solar for the Public Works Building be considered by the Board. The recommendation is supported by the relatively low cost of the project, and the visibility the

project would have for residents and businesses that are considering their own rooftop solar projects. As a tax-exempt organization, the Village cannot monetize the substantial federal tax benefits that would be generated by the proposed solar array. As such, staff recommends that the Village utilize a Power Purchase Agreement to support the development of the proposed Rooftop Solar array in order to allow a private developer to capture the federal tax benefits associated with the installation and pass those incentives to the Village in the form of discounted pricing, and to reduce the impact on the CCA Fund.

Economic Benchmarking. Installing a Rooftop Soar Array for the Public Works Building will reduce electricity supply costs related to space heating only for the Village as the Public Works Building. The remainder of electricity for the facility is provided as unbilled electricity supply service from Commonwealth Edison through the Village's utility franchise agreement. However, the reduction in metered electricity consumption at the Public Works Building resulting from the operation of the solar resource will reduce ComEd collections from Village residents through Rider FCA (the tariff that transfers the costs of franchise accounts to residents). As such, the economic benchmarking assessment of a Rooftop Solar Array for the Public Works Building assumes savings for Village residents and presents a net positive value. The table below conveys the preliminary economic analysis of the Rooftop Solar Array for the Public Works Building option. Staff can continue to refine the economic analysis at the direction of the Board.

Figure 7: Public Works Building Solar Rooftop Array (Program Option A-3)

	Variables	Calcs	Values
Annual City Hall Electricity Consumption			
A	Annual Public Works Electricity Consumption (kWh)	A	1,155,000
Rooftop Solar Project Capacity			
B	Available Rooftop Space (Square Feet)	B	8,025
C	Potential Solar Generating Capacity (kW)	C	107
D	Solar Capacity Factor*	D	16%
E	Hours in a Year	E	8,760
F	Annual Solar Generation Potential (kWh)	F = C * D * E	149,971
G	Annual Consumption (kWh)	G = A	2,237,000
H	Solar Offset to Public Works Building Consumption (%)	H = F / G	6.7%
I	Unit Value of Solar Generation ($/kWh)	I	$0.0800
J	Lifetime for Solar Resource (years)	J	20
K	Lifetime Value of Solar Generation	K = F * I * J	$239,954
Net Results for Capital Purchase of Solar Rooftop Project			
L	Potential Solar Generating Capacity (kW)	L = C	107
M	Estimated Unit Cost of Solar ($/kW)	M	$5,000
N	Estimated Total Cost of Solar Project	N = L * M	$535,000
O	Estimated SREC Incentives (15-year contract, payment in 1st 4 years)	O	($107,979)
P	Estimated Inverter Incentives ($250/kW, 1 time payment, year 1)	P	($26,750)
Q	Net Solar Project Capital Cost	Q = N - O - P	$400,271
Net Results for Power Purchase Agreement of Solar Rooftop Project			
R	Power Purchase Agreement Price ($/kWh)	R	$0.0700
S	Annual Solar Generation Potential (kWh)	S = F	149,971
T	Annual Cost for Solar Project with Power Purchase Agreement	T = R * S	$10,498
U	Term of Power Purchase Agreement (years)	U	20
V	Total Cost for Solar Project with a Power Purchase Agreement	V = T * U	$209,960

***Capacity Factor is the ratio of energy generated over 1-year, divided by the installed capacity.**

Program Option C-1: Offsite Community Solar Subscriptions for Village Electricity Accounts

Description. Community Solar arrays with nameplate (installed) generating capacity of less than 2,000 kW can receive substantial financial incentives under FEJA. By connecting an array of solar panels to the Commonwealth Edison distribution system, the electricity generated by the array can be credited to the accounts of any Commonwealth Edison customer that subscribes to that Community Solar array – a process termed Net Metering. Several hundred Community Solar projects have been proposed for the Commonwealth Edison service region. Community Solar arrays are typically financed from multiple sources: federal tax incentives, the sale of Renewable Energy Credits (SRECs) to local utilities, and subscription fees from project subscribers.

The Village can subscribe some or all the Village's own Commonwealth Edison accounts to one or more of the Community Solar arrays under development in the region. By paying a subscription fee to the Community Solar array developer, the Village would receive on-bill credits on monthly Commonwealth Edison bills. Depending on the type of supply arrangements (i.e. default rate, or retail supply), the cost of Community Solar subscriptions may be less than the resulting on-bill credits – yielding a potential cost savings to the Village.

