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June 17, 2019

VIA ELECTRONIC MAIL AND E-FILING

Ms. Brinda Westbrook-Sedgwick
Commission Secretary
Public Service Commission of the District of Columbia
1325 G Street, NW, Suite 800
Washington, DC 20005

Re: Formal Case No. 1142
[In the Matter of the Merger of AltaGas Ltd. and WGL Holdings, Inc.] – PUBLIC

Dear Ms. Westbrook-Sedgwick:

Enclosed please find the public version of AltaGas Ltd.'s Updated Compliance Filing Regarding Commitment No. 5. Exhibit 1 of the enclosed filing consists of AltaGas's updated plan regarding Commitment No. 5. Appendix 1 to Exhibit 1 is Confidential, and will be submitted under separate cover.

Thank you for your time and attention. Please contact me if you have any questions regarding this matter.

Respectfully submitted,

MAUpadhyaya

Moxila A. Upadhyaya
Counsel for AltaGas Ltd.

Encl.
Copy to: Certificate of Service
Christopher S. Gunderson
J. Joseph Curran, III

BEFORE THE
PUBLIC SERVICE COMMISSION
OF THE DISTRICT OF COLUMBIA

IN THE MATTER OF	)	
THE MERGER OF ALTAGAS LTD.	)	**Formal Case No. 1142**
AND WGL HOLDINGS, INC.	)	

NOTICE OF FILING OF PLAN IN COMPLIANCE WITH COMMITMENT NO. 5

AltaGas Ltd. ("AltaGas") hereby respectfully submits its plan in compliance with Commitment No. 5, attached hereto as **Exhibit 1**, in accordance with the Commission's directive contained in Order No. 19883.[1]

Background

On June 29, 2018, the Commission approved the Settlement Agreement between AltaGas and Washington Gas Light Company (collectively, the "Companies") and Settling Parties in this proceeding.[2] The Settlement Agreement included a set of commitments the Companies agreed to make, including Commitment No. 5, which states that:

> AltaGas shall, within five years after Merger Close, develop or cause to be developed 10MW of either electric grid energy storage or Tier one renewable resources in Washington, D.C. If AltaGas or one of its affiliates develops the project, the construction of the project shall be competitively bid. AltaGas may retain the renewable energy certificates ("RECs") and tax attributes for the Tier one resource. AltaGas will use reasonable best efforts to ensure at least

[1] *Formal Case No. 1142*, Order No. 19883, rel. April 5, 2019.

[2] *Formal Case No. 1142*, Order No. 19396, rel. June 29, 2018. The Settling Parties include: the Office of the People's Counsel of the District of Columbia; the Apartment and Office Building Association of Metropolitan Washington; the District of Columbia Government; the Department of Defense/Other Federal Executive Agencies; the National Consumer Law Center/National Housing Trust/National Housing Trust-Enterprise Preservation Corporation; and the Baltimore Washington Construction & Public Employees Laborers' District Council. The Office and Professional Employees International Union Local 2, AFL-CIO, International Brotherhood of Teamster's Local No. 96, and Potomac Electric Power Company ("Pepco") did not sign the Settlement Agreement, but also did not oppose it.

> twenty percent of the operational jobs for the 10MW are sourced from the local workforce. The costs of this project shall not be recovered through Washington Gas's utility rates. AltaGas shall use best efforts to target this project in capacity constrained electric distribution areas. The Joint Applicants shall file its plan for the 10MW project for approval by the Commission within 180 days of Merger Close and an annual progress report following approval of this plan.

On January 2, 2019, AltaGas timely submitted a plan for the 10MW project for approval by the Commission.[3] OPC and DCG filed a response to AltaGas's plan on January 18, 2019.[4] AltaGas filed its reply on February 4, 2019.[5] On April 5, 2019, the Commission issued an order requiring AltaGas to submit additional details for the 10MW project plan by May 3, 2019.[6] Specifically, the Commission's April 5, 2019 Order required AltaGas to submit a revised plan detailing, at a minimum: (i) timelines for implementing each of the phases and activities AltaGas identified in its original plan; (ii) a method for measuring AltaGas's compliance with Commitment No. 5; (iii) methods for measuring best efforts to ensure that the composition of the workforce is at least 20% local; (iv) methods for measuring best efforts to target projects in capacity constrained electric distribution areas; (v) identification of potential partners (both public and private) for the potential projects and how the ownership structure of the projects would be affected by such partnerships; (vi) technical scopes of potential projects; (vii) hosts and footprints of potential

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[3] *Formal Case No. 1142*, AltaGas's Submission of Plan for 10MW Project in Compliance with Commitment No. 5, filed January 2, 2019.

[4] *Formal Case No. 1142*, Joint Response of the District of Columbia Government and the Office of the People's Counsel to AltaGas' January 2 Compliance Filing with Respect to Merger Condition No. 5, filed January 18, 2019.

[5] *Formal Case No. 1142*, Letter to Brinda Westbrook-Sedgwick, Commission Secretary, from Moxila A. Upadhyaya, Counsel for AltaGas, filed February 4, 2019.

