

STAFF REPORT: Office of The Chief Administrative Officer



REPORT TO: Council
MEETING DATE: August 30, 2010
REPORT NO.: CAO.10.15
SUBJECT: Feasibility Study for Solar Photovoltaic
PREPARED BY: Paul Graham,
Chief Administrative Officer

A. Recommendation

THAT Council receive Report CAO.10.15 entitled "Feasibility Study for Solar Photovoltaic" for their purpose and;

THAT Council authorize Staff to engage Byron J. Landry & Associates Inc. to complete the development of a Feasibility Study for Solar Photovoltaic at the site of the Thornbury Waste Water Treatment Plant and The Blue Mountains Landfill site at a cost of \$26,150 plus HST, as outlined in their Proposal dated August 20, 2010.

B. Background

The Province has announced a Program to stimulate the construction of Solar Photovoltaic installations throughout the Province. The Province is offering very attractive Power Purchase Agreements for electricity produced and connected to the Power Grid.

Both the site of the Thornbury Waste Water Treatment Plant and The Blue Mountains Landfill Site have the potential to become feasible projects. We have invited the firm of Byron J. Landry & Associates Inc. to submit a proposal to develop a Feasibility Study for a Solar Photovoltaic installation at these two sites. We attach a copy of their Proposal for Council's information.

We have not followed The Blue Mountains' Purchasing Policy in this regard. We have invited Byron J. Landry & Associates Inc. to submit this Proposal in order to expedite this Study. The Town's Chief Administrative Officer has a long working history with this Firm and therefore recommends that Council authorize Staff to retain the services of Byron J. Landry & Associates Inc. for the purpose of carrying out this Feasibility Study.

C. The Blue Mountains' Strategic Plan

The Strategic Plan anticipated the creation of a "Green Plan", which is currently known as The Blue Mountains Sustainable Path. Both the Strategic Plan and The Blue Mountains Sustainable Path recognize energy as a significant opportunity as we move into the future. If either or both of these sites become viable Solar Parks, there will be a new revenue stream created which will assist in the long-term financial sustainability of the Town.

D. Environmental Impact

The production of renewable energy such as Solar has resulted in a reduction of Green House Gases and local smog related air contaminants.

E. Budget Impact

The cost of this Feasibility Study is \$26,150 plus HST. Funds were not budgeted in the 2010 Budget Process and we are, therefore, recommending that these costs be taken from our Working Capital Reserve. Should a viable project proceed in the future, the Working Capital Reserve would be replaced with a sum at least equivalent to the funds withdrawn from the Reserve for the purposes of this Feasibility Study.

F. Attachment

1. Proposal for the Development of a Feasibility Study for Solar Photovoltaic dated August 20, 2010.

Respectfully submitted,

J.P. (Paul) Graham, P. Eng.
Chief Administrative Officer

For more information, please contact
Paul Graham
pgraham@thebluemountains.ca
519-599-3131 ext. 234

PROPOSAL
(in response to RFP dated July 19, 2010)

**The Development of a Feasibility Study for Solar
Photovoltaic**

August 20, 2010

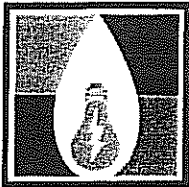
Prepared for:

The Blue Mountains

26 Bridge St. E., Box 310
Thornbury ON N0H 2P0

Prepared by:

Byron Landry, P. Eng., CEM, CEA



**BYRON J. LANDRY
& ASSOCIATES INC.**

1498 York Mills Drive
Ottawa, ON K4A 2N4

In collaboration with

Arborus

*Robin Hutcheson, P. Eng., LEED AP
Arborus Consulting
33 Arlington Ave.
Ottawa ON K2P 1C1*

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APPENDIX A. PROFESSIONAL QUALIFICATIONS AND EXPERIENCE

1. UNDERSTANDING OF THE BLUE MOUNTAINS' KEY REQUIREMENTS FOR THIS ASSIGNMENT

It is understood that that The Blue Mountains seeks to determine the feasibility for the construction and operation of a ground mounted solar facility under the OPA's Feed In Tariff program. The feasibility study shall evaluate the potential and 25 year business case for the two sites identified in the Terms of Reference. The scope of work has been identified as follows:

Part 1 - Site Evaluation & Generator Connection Feasibility

Evaluate the site as indicated in the Terms of Reference.
Consult with Hydro One under the Pre-FIT Consultation phase of the FIT program to determine distribution and transmission connect ability. The timeline for the response from Hydro One is expected to take 15 days. If there is generation connection capacity available, the second phase of this study will proceed.

