



**Barkley Technologies Inc.**

**Proposal to:**



**Virgin Islands Water and Power Authority**

**PROPOSAL FOR:**

**PR-01-21 Composite Pole Project Management  
and Design Services**

**September 11, 2020**

## TABLE OF CONTENTS

<b>Introduction .....</b>	<b>page 3</b>
<b>Form of Tender:</b>	
• Section R. - Questionnaire .....	page 4
• Section S. - Proposal Form .....	page 6
• Section T. - Bid Schedule .....	page 8
• Section V. - Basis of Award .....	page 9
<b>Additional Services .....</b>	<b>page 11</b>
<b>Optional Services .....</b>	<b>page 12</b>
<b>Appendices .....</b>	<b>page 13</b>
<b>Company Information .....</b>	<b>page 42</b>

## **Introduction:**

Barkley Technologies has been designing transmission and distribution lines in Canada, South America, and the Caribbean for more than 27 years. Extreme weather events that now commonly occur in the Caribbean have made it challenging for line designers to use traditional practices that are based on rule of thumb methods. Category 5 winds are the cause of this, which has also made it difficult to continue the use of wood poles.

We are fortunate to have gained years of experience with line construction, which has given us a practical approach to pole line design in the Caribbean. Our understanding of the interactions between design, material performance, construction methods and work equipment has resulted in high-tech designs that are also cost effective.

We are satisfied with what we were able to achieve to this point with the composite pole project. We look forward to working with WAPA to continue to make progress and to safely bring this project in on-time and on-budget. If we are the successful candidate for this project tender, we will be instantly productive and able to provide work packages and associated services quicker than anyone else.

## **Reputation:**

Barkley Technologies has a reputation for providing quality and timely services throughout the Caribbean. We have demonstrated our commitment to our customers and proved our ability to work in an island utility environment. Our capacity to communicate at the Lineman level all the way up to the CEO level is an indication of our range of experience and has helped put our customers at ease.

We have established very good working relationships with Haugland, BBC, AWG, RS and Trident by working collaboratively and respectfully to meet WAPA's objectives. We will continue to work seamlessly with WAPA, the contractors and vendors to ensure a successful project outcome.

## **Compliance:**

We have read and understand our contractual as well as governmental compliance obligations as they are described in the exhibit documents provided in the tender package.

We have a legally registered branch in the US Virgin Islands that is in good standing and will continue to function this way throughout the life of the project.

We will provide WAPA with the required business and insurance documents upon request.

## R. QUESTIONNAIRE (MANDATORY)

The undersigned guarantees the truth and accuracy of all statements and answers herein contained. Include additional sheets if necessary.

1. How many years has your organization been in business as an **Electrical consulting** or engineering firm? (circle one). 27 Years
2. Within the past five years, how many Pole line design projects equal to or greater than this project has your organization completed? 2
3. Have you ever failed to complete work per Contract Specifications or within the time limits of a Contract awarded to you, if so, where and why?  
No  
\_\_\_\_\_  
\_\_\_\_\_
4. Provide three references of similar work previously performed (include name, company, contact information, description of work performed).  
Derick King - Grand Bahama Power (dwking@gmail.com) - Ref. Ginn 69kV  
Lemuel Lavinier - Domlec (lemuel.lavinier@domlec.dm) - Ref. 33kV Conversion  
Richard Hextall - Bahamar Nassau (rhexall@bahamar.com) - Ref. Bahamar 132kV  
Niel Vanterpool - VI WAPA (niel.vanterpool@viwapa.vi) - Ref. Composite Pole Project
5. Will you sublet any part of this work? Yes If so, give details.  
Biologist/Arborist services required in Addendum 1  
Geographic Consulting LLC - St Croix  
\_\_\_\_\_
6. Have you included any exceptions with your proposal?  
No  
\_\_\_\_\_  
\_\_\_\_\_
7. Provide the professional resume of your intended Project Manager with your proposal? **Please see Appendix 1**  
\_\_\_\_\_  
\_\_\_\_\_
8. State the true, exact, correct, and complete name of the partnership, corporation or trade name under which you do business, and the address of the place of business. (If a corporation, state the name of the President and Secretary. If a partnership, state the names of all partners. If trade name, state the names of the individuals who do business under the trade name. It is necessary that this information be furnished.) **Please see Appendix 2**

9. List experience your firm has design and project management of pole lines with composite poles. **Please see Appendix 3**
10. Describe your firms to plan to complete the work as outlined in the scope and engineering specifications. **Please see Appendix 4**
11. Provide a list and description of all personnel to be used on the project. **Please see Appendix 5**
12. Provide the resumes of the key individuals that will work on this contract. **Please see Appendix 6**
13. Provide MWBE utilization plan for the work in your proposal. **Please see Appendix 7**
14. Proposals shall include Section S: Proposal Form, Section V: Basis of Award Form, and Section T: Bid Schedule.

**Barkley Technologies Inc.**  
(Correct Name of Offeror)

The business is a Sole Proprietorship, Partnership, or **Corporation**. (Circle one)

**S. PROPOSAL FORM:**

Name of the Offeror Barkley Technologies Inc.  
(Individual, Firm or Corporation, as case may be)

Date of Proposal September 1, 2020

To: The Virgin Islands Water and Power Authority  
St. Thomas, Virgin Islands

Pursuant to your Request for Proposal and in compliance with other related Contract Documents, the undersigned does hereby propose provide project management and design services as described for the Composite Pole Installation Project, in strict accordance with the Contract Documents at the cost specified. Offeror is expected to submit a fixed price.

The above-named Offeror affirms and declares:

1. That the Offeror is of lawful age and that no other person, firm or corporation has any interest in this Proposal or in the Contract proposed to be entered into.
2. That this Proposal is made without any understanding, agreement or connection with any person, firm, or corporation making a Proposal for the same purposes, and is in all respects fair and without collusion or fraud.
3. That the Offeror is not in arrears to the Virgin Islands Water and Power Authority, upon debt or contract, and is not a defaulter, as surety or otherwise, upon any obligation in the Virgin Islands Water and Power Authority.
4. That no officer or employee or person whose salary is payable in whole or in part from the Virgin Islands Water & Power Authority is, shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this Proposal, or in the performance of the Contract, or in the supplies, materials, or equipment and work or labor to which it relates, or in any portion of the profits thereof.
5. That the Offeror has carefully examined the site of the work and that, from his own investigations, he has satisfied himself as to the nature and location of the work, the character, quality, and quantity of materials and the kind and extent of equipment and other facilities needed for the performance of the work, the general and local condition and all difficulties to be encountered, and all other items which may, in anyway, affect the work or its performance.
6. All proposals shall remain firm for a period of Sixty (90) days following the opening bid date.

Contract Requirements

Issue for Bid

RFP

7. The Offeror must adhere to the VIWAPA construction schedule. The Offeror will carefully coordinate his work with the Virgin Islands Water and Power Authority.
8. Work on the Project Contract time begins on the date of issuance of the NOTICE TO PROCEED and shall not exceed two (2) calendar years to completion for the work.

The Offeror agrees to perform the work as specified and indicated in this document for a Lump Sum Amount of \$ \$3,145,745.40  
(Offeror must fill in this blank with amount in words and \$ numbers)

**T. BID SCHEDULE**

(Note: Offeror must bid on each item. All entries in the entire Proposal must be made carefully and typed or in ink; prices must be written in both words and figures.)

ITEM		DESCRIPTION	TOTAL COST
1.		Project Management Support Services, territory-wide, as detailed in the scope section	\$586,436.35
2.		Material Management Support Services, territory-wide, as detailed in the scope section	\$351,861.81
3.		Field Support Services, territory-wide, as detailed in the scope section	\$469,149.08
4.		Vegetation Management Support Services, territory-wide, as detailed in the scope section	\$1,151,861.81
5.		Design Support Services, territory-wide, as detailed in the scope section	\$586,436.35
TOTAL PROPOSAL PRICE			\$3,145,745.40



**V. BASIS OF AWARD:**

Offerors must acknowledge receipt of addendum(s) as follows:

Addendum Received Addendum 1 on 2020-8-31

Addendum \_\_\_\_\_

Addendum \_\_\_\_\_

(Insert addendum(s) numbers, name, dates and initial)

The Offeror certifies that the addendum(s) above have been received and that changes covered by the addendum(s) have been taken into account in this Proposal.

(If Offeror is a firm, fill in the following blanks)

Names of Partners

Residence of Partners

\_\_\_\_\_  
\_\_\_\_\_  
(If Offeror is a Corporation, fill in the following blanks)

Organized under the laws of the State of The Province of Ontario

Name and Address of President Tim Bell

42 King Crescent, Huntsville, Ontario, Canada P1H 1X6

Name and Address of Vice-President \_\_\_\_\_

Name and Address of Secretary Victoria Bell

Contract Requirements

RFP

42 King Crescent, Huntsville, Ontario, Canada P1H 1X6

Name and Address of Treasurer Victoria Bell

42 King Crescent, Huntsville, Ontario, Canada P1H 1X6

Dated September 1, 2020

(Name of Offeror) Barkley Technologies Inc.

(Address of Offeror) 42 King Crescent, Huntsville, Ontario, Canada P1H 1X6

(City, State, Zip)

705-787-7824

(Telephone)

By:

Tim Bell  
(Signature)

President

(Title)

Where Offeror is a corporation:

Attest:

V Bell  
(Secretary)

AFFIX  
CORPORATE  
SEAL



## **Additional Services (included at no extra cost):**

### **Grounding Study**

- Review current methodologies and practices
- Study various soils in territory
- Study grounding options i.e. ground rods, butt wrap, ground plates
- Use software to model ground potential rise on distribution lines
- Study the use and implementation strategy of arresters
- Make recommendations for best solutions and practices

### **Pole Damage Mitigation Plan**

- Review current policies and practices for broken or damaged poles
- Study existing broken pole situations to determine possible tendencies
- Research available protection options and technologies
- Develop strategy for vulnerable pole locations

### **GIS Asset Database Updating**

- Updating of WAPA GIS through composite pole as-built process

### **Planning Support:**

- Provide ongoing data and metrics for overhead vs underground calculations
- Provide ongoing studies relative to the projects (within reason)
- Provide support to WAPA for applications to National Park Service projects
- Provide contractor tender assistance to WAPA

## **Optional Services: (not included, negotiable costs available upon request)**

### **Contract Administration**

- Assist WAPA with verifying and reconciliation of invoiced work with as-builts
- Assist WAPA to ensure invoices paid are compliant with FEMA
- Assist WAPA with processing of invoices

### **Joint Use and Utility Coordination**

- Organize monthly/bi-monthly coordination meetings to discuss topics such as prioritized areas scheduled for construction.
- Develop policies and procedures as they apply to the storm hardening projects in adherence to the external company's joint use agreements.
- Discuss new hardware and work methods.