Sector. Renewable Energy for Government Facilities

Goal. To subscribe Village accounts to one or more community solar arrays to reduce operating costs.

Approach. The Village may enter into subscription agreements with Community Solar developers for periods of up to 20 years. The subscriptions will generate on-bill credits for subscribed accounts monthly. The on-bill credits can be applied to current balances or can be transferred to outstanding balances on other Village accounts. The Village can seek pricing from Community Solar developers to determine which accounts have the potential to generate cost savings for the Village.

Operational Assessment. Staff's evaluation of the Community Solar option for Village electricity accounts according to key operational characteristics is found in the following table. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according guidance from the Commission.

Figure 8: Community Solar Subscriptions for Municipal Accounts (Program Option C-1)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	1.25
Economics	Level of economic value vs. cost	1.25
Resources	Level of Village resources required to create and manage program activities	0.40
Unknowns	Level of market experience with approach or technology	0.20
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.40
Scalability	Level of ability to increase or decrease funding levels as needed	0.20
Calendar	Ability to facilitate the approach in 2018	0.50
	Total Score	**4.70**

Staff Recommendation: Staff recommends that the Village participate in the Community Solar Clearinghouse Solution (CS^2) program under development by the Metropolitan Mayors Caucus (MMC). The CS^2 program is a bulk purchasing approach to Community Solar for municipalities that are members of the MMC. By buying subscriptions in bulk, the Village can expect better access to more suppliers and lower prices.

Economic Benchmarking. A Community Solar Subscriptions Project for Village electricity accounts can reduce electricity supply costs for the Village when the cost of subscriptions is less than the value of the resulting on-bill credits. Economic benefits differ among accounts based on account size, rate, and supplier. A preliminary review of the Village's accounts indicates an annual potential savings of approximately $25,000 can be achieved through community solar subscriptions. Over a 20-year subscription agreement, the total potential savings to the Village would be approximately $516,000. The specific terms of any community solar subscription agreement will establish costs, benefits, duration, and options for exiting the agreement.

Figure 9: Economic Analysis of Community Solar Subscriptions for a sampling of Municipal Accounts (Program Option C-1)

Variables		Calcs	Values
CCA Community Solar Target			
A	Approximate annual consumption for Village accounts to be Subscribed to Community Solar - annual kWh	A	1,291,728
CCA Community Solar Target			
B	Targeted Volume of Community Solar Subscriptions (kWh)	B = A	1,291,728
C	Average Value of Community Solar Subscriptions ($/kWh)	C	$0.0600
D	Average Cost of Community Solar Subscriptions ($/kWh)	D	$0.0400
E	Average Net Savings for Community Solar Subscriptions ($/kWh)	E = C -D	$0.0200
F	Years in Subscriptions	F	20
G	Average Annual Savings for Community Solar Subscriptions	G = B * E	$25,835
H	Average Annual Savings for Community Solar Subscriptions	H = F * G	$516,691

Program Option C-2: Offsite Community Solar Subscriptions for the Village CCA Program

Description. Community Solar arrays with nameplate generating capacity of less than 2,000 kW can receive substantial financial incentives under FEJA. By connecting an array of solar panels to the Commonwealth Edison distribution system, the electricity generated by the array can be credited to the accounts of any Commonwealth Edison customer that subscribes to that Community Solar array – a process termed Net Metering. Several hundred Community Solar projects have been proposed for the Commonwealth Edison service region. Community Solar arrays are typically financed from multiple sources: federal tax incentives, the sale of Renewable Energy Credits (SRECs) to local utilities, and subscription fees from project subscribers.

The Village has incorporated Community Solar subscriptions to one or more Community Solar arrays into the Village's new 2018-2019 CCA contract with MC-Squared Energy Services. Current projections indicate that the inclusion of Community Solar subscriptions into the PPA equal to 10-20% of the Village's total residential and small commercial account annual consumption will require ongoing financial support from the CCA Fund.

Sector. Renewable Energy for Residential, Small Commercial

Goal. To include subscriptions to one or more Community Solar arrays into the Village's CCA Program.

Approach. The Village has entered into a CCA supply contract with MC-Squared Energy Services that includes an option that allows the Village to secure 10-20% of residential and small commercial supply to be covered by Community Solar subscriptions. These subscriptions will apply across all CCA accounts. The cost and contract terms of this approach will need to be negotiated once the Illinois Power Agency has selected community solar projects for funding in early 2019.