[6] *Formal Case No. 1142*, Order No. 19883, rel. April 5, 2019.

projections; (viii) implications of the potential projects for the electric grid, including any potential deferrals of distribution system capacity additions; (ix) Pepco and PJM Interconnection; (x) potential coordination with Pepco and PJM; (xi) costs of potential projects and financing plans; (xii) impediments to potential projects; (xiii) implications of potential projects on *Formal Case No. 1130*; (xiv) estimated schedule for completing the potential projects; and (xv) a timeline for submitting a report on whether any project can be developed in the Mt. Vernon area.[7]

On May 3, 2019, AltaGas filed a consent motion for extension of time to file its more detailed plan in compliance with Commitment No. 5, which the Commission granted on May 29, 2019.[8]

Discussion

AltaGas's revised plan (**Exhibit 1**) describes in detail AltaGas's approach to meeting Commitment No. 5. In its attached filing, AltaGas frames each of the Commission's list of minimum required details set forth above as questions, and has provided direct, specific, and detailed answers.[9]

By way of brief overview, AltaGas's attached filing is a guideline for the development of projects that will comprise its fulfillment of its commitment to develop (or cause to be developed) 10 MW of solar, energy storage, or a combination thereof within the District of Columbia within five years of Merger close, and includes details regarding each potential project's specific financial and legal structure, as well as current program status, which AltaGas will update in subsequent compliance filings as required by the Commission. AltaGas has engaged EFW, Inc. to manage these projects. EFW's principals and associates have extensive experience in retail and wholesale

7 Order No. 19883, ¶ 13.
8 *Formal Case No. 1142*, Order No. 19942, rel. May 29, 2019.
9 *See* **Ex. 1** at 4-8.

electric markets, energy project development, and behind-the-meter and direct PJM interconnection and electric transmission and distribution grid operations, and AltaGas has included as Appendix 2 to the attached filing the biographies of EFW staff and affiliates that will structure specific development projects, oversee associated contract details, and lead the evaluation of each project and see each project through its implementation, subject to final approval of AltaGas and the Commission.

As explained in greater detail in AltaGas's attached plan, AltaGas and EFW have determined that a combination of solar and battery storage is the preferable target project to meet Commitment No. 5, primarily for economic reasons.[10] AltaGas's plan explains that it is seeking approximately 20 MW of viable target sites for various project types to ensure that it has sufficient—and excess—space to meet the minimum 10 MW requirement when the projects are fully deployed, and provides details regarding its initial estimates of potential project sites. Three reference/target project economics were developed for preliminary project screening and ranking, and AltaGas explains each reference project and its assumptions in detail, and has provided the reference models in Appendix 1 (Confidential) to its attached plan. In addition, AltaGas's attached plan outlines its project development approach and four-phase timeline, including in this overview a specific description of each phase, and identifies the leading EFW principal or affiliate who will be leading each phase.

Conclusion

In sum, AltaGas's enclosed detailed plan satisfies the Commission's requirements contained in Order No. 19942 regarding a Commitment No. 5 compliance filing. AltaGas looks

[10] *See* **Ex. 1** at 1-2.

forward to continuing to work with the Commission and stakeholders on the project that will comprise Commitment No. 5.

Respectfully submitted,

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Counsel for AltaGas Ltd.

Dated: June 17, 2019

Exhibit 1: AltaGas Revised Compliance Filing
Commitment No. 5

A. Executive Summary

AltaGas presents its revised Compliance filing for Commitment No.5. Our approach to meeting this commitment is set forth herein. We have engaged EFW, Inc., whose principals and affiliates have extensive experience in retail and wholesale electric markets, energy project development behind-the-meter (BTM) and direct PJM interconnection and electric transmission and distribution grid operations, to manage the program to meet our compliance obligations. Specific sites and site owner names are not provided at this point, as we are in the early stages of evaluating technical feasibility.

AltaGas will meet our commitment to develop, or cause the development of, at least 10 MW of solar, energy storage, or a combination therein within the District of Columbia within 5 years of the merger closing. The compliance filing sets forth our approach with respect to project types, development approach, target project market-based economics and financial structure.

This filing is a guideline for how projects will be developed, along with key assumptions and decision criteria for each project's specific financial and legal structure over time, as well as a current program status, which will be updated in subsequent compliance filings as required by the Commission. A template project financial evaluation criteria pro-forma is included within this filing, as well as the biographies for key EFW staff and affiliates that will lead the evaluation of each project and see each project through the implementation stage of development. The experts presented, herein, and evaluation criteria will be used to structure specific development projects and associated contract details, subject to final approval of AltaGas and the Commission.

B. Project Types

Two types of resources are under consideration to economically satisfy the Merger Commitment 5: 1) Solar and 2) Battery Storage. Rooftop and canopy mounted systems are viable resources, notwithstanding limited usable roof space in DC, due to high SREC values and Federal tax benefits that can offset the high cost of installation. Battery Storage is a consideration as it is compact and can be installed in relatively small spaces; however, it is expensive. Battery Storage projects will require economic support from another resource developed in conjunction with it, in most cases.

The combination of Solar and Battery Storage is the preferable target project due to the ability to utilize the solar tax benefits for a storage system installed at the same time. Alternatively, storage costs could be offset for sites where 2 MW+ of unpermitted emergency generation with suitable connected load exists. Such systems may be able to be inexpensively permitted with upgraded emissions control equipment to allow for limited operations to reduce PJM capacity costs at host sites. The savings from that type of resource could be used to support the funding of a storage system. Stand-alone storage is unlikely to be economic in most situations at current market costs.

Other types of qualified renewable resources are not likely to be economic or pragmatic in the limited space available in DC. In general, the target project size is 2 – 3 MW, which will require multiple potential sites. We are seeking approximately 20 MW of viable target sites to ensure that we have in excess of the minimum 10 MW requirement when projects are fully deployed.

