Capital Regional District
IRM Procurement Session

Dec 13, 2017

Introduction

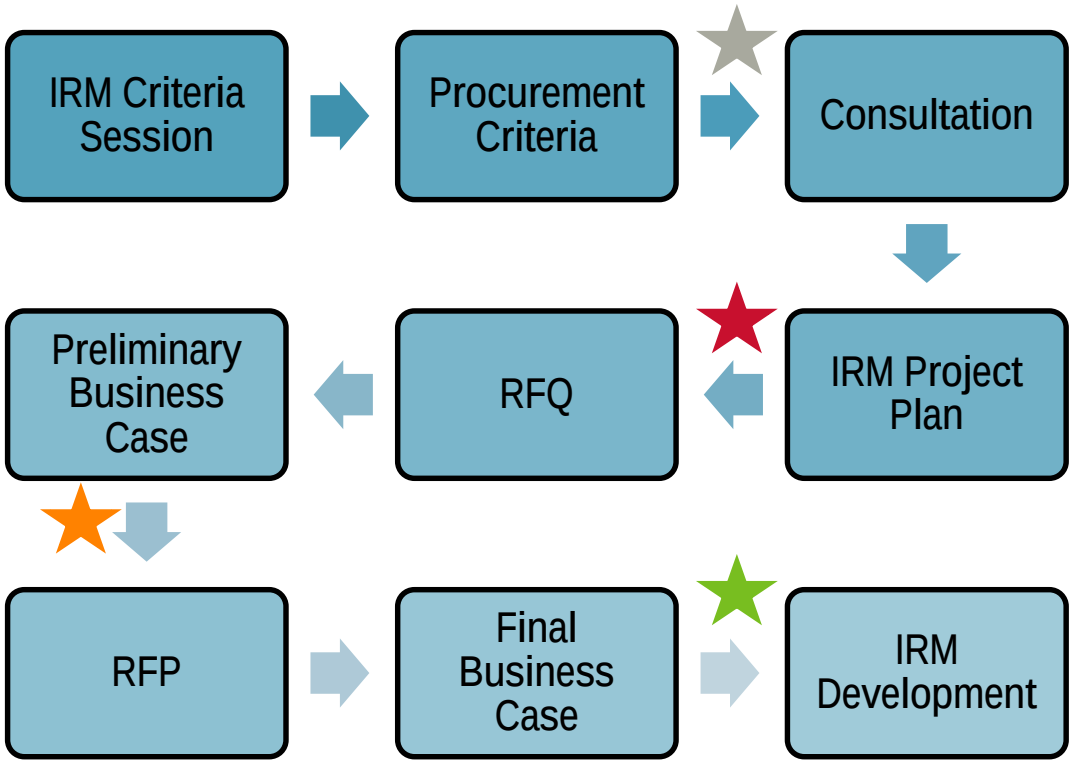
- Presenters today:
  - Janine Ralph
  - Tim Raibley

Purpose

- Confirm Key Considerations for the IRM Procurement Process
- Provide direction to the IRM procurement process through responses to key Issues
- Identify the type of deal structure and project financing approaches assumed for the IRM project

IRM Procurement Process

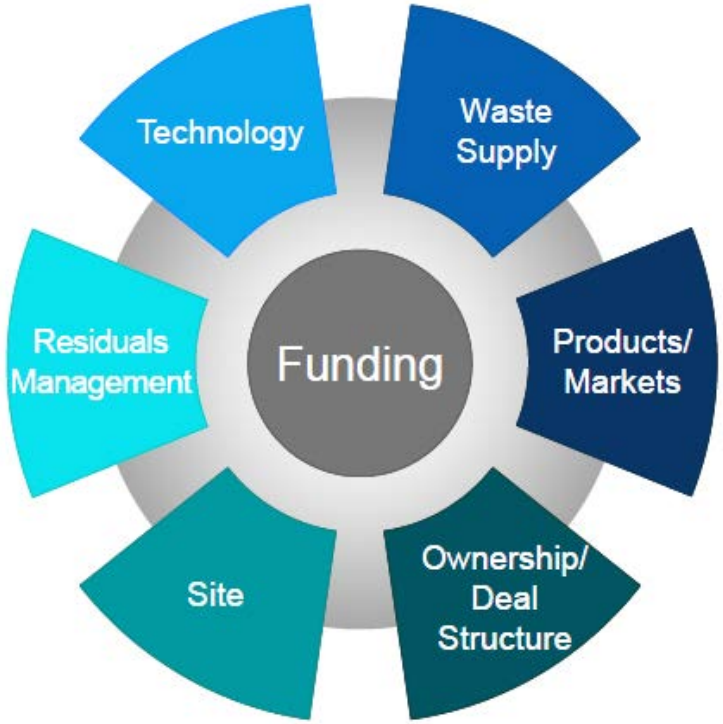
- Decision to Consult
- Decision to Release RFQ
- Decision to Release RFP
- Decision to Award



