

Date: August 18, 2023

Memorandum



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

From: Daniella Levine Cava
Mayor

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Subject: Report Related to the Development of an Integrated Solid Waste Management Plan in Miami-Dade County – A Combined Response to Directives 222097, 230509 and 230998

On May 3, 2022, the Board of County Commissioners (Board) approved Resolution No. R-432-22, sponsored by then Chairman Jose “Pepe” Diaz, directing the County Mayor or County Mayor’s designee to develop and issue a solicitation for a design criteria package for a new waste-to-energy (WTE) plant to replace the County’s Resources Recovery Facility (RRF) on the same site, place a recommendation on the solicitation for a design criteria professional on an agenda of the Board for the Board’s consideration and approval, and utilize legally available and budgeted funding or set forth the amount of additional funding that is necessary.

On February 12, 2023, a fire erupted at the RRF, which had the capacity to process approximately one million tons of waste annually. Since then, except for tire shredding, the RRF has remained inoperable. The loss of the waste reduction capability from the RRF has compressed the timeline on which our landfills reach full capacity and has reduced by approximately half our overall solid waste disposal capacity. The Comprehensive Development Master Plan (CDMP) requires the annual certification of a Level of Service with at least five years’ disposal capacity as a prerequisite to issue development permits, and unlike other forms of concurrency such as transportation, concurrency requirements for solid waste are state mandated and cannot be waived due to their importance to public health. The concurrency requirement is based on a continuing 5-year cycle and must be assured annually for continuing 5-year cycles at the start of each fiscal year. The loss of the RRF raised concerns about the ability of the County to satisfy the solid waste concurrency requirement going forward.

On March 27, 2023, the Board approved Resolution No. R-240-23, sponsored by Commissioner Juan Carlos Bermudez, rescinding Resolution No. R-432-22, and directing the County Mayor or County Mayor’s designee to analyze and recommend siting alternatives for a new WTE facility, explore alternative technologies, and provide a report, including costs and potential funding sources. In addition, the Board adopted two other resolutions as Directives 222097 and 230998, to develop and implement a comprehensive plan on waste management in Miami-Dade County, including services provided by the County to municipalities, and the financial feasibility of continuing these services, as well as identifying new technologies and best practice approaches. The Board also directed the Administration to present a plan that ensures compliance with the Level of Service requirements in the CDMP for the long term.

In addition to the urgency presented by the fire and the Level of Service requirements, the Administration believes that the County now has a unique opportunity to invest in and modernize a 40-year-old system and turn it into a financially sustainable, environmentally responsible program that will grow with the needs of our community. The recommendations made in this plan represent extensive research into national and global strategies and will ensure the County meets its short-term needs while creating a better, newer, more sustainable and cost-efficient system that will give our residents the world class waste disposal system they deserve.

Executive Summary and Recommendations

It is recommended that the Board of County Commissioners adopt an Integrated Solid Waste Management Plan for Miami-Dade County which uses a variety of technologies and strategies to properly dispose of all the waste that enters our system, meets the concurrency requirements of the CDMP, significantly diverts waste away from landfills and provides financial stability for the system while maintaining reasonable costs to our customers. We know this is possible because our neighbors in Palm Beach County have precisely achieved these goals through a similar focus on an integrated solid waste management strategy, and we can certainly implement best practices locally and through regional collaboration to do the same. We should take advantage of this opportunity which the RRF fire has given us to rethink how we do business.

While an Integrated Solid Waste Management Plan is not created overnight, we recommend that the Board endorse and provide direction with respect to the following projects and policy initiatives:

1. The County should promptly procure the development of a Solid Waste campus, which would include the construction of a new modern mass burn waste-to-energy facility capable of processing at least 4,000 tons of waste daily. This is consistent with the recommendations of the 2020 Solid Waste Master Plan.¹ For reasons set forth in this memorandum, the Administration strongly recommends that the facility continue to be County-owned. Operation of the facility could be outsourced to a third-party expert in this field. Construction of the facility could be financed through several possible sources, including federal funding under the Inflation Reduction Act, state funding, County revenue bonds and Public-Private Partnership (P3) opportunities. Additionally, somewhere between \$100 to \$200 million in insurance proceeds from the fire could be used toward a replacement facility, but construction may have to begin by February 2025, unless an extension is granted by the insurer.
2. The Solid Waste campus, which includes the new WTE facility, should be sited on County-owned property located at the intersection of Krome Avenue and US 27. This site, commonly referred to as Opa-Locka West Airport, was formerly the site of an airport operated by the County. This site has the capacity to not only host the WTE facility but

¹ The full 2020 Solid Waste Master Plan can be accessed at the following link:
<https://www.miamidade.gov/solidwaste/library/2020-solid-waste-master-plan.pdf>

also provide space for other elements of the Integrated Solid Waste Management Plan, including (i) organic processing technologies such as biogasification and anaerobic digestion (ii) waste sorting and separation systems, (iii) wood recycling and mulching operations, and (iv) other facilities to support diversion, repurposing, and recycling.

