

**AGREEMENT
For
PROFESSIONAL ENGINEERING SERVICES
Between
THE CITY OF COLUMBIA, MISSOURI
And
QUANTA TECHNOLOGY, LLC**

THIS AGREEMENT made as of _____ day of _____, 2017, by and between the City of Columbia, Missouri (hereinafter called "CITY"), and Quanta Technology, LLC (hereinafter called "ENGINEER").

WITNESSETH, that whereas CITY intends to make improvements as described below, hereinafter called the PROJECT, consisting of the following:

Independent reliability study of City's electric distribution system to increase reliability and compare alternatives to the Mill Creek substation construction proposal

(Description of Project)

NOW, THEREFORE, in consideration of the mutual covenants set out herein the parties agree as follows:

ENGINEER shall serve as CITY's professional engineering contractor in those assignments to which this Agreement applies, and shall give consultation and advice to CITY during the performance of the services. All services shall be performed under the direction of a professional engineer registered in the State of Missouri and qualified in the particular field.

SECTION 1 - AUTHORIZATION OF SERVICES

1.1 ENGINEER shall not undertake to begin any of the services contemplated by this agreement until directed in writing to do so by CITY. CITY may elect to authorize the PROJECT as a whole or in parts.

1.2 Authorized work may include services described hereafter as Basic Services or as Additional Services of ENGINEER.

SECTION 2 - BASIC SERVICES OF ENGINEER

2.1 General

2.1.1 Perform professional engineering services as set forth in Attachment A - "Scope of Basic Services," dated **July 21, 2017** (hereinafter referred to as "Scope of Basic Services").

2.1.2 ENGINEER will designate the following listed individuals as its project team with responsibilities as assigned. ENGINEER shall dedicate whatever additional resources are necessary to accomplish the PROJECT within the specified time frame but will not remove these individuals from the assigned tasks for any reason within the control of ENGINEER without the written approval of CITY.

Name and Title
Bryan Rushing
Dennis Flinn
John Widdifield

Assignment
Project Manager
Technical Project Lead
Cost Estimation Support

All of the services required hereunder will be performed by ENGINEER or under its supervision and all personnel engaged in the work shall be fully qualified and authorized or permitted under state and local law to perform such services.

None of the work or services covered by this Agreement shall be subcontracted without the prior written approval of CITY and any work or services so subcontracted shall be subject to the provisions of this Agreement.

2.2 ENGINEER shall furnish such periodic reports as CITY may request pertaining to the work or services undertaken pursuant to this Agreement, the costs and obligations incurred or to be incurred, and any other matters covered by this Agreement.

2.3 ENGINEER shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to the Agreement and any other records as deemed necessary by CITY to assure proper accounting for all project funds. These records must be available to CITY or its authorized representatives, for audit purposes, and must be retained for three (3) years after expiration or completion of this Agreement.

SECTION 3 - ADDITIONAL SERVICES OF ENGINEER

3.1 General

If authorized in writing by CITY, and agreed to in writing by ENGINEER, ENGINEER shall furnish or obtain from others Additional Services of the following types which are not considered normal or customary Basic Services. The scope of Additional Services may include:

3.1.1 Financial Consultation

Consult with CITY's fiscal agents and bond attorneys and provide such engineering data as required for any bond prospectus or other financing requirements.

3.1.2 Property Procurement Assistance

Provide consultation and assistance on property procurement as related to professional engineering services being performed.

3.1.3 Obtaining Services of Others

Provide through subcontract the services or data set forth in Scope of Basic Services.

3.1.4 Preliminary or final engineering design of capital facilities except as specifically identified herein.

3.1.5 Preparation of reports, data, application, etc., in connection with modifications to FEMA floodplain definition and/or mapping.

- 3.1.6 Extra Services
Services not specifically defined heretofore that may be authorized in writing by CITY.

SECTION 4 - RESPONSIBILITIES OF CITY

- 4.1 Provide full information as to CITY's requirements for the PROJECT.
- 4.2 Assist ENGINEER by placing at ENGINEER's disposal available information pertinent to the assignment including previous reports and other data relative thereto, including the items outlined in Scope of Basic Services.
- 4.3 Guarantee access to and make all provisions for ENGINEER to enter upon public and private property as required for ENGINEER to perform ENGINEER's services under this Agreement.
- 4.4 Examine all studies, reports, sketches, estimates, Bid Documents, Drawings, proposals and other documents presented by ENGINEER and render in writing decisions pertaining thereto.
- 4.5 Provide such professional legal, accounting, financial and insurance counseling services as may be required for the PROJECT.
- 4.6 Designate **Eric Worts, Engineering Supervisor**, as CITY's representative with respect to the services to be performed under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define CITY's policies and decisions with respect to materials, equipment, elements and systems to be used in the PROJECT, and other matters pertinent to the services covered by this Agreement.
- 4.7 Give prompt written notice to ENGINEER whenever CITY observes or otherwise becomes aware of any defect in the PROJECT.
- 4.8 Furnish approvals and permits from all governmental authorities having jurisdiction over the PROJECT and such approvals and consents from others as may be necessary for completion of the PROJECT.
- 4.9 Furnish ENGINEER data such as probings and subsurface explorations, with appropriate professional interpretations; property, boundary, easement, right-of-way, topographic and utility surveys; zoning and deed restriction; and other special data or consultations, all of which ENGINEER may rely upon in performing his services under this Agreement.