Format / Approach

- Session content is divided into three parts:
  1. Key considerations (affordability, priorities, drivers)
  2. IRM procurement key issues/decisions
  3. Deal structure and funding/financing
- Each part includes:
  - Presentation of information for discussion
  - Opportunity for Committee members to provide feedback on key questions that will provide direction to the IRM procurement
- The results would be used to inform development of a IRM consultation strategy and IRM framework

Primary Reason for the Session Today: A Successful Project



Key Elements

Potential Range of IRM Solutions

Range of potential outcomes from the IRM process includes:

- Single or Multiple Facilities
- Single or Multiple Technologies
- Regional and/or Sub-regional options

01 IRM Procurement Key Considerations

IRM Project Priorities / Drivers
Questions for Discussion

- On affordability:
  - What is the upper limit $/tonne (net)?
  - Should the range be set higher if just a subset of materials are directed to IRM?
  - Should the range be set lower if a broader range of materials were directed to IRM?

- How important is it that the IRM solution extends life of Hartland Landfill?
- How important is it that the IRM solution improves environmental performance (GHG emissions etc.)?

Range of Acceptable Costs, Affordability Range

Comparator	Cost per Tonne (CAD)
Hartland Landfill Tipping Fee	$110
CRD Waste Diversion Cost	$35
Hartland Landfill Operating Cost	$75
Kitchen Scrap Tipping Fee (cost recovery on contract)	$120
Metro Vancouver (Large Loads)	$80 plus haul
Washington State (Estimated)	$80 plus haul

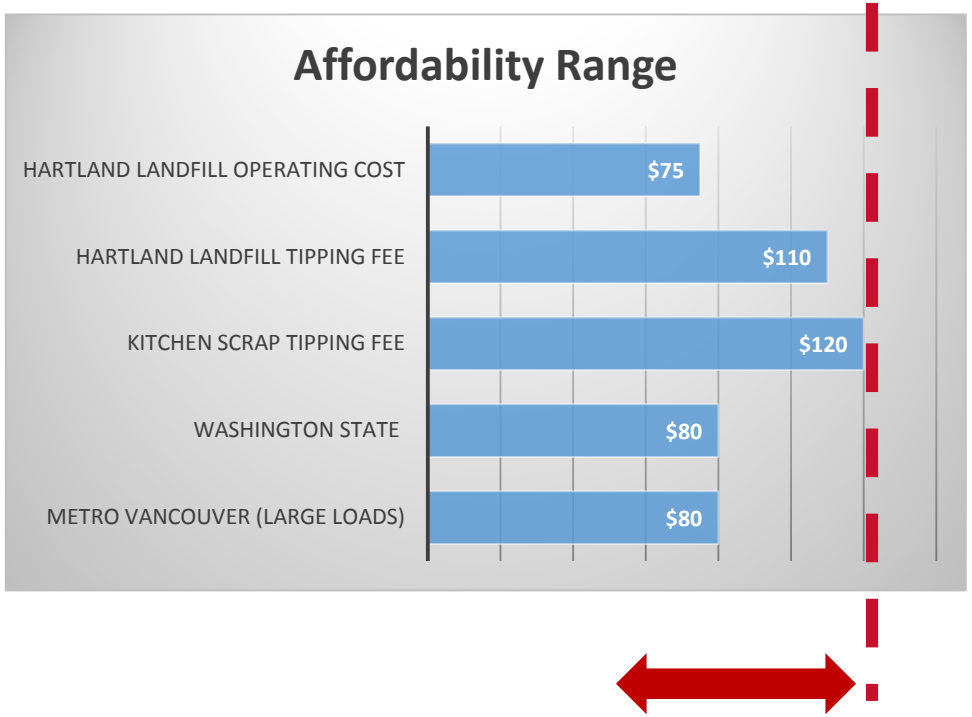
Range of Acceptable Costs, Affordability Range