Operational Assessment. Staff's evaluation of the Community Solar Subscriptions for the Village's CCA program according to key operational characteristics is found in the following table. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according to guidance from the Commission.

Figure 10: Community Solar Subscriptions for Village CCA Program (Program Option C-2)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	1.25
Economics	Level of economic value vs. cost	1.25
Resources	Level of Village resources required to create and manage program activities	0.40
Unknowns	Level of market experience with approach or technology	0.20
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.40
Scalability	Level of ability to increase or decrease funding levels as needed	0.20
Calendar	Ability to facilitate the approach in 2018	0.20
	Total Score	**4.40**

Staff Recommendation: Staff recommends continued collaboration with MC-Squared Energy Services to secure Community Solar subscriptions for the Village CCA program.

Economic Benchmarking. Including Community Solar into the CCA Program will require a slight cost to be paid by the CCA Fund. A cost analysis of the 10% and 20% Community Solar subscription options are found in the tables below.

Figure 11: Community Solar Subscriptions for Village CCA Program @10% Annual Volume (Program Option C-2)

Variables		Calcs	Values
CCA Program and Community Solar Subscription Volume			
A	Community Choice Aggregation Program Size (Annual kWh)	A	160,000,000
B	Targeted Volume of Community Solar Subscriptions @10% (kWh)	B = A * 10%	16,000,000
Subscription Transactions			
C	Targeted Volume of Community Solar Subscriptions (kWh)	C = B	16,000,000
D	Average Value of Community Solar Subscription Credit ($/kWh)	D	$0.028
E	Average Cost of Community Solar Subscriptions ($/kWh)	E	$0.040
F	Average Net Premium for Community Solar Subscriptions ($/kWh)	F = E - D	$0.012
G	Average Annual Cost to CCA Fund for Community Solar Subscriptions	G = B * E	$192,000
H	CCA Contract Term (Years)	H	5
I	5-Year Cost to CCA Fund for Community Solar Subscriptions	I = G * H	$960,000

Figure 12: Community Solar Subscriptions for Village CCA Program @20% Annual Volume (Program Option C-2)

Variables		Calcs	Values
CCA Program and Community Solar Subscription Volume			
A	Community Choice Aggregation Program Size (Annual kWh)	A	160,000,000
B	Targeted Volume of Community Solar Subscriptions @10% (kWh)	B = A * 20%	32,000,000
Subscription Transactions			
C	Targeted Volume of Community Solar Subscriptions (kWh)	C = B	32,000,000
D	Average Value of Community Solar Subscription Credit ($/kWh)	D	$0.028
E	Average Cost of Community Solar Subscriptions ($/kWh)	E	$0.040
F	Average Net Premium for Community Solar Subscriptions ($/kWh)	F = E - D	$0.012
G	Average Annual Cost to CCA Fund for Community Solar Subscriptions	G = B * E	$384,000
H	CCA Contract Term (Years)	H	5
I	5-Year Cost to CCA Fund for Community Solar Subscriptions	I = G * H	$1,920,000

Program Option D-2: Property Assessed Clean Energy (PACE) Funding Program

Description. Property Assessed Clean Energy (PACE) provides low cost/long term loans to building owners to invest in energy efficiency and renewable energy projects in their properties. Under the PACE structure, participating property owners repay the loans over time through special assessments on their property tax bills. State legislation adopted in 2018 enables local municipalities to make PACE available to eligible property owners. It is anticipated that these programs are to be self-financed through user fees, with start-up capital provided through a bond issue. Per statute, PACE programs are open to any commercial, institutional or residential building with five or more units, excluding condominiums.

Sector. Energy Efficiency for Multi-Family, Small Commercial, Large Commercial Developers

Goal. To reduce energy consumption and increase renewable energy generation at multi-family, commercial and industrial properties within the Village.

Approach. Cook County is currently developing a PACE program that will be available to all municipalities located within Cook County on an opt-in basis. The Village may also undertake a communication campaign targeting developers to inform them of the PACE opportunity in the Village once the Cook County PACE program in in place. Participating in the Cook County PACE program is not anticipated to require any funding by the Village and is anticipated for rollout by Cook County in early 2019.

Operational Assessment. Staff's evaluation of the PACE Program option from Cook County according to key operational characteristics is found in the following table. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according to guidance from the Commission.

