

**GOVERNMENT OF THE DISTRICT OF COLUMBIA  
DEPARTMENT OF GENERAL SERVICES**



**TO:** Kathleen Patterson, D.C. Auditor  
Office of the District of Columbia Auditor

**FROM:** Keith A. Anderson, Director  
Department of General Services

**DATE:** Friday, December 9, 2022

**SUBJECT:** Responses to ODCA District-Wide Work Order Process Analysis Issued November 2022

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**BACKGROUND:**

The Office of the D.C. Auditors by RSM US LLP requested an analysis of the business processes employed by the Department of General Services (DGS) to handle D.C. Public School maintenance work orders. The report identified seven (7) observations and recommendations for consideration by DGS. Below are DGS's responses to the observations and recommendations.

| <b>OBSERVATION 1: TRACKING AND CAPTURE OF COST DATA</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>Observation:</b>                                     | Through our detailed testing and discussions with stakeholders, we noted that work order cost data was inconsistently recorded in the CMMS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Recommendation:</b>                                  | <p>In conjunction with the recommendations noted for <b>Observations #2 and #5</b>, we recommend the following:</p> <p>DGS should explore options for implementation of an inventory management system that integrates with the District's CMMS. This would allow craftsperson to add inventory used in real time, rather than relying on supervisors to add inventory at a later date based on review of notes. Integration of the inventory module will also allow for the automated application of cost to the work order based on the materials entered by the craftsperson, rather than relying on supervisors to search for Purchase Orders of bulk items, calculate, and apply unit prices to work orders manually.</p> <p>DGS should implement a robust supervisory review of work orders. This review should provide an independent assessment of the accuracy and reasonableness of data entered for the work order. While the CMMS workflow is currently configured to allow for this review to move work orders from the "completed" status to the "closed" status, the data presented on page 11 above indicates that these reviews are not timely and/or consistently performed. Further, the current process does not require the review to be performed by an independent reviewer (also refer to <b>Observation #5</b>). During review</p> |

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|                             | <p>of each work order, supervisors should assess the following:</p> <ul style="list-style-type: none"> <li>• Completeness of craftsperson notes to validate they accurately describe work performed (also refer to <b>Observation #2</b>)</li> <li>• Accuracy and reasonableness of craftsperson hours added to the work order</li> <li>• Accuracy and reasonableness of material quantities and costs added to the work order</li> <li>• Accuracy and reasonableness of vendor costs added to the work order</li> <li>• Completeness of attachments uploaded to the work order to validate that all invoices, appropriate pictures, and other documentation required for a comprehensive record of the work performed and costs incurred are provided.</li> </ul> <p>If the supervisor's review identifies incomplete or inaccurate data, the work order should be returned to the craftsperson to make necessary updates.</p> |
| <b>Management Response:</b> | <p>We have been aware of the need for inventory management improvements. In 2018, DGS researched and launched an electronic inventory management system. During the pilot of the new system, staff found this system overly complex for our needs. A new parts and material inventory system is being developed specifically for our use and will be deployed mid-2023. (Note: This is a system enhancement, and there are potential staffing needs to support physical inventory management at warehouses and costs associated with employee expansion and licensing.)</p> <p>Please see the responses for <b>Observation #2 and #5</b> for additional details. HVAC Asset inventory is outlined in <b>Observation #3</b></p>                                                                                                                                                                                                  |

| <b>OBSERVATION 2: OTHER SUPPORTING DATA ENTRY</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>Observation:</b>                               | Through our detailed testing, we noted that supplementary information and/or supporting documentation was inconsistently captured within the CMMS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Recommendation:</b>                            | <p>As noted in the recommendations for <b>Observations #1 and #5</b>, we recommend DGS implement a supervisory review process to provide an independent and objective assessment of data entered for each work order. This review process should include assessment of craftsperson notes, hours, material quantities, vendor costs, and attachments uploaded to validate that information added by craftsperson is complete, reasonable, and accurate.</p> <p>Work orders should be reviewed on a timely basis to allow for the most effective assessment by supervisors. As such, performance monitoring should also be coupled with the implementation of this supervisory review process, to validate that reviews are being conducted on a timely basis. To accomplish this, a metric should be added to the current</p> |

