DEVELOPING AN ORGANICS TO ENERGY PROGRAM: PARALLEL TRACK APPROACH TO MAXIMIZE THE BENEFITS

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Presentation Outline

- Introduction
- Project Boundaries
- Business Approach
- Status and Next Steps
- Q&A

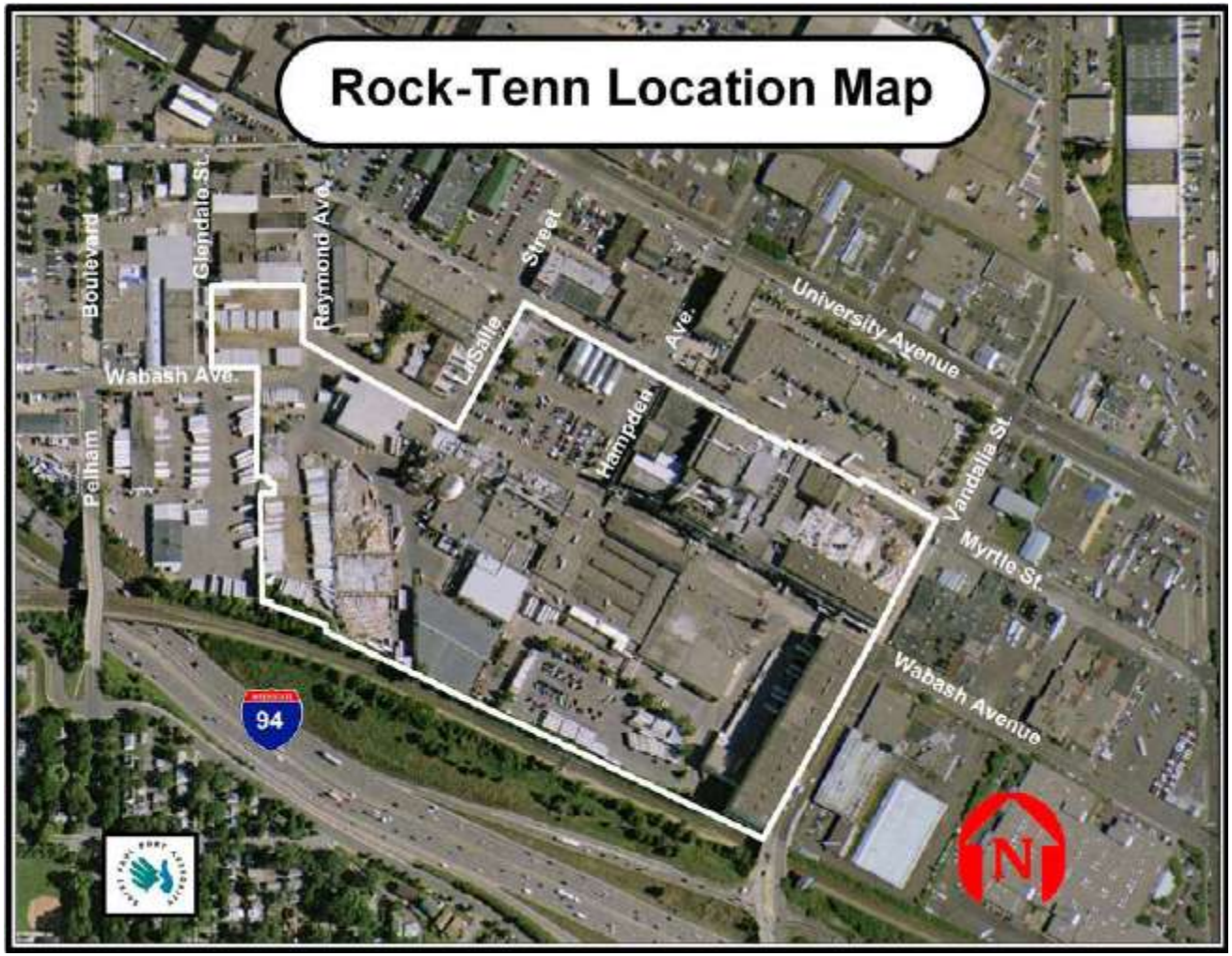
Saint Paul Port Authority and Sustainability

