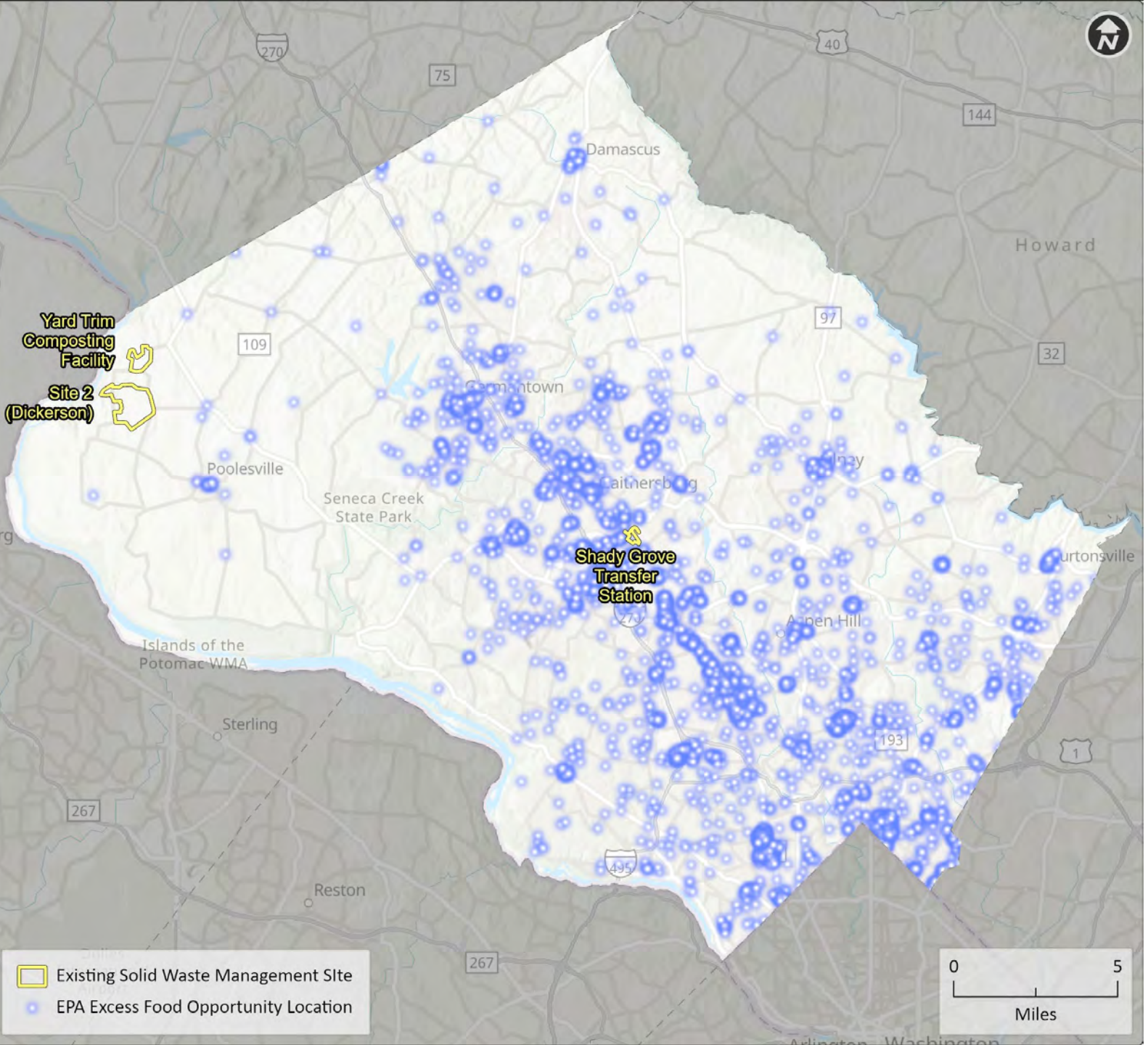

Organics Management Plan

Siting, Technology and Capacity Planning for Montgomery County

Presented to:
Solid Waste Advisory Committee
Montgomery County

Presented by:
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Craig Coker

3 April 2024

AGENDA

A | Scope, Assumptions, and Methodology

B | Feedstock Projections

C | Alternatives

D | Next Steps

A | PROJECT SCOPE

- Evaluate capacity planning, technology, and siting for a County-owned organics processing facility
