

Postal Service's Use of Automated Guided Vehicles

AUDIT REPORT

Report Number 23-057-R23 | August 17, 2023



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Highlights

Background

Automated Guided Vehicles (AGVs) are powered industrial vehicles modified to enable driverless operation. Beginning in June 2019, the Postal Service spent ██████████ to purchase and deploy 350 AGVs between October 2019 and April 2022. These AGVs move wheeled or palletized mail transport equipment for processing and dispatch operations within a facility. The Postal Service expected AGVs would reduce mail handling hours, generate labor savings, and introduce automation to mail handling operations.

What We Did

Our objective was to evaluate the Postal Service's use of AGVs in mail processing operations from the beginning of October 2019 through June 2023. We judgmentally selected nine sites based on AGV usage to conduct our observations.

What We Found

We found that the Postal Service did not use all AGVs as intended and did not meet performance goals for AGV use. Specifically, we identified 177 AGVs (or 46 percent) were used, on average, less than once per day during 2022. This occurred because the Postal Service did not require or adequately monitor the usage of AGVs, resolve issues, or follow up with facilities after deployment to improve use. Postal Service Headquarters management stated changes to processing equipment and facility layout limited the usefulness of AGVs and drove down usage. Additionally, the Postal Service experienced high mail and package volumes due to the COVID-19 pandemic, which caused congestion at facilities and made AGV usage difficult. We estimate questioned costs of over \$28 million associated with underused AGVs.

We also found that the Postal Service did not have accurate accountability of all AGVs. This occurred because the Postal Service did not provide oversight when AGVs were transferred between processing facilities.

Recommendations

We recommended management (1) develop and execute a plan to evaluate AGV locations, require use, and monitor usage to improve performance, (2) train and share best practices and usage goals with personnel at processing facilities that will have AGVs to improve performance, and (3) direct responsible officials to confirm the accuracy of AGV capital asset listings and update information in the Solution for Enterprise Asset Management system and maintenance system records.

Transmittal Letter



OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

August 17, 2023

MEMORANDUM FOR: MICHAEL BARBER
VICE PRESIDENT, PROCESSING AND MAINTENANCE OPERATIONS

LINDA M. MALONE
VICE PRESIDENT, ENGINEERING SYSTEMS

DANE COLEMAN
VICE PRESIDENT, REGIONAL PROCESSING OPERATIONS, EASTERN
REGION

TODD HAWKINS
VICE PRESIDENT, REGIONAL PROCESSING OPERATIONS, WESTERN
REGION

Mary K. Lloyd

FROM: Mary Lloyd
Deputy Assistant Inspector General
for Mission Operations

SUBJECT: Audit Report – Postal Service’s Use of Automated Guided Vehicles
(Report Number 23-057-R23)

This report presents the results of our audit of the Postal Service’s use of Automated Guided Vehicles in mail processing operations.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Todd Watson, Director, Network Processing, or me at 703-248-2100.

Attachment

cc: Postmaster General
Corporate Audit Response Management

Results

Introduction/Objective

This report presents the results of our self-initiated audit of the Postal Service's Use of Automated Guided Vehicles. (Project Number 23-057). Our objective was to evaluate the Postal Service's use of Automated Guided Vehicles (AGVs) in mail processing operations. See [Appendix A](#) for additional information about this audit.

Background

AGVs are powered industrial vehicles modified to enable driverless operation. Beginning in June 2019,

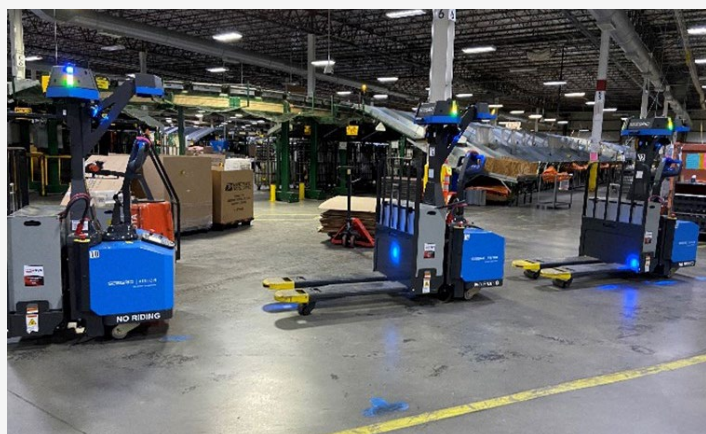
the Postal Service spent [REDACTED] to purchase and deploy 350 AGVs between October 2019 and April 2022. The two types of Postal Service AGVs are pallet jacks, which move palletized mail, and tuggers, which pull wheeled mail transport equipment (MTE)¹ within a processing facility. The Postal Service expected AGVs would reduce mail handling hours, generate labor savings, and introduce automation to mail handling operations. See Figure 1 for the types of Postal Service AGVs.

Figure 1. Automated Guided Vehicles

Pallet Jacks



Source: U.S. Postal Service Office of Inspector General (OIG) photograph taken at Oklahoma City Processing and Delivery Center (P&DC) on March 30, 2023.



Source: OIG photograph taken at Nashua P&DC on March 15, 2023.

Tuggers



Source: OIG photograph taken at Margaret Sellers P&DC on April 13, 2023.



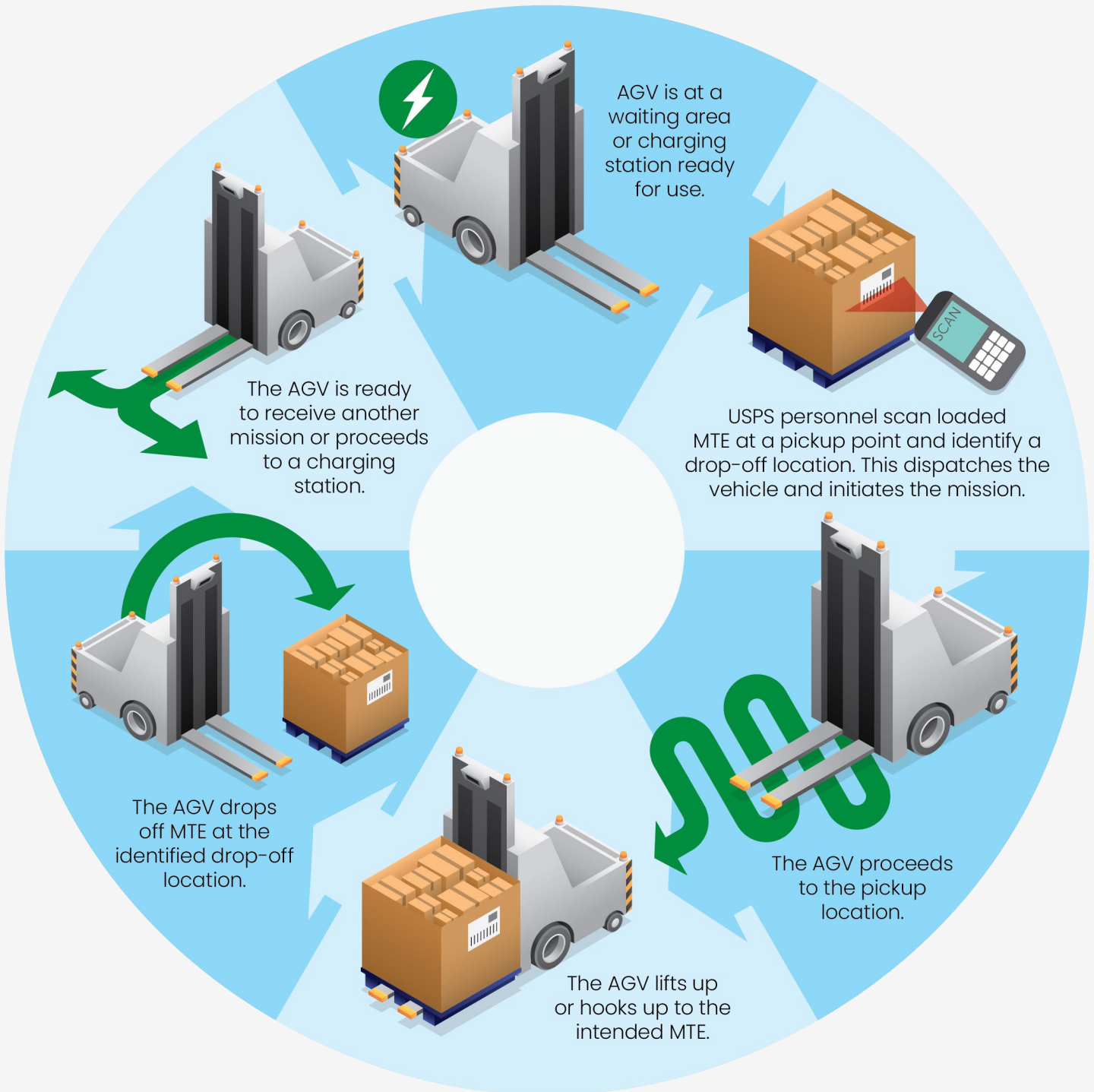
Source: OIG photograph taken at Oklahoma City P&DC on March 30, 2023.

¹ This is a system of containers (including sacks and pouches, trays, wheeled containers, pallets, etc.) used to contain mail during processing or transportation within or between facilities by the Postal Service, its customers, or contractors.

To use an AGV, Postal Service personnel scan loaded MTE at a specific pickup point, identify a drop-off location, and start the mission. See Figure 2 for an overview of an AGV mission. The AGV moves from a designated waiting area to the pickup location, lifts or hooks up to the MTE, and transports the load to the drop-off point to complete a mission. Successful

operation requires accurate MTE placards, functional scanners, and clear routes and pickup and drop-off points. Issues with scanning and congested or obstructed routes, pickup or drop-off points can interfere with AGV operation and prevent mission completion.

Figure 2. AGV Mission



Source: OIG developed based on Postal Service AGV processes.

The Postal Service developed two proprietary technologies to support AGV use. The Automated Guided Vehicle Management (AGVM) system dispatches, manages, and tracks AGV operations and mail movement while collecting AGV mission data. The Eye in the Sky system automatically detects loaded MTE once it arrives at a pickup point, scans that MTE, and dispatches an AGV to bring the load to the correct drop-off point.² This automated system removes the need for Postal Service personnel to use hand-held scanners.

The Postal Service evaluated and selected processing facilities that were best suited for AGV use as part of the investment decision. Initially, the Postal Service set a performance goal for each AGV to run 40 hours per week. The Postal Service expected this would reduce labor hours, leading to a reduction in mail handler positions. Management predicted that AGV use would generate about \$298 million in labor savings based on this usage. However, in January 2022, the Postal Service determined that site specific targets were necessary due to unique circumstances at each facility and changed their performance goals to a weekly goal for total completed AGV missions for

each processing facility.³ Further, as of the third quarter of FY 2022, the Postal Service reported that it would no longer be reducing positions based on AGV use and therefore is unlikely to achieve the predicted savings.

“The Postal Service evaluated and selected processing facilities that were best suited for AGV use as part of the investment decision.”

As of May 2023, the Postal Service had deployed 394 AGVs to 25 processing facilities and one training location.⁴ See [Appendix B](#) for the number of AGVs at each facility. To evaluate how the Postal Service used AGVs, we judgmentally selected six sites with low, one with medium, and two sites with higher usage.⁵ See [Table 1](#) for a list of the facilities we visited.

Table 1. Site Visits

Facility	Location	Use
Middlesex-Essex P&DC	North Reading, MA 01889	Low
Nashua P&DC	Nashua, NH 03063	Low
Royal Palm P&DC	Opa Locka, FL 33054	Low
Seminole P&DC	Orlando, FL 32824	Low
Los Angeles P&DC	Los Angeles, CA 90052	Low
Denver P&DC	Denver, CO 80266	Low
Margaret L. Sellers P&DC	San Diego, CA 92199	Medium
Music City Annex, Nashville P&DC	Nashville, TN 37227	High
Oklahoma City P&DC	Oklahoma City, OK 73125	High

Source: OIG generated based on Postal Service P&DCs with AGVs deployed.

Finding #1: Automated Guided Vehicle Use

The Postal Service did not use all AGVs as intended and did not meet performance goals for AGV use. Specifically, none of the AGVs or facilities consistently met either the hourly or mission performance goals. Further, we found the number of completed missions did not increase despite the Postal Service deploying more AGVs. See [Figure 3](#) for monthly completed missions.

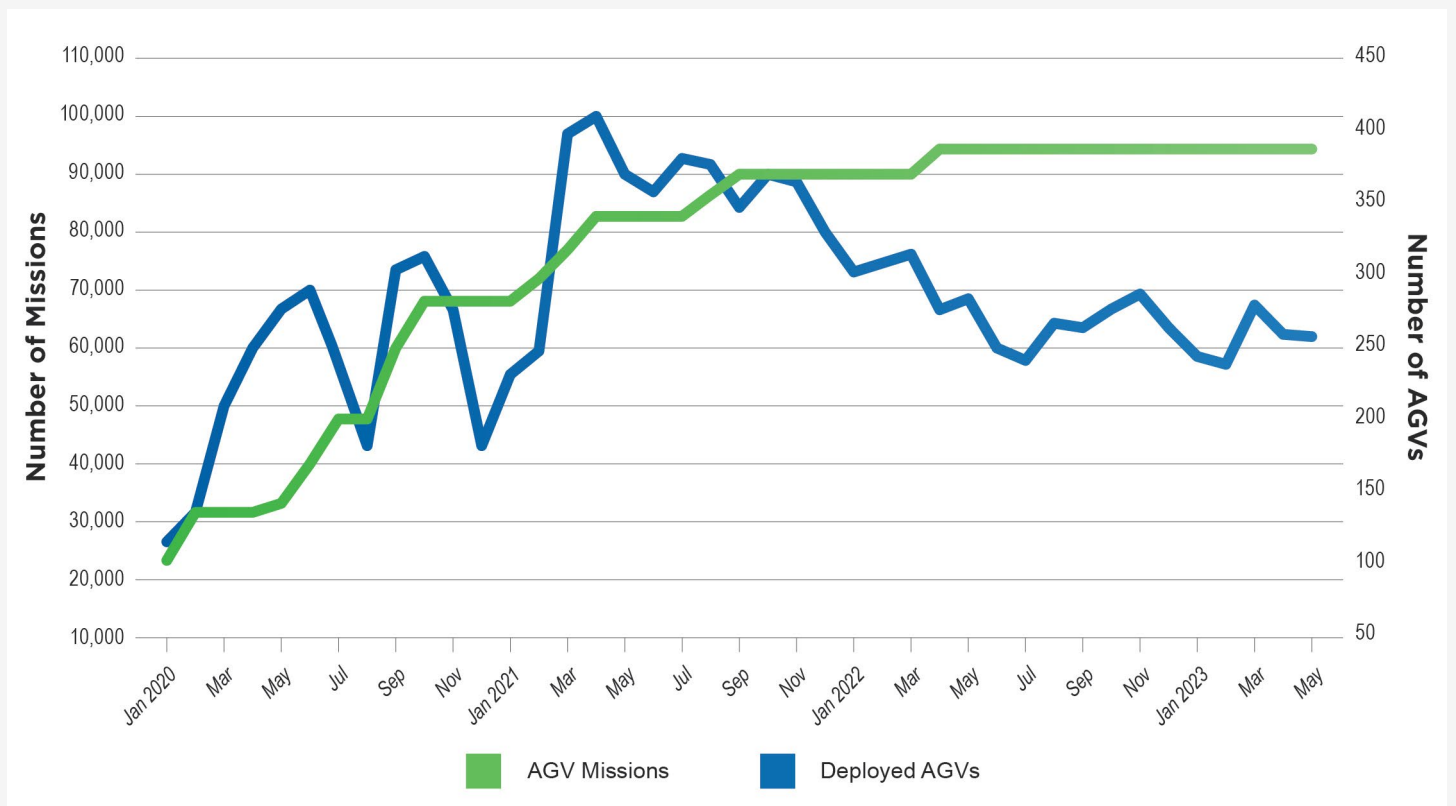
² This is a ceiling mounted camera and sensor system.

³ These goals are based on several factors, including the number of assigned AGVs, mail volume, and facility layout.

⁴ Before October 2019, the Postal Service had purchased a number of AGVs and later integrated most into the program.

⁵ We defined low use as less than 1,000 completed missions per AGV, and high-use as over 2,000 completed missions per AGV in calendar year 2022.

Figure 3. Deployed AGVs Compared to Completed Missions From January 2020 Through May 2023



Source: OIG analysis of AGVM data.

Performance Goals Not Met

We found that only thirteen of 281 (5 percent) deployed AGVs met the 40 hour per week performance goal in calendar year (CY) 2020. In CY 2021, only 26 of 368 (7 percent) of deployed AGVs met the weekly performance goal. See Table 2 for unused and underused AGVs during CYs 2020 to 2021.

Even after the Postal Service changed the performance metrics in January 2022, no facility

consistently met its performance goal.⁶ In CY 2022, only two processing facilities ever met their weekly goal: one for a total of three weeks and the other for nine weeks. In CY 2023, only one facility (Louisville) met average weekly performance goals. See Figure 4 and Figure 5 for a comparison of average weekly missions in CYs 2022 and 2023 to performance goals by processing facility.

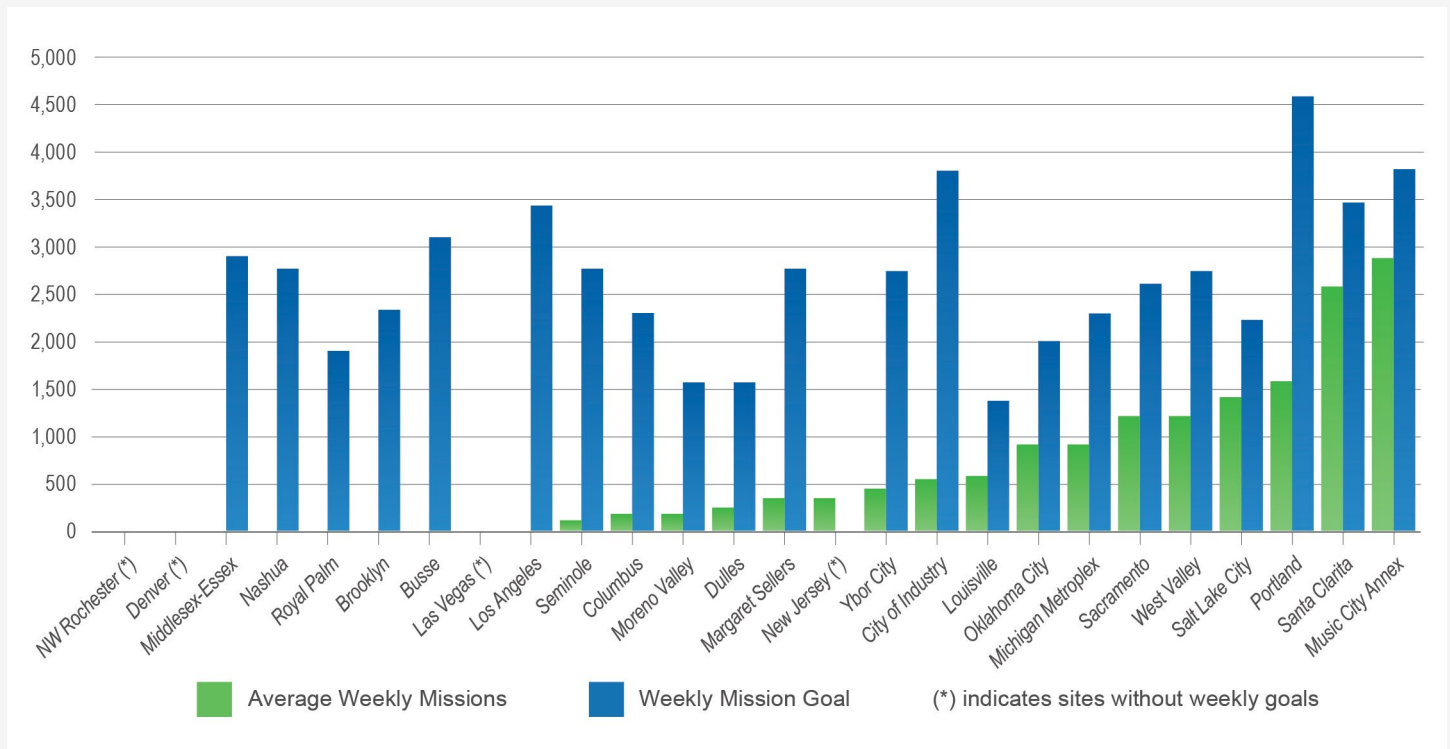
Table 2. AGV Performance - 40 hours per week Goal - CY 2020 and CY 2021

Calendar Year	Total AGVs deployed	AGVs That Met Goal		AGVs That Did Not Meet Goal	
		Count	Percent	Count	Percent
2020	281	13	5%	268	95%
2021	368	26	7%	342	93%

Source: OIG analysis of AGVM data.

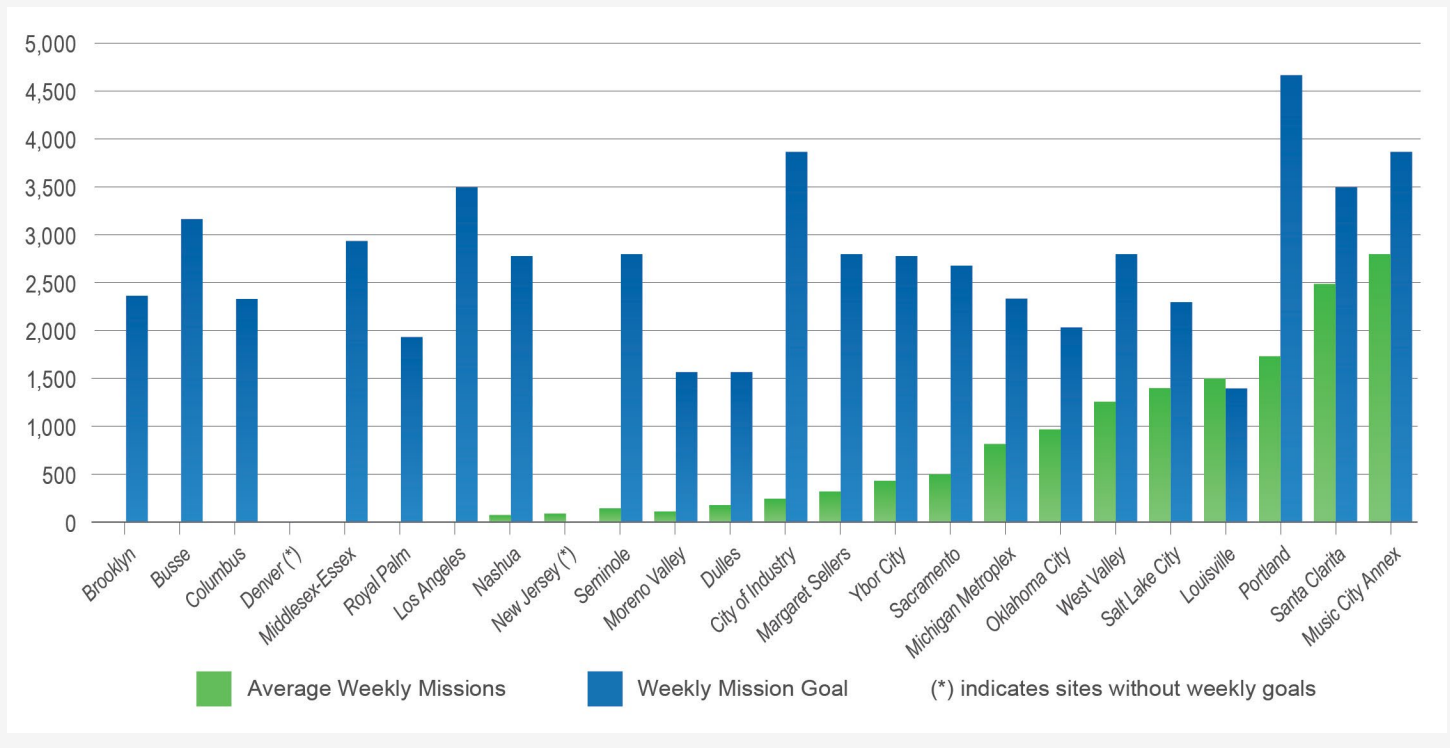
⁶ Four of 26 processing facilities with AGVs lacked new CY 2022 performance goals.

Figure 4. CY 2022 Average Weekly Missions



Source: OIG analysis of AGVM data.

Figure 5. CY 2023 Average Weekly Missions Through June 11, 2023⁷



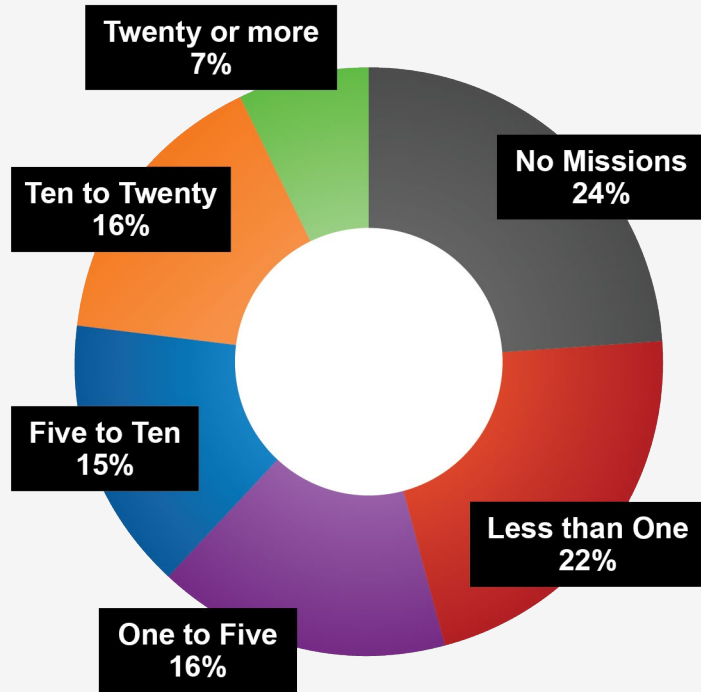
Source: OIG analysis of AGVM data.

⁷ This figure displays mission data covering January 1, 2023, to June 11, 2023. Postal Service removed all AGVs in FY 2022 from Northwest Rochester and Las Vegas P&DCs.

Underuse of Equipment

We found 93 of 389 AGVs (24 percent) at processing facilities did not complete a single mission in CY 2022. In addition, 84 AGVs (22 percent) only completed, on average, less than one mission per day. See Figure 6 for unused and underused AGVs during CY 2022.

Figure 6. Average Daily Missions per AGV - CY 2022



Source: OIG analysis of AGVM data.

We found unused or underused AGVs at all nine processing facilities visited. At the Royal Palm P&DC, we found AGVs covered in plastic wrap. At the Middlesex-Essex P&DC, we found all fifteen AGVs sitting uncharged in a closed wing of the processing facility. At the Los Angeles P&DC, we found AGVs used to block off floor space instead of moving mail. See Figure 7 for examples of unused AGVs.

We also found unused equipment at the two processing facilities with higher AGV use. Specifically, the Music City Annex completed the most AGV missions in CY 2022 but did not use two of its 18 AGVs. At the Oklahoma City P&DC, personnel did not use seven of its 20 AGVs. Management at both locations informed the OIG they planned to add AGV routes and increase future use.

Figure 7. Unused Automated Guided Vehicles



Source: OIG photograph taken at Royal Palm P&DC on April 4, 2023.



Source: OIG photograph taken at Middlesex-Essex P&DC on February 24, 2023.



Source: OIG photograph taken at Los Angeles P&DC on April 11, 2023.



Source: OIG photograph taken at Los Angeles P&DC on April 11, 2023.

We identified common issues inhibiting AGV use at the seven lower use facilities. They included:

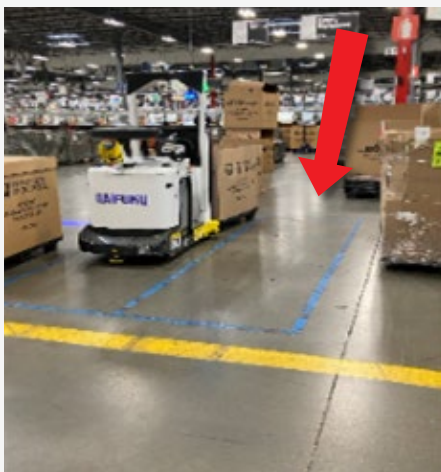
- Narrow or cluttered aisles.
- Lack of trained or knowledgeable personnel.
- Inability to change routes and pickup and drop off points in response to changing conditions.
- Unclear understanding of how to optimize AGV use.
- Lack of management support.
- Low support from craft personnel.

- Not enough trained maintenance personnel to support operations during all tours.⁸
- Lack of awareness of performance goals.
- Limited number of personnel to dispatch AGVs.

Management at these facilities stated that they could not use AGVs on all tours. They stated congestion, using less wheeled MTE, and the removal of mail processing equipment as reasons why AGVs were impractical and not used. See Figure 8 for examples of clear and obstructed AGV areas.

Figure 8. Unobstructed and Blocked AGV Areas

Clear Staging Area



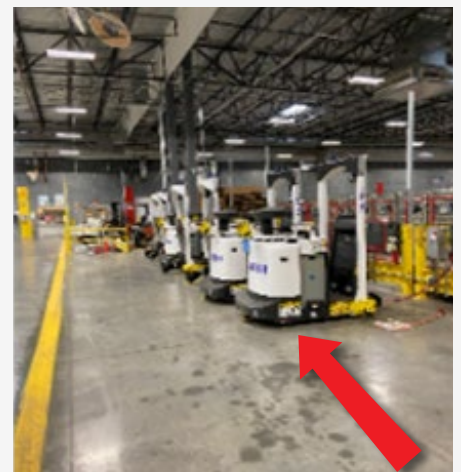
Source: OIG photograph taken at Oklahoma City P&DC on March 30, 2023.

Blocked Staging Area



Source: OIG photograph taken at Royal Palm P&DC on April 4, 2023

Clear Taxi Stand



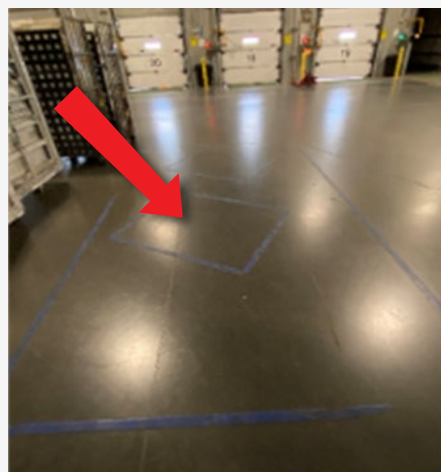
Source: OIG photograph taken at Oklahoma City P&DC on March 30, 2023.

Blocked Taxi Stand



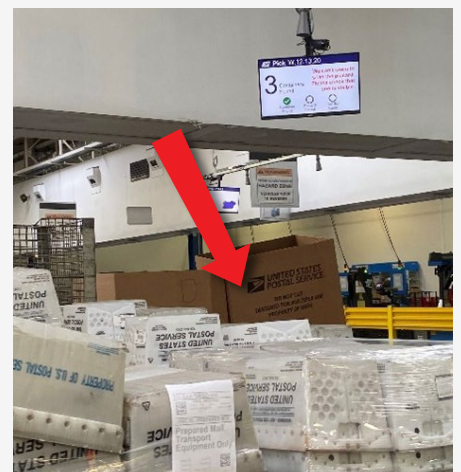
Source: OIG photograph taken at Middlesex-Essex P&DC on February 24, 2023.

Clear Pickup Point



Source: OIG photograph taken at Music City Annex, Nashville P&DC on March 28, 2023.

Obstructed Pickup Point



Source: OIG photograph taken at Margaret Sellers P&DC on April 13, 2023.

⁸ The Postal Service defines a tour as one of three scheduled shifts in a 24-hour period.

During site visits at high use facilities, we found that local management responded to these challenges and demonstrated that they could be overcome. Management at these facilities used AGVs, adapted to changes in the type of MTE used and facility layouts, and regularly communicated weekly performance to employees. The sites employed best practices to increase use that included:

- Learning to create and change routes and pickup and drop-off points.
- Maintaining clear and uncongested aisles.
- Training personnel on all tours to maintain AGVs and troubleshoot problems.
- Communicating the benefits of AGVs to all personnel.
- Training facility operations personnel to use scanners and dispatch AGVs at locations without Eye in the Sky.
- Securing fixed signage to scan and dispatch AGVs.

The Postal Service completed studies to identify best practices for AGV use in February and March of 2021. Management stated they shared these with all facilities that were assigned AGVs. However, during visits at low use sites, we found that management was generally unaware of these best practices.

Underuse of AGVs occurred because the Postal Service did not require or monitor the usage of AGVs. Postal Service Headquarters management stated changes to processing equipment and facility layout limited the usefulness of AGVs and drove down usage. Additionally, the Postal Service experienced high mail and package volumes due to the COVID-19 pandemic, which caused congestion at facilities and made AGV use difficult. In previous audits, we discussed the negative impact to operations due to the increased parcel volume during the FY 2021 peak mailing season.⁹

As a result, the Postal Service did not meet AGV performance goals or achieve planned labor savings. We identified 177 AGVs that executed less than one mission per day during CY 2022 and estimated this represents over \$28 million in unsupported

questioned costs.¹⁰ Postal Service management stated that they are evaluating AGV use and will redeploy them to facilities where they are better suited. Furthermore, as of May 2023, Postal Service management stated that they removed 69 of 233 mail handler positions that were planned for reduction due to projected AGV use. However, they are no longer reducing mail handler positions based on AGV use, thereby limiting the potential planned savings. We estimate this represents a shortfall of \$105 million in projected labor savings.

Recommendation #1

We recommend that the **Vice President, Processing and Maintenance Operations** and the **Vice President, Engineering Systems**, develop and execute a plan to evaluate Automated Guided Vehicle locations, and require and monitor usage to improve performance.

Recommendation #2

We recommend the **Vice President, Processing and Maintenance Operations**, in coordination with the **Vice President, Engineering Systems**, train and share best practices and usage goals with personnel at processing facilities that will have Automated Guided Vehicles to improve performance.

Finding #2: Automated Guided Vehicle Asset Accountability

The Postal Service does not have accurate accountability of all AGVs.¹¹ Specifically, we found discrepancies in AGV quantities and assigned locations between SEAM¹² capital asset records and a list provided by headquarters management. The SEAM records contain 394 AGVs compared to 402 AGVs on management's list from maintenance system records, the former of which also included incomplete and missing information. The cost of these ranged from about [REDACTED] to over [REDACTED] per AGV. Specifically, of the 394 AGVs in the SEAM capital asset records:

- One capital ID was assigned to an AGV that may not exist.
- 16 AGVs were not assigned to the correct facility.
- 230 AGV capital asset listings lacked identifying information, such as serial number or model.

⁹ *Embargoes and Redirections at U.S. Postal Service Processing Facilities* (Report Number 21-112-R21, dated August 13, 2021) and *Nationwide Service Performance* (Report Number 21-120-R21, dated September 20, 2021).

¹⁰ A subset of questioned costs that are called into question because of missing or incomplete documentation, or because of failure to follow required procedures.

¹¹ The Postal Service classifies an AGV as capital property and uses the Solution for Enterprise Asset Management (SEAM) system to document capital asset inventory.

¹² SEAM is designed to improve inventory tracking and visibility, implement forecasting and automatic replenishment capabilities, and standardize asset tracking and maintenance and repair functions.

See [Appendix B](#) for the two different listings of AGVs by location.

Postal Service policy requires equipment asset records to be accurate and adequately identify individual capital items.¹³ The plant manager at a processing facility is responsible for capital asset accountability but can delegate this responsibility to a material accountability officer to oversee compliance with asset accountability policies and procedures.¹⁴

Inaccurate accountability of AGVs occurred because the Postal Service did not provide oversight when transferring AGVs between processing facilities. Additionally, material accountability officers did not always initiate asset transfers between processing facilities or update asset listings, as required.

As a result, the Postal Service cannot accurately account for all AGVs and may be accounting for some that do not exist. Incomplete or inaccurate capital asset records limit the Postal Service's ability to properly account for and value its assets.

Recommendation #3

We recommend the **Vice President, Regional Processing Operations – Eastern**, and the **Vice President, Regional Processing Operations – Western**, direct responsible personnel to confirm the accuracy of Automated Guided Vehicle capital asset listings and update information in the Solution for Enterprise Asset Management system and maintenance system records.

Management's Comments

Management disagreed with the findings and other impact, partially agreed with the monetary impact, and agreed with all recommendations. See [Appendix C](#) for management's comments in their entirety.

Regarding finding 1, management said the report misstates the cause of not meeting usage goals. Management stated the increase in package volume during and following the pandemic, and changes in building equipment and layout to process this volume, are the root causes of low AGV use. Management further stated that the AGV is not a one-system-fits-all type of equipment and may work well at one site but not at another. Management added that OIG's statement in the report, "the Postal Service did not require or adequately monitor

the usage of AGVs," is not accurate, as the systems are and were monitored, and the Postal Service has taken steps to maximize AGV use as processing equipment and building layout are updated as part of the ongoing network redesign. Management also noted that the list of identified common issues inhibiting use suggest clutter is avoidable; however, using aisles for staging is often required at certain times due to space constraints.

Regarding finding 2, management stated that they requested, but were not provided, clarification of the incomplete and missing information in the maintenance system records.

Regarding the monetary impact, management stated they recognized that the program has not met projected savings but that they have taken action to increase AGV use and relocate AGVs to processing facilities more favorable to operations. They believe the difference between actual and target utilization would be a more valid approach than the OIG's methodology as the questioned costs disregard the savings that have been achieved.

Regarding the other impact, management disagreed with the projected savings shortfall calculations and reiterated that the increase in package volumes and other system changes made AGVs unusable in most plants. Management added that OIG's statement in the report regarding a change in removing bid positions because of AGV use is misleading, as the Postal Service did not stop reducing positions based on low AGV use but due to the increased workload. Further, management stated that program savings could be more accurately calculated based on completed AGV missions.

Regarding recommendation 1, management stated that they monitor the use of all equipment, have performance requirements, and have a plan to evaluate and modify AGV locations for effective use. However, daily changes in the processing environment impact AGV use and comparing metrics from plant to plant disregards the unique factors that each plant has on performance. Management noted that AGV performance will improve during the network redesign. The target implementation date is October 31, 2023.

Regarding recommendation 2, management stated that they have a process to train and share best practices and usage goals and provided this to

¹³ Handbook F-1 *Accounting and Reporting Policy*, Section 3-6 Property and Equipment and 3-6.1.1.2 Record Keeping and Handbook AS-701 *Asset Management*, Section 5-2.2.1 Solution for Enterprise Asset Management.

¹⁴ *Material Accountability Officer Guidebook*, Section II. MAO Responsibilities.

current AGV sites. Management requested closure of this recommendation upon issuance of the report.

Regarding recommendation 3, management stated that they will reinforce the process to confirm accuracy and update information in the system records. The target implementation date is January 31, 2024.

Evaluation of Management's Comments

The OIG considers management's comments partially responsive to recommendations 1 and 2, and responsive to recommendation 3 in the report.

Regarding recommendation 1, management did not respond to how they will require AGV use to improve performance. When evaluating and modifying AGV locations, it is important to set realistic performance goals for each location and effectively monitor and require use to meet them.

Regarding recommendation 2, management's comments do not address how they will train and share best practices with personnel at facilities that will have AGVs in the future. Management requested closure of this recommendation and provided documentation of trainings and best practices shared with AGV facilities in 2021. As management noted in their comments, they have a plan to evaluate and modify AGV locations for most efficient use. We will keep this recommendation open until the Postal Service provides documentation on sites that will have AGVs and the plan to provide training and share best practices with personnel at all AGV sites.

The OIG considers management's comments responsive to recommendation 3, and the corrective actions should resolve the issues identified in the report.

Regarding management's disagreement with finding 1, while management had systems to monitor usage, they did not take steps to increase AGV use or move AGVs to more suitable locations in the past two years. As noted in our report, higher use facilities overcame challenges, such as cluttered aisles, and adapted to changes in operations to improve use. We agree that ongoing network changes present an opportunity to increase AGV use; however, management must monitor and require use to meet performance goals.

Regarding management's disagreement with finding 2, the information contained in our report was reflective of Postal Service's own data, which we provided to them after receiving their official comments. Specifically, one capital ID was assigned

to an AGV that may not exist; 16 AGVs were not assigned to the correct facility; and 230 AGV capital asset listings lacked identifying information, such as serial number or model.

Regarding management's concern about monetary impact, the questioned costs represent the value of the 177 under-used AGVs based on capital costs and is independent of any achieved labor savings. Further, management suggested that the difference between actual use and target goals would be a more valid estimate; however, the OIG took a conservative approach. If we used their suggested methodology, total questioned costs would be higher since only one processing facility had consistently met performance goals during our scope period in CY 2023.

Regarding management's disagreement with the projected savings shortfall calculations, there are many variables that can change the need for mail handler positions, such as volume and MTE utilization. However, the Postal Service's original labor savings calculations from AGV use were based on reducing mail handler positions over a 10-year period. In CY 2022, the Postal Service noted in their *Detailed Capital Investment Report* that they would no longer be reducing these positions based on AGV usage. Therefore, we updated the original labor savings projections based on the actual positions reduced to estimate the achievable savings for the next five years.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. Recommendations 1, 2, and 3 should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendation can be closed.

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Appendix A: Additional Information

Scope and Methodology

The team evaluated the Postal Service's use of AGVs from October 1, 2019, through June 11, 2023.

To accomplish our objective, we:

- Reviewed policies, procedures, manuals, training materials, and maintenance documents to gain an understanding of how the Postal Service operates, manages, accounts for, and maintains AGVs.
- Interviewed Postal Service management to gain an understanding of management responsibilities, the internal control environment, and the deployment and use of AGVs.
- Reviewed Decision Analysis and Detailed Capital Investment reports to understand capital investment justifications and the anticipated return on investment.
- Analyzed AGVM data to evaluate AGV use at mail processing facilities.
- Compared AGV hourly use and mission performance to Postal Service goals.
- Reviewed capital asset management, equipment inventory, and facility data to identify the distribution, purchase, and deployment costs of AGVs.
- Judgmentally selected a sample of nine mail processing facilities in both Processing Regions based on high and low AGV use. These included six with limited to no AGV use, one with medium use, and two with high AGV use without Eye in the Sky to identify potential best practices.
- Developed an electronic data collection instrument to document and summarize site visits.
- Visited processing facilities to observe AGV operation and equipment condition, conduct existence testing, and interview processing facility personnel to identify challenges and best practices.
- Compared the results of our existence testing with SEAM data and transfers and AGV distribution provided by Postal Service Headquarters.

We conducted this performance audit from February through August 2023 in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances.

Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We discussed our observations and conclusions with management on July 20, 2023, and included their comments where appropriate.

In planning and conducting the audit, we obtained an understanding of the AGV internal control structure to help determine the nature, timing, and extent of our audit procedures. We reviewed the management controls for overseeing the program and mitigating associated risks. Additionally, we assessed the internal control components and underlying principles, and we determined that the following three components were significant to our audit objective:

- Control Activities
- Information and Communication
- Monitoring

We developed audit work to ensure that we assessed these controls. Based on the work performed, we identified internal control deficiencies that were significant within the context of our objectives. Our recommendations, if implemented, should correct the weaknesses we identified.

We used data from the AGVM and SEAM systems. We assessed the reliability by testing for completeness, accuracy, and validity; evaluating differences in the data; interviewing Postal Service officials knowledgeable about the data; and comparing data across systems. We also assessed the reliability of SEAM system data during site visits by conducting existence tests and interviewing local management. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact
<i>Embargoes and Redirections at U.S. Postal Service Processing Facilities</i>	Evaluate the operational impacts experienced by the U.S. Postal Service before and after the embargoes and redirections at mail processing facilities during the fiscal year (FY) 2021 peak mailing season.	21-112-R21	8/13/21	\$0
<i>Nationwide Service Performance</i>	Assess the U.S. Postal Service's service performance for all mail classes over an 18-month period and determine the most common failure points in the mail flow process.	21-120-R21	9/20/21	\$0

Appendix B: Number of AGVs by Facility

In May 2023, we requested and received from the Postal Service a current list of deployed AGVs by location and the AGV capital asset listing from SEAM. See the table below for comparison of AGV quantities within each list by location.

Facility Name	Deployed AGVs	Capital Asset Listing	Difference (+/-)
Brooklyn, NY, P&DC	11	11	0
Busse, IL, P&DC	19	19	0
Columbus, OH, P&DC	8	13	-5
Denver, CO, P&DC	8	8	0
Dulles, VA, P&DC	10	12	-2
Industry, CA, P&DC	22	22	0
Lancaster, PA, P&DC	0	3	-3
Los Angeles, CA, P&DC	21	21	0
Louisville, KY, P&DC	8	8	0
Margaret Sellers, CA, P&DC	16	16	0
Merrifield, VA, R&D	4	0	+4
Michigan Metroplex, MI, P&DC	17	17	0
Middlesex-Essex, MA, P&DC	15	15	0
Moreno Valley, CA, P&DC	8	8	0
Nashua, NH, P&DC	15	15	0
Music City Annex, Nashville, TN, P&DC	18	19	-1
National Center for Employee Development, OK	4	5	-1
New Jersey Network Distribution Center, NJ	18	18	0
Northwest Rochester, NY, P&DC	0	9	-9
Oklahoma City, OK, P&DC	20	14	+6
Pennwood Place, PA P&DC	9	4	+5
Portland, OR, P&DC	25	25	0
Queens, NY, P&DC	5	2	+3
Richmond, VA, P&DC	10	0	+10
Royal Palm, FL, P&DC	11	11	0
Sacramento, CA, P&DC	17	18	-1
Salt Lake City, UT, Auxiliary Service Facility	9	9	0
Santa Clarita, CA, P&DC	28	25	+3
Seminole, FL, P&DC	16	16	0
West Valley, AZ, P&DC	15	16	-1
Ybor City, FL, P&DC	15	15	0
Total	402	394	+8

Source: USPS Engineering Systems, May 26, 2023, and USPS SEAM, May 30, 2023.

Appendix C: Management's Comments



August 7, 2023

JOHN CIHOTA
DIRECTOR, AUDIT SERVICES

SUBJECT: Management Response: Postal Service's Use of Automated Guided Vehicles (Report Number 23-057-DRAFT)

Thank you for providing the Postal Service with an opportunity to review and comment on the findings and recommendations contained in the draft audit report, *Postal Service's Use of Automated Guided Vehicles (AGV)*.

Management disagrees with the findings. The "What We Found" statement in the Highlights portion of the report misstates the cause of the failure to meet usage goals. The unprecedented impact of the increase in packages during the pandemic, followed by continuing increases in package volume, and the associated changes to equipment and building layouts to process this volume in a timely manner, are the true root causes of the AGV usage challenges. The statement that "the Postal Service did not require or adequately monitor the usage of AGVs" is not accurate. The systems are and were monitored. The Postal Service has taken steps to maximize AGV usage as machine sets and building layouts are being updated during the nationwide plant redesign.

In the Background section of the audit, the Office of Inspector General (OIG) mentions that the Postal Service reported that it would no longer be reducing positions based on AGV use. The OIG states that United State Postal Service (USPS) is therefore unlikely to achieve the predicted savings. Volume (workload) has increased significantly, resulting in the need for more staffing overall and eliminating the need to reduce positions. This does not imply that USPS is unlikely to achieve AGV savings in conducive locations. Projections are based on the current information and cannot anticipate every possible impact to the results. Management determined that the program savings could be more accurately calculated based on Completed AGV Missions, which represent the work contributions of the AGVs.

Management disagrees with Finding 1. The Postal Service did not use the AGVs as originally intended because the operating environment changed. AGV were no longer conducive to efficient operation in many of the planned locations. The AGV is not a one-system-fits-all type of equipment. It will work well in one site and not be appropriate in another location.

The list of "identified common issues inhibiting AGV use at the seven low use facilities" suggests clutter is a contributing factor. The word clutter implies an avoidable condition, when in fact using the aisles for staging is often required at

certain times of the day due to space constraints created by the changing package environment and equipment moves.

Management does not agree with Finding 2. The Postal Service requested clarification of the incomplete and missing information, but no clarification was provided.

USPS partially agrees with the Monetary Impact statement. The program has not met the Decision Analysis Report (DAR) savings in the audit timeframe, but the Postal Service has taken action to boost utilization of deployed systems. Management is working to relocate systems where the initial deployment site became less conducive to successful operations. The Questioned Costs disregard the savings that were achieved. The delta between actual utilization and target utilization would be a more valid estimate. It should also be noted that the DAR has a capture rate less than 100%, so USPS would not need to achieve full utilization to meet the business case.

The Postal Service also disagrees with the Projected Savings Shortfall calculations in the Other Impact document. Increases in package volumes and other system changes made the AGVs unusable in most targeted plants in the current environment. The program is evolving, but there was little opportunity to achieve savings during the audit time frame. The statement regarding a change in removing bid positions because of AGV use is misleading. USPS did not stop removing labor distribution code (LDC)17 positions due to low AGV utilization. This was a decision due to increased workload during recent years. The program savings are more accurately calculated based on Completed AGV Missions, which represent the work contributions of the AGVs.

Following are our comments on each of the three recommendations.

Recommendation 1:

We recommend that the **Vice President, Processing and Maintenance Operations** and the **Vice President, Engineering Systems**, develop and execute a plan to evaluate Automated Guide Vehicle locations, and require and monitor usage to improve performance.

Management Response/Action Plan:

Management **agrees that** having a plan for AGV usage is important and currently has a plan in place to evaluate and modify AGV locations for most effective use. An infrastructure less AGV design was intentionally selected to facilitate the relocation of vehicles to locations where they can be utilized. USPS monitors usage of all equipment and has performance requirements. The AGV are not conducive to daily changes in the mail processing environment, which will always be a factor in performance metrics. Comparing metrics from plant-to-plant disregards the unique impact that building layout and related factors have on performance. As we increase conducive locations during network redesign, AGV performance will improve.

Target Implementation Date: 10/31/23

Responsible Official: Sr Director Strategic Planning and Implementation

Recommendation 2:

We recommend the **Vice President, Processing and Maintenance Operations**, in coordination with the **Vice President, Engineering Systems**, train and share best practices and usage goals with personnel at processing facilities that will have Automated Guided Vehicles to improve performance.

Management Response/Action Plan:

Management **agrees** with this recommendation. The Postal Service has a process to train and share best practices and usage goals to improve AGV performance. Management has provided training and shared best practices to current sites that are conducive to continued AGV operation.

Management requests closure of this recommendation at report issuance.

Target Implementation Date: 10/31/23

Responsible Official: Sr Director Strategic Planning and Implementation

Recommendation 3:

We recommend the **Vice President, Regional Processing Operations - Eastern**, and the **Vice President, Regional Processing Operations - Western**, direct responsible personnel to confirm the accuracy of Automated Guided Vehicle capital asset listings and update information in the Solution for Enterprise Asset Management system and maintenance system records.

Management Response/Action Plan:

Management **agrees** with this recommendation. The Postal Service will reinforce the process for confirming accuracy and updating information in the named systems.

Target Implementation Date: 01/31/24

Responsible Official: Vice President, Regional Processing Operations – Eastern and Vice President, Regional Processing Operations - Western

E-SIGNED by Dane.A Coleman
on 2023-08-07 13:22:55 CDT

Dane Coleman
VP, Regional Processing Operations



Mike L. Barber
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E-SIGNED by Todd.S Hawkins
on 2023-08-07 13:45:08 CDT

Todd Hawkins
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E-SIGNED by Linda.M Malone
on 2023-08-07 16:57:16 CDT

Linda M. Malone
VP, Engineering Systems

cc: *Corporate Audit & Response Management*

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