Potential Utility Scale Solar Power Plant Financial Programs

The following four programs are possible ways SL&P could finance, build, and operate a solar power plant. The following four programs compare a 1 megawatt (MW) installation, which is the estimated size of a power plant at Parcel M. Each program compares the financial return over a 25-year term. The economic impact is calculated by comparing the traditional model of purchasing the electrical energy from SaskPower against the cost of electrical energy from the new solar power plant. The financial calculations assume a price on carbon starting at $10 per tonne carbon dioxide equivalent (CO_{2eq}) and increasing by $10 per year until the price is $50 per tonne CO_{2eq}.

Program No. 1 – Direct Investment

Under this program, SL&P will build and operate the 1 MW solar power plant using its crews. The project will be financed using 100% debt. Generated power will be used for reselling to customers reducing the amount of electrical energy needed from SaskPower.

Details	
Size of Power Plant:	1 MW
Capital Cost:	$3.54 M
Loan:	$3.18 M
1st Year of Operation:	2020

Economics	
Return of Investment after 25 years	-$0.6 M
Simple Payback:	11.8 years
Payback w/ Loan Costs	22.2 years
Internal Rate of Return	1.86%
Discount Rate	3.5%

Program No. 1 Values

Finance	Social	Environment
Neutral	Good	High

The program will:

- ✘ Improve energy affordability for local residents and local businesses.
- ✓ Keep "energy dollars" in the community
- ✓ Create local and/or regional jobs
- ✓ Attract new investment to the community
- ✓ Support community health goals (improved air quality, active transport)
- ✓ Increase energy resilience

The financial impact on SL&P will be neutral, although the yearly return on investment provided to the City would be reduced for the next 20 years to pay off the loan. At the end of the project term, SL&P would own depreciated assets approximately equal to the lost revenue amount.

Through the program, new and interesting work would be created for the SL&P staff with the construction and operations of the solar power plant. The Carbon credits would belong to the City who could apply the credits towards its CO2eq reduction targets.

Program No. 2 – 3rd Party Investment

Under this program, SL&P would contract an Independent Power Producer (IPP) to finance, build, and operate a solar power plant. The IPP would sell the generated electrical energy to SL&P. Generated power would be used for general purpose to reduce the amount of electrical energy needed from SaskPower.

Details	
Size of Power Plant:	1 MW
Capital Cost:	$0
Loan:	$0
1st Year of Operation:	2020

Economics	
Return of Investment after 25 years	-$2.2 M
Simple Payback:	-
Payback w/ Loan Costs	-
Internal Rate of Return	-
Discount Rate	-

Program No. 2 Values

Finance	Social	Environment
Poor	Neutral	High

The program will:

- ✘ Improve energy affordability for local residents and local businesses.
- ✘ Keep "energy dollars" in the community
- ✓ Create local and/or regional jobs
- ✓ Attract new investment to the community
- ✓ Support community health goals (improved air quality, active transport)
- ✓ Increase energy resilience

The IPP would finance the project and own the capital with no upfront costs for SL&P. Instead, SL&P would pay a premium rate for the electrical energy and reduce its return on investments to the City by approximately $100,000 per year to pay the premium rate. The Carbon credits would belong to the City who could apply the credits towards its CO_{2eq} reduction targets.

Program No. 3 – Virtual Net Metering

SL&P would create a Virtual Net Metering Program that would allow customers to install their own solar power equipment. SL&P customers would finance and build solar power systems in a designated area. The electricity generated from the customer's solar power system would be used to reduce their electricity cost at the home or business.

Details	
Size of Power Plant:	1 MW
Capital Cost:	$0
Loan:	$0
1st Year of Operation:	2020

Economics	
Return of Investment after 25 years	-$3.5 M
Simple Payback:	-
Payback w/ Loan Costs	-
Internal Rate of Return	-
Discount Rate	-

Program No. 3 Values

Finance	Social	Environment
Poor	High	High

The program will:

- ✘ Improve energy affordability for local residents and local businesses
- ✓ Keep "energy dollars" in the community
- ✓ Create local and/or regional jobs
- ✓ Attract new investment to the community
- ✓ Support community health goals (improved air quality, active transport)
- ✓ Increase energy resilience

This program would provide high customer satisfaction but would have significant financial impact on SL&P. The negative economic impact would occur from the loss of sales as customers generate electricity. Under the program, SL&P would create new revenue sources for land lease rentals and operating the facility. Carbon credits would belong to the City who could apply the credits towards its CO2eq reduction targets.

Program No. 4 – New Rate Class

SL&P would create a new rate class to sell a bundled package of electrical energy and carbon credits. A bundled rate class is the preferred method for large corporations like Google Inc., who power their operations with 100% renewable power. The program would be designed to be financially neutral and would add new services to customers.

SL&P would build and operate the 1 MW solar power plant. The project is financed using 100% debt. Power generated from the solar power plant would be used for general purpose. Generated electrical energy reduces the amount of electrical energy purchased from SaskPower.

Financially, the program would be net neutral, although SL&P would reduce its return on investment to the City for 20 years to pay the loan costs. Carbon credits would belong to the client.

Details	
Size of Power Plant:	1 MW
Capital Cost:	$3.54 M
Loan:	$3.18 M
1st Year of Operation:	2020

Economics	
Return of Investment after 25 years	$0 M
Simple Payback:	11.0 years
Payback w/ Loan Costs	21.2 years
Internal Rate of Return	2.61 %
Discount Rate	3.5 %

Program No. 4 Values

Finance	Social	Environment
Neutral	Good	Neutral

The program will:

- ✓ Improve energy affordability for local residents and local businesses
- ✓ Keep "energy dollars" in the community
- ✓ Create local and/or regional jobs
- ✓ Attract new investment to the community
- ✓ Support community health goals (improved air quality, active transport)
- ✓ Increase energy resilience