- State of Minnesota RPS of 25% by 2025
- Willingness to invest in sustainable energy sources
- Plans and support to develop a Central Corridor Energy District
- Supporting the viability and needs of Central Corridor businesses

Midway Organic Power Project

- Rock-Tenn – Minnesota's largest paper recycler
- Power needed for the Rock-Tenn facility equivalent to heating 22,000 homes
- Energy efficiency measures and renewable energy to improve current energy balance

Rock-Tenn Site



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Rock-Tenn Site

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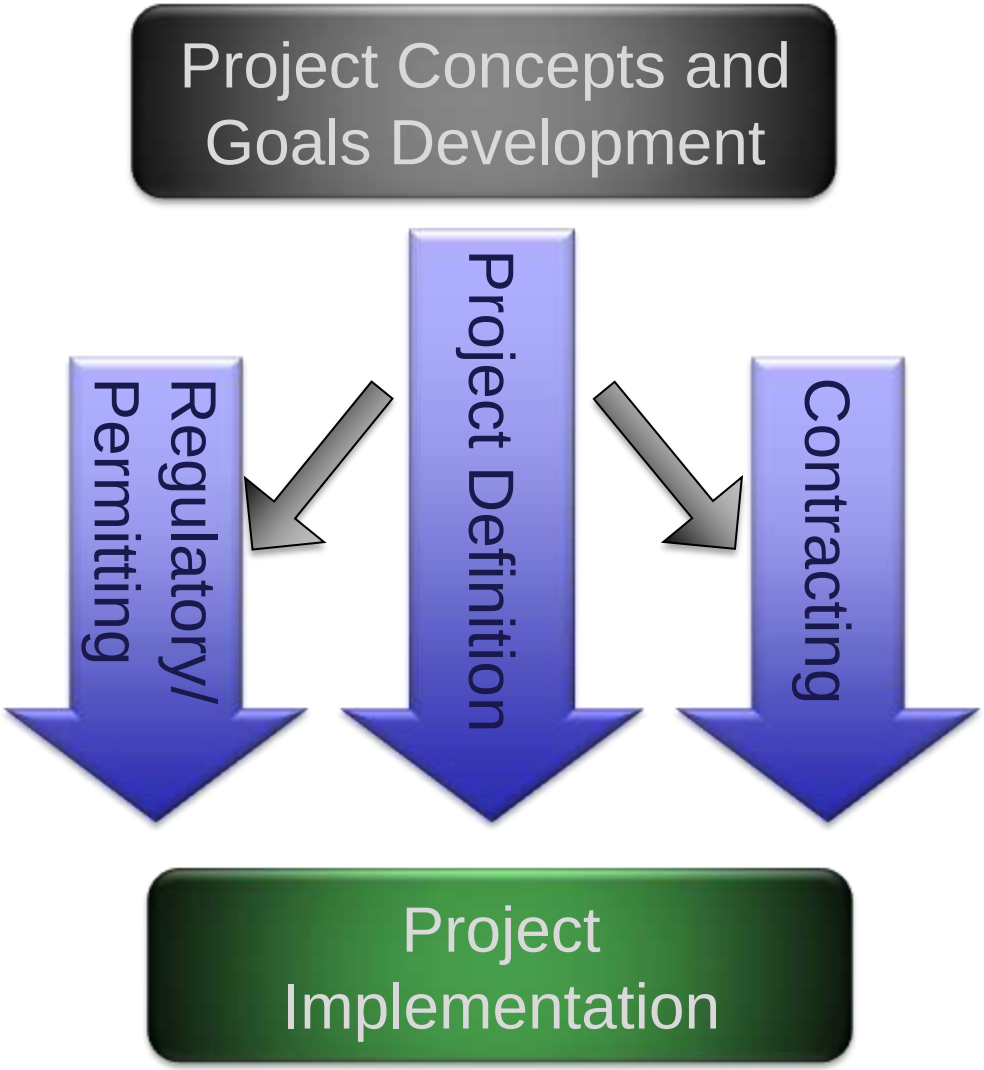
Midway Organic Power Project