Figure 13: Property Assessed Clean Energy Program (Program Option D-2)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	1.25
Economics	Level of economic value vs. cost	1.25
Resources	Level of Village resources required to create and manage program activities	0.50
Unknowns	Level of market experience with approach or technology	0.25
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.50
Scalability	Level of ability to increase or decrease funding levels as needed	0.25
Calendar	Ability to facilitate the approach in 2018	0.20
	Total Score	**4.70**

Staff Recommendation: Village staff recommends that the Village join the Cook County PACE program when the program is finalized.

Economic Benchmarking. No economic benchmarking is necessary for the PACE program option as participation in the Cook County PACE program does not require any expenditures by the Village.

Program Option E: Streetlighting Upgrades

Description. LED technologies provide high quality streetlighting while consuming less energy than the traditional lighting options currently in use by the Village (i.e. metal halide, mercury vapor, etc.). The Village has replaced some streetlighting units with LED technologies, but a large portion of the Village's streetlighting portfolio still require updating. The Village may use its CCA-Fund to support a conversion of the Village's streetlighting inventory to an LED platform.

Sector. Energy Efficiency for Municipal Government

Goal. To reduce energy consumption and costs for the Village's streetlighting inventory.

Approach. Village staff will coordinate the Village's streetlighting system modifications as approved by the Board.

Operational Assessment. Staff's evaluation of the LED Streetlighting Program according to key operational characteristics is found in the following table. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according to guidance from the Commission.

Figure 14: LED Streetlighting Program Scoring (Program Option E)

Category	Description	Weighted Score (1-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	1.25
Economics	Level of economic value vs. cost	0.75
Resources	Level of Village resources required to create and manage program activities	0.50
Unknowns	Level of market experience with approach or technology	0.25
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.40
Scalability	Level of ability to increase or decrease funding levels as needed	0.25
Calendar	Ability to facilitate the approach in 2018	0.50
	Total Score	**4.40**

Staff Recommendation: Per Board direction, staff recommends a 2019 allocation of approximately $170,000 from the CCA Fund to support an LED Streetlighting Program for the specified residential streets in the Village. The recommendation is supported by the high levels of economic benefits for residents, low technology risks, and manageable levels of program complexity.

Economic Benchmarking. An economic cost benefit analysis for the LED Streetlighting Program is provided below in Figure 15.

Figure 15: LED Streetlighting Economics (Program Option E)

Variables		Calcs	**Calcs**
Current Streetlighting Consumption & Cost			
A	Number of Targeted Residential Streets Lighting Units	A	2,314
B	Watts per Targeted Residential Streets Lighting Unit	B	125
C	Annual Operating Hours	C	4,380
D	Estimated Annual Electricity Consumption (kWh)	D = (A*B*C)/1000	1,266,915
E	Average Volumetric Price for Electricity Supply ($/kWh)	E	$0.0680
F	Average Annual Volumetric Cost for Electricity Supply	F = D * E	$86,150
Streetlighting Efficiency Project Costs			
G	Watts per Targeted Residential Streets Lighting Unit (Current)	G = B	125
H	Watts per Targeted Residential Streets Lighting Unit (Proposed)	H	36
I	Watts reduction per Targeted Residential Streets Lighting Unit	I = G -H	89
J	Number of Streetlighting Units	J = A	2,314
K	Average Cost to Retrofit Streetlighting Unit	K	$150
L	Projected Streetlighting Project Cost	L = J * K	$347,100
M	Utility Rebate Rate ($/Watt Reduction)	M	$0.70
N	Watt Reduction per Streetlighting Unit	N = I	89
O	Utility Rebate Amount	O = J * M * N	$144,162
P	Projected Streetlighting Project Cost (Net of Rebate)	P = L - O	$202,938
Q	CCA Fund Expenditure Level Approved by Board	Q	$170,000
R	Net cost of Streetlighting Project	R = P - Q	$172,938
Streetlighting Efficiency Project Impacts			
S	Life Cycle of Streetlighting Upgrades (Years)	S	10
T	Projected Annual Energy Use Reduction (kWh)	T = A*C*(G-H)/1000	902,043
U	Life Cycle Energy Savings of Streetlighting Upgrades	U = S * T	9,020,435
V	Average Energy Cost ($/kWh)	V = E	$0.0680
W	Annual Energy Cost Savings of Streetlighting Upgrades	W = T * V	$61,339
X	Lifecycle Energy Cost Savings of Streetlighting Upgrades	X = S * W	$613,390

Program Option F: Promoting Existing Utility Efficiency Programs

Description. A range of high value energy efficiency products and services are available to reduce energy consumption and costs for consumers. Recognizing that many of these technologies cost more than traditional technology, Commonwealth Edison and Nicor Gas currently provide consumers with rebates and other assistance to help consumers capture cost-saving opportunities. The Village may use the CCA-Fund to support outreach to residents concerning the benefits of utility energy efficiency programs and provide additional incentives to Village residents that purchase and install energy efficiency products.

