*[Building Owner] with an office at [address] (the “Owner”) and [Company] with an office at [address] (the “Company”) to perform work at [Facility] at [address] (the “Facility”).*

Exploratory Energy Audit Scope of Work:

Choose a BEPS Compliance Pathway

Scope of Energy Audit

*[Company]* will perform a Level 2 energy audit in accordance with ANSI/ASHRAE/ACCA Standard 211-2018 (“ASHRAE 211”) that is designed to identify enough measures to meet the energy savings targets outlined in the Principal BEPS Compliance Pathways outlined in the BEPS Compliance and Enforcement Guidebook (the “Guidebook,” see Appendix A).

Optional tasks are also included to meet Prescriptive Pathway requirements such DOEE’s Energy Audit Template (see Appendix B) and Alternative Compliance Pathway (ACP) Options for Deep Energy Retrofit (for a minimum of 2 cycles), as defined in the Guidebook.

**Personnel**

All *[Company]* employees, subcontractors, or agents performing work under the Agreement shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, *[Company]* shall furnish a copy of technical certification or other proof of qualification.

The Energy Audit shall be conducted by a professional who possesses one (1) of the following licenses, credentials, or certifications and who is in good standing with the licensing, credentialing, or certifying entity at the time that the energy use audit is conducted:

* Certified Energy Auditor (CEA)
* Certified Energy Manager (CEM)
* Building Energy Assessment Professional (BEAP)
* High-Performance Building Design Professional (HPBD)
* Multifamily Building Analyst (MFBA)

Task 1 - Preliminary Energy Use Analysis (PEA)

Prior to the Site Visit, *[Company]* shall:

1. **Facilitate Project Kick-off Meeting.** *[Company]* shall facilitate a project team meeting with *[Owner]*, key facility team members, and decision makers to define responsibilities, discuss the energy audit process, and discuss timelines.
2. **Review Facility(s) Information.** *[Company]* shall collect and review the information from *[Owner]* described in Appendix C. *[Owner]* is responsible for providing the information outlined in Appendix C. Delays in providing this information will also delay future tasks.
3. **Verify Benchmarking Data.** Confirm the accuracy of the Facility(s) District Benchmarking Reports for calendar years 2018 and 2019 to establish an accurate baseline to determine EEM selection. The Facility(s) utility cost and consumption data should also be summarized.
	1. Examine the building’s data against other publicly available sources (e.g. tax records, etc.)
	2. Conduct basic data quality checks using obtained information (i.e. square footage of space typologies, energy meters and fuel sources, occupancy, operating hours, etc.)

If discrepancies are found between benchmarking data and site conditions, *[Owner]* is responsible for investigating discrepancies and making corrections. Further work in this scope cannot proceed until these items are addressed.

1. **Calculate the Energy Cost Index.** Calculate total annual building energy cost, including all taxes, and divide by gross floor area to obtain the Energy Cost Index (ECI).
2. **Provide an Energy Cost Component Breakdown.** A breakdown of the annual total energy cost by each energy component (at minimum, electricity and gas usage) shall be developed.

Task 2 - Site Visit (#1)

1. **Walk-through.** Conduct a walk-through survey of the Facility accompanied by *[Owner]* to become familiar with its construction, equipment, operation, and maintenance. Examine the following systems at minimum:
	1. Mechanical systems including but not limited to central mechanical plants, ventilation systems, and space conditioning
	2. Building automation systems
	3. Domestic hot water systems, including central heating and distribution systems
	4. Lighting, including common area and parking lots
	5. Onsite power, including electrical and natural gas
	6. External envelope
2. **Review of Current O&M Procedures.** Discuss the current O&M of building systems impacting energy use or indoor environmental quality.
3. **Conduct Interviews.** Interview key members from *[Owner]*’s team to identify current space use, special problems, planned improvements of the facility, and whether any maintenance problems and/or practices or occupant behaviors affect energy efficiency or indoor environmental quality.
4. **Perform a Space Function Analysis.** Conduct a space function analysis.