- Planning Period 2025-2045
- Organic feedstocks include food scrap, non-recyclable paper, and yard trim
- Considered residential and commercial organics sources

A | PROJECT ASSUMPTIONS

- **Projections** developed to estimate County's capacity needs
- Co-collection vs. separate **collection** considered for food scraps and yard trim
- **Siting** considered Shady Grove TS, MCYTCF, and Site 2, and assumed
  - Shady Grove TS remains the central material receiving location
  - Material transport from Shady Grove TS can continue by rail or truck
- **Technology** review included aerobic/anaerobic equipment appropriate for capacity need identified; thermal processing and unproven technologies not considered
- Capital and O&M **costs** include 30% contingency, for comparison of alternatives
- Material disposal at the RRF did not factor into the analysis

A | EVALUATION METHODOLOGY

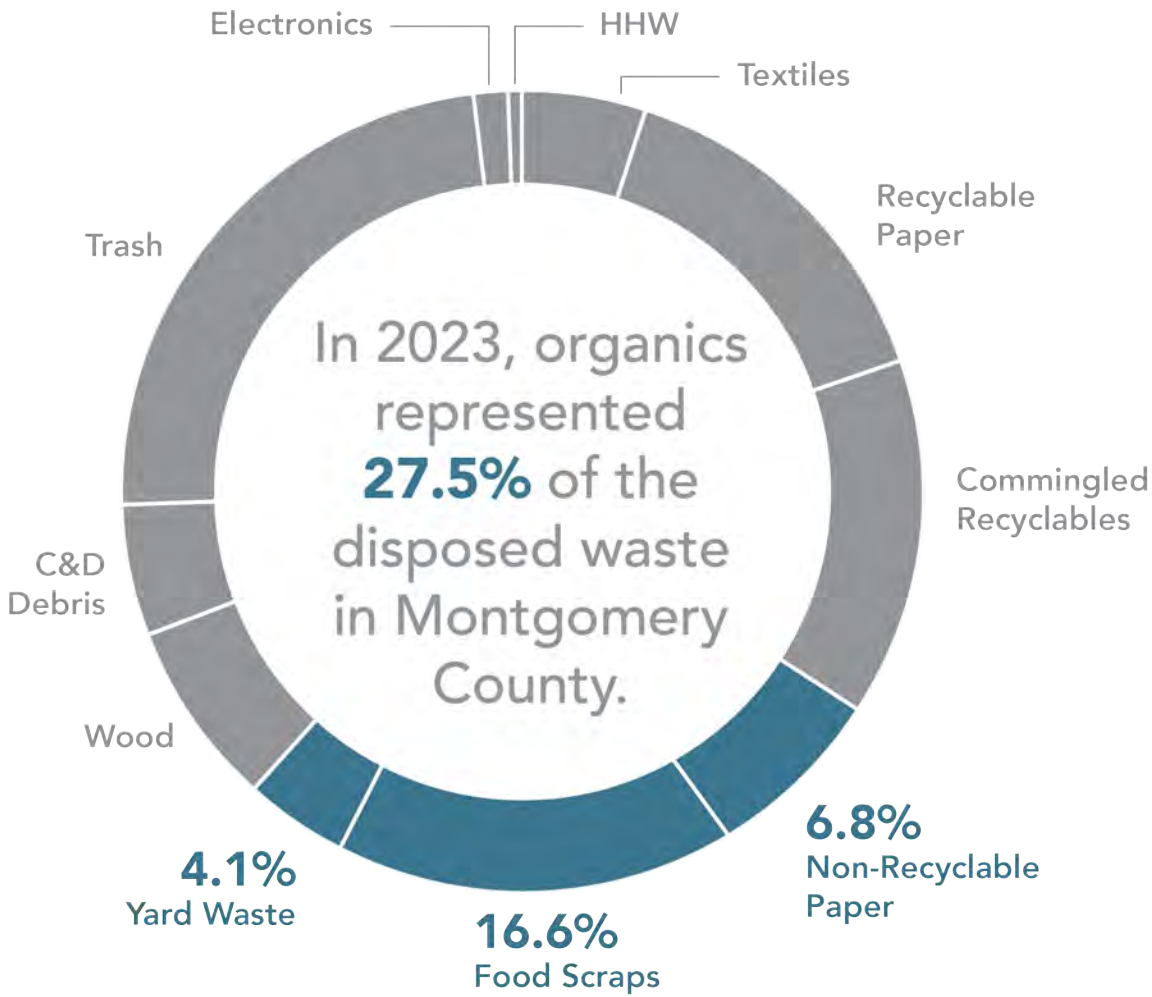
- Weighted Matrix Methodology
  - Evaluation Factors developed by County and EA Team
  - Alternatives ranked based on total weighted score