SECTION 5 - PERIOD OF SERVICE

- 5.1 This Agreement will become effective upon the first written notice by CITY authorizing services hereunder.
- 5.2 This Agreement shall be applicable to all work assignments authorized by CITY subsequent to the date of its execution and shall be effective as to all assignments authorized.

5.3 Services shall be started within 10 calendar days of Notice to Proceed and completed within **90** calendar days from the issuance of the Notice to Proceed. CITY shall have the right to establish performance times for individual phases or elements of the PROJECT by delivering a written schedule setting out the performance times to the ENGINEER.

SECTION 6 - PAYMENTS TO ENGINEER

6.1 Amount of Payment

6.1.1 For services performed, CITY shall pay ENGINEER the sum of amounts determined as follows:

6.1.1.1 For time spent by personnel, payment at the hourly rates indicated in the "Schedule of Hourly Labor Billing Rates" (attached). Such rates include overhead and profit. The schedule is effective to **August 31, 2017**, and may be revised thereafter.

6.1.1.2 For outside expenses incurred by ENGINEER, such as authorized travel and subsistence, commercial services, and incidental expenses, the cost to ENGINEER.

6.1.1.3 For reproduction, printing, long-distance telephone calls, company vehicle usage, testing apparatus, computer services and computer-assisted drafting (CAD), amounts will be charged according to the ENGINEER's standard rates in effect at the time service is provided.

6.1.1.4 For professional services rendered by others as subcontractor(s) to ENGINEER such as surveying, real property descriptions, soil borings, subsurface investigations, laboratory testing, field quality control tests, progress photos, or other activities required or requested by CITY, will be billed at the cost to ENGINEER.

6.1.1.5 For time spent by outside individual professional consultants employed by ENGINEER in providing services to CITY, the cost to ENGINEER. Expenses incurred by such outside consultants in service to CITY shall be reimbursable in accordance with 6.1.1.2 above.

6.1.2 Total payment for Scope of Basic Services and all other expenses and costs to CITY under this Agreement and described herein **shall not exceed \$97,500**.

6.2 Payments

6.2.1 ENGINEER shall submit an invoice for services rendered to CITY not more than once every month. Upon receipt of the invoice and progress report, CITY will, as soon as practical, pay ENGINEER for the services rendered, provided CITY does not contest the invoice, to the extent of ninety-five percent (95%) of the uncontested amount earned. Upon completion and acceptance of the final plans by CITY, the five percent (5%) of these services retained by CITY will be paid to ENGINEER.

SECTION 7 – LIMITATIONS OF LIABILITY

7.1 Maximum Liability

Notwithstanding anything in this Agreement or otherwise to the contrary, and in addition to, cumulative of and not in limitation of any other limits on liability herein, the maximum aggregate liability of ENGINEER and ENGINEER Indemnified Parties under this Agreement, regardless of cause (whether in contract, tort, strict liability, or otherwise), shall not exceed in the aggregate an amount equal to (A) (with respect to losses covered by policies of insurance ENGINEER is required to obtain and maintain under this Agreement) actual proceeds from the insurance coverage amounts for the policy covering such loss, and (B) for claims as to which no such coverage is required (e.g., for ordinary breach of contract), the maximum contract amount of \$97,500.

7.2 Waiver of Consequential Damages

In no event shall either party be liable to the other party or its affiliates, either hereunder, in connection with the services, or otherwise at law, in contract, or in tort, including negligence and strict liability, for any claims for the following damages or any other damage of a similar nature: (i) punitive or exemplary damages or (ii) special, indirect, incidental, or consequential damages, however caused (including by loss or interruption of use, business, or property or access thereto; loss of contract, product, profit, production, interest, or business opportunity; or cost of capital or delays); *provided*, that such waiver of damages shall not apply to (a) indemnity obligations set forth in this agreement as they relate to claims by third parties or (b) losses which arise or result from fraud or willful misconduct.

SECTION 8 - GENERAL CONSIDERATIONS

8.1 Insurance

8.1.1 ENGINEER'S INSURANCE: ENGINEER agrees to maintain, on a primary basis and at its sole expense, at all times during the life of this contract the following insurance coverages, limits, including endorsements described herein. The requirements contained herein, as well as CITY's review or acceptance of insurance maintained by ENGINEER is not intended to and shall not in any manner limit or qualify the liabilities or obligations assumed by ENGINEER under this contract

Commercial General Liability ENGINEER agrees to maintain Commercial General Liability at a limit of liability of **\$2,000,000** combined single limit for any one occurrence covering both bodily injury and property damage, including accidental death. Coverage shall not contain any endorsement(s) excluding nor limiting Contractual Liability or Cross Liability. If the contract involves any underground/digging operations, the general liability certificate shall include X, C and U (Explosion, Collapse and Underground) coverage.

Professional Liability ENGINEER agrees to maintain Professional (Errors & Omissions) Liability at a limit of liability of **\$2,000,000** per claim and **\$2,000,000** aggregate. For policies written on a "Claims-Made" basis, ENGINEER agrees to maintain a Retroactive Date prior to or equal to the effective date of this contract. In the event the policy is canceled, non-renewed, switched to an Occurrence Form, retroactive date advanced; or any other event triggering the right to purchase a Supplemental Extended Reporting Period (SERP) during the life of this contract, ENGINEER agrees to purchase a SERP with a minimum reporting period not less than two (2) years. The requirement to purchase a SERP shall not relieve ENGINEER of the obligation to provide replacement coverage.