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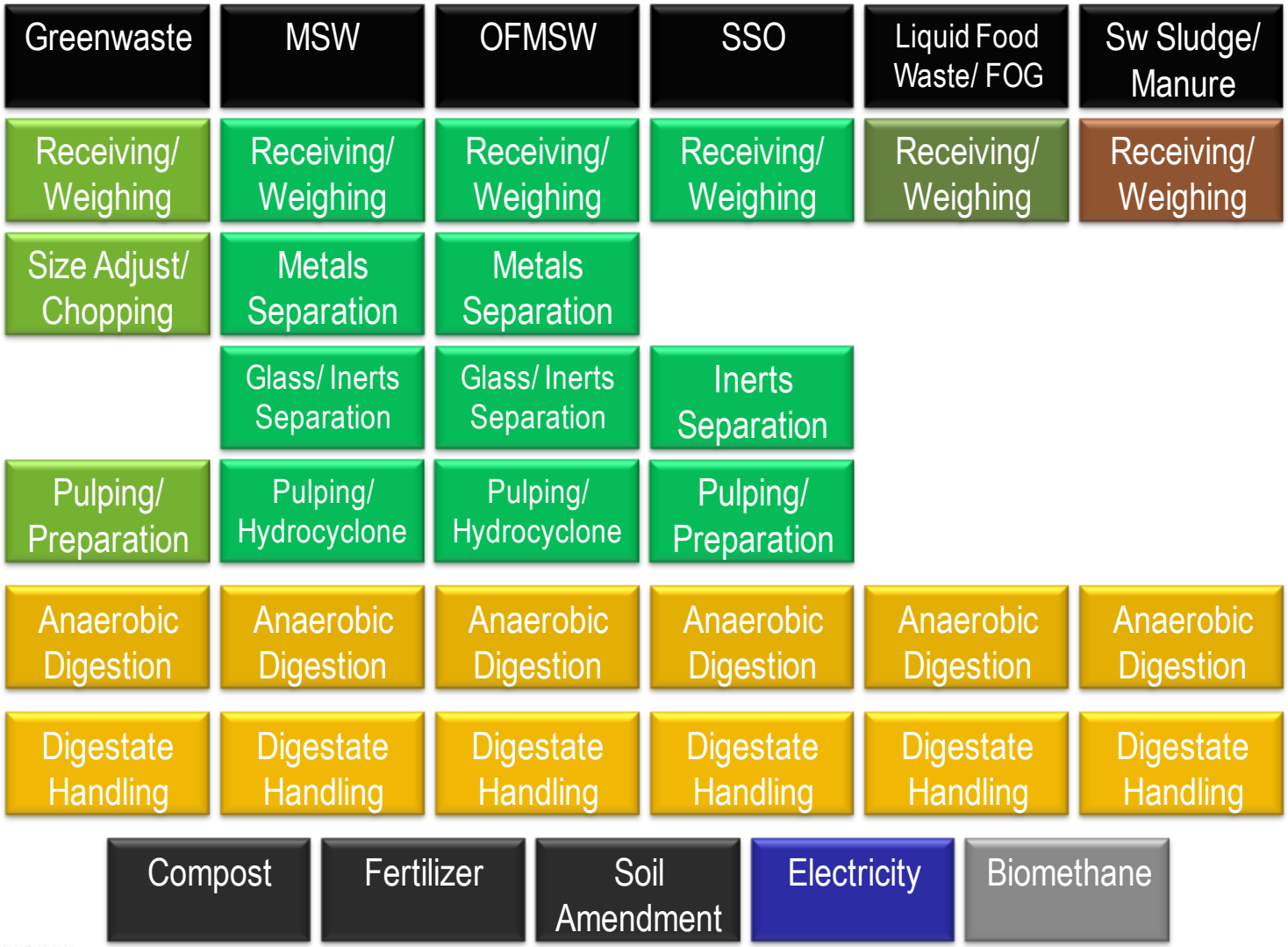
Midway Organic Power
Project Definition Elements

- Feedstock availability and characterization
- Technology screening given the feedstock characteristics
- Bounds of project definition for this 70,000 ton SSOM per year facility
- Feedstock handling methods
- Bioenergy production and engine sizing
- Products management options