3. The Administration also recommends that, given the difficulty of obtaining applicable permits from the Florida Department of Environmental Protection (FDEP) and the US Environmental Protection Agency (EPA) for any of the potential WTE sites that have been evaluated, the County should present three alternate sites to both FDEP and the EPA as part of a preliminary review that could be done in a 6–12-month period. The Administration recommends that while the Opa-Locka West Airport site will be submitted as the preferred choice, the existing site of the RRF facility and the Medley site should also be simultaneously submitted to both FDEP and the EPA as feasible alternatives.
4. The County should explore any opportunities to divert waste from our landfills that could be implemented in the short term, particularly repurposing of yard waste and composting food waste and other organics.
5. The County should undertake the expansion of the North Dade Landfill, which could provide additional disposal capacity during the construction of the new WTE facility while avoiding high landfill closure costs and providing significant revenue to the County. Such project would include better security at the facility and a robust illegal dumping plan in the surrounding community.
6. The Administration should conduct an in-depth analysis of a potential expansion of the South Dade Landfill.
7. DSWM should contract for an additional one million tons annually of private landfill disposal capacity during the pendency of the construction of the WTE facility.
8. The Administration recommends that the existing RRF facility should not be reactivated. The current site could be repurposed for other solid waste purposes (e.g., a transfer station in the event the WTE facility is constructed at the Opa Locka West Airport site, a mulching operation, etc.).
9. We need to implement statutorily required strategies to obtain the federal and state permits for the WTE facility, including a Materials Separation Plan, as defined in 40 CFR 60.57b, a program for collecting and recycling recovered material from the institutional, commercial, and industrial sectors, a waste reduction program for yard trash, and a county procurement program to procure products or materials with recycled content pursuant to FS 403.7065.
10. The Administration will prepare a Zero Waste Master Plan with the long-term goal of achieving 90% or greater diversion from landfills and incinerators.

11. To establish long-term financial stability for the County's solid waste program, the Administration is recommending that the Board direct us to conduct an analysis of using dedicated ad valorem taxation to fund both the collection and disposal of solid waste (as compared to a flat fee), for roll out in Fiscal Year 2024-25. However, to cover the expenses for the upcoming fiscal year budget and continue moving forward on the plan outlined in this document, the Administration recommends adoption of the proposed \$36 fee increase and transfer from the disposal fund, which is on for second reading at the September 6th BCC meeting.

Background

The Miami-Dade County Department of Solid Waste Management (DSWM or Department) provides waste collection service to more than 350,000 households in unincorporated Miami-Dade County and ten municipalities, including Aventura, Cutler Bay, Doral, Miami Gardens, Miami Lakes, Opa Locka, Palmetto Bay, Pinecrest, Sunny Isles Beach, and Sweetwater. DSWM also processes and disposes of approximately 2.4 million tons of solid waste annually, arising from both the solid waste collected by the Department as well as waste from 15 cities with which we have long-term disposal contracts, including Miami, Homestead, Miami Beach, Coral Gables, North Miami Beach, Miami Springs, North Miami, South Miami, Miami Shores, Surfside, North Bay Village, Bay Harbor Island, West Miami, and Sweetwater. The capstone of this system was the Resources Recovery Facility (RRF), which processed approximately one million annual tons of waste and reduced it to a fraction of the original mass, thereby diverting waste from and conserving capacity at our landfills and eliminating the release of methane (a greenhouse gas more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere).

As you know, on February 12, 2023, a fire erupted at the RRF and severely damaged several buildings in the facility. Since then, except for tire shredding, the RRF has remained inoperable and has not been processing waste or producing electricity. The Department has successfully managed/diverted the waste tons normally managed by the RRF to County-owned and contracted landfills, ensuring uninterrupted service for our solid waste customers. But this strategy is not sustainable in the medium or long run unless additional steps are taken. Even before the fire, the North Dade Landfill (NDL), a Class III landfill, was scheduled to reach capacity in 2026, and the South Dade Landfill (SDL), a Class I landfill, was projected to reach capacity by 2030.² Those dates could be accelerated if we do not find alternatives.

Adding to the urgency is the potentially adverse impact on development and the local economy if we do nothing or fail to act quickly. The CDMP requires the annual certification of a Level of Service with at least five years' disposal capacity as a prerequisite to issue development permits, and unlike other forms of concurrency such as transportation, concurrency requirements for solid waste are state mandated and cannot be waived due to their importance to public health. Further,

² A Class I landfill receives general, non-hazardous household, commercial, industrial, and agricultural wastes. A Class III landfill receives yard trash, construction and demolition debris, waste tires, asbestos, carpet, cardboard, paper, glass, plastic, and non-appliance furniture, and cannot accept putrescible, i.e., waste likely to become putrid and readily biodegrade such as organic material or food waste.

the concurrency requirement is based on a continuing 5-year cycle and must be assured annually for continuing 5-year cycles at the start of each fiscal year. Since the permitting and construction of a new WTE facility is likely to take ten years, we need to take interim steps to make sure we can continue to assure at least five year's disposal capacity each year until the WTE facility comes online with at least one million tons of disposal capacity annually. The short-, medium- and long-term strategies are set forth in further detail in this report.

Short-Term Challenges and Opportunities

As we move forward with developing new ways of managing our waste, we must put in place short-term plans to ensure that we can continue to meet our waste disposal needs.

North Dade Landfill Expansion

At the rate of current waste generation, and absent waste generated from a storm or other major catastrophic event, the NDL is projected to reach capacity by 2026. The closure of this landfill would cause residents and commercial haulers to drive 40 miles south to the SDL, increasing pressure on the SDL and accelerating the timeline for that landfill to reach capacity. Additionally, NDL is a revenue generator providing \$17 million in annual revenues; closing it would cost an estimated \$46 million in closure expenditures and post-closure long-term maintenance, negatively impacting the Department's financial health, and putting more pressure to raise rates in the future.