C. Project Economics & Structure

Reference / target project economics were developed for preliminary project screening and ranking (reference models provided in Appendix 1). The reference projects are: 1) 500 kW solar, 2) 4 MWh / 3 hour storage system that provides 1.33 MW of capacity, and 3) 2 MW onsite generation emissions upgrade and permitting installed in conjunction with storage.

Note that for clarity in meeting compliance commitments we are providing specific, market-based definitions of solar and storage capacity, as the underlying Order does not include such definitions. A market-based definition of solar capacity is typically the peak output in MW AC. Therefore, for solar projects 1 MW = 1 MW AC of peak nameplate capacity, i.e., maximum hourly output. With respect to storage, there is no clear market definition of such capacity. We define storage capacity based on the specific use for which it is intended. For behind-the-meter (BTM) applications the primary use and dominant economic driver is the host site's PJM peak load contributions (PLC) which will be reduced by operations of such storage. To that end, our experience is that 3 full operating hours of a storage system will have in excess of a 90% probability of achieving the intended PJM capacity reductions (UCAP and Transmission Capacity). Therefore, we have determined that a 3 hour system, i.e., 3 MWh of usable storage that can be ratably discharged over 3 hours = 1 MW of storage capacity.

While a standalone solar project reference is provided we do not believe that we can rely on this type of project to make a significant difference in meeting our commitments due to their limited size and large number of projects such size would require. The opportunity to economically add storage to any such solar systems should not be overlooked and appears to have the best overall value.

The solar-based systems make maximum use of Federal tax benefits, both ITC and depreciation, to moderate the high installation costs of both rooftop solar and battery storage as these benefits can be applied to the combined systems. Given current and expected DC SREC market values, such combined systems provide a strong economic incentive to a host site. In the absence of a viable solar opportunity we determined that existing onsite generation could be properly permitted and utilized in a limited fashion to enhance storage economics and expand the number of potential economic sites. However, in such cases the tax benefits are substantially reduced.

In most cases, BTM installations provide for the best overall values, although, in some cases site conditions may lead us to consider PJM interconnections. We anticipate a bank lease structure to finance all projects. This will allow for the maximum monetization of all tax benefits. We anticipate 75%+ monetization of tax benefits in the form of a lower lease rate. At this size range, 50% tax benefit monetization is more typical. This difference will make a significant positive

impact on overall savings that can be realized on solar / battery storage combination projects. The ultimate project ownership is flexible and could be the host, or a third party investor, but is not expected to be AltaGas.

D. Development Approach & Timeline

Our project development approach is based on four phases shown below. For avoidance of doubt when we refer to project capacity we mean AC unless specified; otherwise.

1) ***Technical Feasibility*** – This activity is led by Steve Wood (biography provided in Appendix 2) who will screen potential sites for ability to permit, install equipment and interconnect to the electric grid cost-effectively, and will produce initial cost estimates. We are seeking, at least, 20 MW of technically feasible projects and will continue to seek projects until we have reached, at least 15 MW under contract. We expect the initial phase of this activity, i.e., first 20 MW, to be completed in 6 – 9 months.

2) ***Economic Feasibility*** – This activity is led by Bert Wilson (biography provided in Appendix 2) who will review cost estimates and assess the economic viability of the projects that have passed initial technical screening. This includes market revenue analysis, operating costs, BTM impacts, as applicable, financing limitations and tax impacts, and reviewing the analyses with potential host sites. We are seeking, at least, 20 MW of economically feasible projects to move to the proposal stage, and will continue to evaluate projects until there are, at least, 15 MW under contract. We expect the initial phase of this activity, the first 20 MW, to be completed in 6 – 12 months largely concurrent with Technical Feasibility.

3) ***Project Structure & Proposal*** – This activity will be a collaborative effort of both Steve Wood and Bert Wilson. Generally, we expect to provide proposals to hosts based on an open-book pricing of the project and operations costs with objective project economic benefits, i.e., net profits / cash, shared among project participants at a clearly defined ratio or formula that is mutually beneficial to all parties. We anticipate most projects to be financed by lease, but can allow for host ownership where tax benefits may be of use to a specific host. Other forms of third-party ownership and project financing may be considered based on host site requirements or limitations. We expect the initial 20 MW of proposals to be issued in 9 – 18 months partially consecutive with Economic Feasibility.

4) ***Project Implementation*** – This activity will be directed by Steve Wood for permitting, system engineering and installation with supporting project managers, as required. This will include final contracting, full design and installation. Bert Wilson will oversee market interface to ensure that expected market access and credits are realized. Both Steve Wood and Bert Wilson will establish and supervise ongoing operations, or transfer that responsibility, with all Contract parties' consent to a qualified designee. Other than ongoing operations, we expect this activity to be complete upon final commercial operations of all contracted projects with, at least 10 MW of capacity.

E. General Site Targets

We are in discussions with multiple parties to arrange for site visits to determine Technical Feasibility for various project types as described in Section B. Some site visits have already been completed; however, at this time we cannot disclose the specific site or the parties with whom we have entered into discussions. Below is a listing of our initial estimate of potential project sites based on limited overall building electrical demand information that we have obtained so far.