Crank up an Old Technology
Anaerobic Digestion



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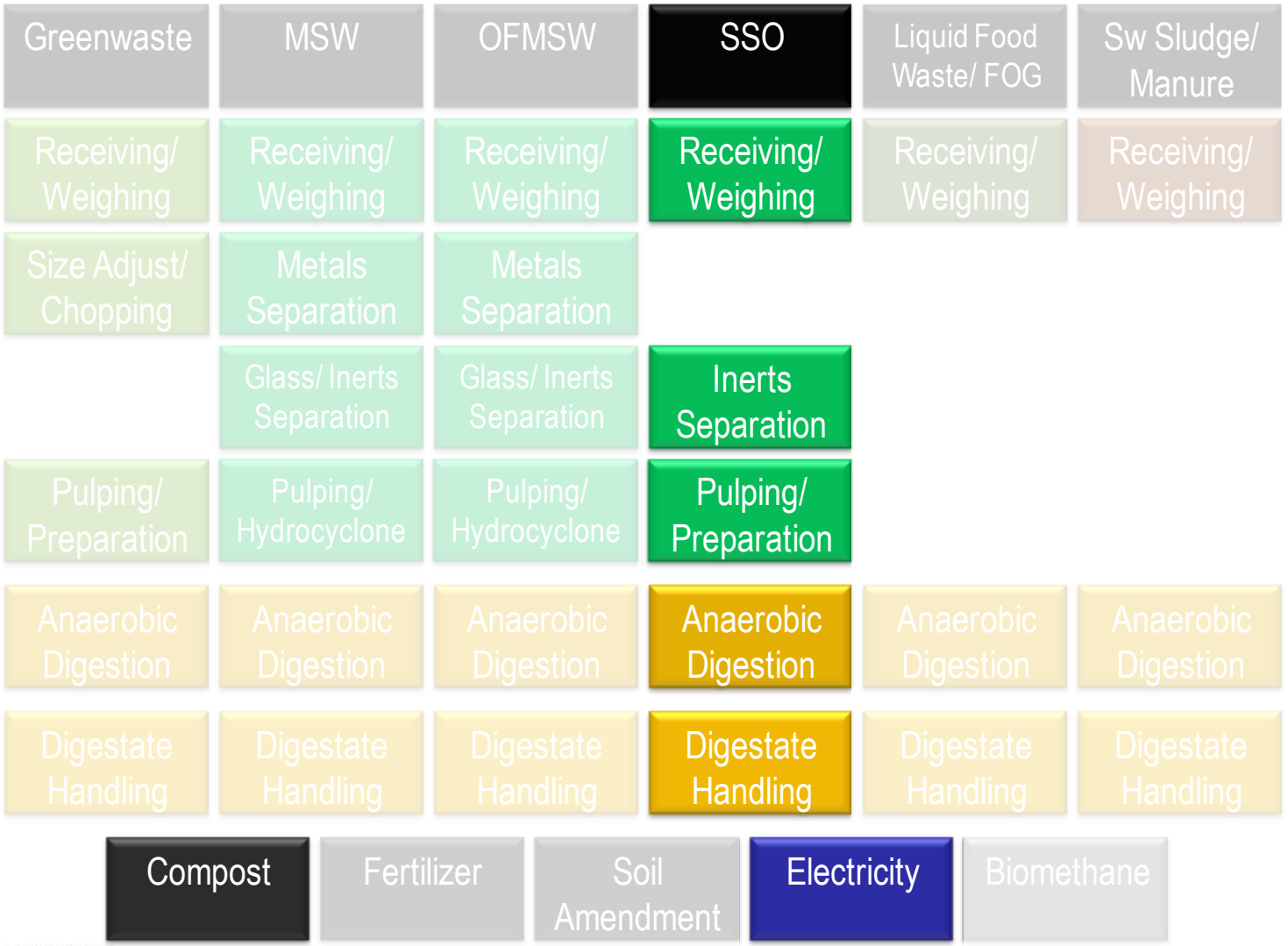
Midway Feedstock and Products



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Anticipated Feed Characteristics