Business Automobile Liability ENGINEER agrees to maintain Business Automobile Liability at a limit of liability of **\$2,000,000** combined single limit for any one occurrence and \$150,000

per individual, covering both bodily injury, including accidental death, and property damage, to protect themselves from any and all claims arising from the use of the ENGINEER's own automobiles, and trucks; hired automobiles, and trucks; and automobiles both on and off the site of work. Coverage shall include liability for Owned, Non-Owned & Hired automobiles. In the event ENGINEER does not own automobiles, ENGINEER agrees to maintain coverage for Hired & Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Workers' Compensation Insurance & Employers' Liability ENGINEER agrees to take out and maintain during the life of this contract, Employers' Liability and Workers' Compensation Insurance for all of their employees employed at the site of the work, and in case any work is sublet, the ENGINEER shall require the subcontractor similarly to provide Workers' Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the ENGINEER. Workers' Compensation coverages shall meet Missouri statutory limits. Employers' Liability limit shall be \$500,000 each employee, \$500,000 each accident and \$500,000 policy limit. In case any class of employees engaged in hazardous work under this contract is not protected under the Workers' Compensation Statute, the ENGINEER shall provide and shall cause each subcontractor to provide Employers' Liability Insurance for the protection of their employees not otherwise protected.

Excess/Umbrella Liability The above liability limits may be satisfied by any combination of primary and excess/umbrella liability policies.

Additional Insured ENGINEER agrees to endorse CITY as an Additional Insured with a CG 2026 Additional Insured – Designated Person or Organization endorsement, or similar endorsement, to the Commercial General Liability. Additional Insured status required by and/or provided under this Agreement of ENGINEER and/or its insurers is provided pursuant and subject to ISO Endorsement Form CG 20 10 04 13 and/or CG 20 37 04 13 or equivalent forms for policies other than Commercial General Liability. CITY shall be named as additional insureds only to the extent of ENGINEER'S negligence in its operations and during the performance of Work, to no greater extent than is necessary to provide insurance coverage for the covered indemnity obligations expressly assumed by ENGINEER under this Agreement, it being the express intent and understanding of the Parties that the insurance and indemnity obligations under this Agreement are dependent upon one another and are not separate and distinct. . The Additional Insured shall read "City of Columbia."

Waiver of Subrogation ENGINEER agrees by entering into this contract to a Waiver of Subrogation for each required policy herein except professional liability. When required by the insurer, or should a policy condition not permit ENGINEER to enter into an pre-loss agreement to waive subrogation without an endorsement, then ENGINEER agrees to notify the insurer and request the policy be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This Waiver of Subrogation requirement shall not apply to any policy, which includes a condition specifically prohibiting such an endorsement, or voids coverage should ENGINEER enter into such an agreement on a pre-loss basis.

Certificate(s) of Insurance ENGINEER agrees to provide CITY with Certificate(s) of Insurance evidencing that all coverages, limits and endorsements required herein are maintained and in full force and effect. Said Certificate(s) of Insurance shall include a minimum thirty (30) day endeavor to notify due to cancellation or non-renewal of coverage. The Certificate(s) of Insurance shall name the City as additional insured in an amount as required in this contract and contain a description of the project or work to be performed.

Right to Revise or Reject CITY reserves the right, but not the obligation, to review and revise any insurance requirement, not limited to limits, coverages and endorsements based on insurance market conditions affecting the availability or affordability of coverage; or changes in the scope of work / specifications affecting the applicability of coverage. Additionally, CITY reserves the right, but not the obligation, to review and reject any insurance policies failing to meet the criteria stated herein or any insurer providing coverage due of its poor financial condition or failure to operating legally.

8.1.2 **HOLD HARMLESS AGREEMENT:** To the fullest extent not prohibited by law, ENGINEER shall indemnify and hold harmless the City of Columbia, its directors, officers, agents and employees from and against all claims, damages, losses and expenses (including but not limited to attorney's fees) arising by reason of any negligent act or failure to act, or willful misconduct, of ENGINEER, of any subcontractor (meaning anyone, including but not limited to consultants having a contract with ENGINEER or a subcontractor for part of the services), of anyone directly or indirectly employed by ENGINEER or by any subcontractor, or of anyone for whose acts ENGINEER or its subcontractor may be liable, in connection with providing these services except as provided in this Agreement. This provision does not, however, require ENGINEER to indemnify, hold harmless or defend the City of Columbia from its own negligence, except as set out herein.

8.2 Professional Responsibility

8.2.1 ENGINEER will exercise reasonable skill, care, and diligence in the performance of its services and will carry out its responsibilities in accordance with customarily accepted good professional engineering practices. If ENGINEER fails to meet the foregoing standard, ENGINEER will perform at its own cost, and without reimbursement from CITY, the professional engineering services necessary to correct errors and omissions which are caused by ENGINEER's failure to comply with above standard, and which are reported to ENGINEER within one year from the completion of ENGINEER's services for the PROJECT.

8.2.2 In addition, ENGINEER will be responsible to CITY for damages caused by its negligent conduct during its activities at the PROJECT site or in the field.