A vertical expansion of the NDL from its current maximum permitted height of 135 feet could provide up to 30 years of capacity to NDL (through 2057) and over \$400 million in anticipated revenues to DSWM. Permit modifications and approvals are projected to take approximately two years. It must be noted this capacity increase will only address a portion of the waste stream, as NDL is a Class III landfill that only accepts yard waste and woody materials. The lifespan of the NDL can be further extended as we more aggressively pursue opportunities to divert woody waste for repurposing as mulch, compost, and biofuel. As part of the expansion project, we can provide better security at the facility to make sure that access is monitored and controlled. We would also implement a more robust program to counter illegal dumping in the surrounding communities.

Evaluation of Partial Reopening of the RRF

Prior to the fire, Covanta, the operator at the RRF, processed the County's waste in two separate operations: one for garbage, which consists of mixed materials including putrescible waste, and one for trash, which consists of yard waste and woody materials. The fire that occurred this year originated inside the G gallery on or adjacent to the tail area of the G1 Conveyor and spread to other areas of the RRF before it was extinguished. Days after the fire, portions of the Garbage Processing Building had to be demolished so Miami-Dade Fire Rescue could access the burning garbage inside the building. The Trash Processing Building, however, did not receive the brunt of the damage. We have been working with Covanta to assess the viability of bringing the RRF back online in a limited capacity, until a replacement facility is constructed and comes online. The reopening would require permits from the Florida Department of Environmental Protection (FDEP). Reopening the RRF, even partially, would help dispose of some of the waste we are currently sending to landfills, with processing likely limited to yard trash only (not garbage), reducing the impact on surrounding residential neighborhoods.

Unfortunately, the significant construction and operational costs and the time it would take to permit and renovate the RRF to 40% of its prior capacity do not make sense. The renovation budget is projected at \$91.5 million. Approximately \$35 million of our insurance proceeds from the fire could be spent on the renovation, but those funds would then be unavailable for the construction of the new facility. The remaining \$56.5 million in construction costs would need to come from other sources, again meaning those funds would not be available for the new WTE project either. Permitting and construction to renovate the RRF will likely take 1.5 to 2 years, meaning the facility would only operate for 5-8 years. Operationally, the cost per ton to incinerate the trash would be \$20 to \$40 higher per ton compared to disposal in private landfills. Additionally, the yard waste that would be processed there could be repurposed for mulching and other uses. Palm Beach County annually repurposes nearly 200,000 tons of yard waste instead of incinerating or landfilling it. It is not surprising, therefore, that Arcadis, the Bond Engineer for DSWM, prepared a Technical Memorandum assessing the Covanta proposal to partially reopen the RRF, a copy of which is attached hereto as Exhibit A, and concluded that “the operational and capital costs are difficult to justify considering the limited throughput and short duration of the proposed operations when compared with costs from other Florida facilities.” The Administration agrees with this recommendation.

South Dade Landfill Expansion

Because of the need to meet ongoing concurrency mandates not just in the short but mid-range, even with the potential approval of a NDL expansion, it is necessary to explore additional avenues for expanding disposal capacity to minimize future risks. Vertical and horizontal expansion of the SDL will maximize capacity in the southern end of the County and ensure we can continue to meet our development requirements. A WTE solution would provide a cleaner alternative to a landfill, but we know that development and construction of a new WTE facility will take approximately seven to ten years. Due to its proximity to the Homestead Air Reserve Base and Biscayne National Park, permitting approval for an expansion of the SDL remains uncertain and is anticipated to extend over several years. The Administration recommends that a thorough analysis be conducted of the feasibility, cost, and impact of expanding the SDL as part of the short- and medium-term approach.

Existing Contract Capacity

DSWM has an existing waste disposal agreement with Waste Management (WM). The 2015 agreement provides the County with 1.25 million tons of annual capacity utilizing WM’s Medley, Monarch (in unincorporated Broward County), and Okeechobee Landfills. The agreement is based on agreed upon rates that are adjusted according to the Consumer Price Index (CPI) and capped at 5%. The agreement is effective through September 30, 2035, and has two, five-year options-to-renew (OTRs) through 2045.

Additionally, DSWM has a waste disposal agreement with Waste Connections (WC). The 2015 agreement provides the County with 500,000 tons of annual capacity utilizing Waste Connections’ JED Landfill in St. Cloud, FL. Like the WM agreement, WC’s agreement is also based on agreed upon rates that are adjusted according to CPI and capped at 5% during any given year. Any increases or decreases in CPI above 5% will be applied in future years when the CPI is less than

5%. This agreement is effective through October 1, 2025, and has two, five-year OTRs through 2035.

DSWM staff has been negotiating with both WM and WC to obtain additional waste disposal capacity under both contracts. The goal of these negotiations is to replace any disposal capacity that might have been generated by partial operation of the existing RRF, but it also could provide some excess capacity for the system as may be needed.

We have also been in discussion with CSX Railroad about the possible disposal of solid waste via rail. They provide such services in other states and are interested in providing similar service to Miami-Dade County. They have preliminarily indicated that, subject to regulatory approvals for the construction of a transfer station(s), they could within 12-18 months provide up to 400,000 tons of waste disposal capacity annually by rail transportation to landfills outside of Florida.