Implications:

- Waste haulers are free to dispose of the refuse they collect wherever it is financially advantageous to do so
- Mainland facilities have competitive fees, some haulers are currently exporting materials
- Current Hartland Tip fee pays for landfill operating costs and CRD waste diversion (fixed cost). Changes to the tipping fee charged for disposal need to recognize how it is used to fund the system.

Range of Acceptable Costs, Affordability Range

- Is the upper limit $120/tonne (net)?
  - Higher?
  - Lower?
- Should the range be set higher if just a subset of materials are directed to IRM?
  - Yes
  - No
- Should the range be set lower if a broader range of materials were directed to IRM?
  - Yes
  - No



IRM Project Priorities / Drivers

- Potential to extend life of Hartland Landfill
  - Currently 30 to 35 years
  - Diversion of some or all refuse to IRM would extend life well beyond this
  - *If this is a priority – would influence decision on what materials are directed to IRM and on minimizing disposal of residuals*

- Environmental Performance / GHG Emission Reduction
  - IRM technologies will require technologies/design/operating parameters to control emissions and meet regulatory requirements.
  - Technologies/approaches are available that can exceed environmental performance requirements (e.g. tertiary treatment technologies etc.
  - Hartland landfill gas capture and utilization reduces GHG emissions
  - IRM technologies have ability to increase GHG Emission Reduction
  - *If this is a priority would influence requirements for and ranking of environmental performance provisions for IRM technologies, including ability to reduce GHG emissions*

IRM Project Priorities / Drivers

- How important is it that the IRM solution extends life of Hartland Landfill?
  - High
  - Medium
  - Low
- How important is it that the IRM solution improves environmental performance (GHG emissions etc.)?
  - High
  - Medium
  - Low

02 IRM Procurement Key Issues / Decisions

IRM Procurement Key Issues/Decisions
Questions for Discussion

- Site
  - Will the CRD provide a site at Hartland?
  - If not at Hartland, who would be responsible for siting process?
- Feedstock
  - What material streams will the CRD guarantee?
  - Would the CRD be willing to solicit other feedstock (e.g. out of region agreements)?
  - Would the CRD want the IRM respondents to solicit other feedstock?
- Products/Markets
  - Who will be responsible for marketing recovered materials and risk?
  - Who will be responsible for energy offtake agreements and risk?
  - Should the CRD ban on land application of Biosolids apply to any beneficial use product arising from an IRM facility which includes Class A Biosolids as a feedstock material, that is used in some form on ‘land’ (i.e. biochar, aggregate)?

Facility Siting – Fundamental Issues

Ability to acquire a site for the facility is a fundamental up-front risk affecting the ability to execute a project.

Most Respondents prefer public sponsor provides site:

- Indicates degree of municipal incentive/commitment to proceed with the project
- Public sector is often better positioned to undertake siting exercise and secure site
- Municipalities may transfer ownership or lease under DBFOM and Private Contract models

Facility Siting – Project Scoping in RFQ

RFQ will describe proposed scope of project including Siting

Should identify:

- Who will be responsible for providing a site
- If it is the CRD, provide information related to the potential site, and proposed terms under which the site would be provided
- If it is the respondent, provide information related to the CRD and CRD requirements related to haul distances, site characteristics, evidence of control, approval for intended use, etc. that would be required

Facility Siting – Respondent Qualifications

RFQ will request qualifications from the respondent

If the CRD provides the site:

- Information regarding the Respondent team experience with facility development
- Information regarding the Financial capacity of the Respondent. Financial institutions providing this information will want to know how site risk is being addressed.