8.2.3 Professional Oversight Indemnification

ENGINEER understands and agrees that CITY has contracted with ENGINEER based upon ENGINEER's representations that ENGINEER is a skilled professional and fully able to provide the services set out in this Agreement. In addition to any other indemnification set out in this Agreement, ENGINEER agrees to defend, indemnify and hold and save harmless CITY from any and all claims, settlements and judgments whatsoever arising out of CITY's alleged negligence in hiring or failing to properly supervise ENGINEER. ENGINEER agrees to provide CITY with Certificate(s) of Insurance evidencing that all coverages, limits and endorsements are maintained and in full force and effect.

8.3 Estimates and Projections

Estimates and projections prepared by ENGINEER relating to construction costs and schedules, operation and maintenance costs, equipment characteristics and performance, and operating results are based on ENGINEER's experience, qualifications and judgment as a design professional. Since ENGINEER has no control over weather, cost and availability of labor, material and equipment, labor productivity, construction contractor's procedures and methods, unavoidable delays, construction contractor's methods of determining prices, economic conditions, competitive bidding or market conditions and other factors affecting such

estimates or projections, ENGINEER does not guarantee that actual rates, costs, performance, schedules, etc., will not vary from estimates and projections prepared by ENGINEER.

8.4 On-Site Services

PROJECT site visits by ENGINEER during construction shall not make ENGINEER responsible for construction means, methods, techniques, sequences or procedures; for construction safety precautions or programs; or for any construction contractor(s) failure to perform its work in accordance with the plans and specifications.

7.5 Changes

CITY shall have the right to make changes within the general scope of ENGINEER's services, with an appropriate change in compensation and/or schedule, upon execution of a mutually acceptable amendment or change order signed by an authorized representative of CITY and the President or any Vice President of ENGINEER.

8.6 Suspension of Services

Should CITY fail to fulfill its responsibilities as provided under Section 4 to the extent that ENGINEER is unduly hindered in ENGINEER's services or if CITY fails to make any payment to ENGINEER on account of its services and expenses within ninety (90) days after receipt of ENGINEER's bill therefor, ENGINEER may, after giving seven (7) days' written notice to CITY, suspend services under this Agreement until CITY has satisfied his obligations under this Agreement.

8.7 Termination

Services may be terminated by the CITY at any time and for any reason, and by ENGINEER in the event of substantial failure to perform in accordance with the terms hereof by CITY through no fault of ENGINEER, by ten (10) days' notice. If so terminated, CITY shall pay ENGINEER all uncontested amounts due ENGINEER for all services properly rendered and expenses incurred to the date of receipt of notice of termination.

8.7.1 In the event of CITY's termination of this Agreement pursuant to the above section, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs and reports prepared under this Agreement, shall at the option of CITY become its property.

Further, ENGINEER shall not be relieved of any liability to CITY for any damages sustained by CITY by virtue of any breach of this Agreement by ENGINEER and CITY may withhold any payments due ENGINEER for the purpose of set-off until such time as the exact amount of damages to CITY, if any, is determined.

8.8 Publications

Recognizing the importance of professional development on the part of ENGINEER's employees and the importance of ENGINEER's public relations, ENGINEER may prepare publications, such as technical papers, articles for periodicals, and press releases, pertaining to ENGINEER's services for the PROJECT. Such publications will be provided to CITY in draft form for CITY's advance review. CITY will review such drafts promptly and will provide comments to ENGINEER. CITY may require deletion of proprietary data or confidential information from such publications but otherwise will not unreasonably withhold its approval. The cost of ENGINEER's activities pertaining to any such publication shall be paid entirely by ENGINEER.

8.9 Nondiscrimination

During the performance of this Agreement, ENGINEER agrees to the following:

8.9.1 ENGINEER shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, ancestry, marital status, disability, sexual orientation or gender identity. ENGINEER shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, age, national origin, ancestry, marital status, disability, sexual orientation or gender identity. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. ENGINEER agrees to post notices in conspicuous places, available to employees and applicants for employment.

8.9.2 ENGINEER shall, in all solicitation or advertisements for employees placed by or on behalf of ENGINEER, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin, ancestry, marital status, disability, sexual orientation or gender identity.

8.9.3 ENGINEER shall comply with all provisions of State and Federal Laws governing the regulation of Equal Employment Opportunity including Title VI of the Civil Rights Act of 1964.

8.10 Successor and Assigns

CITY and ENGINEER each binds himself and his successors, executors, administrators and assigns to the other party of this Agreement and to the successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement; except as above, neither CITY nor ENGINEER shall assign, sublet or transfer his interest in the Agreement without the written consent of the other.

8.11 Rights and Benefits

ENGINEER's services will be performed solely for the benefit of the CITY and not for the benefit of any other persons or entities.

8.12 Compliance with Local Laws

ENGINEER shall comply with all applicable laws, ordinances and codes of the state and city.

8.13 Law; Submission to Jurisdiction Governing

This Agreement shall be governed by, interpreted and enforced in accordance with the laws of the State of Missouri and/or the laws of the United States, as applicable. The venue for all litigation arising out of, or relating to this Agreement, shall be Boone County, Missouri or the United States Western District of Missouri. The parties hereto irrevocably agree to submit to the exclusive jurisdiction of such courts in the State of Missouri and waive any defense of forum non conveniens.

8.14 Employment of Unauthorized Aliens Prohibited

8.14.1 ENGINEER agrees to comply with Missouri State Statute section 285.530 in that they shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri.