1) ***5 – 8 MW***: Multiple facilities of large institution power buyer. Likely candidate for solar / storage combination, as well as onsite generation emission upgrade and storage.
2) ***2 – 4 MW***: Multiple facilities of large building owner and management company. Likely candidate for solar / storage combination.
3) ***2 – 4 MW***: Multiple facilities of large building owner. Likely candidate for solar / storage combination.
4) ***2 – 3 MW***: Large network company. Likely candidate for solar / storage combination, as well as onsite generation emission upgrade and storage.
5) ***2 -3 MW***: Institutional owner / user not in DC, but may be considered DC. Likely candidate for solar / storage combination. PJM subaccount could be provided by WGLES and utilized to assist user to contract for all green physical supply.
6) ***3 – 5 MW***: Various independent users. Possible candidates for moderate sized, i.e., 2 MW and smaller systems.

F. DC PSC Questions & Responses

1) ***Please provide timelines for implementing each of the phases and activities in the Term No. 5 Filing.***
   a. **Identify Potential Project(s)** – Expected completion in 6 – 12 months.
      i. Identify potential site(s) – Multiple commercial sites inside DC are being evaluated for rooftop solar and battery storage systems. Discussions are underway with multiple large scale property management companies and building owners to determine the technical and financial feasibility of both rooftop solar, parking lot canopy solar, and trailer mounted and packaged battery storage systems.
      ii. Identify potential off-take/customers – The potential off-take customers are commercial, educational and public use buildings that have some open roof area, and space inside the building or surrounding the building for installation of battery storage systems. Review also includes the impact of the proposed PV equipment and battery storage equipment on the existing building electrical infrastructure along with any code requirement and zoning requirement necessary to allow use of solar PV and battery storage systems.

System size considerations are in the 200 kW to 2500 kW range for individual buildings with a higher percentage of the capacity being considered as battery storage for most sites since the available roof top space is very limited on most buildings under review. One site under consideration is capable of handling up to 3,000 kW of ground mounted solar equipment along with approximately the same amount of battery storage (this site appears to be outside of DC but indications are that the site may be considered as part of DC and is under review).

iii. **Assess electrical interconnection feasibility** – Initial review and discussion of electrical interconnection for potential sites has started with PEPCO; PEPCO has established standards for solar PV interconnection but is just starting to work on standards for battery storage systems; PEPCO has provided clear indications that they will work with AltaGas to assist and expedite the requirements for interconnecting battery storage systems in DC; to increase the feasibility of interconnecting the sites currently under review, the solar PV and battery storage systems will be sized to allow most, if not all power to be used behind the host meter with little or no injection into PEPCO's distribution system in the grid network areas of DC. Based on preliminary discussions with PEPCO, the sites being considered for solar PV and battery storage will be focused in areas where PEPCO has the highest potential for allowing connection with minimum distribution impact and upgrade cost; PEPCO has also indicated that interconnection may be less complex and have lower impact and cost on their overhead and underground non-network areas.

iv. **Assess engineering feasibility** – Each site being considered will be reviewed for building electrical system impact, structural review for roof top installations and impact on building use. A high level financial analysis will be made for each site based on anticipated lease cost for the space needed for the systems, tax credit usage needs, SREC values, system installation costs and financial mechanisms. Estimated installation and interconnection costs will be developed for the more promising sites and more detailed cost estimates will be prepared as needed to develop sites that appear to have the best technical feasibility and economic potential along with a willing host.

v. **Assess ability to acquire or lease land, obtain necessary permits, etc.** – Initial discussions are currently underway with building managers for multiple buildings that appear to be solid candidates for solar PV and battery storage; ballpark lease terms or other suitable profit-sharing mechanisms will be presented to the property owner or management company after field evaluation is made of space available and preliminary electrical equipment review along with initial review of location with PEPCO to insure that interconnection impact and cost will be within a reasonable range; if a site has potential, a high level term sheet will be

developed and submitted to the building owner or property manager for consideration. Assuming there is an interest in leasing the space, a review will be made to determine the extent and type of permits required for the project. For larger ground mount solar PV projects, local zoning will also be reviewed to determine if solar is allowed or if zoning changes or exceptions are necessary.

b. Finalize Project(s), based on: – Expected completion in 6 – 18 months.

i. Proximity to capacity constrained electric distribution areas – Most of the sites currently under consideration are not close to the Mt Vernon area due to the difficulty of getting appropriate space for the solar PV and battery storage in and on the buildings;. There are several small projects under consideration close to Mt Vernon but it is anticipated that these sites will typically be in 100KW to 200KW range and may not be feasible due to the lack of economy of scale for the solar and battery installations.

ii. Financial viability – The financial viability of each project will depend on the following: 1) space availability and required lease payment to use the space; 2) ability to couple solar PV with battery storage to allow tax credits for the project; 3) cost to modify host's electric system to accommodate solar and battery systems; 4) ability to use solar and battery storage behind the host's electric meter; 5) interconnection cost; 6) total installation cost and ongoing maintenance cost. A full analysis of the financial viability for each site cannot be completed until the initial technical feasibility is completed.

iii. Engineering viability – The engineering viability of each project will depend on the following: 1) condition of the building roof to allow solar PV installation; 2) condition of existing building switchgear and capability of existing equipment to handle additional solar and battery electrical input; 3) suitable space inside the building or around the building to allow battery storage system installation; 4) ability to connect to PEPCO without significant changes to the existing distribution system; 5) host's ability to transfer electrical load from grid supply to battery system to allow reduction of transmission and generation capacity tags for the building.

iv. Production viability – Production viability would only be applicable to the proposed solar PV systems – the major impact would be shading of the PV system due to other buildings or roof equipment or structures. Production viability for the battery storage systems would only be impacted by failure to re-charge the batteries due to limited time between required operation; issues with transferring building loads to the battery system could impact production.

v. **Demand/off-take/customer viability** – Solar output could be impacted if the field is in production but the host building load is less than the solar and/or battery output.

c. Design and Permit Project(s) – This process would start for each viable project within three months after determining viability and would last between 3 and 6 months for each project.

d. Engineer, Procure Materials for, and Construct Project(s) – Engineering is expected to be completed within three to six months after a decision to move forward on a project; larger scale solar fields may require additional engineering, procurement and implementation time and may require zoning changes.

e. Interconnect and Commission Project(s) – Interconnection and commissioning are the final stages of the project and these steps are expected to run approximately 180 days.

f. **Perform Asset Management/Operations and Maintenance activities –** These activities are performed after commercial operations begins.