If the CRD does not provide the site:

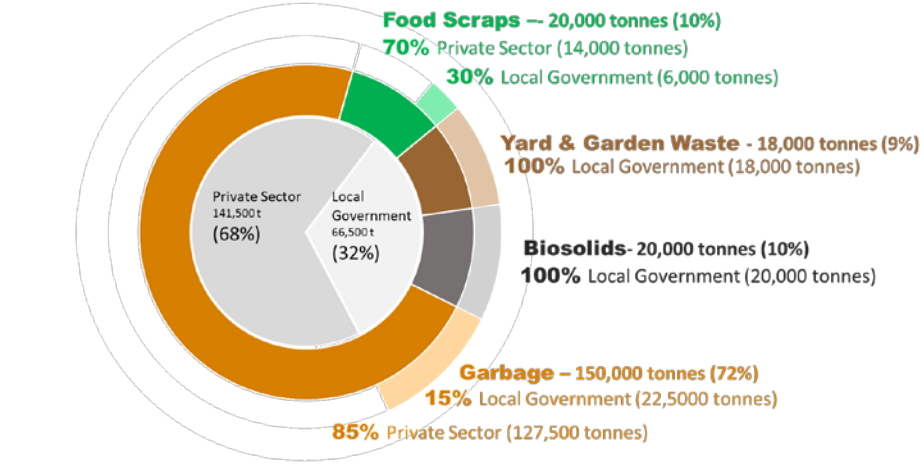
- In addition to the above, would seek information regarding the Respondent team experience with facility siting and a general description as to how they would proceed with the siting process

Facility Siting – Pre-Procurement Decisions

- Will the CRD provide a site at Hartland?
  - Yes
  - No
- If not at Hartland, who would be responsible for siting process?
  - CRD
  - Private Sector

Waste supply / Feedstock – Fundamental Issues

- Key to identifying suitable technologies
- Key for financial sustainability
  - Under private sector funded models, facility must earn sufficient revenues (incl. tip fees) to cover debt and operating costs
- CRD controls Biosolids stream
- Municipalities control Yard & Garden, some Kitchen Scraps and some Garbage
- Private sector controls the rest
- Approaches to control waste supply include long term supply agreements, flow control



Waste Stream Control
(Local Government, CRD and Municipalities

Waste Supply – Project Scoping in RFQ

RFQ will describe proposed scope of project including the proposed materials for IRM:

Should identify:

- The intended IRM facility capacity (or capacity range)
- The waste materials that would be the subject of the procurement
- The quantity and type of materials that the CRD may guarantee
- The quantity and type of other materials that the CRD may be able to provide, and the terms under which they could be provided
- The potential flexibility regarding the facility capacity and any expectations that Respondents secure any material supply

Waste Supply – Respondent Qualifications

RFQ will request qualifications from the respondent

- Information regarding the Respondent team experience with managing the waste materials that would be the subject of the procurement
- Information regarding the Financial capacity of the Respondent. Financial institutions providing this information will want to understand the potential waste supply guarantees
- Information regarding the approach that the Respondent would take in order to secure any additional material supply

Waste Supply – Pre-Procurement Decisions

- What material streams will the CRD guarantee?
  - CRD controlled feedstock (Biosolids)
    - Yes
    - No
  - Local government controlled feedstock (30% of Kitchen Scraps, Leaf & Yard, 15% of Garbage)
    - Yes
    - No
- Would the CRD be willing to solicit other feedstock (e.g. out of region agreements)?
  - Yes
  - No
- Would the CRD want the IRM respondents to solicit other feedstock?
  - Yes
  - No

Products / Markets – Fundamental Issues

- Viability of technologies (and IRM project) depends on ability to generate beneficial use products and there being a market for these products
- Respondents to RFEOI varied in opinion on who should bear energy / commodity risk
- Majority of solid products produced by IRM technologies are used in some form on land (nutrients, soil amendment, aggregate etc.)