Part 2 – Business Case

Develop a 25 year financial plan including all approval, installation, O&M and decommissioning costs as outlined in the Terms of Reference.

(The Terms of Reference for this assignment that were developed by The Blue Mountains are acknowledged and will not be repeated in this document).

2. PROJECT RESOURCES AND RELATED EXPERIENCE

2.1. Proponent's Team

The Proponent for this proposal is Byron J. Landry & Associates in collaboration with Arborus Consulting. The Proponent has over ten years of experience with renewable energy generation and over twenty-five years experience with buildings and energy engineering. More specific to this assignment, the Proponent has direct experience as a developer of solar facilities and is currently engaged in number of assignments related to the scope of work identified in the Terms of Reference.

Byron Landry and Robin Hutcheson of Arborus Consulting have been collaborating on projects since 2003 and have developed a strong working relationship. Their individual skills in field of energy analysis are complimentary, bringing a considerable technical competence to the assignment.

The key experience that makes this Proponent an ideal candidate for this assignment is the two years spent creating a solar development company and delivering a fully permitted and contracted 30MW solar park facility (construction value: \$120-150 Million). The Proponent was the founder of Solaris Energy Partners and the person responsible for developing the Stardale Solar Park. In September of 2009, Solaris and the Stardale project were sold to a European-based renewable energy development and financing company. As a result, the Proponent has gained a full understanding of solar development issues and financial modeling for development and company operations.

In addition, the Proponent is currently engaged in a number of consulting capacities, including cost and energy production analysis, design engineering and development consulting. Project delivery models include design for tender and construction, rooftop and land lease.

2.2. Proposed Resources

For this project, Byron J. Landry & Associates has drawn on its consulting network to create a team of senior specialists, ideally suited for the schematic conceptual design and feasibility analysis of the potential solar project.

The proposed project and team leader would be Byron Landry, P. Eng., CEM, CEA, who has over 30 years experience working in the field of sustainable energy and efficiency. His work over this period has made him a respected leader in the discipline of Energy

Management. Mr. Landry's past experience includes key energy advisory services towards the development of Greater Sudbury's Community Energy Plan, including related initiatives in solar, wind power, biomass and geothermal opportunities. He will be responsible for the management of the project to ensure accuracy and quality of outputs within the schedule and budgets specified. Mr. Landry will also offer input to the Mechanical engineering design development aspects of the assignment.

Supporting Mr. Landry on all electrical engineering aspects of the assignment will be Robin Hutcheson, P. Eng., LEED AP from Arborus Consulting. He will be responsible for the conceptual design of the ground mounted solar facility and its integration with the municipality's systems. He will research and provide up to date installed cost estimates for the solar system under investigation. Mr. Hutcheson will also be responsible for the definition of the approvals of utilities, municipal, regional, provincial and federal agencies, for identifying funding opportunities for the proposed project and for the financial modeling and analysis of project scenarios.

Professional profiles of the proposed lead specialists are included in Appendix "A" of this document.

3. APPROACH TO THE RFP'S SCOPE OF WORK

The Proponent has designed and installed a number of systems since 2000 (referenced in Appendix "A" of this proposal). While experience is important, it is also very important to be working with the realities of the new FEED-In-Tariff (FIT) program. The key issue surrounds the "Domestic Content" rules; projects that reach commercial service after 2010 must have 60% Domestic Content and this consideration would be factored into our approach to this assignment.

The Proponent developed relationships with product and service provider companies from the global solar market during the period of the Renewable Energy Standard Offer Program (RESOP). Since the release of the FIT program, we are meeting with product providers on a regular basis to understand their plans to move manufacturing to Ontario. As a result, we have developed a suite of technology options for pre and post 2011 deployment strategies that would be considered in the analysis phase of this project.