Recycling and Composting of Yard Trash

The Administration is currently pursuing a request for proposals to divert some of the yard trash stream that enters the DSWM system away from landfills to mulching and composting. With respect to the County's own yard waste, new contracts for landscaping services on County property now include provisions to require mulching of non-invasive woody material and composting or woody material recycling, where feasible. County staff are also pursuing pilot projects to test and evaluate certain technologies for processing organics.

Medium-Term Challenges and Opportunities

The options outlined above will ensure the County gains needed disposal capacity in the short term and meets concurrency requirements under the CDMP. We must simultaneously commence the work necessary to create an Integrated Solid Waste Management Plan that provides the medium- and long-term disposal capacity required as we continue to grow, and to do so in a fashion that is both financially and environmentally sustainable.

Advancing a State-of-the-Art Waste-to-Energy Solution

Because of the loss of the RRF and its Countywide significance to the County's solid waste system, a new modernized WTE facility is needed even sooner than originally anticipated due to the impact of the fire. The County needs, in addition to landfill capacity, disposal solutions sufficient to handle over one million tons of waste each year, and due to concurrency requirements, these solutions need to come online as soon as possible. Expediting the construction of a new WTE facility is paramount to take advantage of potentially up to \$200 million in insurance proceeds from the RRF fire. The County's policy requires the County to begin construction within two years of the date of incident, which would be February 12, 2025 (unless an extension is granted). Furthermore, the Inflation Reduction Act (IRA) offers federal tax credits that could fund as much as 30% of the project costs, but those dollars also require commencement of construction of the project within four years from the passage of the law, thus prior to January 1, 2025. The guidelines for the IRA which would provide further detail and direction have not yet been issued, but my Administration is closely monitoring development of these rules.

WTE Technology

The WTE facility will be using the latest technology, described as a mass burn facility. This is the most common type of combustion facility in the United States, and we have one locally at the Palm Beach County WTE facility which was built in 2015. Our RRF relied on an older technology called Refuse-Derived Fuel (RDF) combustion. Under this 40-year-old technology, refuse must be processed by shredding it before it can be burned. Hazardous or potentially explosive materials must be removed before the material is shredded. In the event explosive material, such as a propane cylinder, is not removed and is processed in the shredder, this can cause major damage and downtime during the shredding process. The shredding of material also generates excessive residuals that then must be separated and sent to a landfill for disposal. The substantial front-end processing needed to convert incoming waste into RDF fuel is a common source of odors. While the shredding of the waste makes the feedstock more uniform for the combustion process and generally raises its heating value to improve combustion efficiency and electricity output, it typically results in much less volume reduction than mass burn and has higher residuals that must be landfilled. Due to these reasons, RDF facilities were typically built in the past to maximize energy output rather than maximize waste throughput.

Mass-burn combustion does not require pre-processing before it can be combusted (therefore no conveyor belts at the front end of the process where the trouble arose at the RRF in February). Separation of oversized materials and removal of hazardous or potentially explosive materials will still occur. Mass burn units burn the waste in a single combustion chamber at extreme heat and under conditions of excess air. In combustion systems, excess air promotes mixing and turbulence to ensure the air can reach all parts of the waste. The heat released from burning converts water to steam, which is then sent to a turbine generator to produce electricity.

Modern mass burn WTE facilities use cranes to lift waste from the tipping floor pit into feed chutes that lead to the boiler grate, where combustion occurs. A negative pressure is maintained inside the tipping floor building and the air is then used as combustion air in the boilers, which effectively controls odors at the facility. A visit to the mass burn WTE facility in Palm Beach County provides firsthand confirmation of the difference in odor from an old RDF facility to a modern mass burn facility. A new WTE facility will also have to meet newer and more stringent air quality emission requirements than were in place 40 years ago when the RRF was built.

Regulatory Requirements

It is important to emphasize that the WTE facility cannot exist in a vacuum. Both the EPA and the State of Florida establish as conditions to permit a WTE facility (regardless of the technology) the implementation of waste diversion programs. Part of the approval process with the EPA for development of a new WTE plan includes filing a Materials Separation Plan, per 40 CFR 60.57b. A Materials Separation Plan is defined in 40 CFR 60.51b as:

a plan that identifies both a goal and an approach to separate certain components of municipal solid waste for a given service area in order to make the separated materials available for recycling. A materials separation plan may include elements such as drop-off facilities, buy-back or deposit-return incentives, curbside pickup programs, or centralized mechanical separation systems. A materials separation plan may include different goals or

approaches for different subareas in the service area and may include no materials separation activities for certain subareas or, if warranted, an entire service area.

Similarly, the State of Florida, in Florida Statutes, section 403.7061, has mandated that FDEP evaluate applications for WTE facilities in accordance with the criteria set forth in subsection (3) to confirm that the facilities are part of an integrated waste management plan. Subsection (3) includes the following requirements:

(c) The local government in which the facility is located has implemented a mulching, composting, or other waste reduction program for yard trash.

(d) The local governments served by the facility will have implemented or participated in a separation program designed to remove small-quantity generator and household hazardous waste, mercury containing devices, and mercuric-oxide batteries from the waste stream prior to incineration by the time the facility begins operation.

(e) The local government in which the facility is located has implemented a program to procure products or materials with recycled content, pursuant to s. 403.7065.