Products / Market trends

- Economic drivers vary (energy markets, recycling markets, compost/digestate markets)
- Revenues tend to offset only a portion of Capital & Operating costs, rest have to be recovered from tipping fees
- Seek highest economic value to offset tip fees (e.g. from CHP to RNG or CNG low carbon intensity fuels)
- Consider ‘Conventional’ vs ‘Emerging’ technology product guarantees
- Feedstock quality strongly linked to product quality (and quantity) guarantees

Products / Markets – Project Scoping in RFQ

RFQ will describe proposed scope of project including expectations for generation of products:

Should identify:

- Requirements to generate products that have Beneficial Use
- Any market restrictions that would apply (e.g. CRD policy on land application)
- The role of the respondents and the CRD in securing markets
- The approach that may be used for revenue sharing

Products / Markets – Respondent Qualifications

RFQ will request qualifications from the respondent:

- Information regarding the Respondent team experience with generating Beneficial Use products from similar material streams
- Information regarding the Respondent team experience with marketing products / energy
- Information regarding the approach that the Respondent would take in order to secure markets for products from the IRM project

Products / Markets – Pre-Procurement Decisions

- Who will be responsible for marketing recovered materials and risk?
  - CRD
  - Respondents
- Who will be responsible for energy offtake agreements and risk?
  - CRD
  - Respondents
- Should the CRD ban on land application of Biosolids apply to any beneficial use product arising from an IRM facility which includes Class A Biosolids as a feedstock material, that is used in some form on ‘land’ (i.e. biochar, aggregate)?
  - Yes
  - No

03 Wrap-up:
IRM Procurement Considerations, Key Issues / Decisions

Outcome of Part 1: IRM Procurement Key Considerations

IRM Project Priorities / Drivers

- On affordability:
  - Is the upper limit $120/tonne?
  - Should the range be set higher if just a subset of materials are directed to IRM?
  - Should the range be set lower if a broader range of materials were directed to IRM?

- How important is it that the IRM solution extends life of Hartland Landfill?

- How important is it that the IRM solution reduces GHG Emissions?

Outcome of Part 2: IRM Procurement Key Issues / Decisions

Products / Markets – Pre-Procurement Decisions

- Who will be responsible for marketing recovered materials and risk?
- Who will be responsible for energy offtake agreements and risk?
- Should the CRD ban on land application of Biosolids apply to any beneficial use product arising from an IRM facility which includes Class A Biosolids as a feedstock material, that is used in some form on ‘land’ (i.e. biochar, aggregate)?