- Weighted Matrix Evaluation utilized to rank options considered
  - Processing Technologies
  - Facility Siting
  - Final Alternatives

Table 3-6. Evaluation Criteria

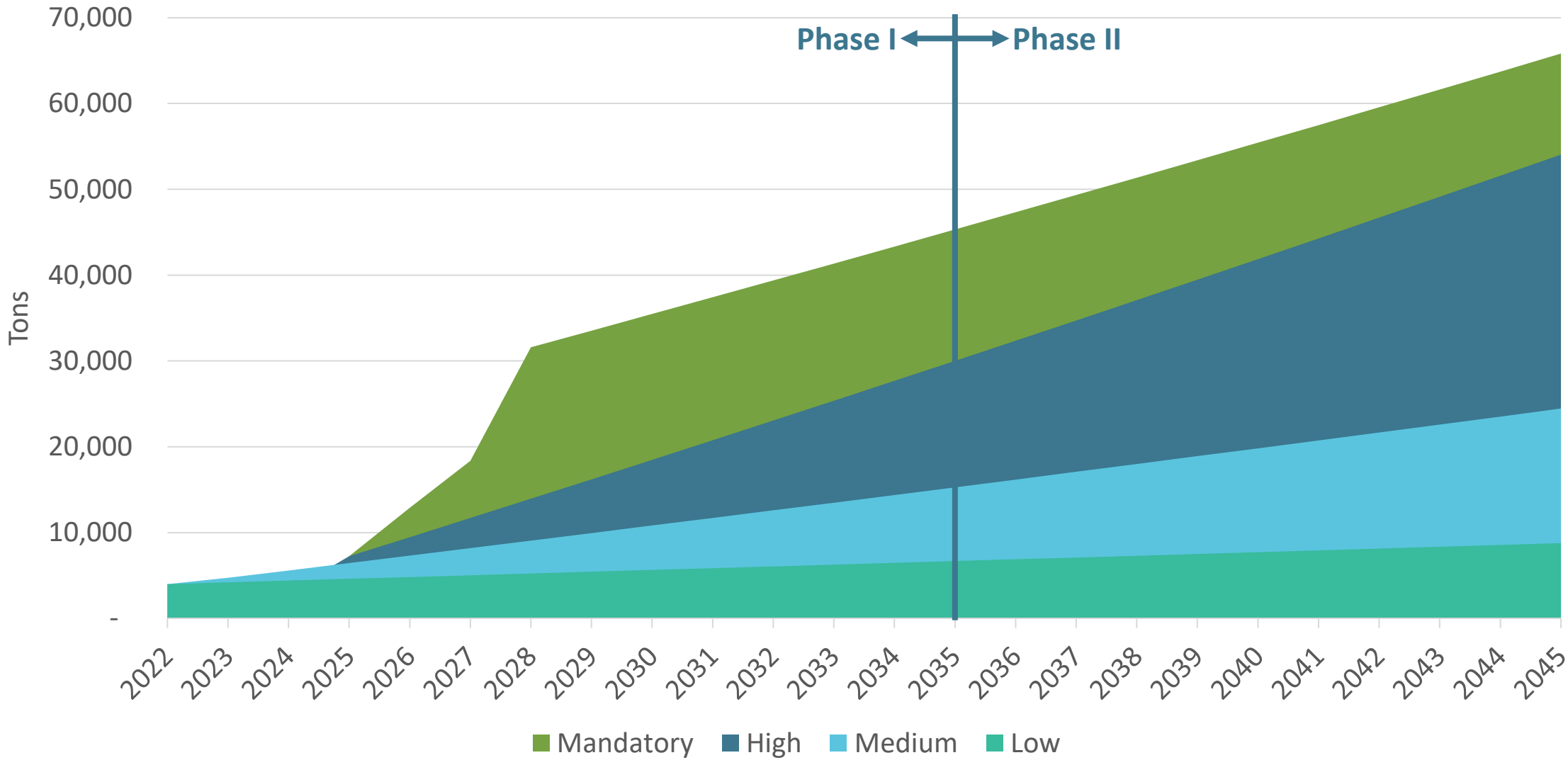
Criteria	Definitions
System Factors	
1 – Relative Costs	A technology with lower capital and operating costs will score higher.
2 – Ease of Construction	A technology that is easily constructed will score higher. This includes consideration of the County management of site development and processing technology installation.
3 – Proven Experience	A technology with more current North American installations will score higher.
4 – Reliability	A technology that minimizes process downtime of mechanical components will score higher.
5 – Adaptability	A technology that is easily adaptable in layout to fit the site area, and expandable to process additional feedstock intake, will score higher.
6 – Permitting	A permitting pathway that has greater definition and clarity of requirements will score higher. This considers permitting at the State and local level for site development around a given technology.