8.14.2 As a condition for the award of this Agreement, ENGINEER shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. ENGINEER shall also sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

8.14.3 ENGINEER shall require each subcontractor to affirmatively state in its contract with ENGINEER that the subcontractor shall not knowingly employ, hire for employment or continue to employ an unauthorized alien to perform work within the state of Missouri. ENGINEER shall also require each subcontractor to provide ENGINEER with a sworn affidavit under the penalty of perjury attesting to the fact that the subcontractor's employees are lawfully present in the United States.

8.15 No Waiver of Immunities

In no event shall the language of this Agreement constitute or be construed as a waiver or limitation for either party's rights or defenses with regard to each party's applicable sovereign, governmental, or official immunities and protections as provided by federal and state constitutions or laws.

In the event of a conflict between the terms and conditions of this Agreement and any attachment hereto, the terms contained in this Agreement shall prevail and the terms contained in any attachment shall subsequently prevail in the order attached hereto.

8.16 Entire Agreement

This Agreement represents the entire and integrated Agreement between ENGINEER and CITY relative to the Scope of Basic Services herein. All previous or contemporaneous agreements, representations, promises and conditions relating to ENGINEER's services described herein are superseded.

[SIGNATURES ON FOLLOWING PAGE]

CITY OF COLUMBIA, MISSOURI

By: _____
Mike Matthes, City Manager

ATTESTED BY:

Sheela Amin, City Clerk

APPROVED AS TO FORM:

Nancy Thompson, City Counselor

CERTIFICATION: I hereby certify that the above expenditure is within the purpose of the appropriation to which it is charged, Account No. _____, and that there is an unencumbered balance to the credit of such appropriation sufficient to pay therefor.

By: _____
Director of Finance

QUANTA TECHNOLOGY, LLC

By: _____

Date: _____

ATTEST:

By: _____

Name: _____

NOTICE TO VENDORS

Section 285.525 – 285.550 RSMo Effective January 1, 2009

Effective January 1, 2009 and pursuant to RSMo 285.530 (1), No business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri.

As a condition for the award of any contract or grant in excess of five thousand dollars by the state or by any political subdivision of the state to a business entity, or for any business entity receiving a state administered or subsidized tax credit, tax abatement, or loan from the state, the business entity shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Every such business entity shall sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. [RSMO 285.530 (2)]

An employer may enroll and participate in a federal work authorization program and shall verify the employment eligibility of every employee in the employer's hire whose employment commences after the employer enrolls in a federal work authorization program. The employer shall retain a copy of the dated verification report received from the federal government. Any business entity that participates in such program shall have an affirmative defense that such business entity has not violated subsection 1 of this section. [RSMO 285.530 (4)]

For vendors that are not already enrolled and participating in a federal work authorization program, E-Verify is an example of this type of program. Information regarding E-Verify is available at:

http://www.dhs.gov/xprevprot/programs/gc_1185221678150.shtm.

Effective 1/1/2009

Notary Public



Independent Distribution Reliability Study for Columbia, MO

PREPARED FOR: Columbia, MO Water & Light
Department

DATE: July 21, 2017

PREPARED BY: Bryan Rushing
brushing@quanta-technology.com
(636) 288-2946

Dennis Flinn
dflinn@quanta-technology.com
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Quanta Technology, LLC is a wholly-owned subsidiary of Quanta Services, Inc. (NYSE: PWR)



CONFIDENTIAL/PROPRIETARY: This document contains trade secrets and/or proprietary, commercial or financial information not generally available to the public. It is considered privileged and proprietary to the Offeror, and is submitted by Quanta Technology, LLC in confidence with the understanding that its contents are specifically exempted from disclosure under the Freedom of Information Act [5 USC Section 552 (b) (4)] and shall not be disclosed by the recipient [whether it be Government (local, state, federal, or foreign), private industry, or non-profit organization] and shall not be duplicated, used, or disclosed, in whole or in part, for any purpose except to the extent in which portions of the information contained in this document are required to permit evaluation of this document, without the expressed written consent of the Offeror. If a contract is awarded to this Offeror as a result of, or in connection with, the submission of this data, the right to duplicate, use, or disclose the data is granted to the extent provided in the contract.



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1 INTRODUCTION

By way of background, the Columbia, MO Water & Light Department (“CWLD”) has been looking at expanding its electric system in the southern part of the city. CWLD has eight (8) substations located throughout its service territory. Over the past few years, CWLD has presented several options for an electric project that would add transmission lines to connect a new Mill creek substation on Peach Tree Drive with some of the existing lines.

CWLD has indicated an interest in having an independent third party perform a study within the CWLD service territory exploring alternatives to compare with the new Mill creek substation.

Quanta Technology proposes to perform the following scope of work to assist CWLD by performing a distribution planning analysis of the CWLD electric system. Quanta Technology proposes to perform the scope of work on a time and materials basis estimated at \$97,500.

1.1 About Quanta Technology

Quanta Technology is an independent consulting company providing business and technical expertise to the energy and utility industries. Our mission is to provide value to our clients in every engagement with the best technical and business expertise, the most holistic and practical advice and the most insightful thought leadership in the industry.

We offer a full spectrum of services in the following areas:

- Transmission & Distribution
- Protection & Control
- Asset Operations
- Asset Management
- Enterprise Integration & Smart Grid Strategies
- Renewables Energy Integration, Storage & Microgrids
- Regulatory Compliance
- Optical Sensors
- Automation & Testing
- Synchrophasors & WAMPAC
- Applied R&D
- Workforce Training & Augmentation

Quanta Technology's client base is well established in North America and in numerous international markets. Our clients include energy delivery utility companies, large industrial companies, energy suppliers, Regional Transmission Operators, Independent System Operators (RTOs/ISOs), and energy industry research and support organizations.