Task 3 - Preliminary EEM Development

1. **Provide a Preliminary EEM Recommendations Memo.** The Preliminary EEM Recommendations Memo should identify EEMs that would comply with the energy savings requirements of all Principal BEPS Compliance Pathway and:
	1. **Identify Low-Cost and No-Cost EEM Recommendations.** Identify low-cost and no-cost changes to the Facility or to O&M procedures identified during the Site Visit. Include a preliminary qualitative estimate (high, medium, or low) of the energy cost savings that will result from each measure.
	2. **Identify Potential EEM Capital Recommendations.** Identify potential capital EEMs, including a preliminary qualitative estimate of the level (high, medium, or low) of potential costs and energy cost savings.
	3. **Assess Distributed and Renewable Energy Resource Opportunities.**  Conduct an overview of the site’s potential for distributed and renewable energy resources, including, at minimum, solar photovoltaic and geothermal energy. Consider building orientation, shading, neighboring features, space available for equipment, thermal and electric loads, and electric metering.
	4. **Optional: identify additional measures that would allow for use of the Accelerated Savings Recognition Pathway.** Identify additional measures that would generate a minimum of 36% site energy use intensity (EUI) reduction. Include a preliminary qualitative estimate of the level (high, medium, or low) of potential costs and energy cost savings.
2. **Deliver the Memo.** Deliver the Preliminary EEM Recommendations Memo to *[Owner]*.
3. **Meet with *[Owner]*.** Within two weeks of delivery of the Preliminary EEM Recommendations Memo, meet with *[Owner]* to review and discuss:
4. The current O+M building systems impacting energy use or indoor environmental quality identified during the Site Visit
5. Findings from the preliminary EEM Recommendations Report
6. Questions or concerns around the preliminary EEM Recommendations
7. Within two weeks of the meeting described in Task 3.3, *[Owner]* shall provide comments about which measures are preferred for implementation or further study. Delays in providing this information will also delay future tasks.

Task 4 – Dwelling Unit Performance Testing

1. For projects without mechanical ventilation:
	1. **Perform Dwelling Unit Performance Testing.** For residential buildings, conduct the following tests using sampling methodology in accordance with Section 5.3.1.2 of ASHRAE 211, the BPI Technical Standards for the Multifamily Building Analyst Professional (BPI MF), or DC Weatherization Assistance Program Multifamily Energy Audit Process Guide ("DC WAP"):
		1. Visual inspections
		2. Combustion Safety, in accordance with Chapter 8 of the RESNET Mortgage Industry National Home Energy Rating, BPI MF, or DC WAP.
		3. Blower Door, Duct Leakage, and Mechanical Ventilation in accordance with ASTM E779, ASTM E1827, ANSI/RESNET/ICC 380-2019, or DC WAP.

Task 5 - Site Visit (#2)

1. **Facility Site Survey.** Accompanied by *[Owner]* or personnel designated by the *[Owner]* (operator or key maintenance staff member), review the mechanical, electrical, envelope, and other systems and their operating conditions that impact energy use, based on direct observation, interviews, testing, and as-built documentation (if available). Additionally:
	1. **Determine Key Operating Parameters.** Determine existing operating parameters for energy using systems commensurate with completing the DOEE Energy Audit Template, at a minimum.
	2. **Assess Operating Efficiency of Current Building Systems.**
	3. **Refine Identified EEMs Based on Updated Site Visit Information.** Additional EEMs may also be identified at this time based on updated information collected after Task 3.
	4. **Conduct End-Use Breakdown.** The energy use allocation shall be quantified for each end-use system and separated by energy source type.