2) ***Please describe methods to be used in measuring compliance with these timelines and other requirements of the Term No. 5 Filing.***

Industry standard project management will be utilized: including procedures, tools and techniques to measure compliance with the timelines and other requirements of the Term No. 5 Filing for project decisions and execution. The processes normally include progress meeting minutes, project schedules, design and development reviews, quarterly management reports, etc.

3) ***Please describe methods to measure AltaGas' best efforts for ensuring the composition of the workforce is at least 20% local workforce.***

With AltaGas' experience with prior projects of this size and nature, we do not believe it will be difficult to use best efforts to ensure at least 20% of operational jobs are sourced from the local workforce. However, depending on the final project type and design the positions available could be limited to 1-2 per project.

4) ***Please describe methods for measuring AltaGas' best efforts to target projects in capacity constrained electric distribution areas.***

AltaGas has initiated high-level conversations with local electric utilities and other industry participants in order to identify constrained areas and determine whether those areas have sites that can accommodate technologies proposed for the project. Among the key determinants that AltaGas will consider in determining the suitability of sites in constrained areas include (but is not limited to): existing infrastructure, cost of upgrades and economic viability,

Please refer to section F.1.b.i. for a high-level discussion.

5) ***Please identify potential partners (both public and private) for the projects and how the ownership structure of the projects would be affected by such partnerships.***

AltaGas is evaluating alternate forms of development that include joint ownership of projects, solar/battery developer ownership, building ownership and financial entity ownership or part ownership. Federal government agency part ownership or participation in the projects is also under review.

Please refer to section C for a high-level discussion.

6) ***Additional: Please provide the following:***

a. **Technical scopes of potential projects**

The technical scope for each project will be specific to the type, size and mixture of solar and battery storage. In general, the technical scope will include detail of the proposed equipment to be installed, electrical system modification, building area modification, installation specification for roof, canopy solar PV panel installation, testing, commissioning, operation and maintenance details and documents.

After the site(s) and project type(s) have been determined, then technical scopes can be developed as part of the design process. It is premature to provide this at this time.

Please see sections A and B for a high-level discussion.

b. Hosts and footprints of potential projects

As noted above, AltaGas is currently evaluating several potential sites for the project.

Please see sections E and F.1.a.ii for a high level discussion.

c. Implications of the potential projects for the electric grid (including any potential deferrals of distribution system capacity additions)

Initial meetings with the local electric utility included discussion of the limitations on the electric grid in specific areas along with interconnection requirements and turn-around time for interconnection reviews. Battery Storage systems are relatively new to the local utility and since there are currently no standards for the interconnection of these systems, we will be working closely with their engineers to establish limitations for interconnection and potential issues associated with interconnection.

d. Interconnection with Pepco and PJM; Potential coordination with Pepco and PJM

AltaGas will coordinate with the local electric utility and, as appropriate, PJM. Please refer to Section F.1.a.iii and F.1.a.v.

e. Costs of potential projects, and financial plans

Please refer to Appendix A for project type screening proformas.

f. Impediments to the potential projects:

Key impediments to the potential project(s) include but are not limited to: existing infrastructure, cost of upgrades and economic viability, as well as available space, permitting, and environmental restrictions.

Additional issues that could impact projects include impact on local utility grid and control systems, need to modify or change out host's switchgear due to code limitations associated with proposed new equipment, possible impact on building fire protection systems and insurance for building as a result of new solar/battery systems. Demands for unreasonable price for leased space in buildings could also impede projects.

g. Implications of potential projects on Formal Case No. 1130 (MEDSIS)

The MEDSIS working groups are currently assessing and proposing recommendations for Commission consideration, and AltaGas is monitoring and participating in these proceedings.

h. Estimated schedule for completing the potential projects

Please see high level plan in F.1 above (general timelines).

7) Include a timeline for submitting a report on whether any project can be developed in the Mt. Vernon area within 4 months of the Order.

Additional time is needed to determine the feasibility of projects that would have any impact on the Mt. Vernon area. In the event suitable host locations are found in the area, a thorough technical and financial review will be required for each potential project along with a proposal to the host for using the required space and allowing any proposed system to operate thru their in building electrical system. It is anticipated that this process could take up to fifteen months to produce a qualified project that is buildable.

Please refer to Section F.1.b.i. for additional discussion.

APPENDIX 1 DESIGNATED CONFIDENTIAL

Appendix 2

Personal Bios / Resumes

H. Bertram Wilson, CFA
Managing Director, EFW, Inc.

QUALIFICATIONS SUMMARY:

Mr. Wilson is a Chartered Financial Analyst with over twenty-five years of experience in traditional and renewable energy markets, PPA and project development, project finance, economic analysis, securities trading, and regulatory analysis. He specializes in risk management, structured energy contracting and distributed generation applications for energy users. Since 1998 Mr. Wilson has directed the purchase and sales of $20.0+ billion of various forms of energy, and has been a principal in electric supply and solar development projects, as well as an energy consulting company that was acquired by EnerNOC in 2008.