Sector. Energy Efficiency for Residential, Small Commercial and Income-Qualified sectors

Goal. To reduce energy consumption and costs in Village residents' households (including Income-Qualified), and small businesses.

Approach. Village staff will coordinate with Commonwealth Edison and Nicor to create local efficiency rebate enrollment channels through the Village's existing Housing Programs Single-Family Rehabilitation Loans & Grants, Small Rental Rehabilitation Programs. These channels will allow Village residents to purchase energy efficiency products and services by monetizing both utility and the Village rebates. The Village will inform residents of the new incentives through the existing Single-Family Rehabilitation Loans & Grants, Small Rental Rehabilitation Programs and with information on the Village's website. Special programming can focus on low-income households that may require additional support in acquiring energy efficiency options.

Additionally, the Village may utilize the Energy Star Portfolio Manager by the US Environmental Protection Agency to securely track and assess energy and water consumption for the Village's building portfolio. Utility consumption and cost data entered in Portfolio Manager can be used to benchmark building efficiency, set investment priorities, identify under-performing buildings, verify efficiency improvements, and support application for Energy Star building certification. The Portfolio Manager is the leading portfolio energy management tool and is available for use at no charge to public sector entities. Lastly, the Village may conduct a new Greenhouse Gas (GHG) inventory with 2015 data to replace the last inventory completed in 2007.

Operational Assessment. Staff's evaluation of Promoting Exiting Utility Efficiency Program option according to key operational characteristics is found in the following table. Scores range from 1 to 5 with 1 indicating poor performance and 5 indicating superior performance, and then were weighted according direction of the Commission.

Figure 16: Supplemental Funding for ComEd Energy Efficiency Programs (Program Option F)

Category	Description	Weighted Score (0-5)
Sustainability	Volume of energy efficiency results or renewable energy generation	1.25
Economics	Level of economic value vs. cost	1.25
Resources	Level of Village resources required to create and manage program activities	0.50
Unknowns	Level of market experience with approach or technology	0.25
Longevity	Duration of project life cycle	0.50
Complexity	Level of management complexity	0.50
Scalability	Level of ability to increase or decrease funding levels as needed	0.25
Calendar	Ability to facilitate the approach in 2018	0.50
	Total Score	**5.00**

Staff Recommendation: Staff recommends allocating $220,000 of the CCA-Fund balance to Promote Existing Utility Efficiency Programs and update the Village's GHG inventory. The Promoting Existing Utility Efficiency Programs activities will be used to cover outreach costs and support local incentives for Smart Thermostats and LED lighting purchased and installed by Village residents. Also, staff recommends providing efficiency project funding through the Village's existing Single-Family Rehabilitation Loans & Grants and Small Rental Rehabilitation Programs. The recommendation is supported by the high levels of economic benefits for residents, low technology risks, and manageable levels of program complexity.

Economic Benchmarking. Economic cost benefit analyses for the supplemental incentives for the ComEd Smart Thermostat Incentive Program, the ComEd LED Lighting Rebate Program, and the Village of Oak Park Residential Rehabilitation Program are provided below.

Figure 17: Supplemental Incentives to ComEd Thermostat Program (Program Option F)