Task 6 - Updated EEM Recommendations Report

1. **Provide an updated EEM Recommendations Report** (Updated Report) to *[Owner]* that:
2. Updates the Preliminary EEM Recommendations Memo based on post-memo activities;
3. Includes potential energy saving opportunities for each system included in the Facility Site Survey and preliminary calculations to estimate the range of savings and costs in order to help guide *[Owner]*’s decisions on which EEMs should be pursued;
4. Includes the following measure packages:
	1. **Performance.** Two packages of measures should be identified which saves at least 20% Site EUI.
	2. **Standard Target (if applicable).** Two packages of measures should be identified which allow for the building to meet the ENERGY STAR Score (or Source EUI, if Score not available) standard target pathway for their building typology.
	3. **Prescriptive.** Optional: twopackages that save at least 25% Site EUI, and compliant with the Prescriptive Pathway.
	4. **Accelerated Savings Recognition (ASR).** One package that saves at least 36% Site EUI (compliant with the Accelerated Savings Recognition alternative pathway).
5. Allows *[Owner]* to decide which Compliance Pathway to pursue and EEMs should be included in the final EEM Recommendations Report; and
6. Satisfies the requirements of the Prescriptive Pathway and DOEE’s Energy Audit Template, and helps guide *[Owner]* decisions as to which EEMs should be included in the Prescriptive Pathway Phase 2 Action Plan (see Task 6.2 and Task 7). This Updated Report will be used as the draft for the DC BEPS Energy Audit Report (see Task 7).
7. **The Updated Report Shall Meet the Requirements Outlined in the Guidebook** under *3.3.4 – Phase 1 – Pathway Selection and Energy Audit* and also ensure that the information required for Phase 2 in *3.3.5.3 – Final EEM Selection Requirement* is provided. It must include:
	1. **Executive Summary.** An executive summary which describes the Facility(s), measures evaluated, analysis methodology, results, and a summary table presenting the cost and savings estimates for each EEM.
	2. **Research Summary**
		1. Results from the Preliminary Energy Use Analysis (PEA)
		2. Summary review of the current O&M procedures
		3. Findings from Site Visits #1 and #2
	3. **Compliance Pathway.** The report should include updated recommendations on what compliance pathway(s) the *[Owner]* should pursue
	4. **Findings and Recommendations**
		1. **Calculated Energy and Cost Savings.** Calculations shall include an evaluation of energy use impacts by energy source type for both of individual EEMs and the interactive effects of potential EEMs as well as potential cost savings and peak demand savings. Potential cost savings should also include potential avoided BEPS compliance penalties from implementing the measure.
		2. **Ancillary Benefits.** This may include improved thermal comfort, reduced maintenance costs, reliability, aesthetic improvement, improved indoor light, improved air quality, reduced water use, or other factors. Where possible, quantitatively estimate the ancillary benefits.
		3. **Available Incentives.** Include a list of applicable, available incentives from any utility or government programs. Identify applicable tax credits.
		4. **Estimated EEM Costs.** Estimations shall include the total expected cost of implementation for each practical measure. Include either simple payback or simple return on investment (ROI) calculations based on calculated EEM costs and energy cost savings.
		5. **Measure Descriptions.** A description of the work required to implement each EEM should be included, as well as other items that may need to be further investigated in order to successfully implement the measure (e.g., if electrical infrastructure upgrades need to be investigated for electrification measures).
	5. **Measure Packages.** Measures should be combined into applicable and appropriate packages, including, at minimum, the following:
		* 1. **Performance.** Two packages of measures should be identified which saves at least 20% Site EUI.
			2. **Standard Target (if applicable).** Two packages of measures should be identified which allow for the building to meet the ENERGY STAR Score (or Source EUI, if Score not available) standard target pathway for their building typology.
			3. **Prescriptive.** Optional: twopackages that save at least 25% Site EUI, and compliant with the Prescriptive Pathway.
			4. **Accelerated Savings Recognition (ASR).** One package that saves at least 36% Site EUI (compliant with the Accelerated Savings Recognition alternative pathway).
	6. **Potential ENERGY STAR Score (or Source EUI, if Score not available) impacts of EEM Packages.** Use ENERGY STAR Target Finder to provide projections about potential ENERGY STAR Score based on EEM packages.
	7. **Next steps.** Identify recommended next steps for the building based on report findings, including items such as phasing considerations and additional information needed in order to successfully implement EEMs.
	8. **Certified Compliance with ASHRAE Standard 211**
	9. **Supporting Documentation.** Supporting documentation shouldincluding the data relied upon to prepare the findings.
8. Within two weeks of delivery of the Updated EEM Recommendations Report, meet with *[Owner]* to review and discuss:
	1. Findings from the Final EEM Recommendations Report.
	2. Questions or concerns around the Final EEM Recommendations Report.
	3. Confirm the recommended compliance pathway.
	4. Identify the next steps to implement chosen EEMs.
9. Within two weeks of the meeting described in Task 6.3, *[Owner]* shall provide comments about which measures are preferred for implementation or additional analysis.