(f) A program will exist in the local government in which the facility is located for collecting and recycling recovered material from the institutional, commercial, and industrial sectors by the time the facility begins operation.

We fully intend to meet and exceed these requirements in connection with rolling out an integrated solid waste management plan that includes existing diversion strategies and alternative technologies.

In addition to developing a new modern WTE facility, we are also planning to incorporate waste diversion technologies to improve beneficial reuse, recycling, and waste diversion of organics and recyclables on the new Solid Waste campus. The 2020 Solid Waste Master Plan also recommends exploring opportunities for additional materials separation. These strategies will enable us to meet solid waste concurrency requirements for decades to come, and advance Miami-Dade as a leader in sustainable energy technologies.

Ownership

We are aware that there may be private entities that are willing to build, finance, own and operate a WTE facility for the County. Promising as that might sound, there are very important reasons why the County needs to retain sufficient ownership of the facility.

1. Bond covenants: The current County bond ordinance for the outstanding DSWM bonds prohibits private ownership as the revenues of the disposal system have already been pledged as “Operating Revenues” to repay the bonds. Also, a private facility would “compete” with the County’s system and is therefore prohibited by the covenants. However, the bond covenants may not end up being a factor, as the Administration recommends repaying the \$34 million in outstanding solid waste revenue bonds to avoid any future conflicts with the long-term strategy.
2. RRF insurance proceeds: The insurance proceeds from the fire at the RRF can be used to repair or replace the existing facility. It is not clear that these proceeds would be paid by

the insurer to a private entity building a facility. Given that the preliminary estimate of the insurance proceeds is between \$100 - 200 million, we do not want to risk putting the availability of such funds at risk.

3. Grant funding: There are state and federal funds, including under the IRA, available to local governments that could be used to fund 30-40% of capital costs to build a new WTE facility. We believe that the state funding would not be available in the event of private ownership, and it is not clear (since the regulations have not yet been issued) whether those funds would be available under the IRA either.
4. Flow control: This is probably the most important reason to own the WTE facility. The County has the authority, under state law, to adopt a local flow control ordinance which requires the flow of waste to County-owned facilities. This would not be possible if a facility were privately owned. The County has never relied upon flow control ordinances and has successfully maintained a solid waste management system that is self-funded by controlling its pricing. But it is a power we should retain in the event it is ever needed. Controlling the local flow can be particularly important to make sure the County can comply with any obligation to provide sufficient waste to the WTE facility operator in the future, or to any technology or organic processing facilities incorporated into a solid waste campus, as well.³
5. Price control: Ownership of the new facility will allow the Department to retain control of its pricing, which is how the Department has historically been able to remain competitive and financially self-sustaining.

Any procurement for the construction and operation of the WTE facility must make it clear that the County must be able to exercise flow control and have full access to the revenue stream and funding opportunities referenced above.

Site Selection

In 2022, the Board directed the Administration to conduct an analysis of all potential sites in Miami-Dade County for the construction of a WTE facility. DSWM directed Arcadis, the Department's Bond Engineer, to conduct the analysis. Arcadis evaluated hundreds of potential sites throughout the County using various criteria that Arcadis had indicated were important for permitting and siting such a facility. In June 2022, Arcadis issued the Preliminary Future Waste-to-Energy Facility Siting Alternatives Analysis Report (Siting Report) which shortlisted four potential sites for siting such a facility.⁴ Earlier this year, Arcadis was asked to revisit the Siting Report and include two additional sites to the short list for fuller analysis. Arcadis was also asked to assess a Zero Waste management strategy for the County that could include alternative

³ See United Haulers Assoc. v. Oneida Herkimer Solid Waste Management Authority (finding a local flow control ordinance directing flow of solid waste to a publicly owned waste facility did not violate the dormant commerce clause; whereas in Carbone v. Town of Clarkstown, N.Y., the US Supreme Court found local flow control regulations favoring a single privately owned waste facility violated the dormant commerce clause.

⁴ The full Siting Report can be accessed at the following link:

<https://www.miamidade.gov/solidwaste/library/preliminary-future-wte-siting-report.pdf>

technologies for a WTE facility. On August 1, 2023, Commissioner Juan Carlos Bermudez asked that an additional site located in the northwestern part of his district be added to the short list for fuller analysis. Arcadis will soon issue the Preliminary Solid Waste System Siting Alternatives Report Update (the Update Report), which includes a full analysis of seven sites. The summary of those findings is included in the letter attached to this memorandum as Exhibit B.

Two of the sites that are shortlisted (referred to as Site 16 Ingraham Hwy. Site #1 and Site 17 Ingraham Hwy. Site #2 in the Siting Report) are located outside the Urban Development Boundary (UDB) and are adjacent to the South Dade Wetlands Basin and Everglades National Park. These sites raise serious environmental and infrastructure concerns, and therefore it would also be very difficult to permit any WTE facility at either of those sites. For the purposes of this memorandum, we are not considering those two sites.

The site described as the Dolphin Expressway site is also not being considered. While it does have some factors in its favor, in addition to serious environmental concerns, the site is very close (0.1 miles) to an existing residential community, and it has the longest estimated project duration (more than 12 years). Furthermore, the site consists of 148 parcels with 70 different owners, making assemblage of the land to build the WTE facility very challenging and expensive.