### **Advanced Project Management**

- Assist WAPA to develop a PMO
- Assist WAPA with developing a set of standard protocols, templates and reporting that can apply to all types of projects across the company
- Integrate the various WAPA corporate reports into standard reporting

### **GIS and Mapping**

- Overhead
  - Mapping of assets including new composite poles
  - Detailed inventory
  - Trimble GPS and LiDAR positioning
- Underground
  - Mapping of new underground distribution
  - GPS – XY and Z(depth)
  - Recording of new nomenclature and tagging

### **Underground Utility Locating**

- Conventional metallic locating including depth
- Ground Penetrating Radar for non-metallic structures, conductors and pipes
- Coordination with other utilities i.e. Cable, Water-Waste Water
- Develop "One Call" system

### **Underground Installation Inspection**

- On the job inspection
- Job accomplishment verification/approval/reporting
- Coordinate with Project Managers
- Coordinate locates with contractors

## POSITION

President of Barkley Technologies Inc., a Consulting Engineering Firm specializing in electrical consulting services.

## YEARS OF EXPERIENCE

30

## EDUCATION

Certificate in Manufacturing Engineering  
Humber College, Toronto, Ontario  
Certified Project Management Professional,  
Project Management Institute

## TRAINING AND DEVELOPMENT

- Distribution Systems - Ontario Hydro T&D
- Power System Load Management - Ontario Hydro T&D
- Overcurrent Protection - Ontario Hydro T&D
- Fault Current and Overcurrent Protection - CEA
- Power System Protective Relaying - EPIC
- Instructional Techniques - Ontario Hydro T&D
- Distribution System Engineering - W.H. Khella
- AutoCAD - Georgian College
- MapInfo - Desktop Mapping Technologies
- GPS - Trimble Navigation - Mike Strutt
- DESS (Distribution Engineering Software Solution) - Dromey Design
- CYMDIST, CYMTCC - CYME International
- PSS/Adept - Power Technologies Inc., Hydro One Network Services
- Computer Aided Power and Distribution - Georgian College
- Intergraph GeoMedia - Huron Geomatics
- ESRI ArcView GIS - Huron Geomatics
- Transmission Line Design - PLS-CADD - Power Line Systems
- Pole Structural Design and Analysis - PLS-POLE- Power Line Systems
- PMP - Exam Prep Course - PTI
- Arc Flash Engineering - Electricity Forum

## PROFESSIONAL AFFILIATIONS

- EUSA - Electrical and Utilities Safety Association
- EDA - Electricity Distributor's Association
- PMI - Project Management Institute
- IEEE - Institute of Electrical & Electronics Engineers
- CARILEC - Caribbean Electric Utility Services Corporation
- GITA - Geospatial Information and Technology Association
- Cigre - International Council on Large Electrical Systems
- Member of Lumiant Technical Advisory Board

## PROFESSIONAL SUMMARY

Tim is the President of Barkley Technologies Inc. in Ontario, Canada. Tim has spent his career in the power industry even though his formal education is in Manufacturing Engineering Technology at Humber College in Toronto Ontario.

Starting at Ontario Hydro in 1980 as a student in the Line Construction Department then full-time in the Generation Division, Tim gained hands-on experience in the day to day operation and maintenance of plants and stations. Tim transferred to Distribution Lines where his responsibilities included pole line and underground design, system planning and power flow analysis.

In 1993, Tim left Ontario Hydro to pursue a full-time career with his company.

Barkley Technologies Inc. provides analysis, planning, design, and a variety of contract field services to utilities in Canada, South America and the Caribbean.

[www.barkleytech.ca](http://www.barkleytech.ca)

## SELECTED PROJECT EXPERIENCE

### USVI – WAPA

*Pole line design, consulting and project management for an 8000 pole replacement project. (on-going).*

### Baha Mar Ltd. - Nassau, New Providence

*Design and construction of 132kV Transmission pole line feeding new resort development at Cable Beach.*

### Ginn sur mer, Grand Bahama Island, The Bahamas

*Design of 24-mile 69kV Transmission Line.* Responsible for all aspects of planning and design of pole line including consulting during construction and assisting utility staff with day to day project management. Transmission line was considered by industry trade professionals such as Transmission & Distribution World Magazine to be one of the most modern pole lines ever built anywhere in the world.

### Wind Farm Projects, Ontario, Canada

*Planning and Design Consultant.* Consultant as part of a three company engineering team responsible for all aspects of planning and design for connection of 140 Megawatts of wind generation at two sites in Southwestern Ontario.

### Staatsolie – Suriname – South America

*Planning and Design of 67 km's of double circuit 69kV.* Overhead and underground designs for connection of sugar cane ethanol plant to local power company grid. Project included design of 5 GIS substations

### Barrie Hydro - Powerstream, Ontario, CA

*Consultant,* member of a four-person committee in charge of all long- and short-term transmission planning in a rapidly expanding City in Central Ontario.

## ONGOING SERVICES

### System Planning and Analysis

*Consulting:*

- Power flow analysis
- System loss reduction
- Load growth forecasting
- System expansions
- Voltage conversions
- System protection
- Reliability studies
- Asset management studies
- Asset evaluation and inspections
- Overhead pole line design
- Underground system design
- Overhead to underground system conversions
- Project Management

## PARTIAL CLIENT LIST

- Staatsolie - Suriname
- EBS - Suriname
- DOMLEC - Dominica
- Grand Bahama Power Company
- APUA - Antigua
- Jamaica Public Services Company
- Trinidad and Tobago Elec. Commission
- St. Lucia Electricity Services Ltd
- Caribbean Electric Utility Services Corp
- Grenada Electricity Services
- Elexicon – Canada
- Alectra - Canada
- Orillia Power Distribution - Canada
- Newmarket Hydro - Canada
- EPCOR - Collingwood - Canada
- Hydro One-Network - Canada
- Midland PUC - Canada
- Whitby Hydro - Canada
- Halton Hills Hydro - Canada
- Peak Power - Colorado USA

**CERTIFICATE**  
This is to certify that these  
articles are effective on

MAY 09 MAI, 1997

Ministre de  
la Consommation  
et du Commerce  
**CERTIFICAT**  
Ceci certifie que les présents  
statuts entrent en vigueur le

Ontario Corporation Number  
Numéro de la compagnie en Ontario

1236850

Trans Code	Line No	Stat	Comp Type	Method Incorp
A	0	0	A	3
18	20	28	29	30

Share	Notice Req'd	Jurisdiction
S	N	ONTARIO
31	32	33 47

Director / Directeur  
Business Corporations Act / Loi de sur les compagnies

**ARTICLES OF INCORPORATION  
STATUTS CONSTITUTIFS**

1. The name of the corporation is: Dénomination sociale de la compagnie:

B A R K L E Y T E C H N O L O G I E S I N C .

2. The address of the registered office is: Adresse du siège social:

42 King Crescent

(Street & Number or R.R. Number & if Multi-Office Building give Room No.)  
(Rue et numéro ou numéro de la R.R. et, s'il s'agit d'un édifice à bureau, numéro du bureau)

Town of Huntsville

(Name of Municipality or Post Office)  
(Nom de la municipalité ou du bureau de poste)

P	1	H	1	X	6
					(Postal Code) (Code postal)

Town of Huntsville

(Name of Municipality, Geographic Township)  
(Nom de la municipalité, du canton)

in District Municipality of Muskoka  
dans le/la (County, District or Regional Municipality)  
(Comté, district, municipalité régionale)

3. Number (or minimum and maximum number) of directors is: Nombre (ou nombres minimal et maximal) d'administrateurs:

Minimum One ( 1 )  
Maximum Ten (10)

4. The first director(s) is/are:

Premier(s) administrateur(s):

First name, initials and last name  
Prénom, initiales et nom de famille

Residence address, giving Street & No. or R.R. No.,  
Municipality and Postal Code  
Adresse personnelle, y compris la rue et le numéro, le  
numéro de la R.R., le nom de la municipalité et le code  
postal

Resident  
Canadian  
State  
Yes or No  
Résident  
Canadien  
Oui/Non

TIMOTHY DOUGLAS BELL

42 King Crescent  
Huntsville, Ontario  
P1H 1X6

Yes

5. Restrictions, if any, on business the corporation may carry on or on powers the corporation may exercise. Limites, s'il y a lieu, imposées aux activités commerciales ou aux pouvoirs de la compagnie.

NONE

6. The classes and any maximum number of shares that the corporation is authorized to issue: Catégories et nombre maximal, s'il y a lieu, d'actions que la compagnie est autorisée à émettre:

The Corporation is authorized to issue an unlimited number of shares of one class designated as Common shares and an unlimited number of shares of a second class designated as special shares.