The quality of the business case is highly dependent on reasonable cost estimation. The Proponent is currently engaged in a number of detailed costing and energy production assignments. These projects have resulted in a body of knowledge around the cost of installation for a variety of systems, including ground mount fixed, ground mount tracking, flat and pitched roof mounted. This knowledge would be leveraged in our approach.

The business case is also highly dependent on energy modeling. The Proponent uses PVSYST for energy production modeling with the Meteonorm weather database. These are the industry standard tools for systems seeking financing.

As a solar developer, the Proponent has worked in a detailed manner to determine cost and revenue streams as well as detailed deployment plans for the approvals, design, construction and operations. As a consultant, some of our recent assignments involved the detailed cost analysis of the following arrangements:

- 10MW Ground Mount
- 2MW Ground Mount
- 500kW Ground Mount
- 100kW Flat Roof mount
- 10kW MicroFIT roof, ground mount and tracking systems

4. PROJECT BUDGET

The proposed professional fees and expenses for this assignment are outlined as follows:

Phase or Cost Element	BJL	Arborus	Travel Expenses
Part 1: Site Examination & Connection Feasibility	\$3,225	\$7,670	\$930
Part 2: Business Case	\$4,575	\$9,200	\$550
<u>TOTAL</u>		<u>\$26,150</u>	

The total professional fees to complete this assignment in accordance with the Terms of Reference would total \$26,150 + HST. The project deliverables would include ongoing communication through e-mail messaging and the submission of DRAFT and FINAL Reports.

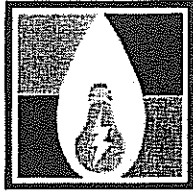
Invoicing terms: Progress billings with 45% payable upon completion of Part 1, 40% upon submission of a Draft Report for Part 2, , 15% balance payable upon submission of Final Report at the conclusion of the assignment. (Net 30 days).

5. PROJECT SCHEDULE

Factoring the availability of the proposed resources and typical turnaround times for the receipt of critical information from outside parties, the following project schedule is considered to be indicative. Every effort would be made to adhere to these timelines, assuming a high degree of responsiveness and cooperation between all parties involved. Any slippage in the authorization process for this assignment or responsiveness by outside parties such as the Utility would shift the schedule accordingly.

Project Event	Time Frame (2010)
Project initiation and site visit	Wk of Sept 6
PreFIT application to Hydro One	By Sept 27
<i>(Typical turnaround \approx 15 business days)</i>	
Submission of Part 1: Site Examination and Connection Feasibility Report	By Oct 20
<i>(Assuming Hydro One response is received by Oct 15. Their response will determine the Go/No Go input to Part 2)</i>	
Submission of Part 2: Business Case Feasibility Report	By Nov 5
Final review by Client and Project Close	By Nov 23

Appendix A. Professional Qualifications and Experience



**BYRON J. LANDRY
& ASSOCIATES INC.**

Byron J. Landry, P. Eng., CEM, CEA
1498 York Mills Drive
Ottawa, Ontario
K4A 2N4
(613) 841-0769

Byron Landry is an independent Energy Advisor with 32 years of experience in both energy production and utilization. His knowledge includes an understanding of energy efficiency strategies, central plants and thermal power generation systems, load assessments and economic evaluation.

Skills and Assets

Extensive professional experience in the energy sector. Twenty years as Chief Engineer of Energy with a consulting engineering firm have yielded a knowledge of energy consumption patterns, industrial plant operations, utility cost reduction measures, training and technology transfer, cash flow and life cycle economic analysis, investment risk assessments and formulation of funding options for international power generation projects. Experience with a power utility and major boiler manufacturer at beginning of career has provided a firm foundation in applied energy conversion systems at the operational level.

Proven Communications Skills

Career success has relied heavily on proven written and verbal communications skills. Past training assignments, speaking engagements, professional secondments and dialogue with senior management in industry and government required effective communications on a wide range of energy related issues.

Career Profile

Byron J. Landry & Associates Inc.
May 2001 – to date

Provide energy consulting support to a broad range of industrial/commercial/institutional sector clients, aimed at reducing utility and operating costs. Client base includes Vale (formerly Inco Limited), 3M Canada, National Research Council, Union Gas, Enbridge, Abbott Laboratories, BPB Canada, NRCan, CEA Technologies Inc., AECL, IKO Industries, RCMP, Canadian Coast Guard, Transport Canada, Flakeboard Company, Papier Masson, Ottawa Health Sciences Centre.