Item	Estimated Design Value	Range
Total solids content of SSO including inorganic matter	35%	25 to 50%
Volatile solids as a percent of total solids	70%	55 to 90%
SSOM as received pH	5.5	4.5-7
Residential contribution as a percent of total SSOM	10%	0 to 20%
Commercial contribution as a percent of total SSOM	90%	80 to 100%
Food waste contribution as a percent of residential and commercial SSOM	55%	
Paper waste contribution as a percent of residential and commercial SSOM	35%	
Inorganic matter as % of residential and commercial SSOM	15%	

Low Solids AD Technologies

Feed Handling and Preparation

Feed Pulping

Biogas Storage and Energy Recovery

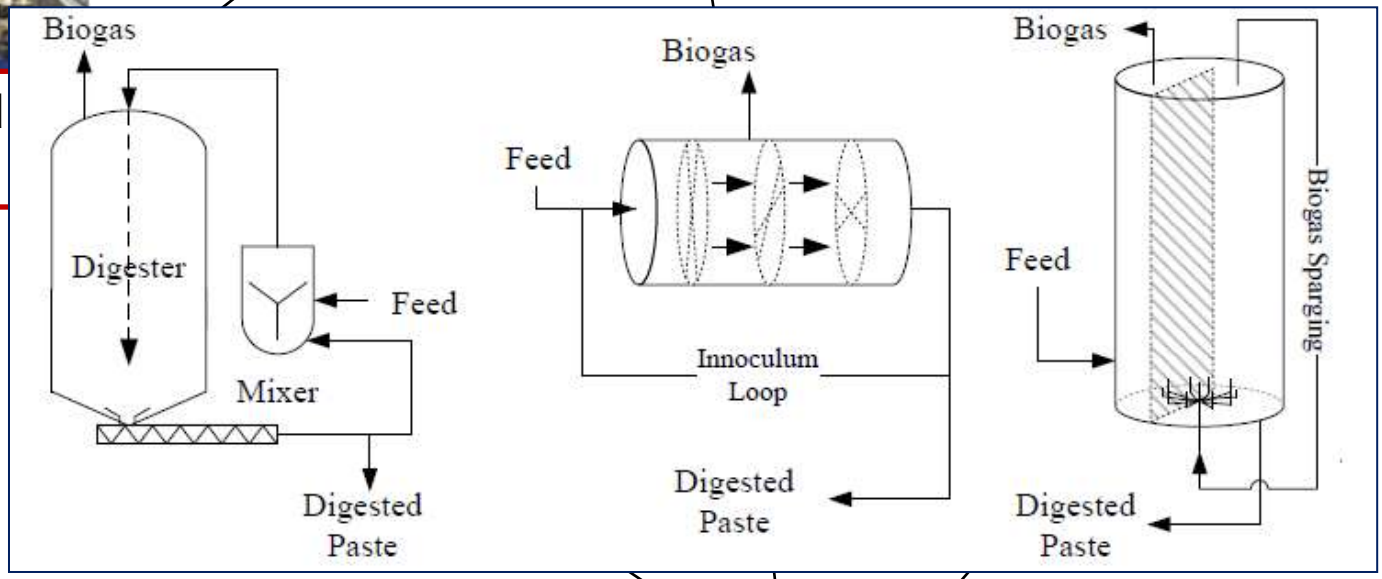
Digesters

Digestate Handling

High Solids AD Technologies

Feed Handling and Preparation

Biogas Storage and Energy Recovery



Digestate Handling

High Solids AD Technologies

Biogas Storage

Digesters

Digestate Handling

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Technology Screening Key Issues

- Experience with Municipal Waste and SSOM
- Biogas Yields
- Operating History at Multiple Facilities
- Operations Risks and Feedback
- Odor Management
- Waste Streams
- Flexibility in Project Delivery
- Other Considerations
  - *Life Cycle Costs*
  - *Reference Facilities*