Variables		Calcs	Values
Incentive Budget			
A	Community Incentive Amount	A	$10,000
B	Outreach Budget (Mailings)	B	($1,000)
C	Capital Budget (Smart Thermostats)	C = A - B	($9,000)
D	Total Budget Use	D = B + C	($10,000)
Energy Impact (Electricity)			
E	% Reduction in Annual Individual Electricity Use	E	10%
F	Average Annual Individual Electricity Use (kWh)	F	7,500
G	Average Annual Individual Electricity Use Reduction (kWh)	G = E * F	750
H	# NEST Units Deployed	H = C / $50	180
I	Annual Community-wide Electricity Use Reduction	I = G * H	135,000
J	Average Electicity Supply Unit Cost ($/kWh)	J	$0.0760
K	Annual Community-wide Electricity Cost Reduction	K = I * K	$10,260
L	Measure life expectance	L	10
M	Long-Term Community-wide Electricity Cost Reduction	M = K * L	$102,600
Energy Impact (Natural Gas)			
N	% Reduction in Annual Individual Electricity Use	N	20%
O	Average Annual Individual Natural Gas Use (Therms)	O	900
P	Average Annual Individual Natural Gas Use Reduction (Therms)	P = N * O	180
Q	# NEST Units Deployed	Q = C / $50	180
R	Annual Community-wide Natural Gas Use Reduction	R = P * Q	32,400
S	Average Natural Gas Supply Unit Cost ($/kWh)	S	$0.3500
T	Annual Community-wide Natural Gas Cost Reduction	T = R * S	$11,340
U	Measure life expectance	U	10
V	Long-Term Community-wide Natural Gas Cost Reduction	V = T * U	$113,400
Net Energy Impact			
W	Program Cost	W = D	($10,000)
X	Annual Economic Benefit	X = K +T	$21,600
y	Annual Leverage Ratio	Y = X / W	2.2
z	Annual Leverage Ratio	Z = M + V	$216,000
AA	Lifetime Leverage Ratio	AA = Z / W	21.6

Figure 18: Supplemental Incentives to ComEd LED Lighting Program (Program Option F)

	Variables	Calcs	Values
Incentive Budget			
A	Community Incentive Amount	A	$10,000
B	Outreach Budget (Mailings)	B	($1,000)
C	Capital Budget (LED Lighting Incentives)	C = A - B	($9,000)
D	Total Budget Use	D = B + C	($10,000)
Energy Impact (Electricity)			
E	% Reduction in Annual Individual Bulb Use	E	50%
F	Average Annual Individual Bulb Use (kWh)	F	44
G	Average Annual Individual Electricity Use Reduction (kWh)	G = E * F	22
H	# LED Lighting Units Deployed	H = C / $2.50	3,600
I	Annual Community-wide Electricity Use Reduction (kWh)	I = G * H	78,840
J	Average Electricity Supply Unit Cost ($/kWh)	J	$0.0760
K	Annual Community-wide Electricity Cost Reduction	K = I * K	$5,992
L	Measure life expectance (Years)	L	10
M	Long-Term Community-wide Electricity Cost Reduction	M = K * L	$59,918
Net Energy Impact			
N	Program Cost	N = D	($10,000)
O	Annual Economic Benefit	O = K	$5,992
P	Annual Leverage Ratio	P = N / O	0.6
Q	Annual Leverage Ratio	Q = M	$59,918
R	Lifetime Leverage Ratio	R = Q / N	6.0

Figure 19: Supplemental Incentives to Village Residential Rehabilitation Program

	Variables	Calcs	Values
Incentive Budget			
A	Community Incentive Amount	A	$200,000
B	Outreach Budget (Mailings)	B	($1,000)
C	Capital Budget (efficiency measures)	C = A - B	($199,000)
D	Total Budget Use	D = B + C	($200,000)
Energy Impact (Electricity)			
E	% Reduction in Annual Individual Electricity Use	E	5%
F	Average Annual Individual Electricity Use (kWh)	F	7,500
G	Average Annual Individual Electricity Use Reduction (kWh)	G = E * F	375
H	# Housing Units Impacted	H = C / $500	398
I	Annual Community-wide Electricity Use Reduction	I = G * H	149,250
J	Average Electicity Supply Unit Cost ($/kWh)	J	$0.0760
K	Annual Community-wide Electricity Cost Reduction	K = I * K	$11,343
L	Measure life expectance	L	10
M	Lifecycle Electricity Cost Reduction	M = K * L	$113,430
Energy Impact (Natural Gas)			
N	% Reduction in Annual Individual Electricity Use	N	10%
O	Average Annual Individual Natural Gas Use (Therms)	O	900
P	Average Annual Individual Natural Gas Use Reduction (Therms)	P = N * O	90
Q	# Housing Units Impacted	Q = C / $500	398
R	Annual Community-wide Natural Gas Use Reduction	R = P * Q	35,820
S	Average Natural Gas Supply Unit Cost ($/Therm)	S	$0.3500
T	Annual Community-wide Natural Gas Cost Reduction	T = R * S	$12,537
U	Measure life expectance	U	10
V	Lifecycle Natural Gas Cost Reduction	V = T * U	$125,370
Net Energy Impact			
W	Program Cost	W = D	($200,000)
X	Annual Economic Benefit	X = K +T	$23,880
Y	Annual Leverage Ratio	Y = X / W	0.1
Z	Annual Leverage Ratio	Z = M + V	$238,800
AA	Lifetime Leverage Ratio	AA = Z / W	1.2