The site described as the Okeechobee Road site is also not being considered. The site is very close to the Opa-Locka West Airport site, and while it shares some of the same pros and cons associated with that site, it is privately owned. The negotiation and purchase of the parcels could be difficult and expensive. The Arcadis Update Report shows that the Okeechobee Road site would take longer to develop and cost more than the Opa-Locka West Airport site, which is already owned by the County. It also appears that this site has a covenanted Wetlands Mitigation Area on site which could complicate permitting. Finally, with only 68 acres, this site does not lend itself as well to a large solid waste campus as is envisioned by the Integrated Solid Waste Management Plan. As such, given the availability of a larger county-owned property in the same vicinity, this property is not under consideration.

Each of the remaining three sites do merit serious consideration. The Medley site has the second lowest construction cost, the third shortest construction schedule and the second lowest operation costs. It is within the UDB and at 320 acres, is sufficiently large to accommodate a robust solid waste campus. It has good access to roadways and needed utilities. The site, however, is privately owned and the estimated purchase price makes this the second most expensive project. Virtually the entire site was previously a borrow pit and has been partially backfilled. This could lead to additional foundation design and construction costs. Also, since the site sits between two existing large Title V emitters (the Medley Landfill and the Titan Pennsuco facility), obtaining the required air permits could be complicated. Finally, the site is located adjacent to a residential community, which may result in the relocation of existing residents. Plus, the site also sits between residential communities in Doral and Hialeah Gardens.

The existing RRF site in Doral is the likely fastest and least expensive to build as well as least expensive to operate. It is within the UDB, is already owned by the County, is a permitted site under the Power Plant Siting Act and has all the necessary infrastructure in place. There is a

residential community within 0.5 miles of the site, which has expressed significant opposition to the facility. The proposed WTE facility would be larger than the existing RRF, and this might complicate the air permitting process. The total acreage of the site is smaller and would not accommodate a robust solid waste campus as well as the other two sites under consideration. This site has the lowest operational costs as the system's infrastructure has been built around it and it is more centrally located. The other sites recommended will have operational costs associated with their use at approximately twice the amount of the existing site.

The Opa-Locka West Airport site is 416 acres of County-owned land that sits in the northwest portion of the county outside the UDB. It is the furthest site from the boundary of the Everglades Class I area and there is no agricultural activity on the site. Although this site remains within the Biscayne Bay Southeastern Everglades Ecosystem Restoration (BBSEER) study area, DERM staff has learned through its participation in Project Delivery Team meetings that this location has been removed from the Comprehensive Everglades Restoration Plan (CERP) footprint and it appears to have a lesser impact on the overall CERP project than the other alternative sites. It functioned as an airport for some time, although it was decommissioned approximately 15 years ago. As such, there was a prior governmental use on this property. In fact, the CDMP allows government facilities outside of the UDB when necessary. This site has the second shortest construction schedule, the fourth least expensive construction costs, but the operating costs are estimated at nearly double the operating costs at the RRF site. The site is large enough to accommodate a robust solid waste campus. The closest residential community is over half a mile away in Broward County and even further away in Miami-Dade County. It is not near utilities; therefore, long extensions will be needed to support the facility. Finally, because of its location at the northwest corner of the county line, DSWM would recommend adding a transfer station at the current RRF site to accommodate waste haulers given the longer drive to the WTE facility.

The Administration is recommending that the Opa Locka Airport West site be the preferred site for the location of the Solid Waste campus with the WTE facility. The location of a significant industrial facility close to residential areas is never a first choice. And moving the plant from one residential area to another, particularly a move from a higher income area in Doral to a lower one in Medley, does not make sense (and relocating people is not acceptable). The Opa Locka West Airport site is large enough to accommodate a robust Solid Waste campus and is less environmentally sensitive than the other sites outside the UDB. The estimated construction schedule is 9 years, 3 months, only 1.5 years longer than the Doral site. That time differential might be narrowed if the permitting process at the RRF site were tied up in extensive litigation (which would also drive-up the construction costs). As for infrastructure and utilities costs, portions of this site are also under consideration for an inland cargo facility for Port Miami, and some of those costs could be shared with that project. And the ability to have a larger campus at this site means we will have the ability to deploy more strategies to divert waste from our landfills and perhaps reduce disposal costs in the process. For these reasons, I recommend that the Board designate the Opa Locka West Airport site as the preferred site.

As the Arcadis Update Report notes, none of the sites are ideal candidates, and for all of them, there will be an extensive environmental and development permitting process. In conversations with representatives of Arcadis and others in the industry, there is no site that is guaranteed to

receive all the required federal and state permits. This raises the concern that by selecting a site that might not ultimately be permitted, we might find ourselves several years down the road and having to start over. In discussions with our consultants, there is a process in which one can work with FDEP and the EPA to conduct a preliminary review in a 6–12-month period and obtain early guidance from both agencies. My recommendation is that we present all three sites that have received serious consideration to both agencies for this preliminary review. If it turns out that our preferred site is not likely to be permitted but one of the other two sites receives a positive prognosis from the agencies, we would then be able to proceed on a timely basis with such site.

Procurement of the WTE facility

The Strategic Procurement Department is finalizing its selection of a Design Criteria Professional and Owner’s Representative for a new WTE facility. This contract, currently under the Cone of Silence, is one of the first critical steps to designing a new facility. The recommendation for the award is being prepared and could be presented to the Board for consideration in October. Concurrently, SPD has thus far received three responses to its Request for Information (RFI) for a future WTE facility and continues to accept responses from the industry. These two solicitations provide the Department flexibility to develop the optimal procurement for a future WTE facility, including a campus that integrates other waste diversion technologies, either under the RFI or through the traditional Design-Build mechanism.

