WORK ORDER REQUEST

DGS Facilities Decarbonization Plan

State of Maryland, Department of General Services

Project ID: BPM038491

July 31, 2024

Prepared By

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July 26, 2024

Ms. Lola Tiamiyu
Procurement Officer
Maryland Department of General Services
45 Calvert Street, Second Floor
Annapolis, MD 21401

DGS Facilities Decarbonization Plan | Solicitation No. BPM038491

Dear Ms. Tiamiya,

In response to the Facilities Decarbonization Plan Solicitation #BPM038491, Salas O'Brien is pleased to submit this Work Order Request to complete a Decarbonization and Energy Use Index Reduction Plan for the State of Maryland, Department of General Services (DGS).

The scope of this project is to draft a decarbonization and Energy Use Intensity (EUI) reduction plan for State-owned buildings subject to the draft Building Energy Performance Standard Program regulation dated July 10, 2024. Our focus will be on providing technical recommendations for electrification and developing multi-year budget forecasts for compliance.

Background, Purpose, and Goals

DGS has shared a revised RFP, section 2. Technical Requirements, to describe this scope of work. This revised RFP section is included as Appendix A. We understand the DGS draft plans are to achieve a portfolio-wide 20% reduction in direct GHG emissions in state-owned facilities and operations, on or before January 1, 2030, and net-zero direct GHG emissions on or before January 1, 2040. Our understanding of the Technical Requirements and commitment to fulfill this scope of work is presented herein.

Our focus will be on providing technical recommendations for electrification and developing multi-year budget forecasts for compliance, with the following primary objectives:

1. Our scope is to provide technical recommendations and cost estimates for achieving Building Energy Performance Standard (BEPS) Program compliance for 10 prioritized Standalone buildings listed by DGS. This scope is broken down under Phases 1-4 below.
2. In addition, we will develop a budgetary-level Class 5 forecast for 20 other DGS-controlled standalone buildings totaling 2,345,624 SF, and 39 campuses totaling 23,543,339 SF. The details for this part of our scope will be described in Phase 5.
3. Phase 6 of our scope will include project management plan, regular updates/meetings, reporting and milestone deliverables.

Phase 1: Building Analysis – Data Request and Site Visits

Building Data Request

DGS has provided a Prioritized List of Standalone Buildings and broken the list into three groupings (Appendix B): first 5-years (10 buildings in red), years 6-10 (10 buildings in orange), and years 11-15 (10 buildings in yellow), totaling 30 buildings. The final 8 buildings shown in green are not in plan/scope.

Table 1. The ten (10) prioritized buildings identified by DGS staff for this scope of work.

Building Names	Address	Year	Sq. Ft.	Business as Usual (BAU) Use
Forensics Lab	211 Milford Mill Rd, Pikesville, Baltimore, MD, 21208	2006	68,500	Admin
Jessup State Complex	7275 Waterloo Road, Jessup, MD, 20794	1970	126,000	Administrative
Eastern Shore Hospital Center / Main Building	5262 Woods Road, Cambridge, MD, 21613	2001	108,000	Admin. / Patient / Residential Care
Wabash DC/MSC	5800 Wabash Ave, Baltimore, MD, 21201	1986	52,824	Administrative
Hargrove DC/MSC	700 East Patapsco Ave, Brooklyn, MD, 21225	2003	84,730	Administrative
Salisbury DC/MSC	201 Baptist Street, Salisbury, MD, 21801	1990	224,343	Administrative
Silver Spring District Court	8552 2nd Ave, Silver Spring, MD, 20910	2004	79,596	Administrative
Ruhl Armory Bldg.	1035 York Rd, Towson, MD, 21204	1980	71,699	Readiness Center
Baltimore City Juvenile Justice Center	300 North Gay Street, Baltimore, MD, 21212	2003	294,000	Inmate / Residence
Elkton DC/MSC	170 East Main Street, Elkton, MD, 21921	1983	126,145	Administrative

We have received example energy audits for five of the ten building locations in Table 1. These reports do provide a general review of the building's size, annual utility use and cost, and some recommendations for energy efficiency measures such as lighting upgrades or changing operable to non-operable windows.

To further add to our review of these ten buildings, we will begin by requesting building details, equipment sheets and plans from DGS staff. Many detailed questions will come in the form of a questionnaire for Maryland staff to provide building and campus details. Information obtained from the questionnaire, as well as the building plans and specification sheets we receive, will be used to facilitate this scope of work for the Table 1 prioritized buildings. A list of building plans to be requested is organized by Uniformat code as detailed in Appendix C as a general description of the type of information, level of detail, and organizational structure of a typical building asset assessment that we use to perform the technical requirements of the scope of work. We recognize that some items may be rarely seen in a typical building or are generally not significant for capital planning purposes. There are reasons to review a complete set of plans to properly account for details such as energy loads, GHG emissions, and for future scenario planning or suggested upgrades and capital projects for decarbonization scenarios. Reviewing details in advance of site visits will assist our team in identifying site and building information and will both address questions up front and potentially narrow time spent on site visits. However, should any of these items or requests for a particular building not be shareable (i.e. building security), we will request those specific details be offered in whatever form possible to complete the requested scope. Should the documents/data not exist, our team will do its best to find the answers during a site visit.

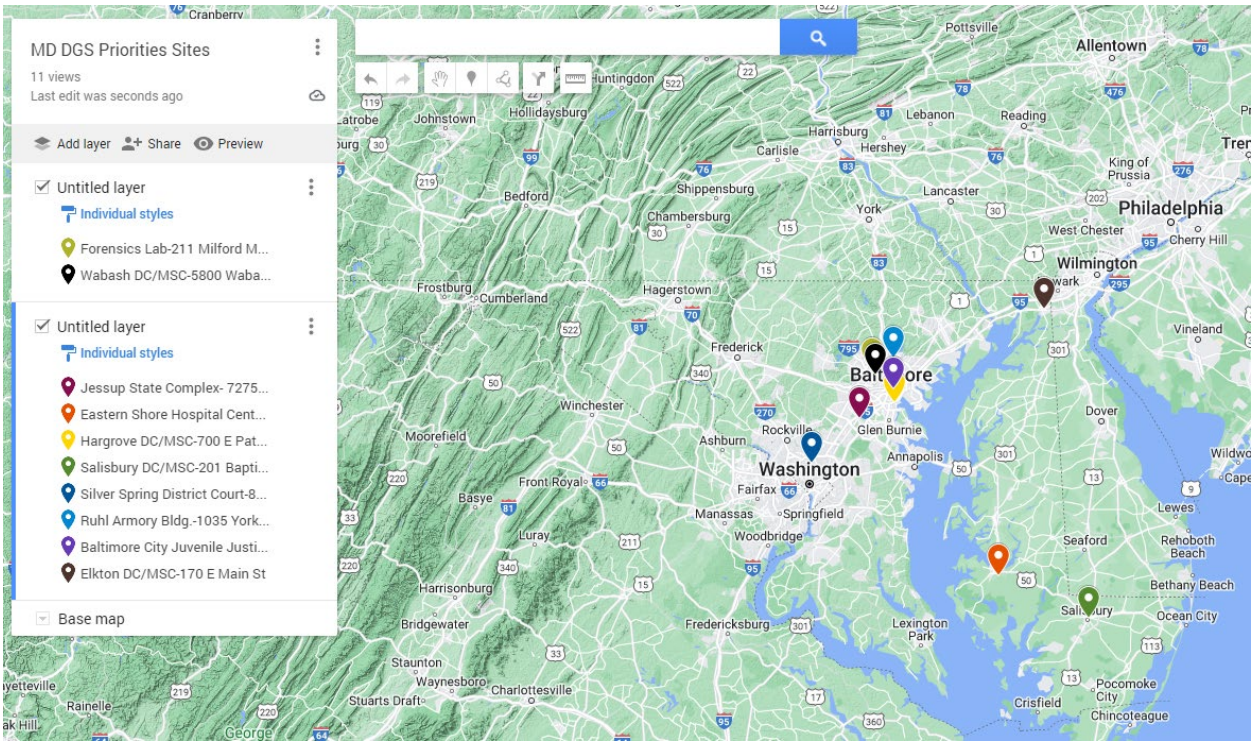
Review of Prioritized Buildings

Once we have cataloged and performed a desktop review of all available building documentation for the priority sites in Table 1, we will schedule site visits. During the site visits we will request to meet with a facility representative to review equipment and answer questions we may have about building construction and equipment. We have a suggested grouping of the priority buildings below by scale and proximity to local Salas O'Brien offices and will work with DGS and the facility site rep to schedule each visit. We will update DGS on progress and identify any gaps in information should any arise. At the end of Phase 1, we will provide a progress report of findings and outline any data gaps we may still by missing.

Table 2. Suggested site groupings to complete our scope of services.

Group 1	Group 2	Group 3	Group 4
• Silver Spring District Court • Wabash DC/MSC • Hargrove DC/MSC • Ruhl Armory Building	• Baltimore City Juvenile Justice Center • Elkton DC/MSC	• Jessup State Complex • Forensics Lab	• Eastern Shore Hospital Center / Main Building • Salisbury DC/MSC

The map below shows the locations for each of the ten priority sites from Table 1.



The visual nature of the assessment process requires close interaction with the facility's maintenance and operations personnel. Many of the problems inherent in building systems and components may not be visually apparent during the time of the walk-through. As a result, the assessment team members may request staff interviews to ensure all known equipment or

building issues are relayed to the Salas O'Brien team and our team has an opportunity to ask questions as it relates to their initial observations.