Quanta Technology is a wholly owned subsidiary of **Quanta Services, Inc.** (NYSE: PWR). Quanta Services safely provides engineering, procurement and construction (EPC) services for comprehensive infrastructure needs in the electric power and oil and natural gas industries. With a workforce greater than 24,000 strong and offices throughout North America, Quanta Services is the premier provider in the industries it serves. As part of the Quanta Services family



of companies, Quanta Technology has the manpower, resources, and expertise to complete projects that are local, regional, national, and/or international in scope.

About Quanta Services:

- The largest electric transmission and distribution specialty contractor in North America.
- Largest employer of certified electric power linemen in North America.
- The largest pipeline specialty contractor in North America.
- The owner of the largest specialized equipment fleet in the industry.
- Fortune 400 company with a strong balance and the financial resources for capital-intensive projects.
- Full service engineering, procurement and construction (EPC) service provider.
- An innovator of technologies and proprietary methodologies.



2 PROPOSED PROJECT WORK PLAN

Quanta Technology proposes the following work plan to provide CWLD with an independent distribution reliability study for CWLD electric distribution system, identifying potential weaknesses in the current configuration. Quanta will propose several project that will increase reliability. Alternatives to will be compared to the addition of the new Mill creek substation proposed by city staff. Quanta Technology has broken the proposed work plan into five major tasks.

1. Task 1 – Project Planning and Initiation

A project initiation meeting is used to ensure there is mutual agreement between parties of the objectives, scope, schedule, deliverables, and budget of the project. This meeting is also used to establish on going contact information and protocols, reporting requirements, and to identify needs for client assistance, data acquisition, and other logistical requirements.

2. Task 2 – Data gathering

The purpose of this task is to obtain all information necessary to perform the work. Quanta Technology will provide a data request at the project outset. The data required for this project will include:

A. Circuit Data

a. Parameters to be included:

- i. Cable and/or conductor type;
- ii. Cable and/or conductor size;
- iii. Cable and/or conductor configuration;
- iv. Cable and/or conductor length; and
- v. If available, known loads greater than 1 MVA and their location on the circuit.

B. Load Data

- a. Circuit amps of each feeder (including date and time the load was recorded).
- b. Substation Power Factor (or MW / Mvar)

C. Capacitors

- a. Size & Location
- b. Fixed or Switched
- c. If Switched, provide control settings

D. Feeder Load Limits



- a. Identification of the maximum amps placed on the feeder under normal and contingency conditions.
- E. Voltage Drop Permissions
 - a. Provide the maximum voltage drop permitted on the feeders if such a limit has been established.
- F. Transformer Voltage Regulation Settings
 - a. Provide the voltage regulation settings on each substation transformer
 - b. Provide location of line regulators (if used) along with settings.
- G. Substation One-line Diagrams
 - a. Provide a one-line diagram of each substation.
- H. Location and size of Distribution Transformers
- I. Cost Estimates and other engineering plans for Mill Creek Substation.

The circuit data is assumed to be in a format that Quanta Technology can readily import into a power flow analysis software program. If a circuit model database is needed to be created, or major modifications to the data to build a working model is needed, Quanta Technology proposes to perform this as a separate scope of work within the project.

Task 3 – Electric System Review and Assessment

The purpose of the electric system review and assessment will be to identify system deficiencies, compare with industry best practices and determine if revisions to engineering, operating and maintenance practices should be considered. The circuit and substation capacity analysis and evaluation may include, in part or all, of the following activities.

1. Visual overview of the system components.
2. Review of Distribution Standards and Planning Guidelines
3. Review of operating practices.
4. Review of outage records and reliability reports.
5. Review of substation and equipment loading practices.
6. Discussions with engineering and operations personnel.
 - o Reliability goals;
 - o Operating issues; and
 - o Financial targets;
7. Review load growth projections and determine, at a system level, the ability of the infrastructure to support current and future load.
 - o Perform equipment loading analysis as required for transformers, conductors, cables, etc.



8. Identify areas of the city that the electric utility with reliability concerns with the current infrastructure.

Task 4 – Review of Potential Mitigations and Comparison to Proposed Mill Creek Substation

Quanta Technology will develop and propose additional alternatives to construction of the Mill Creek Substation. Quanta Technology will also evaluate if the Mill Creek Substation is the best solution for the CWLD's electric system expansion.

1. Propose alternative solutions to Mill Creek that may include
 - o Expansion of surrounding substations
 - o Re-distribution of available capacity from other substations in the territory.
 - o Novel solutions such as distribution battery banks
 - o Rooftop Solar
 - o Any combination
2. Compare
 - o Reliability goals;
 - o Operating issues; and
 - o Financial targets;
3. Review CWLD service territory load growth projections and the ability of the surrounding electrical infrastructure to support current and future load with each proposed alternative and Mill Creek Substation.