EDUCATION / CERTIFICATION:

BS, Business Administration, 1984, University of Baltimore.

Chartered Financial Analyst, CFA Institute, Charlottesville, VA 1991

PROFESSIONAL EXPERIENCE:

Managing Director, EFW, Inc.
Ellicott City, Maryland
7/2015 – Present

Manages grid-connected renewable and high-efficiency physical energy delivery and onsite generation, as well as wholesale energy purchases and sales for clients. Developed and manages Peak Day Signal ™, a PJM and NEISO capacity management service designed to reduce system capacity and transmission costs and enable automated system response, and also, manages the Energy Artisans ™ network, which was developed by EFW to provide a broad range of energy expertise for buyers and sellers with minimal overheads. Provides and supervises generation project development services and provides analysis of clients' projects for grid-based renewable and efficient natural gas developments.

Director Energy Supply, EnerNOC
Baltimore, Maryland
5/2008 – 7/2010 & 5/2014 – 6/2015

After acquisition of South River Consulting (SRC) served as the Director of EnerNOC's U.S. based Energy Supply consulting practice which managed approximately $3.0 billion in clients' annual energy value. Responsible and actively involved in managing all client associated services related to energy procurement, with particular focus on PJM account management for larger clients and client groups that was developed in SRC. Developed new services for dispatching energy resources, capacity management and renewable contract and economic evaluations. Began structuring of services for international offerings.

Principal, Castlebridge Energy Group
Baltimore, Maryland
8/2010 – 4/2014

Principal in and managed the operations of a startup of a residential electric and natural gas supplier that grew to a 20,000 customer book from 2010 until its sale in 2013. Developed billing and data systems to support the business. Provided consulting services to support EnerNOC and independently developed energy customers. Developed 1st PJM grid-connected solar project for 3.3 MW delivered to a client served by its own PJM account, which included both power contract and site development.

Principal South River Consulting
Baltimore, Maryland
12/1998 – 4/2008

Founded South River Consulting (SRC) to provide energy contract structuring, procurement consulting, and risk management services to large commercial and industrial energy users in deregulated electric and gas markets. Developed and managed all client services, provided onsite generation development and operating services, developed a PJM capacity service for clients to control capacity costs (PLC Predictor), and provided financial feasibility analyses for multiple generation and efficiency projects. Developed block & index contract structures for clients and pioneered the making large customers or groups PJM members and managed such self supply operations for clients. From inception to 1998 when the company was acquired by EnerNOC grew client base to 15,000,000 MWh and 40 BCF with and annual value in excess of $2.0 billion.

Financial Analyst / Business Developer, Baltimore Gas & Electric / Constellation Energy Services
Baltimore, Maryland
11/1989 – 11/1998

Served in various positions with beginning with Baltimore Gas & Electric Company as financial analyst providing rate case, capital investment assessment, and earnings reporting. Developed alternative energy contracts for large industrial customers that could install onsite generation and supported approval at Public Service Commission. Member of initial group that formed Constellation Energy Services, a performance contracting Energy Service Company (ESCO). Lead the financial development efforts for a newly established district chilled water company in Baltimore, Maryland (Comfort Link), developed project finance capability to support energy project financing for Constellation's newly formed ESCO, provided contract structure and pricing for integrated energy projects and proposals offered by Constellation's ESCO and developed its first distributed generation plant – 4 MW at the Maryland Stadium Authority.

AVP, Business Valuation Analyst, Mercantile Bank & Trust, Corporate Finance
Baltimore, Maryland
12/1987 – 11/1989

Responsible for developing company and investment valuations based on business operating plans and cash requirements for use in merger and acquisition proposals and estate planning. Provided valuation, and advisory and M&A services to small to mid-sized local businesses. Developed interest rate risk management program for bank and product that allowed customers to cap and collar interest rate risk based on their unique needs.

Securities Analyst / Trader / Financial Principal, Offutt & Taylor / Offutt Securities
Baltimore, Maryland
12/1984 – 11/1987

Developed stock valuations based on discounted cash flow analysis, researched small cap companies in Mid-Atlantic region, prepared research reports and presented to institutional client base. Obtained General Securities Agent and Financial Principal registrations. Responsible for firm's trading activity with institutional client base and managed clearing relationship with Bear, Stearns. Formed new brokerage firm and managed regulatory interface as the company's Financial Principal.

SELECTED PROJECT EXPERIENCE:

U.S. General Services Administration

Developed deregulated purchasing strategy for GSA Mid-Atlantic area serving 2.2 GWh and over 500 MW of demand. Provided ongoing contract guidance and contract structuring for GSA, as well as managing delivery and settlement of 200+ MW of renewable power (solar and wind). Developed and customized a capacity management program to notify the GSA group to reduce load to manage capacity costs at strategic times on the grid that incorporates both system and transmission capacity to maximize response benefits. Provided contract structure and negotiating support for GSA's wind and solar purchases, as well as design for delivery of physical renewable energy to supply load. Services provided since 1999 and are continuing.