7. Rights, privileges, restrictions and conditions (if any) attaching to each class of shares and directors authority with respect to any class of shares which may be issued in series: Droits, privilèges, restrictions et conditions, s'il y a lieu, rattachés à chaque catégorie d'actions et pouvoirs des administrateurs relatifs à chaque catégorie d'actions qui peut être émise en série:
- 7.01 the special shares may be issued in one or more series;
- 7.02 the directors are authorized to fix the number of shares in and to determine the designation, rights, privileges, restrictions and conditions attaching to the shares of each series except for the first series of such shares, in respect of which the number, designation, rights, privileges, restrictions and conditions are set out in paragraph 4 below;
- 7.03 the special shares of each series shall, with respect to the priority in payment of dividends and in the return of capital in the event of the liquidation, dissolution or winding up of the corporation be entitled to a preference over the Common shares of the corporation and over any other shares ranking junior to the special shares;
- 7.04 the first series of special shares shall consist of 50,000 shares designated as Series "A" special shares and in addition to the preferences attaching to the special shares as a class set out in paragraph 3 above shall have attached thereto the following rights, privileges, restrictions and conditions:
- 7.04.1 the holder of each Series "A" special share shall be entitled to receive as and when declared by the directors out of the monies properly applicable to the payment of dividends preferential non-cumulative cash dividends at the rate of eight per cent per share per annum, of the amount paid to the Corporation for such share and no more;
- 7.04.2 the holder of each Series "A" special share shall have the right to two votes for such Series "A" special share at all meetings of the shareholders other than meetings of the holders of another class or series of shares; and
- 7.04.3 in the event of the liquidation, dissolution or winding up of the corporation, the holder of each Series "A" special share shall be entitled to receive the amount paid to the corporation for such share, together with all unpaid dividends declared thereon.
- 7.05 the holder of each Common share has the right to one vote for such Common shares at all meetings of the shareholders other than meetings of the holders of any class of shares and to receive the remaining property of the corporation upon dissolution.



8. The issue, transfer or ownership of shares is/is not restricted and the restrictions (if any) are as follows: L'émission, le transfert ou la propriété d'actions est/n'est pas restreinte. Les restrictions, s'il y a lieu, sont les suivantes:

The right to transfer shares of the corporation shall be restricted in that no shares shall be transferred without either:

- 8.01 the previous consent of the directors of the Corporation expressed by a resolution passed at a meeting of the directors or by an instrument or instruments in writing signed by a majority of the directors; or
- 8.02 the previous consent of the holders of at least 51% of the shares for the time being outstanding entitled to vote expressed by resolution passed at a meeting of the shareholders or by an instrument or instruments in writing signed by such shareholders.

9.01 that the board of directors may from time to time, in such amounts and on such terms as it deems expedient:

- 9.01.1 borrow money on the credit of the corporation;
- 9.01.2 issue, reissue, sell or pledge debt obligations (including bonds, debentures, notes or other similar obligations, secured or unsecured) of the corporation;
- 9.01.3 to the extent permitted by law, give a guarantee on behalf of the corporation to secure performance of any present or future indebtedness, liability or obligation of any person; and
- 9.01.4 charge, mortgage, hypothecate, pledge or otherwise create a security interest in all or any of the currently owned or subsequently acquired real or personal, movable or immovable, property of the corporation, including book debts, rights, powers, franchises and undertakings, to secure any debt obligations or any money borrowed or other debt or liability of the corporation;

The board of directors may from time to time delegate such one or more of the directors and officers of the corporation as may be designated by the board all or any of the powers conferred on the board above to such extent and in such manner as the board shall determine at the time of each such delegation;

9.02 that the number of shareholders of the corporation, exclusive of persons who are in the employment of the corporation and exclusive of persons who, having been formerly in the employment of the corporation, were, while in the employment, and have continued after the termination of that employment to be shareholders of the corporation, is limited to not more than fifty (50), two (2) or more persons who are the joint registered owners of one (1) or more shares being counted as one (1) shareholder; and

9.03 that any invitation to the public to subscribe for any shares or securities of the corporation is hereby prohibited.

<p>10. The names and addresses of the incorporators are  Nom et adresse des fondateurs  First name, initials and last name or corporate name  Prénom, initiale et nom de famille ou dénomination sociale</p>	<p>Full residence address or address of registered office or of principal place of business giving street &amp; No. or R.R. No., municipality and postal code  Adresse personnelle au complet, adresse du siège social ou adresse de l'établissement principal, y compris la rue et le numéro, le numéro de la R.R., le nom de la municipalité et le code postal</p>
--	--

TIMOTHY DOUGLAS BELL

42 King Crescent  
Huntsville, Ontario  
P1H 1X6

These articles are signed in duplicate.

Les présents statuts sont signés en double exemplaire.

Signatures of incorporators  
(Signature des fondateurs)



TIMOTHY DOUGLAS BELL

## Appendix 3

### Project Management Experience – Composite Pole Projects

1. VI-WAPA, United States Virgin Islands – Replacement of approximately 2000 wood poles on St Thomas, St John, St Croix and Water Island.
2. Grand Bahama Power, Freeport Grand Bahama – New double circuit 69kV pole line on Grand Bahama.
3. Bahamas Power & Light, Nassau Bahamas – New 132kV pole line on New Providence (Nassau).
4. DOMLEC, Dominica – Planning and design of voltage conversion 11kV to 33kV of interconnection lines between four hydro stations. Line included a mixture of wood and composite poles. Project management portion was to develop a collaborative plan with engineering, planning and generation that required significant experience to satisfy all stakeholders.



Bahamar Nassau 132kV

## **Appendix 4**

### **Project Plan – Composite Pole Project**

#### **Introduction:**

Before Barkley Technologies became involved with this project, the pole structure framings were being developed by the composite pole vendor and did not reflect the space constraints, terrain and digging challenges that commonly exists in the US Virgin Islands. Two pole structures, push braces, custom steel supports and complex guying configurations were very costly and making it very difficult for the contractors to replace poles. The general public who were used to seeing relatively small diameter wood poles were understandably reacting unfavorably. Since then, we have re-engineered the structures and continuously worked to reduce the impact on the islands. This has been accomplished without compromising pole strength, reliability or the pole manufacturers warranties. 180-200 mph capability is very difficult to achieve particularly in an island environment. It requires a balance between structural analysis for hardening the system and a practical approach to make it all work.

#### **Project Plan:**

It is our plan to continue to leverage technology and data to streamline design time and field time. The acquisition of 360-degree 4K video, high resolution LiDAR, satellite imagery and WAPA GIS data has made it possible to achieve this. This approach has greatly reduced the time required for WAPA to assist in the field. Now all of WAPA's field time is spent reviewing designs instead gathering information.

The goal for the next two years is to have job packages approved and ready far enough in advance so that they can be reviewed with WAPA and the contractors, weeks if not months before the job is started instead of days. Once we accomplish this, we can begin to order materials from the detailed designs instead of forecasts.

## **Project Management Assistance:**

The following lists work scope tasks that Barkley Technologies understands is required for project management assistance.

- Project Plan Development
- Development of Project Phases
- Development of Project Scheduling and Coordination
- Work with WAPA and contractor(s) to develop location-based job priority sequence
- Ongoing development - work reporting application to track project
  - Weekly progress as reported by contractor(s)
  - Work units for each labour if required
  - Work reports to compare \$ spent vs % of work completed
- Ongoing development - cloud-based status dashboard for WAPA management
  - Monthly accomplishment reports
  - Weekly accomplishment reports
  - Daily accomplishment reports

## ***Project Management Summary***

*Using the experience gained from the project to date, we propose leveraging two resources and continue to improve the composite pole project reporting and tracking. The first resource is the WAPA Projects Department. Going forward, the goal will be to work with the Projects Department to ensure that WAPA receives accurate and timely reporting. The second resource is the expanded dashboard. The project dashboard was developed for the purpose of tracking and displaying the reported progress of each phase of each project using the GIS, graphs and statistics. The concept for the dashboard was to provide various levels of detail for this progress to the user by summaries and by drilling into each job for more detail. We recommend transitioning the dashboard into more of a work management tool by expanding ToolWatch to link with vendors and contractor reporting systems. This will provide the WAPA team with a more complete picture that will only be limited by the level of detail the contractors and vendors can provide.*

*Our plan is to work directly with the contractors, the vendors and WAPA to add this functionality. The objective is to align the contractor work reporting in Fulcrum with their invoicing using standard work units and exception reporting. This can be automated and will be integrated with material and all expenses charged to individual projects. The results will provide improved project reconciliation for FEMA compliance and expenditure approvals.*

## **Material Management Assistance:**

**The following lists work scope tasks that Barkley Technologies understands is required for material management assistance.**

- Facilitate coordination between contractors, WAPA procurement and vendors as required
- Ongoing development - detailed Contract Order Forms for project
- Ensure the correct material is specified, ordered and assigned.
- Assist with scheduling, staging, verification and charging out
- Synchronize deliveries with construction schedule, cost centers and storage locations
- Work with shipping companies to ensure material is delivered to the correct island

## ***Material Management Summary***

***Material including poles, hardware and conductor has been and remains as the single most challenging aspect of the composite pole project. To meet this challenge, we will assign a Material Specialist who will work closely with WAPA Material Specialists and vendors to optimize the material ordering process while adhering to WAPA policies and keep all stakeholders up to date using status reporting. This will provide the flexibility required to quickly adapt to the external and internal shifting of priorities and logistics.***



## Design Support:

The following lists work scope tasks that Barkley Technologies understands is required for pole line design.