04 Deal Structure and Financing: Decisions

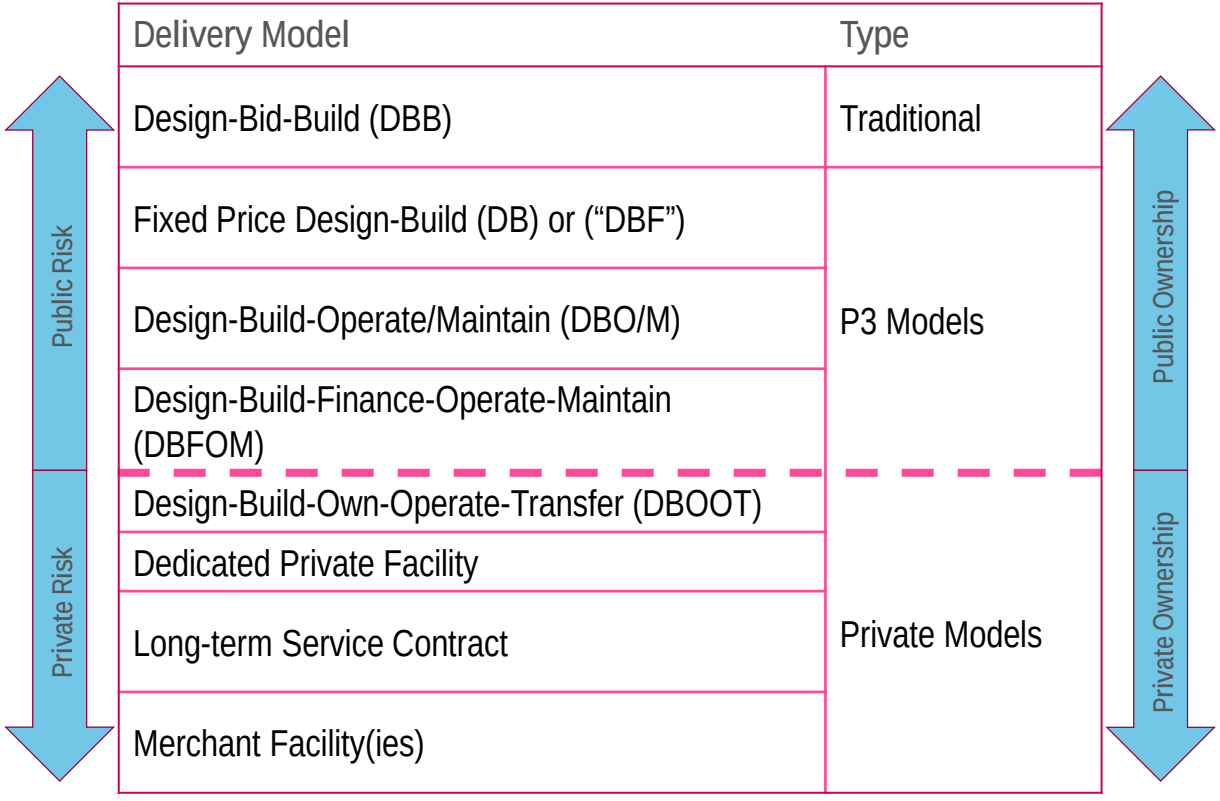
Deal Structure and Financing

- CRD Staff are currently reviewing the options for Deal Structure and Financing with the consultant
- Work to-date includes development of the detailed risk allocation matrix which is provided as information in Section 06 of this presentation
- The questions being examined are:
  - What is the preferred approach to allocating risk?
  - Considering the above, what is the preferred ownership arrangement?
  - If publicly owned, should the CRD consider financing an IRM solution?
  - If privately financed (DBFOM, Private Models), what material streams can/would be ‘guaranteed’ (e.g. type and tonnage) to help secure project financing and manage project risk? *Note: this will be informed by feedback received on the previous feedstock questions.*

Fundamental Issues

- Ownership is central to deal structure, financing and allocation of risk
- Technology risk is a key consideration:
  - Public ownership often linked to conventional technologies
  - When Respondent providing proprietary technology some form of public/private partnership usually used
- Moving risk to the private sector, often increases project costs
- Procurement approach reflects deal structure
  - Less complex procurement documents for DBB and Private Models
  - More complex requirements for DBOM and DBFOM

Ownership and Deal Structure Options



Delivery Model	Type
Design-Bid-Build (DBB)	Traditional
Fixed Price Design-Build (DB) or (“DBF”)	P3 Models
Design-Build-Operate/Maintain (DBO/M)	
Design-Build-Finance-Operate-Maintain (DBFOM)	
Design-Build-Own-Operate-Transfer (DBOOT)	Private Models
Dedicated Private Facility	
Long-term Service Contract	
Merchant Facility(ies)	

Financing / Funding

Financing requirements for private sector correlates with:

- Ownership / deal structure
  - DB and DBOM, private sector secures short-term financing for construction
  - DBFOM and Private Models, private sector provides all financing
- Commitment for waste supply - under DBFOM and Private Models, facility must earn sufficient revenues (tip fees) to cover debt
- A key threshold is the availability and amount of public funding for capital investment

What are the Risks?