The inspection of the asset interiors will include mechanical and electrical rooms, public spaces as well as a representative sampling of similar room types (e.g., offices). For example, it is not the intent to survey every balcony, window, utility closet, every square foot of roofing, etc. Only representative observations of such areas are to be surveyed as per ASTM Document E-2018-15, Standard Guide for Property Condition Assessments. Additional review and delineation of equipment and architectural systems not specified above are considered outside this scope of work unless specified otherwise.

The inspections of the asset exteriors will include an approximate ten-foot perimeter around the asset and the areas adjacent to and/or attached to the asset that are inherent to the asset's use, such as ramps, stairs, paving, landscaping, and exterior, wall-mounted lighting. Additional site/property level assessments are outside of this scope of work unless specifically included.

Phase 1 Progress Meetings & Summary Reporting

A project kickoff meeting will commence the project once an approved work order is issued. We expect regular coordination during this phase, especially to setup site visits; progress updates will be provided. We will create an outline of the plan with a proposed table of contents and timeline for completing each phase and the final plan.

A summary of major observations will be presented once all ten priority list building assessments has been complete. At this point, we will request EUI performance targets from DGS staff to be used for the building energy analysis and modeling purposes.

Phase 2: Building Energy Analysis & Modeling for 5-yr Plan Buildings

As soon as site visits are complete, our team will begin the Building Energy Analysis & Modeling phase for the ten Priority buildings. This scope of work will consist of energy modeling for the building envelope, lighting, domestic hot water (DHW) and heating/ventilation/air conditioning (HVAC) systems to assess and recommend energy performance improvements to achieve the BEPS performance targets. We understand the energy-savings Executive Order with the goal of, by Fiscal Year 2031, reducing energy consumption in State-owned buildings by 20 percent compared to a Fiscal Year 2018 baseline."In the modeling phase, we will follow the Executive Order 20% reduction in EUI and understand MD DGS staff will provide the 2018 baseline to Salas O'Brien for modeling purposes.

Energy Modeling. During this portion of phase 2, we will conduct the following for each of the ten prioritized buildings:

1) Develop virtual building energy models from existing as-built documentation, user input, and site verification efforts using IES-VE energy modeling software based on the following building information collected in Phase 1:
    a. Architectural drawings and specifications with envelope performance characteristics.
    b. Mechanical drawings with HVAC system types, performance characteristics and building ventilation requirements.

c. Electrical drawings with lighting and power system requirements.
d. Plumbing drawings with DWH, DCW, and wastewater system requirements.
e. User input on building utilization schedules.
f. Site verification of existing systems and equipment.

2) Define building utilization schedules for occupancy, interior lighting, plug load, ventilation, energy recovery, thermal comfort settings, etc. Building operational schedules will be based on typical space type utilization requirements and informed by owner input.
3) Owner provided utility rate structures.
4) Apply full year Typical Meteorological Year 3 (TMY3) climate data for nearest available station to project location.
5) Simulated existing building performance and provide general calibration of energy use and demand based on existing utility use data when available.
6) Develop energy reduction alternatives for each building based on documentation review, assessment of existing energy end use, and identification of system replacement and upgrade opportunities.
7) Estimate annual energy use, energy cost, and GHG performance for proposed energy reduction scenarios based on BEPS performance targets for the Proposed Building Design.
8) Provide energy performance comparison for specific building targeted Energy Use Intensity (EUI) and energy cost comparisons.
9) Provide energy demand comparisons for energy reduction scenarios including electrical system demand.
10) Energy models will assess upgrades applicable to the specific building based on the initial assessment and review. Below is a list of potential scenarios that may be considered for each building:
    a. Envelope:
        i. (1) One each exterior wall, fenestration, and roof performance comparison
        ii. (1) Interior shading control comparison
        iii. (1) Exterior shading comparison
    b. HVAC:
        i. (1) Ventilation control upgrade.
        ii. (1) Ventilation air energy recovery system
        iii. Centralized HVAC system opportunities including simultaneous heating and cooling and energy recovery
        iv. (1) Building automation control system upgrade
    c. Electrical
        i. (1) Lighting system upgrade alternative
        ii. (2) Lighting system control upgrades
        iii. (1) PV system impact
    d. DHW
        i. (1) One DHW system performance comparison based on proposed fixture water use reductions
        ii. (1) Alternative DHW source heating system
    e. Iteration types and quantities may vary from above after initial information gathering and energy conservation measure identification and review. Additional iterations will be conducted as needed.

Phase 2 Progress Meetings & Summary Reporting

A sample technical submittal of a Standalone building containing the information required in Appendix A, Section 2-A, (i-ix) for initial review by the State. Phase 2 deliverables include providing summary narratives for each building including energy model input assumptions, alternative scenario descriptions, and results summary with current energy use, cost, demand, and greenhouse gas (GHG) metrics.

Phase 3: Class 3 Design Documents for Priority Buildings

We understand the importance of estimates of probable cost in ensuring the financial feasibility and success of your decarbonization project. Our approach combines industry expertise and a thorough understanding of project specifics to deliver this scope.

The objective of this phase is to deliver comprehensive Class 3 design documents (building narrative basis of design, drawings including floorplans, single line diagrams, equipment schedules, and outline specifications), which offer sufficient detail for equipment sizing and selection, and to develop budgetary construction cost projections. For this phase, we define project design definition level as 30%, to accommodate the scope of work requesting Class 3 cost estimating.

Table 3. Construction Cost Estimate Classes

Estimate Class	Name	Purpose	Project Definition Level
Class 5	Order of Magnitude	Screening or Feasibility	0% to 2%
Class 4	Intermediate	Concept Study or Feasibility	1% to 15%
Class 3	**Preliminary**	**Budget, Authorization, or Control**	**10% to 40%**
Class 2	Substantive	Control or Bid/Tender	30% to 70%
Class 1	Definitive	Check Estimate or Bid/Tender	50% to 100%

From the initial project review in Phase 1, a collection and review of all available project documentation including drawings, specifications, and site visits will be complete and project scope, objectives, and requirements will be clarified with the client. Having each building energy and envelope analysis completed from Phase 2 will allow our team to commence the design development work of Phase 3. Once designs are 30% complete, the estimating process can begin for each of the Table 1 priority buildings.

Phase 3 Progress Meetings & Summary Reporting

With the important details understood from building assessments and energy modeling, our team will be working on designs documentation as input to the forthcoming Phase 4 cost analysis work. As a milestone deliverable in Phase 3, we will first complete and review sample project Silver Spring District Court facility during a regular scheduled meeting. DGS staff will have ten business days to provide feedback before continuing with the remaining priority buildings.

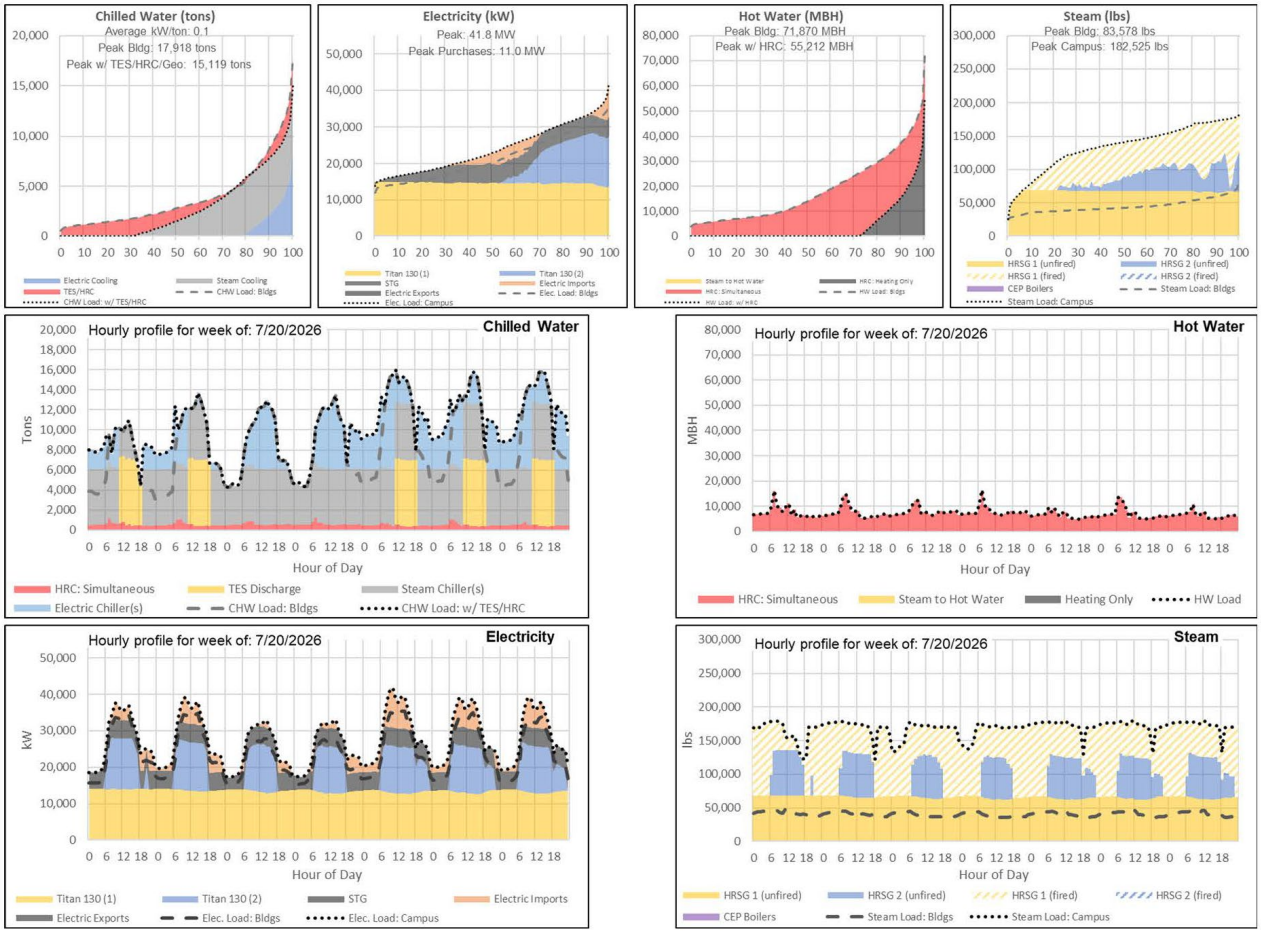
Phase 4 – Estimates of Probable Cost for 10 Priority Buildings