Program Option G: Utility-Scale Renewable Energy

Description. Utility-scale renewable energy resources (i.e. wind and solar) are being proposed in Illinois due to FEJA incentives. For reference, a 200 MW utility-scale solar array located in Illinois can generate as much as 400,000 MWh per year – slightly more than the 353,700 MWh of annual electricity consumption by all residential and commercial accounts located in Oak Park.[1] Generally, utility scale renewable energy resources are financed by monetizing federal tax and depreciation credits, the sale of Renewable Energy Credits (RECs), and the sale of electricity generated for a period of between 10 and 30 years.

The Village could purchase a volume of electricity generation from a utility-scale renewable energy resource to offset some or all of the volume of electricity consumed by all residential and commercial accounts located in Oak Park. Such an offset would require the output of as much as 175 MW of utility scale solar or 125 MW of utility scale wind generation.

Sector. Renewable Energy (Residential, Commercial, Industrial).

Goal. Offset some or all of the electricity consumption of all consumers in Oak Park with output from a utility scale renewable energy resource.

Approach. Due to physical and legal barriers, utility-scale renewable energy resources contracted or owned by the Village cannot directly supply the needs of accounts within the Village. As an alternative, the Village can offset Village consumption with the output of a utility-scale renewable energy resource located anywhere in Illinois. This offset approach is used by large corporations (i.e. Google, Amazon, etc.) to achieve their 100% renewable energy goals. Typically, offset approaches use either a 'Contract for Differences' (CFD) or simple ownership contracting structure. Under a CFD, the Village would pay a fixed price for the electricity generated from the utility-scale renewable energy resource, and then immediately sell that electricity into the wholesale market at prevailing hourly energy prices. Under an ownership approach, the Village would pay the capital cost of constructing the utility-scale renewable energy resource, and then sell the electricity generation into the wholesale market at the prevailing hourly energy price and utilize that revenue as reimbursement for the initial investment. Under both approaches, the Village would be effectively injecting an equivalent amount of renewable energy into the grid as its residents take out. Under both approaches, the Village would bear the risk of economic loss whenever the hourly energy price in the wholesale market was less than: i) the contract rate (in a CFD approach); or, ii) the cost of financing (in an ownership approach).

Operational Assessment. Staff's evaluation of the Utility-Scale Renewable Energy Resource option is pending and will be finalized once valid utility-scale renewable energy options have been evaluated.

Staff Recommendation: Staff recommends that the Village table consideration of a Utility-Scale Renewable Energy Resource pending further evaluation.

Economic Benchmarking. Staff's evaluation of the economic impacts of the Utility-Scale Renewable Energy Resource option is pending and will be finalized once valid utility-scale renewable energy options have been evaluated.

[1] 'Oak Park Baseline Metric Data', Oak Park River Forest Baseline Metric Study, Center for Neighborhood Technology, 2011

Conclusions

Based on direction from the Board and the Commission, and the above evaluation of the various Program Options to be supported by the CCA Fund, staff recommends that the Board approve a budget consisting of the following CCA Fund revenues and uses as noted in Figure 20. The proposed CCA-Fund revenue and uses budget prioritizes CCA-Fund use to those projects that can offset electricity consumption by Village residents and businesses while leaving sufficient funds in reserve to direct towards new energy efficiency or renewable energy opportunities as they become available.

