



## **Return to Written Question**

**Asked by: Adam Arreak Lightstone**

**Asked of: Hon. Jeannie Ehaloak**

**Number: 034-5(2)**

**Date: June 7, 2019**

**Subject: QEC Solar Panel Project**

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**Question 1: What solar panel make and model was selected for the Iqaluit project?**

**Response:** The Iqaluit project panels were made by Jinko Solar and they were JKM 265P-60 245-256 watt panels.

**Question 2: Why did the QEC select these particular solar panels?**

**Response:** This project was initiated, funded, and designed by the National Research Council (NRC). QEC was not involved in the process to select this particular model of solar panels.

**Question 3: How does this specific solar panel compare in quality to other make and models?**

**Response:** With the rapid changes in solar panel technology, QEC does not possess the expertise to provide an up-to-date comparison of models.

**Question 4: How did the QEC decide that 11 panels would suffice?**

**Response:** This project was initiated, funded, and designed by the NRC. QEC was not involved in the process to determine the number of necessary solar panels.

**Question 5: What inverter make and model was selected for the Iqaluit project?**

**Response:** The Iqaluit project uses a Fronius Galvo 2.5-1 208-240 inverter.

**Question 6: Why did the QEC select this specific inverter?**

**Response:** This project was initiated, funded, and designed by the NRC. QEC was not involved in the selection of this specific inverter.

**Question 7: How did the QEC determine the location of the panels?**

**Response:** The NRC conducted a site visit to the power plant in Iqaluit. They selected the location based on the best orientation and availability of solar energy.

**Question 8: What certified electrical contractor was hired to install the system?**

**Response:** Green Sun Rising installed the system.

**Question 9: Why was this company chosen to perform the installation?**

**Response:** The contract for installation was completed through an RFP.

**Question 10: Where any local technicians or QEC employees trained on solar installation or operation as part of the project? If so, what did the training involve?**

**Response:** There was a training for QEC's electricians at the Iqaluit plant which covered operation and troubleshooting procedures for the solar installation.

**Question 11: Who performed the final inspection?**

**Response:** The Government of Nunavut's Electrical Inspector performed the final inspection.

**Question 12: What were the results of the inspection?**

**Response:** The installation was approved following the inspection.

**Question 13: What was the purchase price of the;**

**a. Solar panels;**

**b. Inverter;**

- c. Additional equipment to monitor performance;
- d. Other?

**Response:** a. Solar panels: \$7100 (this was for 16 panels and 5 replacement panels)  
b. Inverter: \$1700  
c. Additional equipment to monitor performance: \$8200 for an ION power meter. This device allows QEC to study the power quality of the system in greater detail than a regular household meter.  
d. Other: N/A

**Question 14: What was the transportation cost of the;**

- a. Solar panels;
- b. Inverter;
- c. Additional equipment to monitor performance; and
- d. Other?

**Response:** The breakdown provided to QEC by the NRC does not breakdown the cost of shipping by component. The total cost of shipping items to Iqaluit was \$3,600.

**Question 15: What was the installation cost of the**

- a. Solar panels;
- b. Inverter;
- c. Additional equipment to monitor performance; and
- d. Other?

**Response:** The tender process was for a lump sum and did not include a breakdown by component. The total cost of installation was \$48,000.

**Question 16: What other costs were included in the \$73,000 total project cost?**

**Response:** Additionally, QEC's in-kind contribution of employee's time/wages were incorporated into this calculation. This totaled roughly \$5,000.

**Question 17: Have the solar panels performed as expected?**

**Response:** Yes. They have produced power within their capacity and provided QEC with information on solar generation in the Arctic.

**Question 18: Can the QEC share the total energy generated from this project so far, as well as how much energy the panels generate each month?**

**Response:** As of May 17, 2019 the solar installation had generated 9313.5 kilowatt hours of energy. Due to the Arctic's unique solar environment monthly generation dates

fluctuate considerably. In 2018, the highest solar generating month produced roughly 500kWh, while the lowest generation month produced fewer than 20kWh.

**Question 19: What lessons did the QEC learn from the project?**

**Response:** The data gathered has shown that solar installations are a viable method of power generation for QEC moving forward.

**Question 20: Has the pilot project helped the QEC to develop other potential renewable energy projects?**

**Response:** The information gathered from this installation has allowed QEC to plan other solar projects. This includes the upcoming solar generation project in Kugluktuk.

**Question 21: If the project were to be repeated, what would be done differently?**

**Response:** This project functioned as intended and did not impact customer rates as a result of external funding. It would be an ideal project model to replicate.

**Question 22: Are the results from this project helping to inform the QEC on how to shape their renewable energy policies as they move forward?**

**Response:** This installation gave QEC firsthand experience with renewable energy projects in Nunavut. This included an analysis of energy generation potential and how it fluctuated season to season.

**Question 23: What other relevant information would Nunavummiut gain from the QEC's solar panel project?**

**Response:** The scope and information gleaned from this project has been fully outlined in this response.

**Question 24: What sort of maintenance has been required on this solar project, and at what cost?**

**Response:** There has been no maintenance required thus far.

**Question 25: Does the QEC have end-of-life concerns for solar energy systems?**

**Response:** Yes, QEC is cognizant that proper end-of-life disposal is important. Ensuring that disposal is completed efficiently and safely is something that will be addressed in the implementation of the Independent Power Producer program.

**Question 26: How long do they expect the panels to last, and can they be recycled at the end of their lifetime?**

**Response:** The life expectancy for solar panels ranges from 20-30 years. Solar panels can be recycled at the end of their life.

**Question 27: Will QEC roll out any incentive programs to assist Nunavummiut to take part in the net metering program?**

**Response:** No, QEC will not have an incentive program. This would impact rates for customers in order to pay for a select few who would benefit from the incentive.