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|                             | <p>suite of monitoring reports to capture aging work orders noted as “complete” but not “closed”. If metrics reveal that work orders are not being reviewed timely, follow up should be conducted with supervisors to remediate backlogs and reinforce the critical nature of their review process.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Management Response:</b> | <p>FIRST Team and Operations Managers conduct reviews to ensure requests have the supporting documentation needed to become work orders. Since 2019, alongside a more careful review process, DGS worked with its client agency partners to streamline its available work order categories from a pool of over 250+ problem types to 50. Based on that streamlining, DGS restructured its data to align with its current problem types. DGS now conducts annual data reviews with client agency partners. DGS has rejected or cancelled an average of 15% of work order requests. ECD's, estimated craftsperson hours, and estimated material costs are part of an enhanced DGS work order lifecycle process that is being implemented in FY23. We are currently monitoring our aging work orders through dashboards and reports which are available for Work Teams and FIRST Team to inform the review process by Trade Supervisors or Project Managers and the work orders slated for completion to address backlog.</p> |

| <b>OBSERVATION 3: PREVENTATIVE MAINTENANCE</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <b>Observation:</b>                            | <p>Through interviews with the Department of General Services (“DGS”), we noted that a comprehensive preventative maintenance program has not been implemented. The District currently utilizes manual processes for tracking, scheduling, and performing preventative maintenance activities, which typically occur outside of the CMMS.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recommendation:</b>                         | <p>We recommend DGS begin tracking preventative maintenance activities in a CMMS. This should include the import of manufacturer recommended maintenance schedules, as well as warranty requirements for each asset. The CMMS should be configured to automatically create work tasks at intervals specified by the manufacturer, which should be completed and documented within the CMMS.</p> <p>As an example, if a manufacturer recommends or a warranty requires a filter change every 90 days, a work task should be automatically created every 90 days so a supervisor can assign a craftsperson to complete the task. Confirmation of completion, along with upload of documentation should be noted by the craftsperson and reviewed by a supervisor.</p> <p>As part of a broader shift from reactive maintenance to proactive asset management, we also recommend DGS begin efforts to inventory individual assets, so that maintenance tasks can be applied to individual assets, instead of only the building / location. This approach will provide DGS with invaluable maintenance information by individual asset, asset type, manufacturer, installer, and many other categories. This data can be utilized to drive future asset purchasing</p> |

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|                             | <p>decisions by DGS based on actual data regarding performance, longevity, reliability, etc.</p> <p>Understanding that capturing an inventory of all assets will require significant effort, we recommend DGS begin with inventory of all new critical assets installed in the District. DGS should also identify other critical assets currently in operation to be inventoried.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Management Response:</b> | <p>In FY22, DGS executed a comprehensive survey of critical HVAC assets across the DCPS portfolio resulting in a catalog of roughly 24,000 pieces of HVAC infrastructure. Currently, 10 CBE mechanical contractors support DGS with inspection, testing, and maintenance across DCPS. In addition to completing scheduled maintenance activities, like filter changes between March and June, the teams proactively identified and corrected roughly \$1.1M worth of HVAC defects. Between June and September, approximately \$2.5M of proactive repairs were completed in addition to completing 90 priority work orders for DCPS. In FY23, DGS will finalize the development of a maintenance module within its work order platform, which will schedule and track all assets and maintenance activities for all the critical HVAC assets currently cataloged. DGS will complete a similar survey of HVAC assets across the DPR, DHS, MPD, FEMS, and DMV portfolios. DGS is utilizing this catalog of DCPS assets as the foundation for proactive HVAC maintenance. An enhancement will be necessary for the preventative maintenance for FY24 and beyond.</p> |