Task 5 – Deliverable Items

1. Secure File Sharing

Prior to the model setup and validation, a secure file sharing site (Box.com) will be provided for CWLD to upload data required for Quanta Technology to conduct the study.
2. Kick-off Meeting

Quanta Technology proposes a ½ day kick-off meeting for the project. The meeting will be to review the data provided, gain a better understanding of CWLD electric system and kick-off the project. The information gathered from the workshop will be the basis for the study and the written report that will conclude the project. The success of the meeting will be dependent upon having subject matter experts from CWLD in attendance. Additionally, it might be helpful for CWLD to provide Quanta Technology with a high level tour of the more important physical electrical system facilities in Columbia, MO.
3. Bi-weekly Updates



After the project kick-off, a bi-weekly call will be organized by Quanta Technology with CWLD to review the project status, deliverables, and ensure that the project is on-schedule. A summary of the bi-weekly calls will be sent out following the conclusion of each call.

4. Written Study Report

A detailed written study report will present Quanta Technology's findings of the power flow computations, substation load evaluations, concerns, and mitigation options. In order to obtain an interim consensus on layout and content of the report, it is proposed that a draft of the report be presented two weeks prior to the final report, with CWLD providing feedback in a timely fashion.

Through this proposal, Quanta Technology offers its technical capabilities and expertise to assist CWLD in performing an independent distribution reliability study for the CWLD electric system exploring alternatives to compare with the new Mill creek substation.

2.1 Additional Tasks

In addition to the tasks detailed above, Quanta Technology will support CWLD with any additional support it might require on a time and material basis. The costs of these tasks will be determined upon understanding of the requirement, and are not included in the current pricing package.



3 **PROJECT TIMELINE**

Quanta Technology proposes to complete the scope of work outlined in this proposal in approximately ten (10) weeks from the date of being awarded this project, subject to availability of working models. If it is determined that one of the tasks of the project is needed prior to the others, Quanta Technology will work in concert with CWLD to try to best achieve CWLD's needs and objectives. Assuming the project is awarded the week of August 1st, 2017, the anticipated completion date would be October 6th, 2017. Quanta Technology will make every effort to complete the study sooner if possible.

Table 3-1 contains a draft project schedule of the tasks for this proposal. Quanta Technology will make every effort to meet or exceed the timing outlined in this schedule. Quanta Technology will work with CWLD to adjust this proposed schedule as necessary to meet their needs.

Table 3-1 Proposed Project Schedule

Proposed Project Phases/Tasks	Timing
Task 1: Project Planning and Initiation	T ₀ (August 1, 2017)
Task 2: Data gathering	T ₀ + 2 Weeks
Task 3: Electric System Review and Assessment	T ₀ + 5 Weeks
Task 4: Review of Potential Mitigations and Comparison to Proposed Mill Creek Substation	T ₀ + 8 Weeks
Task 5: Deliverable Items	T ₀ + 10 Weeks
Project Wrap-up	

Quanta Technology proposes to host either weekly or bi-weekly meetings with CWLD to review the project findings, costs, and schedule.



4 **PROPOSED PROJECT TEAM**

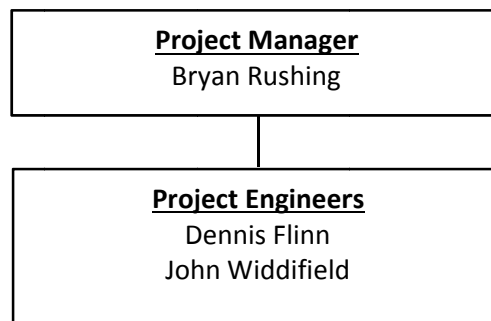
Quanta Technology's project team is composed of experts who have worked together previously on similar projects. This section provides details on their qualifications, how they will be organized and who will work on what aspects of this project.

4.1 **Organization, Project Management & Key Personnel**

The proposed project team is composed of the following engineers. The following resources are considered to act as primary support for CWLD in this effort.

- Bryan Rushing – Project Manager
- Dennis Flinn – Technical Project Lead
- John Widdifield – Cost Estimation Support

The proposed team members and their respective roles in this project are presented below. On a task-by-task basis, additional members from the Quanta Technology team will be made available. It should be noted that the ultimate team will be selected per project needs and specification to meet specific project scope.



4.2 **Proposed Project Team**

Quanta Technology is proud of our team and the depth of real-world experience we can bring to CWLD. For this particular engagement, we propose the following key personnel to support the Project. A brief synopsis of each team member is provided below.

Bryan Rushing

Bryan Rushing, *Executive Advisor, Vice President, Electric Transmission Infrastructure Development*, Business development and management professional with more than seventeen years of technical, operational, problem solving, and commercial experience in business-to-business sales, technical support, and marketing. Skilled in identifying business development opportunities, technical and economic valuation, strategy formulation, and plan implementation. A self-starter and top performer in business-to-business transactions.



Vice President
*Electric Transmission
Infrastructure Development*

Areas of Expertise

- Origination & Business Development
- Power Supply Planning
- Transmission Service Procurement and Analysis
- Energy and Ancillary Service Markets
- Regulatory and Policy

Experience & Background

- Years of experience in the electric power industry1999–Present
- Vice President, Electric Transmission Infrastructure Development, Quanta Technology, LLC...2016–Present
- Sr. Director, Transmission & Regulatory, Quanta Technology, LLC.....2014–2016
- Manager, Business Development, Quanta Technology, LLC2012–2014
- Director of Origination, LS Power Development, LLC2006–2012
- Transmission & Operations Executive, Ameren Energy Marketing.....2004–2006
- Transmission Service Engineer, Ameren Services.....1999–2004

Accomplishments & Industry Recognition

- IEEE Member
- Missouri Division of Professional Registration (Engineering Intern - FE)
- NERC - Certified Reliability Coordinator Operator (December 23, 2005)