Task 7 – Complete and Submit DC BEPS Energy Audit Report

1. Submit the DC BEPS Energy Audit Report via Audit Template (see Appendix B) to complete Prescriptive Pathway Phase 1 as described in paragraph *3.3.4.2 – Phase I Reporting* Requirements of the Guidebook.
2. Respond to DOEE follow-up questions and documentation requests.
3. After *[Owner]* approval, update final EEMs as described in paragraph *3.3.5.3 – Final EEM Selection Requirement* of the Guidebook (Prescriptive Pathway Phase 2).

Appendix A

BEPS Compliance and Enforcement Guidebook

On March 23, 2022, the DC Department of Energy & Environment (DOEE) published the final [Building Energy Performance Standards Compliance Guidebook](https://dc.beam-portal.org/helpdesk/kb/BEPS_Guidebook/), which provides specific instructions and details for compliance.

Appendix B

DOEE Energy Audit Template

A DC BEPS Energy Audit Report must be submitted to DOEE by the Energy Auditor via the [Audit Report Template](https://buildingenergyscore.energy.gov/d/users/sign_in). This web-based tool, developed by the U.S. Department of Energy, enables project teams to enter building Energy Audit data throughout the audit process beginning with the PEA, perform data validation, export data in various formats, and submit data to DOEE. Auditors must submit the complete report with all mandatory fields entered and supporting information (e.g., auditor’s certificate, supporting spreadsheets, model reports, photos, etc.). For more information, visit DOEE’s [Building Performance Helpdesk](https://dc.beam-portal.org/helpdesk/kb/BEPS/55/?org=District%20of%20Columbia%20Department%20of%20Energy%20and%20Environment).

Appendix C

Owner Attestation

*[Owner]* will provide, at a minimum, the following information to *[Company]*:

* Access to ENERGY STAR Portfolio Manager account and grant access to allow the ability to set building baselines
* Copies of historical utility bills, at minimum, for calendar years 2018 and 2019 if available
* Basic facility information. This can include, but is not limited to:
	+ Project and client names
	+ Key contacts
	+ Site address
	+ Building size
	+ Building type and function
	+ Year constructed and dates of renovations/additions
	+ Construction type
	+ A breakdown of floor area by space use
	+ Number of floors
	+ Number of occupants and schedule of building occupancy. For multifamily buildings or other buildings with residential occupancies, include number of dwelling units and percent occupied.
	+ Utility rates, suppliers, and meter (and submeter) locations, data availability (hard copy or electronic)
	+ Historical preservation status
* All previous Energy Audit reports, if available
* Information about any EEM currently being installed or currently planned to be installed by *[Owner]* in the Facility(s)
* As-built architecture, mechanical, electrical, and plumbing drawings, if available
* Remote access to building and energy management systems, if available
* History of all commissioning that has been performed on the building and changes made at the Facility

Appendix D

Performance Testing Scope

**Unit Sampling**

Sampling of units shall be carried out in accordance with one of the following:

* The methods described in Section 5.3.1.2 of ASHRAE 211
* [BPI Technical Standards for the Multifamily Building Analyst Professional ("BPI MF")](https://www.bpi.org/sites/default/files/Technical%20Standards%20for%20the%20Multifamily%20Building%20Analyst%20Professional.pdf)

* [DC Weatherization Assistance Program Multifamily Energy Audit Process Guide ("DC WAP")](https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/06%20DOEE-Multifamily%20Energy%20Audit%20Policy%20and%20Procedure.pdf)

Units will be selected based on the following sampling guidelines:

* At least one of each unit type (studio, 1 bedroom, 2 bedroom, etc.)
* At least one unit from each location (bottom floor, top floor, and mid floor, and any other unique locations such as over the garage)
* At least one of each end condition (interior or end/corner unit)

**Visual Inspection**

Visually inspect the sampled units to identify evidence of air leakage. This will include but not be limited to windows, doors, common walls, exterior walls, utility penetrations, ductwork, window/wall air conditioners, ceiling/wall intersections, floor/wall intersection, slab edge, vents, rim joist, and cantilevered floors. In some unique cases the contractor will need to pay additional attention to units that have basements, attic hatches, or crawlspaces or be adjacent to stairwells or elevator shafts.