Risk Category	Source of Risk	Risk Category	Source of Risk
Site Risk	- Acquisition - On site Conditions - Site Preparation - Land Use	**Energy / Market Risk**	- Fluctuation in demand - Long term stability
Waste Supply	- Delivery - Quantity - Composition	**Revenu**	ty Pricing ctuation edits/incentives
Facility	- Technology - System Performance - Operating Costs		ates - Bankruptcy - Market access
Construction	- Delay - Cost Overruns - Failure to meet Performance Guarantees	**Regulatory / Political**	- Failure to secure permits - Changes in regulations - Lack of support

Range of Risks during Development, Construction and Operation

Deal Structure / Ownership Options: Risk Allocation

Most Risks with the Public Sector

Largely Shared Risk

Most Risks with the Private Sector but not all

Risk Category	Alternative Deal Structure / Ownership Options Risk Typically Taken By					
	DBB Publicly Owned & Operated		DBOM / DBFOM Publicly Owned, Privately Operated		Private Models Privately Owned & Operated	
	Public Sponsor	Vendor / Developer	Public Sponsor	Vendor / Developer	Public Sponsor	Vendor / Developer
Site Risk	All		Most	Some		All
Waste Supply	All		Shared		Some	Most
Facility	Most	Some	Some	Most		Nearly All
Construction	Some	Most	Some	Most		Nearly All
Force Majeure	Shared					
Operations	All		Some	Most	Some	Most

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Alternative Deal Structure / Ownership Options Risk Typically Taken By					
	DBB Publicly Owned & Operated		DBOM / DBFOM Publicly Owned, Privately Operated		Private Models Privately Owned & Operated	
	Public Sponsor	Vendor / Developer	Public Sponsor	Vendor / Developer	Public Sponsor	Vendor / Developer
Energy / Market Risk	All		Some	Most		All
Revenue Risk	All		Some	Most		All
Financial Risks	All			All		All
Regulatory / Political	Most	Some	Some	Most	Some	Most
Project Default	Some	Some	Some	Some	Some	Some
Asset Risk	All		All			All

How Does Deal Structure & Financing / Funding Affect the RFQ?

- Clear definition of what the project is, and the roles of the CRD and Private Sector is required

- Will define required Respondent qualifications
  - Ability to Finance
  - Ability to Design/Engineer
  - Ability to Build
  - Ability to Operate

Pre-Procurement Decisions

- What is the preferred approach to allocating risk?

- Considering the above, what is the preferred ownership arrangement?
  - Public
  - Private
- If publicly owned, should the CRD consider financing an IRM solution?
  - Yes
  - No

Pre-Procurement Decisions

- If privately financed (DBFOM, Private Models), what material streams can/would be ‘guaranteed’ (e.g. type and tonnage) to help secure project financing and manage project risk?
  - Biosolids
  - Yard & Garden Waste
  - Organics
  - Garbage

05 Wrap Up:
Deal Structure and Financing Decisions

Outcome of Part 5: Deal Structure and Financing

Pre-Procurement Decisions

- What is the preferred approach to allocating risk?
- Considering the above, what is the preferred ownership arrangement?
- If publicly owned, should the CRD consider financing an IRM solution?
- If privately financed (DBFOM, Private Models), what material streams can/would be 'guaranteed' (e.g. type and tonnage) to help secure project financing and manage project risk?