B | ORGANICS IN MONTGOMERY COUNTY

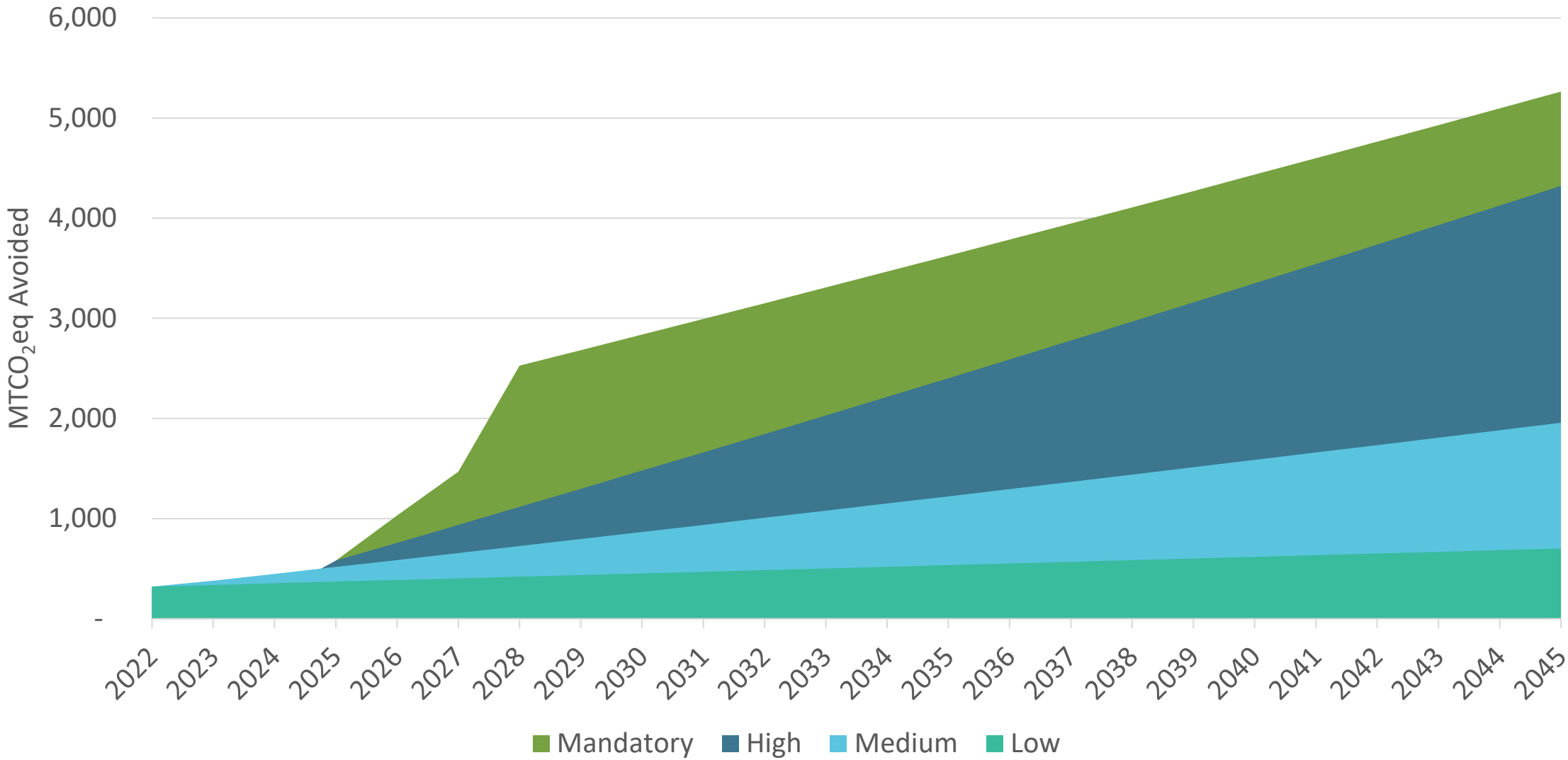


Source: SCS (2023)

B | FOOD SCRAP PROJECTIONS



B | GHG EMISSIONS AVOIDED



C | FINAL ALTERNATIVES OVERVIEW

- Final Alternatives
  - 5 alternatives developed based on top ranked technology and site
  - Represent options that are technically feasible
  - Other feasible options considered at high-level in report

- Analysis Boundary Conditions
  - No additional County-owned parcels were identified from GIS screening
  - Non-County-owned sites not considered
  - Material receiving at the Shady Grove TS
  - Material transport from Shady Grove TS by rail or truck
  - Food scrap and Yard Trim co-collection vs. separate collection

Technology	Ranking
Aerated Static Pile	1
Tunnel Reactor	2
Agitated Bed	3
Dry Fermentation	4
Rotating Drum	5
High Solids Plug Flow	6
Wet (low-solids) CSTR	7