As the design work of Phase 3 is ongoing, we will review existing information and integrating that data into a business-as-usual (BAU) model of the State's operations for Table 1 buildings. The BAU will be used as the foundation for all further project assessments and analysis. As such, it is critical that the BAU is developed and reviewed early in the project to clearly reflect building history and current energy upgrade projects and strategies. The BAU will be developed to reflect relevant historical information and a 30-year forecast horizon.

We propose focusing on one building (Silver Spring District Court) to start with to establish agreed upon process and methodology then expanding analysis to include other buildings.

Developing an accurate thermal profile of each building is one of most important steps in the strategic planning process; an example is shown in Table 4. It is the foundation of sizing any system components, including equipment, energy sources, and supporting contracts. Additionally, the thermal profile will be a fundamental driver of the economic evaluations conducted to assess options.

Table 4. Example Thermal Profile. *The fundamental driver of the economic evaluations conducted is to assess options. It's an important part of the analysis for sizing the capacity of alternative energy sources.*



Specifically, the thermal profile is an important part of the analysis for sizing the capacity of alternative energy sources such as ground loop heat exchangers (GLHE), wastewater heating/cooling, air source heat pumps, or other infrastructure components. In the case of a ground loop heat exchanger, if under sized, this would deplete the energy in a heating dominant facility/campus. If oversized, this would increase the first cost and could make the project financially infeasible. The information provided below emphasizes our process as it relates to sizing GLHE (as an example) but is similarly applicable to other energy source strategies the project will consider.

The two key components of the thermal profile that must be identified and analyzed are the building thermal peaks and energy consumed. When receiving data from DGS, we can accept historical data in hourly or monthly increments, whichever the lowest increment available may be:

- **Heating and cooling peaks (Btu/hr.):** The heating and cooling peaks dictate the size of the heating and cooling equipment needed to transfer the peak Btus per hour from the building to energy source/sinks (during cooling) and from source/sinks to the building(s) (during heating).
- **Heating and cooling energy consumption (Btu):** The total heating and cooling energy consumed dictates the size source/sinks (i.e., a ground loop heat exchanger, sea water systems, etc.) needed to store the Btus in the cooling season that will be used later during the heating season.

The monthly building's thermal load characteristics will determine the following:

- **Base simultaneous load.** The minimum simultaneous heating and cooling load required year-round for the building.
- **Instantaneous simultaneous load.** The amount of simultaneous heating and cooling load required above the base simultaneous load at different times throughout the year, largest in the shoulder seasons when there is the transition from summer to fall or from spring to summer.
- **Unbalanced heating load.** The amount of heating load required in addition to the base simultaneous and instantaneous simultaneous heating and cooling loads. The Btus for this are supplied from energy source/sinks.
- **Unbalanced cooling load**. The amount of cooling load required in addition to the base simultaneous and instantaneous simultaneous heating and cooling loads. The Btus for this are deposited in the energy source/sinks.

** The above information will be used to accurately size bore field size requirements, air source heat pumps, thermal storage options, etc. or other traditional energy source/sinks as well as any central equipment serving the building or the campus.*

Of equal importance to the discovery process will be interaction with the State of Maryland's staff and advisors to leverage the institutional knowledge of buildings, systems, deficiencies, and opportunities. The project will be collaborative with staff and other stakeholders, to maximize knowledge transfer to, and from, our team to enable efficient project delivery.

This project will require the State of Maryland's staff to provide technical documentation, offer analysis feedback, and be active participants in developing analysis tools to be used throughout the project, via careful review as we present our work. To every extent possible we will seek to

reduce the administrative burden on staff and use our experience, skills, and tools to amplify their institutional knowledge and relationships. We will:

- Confirm and evolve project goals on an ongoing basis relating to energy use reduction, carbon emission reduction, energy cost reduction, deferred maintenance, reliability, resiliency, fuel procurement strategies, and sustainability objectives.
- Complete information requests for critical data, including site diagrams, utility infrastructure drawings, metered utility use, energy pricing and commodity costs (including hedging strategies and forecasts), and historic carbon emissions data.
- Determine status of prior recommendations for building systems.
- Complete walk-throughs of representative and critically important buildings/systems to confirm existing conditions and utility infrastructure interface points for Hot Water, Chilled Water, Steam and Electrical systems.
- Conduct initial stakeholder engagement with DGS staff and relevant project leadership, including interviews with facility staff most familiar with relevant building systems, constraints, and opportunities, including unique site constraints.
- Document existing “process” steam uses.

Characterize Recommended Options

The Phase 3 Design Documents will be used to provide a detailed description of the recommended system changes to each building to achieve the BEPS goals. These options will be analyzed in a recommended case for comparison to the BAU case developed earlier in this phase. The recommended case (or scenario) may include previous recommendations from energy audits or State staff as well as non-technical strategies such as energy procurement and the impact of greening of the grid. Additionally, an electric profile is developed to be used in the economic analysis and sizing of supporting electrical infrastructure modifications. This model can also be used to assess renewable electricity options including onsite generation and power purchase agreements.

Each building’s design documents will be used as be basis for preparing estimates of probable cost as previously described. The estimates of probable cost will then be used to develop a life cycle cost analysis of the recommended case that can be compared to the BAU case previously developed for each building.

Recommended case models will include a 30-year forecast horizon for:

- Energy commodities
- Greenhouse gas emissions
- Non-fuel operations and maintenance expenses
- Cost benefit of addressing deferred maintenance
- Commodity costs
- Utility rate structures (as appropriate)

The recommended case models will provide estimates of annual operating costs for each facility (both fuel and non-fuel) as well as estimates of probable cost that would be required for implementation of new systems and the total Net Present Value operational cost.

From this analysis, our team will be able to finalize:

1) **Cost Data Collection and Analysis:**
    a. A collection of current cost data for materials, labor, and equipment from reliable industry sources.
    b. Adjustment for location-specific factors, market trends, and inflation rates.
2) **Estimates of Probable Cost:**
    a. Preparation of estimates of probable cost, categorized by division.
    b. Inclusion of indirect costs such as overhead, profit, and contingencies.
    c. Breakdown of costs into labor, materials, equipment, and subcontractor services.
3) **Risk Analysis and Contingency Planning:**
    a. Identification of potential cost risks and uncertainties.
    b. Development of appropriate contingency plans to mitigate identified risks.
4) **Review and Quality Assurance:**
    a. Internal review and validation of cost estimates to ensure completeness.
    b. Comparison with historical data and benchmarks for similar projects.
5) **Final Reporting and Presentation:**
    a. Preparation of a comprehensive estimate of probable costs report, including all supporting documentation and assumptions.
    b. Presentation of findings to the client, with an opportunity for discussion and clarification.

Phase 4 Deliverables. Upon completion of this phase, we will provide the following deliverables for each of the Table 1 priority buildings:

Cost Analysis for Priority Buildings

- Cost estimates for BEPS compliance reflecting incremental costs.
- Estimated capital costs with a 3% annual escalation beyond 2024.
- Consideration of utility rebates, state grants, and federal funds.
- Comparison between implementation costs and costs of doing nothing.
- Additional maintenance costs or savings.
- Class 3 cost estimates for the 10 Prioritized Buildings.
- A cost forecast to achieve GHG emission reductions and EUI reductions.

Phase 5 – Analysis for 20 Standalone Buildings & Campus Group Buildings

The scope of work includes a Class 5 Cost Analysis per Table 2. This work includes the 20 standalone buildings list in Appendix B – Second and Third, 5 Year Buildings. In addition, this scope of work includes a Class 5 Cost Analysis of 39 DGS-managed, State of Maryland campuses totaling 23,543,340 SF. A list of the 39 campuses is included in Appendix D.

Class 5 Development Work – Part A, Standalone Buildings

Building Energy Summary

For all Standalone buildings (see Appendix B) that are scheduled for implementation projects in the 6-15 year window, a building energy system review will be conducted to document:

- energy use by utility
- energy use intensity
- carbon emissions

- existing systems
- deferred maintenance log
- anticipated future capital refurbishment schedule

Existing energy audit work can be an initial source of much of this information. We will require some data collection from staff should the energy audits not be all-inclusive.

Typology Categorization and Analogies

Building energy summary information will be integrated with building typology categorization to align each building to analogs from the priority buildings, which will be studied in detail as described previously. By defining analogs to similar buildings Class 3 cost estimate work can be leveraged to provide Class 5 budgetary estimates of probable cost.