- Ongoing development of PLS-POLE structure files from WAPA Framing Standards
- Perform non-Linear PLS-CADD structural analysis on all pole designs
- Perform non-Linear PLS-CADD analysis on all guying and anchoring designs
- Perform non-Linear PLS-CADD analysis on all hardware connections to adhere to FRP pole manufactures guidelines
- Perform non-Linear PLS-CADD analysis to maintain NESC Clearance for all conductors and guy cables
- Submit project designs to WAPA for review
- Ensure designs are compliant with manufacturers guidelines and specifications
- Provide overhead pole cost estimating assistance
- Provide ongoing studies relative to the project
- Provide procurement support
- Develop triangulated irregular network (TIN) dataset from point cloud LiDAR
- Lidar Classification for Poles, Conductors, Vegetation and Buildings
- Work with FRP pole manufacturers to ensure project design continuity
- Develop job packages for individual construction projects:
  - ⇒ Plan view drawings showing pole and anchor location information
  - ⇒ 3D pole framing drawings for each type of construction
  - ⇒ Guying and anchoring information – drawings and specifications
  - ⇒ Staking data for line layout
  - ⇒ Construction data for each pole that includes:
    - Pole location number
    - Pole height, type and class
    - Framing/structure drawing reference
    - Number of anchors and guys
    - Number of services to relocate
    - Equipment to relocate i.e.:
      - Transformers, Switches, St. Lights, Capacitor banks etc.
      - Solar equipment
      - AMI gear
  - ⇒ Joint Use attachments – CATV, Telco, Other comm
    - Ongoing development - project notification process
    - Assist with coordination of transferring and inspections
    - Assist with the approval of attachment hardware
  - ⇒ Material lists per project, work order or per pole
  - ⇒ Work with WAPA to arrange access to private property, right of way or locked gates etc.
  - ⇒ Assist with on the job design situations caused by unforeseen constraints



- ⇒ Pole Damage Management
  - Ongoing development - workflow
  - Ongoing development – damage evaluation procedure
  - Ongoing development – repair/replacement procedure
  - Ongoing development – damage mitigation planning

### ***Design Support Summary***

***The design process will continue to evolve throughout the composite pole project to keep pace with new advancements in material, equipment and work practices. Finite element analysis has proven to be a valuable design tool for us to strike a balance between robust hurricane ready and practical, cost effective designs.***

***We will continue to collaborate with pole vendors to ensure that our designs and methodologies are aligned with their specifications and warranty requirements. Even though a second pole vendor has been added, the range of pole module combinations, sizes and types have decreased since the beginning of the project. This is to keep logistics and construction as straight forward as possible.***

***We will continue to work with contractors and tap into their construction work methods experience that could impact how we do our designs.***

***A study will be performed specifically for the development of a mitigation plan for impact damage to composite poles from traffic and other external forces. This plan will be integrated with the damage assessment and repair plan.***

***A complete catalogue of composite pole framing drawings has been provided to WAPA. We will continue to provide these drawings as revisions and new drawings are developed as part of the knowledge transfer.***

## **Field Support:**

**The following lists work scope tasks that Barkley Technologies understands is required for field support.**

- Review pole change instructions
- Assist WAPA with field checking poles
- Make revisions and update GIS as required
- Resolve and include single and three phase plans and discrepancies as required.
- Develop guying strategy for each pole:
  - Anchor locations
  - Develop location specific guying method as required i.e. V guying
  - Guy lead adjustments
  - Push brace integration
- Develop revised pole and anchor drawings as required
- Work with WAPA to resolve landowner conflicts
- Provide As-Builts

### ***Field Support Summary***

***We will continue to work with WAPA to obtain the necessary field data required for high quality pole line designs, including 360 degree video collection, design verification and as-built field checks between St Thomas/St John and St Croix.***

***Any opportunity that results in enhancing and verifying the WAPA corporate GIS will be a priority.***

***Because we are building such a robust overhead system, the footprint is larger than the existing pole lines being replaced. Barkley Technologies has experience with projects that require attention to detail that results in designs with the least impact possible on customers.***

**Vegetation Management:**

The following lists work scope tasks that Barkley Technologies understands is required for vegetation management.

**Powerline Vegetation Encroachment Analysis and Mapping**

- Development and facilitate workflow
- Perform vegetation analysis using PLS-CADD per job
- Develop vegetation analysis results map books
- Provide GIS support as required
- Provide Fulcrum support as required

**Direct and Manage Biologist/Arborist to facilitate:**

- Endangered species - FEMA compliance
- Tree trimming and removal
- Tree removal
- Danger trees
- Land clearing
- Customer contacts and permissions
- Documentation and project archiving

**Biologist/Arborist scope of works:**

- Assess areas where poles are to be installed.
- Notify of sensitive areas prior to installation
- Offer guidance on minimizing impact to sensitive species.
- Assess pole-to-pole spans for vegetation issues as needed.
- Report results of assessments
- Be available for field inspections as needed to ensure ESA compliance
- When poles are being placed which require some level of vegetation clearing for access, the access road and a 10 FT diameter around the pole should be surveyed prior to vegetation clearance.
- Areas of concern, must be surveyed by a qualified biologist for the
- floral species occurrence within the project area prior to work commencing.
- If areas of concern are confirmed, monitoring must be conducted on the species for the
- duration of work.
- If issues arise while work is being performed in the areas of concern, person(s)/crew(s)
- must contact the USFWS point of contact James Yrigoyen or designee at 787-664-3085.
- If any of the above conditions cannot be adhered to, the U.S. Fish and Wildlife Service
- shall be contacted prior to the start of repairs/construction.
- Documentation of this coordination must be provided to FEMA.

### **WAPA Project Dashboard – Vegetation Management Portal**

- Ongoing development - reporting and status of Biologist/Arborist progress
- Ongoing development - reporting and status of forestry work
- Post ongoing status reports to dashboard

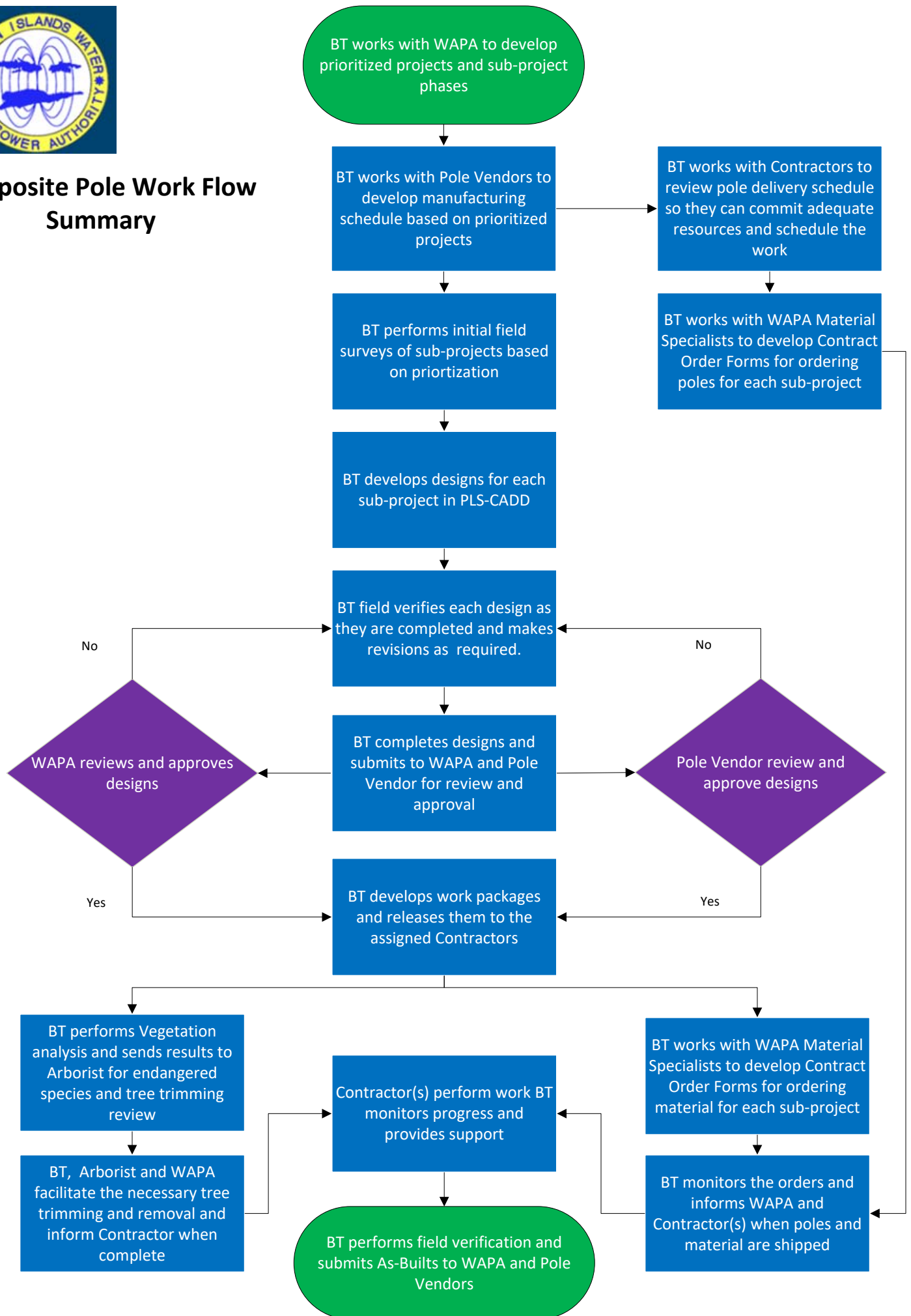
### ***Vegetation Management Summary***

***We will continue to work with a qualified Biologist/Arborist to ensure endangered species and habitats remain undisturbed and that right of ways are trimmed or cleared using industry standards.***

***The LiDAR data analyzed in PLS-CADD, simulates potential conflicts between vegetation and the powerlines. The advantage using PLS-CADD for this has is that the analysis is performed at maximum operating conditions (maximum sag) and extreme weather conditions (maximum blow-out). This provides planners with an accurate package they can use for prioritizing and then directing trimming and cutting contractors.***