J. L. Richards & Associates Ltd.
Ottawa, Ontario
February 1981 to May 2001

Chief Engineer - Energy
Responsibilities:

- Develop all energy-related business on behalf of the firm, including marketing and proposal preparation.
- Manage all energy related assignments while maintaining a “hands on” involvement in projects.
- Conduct energy audits and cogeneration feasibility studies in industrial plants and commercial facilities.
- Analyze and direct the installation of industrial utility monitoring and targeting systems.
- Conduct independent third party reviews of energy performance contracting proposals for public and private sector clients.
- Prepare and present energy related training courses and workshops.

Selected Achievements

- Successfully fulfilled the role of catalyst for Inco Ltd. to accelerate the rate at which improvements in energy use are being made, resulting in annual energy budget reductions of \$ 18 million over a four year period. Earned client trust by being assigned as a resource to Corporate Internal Audit team.
- Acquired a broad knowledge of plant processes and contacts from completion of 200+ industrial energy audits such as Labatt's, Kellogg's, Pepsi-Cola, Ault Foods, Nestle, Celanese Canada, Dupont, Essroc Cement, Inco, Canada Packers, Monarch, Loblaw's, Abbott Laboratories, Nordion, Champlain Foods. Commercial sector facility audits include Bell Canada, Royal Bank Centre, Metropolitan Life Centre, St. Lawrence College (Cornwall Campus).
- Served on a three-year secondment to the Association of Consulting Engineers of Canada to disseminate information on energy efficient practices and transfer of existing or new technology to the private sector.
- Established working relationships with leading energy consultants from the U.K., who have key specialized experience in emerging European technologies and new developments.
- Developed a Community Energy Plan for The City of Greater Sudbury, in collaboration with Earthcare Sudbury's Technical Advisory Committee. Provided specialist advice on a broad portfolio of Renewable Energy Technologies.
- Co-authored a handbook "Energy Management Information Systems -- Achieving Improved Energy Efficiency", published by NRCan.

Combustion Engineering Superheater Ltd.

Ottawa, Ontario

February 1980 to February 1981

Conducted performance testing of steam boiler systems and environmental emissions for the power generation and pulp and paper industry.

Ontario Hydro

Toronto, Kingston and Port Dover, Ontario
May 1978 to February 1980

Assigned to Lakeview, Lennox and Nanticoke Generating Stations. Gained varied "hands on" experience in the maintenance and operation of boilers, turbines and auxiliary equipment in the station's production groups.

Education

B. Eng., Mechanical Engineering
Carleton University, 1978

Bilingual

Ability to communicate in English and French.

Memberships and Certifications

- Professional Engineers of Ontario
- Association of Energy Engineers, Senior Member: **Certified Energy Manager, Certified Energy Auditor**
- Cogeneration Institute
- ASHRAE (Past-President, Ottawa Valley Chapter)

Robin Hutcheson, P.Eng., LEED AP

President – Arborus Consulting

Profile

- Over 25 years experience in consulting engineering, project management, construction and operation & maintenance.
- Experience as project manager with Univex Electrical Contractors.
- Utility Scale Photovoltaic Generating Facilities - Currently working with a number of clients developing solar facilities ranging from 10kW to 30MW.
- Delivered 30 MW of contracts with the Ontario Power Authority. Executed all phases of the approvals for the 30MW Stardale Solar Park.
- Building Integrated Renewable Energy – engineer for the first grid connected solar system in Eastern Ontario
- Designed and supervised construction of commercial solar energy systems in Ontario, Alberta and Argentina.