Site	Ranking
MCYTCF	1
Shady Grove TS	2
Site 2	3

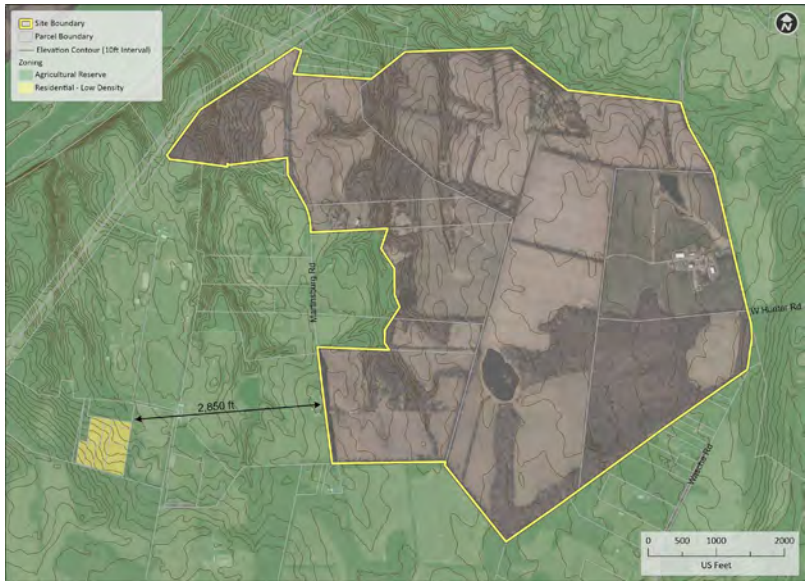
C | OPTION 1 – ASP COMPOSTING AT MCYTCF

General Description	Major Considerations for Implementation
• Aerobic processing utilizing biocovers or fabric covers over compost piles • Process controls to optimize material processing • Management of contact water required	• Material receiving from Shady Grove TS • Site upgrades to MCYTCF required • Established technology familiar to regulators

C | OPTION 2 – TUNNEL REACTOR AT SHADY GROVE TS

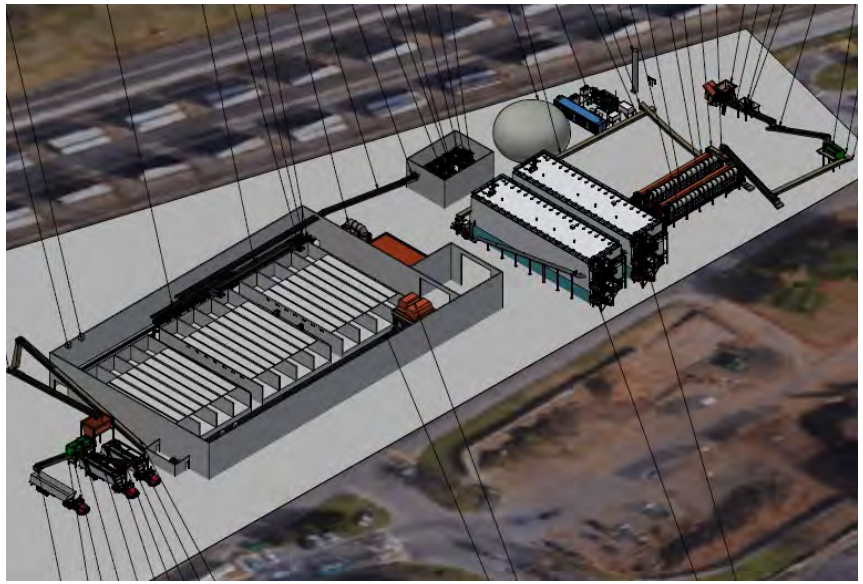
General Description	Major Considerations for Implementation
• Aerobic processing in sealed concrete bunkers • High degree of process control to minimize odors and optimize material processing • Minimal contact water generation	• Relocating current Shady Grove TS activities required, or acquisition of adjacent parcels • Material receiving and processing at Shady Grove TS with curing off-site with significant transportation cost • Significant capital costs for equipment and concrete construction

