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Asked by: Adam Arreak Lightsone

Asked of: Hon. Patterk Netser, MLA
Ministers Responsible for the
Nunavut Arctic College

Number: 053-5(2)

Date: November 7, 2019

Subject: NAC Solar Power System

I would like to thank the Mr. Lightstone for his written question dated November 7, 2019. In this written question, you requested additional information on NAC's Solar Power System, following up from responses NAC provided you on June 5, 2019, which was in response to written question 35-5(2).

The questions you raised in your submission center on the solar panels found at the front of the Nunatta Campus: their hardware specifications, installation, inspection, costs, performance and evaluation. I would like to provide you with additional context about this project. It is my hope that these answers will provide you with the relevant information you are requesting. In addition, I will also provide you with some plans the College has for renewable energy projects in the future.

In response to your questions regarding the Solar Panel Hardware (specifications, installation and inspections), questions 1 – 12 in your submission, I will share with you some background information that I believe will provide you with relevant context that informed NAC's initial responses to your questions.

The Federal Government, specifically Natural Resources Canada (NRCan), led the project on the installation and data collection on solar panels. This project was initiated to fill an important gap in available research, namely, how does sustainable energy technology function in the north. In understanding this gap, NRCan sought partners for a "research collaboration on Photovoltaic (PV)

system performance north of the 60th parallel.” Nunavut Arctic College was approached to participate in this research, namely, to be a site where NRCan could install their PV system and store their related monitoring systems.

As explained to the College, NRCan decided to focus its research on a PV system because this type of system does not contain moving parts, is virtually silent and it does not release atmospheric emissions. Also, importantly, it is also a system that is difficult to monitor performance, hence the interest in additional research.

I highlight this background to explain that NAC’s participation in this research was minimal, practical and basic. NAC was not involved in the selection of technology; therefore, NAC is unable to provide you with the specific information you were seeking in asking questions 1 -7.

In terms of the installation of the PV system, and in response to questions 7-12 of your submission, NRCan was responsible for installing the necessary sensors, as well as the monitoring and communications equipment. The communications equipment allowed NRCan to communicate with the equipment and data remotely. Again, NAC’s only participation was to provide space for NRCan to set up their necessary equipment, and to provide accesses to this equipment when they needed to inspect, install, or conduct maintenance on the equipment.

Regarding your questions around the costs associated with this project, question 13 – 16, including all sub questions, it is my hope that the information I provided you in this response again provides you with relevant context. Namely, NRCan incurred all costs for this project. Reporting for these costs will have occurred within the Federal Government’s financial reporting requirements, and NAC does not have access to that information. In speaking directly to the costs to NAC, they are minimal at best. NAC’s role in this project was to provide NRCan with space on the outside of a building, as well as storage space, and access to monitoring and communications equipment.

Your questions about performance, results and evaluation, questions 17 – 26 of your submission, are valid. In NAC’s response to your initial submission, it references the report *Performance Monitoring of the NAC PV System: Nine Years of Reliable Electricity Generation*. Again, as the College’s participation occurred within the context of a larger North of the 60th parallel grouping, the data from the NAC specific site can best be evaluated within the context of the whole project. The data collected from the NAC site specifically seems to confirm that the panels performed as expected. Regarding your request for additional information on results and evaluation of the project, please note that this data is not held by NAC. This inquiry would best be directed to the research lead of this project, which is NRCan. It is worth mentioning again that any evaluation on the NAC specific performance would be based on the performance in relation to the other sites in this research.

I do hope this information provides you with relevant context in which to interact with the answers NAC previously provided.

I would like to also respond to the larger question I think you are asking in this written submission, that being “what is the Nunavut Arctic College doing to increase knowledge, training and experience on the use of sustainable energy and technology in Nunavut”. This is a very important question and is an important discussion to have. I appreciate your interest in this area, as I too believe it is an important area to develop in our territory. I believe that this discussion can begin by having a conversation that is different than what is provided in your written submission, a conversation that is spurred on by asking a broader question, namely, what are NAC’s future plans to improve science research and education, particularly as they relate to sustainable and alternate forms of energy technology in Nunavut?

Answering this question would involve different parts, parts that I will summarize for you below.

- Sustainable/Alternative Energy is on the College’s radar, particularly in relation to future program development offered by the College, and future Research potential.
- The College’s Environmental Technology Program (ETP), a program that is popular and has a long, successful history, represents the way in which NAC approaches science-based programming in Nunavut. While the gap between ETP’s 2-year diploma program and a robust science degree program that has space within its curriculum to explore topics like sustainable energies, seems very large, I would encourage you to think otherwise. The College has publically stated its intention to work towards developing a Bachelor of Science degree program. Successfully delivering a science degree program for Nunavut students is an important step in broadening the College’s engagement in the sciences.
- The programming and curriculum offered by Piquisilivvik in Clyde River is rich in Inuit Traditional Knowledge, including Inuit “scientific” knowledge. Knowing the land, reading weather patterns and developing tools that support Inuit engagement with the land and weather are foundational offerings the College intends to draw from as it seeks to develop its Science program.
- The Nunavut Research Institute is Nunavut’s research licensing body. Reviewing its Research Compendium, which is developed annually, does confirm that significant research is being conducted on climate change in Nunavut. Future efforts could be placed on encouraging the growth of research related to sustainable energy sources. NRI is well connected to networks of researchers in multiple disciplines, and hence, are ideally positioned to help identify, promote, and broker new research and technology development projects in Nunavut.

- In addition, NRI's senior research officer is a member of the Northern Energy Consortium (NEC) led by Yukon College under an NSERC Industrial Research Chair. The NEC is leading new innovative research into northern renewable energy generation systems in Yukon, Nunavut and NWT, with an aim to reduce our communities' reliance on diesel-generated power. Community "grid integration" studies are underway in Cape Dorset and Arviat.
- NAC's Board of Governors has approved NAC's Taxonomy. The Taxonomy provides the necessary structure from which future programs are developed and evaluated. Science is included in the taxonomy. This means that all future College programs will be evaluated for its science content.
- NAC has signed a 10- year Memorandum of Understanding with the Memorial University of Newfoundland. This partnership affirms collaboration between our two institutions in the areas of program development, research and staff and professional development. While the terms of this collaboration have still yet to be developed, I do believe science and research around sustainable energy could be an area for future collaboration. Memorial University offers a class on Renewable Energy Systems within its Faculty of Engineering and Applied Science. It also has an Environmental Science Program, which is a graduate level program that complements its Engineering & Applied Science Program and its Environmental Engineering Program. The potential for partnership and collaboration in this area is brimming with possibility.
- Memorial University is also participating in important and innovative research. Early in 2019, Memorial University, along with Dalhousie and the University of Prince Edward Island, were awarded 16 million dollars from the Ocean Frontier Institute. This award, which allowed these universities to examine the impact climate change is having on coastal communities, has two research streams: one that focuses on the ecosystem of the North Atlantic, and the other, on the dynamic relationship between coastal communities and the oceans. As part of the latter focus, it examines how coastal communities are impacted by the rapidly evolving social, institutional and economic conditions, as well as how these factors impact the marine environment. While this example points to research in climate change specifically, it also signals the potential collaboration that NAC could be a part of.

In closing, I would like to say that I truly believe Nunavut Arctic College is at the cusp of becoming an important player in Arctic science, research, training and education, not only in Nunavut, but across Inuit Nunagat, nationally as well as within the circumpolar community. The College will continue to seek out partners – both existing and new - to continue this important work in a collaborative, respectful and meaningful manner.