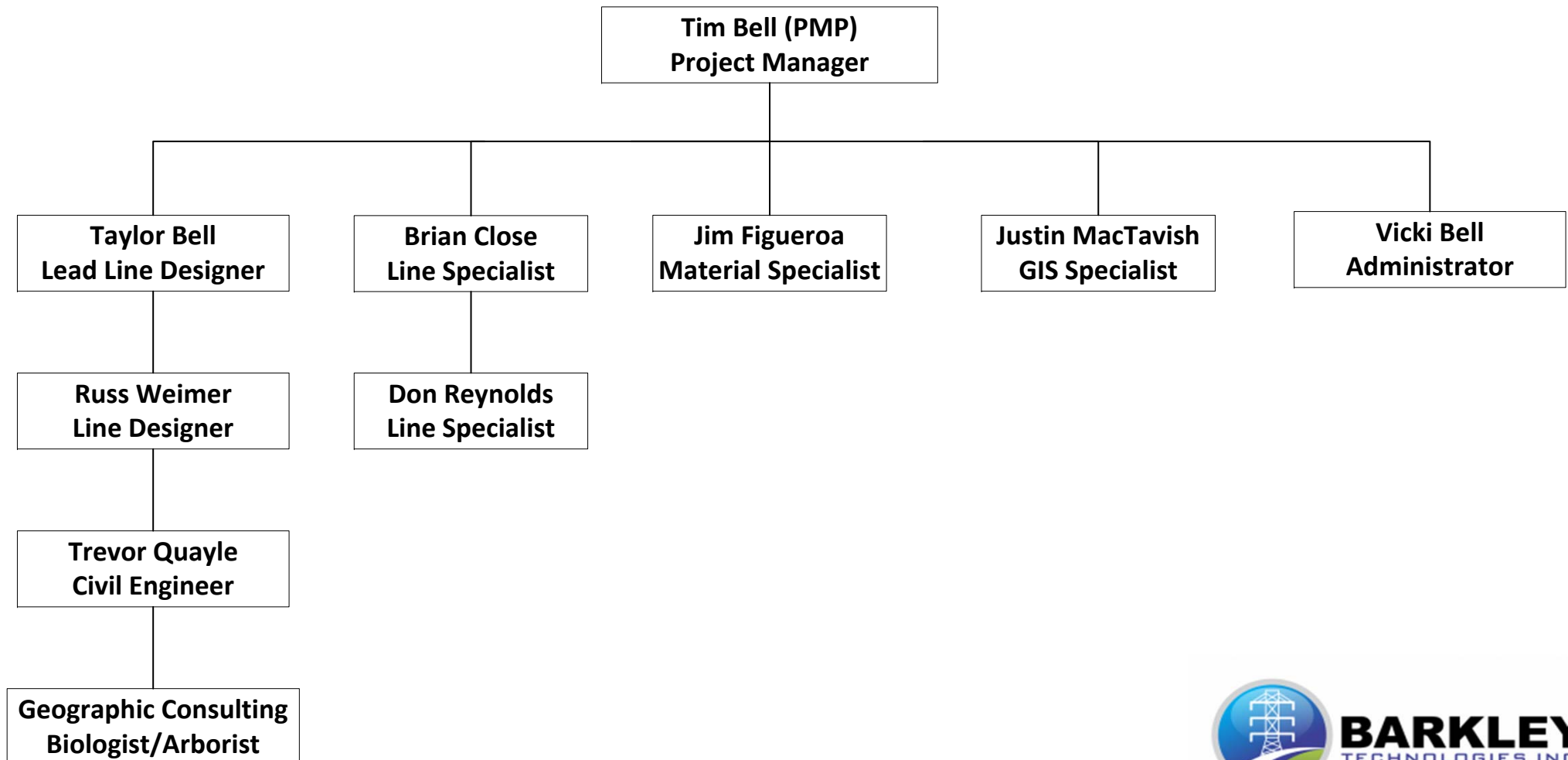


## Composite Pole Work Flow Summary





**USVI-WAPA Composite Pole Project  
Organization Chart and Resource Matrix  
Barkley Technologies Inc.**



## POSITION

President of Barkley Technologies Inc., a Consulting Engineering Firm specializing in electrical consulting services.

## YEARS OF EXPERIENCE

30

## EDUCATION

Certificate in Manufacturing Engineering  
Humber College, Toronto, Ontario  
Certified Project Management Professional,  
Project Management Institute

## TRAINING AND DEVELOPMENT

- Distribution Systems - Ontario Hydro T&D
- Power System Load Management - Ontario Hydro T&D
- Overcurrent Protection - Ontario Hydro T&D
- Fault Current and Overcurrent Protection - CEA
- Power System Protective Relaying - EPIC
- Instructional Techniques - Ontario Hydro T&D
- Distribution System Engineering - W.H. Khella
- AutoCAD - Georgian College
- MapInfo - Desktop Mapping Technologies
- GPS - Trimble Navigation - Mike Strutt
- DESS (Distribution Engineering Software Solution) - Dromey Design
- CYMDIST, CYMTCC - CYME International
- PSS/Adept - Power Technologies Inc., Hydro One Network Services
- Computer Aided Power and Distribution - Georgian College
- Intergraph GeoMedia - Huron Geomatics
- ESRI ArcView GIS - Huron Geomatics
- Transmission Line Design - PLS-CADD - Power Line Systems
- Pole Structural Design and Analysis - PLS-POLE- Power Line Systems
- PMP - Exam Prep Course - PTI
- Arc Flash Engineering - Electricity Forum

## PROFESSIONAL AFFILIATIONS

- EUSA - Electrical and Utilities Safety Association
- EDA - Electricity Distributor's Association
- PMI - Project Management Institute
- IEEE - Institute of Electrical & Electronics Engineers
- CARILEC - Caribbean Electric Utility Services Corporation
- GITA - Geospatial Information and Technology Association
- Cigre - International Council on Large Electrical Systems
- Member of Lumiant Technical Advisory Board

## PROFESSIONAL SUMMARY

Tim is the President of Barkley Technologies Inc. in Ontario, Canada. Tim has spent his career in the power industry even though his formal education is in Manufacturing Engineering Technology at Humber College in Toronto Ontario.

Starting at Ontario Hydro in 1980 as a student in the Line Construction Department then full-time in the Generation Division, Tim gained hands-on experience in the day to day operation and maintenance of plants and stations. Tim transferred to Distribution Lines where his responsibilities included pole line and underground design, system planning and power flow analysis.

In 1993, Tim left Ontario Hydro to pursue a full-time career with his company.

Barkley Technologies Inc. provides analysis, planning, design, and a variety of contract field services to utilities in Canada, South America and the Caribbean.

[www.barkleytech.ca](http://www.barkleytech.ca)

## SELECTED PROJECT EXPERIENCE

### USVI - WAPA

*Pole line design, consulting and project management for an 8000 pole replacement project. (on-going).*

### Baha Mar Ltd. - Nassau, New Providence

*Design and construction of 132kV Transmission pole line feeding new resort development at Cable Beach.*

### Ginn sur mer, Grand Bahama Island, The Bahamas

*Design of 24-mile 69kV Transmission Line.* Responsible for all aspects of planning and design of pole line including consulting during construction and assisting utility staff with day to day project management. Transmission line was considered by industry trade professionals such as Transmission & Distribution World Magazine to be one of the most modern pole lines ever built anywhere in the world.

### Wind Farm Projects, Ontario, Canada

*Planning and Design Consultant.* Consultant as part of a three company engineering team responsible for all aspects of planning and design for connection of 140 Megawatts of wind generation at two sites in Southwestern Ontario.

### Staatsolie - Suriname - South America

*Planning and Design of 67 km's of double circuit 69kV.* Overhead and underground designs for connection of sugar cane ethanol plant to local power company grid. Project included design of 5 GIS substations

### Barrie Hydro - Powerstream, Ontario, CA

*Consultant,* member of a four-person committee in charge of all long- and short-term transmission planning in a rapidly expanding City in Central Ontario.

## ONGOING SERVICES

### System Planning and Analysis

*Consulting:*

- Power flow analysis
- System loss reduction
- Load growth forecasting
- System expansions
- Voltage conversions
- System protection
- Reliability studies
- Asset management studies
- Asset evaluation and inspections
- Overhead pole line design
- Underground system design
- Overhead to underground system conversions
- Project Management

## PARTIAL CLIENT LIST

- Staatsolie - Suriname
- EBS - Suriname
- DOMLEC - Dominica
- Grand Bahama Power Company
- APUA - Antigua
- Jamaica Public Services Company
- Trinidad and Tobago Elec. Commission
- St. Lucia Electricity Services Ltd
- Caribbean Electric Utility Services Corp
- Grenada Electricity Services
- Elexicon - Canada
- Alectra - Canada
- Orillia Power Distribution - Canada
- Newmarket Hydro - Canada
- EPCOR - Collingwood - Canada
- Hydro One-Network - Canada
- Midland PUC - Canada
- Whitby Hydro - Canada
- Halton Hills Hydro - Canada
- Peak Power - Colorado USA

## **Taylor Bell**

267 Muskoka Rd. 3 North, Huntsville, Ontario  
P1H 1X6

**taylorbell@barkleytech.ca**

**(705) 571-2377**

---

### **Highlights of Qualifications**

- Certified Electrical Engineering Technologist OACETT
- Completed 3 Year Advanced Diploma in Electrical Engineering Technology Georgian College
- PLS-CADD Pole Line Design Certified Training
- PLS-TOWER Certified training
- MEARIE Substation Electrician Level One (Hydro One Training Center)
- S&C Wallas Khella *Tension, Sags and Guying of Distribution Poles* certificate
- Electricity Forum *Transformer Testing and Maintenance* certificate
- SPIDA CALC General User Training
- AutoCAD and AutoCAD Map Certified
- Solid CAD Autodesk Inventor Certified Training
- SBS Substation 3D Design
- Strong computer skills including MS ACCESS , Excel and Word
- ARC GIS Level 1 Certificate
- CYME Load Flow Modeling Software Experience
- DESS Load flow Modeling Software Experience
- Advanced experience working with GIS and Distribution maps
- Knowledgeable of various GPS Hardware
- Experienced with roadside construction practices
- CPR and First AID Certificate
- EUSA Electrical Safety Certificate

### **Education**

#### **Electrical Engineering Technologist**

Graduate December, 2012  
Georgian College , Barrie Ontario

#### **Media Foundation Diploma**

April 2006, *Humber College, Toronto, ON*

#### **Huntsville High School**

2000-2004, *Huntsville , ON*



## **Employment**

### **2012 - Present, Barkley Technologies, Huntsville, Ontario**

- Designed substation construction drawings for various equipment installations to meet ESA 22/04 Regulation and P. Eng Approval
- Designed distribution class pole line using PLS-CADD calculating sags and tensions to meet CSA C22.3 No. 1-10 Guidelines for renewable energy projects.
- Designed 60km of 69kV steel structure transmission line using PLS-CADD with NESC Requirements in South America
- Designed 50km 33kV Transmission/Distribution wood pole line in Caribbean under NESC Heavy /wind criteria.
- Assisted in the design of five 33kV substation upgrades in Caribbean including transformer and switchgear replacement
- Conducted Transformer Oil Sampling Syringe and Bottle (ASTM D-3612, ASTM D-1533, ASTM D-971, ASTM D-5837 etc.)
- Infrared substation inspection with FLIR Camera
- Assisted in NETA 12 month full substation inspection
- Created custom framing standards with AutoCAD for various pole line constructions
- Tested and GPS mapped over 6000 poles for utilities in Ontario with Polux Testing Device.
- Used Excel and GPS software to provide a deliverable to customers
- Provided technical support for co workers using GPS and pole testing equipment
- Provide Pole testing and GIS training and troubleshooting to co-workers
- Professionally represent the organization and contribute positively to an effective team environment
- Worked to meet and exceed specified project deadlines