C | OPTION 3 – AGITATED BED AT SITE 2



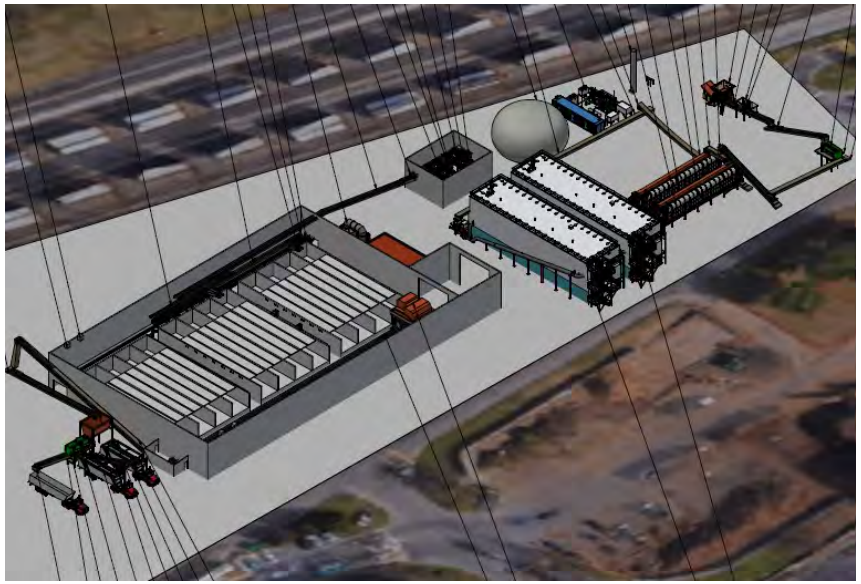
General Description	Major Considerations for Implementation
• Aerobic processing in long bays with mechanical auger, within odor-controlled building • Effective system for large-scale operations • Indoor processing yields little to no contact water • High degree of process control	• Significant capital costs for equipment and building • Material receiving from Shady Grove TS would require road access from RRF to Site 2

C | OPTION 4 – DRY FERMENTATION AD AT SHADY GROVE TS WITH IN-VESSEL TUNNEL REACTOR COMPOSTING AT MCYTCF



General Description	Major Considerations for Implementation
• Anaerobic digestion of food scrap and yard trim • Enclosed system yields little to no contact water • End products include digestate and biogas which require management • MCYTCF upgrades required	• Material receiving and processing at Shady Grove TS with curing off-site • Relocating current Shady Grove TS activities required, or acquisition of adjacent parcels • Unclear permitting pathway and unfamiliar to regulators

C | OPTION 5 - DRY FERMENTATION AD AT SHADY GROVE TS WITH WINDROW COMPOSTING AT MCYTCF



General Description	Major Considerations for Implementation
• Anaerobic digestion of food scrap and yard trim • Enclosed system yields little to no contact water • End products include digestate and biogas which require management • No MCYTCF upgrades required	• Material receiving and processing at Shady Grove TS with curing off-site • Relocating current Shady Grove TS activities required, or acquisition of adjacent parcels • Unclear permitting pathway and unfamiliar to regulators

C | ALTERNATIVES RANKING

Option Description	Ranking	Total Capital Cost	Annual O&M Cost
Option 1 – ASP Composting at Montgomery County Yard Trim Composting Facility (MCYTCF)	1	$31,235,000	$7,580,000
Option 3 – Agitated Bed Composting at Site 2	2	$89,632,000	$8,430,000
Option 2 – In-Vessel Tunnel Reactor Composting at Shady Grove TS and Product Finishing At MCYTCF	3	$62,811,000	$9,130,000
Option 5 – Dry Fermentation Anaerobic Digestion at Shady Grove TS with Product Finishing at MCYTCF	4	$107,866,000	$10,180,000
Option 4 – Dry Fermentation Anaerobic Digestion at Shady Grove TS with Product Finishing at MCYTCF via Tunnel Reactor Composting	5	$142,288,000	$11,640,000

D | NEXT STEPS

- Project Pathway prior to Alternative Selection
  - Community input and/or negotiations
  - Re-location of processing activities currently at Shady Grove TS
- Project pathway after Alternative selection – 2.5-4 years to operable facility
  - Issue RFQ/RFP for site design and permitting (3-6 months)
  - Develop Site Investigation and Site Design (12-18 months)
  - State and Local Permitting (12-18 months)
  - Project Bidding (3 months)
  - Facility Construction (12-18 months)
- Additional Programmatic Considerations
  - Material collection (co-collection vs. separate)
  - Outreach and Education

QUESTIONS?