Development of a Sustainability Campus Supporting Waste Diversion and Recycling⁵

In pursuit of meeting Zero Waste, recycling, and waste diversion goals, the Administration is procuring a design criteria consultant to support diversion and processing of recyclables and organic materials in the waste stream. This will be procured through the equitable distribution pool, which will expedite the process and facilitate integration of advanced sorting and organic processing technology into the planned sustainability campus that will house a new WTE facility. The consultant selected will evaluate alternatives for collection, sorting, and processing of these materials, recommend the best option for Miami-Dade County and develop design criteria to support designing and building appropriate waste diversion facilities to meet the County’s needs.

The selected vendor will evaluate, recommend, and develop design criteria for collection, sorting and processing of organic material, including wasted food and yard trash. According to DSWM’s 2021 Waste Composition Study, food waste was the largest component of the DSWM’s waste stream at 16.7%, with leaves and vegetation second, making up 11.6% of the waste stream, and other organics at 4%. As such, it is critical that we have the systems and infrastructure in place to support recycling organic materials in the waste stream for both food waste and yard trash.

⁵ Arcadis, the Bond Engineer for DSWM, was tasked last year with evaluating the latest commercially available processing technologies used in the solid waste industry that might be suitable for handling the County’s solid waste stream. Their report, dated June 2022, can be accessed through the link below. <https://www.miamidade.gov/solidwaste/library/state-of-the-waste-processing-technology-industry.pdf>

As noted earlier in this memorandum, these strategies are also part of the regulatory requirements to obtain federal and state permits for the WTE facility. But these strategies and waste processing technologies, when combined with a mass burn WTE facility of the scale recommended herein, also provide an opportunity to significantly divert waste away from our landfills. Our neighbors in Palm Beach County serve as a great example. The Palm Beach County Solid Waste Authority receives all the waste generated in Palm Beach County. They have two WTE facilities that collectively process 5,000 tons of waste daily, plus a very robust diversion and recycling program. As a result of their integrated plan, they do not landfill any solid waste generated in Palm Beach County.⁶ I believe we could accomplish the same here. But to take it one step further, right now DSWM only handles approximately 40% of the waste generated in Miami-Dade County. Before the fire at the RRF, we annually placed 1.25 million tons of waste into landfills. If our Integrated Solid Waste Management Plan is able over the long term to divert all that waste out of landfills, we have an opportunity to work with municipalities that don't currently use our disposal system and begin to divert that from landfills as well. A successful Integrated Solid Waste Management Plan gives us the opportunity to take that capacity on in the future and thereby expand the diversion program to such waste, expanding our environmental impact by reducing dependency on landfilling not just in the DSWM system, but countywide.

Specific technologies like anaerobic digestion and bio-gasification have been proven management tools for handling wasted food. These technologies can be developed at scale with reduced greenhouse gas emissions and environmental impacts when compared to mass burn and landfilling. The outputs of these technologies include both energy that the County could consume itself or sell back to the grid and digestate that can be processed into fertilizer, animal bedding, horticulture products like soil amendments, crop irrigation, and other products like building materials. The biogas from these processes can be used for heat, vehicle fuel, renewable natural gas, and feedstock for bioproducts/bioplastics.

In incorporating waste diversion infrastructure in the future Solid Waste campus, we are also considering the most effective and economic means to reach waste diversion and recycling goals through our collection and sorting processes. The design criteria procurement will analyze and recommend detailed criteria to support environmentally sustainable and economically feasible collection and sorting systems for DSWM streams. This review of collection and sorting operations and infrastructure will identify efficiencies to incorporate into the system that would be expected to increase the recycling rate for inorganic recyclables, as well as organic materials.

Long-Term Challenges and Opportunities **Development of a Zero Waste Master Plan**

One of the key assumptions in the analyses HDR performed in the 2020 Master Plan Update is that the County's waste generation rate would continue to increase in future years, given population growth and disposal trends over time. Landfills are an imperfect long-term solution to manage our waste: organics in landfills generate significant greenhouse gas emissions and make them one of the largest emitters of methane. The methane generated by landfills is over 25 times

⁶ They do landfill the ash generated at the WTE facility, but that does not create greenhouse gasses.

more potent a greenhouse gas than carbon dioxide at trapping heat in the atmosphere, according to the EPA. Closed landfills must be managed long-term to ensure safe environmental conditions. Currently, the Department spends \$5.1 million annually to manage closed portions of its landfills. The landfilling of potentially reusable materials also wastes valuable resources that could be repurposed and reused in the economy.

As we look to the future, it's critical that we take steps to build a more environmentally sustainable and resilient waste system. Zero Waste strategies are an important piece of this long-term vision that will reduce our waste output and ultimately save taxpayers money. I have directed the Office of Resilience to lead our efforts to develop a community-wide plan to transition Miami-Dade to Zero Waste. Zero Waste is an approach that calls for the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials in an environmentally, socially and economically sustainable manner – aiming to transition Miami-Dade County from a “take-use quickly-waste” system to a more circular system, in which as much material as possible is repurposed or recycled back to nature or to the economy. In consultation with the community, our cities, and the private sector, my administration is developing a Zero Waste Master Plan, which will outline best practices being employed in other communities while considering our unique capacity requirements and local and state laws and regulations.