Baltimore Regional Cooperative Purchasing Committee (BRCPC)

Developed electric new aggregation approach based on a segregated PJM account (known as subaccount) that enables a customer to pool many accounts together and function as their own supplier. The customer pooled approximately 3,000 electric accounts with 1.8 GWh of annual load and over 300 MW of demand. Designed and implemented all related services and managed from 2005 – leaving EnerNOC in 2015. This approach allows customers to pool small accounts which can be more costly to manage and treat the pool as one account; thereby allowing for management of various components of power more effectively. Designed and implemented with supplier (PJM account owner) a budget billing method that allows customer to stabilize billed cost while implementing a commodity management strategy that optimizes risk and cost.

Mittal Steel USA / ISG Sparrows Point

Converted site from retail to wholesale electric purchasing. Established PJM account and retail electric supply license for steel Baltimore-based steel plant with 200 MW electric load and 150 MW onsite generation. Developed energy strategy for PJM account management, including hedging, day-ahead scheduling, ARR/FTR, demand response, ancillary products and supplemental generation. Managed all aspects of PJM account and fuel and dispatch strategy for 150 MW multi-fueled generator, and developed financing for 125 MW cogeneration system. Developed gas scheduling model and provided daily balancing info for gas supply pool manager. Provided 10 years ongoing management that spanned 4 different owners until facility retired.

Solo Cup Company

Provided energy procurement and management for large manufacturing facility using block / index electric contract. Managed the company's 11 MW cogeneration plant and associated direct interstate pipeline connection for economic operations. Provided supplemental interconnection services to facilitate electric

export to grid and complete elimination of capacity costs. Managed purchase of natural gas and optimized cogeneration operations, including training operators on how to make economic decisions. Provided services for 15 years until facility retired

Northeast Maryland Waste Disposal Authority, Principal

Provided electric sales and contract structuring and negotiation for 50 MW waste-to-energy power plant. Service included contract renewal / rebidding, and evaluation of landfill gas and solar development on landfills.

Wheelabrator Technologies, BRESCO

Developed dispatch optimization for split between electric and steam sales for 60 MW waste-to-energy power plant and provided ongoing monitoring and training for plant operators. Provided contract structure and negotiation support for electric and steam contract renewals with Constellation and Trigen, respectively. Developed and implemented methodology to purchase instead of producing electricity when electric prices went negative, and provided guidance on forward sales of power. Services provided 1999 – 2013.

Stephen F. Wood – Consultant

Over the past thirty-four years, Mr. Wood has held various positions in the Electric Power & Gas Industry. He is currently Managing Partner of Northeast Energy Services, LLC, an energy consulting firm. Previous experience include executive positions with Con Edison of New York, Baltimore Gas and Electric and Constellation Energy Projects and Services. His experience includes the design, building and operation of electric and gas distribution systems, substation and transmission system design, construction, operation, electric system planning and tariff development. In addition Mr. Wood has considerable experience in Demand Management program development and implementation. He was responsible for establishing two Energy Service Companies along with a business that generates and distributes chilled water in downtown Baltimore. Mr. Wood has considerable experience in deregulated energy markets. He was responsible for developing energy projects that required purchasing and selling multiple years of energy in the non-regulated energy market place. He was also actively involved with the New York energy markets since he was responsible for determining the impact of large demand side management programs on the market. In addition his group was responsible for connecting all new and upgraded customers to the Con Edison Electric and Gas system and connecting small to medium size cogeneration units to Con Edison's system and determining the overall impact.

Mr. Wood has considerable experience in handling regulatory matters including extensive testifying to the New York and Maryland Public Service Commissions. He has testified on many issues including substation/transmission concerns, cogeneration interconnection problems, demand side management and conservation program design and structures and class of service/tariff issues. In addition to the Public Service Commissions, Mr. Wood also has considerable experience in testifying before State and local governmental groups.

As Managing Partner of Northeast Energy Services, Mr. Wood has coordinated many consultant studies and provided recommendation concerning solar power, wind power, clean co-generation and energy conservation plans. He has worked with clients in New York, New Jersey, Maryland and Virginia in energy review, analysis and energy market assessment. He has also been engaged in the engineering analysis, financial model development and preliminary design of a hybrid electric supply system that incorporates solar, wind, clean generation and large battery storage systems. He has a solid knowledge of the PJM and NYISO energy and capacity markets along with a thorough understanding of the Tier 1 and Tier 2 credit markets in Maryland and New Jersey. In addition, he has recently completed a consulting assignment for the City of Baltimore to determine the options for reducing the energy costs for the residential customers. This study included a review of residential aggregation, merchant plant options and cost along with energy conservation feasibility and impact.

Mr. Wood has provided energy/financial consulting services through Northeast Energy Services to Baltimore City for over six years. His services have included the following activities:

- Emergency Plan Analysis (including back-up generator plan)
- Cogeneration evaluation & analysis for multiple City facilities
- Analysis of existing cogeneration at Back River & JCI performance
- Multiple Solar site feasibility studies and economic evaluations
- Feasibility of small cogeneration plant to supply multiple sites
- Assistance with State Incentives for Cogeneration projects

- Feasibility reports and applications for BGE cogeneration incentives
- Review of thermal needs at Back River & Patapsco Plants
- Feasibility of City solar project at Back River and two other sites
- Virtual net metering of solar and application to City accounts
- Analysis and review of issues with JCI solar installation at Back River
- Feasibility and financial evaluation of several new technologies
- Initial review of Back River electric system for potential microgrid
- Assisted City in preparing Federal emission reporting forms
- Initial review of City's energy reporting system and steps needed to improve accuracy
- Provided support and technical assistance to City for interconnection of generation projects to BGE's system

Mr. Wood has been a partner for the last two years in a start-up company involved in developing modifications to engine generators that involve more efficient operation using methane from animal manure and food waste products. His involvement has been focused mostly on dairy farm application and the use of both simple and complex digester systems to produce methane for onsite electric generation. He has also been directly involved in the analysis and interconnection of both small and large scale electric generation plants that use waste products for the fuel source.