BAU Model

Business-as-Usual (BAU) models of each standalone building will be developed. These BAU models will be used as the basis for conducting life cycle cost analysis of each facility and the recommended systems for decarbonization to BEPS performance standards. BAU models will include a 30-year forecast horizon for:

- Energy commodities
- Greenhouse gas emissions
- Non-fuel operations and maintenance expenses
- Deferred maintenance applicable to decarbonization strategies
- Commodity costs
- Utility rate structures (as appropriate)

The BAU models will provide estimates of annual operating costs for each facility (both fuel and non-fuel) as well as estimates of probable cost that would be required to fund in-kind replacement of existing systems and the total Net Present Value operational cost of the BAU.

Estimates of Probable Cost

Class 5 estimates are budgetary costs that are developed with minimal design definition. These cost estimates will be prepared using per square foot analogies drawn from the Priority Building set that will have design definition and Class 3 cost estimates. Class 5 estimates can have a similar format to the Class 3 estimates developed from more detailed design documentation, but their uncertainty range will be significantly higher. As necessary, additional information will be used to finalize these estimates of probable cost if insufficient information is available from the building analogies developed as part of the priority building scope.

Recommend Case Analysis

Insight derived from each building as part of the Building Energy Summary will be used to develop a recommended case for building decarbonization consistent with the BEPS requirements. At this level of analysis, the recommended cases will be documented in narrative format. The narrative will generally describe the building system modifications required and major changes to equipment but will not make specific equipment selections or include any design drawings. Impacts to building HVAC systems and electrical systems will be described. To the extent that

energy audits exist for these facilities recommendations from that previous work will be reviewed and included in the recommended case as appropriate.

Each building narrative will be used as be basis for preparing estimates of probable cost as previously described. The estimates of probable cost will then be used to develop a life cycle cost analysis of the recommended case that can be compared to the BAU case previously developed for each building.

Recommended case models will include a 30-year forecast horizon for:

- Energy commodities
- Greenhouse gas emissions
- Non-fuel operations and maintenance expenses
- Cost benefit of addressing deferred maintenance
- Commodity costs
- Utility rate structures (as appropriate)

The recommended case models will provide estimates of annual operating costs for each facility (both fuel and non-fuel) as well as estimates of probable cost that would be required for implementation of new systems and the total Net Present Value operational cost.

Building Group Summary - After each building has been assessed and analyzed, a summary of findings will be prepared for review by DGS.

Class 5 Development Work – Part B, Campus Context

Energy Summary

For all campus facilities (see Appendix D), an energy system review will be conducted to document:

- energy use by utility
- energy use intensity
- carbon emissions
- existing systems
- deferred maintenance log
- anticipated future capital refurbishment schedule

As possible buildings at each campus site will be viewed together to minimize the analytical burden of such a large set of buildings. Existing energy audit work can be an initial source of much of this information.

Typology Categorization and Analogies

Energy summary information will be integrated with building typology categorization for each building in a campus setting to align each building to analogs from the priority buildings, which will be studied in detail as described previously. By defining analogs to similar buildings Class 3 cost estimate work can be leveraged to provide Class 5 budgetary estimates of probable cost. At the campus level additional building typologies may be defined outside of the analogs available from the Class 3 detailed work.

BAU Model

Business-as-Usual models of each campus will be developed. These BAU models will be used as the basis for conducting life cycle cost analysis of each campus and a characterization of systems for decarbonization to BEPS performance standards. BAU models will include a 30-year forecast horizon for:

- Energy commodities
- Greenhouse gas emissions
- Non-fuel operations and maintenance expenses
- Major deferred maintenance applicable to decarbonization strategies from centralized energy service systems, as appropriate
- Commodity costs
- Utility rate structures (as appropriate)

The BAU models will provide estimates of annual operating costs for each campus (both fuel and non-fuel) as well as estimates of probable cost that would be required to fund in-kind replacement of existing systems and the total Net Present Value operational cost of the BAU.

Estimates of Probable Cost

Class 5 estimates are budgetary costs that are developed with minimal design definition. These cost estimates will be prepared using per square foot analogies drawn from the Priority Building set that will have design definition and Class 3 cost estimates. Class 5 estimates can have a similar format to the Class 3 estimates developed from more detailed design documentation, but their uncertainty range will be significantly higher. As necessary, additional information will be used to finalize these estimates of probable cost if insufficient information is available from the building analogies developed as part of the priority building scope.

Recommend Case Analysis

Insight derived from each campus as part of the Building Energy Summary will be used to develop a recommended case for decarbonization consistent with the BEPS requirements. At this level of analysis, the recommended cases will be documented in narrative format. The narrative will generally describe the campus system modifications required and major changes to central equipment but will not make specific equipment selections or include any design drawings. Impacts to centralized mechanical and electrical systems will be described. To the extent that energy audits exist for buildings at campuses recommendations from that previous work will be reviewed and included in the recommended case as appropriate. Analysis of each individual building on each campus is not included. Buildings will be categorized by typology based on their programmatic use and a desktop review of their systems and any connection to central utilities. This categorization will be used to breakdown campuses into gross square foot areas to which costs per square foot metrics will be applied.

The campus building typology composition and a campus-level narrative will be used as be basis for preparing estimates of probable cost as previously described. The estimates of probable cost will then be used to develop a life cycle cost analysis of the recommended case that can be compared to the BAU case previously developed for each campus.

Recommended case models will include a 30-year forecast horizon for:

- Energy commodities
- Greenhouse gas emissions
- Non-fuel operations and maintenance expenses
- Cost benefit of addressing deferred maintenance
- Commodity costs
- Utility rate structures (as appropriate)

The recommended case models will provide estimates of annual operating costs for each facility (both fuel and non-fuel) as well as estimates of probable cost that would be required for implementation of new systems and the total Net Present Value operational cost.

Campus Group Summary - After each campus has been assessed and analyzed, a summary of findings will be prepared for review by DGS.

Phase 5 Progress Meetings & Deliverables

A summary of findings will be presented and reported for both Parts A (20 standalone buildings) and B (39 campuses) of Phase 5. The Part A summary deliverable will initiate a review period near the mid-point of the project schedule which will allow ample time for adjustments and finalization. The Building Group Summary documentation will define a prioritized list for implementation and the budgetary recommendations determined required for each facility to continue meeting BEPS targets in years 6 through 15 of the program.

After each campus has been assessed and analyzed, a summary of findings will be prepared for review by DGS. This deliverable will initiate a review period near the end of the project schedule. The Campus Group Summary documentation will define a budgetary recommendation required for each facility to continue meeting BEPS targets in years 6 through 15 of the program.

Phase 6 – Project Management, Progress Meetings/Reviews & Milestone Deliverables

Project Initiation

Our project plan centers on developing a thorough understanding of the State of Maryland's unique context and objectives for this Decarbonization Plan to enable us to help develop an actionable, implementable plan. To this end, it is important to begin this planning process with an initial project kick-off meeting.

The kick-off meeting will:

- Introduce key team members and define roles.
- Identify key stakeholders to be included in the project.
- Set expectations for engagement, communication, and stakeholder involvement.
- Establish clear communication channels and the decision-making process.
- Confirm Maryland DGS's vision, project scope, important constraints (funding, programmatic needs, site, etc.), and desired results.
- Review relevant work efforts to date that form the basis of current perspectives and offer technical detail relating to analysis that will occur as part of this planning effort. We will

engage with the Ecosystem Energy team to help utilize as much of their prior work as possible.

- Document supporting key metrics, assumptions, and analytical methods.
- Adopt a project schedule including important milestone dates.

Project Schedule – Appendix E

An estimate schedule to complete this scope of work is presented in Appendix E and illustrates our estimated time to complete the scope of work by phase and includes regular check-ins/updates with DGS. This assumes a project start of August 12, 2024. Should revisions be necessary, a customized schedule for this project will be developed by the project team in cooperation with DGS. Once the project starts, if a shortened timeline be needed, multiple teams can be arranged (with adequate advanced planning) but may incur some added costs.

This continuous work plan includes codifying recommended plans to define capital investment timing, design and construction timeframes, and anticipated impacts to energy system operation and costs. This includes periodic (monthly) DGS check-ins and offer periods of review time by State of Maryland staff. Salas O'Brien will provide and submit for review a draft partial plan at each of the milestones listed below in editable Microsoft Word and Excel documents. The State will review submittals and return written comments in a timely fashion, or within ten business days. We understand that DGS staff intends to review each milestone and specifically, submittals for Silver Spring DC project site, prior to the Salas O'Brien team moving forward with additional work. Note, there is some parallel path work planned as presented in our schedule, but not to a point beyond the review periods, allowing ample time for review, feedback and response.