Education

- MBA, Maryville University at St. Louis, 2008
- BS, Engineering Management, Missouri University of Science & Technology, 1998
- BA, Business Administration, Drury University, Springfield, Missouri, 1996

Dennis Flinn

Dennis Flinn, *Principal Advisor*, has over 38 years of experience in distribution systems modeling, operations, and analysis, with a significant emphasis on distribution automation, Volt/VAR, CVR, renewable, and storage. He has taught numerous training seminars worldwide related to distribution engineering and circuit protection



Principal Advisor

Areas of Expertise

- Renewables & Energy Storage System integration and the impact within Distribution Systems.
- Distribution Smart Grid Strategy, Design & Implementation.
- Distribution Conservation Voltage Reduction Impact.
- Distribution Planning: Load Flow, Short Circuit, and Reactive Power Flow Studies, Contingency Analysis, and Load Forecasting.
- Application Integration: Interface design between business processes.
- Power System Protection: Overcurrent protection and coordination.
- Reliability: Conducted individual Reliability Studies.
- Power Quality: Data collection and analytics of disturbances & Indices.

Accomplishments & Industry Recognition

- Professional Engineer – Pennsylvania
- Senior Member IEEE – Power & Energy Society (PES)
- Senior Member IEEE – Industry Applications Society (IAS)
- Published over 20 papers

Education

- MS, Electric Power Engineering – Ohio State University, 1978
- BS, Electric Power Engineering – Ohio University, 1977
- AAS, Electric Engineering – Ohio State University, 1975

John H Widdifield

John H. Widdifield, Principal Advisor, Mr. Widdifield has extensive experience in high voltage substations, equipment and apparatus. He has substantial knowledge of relaying, protection, coordination, fault current calculations, and relay settings for transmission lines and high-voltage substations. Additional areas of expertise include investigating and reporting root causes of substation, transmission line, and distribution feeder operations and outages.

Principal Advisor

During his career Mr. Widdifield has held positions of Manager of Substation Engineering, Manager of Transmission Standards, and Manager of Transmission Line Engineering at a large IOU utility.

Areas of Expertise

- Substation Design
- Medium/High Voltage Equipment & Apparatus
- Application of Substation Equipment/Relaying

Experience and Background

- | | |
|--|--------------|
| • Number of years of experience in the electric power industry | 38 years |
| • Supervising Engineer - Dashiell | 2008 – 2010 |
| • Senior Project Engineer - Utility Engineering | 2007 – 2008 |
| • General Manager -,Southeastern Transformer | 2005 – 2007 |
| • Senior Project Engineer – Booth & Associates | 1995 – 2005 |
| • Manager of Engineering Units – Progress Energy (was CP&L) | 1980 – 1995 |
| • Senior Project Engineer – Monterey Coal | 1976 – 1980 |
| • Associate Engineer – Virginia Power | 1971 -- 1976 |

Accomplishments & Industry Recognition

- Registered Professional Engineer, NC, VA, MS, CO, CA, AZ, WY, NJ,TX

Education

- BSEE- Virginia Tech
- MS Business – Virginia Commonwealth University



5 **PRICING AND TERMS**

5.1 **Cost Plan/Budget**

Quanta Technology offers the project team, capabilities and experience described in this proposal on a time and material basis estimated at \$97,500.

In recognition of CWLD being a valued customer of Quanta Technology, the time will be charged at the Quanta Technology standard hourly rate less a 15% discount (see table below “Standard Hourly Rate (15% Discount)”). Periodic reviews of the cost, estimates and schedules will be conducted during the project execution.

Below please find an estimate of the costs associated with each phase for Quanta Technology to support CWLD by performing an independent distribution reliability study for CWLD electric system exploring alternatives to compare with the new Mill creek substation.

Table 5-1 : Phase Cost Estimate

Task #	Task Name/Description	Cost Estimate
1	Project Planning and Initiation	\$2,500
2	Data gathering	\$15,000
3	Electric System Review and Assessment	\$35,000
4	Review of Potential Mitigations and Comparison to Proposed Mill Creek Substation	\$35,000
5	Deliverable Items	\$10,000
TOTAL		\$97,500

Table 5-2 : Standard Hourly Rate (15% Discount)

Title	Standard Hourly Rate	Standard Hourly Rate (15% Discount)
Industry Advisor	\$400	\$340
Executive Advisor	\$350	\$298
Principal Advisor	\$295	\$251
Senior Advisor	\$250	\$213
Advisor	\$210	\$179
Principal Engineer	\$185	\$157
Senior Engineer	\$167	\$142
Engineer III	\$150	\$128
Engineer II	\$135	\$115



Title	Standard Hourly Rate	Standard Hourly Rate (15% Discount)
Engineer I	\$120	\$102
Senior Project Manager	\$200	\$170
Project Manager	\$175	\$149
Analyst	\$100	\$85
Administrative	\$50	\$43

Notes

1. Rates subject to change

Travel, lodging, and materials costs will be billed separately on a cost plus 10% basis. For every one hour of project-related travel time, the customer should be billed one half hour of consulting time up to eight hours of travel per day (four hours billed). If the consultant is performing project work during travel, this time should be treated as normal project work and will not be billed separately as travel time.

5.2 Proposal Expiration Date

This offer is valid through August 31, 2017. For information on extensions of the offer, please contact Bryan Rushing, brushing@quanta-technology.com, (636) 288-2946.