| <b>OBSERVATION 4: WORK ORDER HISTORIES AND AUDIT TRAILS</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <b>Observation:</b>                                         | Through our detailed testing, we noted missing information related to system-generated “Work Order Histories” and the documentation of individual workflow steps within the CMMS.                                                                                                                                                                                                                                                                                  |
| <b>Recommendation:</b>                                      | We recommend DGS coordinate with the CMMS provider or implementation partner to assess the cause of the missing work order history information. After identification of the cause, a remedy should be implemented to prevent the future loss or mis-capture of this critical information.                                                                                                                                                                          |
| <b>Management Response:</b>                                 | The system’s history tracking parameters are set to maintain the historical data points for 18 months, after which the history event begins to clear automatically. This timeframe is the default setting and can be increased at an additional cost for storage. DGS will investigate the cost benefit of additional storage for the event history, and we are looking at possible improvements to our reporting and analysis capabilities regarding work orders. |

| <b>OBSERVATION 5: SEGREGATION OF DUTIES</b> |                                                                                                                                                                     |
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| <b>Observation:</b>                         | Through our detailed testing, we noted that certain functions within the “SMART DGS” work order management platform may not be appropriately or ideally segregated. |

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| <b>Recommendation:</b>     | <p>As noted in the recommendations for <b>Observations #1 and #2</b>, we recommend DGS implement an independent supervisory review process. To accomplish this, the CMMS should be configured to limit permissions within the software. Only craftsperson should have the ability to add information to work orders and should be expected to add all relevant data and attachments. Only supervisors should have the ability to move a work order from the “completed” status to the “closed” status. Separation of these functions through access rights in the CMMS will facilitate an automated approach to appropriate segregation.</p> <p>When these duties are separated, the supervisor’s role will shift from data entry to an objective and independent review, which will help drive accountability for accurate capture of information within the CMMS. To maintain consistency with best practice software access controls, a review of access rights should be performed periodically to validate that permissions are appropriately configured within the CMMS.</p>                                                           |
| <b>Management Response</b> | <p>While FIRST Team has “Super User” access and can perform all actions in the CMMS system, work orders are approved, prioritized and assigned by FIRST Team during intake. Trade Supervisors issue work orders, craftsperson complete those work orders, and Trade Supervisors are responsible for closing those requests with cost data. The duties are segregated based on job responsibility; for example, with specific units within Facilities Management such as Contract Services, the project manager moves the work order through its lifecycle based on vendor and craftsperson reporting in the system.</p> <p>As an additional check, after DGS Craftsperson's/Contract Vendors identify the work order status as complete, or a Building Manager confirms a work order is complete, DCPS is notified to complete a QA/QC verification. During a 14-day period, DCPS can request a return visit and have DGS address any outlying concerns with any work that was performed and while a work order is in the grace period, it cannot be closed by DGS. After the grace period ends, DGS’ closure functionality is restored.</p> |

| <b>OBSERVATION 6: WORK ORDER RESPONSE TIME:</b> |                                                                                                                                                                                                                                                                                                                                                    |
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| <b>Observation:</b>                             | Through our detailed testing, we noted that nineteen (19) of twenty-five (25) sampled work orders were not in compliance with the Department of General Services’ (“DGS”) Service Level Agreement (“SLA”).                                                                                                                                         |
| <b>Recommendation:</b>                          | We recommend DGS add dashboard and/or reporting capabilities to the CMMS that will allow supervisors to view open work orders that are noncompliant with the SLA. This will increase visibility of current SLA statuses and help provide supervisors with knowledge of current assigned SLA statuses when assigning new work orders. Also refer to |