### **2011-January-May CO-OP Student Midland Public Utilities Corporation , Midland , Ontario**

- Created Standards and drawings for capital pole line construction projects
- Worked to meet and exceed specified project deadlines
- Assisted in the updated of system operation maps and the integration of GIS
- Update schematics for line trucks and substations
- Assisted in the utilization of DESS software for system model studies
- Created transmission schematic for company website

### **2010-May-Septmeber CO-OP Student Orillia Power, Orillia, Ontario**

- Assisted Engineering department in design of pole framings as per USF Standards including guy and transformer load calculations

- Maintained organization of projects using project tracking methods
- Field checked and updated system maps using both Autocad and Cablecad Software
- Field Checked new pole construction to verify USF standards were met
- Assisted in layout reports for residential service upgrades
- Worked in a team environment and met project deadlines

**2007 –September-December** *Lakeland Power, Bracebridge ,Onatrio*

- Assisted in the maintenance and painting of a Generation Station
- Helped reorganize stockyard
- Connected fiber optics underground to several businesses
- Worked efficiently as member of a team

**2006- Summer** *Town Of Huntsville Huntsville, Onatrio*

- Worked as General Laborer
- Flagged Traffic and setup proper roadside construction signs
- Fixed potholes and wash outs on town roads
- Assisted in the replacement of drainage and culvert projects

## Jim Figueroa - Resume



996032 Mulmur Tos T/L  
Mulmur Ontario  
L9V 0N1  
(705)789-7824  
[www.barkleytech.ca](http://www.barkleytech.ca)

Mr. Figueroa, has the ability to work independently and work directly with the private and public sector. He has an extensive knowledge and experience in all aspects of Distribution Engineering and Distributed Generation/Utility Interaction. With 34 years of experience, 29 years in Distribution Engineering, he worked as an Account Executive for Generators, large customers and Municipal Utilities.

### Relevant Achievements

#### **Senior Utility Coordinator – Barkley Technologies Inc 2017 – Present**

- Material procurement and management
- Project Management
- Design Assistance – Transmission and Distribution

#### **Utility Interconnection Manager JIFTECH Energy Consulting 2013 – 2017**

- Completed generator substation and site inspections for solar generator (Barkley Technologies)
- Responsible for all aspects of electrical interconnection work between the customer's transmission and distribution projects and the Utility
- Provide technical expertise in transmission and distribution systems. (230kV, 115 kV, 44 kV, 27.6 kV, 12.47 kV)
- Facilitate kick off and site meetings with customer's representatives and utility staff
- Manage all documentation issued between the utility and the customer
- Facilitate completion of connection and operating agreements with the Utility
- Canadian Solar Distribution Projects – Little Creek, Val Carron, Glen Arm, Sparkle Light, Good light, Discovery Light ☐ Canadian Solar Transmission Project – Liskeard (30MW), Kingston Solar (100MW)
- Inverenergy Transmission Project – (70MW)
- Samsung Transmission Project Caledonia (215MW)

#### **Distribution Generation Account Executive - Hydro One, 2009-2013**

- Manage Hydro One's relationship with Distributed Generation Customers.
  - Single point of contact for customer for all Utility issues.
  - Primary customer contact from initial application to post connection.
  - Navigate the customer through the Hydro One connection process.
  - Provide Technical guidance and advice for connection requirements.
  - Prepare and execute Distribution Connection Agreements.
  - Build and maintain customer relationship and satisfaction for the life of the connection.
- Customer Care

**Distribution Engineering Planner – Hydro One, 2003-2009**

- Account Executive for large Generators within territory.
- Accountable for power quality issues for large and small customers.
- Interact with Asset Management on long term system planning issues.
- Perform impact assessments for large load connections.
- Issue system enhancement work associated with subdivisions and large connections
- Perform financial analysis for customer connections to determine investment strategy
- Supervise, coach and mentor junior engineering staff.
- Provide engineering support for all facets of the Distribution Operations within given territory.
- Plan and prepare projects for system improvements.

**Senior Network Management Engineer/Officer – Hydro One, 1998-2003**

- Design major work packages for execution by Provincial Lines.
- Negotiate Service Level Agreements for key areas of work with Network Services.
- Accountable for work program valued at \$190M annually.
- Program Contracts include Trouble Calls, Pole Replacement, Submarine Cable Replacement, Recloser and Regulator

**Distribution Planning Engineer/Officer – Hydro One, 1993-1998 Central Ontario – Orangeville:**

- Monitor system performance and design solutions through major projects. ☑ Approve subdivision designs.
- Approve Station and feeder protective coordination studies.
- Complete Utility Lines budget.
- Assist in hiring Field Technicians.

**Regional Lines Supervisor – Ontario Hydro, 1989-1993**

Georgian Bay Region – Barrie:

- Monitor system performance and design solutions through major projects. ☑ Train and Supervise Technician staff.
- Approve subdivision designs.
- Approve distribution feeder protective coordination schemes.
- Create and coordinate Operations Center budgets.
- Assist in Operations Lines Fleet Management.
- Assist in hiring Lines trades Supervisors and Lines Technicians.

**Assistant Lines Supervisor – Ontario Hydro, 1988-1989 Central Region – Toronto:**

- Plan and design major projects, approve subdivision designs. ☑ Assist in monitoring feeder and station performance.

**PMP-certified  
project manager**  
with eight years  
of experience  
delivering cutting  
edge geospatial  
solutions.

## Skills

Project  
Management

Enterprise GIS  
Implementations

UAV Pilot  
Experience

3D Laser Scanning

Vehicle-based  
LiDAR

RTK Survey  
Techniques

Database  
Development

GIS Consulting and  
Support

## Industry Experience

Electrical Utilities

Municipalities

Environmental  
Agencies

Agricultural

Telecommunication  
Providers

Engineering Firms

Nuclear Industry

# JUSTIN MACTAVISH, PMP

---

Wingham, ON ■ 519-357-7730 ■ [justin.mactavish@gmail.com](mailto:justin.mactavish@gmail.com)  
LinkedIn: [www.linkedin.com/in/justin-mactavish](http://www.linkedin.com/in/justin-mactavish)

**GIS Consultant:** Specializing in cutting edge GIS and Remote Sensing technologies

Excel in developing and implementing technical solutions for geospatial services and GIS systems. Have a track record of delivering projects that satisfy clients' needs in a wide range of sectors, with varying requirements and demands.

## Education & Credentials

PROJECT MANAGEMENT INSTITUTE  
**Project Management Professional (PMP), 2016**

FLEMING COLLEGE — Lindsay, ON  
**GIS Applications Specialist, Post Graduate Diploma 2009**

NIAGARA COLLEGE — Niagara-on-the-lake, ON  
**Environmental Technician, Diploma 2005**

## Professional Experience

**Barkley Technologies Inc. - GIS Consultant, 2018 to present**

- Provide support for clients that use various GIS software and database environments, including: **ESRI ArcGIS Server, ArcSDE, ArcGIS Online and SQL Server.**
- Familiar with spatial **data management practices** to help develop enterprise data models that integrate throughout organizations.
- Develop workflows and find solutions for clients to **manage, process** and **analyze** their GIS or remote-sensed data.
- Experience providing **support and training** in Autodesk AutoCAD Map3D, ESRI ArcGIS Desktop, SQL Server, Oracle.
- **Communicate** directly with clients, from a wide variety of sectors and industries, to help identify needs, and develop solutions that meet requirements for their unique objectives.

## Software Solutions

### ESRI

ArcGIS Desktop  
ArcServer  
ArcGIS Online  
ArcPad

### Autodesk

AutoCAD Map3D  
Infrastructure Map Server  
Topobase  
ReCap

### FME

FME Desktop

### QGIS

QGIS Desktop  
QGIS Browser

### Trimble

TerraSync  
Pathfinder Office

### Microsoft Office

Access  
Excel  
Word  
VBA Automation

### Oracle

Spatial  
PL/SQL  
SQL Developer

### SQL Server

Spatial  
Management Studio

## Professional Experience - cont'd

HURON GEOMATICS INC. — Wingham, ON

*Provide project management and technical development leadership through multiple service lines for a fast-growing adaptive geomatics company.*

**Project Manager**, 2013 to 2017

**GIS Specialist**, 2009 to 2013

**GIS Technician**, 2008 to 2009

- Promoted to **project manager** role to plan, schedule and execute all stages of GIS, remote sensing, and data collection projects.
- Acted as **lead** for project teams to deliver projects and to help direct resources to overcome technical challenges.
- **Troubleshoot** problems and deliver solutions internally for our GIS and data collection (RTK GPS, UAV, 3D Scanning, Mobile LiDAR) services.
- Completed projects in a wide variety of GIS environments, which required the familiarity of multiple **GIS scripting languages** (VBA, Python, .NET).
- Helped the company develop **business processes** and actuate **project management** techniques to operate efficiently and allow for growth.
- **Managed and built relationships** for a large support portfolio. Acted as GIS support for clients in multiple industries.

## Recently Completed Projects

MID-SIZED ONTARIO ELECTRICAL SERVICES COMPANY, 2018

### GIS Support and Training

- Provide training for Autodesk AutoCAD Map 3D's enterprise GIS solution, including Oracle database development.
- Supported and helped facilitate the integration of company datasets with their Oracle GIS database.

