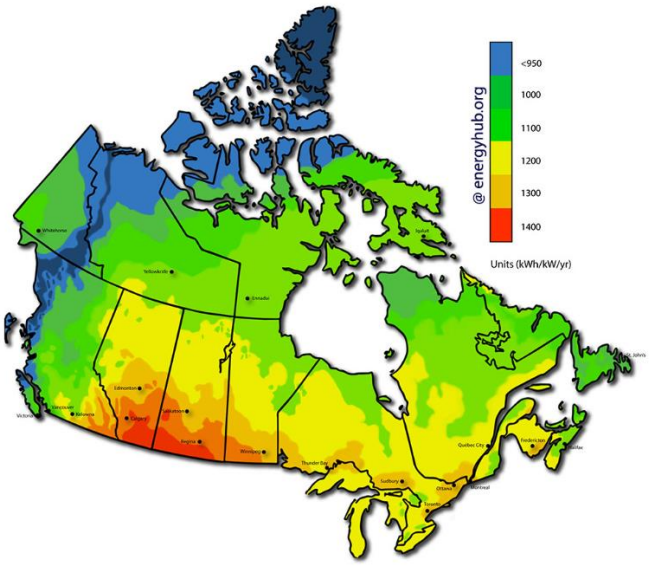
CITY BUSINESS PLAN + BUDGET

CAPITAL PROJECT CHARTER

YEAR:	2021
CHARTER NUMBER:	ENV-002
CHARTER NAME:	Solar Photovoltaics (PV) Program
LEAD DEPARTMENT:	Utilities & Environment

TYPE:	○ RMR ◉ GROWTH	
	The project is growth capital as it involves the design and installation of new technologies that improves the condition of the asset beyond its original performance standard.	
ASSET CATEGORY:	◉ Civic Facilities ○ Master Plan, Studies, & Other ○ Roads & Other Engineered Structures ○ Historical/ Cultural	○ Parks & Trails ○ Mobile & Other Equipment ○ Land & Land Improvements
SCOPE STATEMENT:	Project includes the design and installation of a roof top solar photovoltaic array for selection City owned facilities.	

PROJECT CHARTER JUSTIFICATION:	In 2015, Stantec was engaged to conduct energy and water audits on eleven civic facilities. The audit also included preliminary evaluations of feasibility and costs and benefits of the installation of solar photovoltaics (PV) at these facilities. Preliminary analysis suggested that the available roof space at these eleven facilities could produce approximately 20% of the electricity needs of the facilities if implemented across the portfolio. This level of investment in renewable energy would contribute approximately 30% towards the achievement of the City Council approved greenhouse gas target of 20% below 2008 levels by 2020 (the target equates to a total reduction of 6,471 tCO2e by 2020). If installed, the proposed solar PV installations are expected to pay for themselves within its life cycle. In addition, solar PV provide certainty of electricity costs, avoidance of carbon tax costs, reduction in greenhouse gas emissions, aligns with the implementation of Smart City technologies and advances the community sustainability vision of St. Albert by shifting to renewable fuel sources. A solar photovoltaics (PV) system employs solar panels to transform energy from the sun into useable electricity. The systems that are being recommended here are roof-top, grid connected systems that will supplant a portion of a facility's demand for electricity from the grid.

	The systems would conform to Alberta's Micro Generation Regulation and not exceed the five-megawatt limit established in that regulation. The on-site power that is generated will be used by the facility, reducing the overall demand for grid supplied electricity particularly during peak usage which will reduce both variable charges and the transmission and distribution rates. If excess power is produced, it would be sold onto the grid and the City would be paid the retail rate for that electricity. Alberta has some of the best solar production potential in Canada. The map below is a solar energy maps, which is a visual representation of the amount of energy that a solar PV system can produce based on the intensity of light that reaches the Earth's surface. This is called *Solar Production Potential*. In Alberta, you need less solar panels to produce the same amount of energy than in a province with a lower solar energy potential. The maps are presented in units of kWh/kW/year which details how much energy (in units of kWh) can be produce per year given the size of the solar power system (in units of kW).  Preliminary evaluations have been obtained for systems ranging in size-on the following facilities: Transit (301 kwDC system, complete in 2017), Fountain Park, Akinsdale/Kinex Arenas and Servus Place. Each system assumed an installed capacity equal to 15% to 30% of the facility's electricity requirements. Costs provided by one retailer generally ranged between $1.70 to $2.50 per watt installed depending on the size of the system. It is important to note that solar is scalable and the system size can be adjusted to fit the budget allocated to it; however, the larger the system the better per watt cost that can be obtained.