It is important to note that the Department is already incorporating environmentally friendly, sustainable practices into our solid waste system. Some of these initiatives include:

Landfill Gas Collection and Control System. The Department has constructed a Landfill Gas Collection and Control System to collect and harness for future beneficial use of methane from its landfills. These systems will reduce the environmental impacts of methane produced at the landfills. Plans are underway to more effectively reuse this biomethane in our operations.

Home Chemical Collection Centers. The Department has opened two Home Chemical Collection Centers (HCCCs) which accept oil-based paints, pesticides, solvents, pool chemicals and other household items. Residents may also drop off some of these items for other residents to pick up and use as needed free of charge. This initiative keeps these chemicals out of landfills and provides a marketplace for their beneficial use in the community.

Electric Waste Collection Vehicles. In 2022, the Department acquired its first electric waste collection vehicle, powered by electricity generated at the RRF from the waste it collected. This vehicle represents the first step toward an all-electric fleet of waste collection vehicles powered using energy created at the County's WTE facility.

Used Oil Program. The Department has a used oil collection program at select TRCs and was expanded at two additional sites in 2022, bringing the sites to eight (two at our HCCCs and six at the TRCs). These sites make it convenient for residents to properly dispose of the oil so that it does not end up being poured onto the ground or into our waterways.

Alternative Funding Mechanism for DSWM

Before discussing an alternative approach to funding, it is important to note that such an approach cannot be adopted in time for FY 2023-24. We will need the proposed \$36 annual fee increase and transfer from the disposal fund to balance the collection side budget, continue operations without any service cuts, and begin to implement the plan outlined in this memo.

At the July 18, 2023, Board meeting, several Commissioners asked the Administration to return to the Board with a holistic approach to funding the waste collection and disposal systems that would be sustainable in the long run (no more “kicking the can”), which could provide for the adequate funding of long-term capital needs, and might even be able to enhance the services provided (e.g. more frequent bulky waste pickup). There were also concerns that fee increases impact some members of our community (e.g., elderly, and low-income families) more heavily than others. In the case of water and sewer rates, by comparison, the fee is tied to water consumption, and the actual cost for a household is determined by the amount of water consumed by that household. An elderly couple would likely have a much lower water and sewer bill than a family of five. In the case of solid waste, there is currently no mechanism in the County to track the amount of waste generated per household.

To clarify, in addition to a non-ad valorem fee, the Board does have the option to adopt an ad valorem taxing district that supports and/or replaces the fee. This solution would be developed with a comprehensive solid waste collections solution in mind to include, at the minimum, the following services:

- Enhanced illegal dumping enforcement,
- Operations of 13 trash and recycling centers (TRCs),
- Litter collection on designated roads and/or rights-of-way,
- Twice weekly garbage collection,
- Every other week recyclables collection,
- At least two – 25 cubic yard bulky waste pick-ups per year, and
- Residential waste services enforcement.

The Board could provide for enhanced service levels (e.g., more frequent bulky waste pick-ups) as part of rolling out the new financing mechanism. A similar solution may also be developed for a comprehensive disposal solution countywide, that could include the construction of the new WTE facility and other disposal services that may be proposed in the coming months.

We already have examples of these kinds of taxing districts at the County. Our outstanding public library system is funded by a dedicated millage rate paid by those who reside in UMSA and in those cities that do not have their own library system. Similarly, the Miami-Dade Fire Rescue Department is funded by a dedicated millage rate paid by those who reside in UMSA and in those cities that do not have their own fire departments. Rather than raising flat fees annually to keep up with rising costs, new construction and rising property values make it possible for these two departments to continue to offer outstanding service. Ad valorem taxes can also be pledged to support the issuance of bonds to pay for needed capital projects. Finally, as compared with flat

fees, ad valorem taxes reduce the burden on lower income individuals and families. Interestingly, in the early 1970s, the County funded the Department with real property taxes and not a flat fee.

These long-term comprehensive solutions cannot be developed in time for the adoption of the Fiscal Year 2023-24 budget, but we will be working with the County Attorney's Office to bring an item back to the Board as soon as possible, which could be as soon as the first or second quarter of next fiscal year. In the meantime, the collections fund will require the additional revenue generated from the proposed \$36 annual fee increase and the transfer from the disposal fund to be balanced and continue the operations and maintenance that is required.

Conclusion

The February 12th fire at the RRF has presented us an opportunity to not just build a replacement facility, but to implement a holistic integrated solid waste management system that enables us to collect and dispose of waste in a manner that is sustainable operationally, financially, and environmentally. As the Board wisely noted in July, we cannot continue to "kick the can" down the road and underinvest in our solid waste system. Significant investment will be required, but the timing is right to take advantage of federal and state grant programs on the capital side, and to restructure the funding mechanism in a way that keeps it affordable for our residents on the operational side. The Administration has set forth a series of recommendations at the beginning of this memorandum, and if directed by the Board, is prepared to bring forward the legislation and procurement items to implement those recommendations in the weeks and months to come. Palm Beach County can boast today that no waste generated in their county is sent to a landfill. Today is the day we can begin our journey to one day make that same proud declaration.

In accordance with Ordinance No. 14-65, this report will be placed on the next available Board meeting agenda. If additional information is needed, please contact Jimmy Morales, Chief Operations Officer, at jimmy.morales2@miamidade.gov.

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