Milestones are listed for each phase of the project in the Proposed Schedule:

1) Phase 1 Milestone: A summary presentation of major observations will be provided once all ten priority list building assessments have been complete. We will have a virtual meeting to outline phases and review schedule of values. Outline of plan with table of contents and schedule of values for remaining work/milestones. At this point in the project, it will be important to have EUI Targets for Analysis identified by DGS as a milestone deliverable to Salas O'Brien.
2) Building Energy Analysis & Modeling for Priority Building – presentation and review of draft Single Building analysis (Silver Spring District Court).
3) Building Energy Analysis & Modeling for Priority Buildings – remaining nine (9) buildings summary as outlined in the attached Schedule.
4) Design Development for Silver Spring District Court.
5) Design Development for remaining nine (9) buildings.
6) Class 3 Estimates of Probable Cost for Silver Spring District Court.
7) Class 3 Estimates of Probable Cost for remaining nine (9) buildings.
8) Class 5 Analysis Presentation and Technical submittal for 1 of the remaining 20 buildings.
9) Class 5 Analysis Presentation and Technical submittal for 9 of the remaining 20 buildings.
10) Class 5 Analysis Presentation and Technical submittal for the remaining 10 buildings.
11) Technical report and incremental probable costs for 1 of the campuses.
12) Technical report and incremental probable costs for the remaining 38 campuses.
13) Completed plan with technical reports and cost estimates for each building and a budgetary incremental cost plan for the entire project.

Project Fee Breakdown – Appendix F

Our fee breakdown to complete this scope of work is presented in Appendix F and illustrates our estimated time to complete the scope of work by phase. Appendix F also contains a breakdown of fees per Milestone. Our fee and time are based on these numbers and square foot estimates. Should we discover a discrepancy in number of buildings and size, a revised quotation will need to be accepted by both parties before work continues.

Exclusions

Time and materials Work Orders will be issued in accordance with pre-approved Labor Categories with the fully loaded rates proposed in Appendix G - FINANCIAL PROPOSAL FORM, BAFO Facility Decarbonization Plan RFP BPM038491.

This proposal assumes that all necessary project documentation will be provided by the client in a timely manner.

Not included in our Scope of Work:

1. Should DGS request out of scope building envelope analyses (i.e. blower door testing, thermal imaging, etc.) our team can provide these on a time and materials basis. If rates are not specific to Appendix G, rates will be quoted at such time.
2. If any of the listed buildings have ancillary structures associated with those buildings, those buildings will not be assessed without additional fee and potentially schedule adjustments and prior notification with DGS.
3. SOC 2 Type 2 Audit Report A SOC 2 Type 2 Report is not a Contractor requirement for this Contract.
4. DGS will supply an expert in the source data to work with Salas O'Brien to identify data gaps or confusion.
5. No photo imports are included in this scope. If required, these can be imported and reviewed for an additional fee at the Technical Staff rate provided in Appendix G.
6. The fee herein provided is based on the Appendix A Technical Requirements listing ten (10) priority buildings, 20 standalone buildings (see Appendix B) and 39 campuses. These facilities total approximately 28.3 million square feet. Our fee and time are based on these numbers and square foot estimates. Should we discover a discrepancy in number of buildings and size, a revised quotation will need to be accepted by both parties before work continues.
7. The scope of work does not include detailed design services, cost management beyond the Class 3 estimate of probable costs, or construction administration.
8. This scope does not include intrusive and destructive testing such as infrared, roofing core sampling, soil testing, generator testing, blower door testing and hazardous material testing as part of the standard assessment methodology. If observed field conditions warrant further testing, Salas O'Brien will make recommendations for such investigation as appropriate and include in the final deliverable.

Appendix A – RFP Technical Requirements Scope of Work

PROJECT SCOPE OF WORK

FOR DECARBONIZATION PLANNING

Date: April 17, 2024

Project Title: DGS Facilities Decarbonization Plan

Project Number: -

1. BACKGROUND

A. The Department of General Services (DGS or Department) is issuing this Scope of Work to draft a decarbonization and energy use index (EUI) reduction plan for a number of State-owned buildings that are subject to the draft Building Energy Performance Standards (BEPS) regulation to be issued by the Maryland Department of the Environment, per Environment Article 2-1602. (See Attachment A).

B. The primary purposes of the plan are to develop multi-year budget forecasts for the State to comply with BEPS regulations and to provide technical recommendations for electrification.

C. The decarbonization plan requested under this task order will encompass two primary tasks:

   i. Provide a budgetary-level forecast for the DGS-controlled facilities subject to the BEPS regulations listed in Attachment B. These facilities total approximately 28.3 million square feet in ten separate State agencies located in all regions of the state and include approximately 39 campuses of 856 buildings, and 38 individually metered Standalone buildings.

      1. Facilities include state hospitals, correctional facilities, office buildings, laboratories, State Police barracks, and other state-owned buildings.
      2. Facilities include buildings served by a central plant and buildings with Standalone HVAC systems.

   ii. Provide technical recommendations and cost estimates to achieve BEPS compliance for the set of Standalone buildings listed in Attachment C.

2. Technical Recommendations

A. The contractor shall provide a five-year plan to achieve a reduction in direct greenhouse gas (GHG) emissions, and a reduction in site EUI, per the draft BEPS regulations, for the prioritized subset of Standalone buildings listed on Attachment C. Attachment C is a prioritized list of buildings to be addressed in five-year increments. The plan for the first five-year subset of buildings shall include the following items:

   i. A single recommendation for each Standalone building for system replacement to achieve a reduction in GHG emissions and site energy usage in accordance with the BEPS performance standards.

   ii. The analysis shall evaluate and make recommendations for peak shaving, demand response, and load shifting as methods of offsetting the cost of electricity and reducing demand charges.

   iii. The analysis shall include any required adjustments or replacement of the existing heat distribution and/or combustion exhaust systems.

   iv. The analysis shall include considerations of potential required upgrades to the onsite electrical infrastructure and the utility service connections.

      1. Provide an estimate for the post-retrofit electrical peak load and required backup power of each facility.

      2. Provide a list of sites that are likely to need an increase in the electrical capacity at the site.

      3. Provide a budgetary level estimate of potential costs for each electrical service upgrade.

   v. Recommended system replacements shall be designed to provide at least the existing levels of redundancy and resiliency such that redundancy and resilience are not reduced in the implementation of this plan.

   vi. The analysis shall include recommendations for building envelope improvements, including installing high performance glazing, reducing air infiltration, and increasing insulation as a means to reduce heating equipment size and life-cycle operating costs.

   vii. The analysis shall include an order of implementation for each facility improvement to highlight the measures that should be installed first, second, etc. and how each interdependent measure impacts the energy use of the others.

   viii. The scope of the Plan shall not include recommendations to replace fossil-fuel fired emergency generators with carbon-neutral alternatives. Fossil fueled back-up HVAC equipment and addition of generators to support electrification and maintain existing levels of resiliency/redundancy may be considered.

   ix. Electric resistance boilers shall only be recommended in extreme cases in which there are no other feasible options. All recommended electric heating technology shall have a coefficient of performance greater than one unless it can be demonstrated that no other feasible option exists.

3. Budget Analysis

A. For each Standalone building on Attachment C, a cost forecast to achieve a reduction in direct GHG emissions and a reduction in site energy use in accordance with the BEPS performance standards shall be provided.

   i. The cost analysis for the first five-year subset of buildings shall include:

      1. The cost estimate for BEPS compliance shall reflect only the estimated incremental cost and not the cost of in-kind end-of-life equipment replacements.

      2. Estimated capital costs for each recommendation. For capital costs in future years, use a 3% annual escalator beyond 2024.

      3. The cost analysis shall include consideration of the available utility rebates, state grants and federal funds such as 179D Commercial Buildings Energy-Efficiency Tax Deduction.

      4. The cost analysis shall include a comparison between implementing the recommendation and the cost of doing nothing. The comparison shall include the missed opportunity cost from not making the building or campus more energy efficient, and the additional costs from incurring any BEPS levied alternative compliance payments.

      5. The cost analysis shall include any additional maintenance costs or savings resulting from the proposed systems upgrades.

      6. The level of accuracy of the cost estimate shall be Class 3 for work to be addressed in the first five years, per the AACE Recommended Practice publication 56R-08.

   ii. Provide a cost analysis of the remaining Standalone buildings on Attachment C.

      7. The level of accuracy of the cost estimate shall be Class 5 for the remainder of the timeframe of the project, per the AACE Recommended Practice publication 56R-08.

B. For the entire facility portfolio of 28.3 million square feet listed in Attachment B, provide an overall Class 5 estimated budget per the AACE Recommended Practice publication 56R-08 to achieve compliance with BEPS by 2040.

   i. The cost analysis shall include an estimate of the additional State personnel required between the present and 2040 to complete the implementation of the plan as opposed to doing nothing.

4. Milestones

A. The contractor shall provide and submit for review a draft partial plan at each of the milestones listed below. The State will review submittals and return written comments to the Contractor within ten business days. The contractor shall provide all submittals in editable Microsoft Word and Excel documents.

   i. Complete outline of the plan with a proposed table of contents and timeline and itemized schedule of values for completing each milestone and the final plan.

   ii. A sample technical submittal of a Standalone building containing the information required above in items 2-A, (i-ix) for initial review by the State.

   iii. A sample cost estimate submittal of a single Standalone building containing the information required above in items 3-A, (i) to include a Class 3 analysis for initial review by the State.

   iv. A sample cost estimate submittal of a single Standalone building containing the information required above in items 3-A (ii) to include a Class 5 analysis for initial review by the State.

   v. Budgetary cost of the entire portfolio listed in Attachment C.

   vi. Budgetary cost of the entire portfolio listed in Attachment B.

   vii. Complete plan.

   viii. The contractor may elect to provide submittals for feedback on additional milestones if needed.