	Note: The Municipal Climate Change Action Centre (MCCAC) released the Alberta Municipal Solar Program Grant in mid 2016. The program provides a rebate ($/watt) based on installed solar capacity to a maximum of 30% of capital costs and a total cap of $1,500,000 per municipality (2019). In 2020, MCCAC indicated this funding has nearly been exhausted, however current funding will be available for projects in 2021. Solar PV's benefits go beyond financial payback as solar provides deep carbon reductions, avoids carbon tax, promotes a transition to renewable energy and smart technologies and reduces the risk associated with potentially volatile and escalating electricity prices. This program supports many of the goals within the Environmental Master Plan and the Pillars of Sustainability throughout the City.
STRATEGIC PLAN & CORPORATE BUSINESS PLAN ALIGNMENT:	Council Priority: 6. Environmental Stewardship Activity: 6.3 Investigate net zero residential development. Administrative Priority: N / A Activity: N / A
STAKEHOLDER IDENTIFICATION:	Facility staff and patrons of the facility chosen for the solar PV pilot will require advanced notice of the installation schedule for the system, as this project has the potential to impact scheduled programming and access to the facility during the period of installation. As well, given the environmental benefits and reduction in the facilities environmental impact, an educational and awareness program regarding the solar PV program should be conducted in conjunction with the installation of the solar array.
TIMELINE:	Servus Place is scheduled for roof improvements and partial replacement in 2021, and it is expected the roof would be ready for a large 1.0 MWDC solar PV array in Q2-Q3 2021. The timing of the future solar projects will be based on structurally roof assessments and scheduled life cycle maintenance or replacement of roof structures. The proposed solar program is flexible and can be accelerated or broken in phases on an annual basis. As indicated above, grants received through the provincial MCCAC Municipal Solar Grant program are likely available for 2021 solar PV projects however future years may not have applicable grant funding without an influx of additional funding from other levels of government.

FINANCIAL INFORMATION:	Investment Year		
		2021	$ 1,500,000
		2022	$ -
		2023	$ -
		2024	$ -
		2025	$ -
		2026	$ -
		2027	$ -
		2028	$ -
		2029	$ -
		2030	$ -
		Total	**$ 1,500,000**
			See Capital Project Worksheet for details.

OPERATIONAL IMPACTS:		(•) Yes ( ) No If yes, refer to Operating Impacts Worksheet for details.
ASSOCIATED OPERATING BUSINESS CASE:		

APPROVAL

Author:	Christian Benson, Manager Environment	September 16, 2020
	Project Charter Developer	Date
Director:	Kate Polkovsky	September 23, 2020
	Director	Date
DCAO/CPO:		
	Deputy Chief Administrative Officer/Chief People Officer	Date

CAPITAL PROJECT WORKSHEET

PROJECT COMPONENT	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Land Determined Costs										
Concept Planning										
Detailed Planning and Design										
Site Servicing										
Strucure/Building Construction										
Landscaping										
Construction Management										
Commissioning and QA/QC										
Contingency										
Public Participation Activities										
Equipment	1,500,000	-								
TOTAL	**1,500,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Please note Public Art is budgeted separately on the Ten-Year Capital Plan.

Comments:
2021: one large solar PV installation at Servus Credit Union Place.

OPERATING IMPACTS WORKSHEET

○ One Time ◉ Ongoing	Building Maintenance - Each system has an estimate annual maintenance impact based on size of system. This ranges from $200 for small systems (<20 Kw) to $16,000 (for over 1 MW). It is unlikely that maintenance would be required in the first few years of operation of the systems.

OPERATING IMPACTS	**2021**	**2022**	**2023**
Building Maintenance Cost	NA	NA	NA
Cost Avoidance (electricity)			
Servus Place	$80,000	$80,000	$80,000
TOTAL	**$80,000**	**$80,000**	**$80,000**