CARIBBEAN ELECTRICAL SERVICES COMPANY, 2017

### ArcGIS Enterprise Implementation

- Install, configure, load and support the development of **ArcGIS Enterprise** using ArcSDE and MS SQL Server.
- Included the development of a Portal site and the training of their users for its use.

ONTARIO TELECOMMUNICATIONS PROVIDER, 2017

### GIS Audit & Development Support

- Verified assets by conducting a GPS field audit.
- Modified GIS database to accurately reflect assets found in field.
- Provided support for **database development** (ArcSDE) which included coordinate system transformations, importing feature classes and versioning.

**References available upon request**

# Russ Weimer

1020-600 Queens Quay W, Toronto, ON, M5V 3M3

## SUMMARY

- Transmission and distribution design
- Scada system design and implementation
- Construction support
- Substation automation
- Diesel engine controls
- Generator protection
- Commissioning and start-up
- Material specification and procurement
- Industrial data communications
- Powerplant distributed control and PLC systems

## EXPERIENCE PROFILE

### **Barkley Technologies / Belrey Power Services,**

*Consultant* 1994 to present

- Provide utility services in the areas of transmission/distribution design, scada systems, automation, and grounding.

### **AMEC Engineering,** *Construction Supervisor*

2002 - 03

- Provided field supervision and support for a pharmaceutical plant electrical and control installation project.
- Provided estimating and design review services.

### **Acres International,** *Construction Supervisor*

2001 - 02

- Provided field supervision and support for a central utility plant electrical and control installation project.
- Provided estimating and design review services.

### **Eastern Power,** *I&C Manager*

1994 - 2001

- Responsible for the control system design, installation, commissioning and start-up for a 35MW combined-cycle cogeneration power plant.
- Responsible for the control system design, installation, commissioning and start-up for a solid waste processing / power generation plant.
- Powerplant I&C maintenance and control system optimization

### **North York Hydro,** *Distribution Design & Standards Technician*

1991 - 1994

- Designed overhead and underground distribution systems.
- Created design standards and equipment specifications for distribution and scada systems.

**Ontario Hydro, Nuclear Generation, Control Technician**

1986 – 1991

- Installation, commissioning and maintenance of nuclear power plant electrical and process control equipment.
- Specialized in fuel handling robotics

**Westinghouse Canada Ltd., Generator Repair Technician**

2000 – 2003

- Testing and repair of high tension generators

**EDUCATION & CERTIFICATION**

- 'Design and Optimization of Transmission Lines using PLS-CADD – Power Line Systems
- 'Design of Transmission Lines using PLS-CADD' – Innovative Engineering Solutions
- Anchoring and Guying Fundamentals – Wallas Khella & Associates
- Generation System Protection – Schweitzer Engineering Labs
- Microprocessor System Design – Ryerson Polytechnical Institute
- Power System Design - Ryerson Polytechnical Institute
- Nuclear Control Technician Certification – Ontario Hydro
- Industrial Instrumentation Engineering Technician Diploma – Humber College
- Surveying Technician – Southern Alberta Institute of Technology



## **BRIAN CLOSE**

**205-1425 HIGH ST, NORTH BAY, ON P1B 9N3  
705-494-5554**

---

### **WORK EXPERIENCE**

BARKLEY TECHNOLOGIES 2007 – PRESENT – LINE SPECIALIST

NORTH BAY HYDRO 1975 – 2006

MAY 23, 1975	METER READER
MAR 11, 1977	LINEMAN LEARNER
MAR 11, 1982	JOURNEYMAN LINEMAN
NOV 20, 1989	CHARGE HAND
JAN 5, 1994	OPERATIONS SUPERVISOR

### **RELATED JOB ACTIVITIES**

COMMUNITY ELECTRICAL AWARENESS & HAZARDS AT LOCAL SCHOOLS  
INSTRUCTOR FOR SECOND YEAR LINEMAN TRAINING (4 YEARS) – ORANGEVILLE, ON  
MAINTAINED TRADE SKILLS SINCE RETIREMENT IN 2006; POLE TESTING, SYSTEM  
AUDITS, U/G LOCATING AND MAPPING, PCB TRANSFORMER TESTING, LINE  
CONSTRUCTION

### **EDUCATION**

1987 INTRODUCTION TO SOCIOLOGY, NIPISSING UNIVERSITY  
1984 BASIC ACCOUNTING, CANADORE COLLEGE  
1971 – 1973 LABORATORY TECHNOLOGY, CANADORE COLLEGE  
1966 – 1971 CHIPPEWA HIGH SCHOOL

### **TRAINING & DEVELOPMENT**

MEA EMPLOYER SEMINARS BY MLRO SERVICES  
SURVIVAL SKILLS FOR THE SUPERVISOR  
MUTUAL GAINS DIALOGUE  
CREATIVE PROBLEM SOLVING  
RISK MANAGEMENT TECHNIQUES/JOB PLANNING  
UTILITY RISK MANAGEMENT WORKSHOP  
CERTIFIED HEALTH & SAFETY MEMBER  
EUSA FRONT LINE LEADERSHIP  
EUSA TRADES COURSES (1983-1988)

### **COMMITTEES**

MANAGEMENT MEMBER – JOINT HEALTH & SAFETY CO-CHAIR  
UNION MEMBER – JOINT HEALTH & SAFETY MEMBER  
UNION RECORDING SECRETARY  
MEMBER OF NEGOTIATING COMMITTEE

# Don Reynolds

---

1525 Muskoka Road North , Gravenhurst , Ontario , P1P-1R5

| 705- 687-8179 Home / 705 826-6551 Cel) | E-mail: donannareynolds@hotmail.com

## Profile:

I consider myself an organized, dedicated, and loyal hard working person. I am highly motivated and enjoy challenges of different situations and problems. I have strong leadership skills and experiences that I have developed over the years , and consider myself a flexible team player. Over my many years of experience in the electrical field have great understanding of the electrical field and the daily operation security and safe of electrical production.

## Work Experience:

Alcan Aluminum Smelter , Kitimat , BC

Electrical Apprentice 1977-1978

- Preform electrical duties in the electrical portion for the production aluminum

Ontario Hydro

Electrical Station Maintenance Apprentice 1978 – 1982

- Perform electrical maintenance duties for power equipment from 230KV to 8KV in the distribution/ transmission/ hydroelectric generation stations ,
- Some of the areas of duties: stations/transformers/reclosers /SF6, oil breakers/ generation/switchgear/ D-C & A-C systems / fire systems/ battery and charger systems/ static exciters/ installation of conduit ,cabling and wire systems/ low volt systems/ line regulators/installation of MUS units/electrical tool repairs/install new equipment/troubleshooting
- Test of electrical equipment for maintenance/ commission/ troubleshooting
- Emergency repairs in stations/ trouble shooting/ support to line departments

Ontario Hydro

Electrical Station Maintenance Crew Supervisor 1987 – 1999

- Perform electrical maintenance duties as required / Emergency repairs/trouble shooting/support to line departments/ oversee the equipment maintenance scheduling/ ensure materials and supplies for maintenance/ TWE responsibilities
- Design and procurement of different projects in all Distribution/Transmission/HydroElectric Generation areas
- Monitor projects, support , commissioning of equipment
- Responsible for the day to day crew scheduling / outages/ equipment/ support/ training/ health and safety of staff
- Responsible for year budgets, Capital Project and Minor Project assignments

## Ontario Power Generation

Electrical Station Maintenance Crew Supervisor 1999 – 2014 (Retired)

- Perform electrical maintenance duties as required / Emergency repairs/trouble shooting/support to other plant groups/ oversee the equipment maintenance scheduling/ ensure materials and supplies for maintenance/ TWE responsibilities
- Design and procurement of different projects in HydroElectric Generation area, for Contractors/ OPG staff
- Monitor projects, support , commissioning of equipment
- Responsible for civil crews and river water control systems
- Responsible for the day to day crew scheduling / outages/ equipment/ support/ training/ health and safety of staff
- Responsible for year budgets, Capital Project and Minor Project assignments
- Responsible for outside contractor's work assignments and contract documents

## BARKLEY TECHNOLOGIES INC

Substation Specialist September 2014 – present

- Electrical station maintenance consultant , design consultant , project development and budgetary consultant
- Design and development of transmission/ distribution and generation station
- Electrical projects in South America and Caribbean Region for electrical stations design, development, equipment and material specifications, budgetary of projects
- Solar farm maintenance and maintenance development assignments
- Utilities station modification design and development

## Education:

Georgian College , Barrie , Ontario

Electrical Engineering Technician

2 Years Graduated - 1975-1977

North Collegiate High School , Barrie , Ontario

4 Year Program Graduated – 1973-1977

## Skills/ Training:

- Project Work: design/development /budget/ procedure equipment/specification documents/ monitor large crews of different trades/ overseen and instructed up to 20 men crews/ overseen start to finish of major projects/ commission of station equipment/ process ,develop, completion of construction documents / the approve and design changes of project on site/ scheduling and costing/ensure health and safety process/ working with manufactures of equipment for issues
- Ontario Industrial Electrician , Journeyman Certified
- Ontario Hydro Power Maintenance Electrician Certified
- Ontario Class AMZ Driver Licence
- Leadership and Supervisor Training(different modules/companies)
- OPG Contractor Monitor Training
- OPG Work Protection Training
- OPG Limits of Approach Training
- OPG Job Safety Development Training
- WHMIS Training Transport OF Dangerous Goods Training
- Fall Protection Training
- First Aid Training
- Auto External Defibrillator Training
- Confine Space Training
- Spill Response Training
- Elevated Work Platform Training
- RBD / Bucket Truck Training
- Craning and Rigging Training
- ATV training
- Smoke Detection And Alarm Training
- Thermal Vision Training
- Asbestos Training
- Hilti Tool Operator Certified
- Propane Handling Training

## **Appendix 7**

### **MWBE Utilization Plan**

Barkley Technologies has a registered branch in St Thomas and has worked in the US Virgin Islands since 2018. During this time we have made many contacts with people in various private enterprises throughout the communities on all three islands. It is our intention to take advantage of the local workforces whenever there are opportunities. The composite pole project requires expertise in many types of work. Some tasks are administrative and are on an ongoing basis that are well suited to small MWBE businesses.