5. PLAN UPDATES

A. The contractor shall attend monthly progress meetings, which shall be held virtually. Contractor shall submit monthly updated drafts at least five business days before the regularly scheduled monthly meetings, during which the Contractor will present the draft plan update.

i. Contractor shall provide all plan updates in editable Microsoft Word and Excel.

ii. Contract Monitor shall formally communicate in writing any deliverable deficiencies or non-conformities to the Contractor, describing in those deficiencies what shall be corrected prior to acceptance of the deliverable in sufficient detail for the Contractor to address the deficiencies. The Contractor shall correct deficiencies and resubmit the corrected deliverable for acceptance within the agreed-upon time period for correction.

iii. Contractor shall deliver the final draft of the Plan within twelve months (365 days) of the notice to proceed date.

6. Invoicing

A. Contractor shall submit monthly invoices in the format specified in the RFP Section 3.3.
B. Contractor shall submit a monthly progress report of Plan updates with each invoice.

Appendix B

Prioritized List of Standalone Buildings

Timeframe	Agency	Building Name	Address	City
First Five Years	MSP	Forensics Lab	211 Milford Mill Rd	Pikesville
	DGS-FOM	Jessup State Complex	7275 Waterloo Road	Jessup
	MDH	Eastern Shore Hospital Center / Main Building	5262 Woods Road	Cambridge
	DGS-FOM	Wabash DC/MSC	5800 Wabash Ave	Baltimore
	DGS-FOM	Hargrove DC/MSC	700 East Patapsco Ave	Brooklyn
	DGS-FOM	Salisbury DC/MSC	201 Baptist Street	Salisbury
	DGS-FOM	Silver Spring District Court	8552 2nd Ave	Silver Spring
	DMIL	Ruhl Armory Bldg.	1035 York Rd.	Towson
	DJS	Baltimore City Juvenile Justice Center	300 North Gay Street	Baltimore
	DGS-FOM	Elkton DC/MSC	170 East Main Street	Elkton
Second Five Years	MDH	Deers Head Hospital Center	351 Deer's Head Hospital Road	Salisbury
	DMIL	Cade Readiness	2620 Winchester Ave.	Baltimore
	DGS-FOM	Ellicott City DC/MSC	3451 Courthouse Drive	Ellicott City
	DGS-FOM	Rockville DC/MSC	191 East Jefferson Street	Rockville
	DGS-FOM	Joseph P. Carter DC/MSC	23110 Leonard Hall Drive	Leonardtown
	DGS-FOM	Towson DC/MSC	120 E. Chesapeake Avenue	Towson
	DGS-FOM	Crownsville 100 Community Place	100 Community Place	Crownsville
	DGS-FOM	Glen Burnie DC/MSC	7500 Ritchie Highway	Glen Burnie
	DMIL	5th Reg. Armory Bldg.	219 W. 29th Division Street	Baltimore
	DGS-FOM	Centreville DC/MSC	120 Broadway Street	Centreville
Third Five Years	MDH	Office of Cheif Medical Examiner	900 West Baltimore Street	Baltimore
	DGS-FOM	Westminster DC/MSC	101 North Court Street	Westminster
	DGS-OFM	Catonsville DC/MSC	1 E Rolling Crossroads	Catonsville
	MSDE	Division of Rehabilitation Services (DORS) Main Bu	2301 Argonne Drive	Baltimore
	DMIL	Dundalk Readiness Center	2101 North Point Blvd.	Dundalk
	MIEMSS	MIEMSS John M. Murphy Building	653 West Pratt Street	Baltimore
	DGS-FOM	Hyattsville DC	4990 Rhode Island Ave	Hyattsville
	DMIL	Annapolis Readiness Center	21 Hudson St	Annapolis
	DGS-FOM	Louis L. Goldstein DC/MSC	200 Duke Street	Prince Frederi
	DGS-FOM	Shillman Building	500 North Calvert Street	Baltimore
Not in PLan	DGS-FOM	Atman Glazer Building	45 Calvert Street	Annapolis
	DGS-FOM	Nancy S Grasmick Education Bldg.	200 West Baltimore Street	Baltimore
	DGS-FOM	WM Donald Schaefer Tower	6 St Paul Street	Baltimore
	DPSCS	Building # 1	550 E. Madison Street	Baltimore
	LBPH	Library for the Blind and Print Disabled - Library	415 Park Avenue	Baltimore
	MD Aging	Cheltenham Tobacco Bldg.	11701 Crain Highway	Cheltenham
	DGS-FOM	Belair DC/MSC	2 South Bond Street	Bel Air
	DGS-FOM	State Office Building #3	2100 Guilford Ave	Baltimore

Appendix C

Drawings & Plan Review of Systems & Equipment – Data Organization and Content

Information from building plans and specification sheets will be used to facilitate this scope of work for the top 10 prioritized buildings. A detailed list of building plans to be requested is organized by Uniformat code as detailed in the tables below. The following is a general description of the type of information, level of detail, and organizational structure of a typical building asset assessment that we use to perform the technical requirements of the scope of work.

The ASTM Uniformat II Classification for Building Elements defines a standard classification for building elements and related sitework. Each Uniformat II Category performs a given function, regardless of the design specification, construction method, or materials used. Using Uniformat II to classify systems provides a consistent reference for the description, economic analysis, and management of building components during all phases of their life cycles.

The Uniformat II Classification for Buildings Elements is made up of four levels:

- **Level 1** is a general grouping of major elements.
- **Level 2** is group elements (i.e., roofing, conveying, plumbing).
- **Level 3** contains individual elements (i.e., basement walls, partitions, floor finishes).
- **Level 4** contains sub-elements of individual elements (i.e., specific equipment, door frames, roof canopies).

Drawings/Plans to Review & Content Organized for Energy Modeling Purposes

A - Substructure

Level 2: Group Elements	**Level 3: Individual Elements**	**Level 4: Sub-Elements**	**Unit of Measure**
A10 Foundations	A1010 Standard Foundations	A1011 Wall Foundations A1012 Column Foundations & Pile Caps	LF SF- certain cases may be 'Each'
	A1020 Special Foundations	A1021 Pile Foundations A1022 Grade Beams	SF SF
	A1030 Slab on Grade	A1031 Standard Slab on Grade A1032 Structural Slab on Grade	SF SF
A20 Basement Construction	A2020 Basement Walls	A2021 Basement Wall Construction *Note: A1010 classification for basements may suffice*	LF

B - Shell

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
B10 Superstructure	B1010 Floor Construction *(Generally included within general Superstructure)*		
	B1020 Roof Construction *(Generally included within general Superstructure)*	B1023 Canopies	
B20 Exterior Enclosure	B2010 Exterior Walls	B2011 Exterior Wall Construction B2013 Exterior Louvers, Screens & Fencing B2014 Exterior Sun Control Devices B2016 Exterior Soffits	SFLF or Each LF SF
	B2020 Exterior Windows	B2021 Windows B2022 Curtain Walls B2023 Storefronts	Each, or in some cases SF SF SF
	B2030 Exterior Doors	B2031 Glazed Doors & Entrances B2032 Solid Exterior Doors B2033 Revolving Doors B2034 Overhead Doors B2039 Other Doors & Entrances	Each Each Each Each Each
B30 Roofing	B3010 Roof Coverings	*B3011 Roof Finishes* *B3013 Roof Insulation & Fill* *B3015 Roof Eaves & Soffits*	*SF* *SF* *LF*
	B3020 Roof Openings	B3021 Glazed Roof Openings B3022 Roof Hatches	SF Each

C – Interiors – *not applicable for this scope of work*

D - Services

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
D20 Plumbing	D2010 Plumbing Fixtures	D2011 Water Closets D2012 Urinals D2013 Lavatories D2014 Sinks D2015 Bathtubs D2016 Wash Fountains D2017 Showers D2018 Drinking Fountains & Coolers D2019 Bidets & Other Plumbing Fixtures	Each (all fixtures by count)
	D2020 Domestic Water Distribution	D2021 Cold Water Service D2022 Hot Water Service D2023 Domestic Water Supply Equipment	LF

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
	(Generally, items at the column to the right are included within Systems that are created based upon Level 3 Column; similar for other sections of this chart.)		
	D2030 Sanitary Waste	D2031 Waste Piping D2032 Vent Piping D2033 Floor Drains D2034 Sanitary Waste Equipment D2035 Pipe Insulation	LF
	D2090 Other Plumbing Systems	D2091 Gas Distribution D2092 Acid Waste Systems D2093 Interceptors D2094 Pool Piping & Equipment D2095 Decorative Fountain Piping Devices D2099 Other Piping Systems	LF
D30 HVAC	D3010 Energy Supply	D3011 Oil Supply System D3012 Gas Supply System D3013 Coal Supply System D3014 Steam Supply System D3015 Hot Water Supply System D3016 Solar Energy System D3017 Wind Energy System	LF LF LF LF Kw
	D3020 Heat Generating Systems	D3021 Boilers D3022 Boiler Room Piping & Specialties D3023 Auxiliary Equipment D3024 Insulation	Each
	D3030 Cooling Generating Systems	D3031 Chilled Water Systems D3032 Direct Expansion Systems	LF Each
	D3040 Distribution Systems	D3041 Air Distribution Systems D3042 Exhaust Ventilation Systems D3043 Steam Distribution Systems D3044 Hot Water Distribution D3045 Chilled Water Distribution D3046 Change-over Distribution Systems D3047 Glycol Distribution Systems	SF SF LF SF SF
	D3050 Terminal & Package Units	D3051 Terminal Self-Contained Units D3052 Package Units	SF
	D3060 Controls & Instrumentation	D3061 Heating Generating Systems D3062 Cooling Generating Systems D3063 Heating/Cooling Air Handling Units D3064 Exhaust & Ventilating Systems D3065 Hoods & Exhaust Systems D3066 Terminal Devices D3067 Energy Monitoring & Control D3065 Hoods & Exhaust Systems	SF SF SF SF