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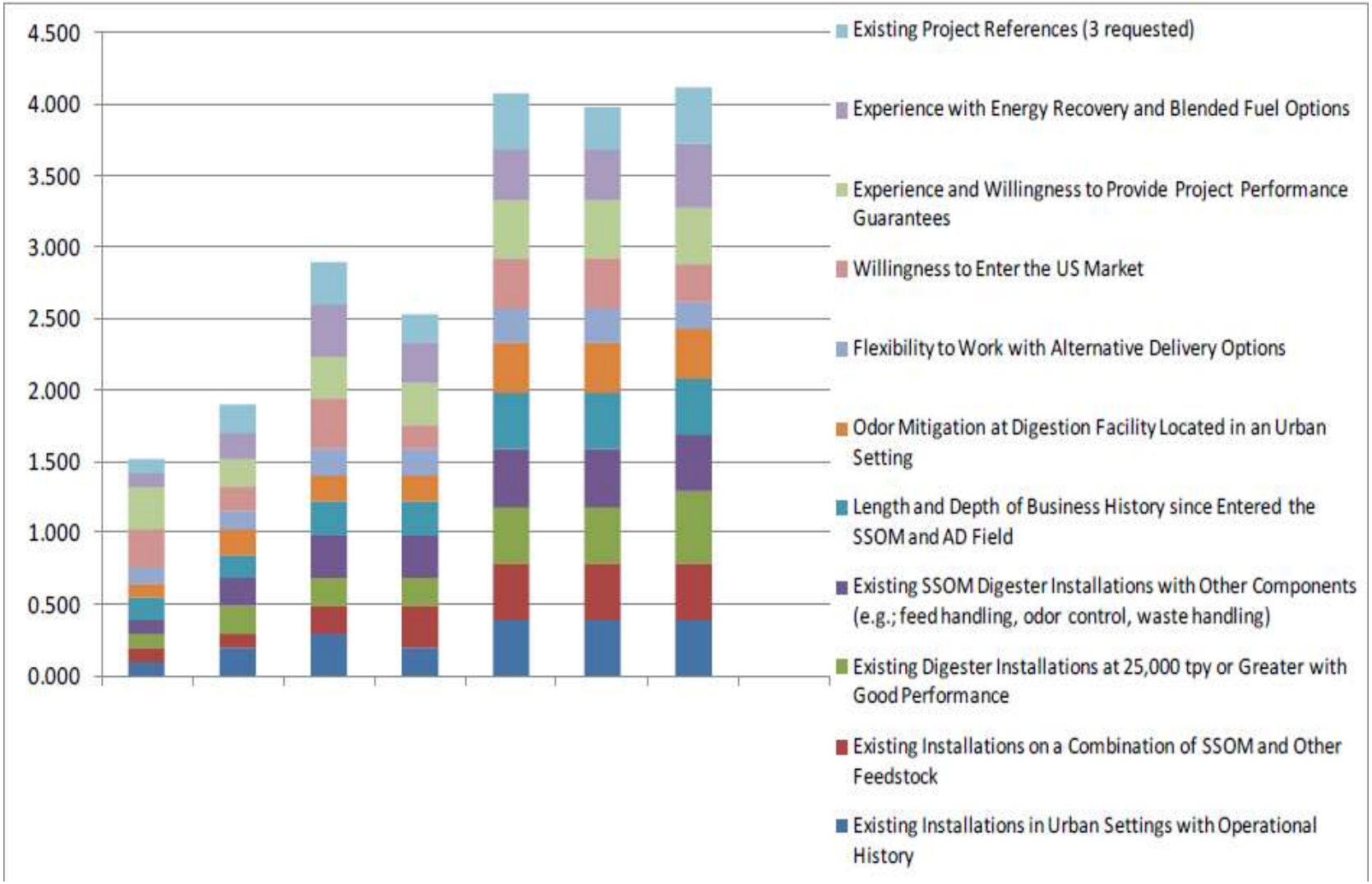
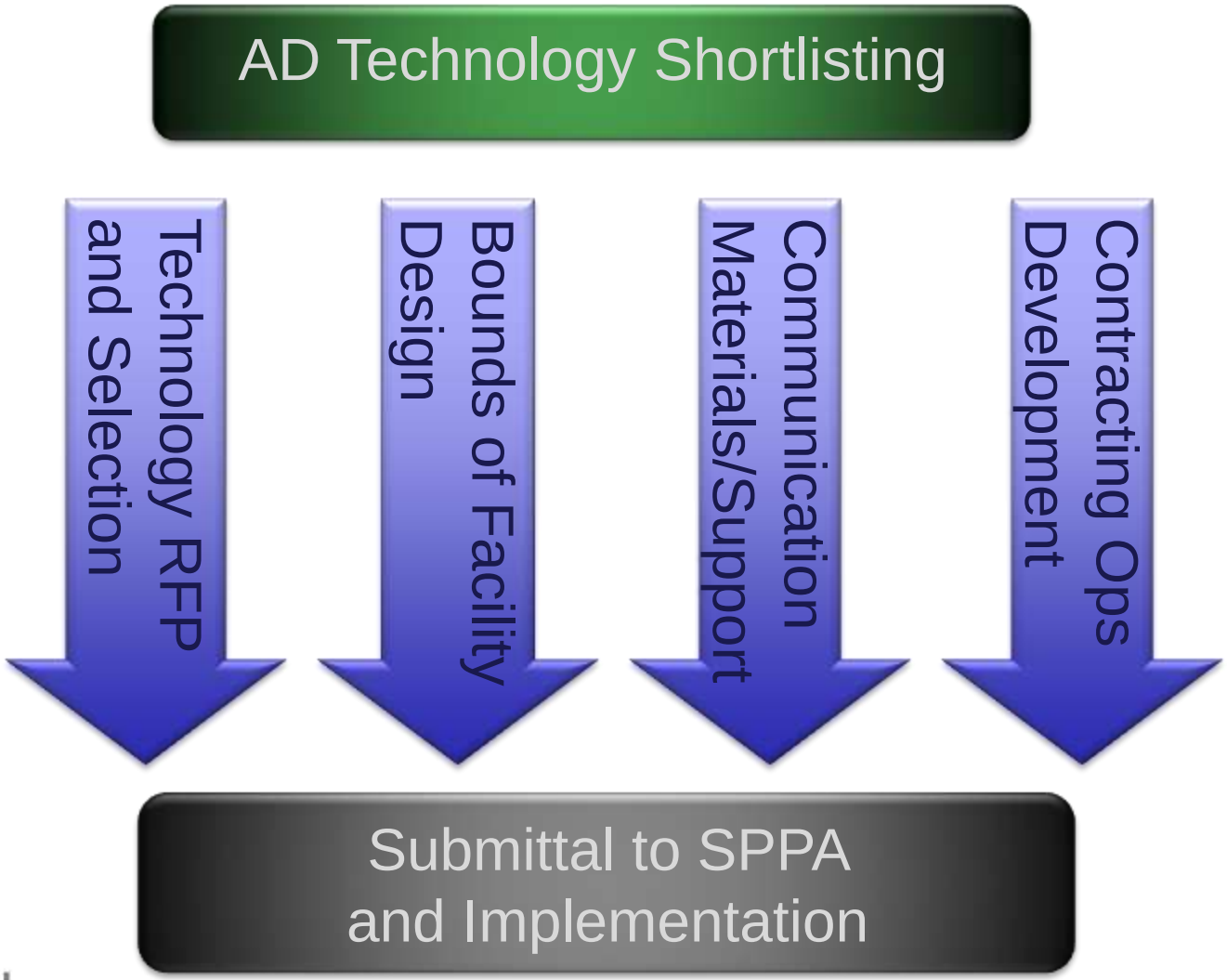
Technology Ranking Based on Selected Criteria and Scoring – Shortlisting



Project Definition Phase II



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RFP Process

- Identify a single, best value AD system supply for the Project
- Complement the Project permitting/ modeling/ environmental assessment worksheet schedule
- Complement the Project financing schedule
- Complement the integration plan for the development and implementation of all Project elements

RFP Process

- Shortlisted four
- Developed and sent Request for Proposals
- Received two
- Reviewed and selected one

Status and Next Steps

- Technology selected
- Continuing efforts to secure the 70,000 tpy feedstock
- Federal tax credit extension and low interest financing
- Communications with the elected officials

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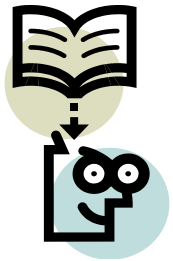
Questions



Comments

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