We have reviewed the document included as Exhibit E. "Virgin Islands Uniform Certification Program (UCP) Disadvantaged Business Enterprise (DBE) Directory of Firms". We have identified firms that we recognize as well as firms that are relevant to this project and we will endeavor to utilize where possible as well as promote to the pole contractor(s).

Barkley Technologies will do its best to support this important initiative as the project progresses.



**BARKLEY**  
TECHNOLOGIES Inc.

## Leveraging Experience and Technology

Technical Services

Field Services

Construction Services

Substation Inspections

## Welcome to Barkley Technologies Inc.

Barkley Technologies has been providing technical and engineering services to Electrical Utilities in Canada and the Caribbean for 25 years.

### Technical Services

- Loss Reduction Studies
- Power Flow Studies
- Reliability Studies
- Overcurrent Protection
- System Planning
- Generator Impact Studies
- Pole Line Design
- PLS-CADD, PLS-POLE, TOWER
- T&D Structural Audits
- UG-OH Transmission Design

### Field Services

- T&D Mapping & Inventorying
- T&D Audits & Inspections
- Wood Pole Testing
- GPS Mapping
- Digital Photos Spatial Link
- CATV-TELCO Audit
- UG Locating and Mapping
- UG-OH Transmission Design
- UG Conductor Labelling
- Pole Numbering

### System Development

- Geographic Information System Development
- Asset Management Program
- Outage Management System
- Non-technical Loss Analysis
- Database Design
- Cost Estimating Program
- Project Dashboard Development

### Line and Substation Construction Management

- Project Approval Assistance
- Contractor Procurement and Management
- Material Procurement and Management
- Project Management



## PROJECTS

**Barkley Technologies Inc. has completed projects in more than 50 electrical utilities to date. The following are some of the latest projects.**

**US Virgin Islands Water & Power Authority** - Territory wide pole replacement project. Planning, Design, Project Management, Material Management, Vegetation Management (In progress)

**Staatsolie - Suriname** - Planning and Design of 69V transmission line. Includes overhead steel poles underground sections, riser structures, foundations and five GIS substations.

**EBS - Suriname** - Planning and Design of 161V transmission line. Includes overhead steel pole structures, foundations and tender documents.

**Antigua Public Utilities Authority** – Planning and design of 22km's of lattice tower reconductoring. Project includes specifying replacement of hardware as necessary, inspection, analysis of tower remaining strength and supply of material.

**Dominica Electricity Services Limited** – Planning and Design of 60 km's of 33kV sub-transmission wood pole line and upgrade of 5 substations to connect future geothermal plant to power company.

**Baha Mar Ltd. - Nassau Bahamas** - EPC Design and Construction of 132kV transmission line. Includes overhead steel and FRP poles, underground section and riser structures.

### **Canadian Solar – Guelph Ontario**

- Solar Farm substation inspections and maintenance in Ontario

### **Peak Power - Colorado**

- Transmission and Distribution Planning , Design and Power Flow technical assistance for 2 major Wind Farm projects in Southern Ontario (Nextera). Technical assistance included 230kV transmission with 44kV and 34.5 kV collector systems.

### **Ginn Sur Mer Project - Grand Bahama**

- Planning and Design of 21 miles of 69kV double circuit transmission pole line using composite poles and composite core conductor (ACCR). Project included all aspects of planning, route selection, impact studies, traffic management, safety, material and equipment procurement.
- Project Management services and participation as a GBPC consultant.

### **Grand Bahama Power Company**

- Transmission and Distribution planning. Power Flow Analysis, Line Design, Technical Consulting.
- Development of Corporate Geographic Information System, Cost Estimating System, Outage Management System. Power Flow and Complete system inventory and GPS mapping.

**Jamaica Public Services Company** – Development of corporate Geographic Information System implementation plan. Integration plan for existing and future management information and applications.

**Bahamas Power & Light** – 12kV feeder voltage support study on Eleuthera Island.

**Trinidad and Tobago Electricity Commission** - Development of Geographic Information System, GPS Mapping, Inventory, Inspection and Development (Tobago)

**St. Lucia Electricity Services Ltd.** - Development of Geographic Information System, Development of GPS Mapping, Inventory, Inspection and Automation process.

**St. Vincent Electricity Services** – Structural analysis of existing 33kV pole line using PLS-CADD

**Grenada Electricity Services Ltd.** – Development of Geographic Information System applications including Outage Management

**Veridian Connections** - Complete system analysis including 44kV, 27.6kV, 13.8kV, 8.32kV and 4.16kV optimization and loss reduction study. Project also includes consulting and planning recommendations. Ongoing power flow assistance and substation retrofit designs.

#### **Powerstream - Barrie**

- Inventory, GPS and oil sample testing of distribution transformers in the city of Barrie
- Tracing and tagging of unmarked secondary services in selected pad mounted transformers.
- Distribution and Subtransmission pole line design and cost estimating
- System model development and calibration for all 44kV, 13.8kV, 8.32kV and 4.14kV Feeders

#### **Orillia Power Distribution**

Complete system analysis including 44kV, 13.8kV and 4.16kV optimization and device coordination. Project also includes consulting and recommendations that enhance the distribution system and its capabilities in the future. Complete field inventory and map verification of all utility's customers, poles, transformers, switches, reclosers, conductor. Procedure includes a physical pole test.

**Newmarket Hydro** – Protective device coordination study. Coordination of 44kV and 13.8kV electromechanical and microprocessor based relays and all downstream devices.

**Collingwood Utility Services** – Development and planning of utilities distribution system with regards to voltage(s), substations, feeders and how to best manage the system during a period of high load growth.

**Hydro One-Network Services** - System modeling and protective device coordination for distribution feeders in various locations in Ontario.

**Midland Hydro** – Development and planning of utilities distribution system with regards to voltage(s), substations, feeder requirements and to manage the system during a period of high load growth.

#### **North Bay Hydro**

- Complete system inventory and GPS mapping of all utility's customers and T&D
- Complete system analysis including 44kV, 27.6kV, 8.32kV and 4.16kV optimization and device coordination

**Lakeland Power** – Power flow modeling and loss reduction project for Bracebridge system.

**Ottawa River Power** – Power flow modeling, substation and feeder planning for Almonte system.

**Burlington Hydro** – Substation ground grid design and GPR study.

**Wasaga Distribution Inc.** – Power flow and GIS ongoing assistance.



**Organizational Memberships**

IHSA EUSA – Infrastructure Health & Safety Assoc. Electrical and Utilities Safety Assoc.

EDA - Electricity Distributor's Association

PMI – Project Management Institute

IEEE - Institute of Electrical & Electronics Engineers

CARILEC - Caribbean Electric Utility Services Corporation

WSIB - Workplace Safety Insurance Board

CIGRE - Council on Large Electric Systems

**Contact – Tim Bell, PMP  
(705)789-7824**

[timbell@barkleytech.ca](mailto:timbell@barkleytech.ca)  
or  
[info@barkleytech.ca](mailto:info@barkleytech.ca)

**website** [www.barkleytech.ca](http://www.barkleytech.ca)



## Description of Services - 2020

Geographic Consulting LLC provides the most comprehensive set of environmental consulting services in the US Virgin Islands. We boast the largest, privately managed geodatabase in the Virgin Islands, state of the art software and equipment and up-to-date licenses. We pride ourselves on our ability to understand client needs and develop solutions using our staff's technical expertise and provide the resulting data in easy to use dashboards suited to the client's needs. Our services include;

- Endangered species mapping and compliance
- Environmental Assessments, including Phase 1
- Geospatial data collection and analysis,
- Reforestation and forest restoration
- Territorial and federal permitting
- Forest restoration/tree planting/tree nursery
- Expert Witness testimony

The arborists and environmental professionals at Geographic Consulting provide a wide range of other services. We conduct site assessments for private and public conservation plans. Dr. Brian Daley has over 20 years environmental experience in the US Virgin Islands, with a specialty in forestry and is also certified arborist (ISA) in the Virgin Islands. We own and operate our tree nursery, specializing in the production of native plant material. We produce nursery-grown trees for large and small environmental restoration, roadside and ornamental plantings. Our plant specialists have installed thousands of native trees with the National Park Service, the Virgin Islands Port Authority, private land and the public roadsides connecting them.

We create Phase 1 & 2 Environmental Site Assessment (ESA) and carry >\$1 million in Environmental Professional & Pollution Incident liability insurance so that our clients may proceed with peace of mind and more easily obtain financing. We navigate the entire permitting process for our clients; federal and local government. Our team has extensive experience in obtaining environmental (CZM, Endangered Species), Archeological (SHPO), engineering (SWPP, TPDES) and others. Our staff has the experience and equipment necessary to punctually conduct all manners of environmental field work and an additional \$1 million in general liability insurance.

Our work is spatially explicit, and we boast the largest private GIS geodatabase in the Caribbean region. We bring historic aerial photography, satellite images, land cover/forest cover maps and other assets to every job and create new, custom products for our clients. Our wildlife biologists conduct one-time population assessments for endangered species as well as long term nesting monitoring activity of Leatherback Sea Turtles and other organisms. We have mapped endangered plant species for the US Fish and Wildlife and also navigated our clients' safely through development in environmentally sensitive areas.

## Tim Bell

---

**From:** Dun & Bradstreet <customerinquiries@dnb.com>  
**Sent:** April 3, 2020 10:17 AM  
**To:** timbell@barkleytech.ca  
**Subject:** Your Dun & Bradstreet D-U-N-S Number



Dear Tim,

Thank you for requesting your Dun & Bradstreet D-U-N-S® Number. The details are below.

Company: Barkley Technologies Inc  
Street: 367 Muskoka Rd 3 N Unit 3  
City: Huntsville  
Postal Code: P1H 1H6  
D-U-N-S® Number: " 258789569 "

Please visit us at [www.dnb.com/ca-en/contact-us.html](http://www.dnb.com/ca-en/contact-us.html) with any questions. For more information about D&B's Products and Services, please visit [www.dnb.com/ca-en](http://www.dnb.com/ca-en).

Regards,

Dun & Bradstreet Customer Service Team