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
		D3069 Other Controls & Instrumentation	SF/Hoods by Count
	D3070 Systems Testing & Balancing	D3071 Piping System Testing & Balancing D3072 Air Systems Testing & Balancing D3073 HVAC Commissioning D3079 Other Systems Testing & Balancing	
	D3090 Other HVAC Systems & Equipment	D3091 Special Cooling Systems & Devices D3092 Special Humidity Control D3093 Dust & Fume Collectors D3094 Air Curtains D3095 Air Purifiers D3096 Paint Spray Booth Ventilation D3097 General Construction Items (HVAC)	
D50 Electrical	D5010 Electrical Service & Distribution	D5011 High Tension Service & Dist. D5012 Low Tension Service & Dist.	SF or Each SF or Each
	D5020 Lighting & Branch Wiring	D5021 Branch Wiring Devices D5022 Lighting Equipment	SF SF
	D5030 Communications & Security	D5031 Public Address & Music Systems D5032 Intercommunication & Paging System D5033 Telephone Systems D5034 Call Systems D5035 Television Systems D5036 Clock & Program Systems D5037 Fire Alarm Systems D5038 Security & Detection Systems D5039 Local Area Networks	SF for all
	D5090 Other Electrical System	D5092 Emergency Light & Power Systems	SF or Each

E - EQUIPMENT & FURNISHINGS

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
E10 Equipment	E1010 Commercial Equipment	E1011 Security & Vault Equipment E1012 Teller & Service Equipment E1013 Registration Equipment E1014 Checkroom Equipment E1015 Mercantile Equipment E1016 Laundry & Dry-Cleaning Equipment E1017 Vending Equipment E1018 Office Equipment	
	E1020 Institutional Equipment	E1021 Ecclesiastical Equipment E1022 Library Equipment E1023 Theater & Stage Equipment E1024 Instrumental Equipment E1025 Audio-visual Equipment	Each

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
		E1026 Detention Equipment E1027 Laboratory Equipment E1028 Medical Equipment E1029 Other Institutional Equipment	
	E1030 Vehicular Equipment	E1031 Vehicular Service Equipment E1032 Parking Control Equipment E1033 Loading Dock Equipment E1039 Other Vehicular Equipment	Each
	E1090 Other Equipment	E1091 Maintenance Equipment E1092 Solid Waste Handling Equipment E1093 Food Service Equipment E1094 Residential Equipment E1095 Unit Kitchens E1097 Window Washing Equipment E1099 Other Equipment	
E20 Furnishings	E2010 Fixed Furnishings	E2013 Blinds & Other Window Treatments	LF Each

F - Special Construction & Demolition

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
F10 Special Construction	F1010 Special Structures	F1011 Air Supported Structures F1012 Pre-engineered Structures F1013 Other Special Structures	
	F1020 Integrated Construction	F1021 Integrated Assemblies F1022 Special Purpose Rooms F1023 Other Integrated Construction	
	F1030 Special Construction Systems	F1031 Sound, Vibration & Seismic Const. F1032 Radiation Protection F1033 Special Security Systems F1034 Vaults F1039 Other Special Construction Systems	
	F1040 Special Facilities	F1041 Aquatic Facilities F1042 Ice Rinks F1043 Site Constructed Incinerators F1045 Liquid & Gas Storage Tanks F1049 Other Special Facilities	Each Each Each
	F1050 Special Controls & Instrumentation	F1051 Recording Instrumentation F1052 Building Automation System F1059 Other Special Controls & Instrumentation	

G - Building Sitework

Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
G20 Site Improvement	G2010 Roadways	G2011 Bases & Sub-Bases G2012 Paving & Surfacing G2013 Curbs Gutters & Drains G2017 Vehicular Bridges	SF SF LF Each
	G2020 Parking Lots	G2021 Bases & Sub-Bases G2022 Paving & Surfacing G2023 Curbs, Rails & Barriers G2024 Parking Booths & Equipment	SF SF LF Each
	G2030 Pedestrian Paving	G2031 Paving & Surfacing G2033 Exterior Steps G2034 Pedestrian Bridges	SF Flight Each
	G2040 Site Development	G2041 Fences & Gates G2042 Retaining Walls G2043 Terrace & Perimeter WallsG2045 Site Furnishings G2046 Fountains, Pools & Watercourses G2047 Playing Fields G2049 Miscellaneous Structures	LF LF LF Each Each Each Varies
	G2053 Topsoil & Planting	G2057 Irrigation Systems	
G30 Site Mechanical Utilities	G3010 Water Supply	G3011 Potable Water Distribution & Storage G3012 Non-Potable Water Distribution & Storage G3013 Well Systems G3014 Fire Protection Distribution & Storage G3015 Pumping Stations G3016 Package Water Treatment Plants	LF LF Each Each Each Each
	G3020 Sanitary Sewer	G3021 Piping G3023 Septic Disposal Systems G3024 Lift Stations G3025 Packaged Water Waste Treatment Plants G3026 Septic Tanks G3027 Drain Fields	LF SF Each Each Each SF
	G3030 Storm Sewer	G3027 Drain Fields-G3034 Lift Stations G3035 Retention Ponds G3036 Ditches & Culverts	SF Each Each LF
	G3040 Heating Distribution	G3041 Steam Supply G3042 Condensate Return G3043 Hot Water Supply System G3044 Pumping Stations	LF LF LF Each
	G3050 Cooling Distribution	G3051 Chilled Water Piping G3052 Wells for Cooling/Heating G3053 Pumping Stations G3054 Cooling Towers on Site	LF Each Each Each
	G3060 Fuel Distribution	G3061 Fuel Piping G3062 Fuel Equipment G3063 Fuel Storage Tanks G3064 Fuel Dispensing Stations	LF Each

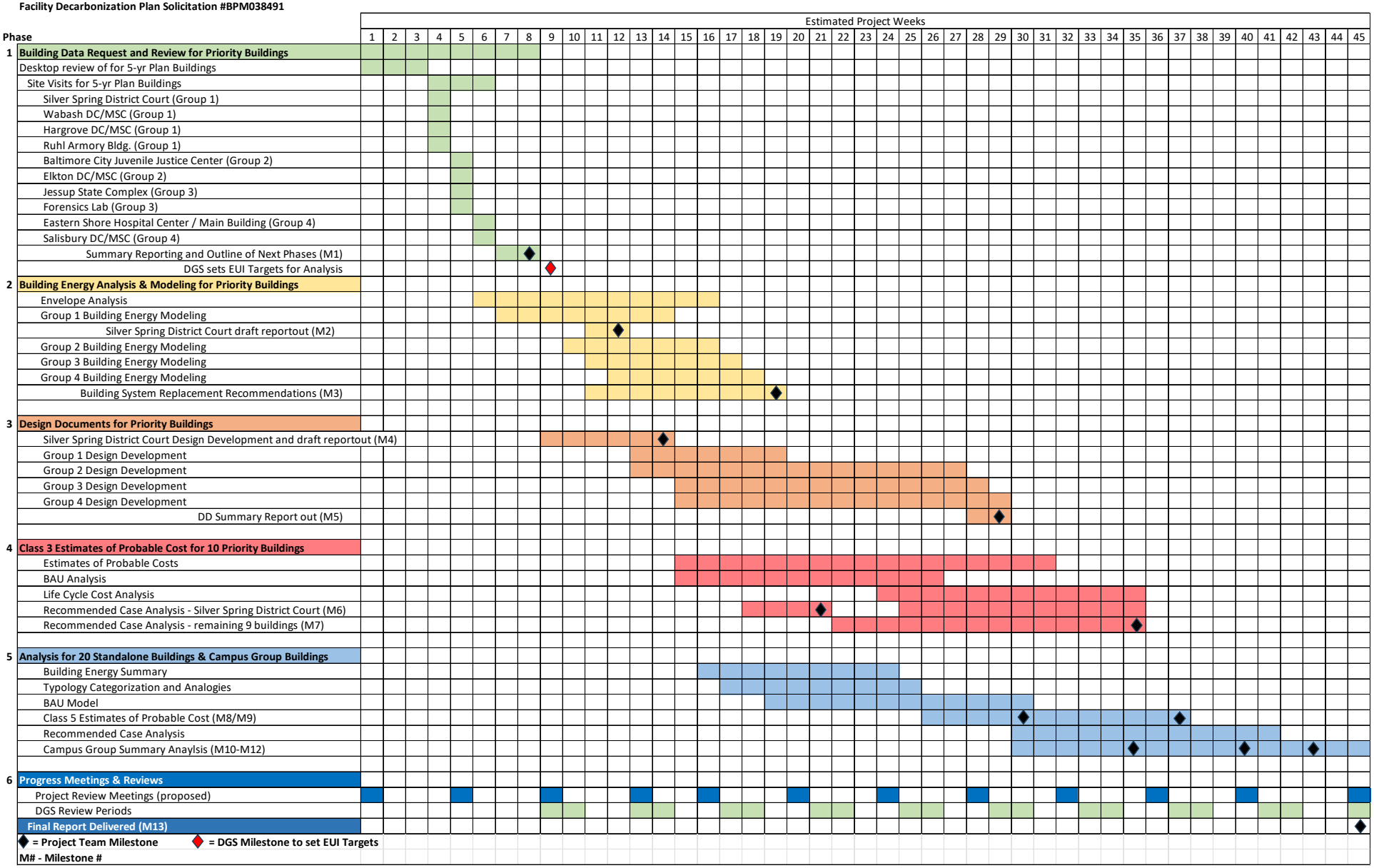
Level 2: Group Elements	Level 3: Individual Elements	Level 4: Sub-Elements	Unit of Measure
	G3090 Other Site Mechanical Utilities	G3091 Industrial Waste Systems	Each
G40 Site Electrical Utilities	G4010 Electrical Distribution	G4011 Substations G4012 Overhead Power Distribution G4013 Underground Power Distribution	Each LF LF
	G4020 Site Lighting	G4021 Fixtures & Transformers G4022 Poles G4023 Wiring Conduits & Duct banks G4024 Site Lighting Controls	Each Each LF SF or Each
	G4030 Site Communication & Security	G4031 Site Communication Systems (duct banks) G4032 Site Security & Alarm Systems	LF LF or Each
	G4090 Other Site Electrical Utilities	G4091 Cathodic Protection G4092 Site Emergency Power Generation	Each
G90 Other Site Construction	G9010 Service & Pedestrian Tunnels	G9011 Service Tunnels G9012 Trench Boxes G9013 Pedestrian Tunnels	LF
	G9090 Other Site Systems	G9091 Snow Melting Systems	SF