Consulting service including engineering analysis, project development and project management have been provided to the following clients over the last two years:

- Calvin Klein (Power Quality Issue in Manhattan, NY)
- Northern Virginia Data Center (Power usage review, co-generation analysis and power purchase recommendation)
- Solo Cup (Co-generation interconnection study and project management, Power factor study and recommendation)
- Lockheed Martin (preliminary solar application analysis for large scale solar plant; Power factor study; submetering project)
- Pratt Institute (development of alternatives for new electric supply and development of electric vault plan for New York DOT and Con Edison review and approval)
- Merchants Terminal Baltimore (analysis of benefit and impact of primary versus secondary service; project management of installation of new client owned high voltage electric supply)
- 1st Mariner Bank (analysis of operation of existing central campus plant, economic evaluation of self generation option for chilled water, heat, emergency power and new primary electric supply; design build project to resupply primary and emergency power to main building)
- Electric Utility Relocation Projects in the Town of Eastchester and Village of Tuckahoe, NY
- 131 Second Ave, Brooklyn NY (developed plan for supply of electric power and obtained approval from NY DOT, NY Transit Authority and Con Edison.
- Coordination of submetering activity for two large condo building in Manhattan, New York)
- Utility Interconnection Issue Resolution for over twenty large New York City Projects
- Utility Relocation & Replacement coordination for Metropolitan Museum of Art and Whitney Museum in Manhattan New York
- Submetering project for large industrial client in Maryland

- Assisted in conceptual development of "hybrid" system to provide emergency power for long periods through the use of specialized battery storage, wind power, solar and clean diesel generation
- Analysis of PJM Capacity and Energy Markets and marketing of output from 150MW Merchant electric plant in Baltimore
- Develop plan, path, cost estimates and schedule for new 4.6 mile transmission line; coordination with PJM, local Utility, State and Federal Agencies for construction rights and permits.
- PJM Interconnect coordination for Chesapeake Renewable Solar Plant; Energy Answers Baltimore Merchant Plant; Delaware Generation Project; multiple small generation facilities.
- New York ISO Interconnect for ISLIP Generation Plant.
- Analysis of the Back River digester gas cogeneration facility and recommendations for more efficient operation.
- Cogeneration analysis and incentive application packages for four Major Baltimore City projects and one large medical center project.
- Vanguard Campus Solar Evaluation
- Castlebridge/BITH Energy/Constellation Somerset Solar Project Interconnection
- Somerset Soybean Processing Plant Project Development
- Roseda Farm Solar Project Development
- Reistertown Fish Farm Development
- Solar Reviews for approximately ten large scale projects in Maryland, Virginia, Pennsylvania, New Jersey and Delaware
- Developing two solar projects on Eastern Shore Maryland
- Developing solar training project for Baltimore City Tech School
- Technical & financial evaluation of multiple large building energy usage and utility options in New York City.
- Analysis of interruptible gas versus firm gas for several NY City Clients
- Assistance and direction for new generation project in NY City to be connected to Coned's system
- Assistance with new electric and gas supply to St Patrick's Catherdral in Manhattan
- Review of electrical interconnection plans and cost for WSSC Waste Water Treatment Plant

Mr. Wood has considerable experience in coordinating new electric and gas service work for new and renovated buildings in New York City. His past experience with Con Edison of New York and his many contacts in all parts of Con Edison allows more efficient handling of new electric and gas service work and electric vault placements. He has extensive knowledge of New York DOT requirements for new vault location along with Con Edison specifications.

While serving as a Vice President at Con Edison of New York, Mr. Wood was responsible for the groups that handled the following critical activities:

- All contacts and coordination with commercial, industrial, institutional and governmental customers for electric, gas and steam connections
- Requests for electric and gas service upgrades or new services (Electric/gas/steam)

- Resolution of issues associated with construction interference with electric and gas utility infrastructure
- New and upgrade electric/gas service layout and transformer vault design
- Types of electrical service offerings and design of distribution system to support services
- Energy Efficiency and Demand Management Programs
- Sales and Marketing of oil to gas conversion programs
- Cogeneration evaluation and integration with electric system
- Design, Planning and Engineering for the entire Distribution System for New York City and Westchester County
- Development of alternatives solutions for handling load growth rather than standard substation/transmission/distribution facilities
- Review of proposed transmission/substation expansion programs to determine impact on distribution system and ability to handle customer growth needs

As Vice President Transmission & Distribution at Baltimore Gas & Electric, Mr. Wood was responsible for all planning, design, engineering and operation of the electric transmission/distribution system. His duties also included the representation of BG&E in the PJM during a period of heavy transition to open markets. During his tenure at Baltimore Gas & Electric, Mr. Wood was responsible for the design and construction of multiple large substations and several transmission lines ranging from 115KV to 500KV. For approximately eighteen years, Mr. Wood was responsible for both the electric and gas distribution system through various positions including project development, project management, engineering and design standards, system operations, metering and emergency response.

Mr. Wood is an electrical engineering graduate from the University of Maryland College Park. He also holds a Master in Business Administration from Loyola College in Baltimore Maryland.