Figure 20: Proposed Budget Allocations for CCA-Fund

CCA_Funds Variables		CCA-Funding (Calendar Years)						5-Year Total
		2018	2019	2020	2021	2022	2023	
CCA-Fund Revenues								
A	Funds already deposited in CCA-Fund	$1,203,388	$0	$0	$0	$0	$0	$1,203,388
B	Funds projected for deposit in CCA-Fund	$0	$400,000	$400,000	$400,000	$400,000	$400,000	$2,000,000
D	Annual Revenues for CCA-Fund	$1,203,388	$400,000	$400,000	$400,000	$400,000	$400,000	$3,203,388
D	**Cumulative Revenues for CCA-Fund**	**$1,203,388**	**$1,603,388**	**$2,003,388**	**$2,403,388**	**$2,803,388**	**$3,203,388**	**$3,203,388**
CCA-Fund Uses								
D	Project Option A-2: Parking Lot Solar Canopy	$0	-$28,616	-$28,616	-$28,616	-$28,616	-$28,616	-$143,080
E	Project Option A-3: Public Works Rooftop Solar	$0	-$11,998	-$11,998	-$11,998	-$11,998	-$11,998	-$59,988
F	Project Option C-1: Community Solar for Municipal Accounts	$0	$0	$0	$0	$0	$0	$0
G	Project Option C-2: Community Solar for CCA Program (20%)	$0	-$384,000	-$384,000	-$384,000	-$384,000	-$384,000	-$1,920,000
H	Project Option D-2: Property Assessed Clean Energy (PACE)	$0	$0	$0	$0	$0	$0	$0
I	Project Option E: LED Streetlighting Upgrades	$0	-$170,000	$0	$0	$0	$0	-$170,000
J	Project Option F: Promoting Existing Efficiency Programs	$0	-$220,000	$0	$0	$0	$0	-$220,000
K	Project Option G: Utility-Scale Renewable Energy	$0	$0	$0	$0	$0	$0	$0
L	Annual Uses for CCA-Funds	$0	-$814,614	-$424,614	-$424,614	-$424,614	-$424,614	-$2,513,068
M	**Cumulative Uses for CCA-Fund**	**$0**	**-$814,614**	**-$1,239,227**	**-$1,663,841**	**-$2,088,455**	**-$2,513,068**	**-$2,513,068**
Net CCA-Fund Balances								
N	Cumulative Revenues for CCA-Fund	$1,203,388	$1,603,388	$2,003,388	$2,403,388	$2,803,388	$3,203,388	$3,203,388
O	Cumulative Uses for CCA-Fund	$0	-$814,614	-$1,239,227	-$1,663,841	-$2,088,455	-$2,513,068	-$2,513,068
P	Cumulative Balance for CCA-Fund	$1,203,388	$788,774	$764,161	$739,547	$714,933	$690,320	$690,320

The Program Options recommended for approval by staff are projected to yield annual energy impacts (i.e. energy use reductions through energy efficiency or increased renewable energy) that rap up to approximately 10% of the projected total electricity consumption within the Village. Figure 21 conveys the projected annual energy impacts of recommended CCA-Fund Program options. As noted, energy impacts are projected to be lower in Calendar Year 2019 than in subsequent years to reflect lead times for Program implementation, equipment installations, and alignment with other external funding sources. Additionally, the energy impacts noted only reference electricity consumption within the Village and do not reference natural gas consumption.

Figure 21: Proposed Budget Allocations for CCA-Fund

	CCA_Funds Variables	CCA-Fund Program Results (Calendar Years)						5-Year Total
		2018	2019	2020	2021	2022	2023	
Energy Impact (MWh grid-sourced energy replaced or avoided)								
A	Project Option A-2: Parking Lot Solar Canopy	0	204	409	409	409	409	1,840
B	Project Option A-3: Public Works Rooftop Solar	0	75	150	150	150	150	675
C	Project Option C-1: Community Solar for Municipal Accounts	0	646	1,292	1,292	1,292	1,292	5,813
D	Project Option C-2: Community Solar for CCA Program (20%)	0	16,000	32,000	32,000	32,000	32,000	144,000
E	Project Option D-2: Property Assessed Clean Energy (PACE)	0	0	0	0	0	0	0
F	Project Option E: LED Streetlighting Upgrades	0	451	902	902	902	902	4,059
G	Project Option F: Promoting Existing Efficiency Programs	0	182	363	363	363	363	1,634
H	Project Option G: Utility-Scale Renewable Energy	0	0	0	0	0	0	0
I	**Annual Energy Impact from CC-Fund Programs (MWh)**	**0**	**17,558**	**35,116**	**35,116**	**35,116**	**35,116**	**158,020**
Energy Impact (MWh grid-sourced energy replaced or avoided)								
J	Baseline Annual Community-wide Electricity Consumption*	325,000	325,000	325,000	325,000	325,000	325,000	1,625,000
Energy Impact (MWh grid-sourced energy replaced or avoided)								
K	Annual Energy Impact from CC-Fund Programs (MWh)	0	17,558	35,116	35,116	35,116	35,116	158,020
L	Baseline Annual Community-wide Electricity Consumption*	325,000	325,000	325,000	325,000	325,000	325,000	1,625,000
M	Percent Community-wide Electricity Consumption Offset by CCA-Fund Programs	0.0%	5.4%	10.8%	10.8%	10.8%	10.8%	9.7%

* 2016 Oak Park and River Forest Community Sustainability Report Card, PlanIt Green