Appendix D – DGS-Managed Campus List

	Campus Name	GSF
1	Annapolis Campus	1,996,160
2	BCCC Liberty Campus	565,474
3	Charlotte Hall Veterans Home Campus	324,519
4	State Center Campus	1,606,851
5	Saratoga State Center Campus	564,900
6	Cheltenham Youth Center Campus	299,884
7	Camp Fretterd Campus	376,020
8	Easton Readiness Center Campus	43,392
9	Edgewood Armory Campus	391,826
10	Havre De Grace Military Reservation Campus	189,112
11	Laurel Armory Campus	56,225
12	Pikesville Military Reservation Campus	251,322
13	Salisbury Armory Campus	65,981
14	Warfield Air National Guard Campus	710,000
15	Baltimore City Correctional Center Campus	110965
16	Baltimore Pre-Release Campus	415,044
17	Chesapeake Detention Facility Campus	203,128
18	Eastern Correctional Institution Campus	903,060
19	Jessup Region Correctional Campus	1,203,546
20	Maryland Correctional Institution for Women Campus	346,256
21	Maryland Reception Diagnostic & Classification CTR Campus	254,872
22	Metropolitan Transition Center Campus	430,996
23	Patuxent Institution Campus	496,497
24	PCTC Sykesville Training Campus	259,940
25	Hagerstown Regional Campus	1,646,876
26	WCI/NBCI Campus	877,634
27	Headquarters Campus	224,664
28	Clifton t Perkins Campus	337,210
29	Holly Center Campus	161,253
30	Potomac Center Campus	373,148
31	Spring Grove Hospital Center Campus	1,969,295
32	Springfield Hospital Center Campus	2,898,180
33	Thomas B. Finan Center Campus	449,506
34	U.S.C.M.H.C. Campus	133,442
35	Western MD. Hospital Center Campus	410,176
36	Jefferson Patterson Park and Museum Campus	1,050,969
37	MPT Owings Mills Campus	235,808
38	Jessup - Waterloo Campus	288,821
39	MSP Pikesville Campus	420,388
	Totals	**23,543,340**

Appendix E – Proposed Schedule

State of Maryland, Department of General Services RFP
Facility Decarbonization Plan Solicitation #BPM038491



Appendix F – Fee Breakdown

State of Maryland, Department of General Services RFP: Facility Decarbonization Plan Solicitation #BPM038491

Salas O'Brien - Fee Breakdown **Appendix F** *07.26.24*

	Work Plan Tasks	Fee Amount Sub-Totals	Hours Per Staff Position				
			Project Manager	Mechanical Engineer	Technical Lead	Technical Staff	Sub-Total Hours
	Progress Meetings						
	Monthly Meetings						
	Task Totals:						
1	**Building Data Request and Review for Priority Buildings**						
	Forensics Lab (Group 3)						
	Jessup State Complex (Group 3)						
	Eastern Shore Hospital Center / Main Building (Group 4)						
	Wabash DC/MSC (Group 1)						
	Hargrove DC/MSC (Group 1)						
	Salisbury DC/MSC (Group 4)						
	Silver Spring District Court (Group 1)						
	Ruhl Armory Bldg. (Group 1)						
	Baltimore City Juvenile Justice Center (Group 2)						
	Elkton DC/MSC (Group 2)						
	Task Totals:						
2	**Building Energy Analysis & Modeling for Priority Buildings**						
	Envelope Analysis						
	Group 1 Building Energy Modeling						
	Silver Spring Draft Technical Report Milestone						
	Group 2 Building Energy Modeling						
	Group 3 Building Energy Modeling						
	Group 4 Building Energy Modeling						
	Building System Replacement Recommendations						
	Task Totals:						
3	**Design Documents for Priority Buildings**						
	Forensics Lab						
	Jessup State Complex						
	Eastern Shore Hospital Center / Main Building						
	Wabash DC/MSC						
	Hargrove DC/MSC						
	Salisbury DC/MSC						
	Silver Spring District Court						
	Ruhl Armory Bldg.						
	Baltimore City Juvenile Justice Center						
	Elkton DC/MSC						
	Task Totals:						
4	**Class 3 Estimates of Probable Cost for 10 Priority Buildings**						
	Cost Estimating						
	BAU Analysis						
	Life Cycle Cost Analysis						
	Recommended Case Analysis						
	Summary						
	Task Totals:	**$144,110**					
5	**Analysis for 20 Standalone Buildings & Campus Group Buildings**						
	Building Energy Summary						
	Typology Categorization and Analogies						
	BAU Model						
	Class 5 Estimates of Probable Cost						
	Recommended Case Analysis						
	Building Group Summary Documentation						
	Task Totals:						
6	**Summary Report Deliverable**						
	DGS Review Periods						
	Report Outline Definition for Single Building						
	Report Outline Definition - Complete Deliverable						
	Priority Buildings DRAFT Recommendations						
	Priority Buildings Energy Analysis Summary						
	20 Additional Standalone Building Group Summary						
	Campus Group Summary						
	Final Report Delivered - Task Totals:						
	Project Totals:	**$1,931,285**					

Appendix F – Fee Breakdown

State of Maryland, Department of General Services RFP	Appendix F
Facility Decarbonization Plan Solicitation #BPM038491	07.26.24
Salas O'Brien - Fee Breakdown by Milestone	

Milestone No.	Milestone Description:	Milestone Fee Amount
1	Phase 1 Milestone: A summary presentation of major observations will be provided once all ten priority list building assessments has been complete. We will have a virtual meeting to outline phases and review schedule of values. Outline of plan with table of contents and schedule of values for remaining work/milestones. At this point in the project it will be important to have EUI Targets for Analysis identified by DGS as a milestone deliverable to Salas O'Brien.	
2	Building Energy Analysis & Modeling for Priority Building – presentation and review of draft Single Building analysis (Silver Spring).	
3	Building Energy Analysis & Modeling for Priority Buildings – remaining nine (9) buildings summary.	
4	Design Development for Silver Spring.	
5	Design Development for remaining nine (9) buildings,	
6	Class 3 Estimates of Probable Cost for Silver Spring.	
7	Class 3 Estimates of Probable Cost for remaining nine (9) buildings.	
8	Class 5 Analysis Presentation and Technical submittal for 1 of the remaining 20 buildings	
9	Class 5 Analysis Presentation and Technical submittal for 9 of the remaining 20 buildings	
10	Class 5 Analysis Presentation and Technical submittal for the remaining 10 buildings.	
11	Technical report and incremental probable costs for 1 of the campuses	
12	Technical report and incremental probable costs for the remaining 38 campuses	
13	Completed plan with technical reports and cost estimates for each building and a budgetary incremental cost plan for the entire project	
		$1,931,285

Appendix G

FINANCIAL PROPOSAL FORM, BAFO Facility Decarbonization Plan RFP BPM038491

ATTACHMENT B – FINANCIAL PROPOSAL FORM
BAFO Facility Decarbonization Plan RFP BPM038491

Instructions: The Financial Proposal Form shall contain all price information in the format specified on thsis page. Complete the Financial Proposal Form only as provided in the Financial Proposal Instructions. Do not amend, alter or leave blank any items on the Financial Proposal Form.
The unit price for year one and year two must be the same.

Labor Category	Sample Annual Hours*	Year 1 Labor Rates ($/Hour)	Year 2 Labor Rates ($/Hour)	Year 3 Labor Rates ($/Hour)	Year 4 Labor Rates ($/Hour)	Year 5 Labor Rates ($/Hour)
Project Manager	40					
Mechanical Engineer	120					
Technical Lead	200					
Technical Staff	200					
Annual Totals						
TOTAL PROPOSAL PRICE=						

*Notes

1. The hours listed above are provided solely to assist with the financial evaluation. Actual hours for the labor categories may be higher or lower in a given contract year.

Submitted By:

Offeror: Salas O'Brien

Signature of Authorized Representative:

Printed Name: Essi Najafi

Title Managing Principal

Date: 22-Dec-23

Company Address: 6700A Rockledge Drive, Suite 301, Bethesda, MD 20817