Positions Held

- Vice President, Solaris Energy Partners (2006-09)
- Director of Engineering and Energy - North of 58 Aboriginal Technology Company, Deline, NWT. (2000-2001)
- Lead Electrical Engineer - Frontec Corporation, Ottawa (1995-1997)
- Project Manager/Design Engineer - Univex Canada, Contractors & Design Engineers (1994-1995)
- Senior Electrical Designer - Clemann Large Patterson, Consulting Engineers, Ottawa (1986-1991)
- Electrical Designer - Goodkey Weedmark & Assoc., Consulting Engineers, Ottawa (1982-1986)

Education

- Lakehead University, 1992-94
- Ryerson Polytechnical Institute, 1979-1982

Key Project Experience for Arborus Consulting

Utility & Large Scale Commercial Photovoltaic Projects

- Dryden Solar Park – 5MW solar park development for the City of Dryden. Phase 1: FIT program application (completed) Phase 2: design phase (ongoing). Contact: Paul Leitch, Johnson Controls International, paul.d.leitch@jci.com
- 2MW and 500kW solar facilities pro-forma analysis for Waste Management (ongoing). Contact: Remi Godin, P.Eng., Landfill Engineer, Waste Management, rgodin@wm.com
- 500kW rooftop solar facility design services for Enfinity Canada - Contact Chris Young, Country Manager, Enfinity Canada, cyoung@enfinitycorp.com
- Stardale Solarpark – Technical and land use approvals and EPC tendering for 30MW project. Project sold to Enfinity Canada. Contact Chris Young, Country Manager, Enfinity Canada, cyoung@enfinitycorp.com

Small & Medium Scale Commercial Projects

- 100kW & 10kW solar facilities pro-forma analyses for Waste Management (ongoing): Contact: Remi Godin, Landfill Engineer, Waste Management, rgodin@wm.com
- Dryden School – Integrated solar design for 30kW rooftop system (preliminary design package). Contact: Kim Carleson, Facility Manager, Keewatin-Patricia District School Board, kim.carleson@kpdsb.on.ca
- City of Brockville – Advisory assignment for the deployment strategy of a 200kW solar power system on a municipal building. Contact: David Paul, City of Brockville, Economic Development Officer, dpaul@brockville.com
- Rideau Canal System (Parks Canada) – 3.0kW grid connected photovoltaic power system design and construction supervision. Contact: Trevor Stewart, Technical Officer, Parks Canada, Trevor.stewart@pc.gc.ca
- St. Lawrence Islands National Park – Stand alone hybrid wind / photovoltaic power system for two historic buildings. Contact: Robert Van Rumpt, Operations Manager, St. Lawrence Islands National Park, Robert.vanrumpt@pc.gc.ca or Gordon Griffin, Superintendent, Gordon.griffin@pc.gc.ca
- Fundy National Park – Design for solar thermal heating for salt-water public swimming pool & bath house.
- St. Lawrence Islands National Park – Design & construction supervision of 5.4kW grid connected photovoltaic power system
- Paquin Residence – design engineer for 5kW of tracked solar, 10kW of wind generation and a rooftop solar thermal system.

- Inspiration House, Manotick, ON. – Design engineer and pro-forma analyses for wind power, photovoltaic and solar thermal systems for a Net-Zero energy home constructed by Minto Developments as part of a CMHC national competition (Equilibrium).
- Agriculture Canada – Design for solar powered irrigation system, Central Experimental Farm
- Tonquin Valley Packtrips – Jasper, Alberta - Installation of a stand-alone photovoltaic power system.
- Canadian Argentina Capacity Initiative – Misiones, Argentina. – Design and installation of solar power systems for two rural schools.
- Tonquin Valley Adventures – Jasper, Alberta - Installation of a stand-alone photovoltaic power system (owned by Arborus Consulting).

Specialty Studies

- Brant County Power – Technical study and product cataloguing for the development of a deployment strategy by the utility to offer MicroFIT systems to their rate-payers.
- Ontario Ministry of Energy – Study to identify economic and regulatory barriers for the large scale deployment of residential solar hot water systems (with Marbek Resource Consultants)
- University of Ottawa – Feasibility study for the application of a solar thermal-PV system
- Ste. Anne de Prescott, Ontario – Biological Digester and Green Power Generation feasibility study
- “Addressing the Barriers Facing Large Scale Deployment of Photovoltaics as a Distributed Energy Source in Canada” – Technical advisors for an Industry Canada report (with The Delphi Group).
- Deline Dene Band Council - Deline, NT. – Feasibility study for a community owned power-generating facility (Hybrid system using wind & diesel generation supplementing with a district heating system).