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|                            | <p>the recommendation for <b>Observation #7</b>, related to management's monitoring of Key Performance Indicators, which should include routine monitoring of compliance with the SLA.</p> <p>To facilitate additional accountability, we recommend DGS consider associating work order responsiveness to performance evaluations. Through reporting, management could identify potential root cause of delays, or whether patterns exist related work orders assigned to specific teams or CMC vendors. If feasible, DGS should consider incorporation of SLA metrics into employee and vendor performance evaluations. Monitoring this metric and addressing anomalies as they arise through documented evaluations will help provide additional accountability to employees and CMC vendors related to the responsiveness and completion of work orders within DGS' established SLA.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Management Response</b> | <p>All work orders are not created equally. Some work orders, such as changing ceiling tiles and painting walls, have longer response times than others. Critical issues like HVAC cooling and heating and electrical and plumbing requests meet or exceed the stated SLA in almost all cases. DGS is also working through its Construction, Maintenance and Sustainability Divisions to standardize build specifications. This will drastically improve response times for most work order categories. For example, currently, when a lighting work order is requested, depending on the facility, DGS can reasonably expect to encounter a varying number of lighting fixtures, manufacturers and bulb types. Because of this, parts would not be readily available and would need to be procured rather than pulled off the shelf in a DGS warehouse extending the time for completion. While DGS is never pleased with a delay in service or repair, we understand that each property may present unique challenges regarding its upkeep. These challenges can often be multi-layered and include, for example, issues involving environmental changes, additional trades, parts no longer being available, excessive wear-and-tear before the end of the warranty, and budgetary constraints. These extenuating issues are taken into consideration, as well as the expediency of the repair required.</p> |

| <b>OBSERVATION 7: KEY PERFORMANCE INDICATORS ("KPIs")</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <b>Observation:</b>                                       | Through discussions with the Department of General Services ("DGS"), we noted that while analytical monitoring is occurring, consistent KPI monitoring and reporting procedures have not been adopted.                                                                                                                                                                                                                                                                |
| <b>Recommendation:</b>                                    | We recommend DGS leadership conduct facilitated sessions to identify measurable Key Performance Indicators. After the suite of critical KPIs have been identified, management should begin monitoring performance on a consistent cadence. DGS may consider incorporating these discussions into the scrum and cluster meetings currently taking place. Monitoring discussions should be targeted to assess current performance of KPIs, identification of anomalies, |

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|                            | <p>and development of action plans to remediate issues identified. The identification and recurring measurement of KPIs can provide management with valuable insights to identify trends and/or emerging issues and assess performance and progress against goals. While KPIs should be specifically tailored to each organization's goals, some examples may include the following:</p> <ul style="list-style-type: none"> <li>• Adherence to SLA (also refer to <b>Observation #6</b>)</li> <li>• CMC performance</li> <li>• Length of time between various workflow steps: <ul style="list-style-type: none"> <li>o "requested" to "assigned"</li> <li>o "complete" to "closed"</li> <li>o total days "on hold"</li> </ul> </li> <li>• Labor metrics to assess utilization by personnel, location, work team <ul style="list-style-type: none"> <li>o Hours coded by craftsperson to work orders each day / week/month</li> <li>o Average hours per work order</li> </ul> </li> <li>• Monthly work orders "completed" vs "closed" to identify when demand outpaces capacity (similar metric is currently being tracked)</li> <li>• Monthly work orders "requested" vs. "closed" to assess closure of backlog of open work orders (similar metric is currently being tracked)</li> </ul> |
| <b>Management Response</b> | <p>Since July 2022, staff has continued to collaborate on analytical monitoring with an emphasis on incorporating KPIs in monthly discussions, reevaluating metrics including KPIs tantamount to any assessment, and developing a robust reporting infrastructure. DGS is approaching work order performance management differently moving forward. In Q2 of this fiscal year, monthly discussions supported by on-the-ground data will influence solutions-driven dialog. Additionally, DGS utilizes these discussions as a sounding board to reassess and redefine performance metrics to foster solutions-oriented, data-driven decisions. DGS is also developing a comprehensive reporting dashboard as part of this new performance approach.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |