Memorandum

MIAMI-DADE COUNTY

Date: May 6, 2024

To: Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners

From: Daniella Levine Cava
Mayor

Subject: Final Report Related to the Creation of a Waste Management Metering Pilot Program in District 2 and District 8 – Directive No 220899

Executive Summary

On May 3, 2022, the Board of County Commissioners adopted Resolution No. R-440-22, sponsored by Commissioner Cohen Higgins, which directed the Department of Solid Waste Management (DSWM) to create a District 8 and District 2 Waste Management Metering Pilot Program, including identifying available funding sources and authorizing the Mayor or Mayor's designee to negotiate and execute all documents for the pilot program. The resolution directed the Administration to provide a report detailing the status of the pilot program and identifying legally available funding sources.

The purpose of the pilot was to demonstrate the performance of a waste container monitoring technology installed on County waste containers that utilized specialized sensors. These sensors enabled remote monitoring of the fill levels of the containers, allowing the waste collections operation staff to monitor which containers were full, or near full, and required servicing in order to avoid overflow and spillage. The sensors also showed which containers had low levels of waste, allowing for a delayed pick-up to achieve greater collection operational efficiency. The objective of the pilot was to determine the potential value of waste metering technology, both in general and to DSWM specifically.

Of the 550 containers that DSWM services, the pilot program tested seven locations with waste metering technology over a two-month period, and the results showed that two locations were at risk of overflowing waste within a seven-day period (see Attachment A). If the County were to have a critical mass of containers utilizing the technology, coupled with a dynamic routing service model, this technology has the potential to achieve additional efficiencies in comparison to a standard two to three times weekly regularly scheduled service model. Absent a larger number of containers included in the program and dynamic/customized routing, however, it would be difficult to fully implement the program and more precisely quantify its effectiveness. The technology does show promise for the future as DSWM looks ahead to the servicing of the additional County containers.

Pilot Update

Upon adoption of Resolution No. R-440-22, DSWM conducted research and prepared a Request for Information (RFI) that was issued on June 30, 2022, and subsequently closed on July 29, 2022. After staff reviewed the responses, four respondents were invited to conduct a presentation for DSWM. These presentations took place in September 2022 and October 2022, after which staff recommended that two firms be included in the demonstration project. Following oral presentations, staff determined that the two companies that best fit the County's vision were those that utilized Artificial Intelligence capable of "reading" or recognizing contamination in recycling collection containers. Both companies were invited to participate in the pilot. However, one of the companies declined to

Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners
Page No. 2

participate when advised that the pilot would have to be performed at no cost to the County; therefore, the pilot project moved forward with Sensoneo USA, the single remaining firm.

The demonstration project agreement was executed on December 9, 2022. The sensors were installed in seven containers, and DSWM staff was introduced to the software portal in February 2023, following meetings with the vendor. Staff reviewed over two months of metering data for seven locations provided by Sensoneo. The resulting data indicated that in any given week, of the seven locations included in the pilot, two locations were at risk of overflowing, while the remaining five were adequately serviced (without overflowing) with either a regular or a delayed/skipped collection. See Table 1 in Attachment A.

Based on the data collected, DSWM concluded that waste metering technology has the potential to achieve efficiencies in comparison to a standard two to three times weekly regular scheduled service model. However, achieving such efficiencies would require the County to have a critical mass of containers utilizing the technology. Absent a larger number of containers included in the program and dynamic/customized routing, however, it would be difficult to fully implement the program and more precisely quantify its effectiveness. The technology does show promise for the future as DSWM looks ahead to the servicing of the additional County containers.

Accordingly, based on this pilot experience, if the Board desires to utilize this technology, DSWM staff would recommend exploring a solution that integrates the container fill monitoring function with a dynamic routing tool. In this way, the driver/operator could be provided with the most productive route on each service day.
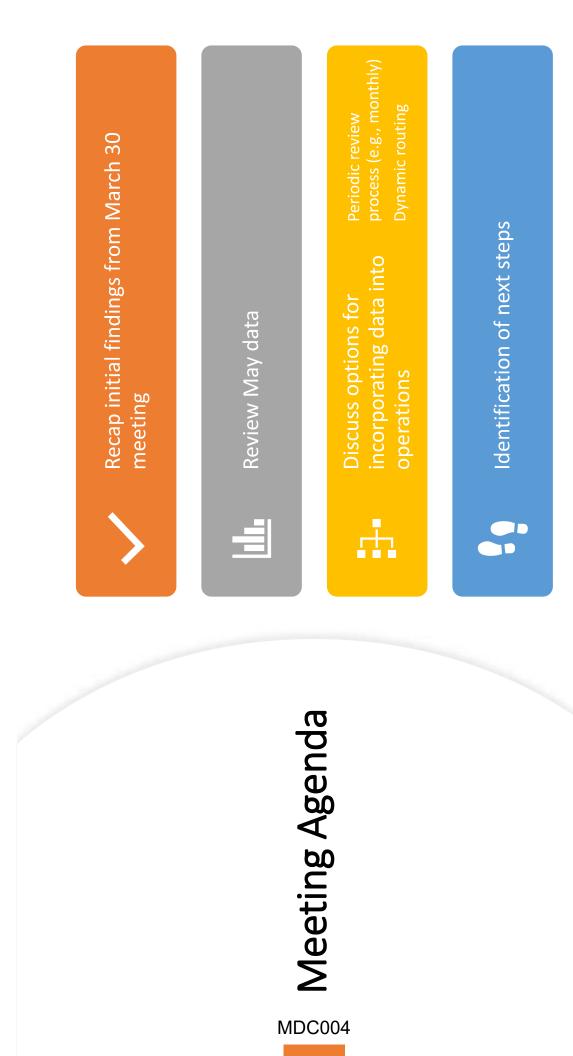
If additional information is needed, please contact Olga Espinosa-Anderson, Interim Director, Department of Solid Waste Management, at Olga.Espinosa-Anderson@miamidade.gov.

Per Ordinance No. 14-65, this report shall be placed on the next available Board meeting agenda.

c: Geri Bonzon-Keenan, County Attorney
  Gerald Sanchez, First Assistant County Attorney
  Jess McCarty, Executive Assistant County Attorney
  Office of the Mayor Senior Staff
  Olga Espinosa-Anderson, Interim Director, Department of Solid Waste Management
  Jennifer Moon, Chief, Office of Policy, and Budgetary Affairs
  Adeyinka Majekodunmi, Commission Auditor
  Basia Pruna, Director, Clerk of the Board
  Eugene Love, Agenda Coordinator

Attachment A

Updated Data Review
May 1 – May 15

Meeting Agenda

- Recap initial findings from March 30 meeting
- Review May data
- Discuss options for incorporating data into operations
  - Periodic review process (e.g., monthly)
  - Dynamic routing
- Identification of next steps

Three Categories of Containers

Category I: **Underserviced**

Category II: **Overserviced**

Category IIII: **Properly serviced**

May Data Review- Consistent with March Findings

Table 1

Stand	Street	Type	DevEUI	04/30 Sun	05/01 Mon	05/02 Tue	05/03 Wed	05/04 Thu	05/05 Fri	05/06 Sat	05/07 Sun	05/08 Mon	05/09 Tue	05/10 Wed	05/11 Thu	05/12 Fri	05/13 Sat	05/14 Sun	05/15 Mon	Ø	Map	Graph
Residential Town 249	11027 Southwest 249th Street	MIXED-WASTE	8988307000000023445453	72%	0%	0%	0%	0%	0%	7%	23%	0%	0%	0%	0%	3%	15%	55%	0%	11%	📍	📊
Residential Town 248	11590 Southwest 248th Lane	MIXED-WASTE	8988307000000023444563	41%	17%	27%	41%	0%	41%	82%	94%	0%	40%	52%	0%	17%	98%	100%	62%	45%	📍	📊
Metro Bus Radio Shop	3300 Northwest 32nd Avenue	MIXED-WASTE	8988307000000023444126	0%	0%	0%	30%	18%	0%	0%	25%	0%	13%	47%	55%	60%	63%	82%	100%	31%	📍	📊
Metro Bus Body Shop	3300 Northwest 32nd Avenue	MIXED-WASTE	8988307000000023445271	9%	6%	0%	0%	0%	29%	29%	29%	0%	0%	27%	26%	9%	19%	34%	27%	15%	📍	📊
MDFR Station 70	11699 Southwest 248th Street	MIXED-WASTE	8988307000000023442427	35%	41%	100%	65%	55%	66%	67%	65%	5%	0%	0%	33%	36%	50%	55%	59%	46%	📍	📊
MDFR Station 45	9710 NW 58th St	MIXED-WASTE	8988307000000023443037	83%	0%	70%	75%	0%	85%	100%	100%	4%	39%	46%	59%	60%	61%	41%	23%	53%	📍	📊
Golden Glades Librar	100 Northeast 166th Street	MIXED WASTE	8988307000000023441999	0%	0%	2%	13%	30%	0%	0%	38%	6%	0%	1%	21%	0%	0%	20%	30%	10%	📍	📊

Category I: Overflows (12.5%)
Red circles.

Category II: Overserviced (50%)
Blue circles.

Category III: Properly Serviced (37.5%)
Yellow circles.

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