06 Additional Information:
Deal Structure and Ownership
Detailed Risk Allocation

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Private Models Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Site Risk	On-Site Conditions	Ground/Subsurface Conditions/Obstructions	X		X			X
		Supporting Structures	X		X			X
		Unknown/Undiscovered Conditions	X		X			X
	Site Preparation	Preexisting Liability	X		X			X
		Site Remediation, Residual Disposal	X		X			X
		Pollution/Discharge	X			X		X
		Obtaining Permits	X			X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Site Risk	Land Use	Land Title	X		X			X
		On-Site Easements	X		X			X
		Development Costs (Utilities/infrastructure)	X		X			X
		Site Contamination /Decommissioning Costs	X			X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Waste Supply	Delivery	Quantity (Delivery Guarantee)	X		X	X	X	X
		Composition	X		X	X	X	X
		Quality And Energy Content	X		X	X	X	X
	Additional Capacity	Quantity (Inter-local agreements?)	X		X	X		X
		System Sizing	X		X	X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/ Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Facility	Technical Approach	Overall Configuration		X		X		X
		Impacts To Existing Operations	X		X			X
		Technology Efficacy		X		X		X
	System Performance	Design Errors		X		X		X
		System Efficiency	X	X		X		X
		Regulatory Compliance	X	X	X	X		X
		Outages And Excessive Downtime	X	X	X	X		X
	Operating Costs	Higher Than Anticipated Maintenance Costs	X			X		X
		Repair And Replacement of Components	X			X		X
		Residue Disposal	X		X	X	X	X
		Residue Quality/Quantity	X			X		X
		Damages/Repair/Replacement (During term of agreement)	X			X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Technical Risk During Construction	Non-Performance	System Not Completed		X		X		X
		Equipment/Component Failures		X		X		X
		Strikes Or Service Interruptions	X	X	X	X		X
		Fault in Specifications	X	X	X	X		X
		Contractor Design Fault		X		X		X
Construction Risk	Cost Overrun	Inefficient Work Practices and Wastage Of Materials		X		X		X
		Contract Change-Orders	X	X	X	X	X	X
		Changes In Law or Regulation	X	X	X	X	X	X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Construction Risk (Continued)	Delay in Completion	Delays in Regulatory Approval, Etc.	X		X			
		Lack Of Coordination Of Contractors		X		X		X
		Failure To Obtain Standard Planning Approvals		X		X	X	X
		Insured Force Majeure Events	X	X	X	X		X
	Failure to meet performance criteria	Quality Shortfall/Defects In Construction/Commissioning Tests Failure		X		X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Force Majeure Risk		Floods	X	X	X	X	X	X
		Earthquake	X	X	X	X	X	X
		Acts of God	X	X	X	X	X	X
		Riots	X	X	X	X	X	X
		Strikes	X	X	X	X	X	X
Facility Operating Risk	Operating Cost Overrun	Change In Practice	X			X		X
		Industrial Relations	X			X		X
		Occupational Health and Safety	X			X		X
		Maintenance and Other Costs	X			X		X
		Regulatory Change Affecting Output	X		X	X	X	X
	Delays or Interruption in Operation	Operator Fault	X			X		X
		Government Action or Intervention	X		X	X	X	X
	Shortfall in service quality	Project Company LLC Default	NA		X	X	X	X
		Sale of project to another company (increased cost)	NA		X	X	X	X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Energy/ Market Risk	Purchase and Use of Materials	Fluctuation In Demand	X		X	X		X
		Take/Use or Pay Costs	X		X	X		X
		Long-Term Market	X		X	X		X
	Compliance	Permit	X			X		X
		Emissions	X			X		X
Revenue Risk	Decreased Revenue	Index Changes	X			X		X
		Contractual Violations	X			X		X
		Market Fluctuation in energy prices and environmental attribute value.	X		X	X		X
	Change In Taxes, Laws, Tariffs	Fall In Revenue	X		X	X		X
		Loss of Tax Credits or Incentives.	X		X	X		X

Deal Structure / Ownership Options: Risk Allocation

Risk Category	Subcategory	Source of Risk	Under Alternative Project Structures Risk Typically Taken By					
			DBB Publically Owned/Publically Operated		DBOM / DBFOM Publically Owned/Privately Operated		Privately Owned/Privately Operated	
			Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer	Public Sponsor	Vendor/ Developer
Financial Risks	Interest Rates	Fluctuations	X			X		X
	Inflation	Payments Eroded By Inflation	X			X		X
Regulatory/ Political Risks	Change in Law	Construction Period	X	X	X	X	X	X
		Operating Period	X		X	X	X	X
	Political interference	Breach/Cancellation	X			X		X
		Expropriation	X			X		X
		Failure To Renew Approvals	X		X	X	X	X
		Discriminatory Taxes	X		X	X	X	X
Project Default Risk		Combination of Risks	X	X	X	X	X	X
		Bankruptcy	NA		X		X	
Asset Risk		Technical Obsolescence	X		X			X
		Residual Asset Value	X		X			X