**Performance Testing**

Blower door (compartmentalization) testing, duct leakage testing, and mechanical ventilation testing shall be carried out in accordance with the relevant sections of at least one of the following:

* The methods described in Section 5.3.1.2 of ASHRAE 211
* [ANSI/RESNET/ICC 380-2019](https://www.resnet.us/wp-content/uploads/ANSIRESNETICC_380-2019_vf1.24.19_cover%5E0TOC-2.pdf)
* ["DC WAP"](https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/06%20DOEE-Multifamily%20Energy%20Audit%20Policy%20and%20Procedure.pdf)

**Blower Door Unit to Unit Compartmentalization Testing**

Compartmentalization testing will be done per the procedures outlined in the standards referenced above. For the purpose of the compartmentalization test, each apartment unit will be considered a “single zone.” Excerpts from ASTM E779 state the following:

* All doors inside the apartment should be opened for the test. All doors to the exterior (porch or entrance) shall be closed and locked.
* Windows should be closed and locked, including storm windows if they exist.
* Balancing dampers and registers should not be adjusted. Fireplace and other operable dampers should be closed.
* Note the indoor and outdoor temperatures at the time of the test as well as wind speed and direction
* Depressurize the unit to 50 and take readings.
* Readings should be adjusted for air density based on tables provided by blower door equipment company.
* Record all conditions when test was complete (e.g. Interior and exterior door positions, window conditions, ventilation, and heating damper positions) such that a repeat test with similar conditions can be done.

**Duct Leakage Testing**

Test total duct leakage and duct leakage to the outside in each unit inspected. Conduct a visual inspection to note the nature and quality of the duct work in a sampling of units. Primary attention should be paid to leakage at the connection of ductwork to finished surface (e.g. duct boots to drywall) and at accessible equipment in mechanical closet. The findings will support potential future work to be performed in all dwelling units.

**Mechanical Ventilation**

For buildings with unitized ventilation systems, evaluate ventilation air with direct air flow measurements and note ventilation control settings in a sampling of units. For buildings with central ventilation systems, measure air flow from multiple locations per the referenced standards and note control settings. Note any sign(s) of obvious over‐ or under‐ventilation, if any energy savings opportunities are available while meeting ventilation requirements, or if additional ventilation is recommended or needed even if it may increase the building’s energy consumption.

Post-retrofit buildings that include any weatherization and/or air sealing EEMs must comply with ASHRAE 62.1/62.2. Subcontractor is encouraged to propose adding mechanical ventilation regardless of the energy penalty in buildings that have no ventilation or sub-standard ventilation pre-retrofit.

The potential energy penalty associated with adding mechanical ventilation should be quantified and may be used as the basis of a baseline EUI adjustment for BEPS compliance evaluation, pending DOEE technical review and approval.

Check bath exhaust fans, kitchen exhaust ventilation, dryer venting and range hood operation, if applicable. If kitchen exhaust or dryer venting are not ducted to outdoors, the auditor must note this condition.

**Combustion safety**

Combustion safety testing shall be carried out in accordance with one of the following:

* [Chapter 8 of the RESNET Mortgage Industry National Home Energy Rating Systems Standards – Continuous Maintenance Version (“RESNET MINHERS”)](https://standards.resnet.us/index.htm#t=minhers_adv%2FHome%2FHome.htm)
* BPI MF
* DC WAP

Evaluate supply air to mechanical rooms, gas furnaces/hot water heater/appliances, complete carbon monoxide (CO) testing of combustion equipment, and recommend CO detectors as needed.