



# Strategic Review of Wastewater Solids Management

Biosolids Advisory Committee

April 4<sup>th</sup>, 2017

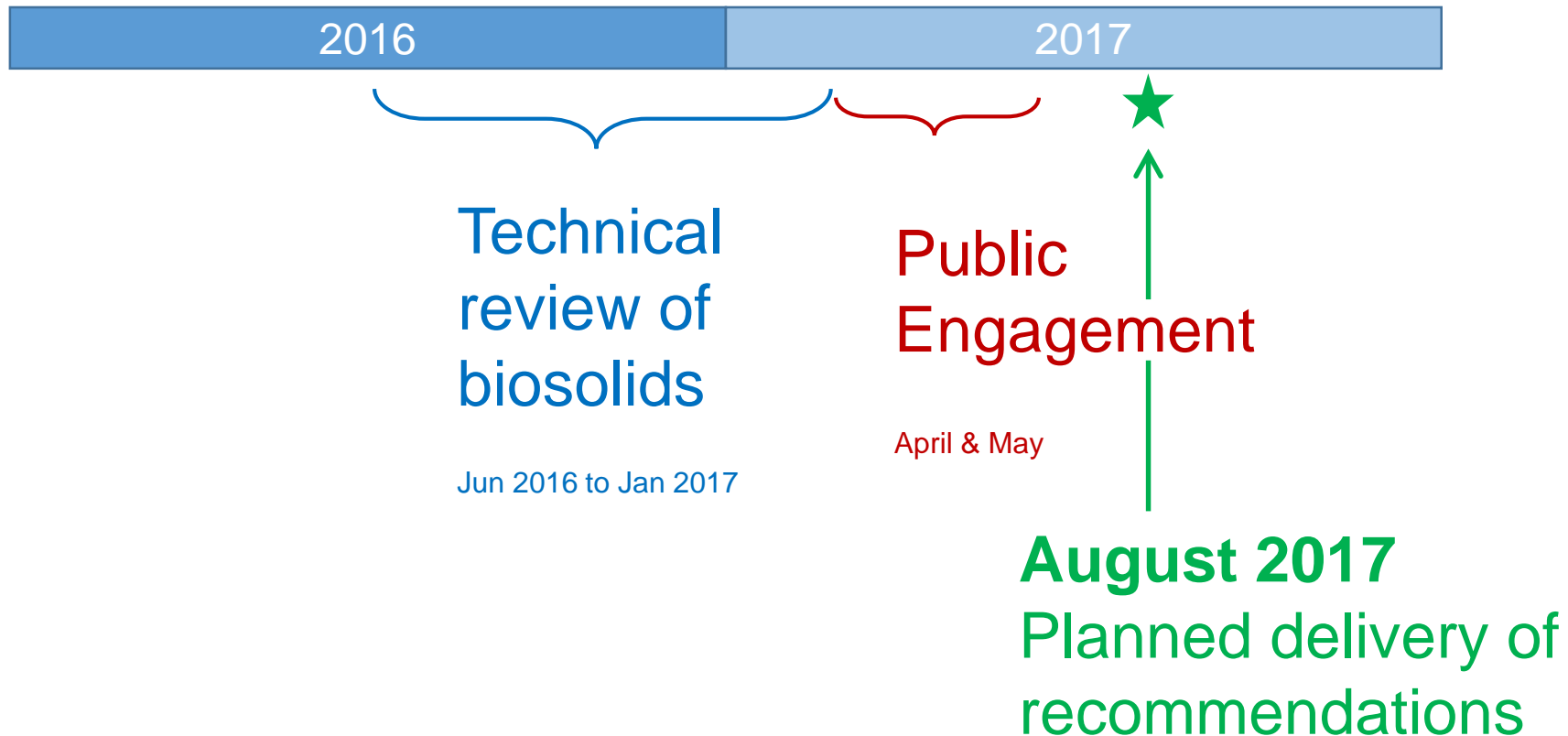
# • Overview

Summary of Biosolids Management Study

And

Introduction to Public Engagement Plan

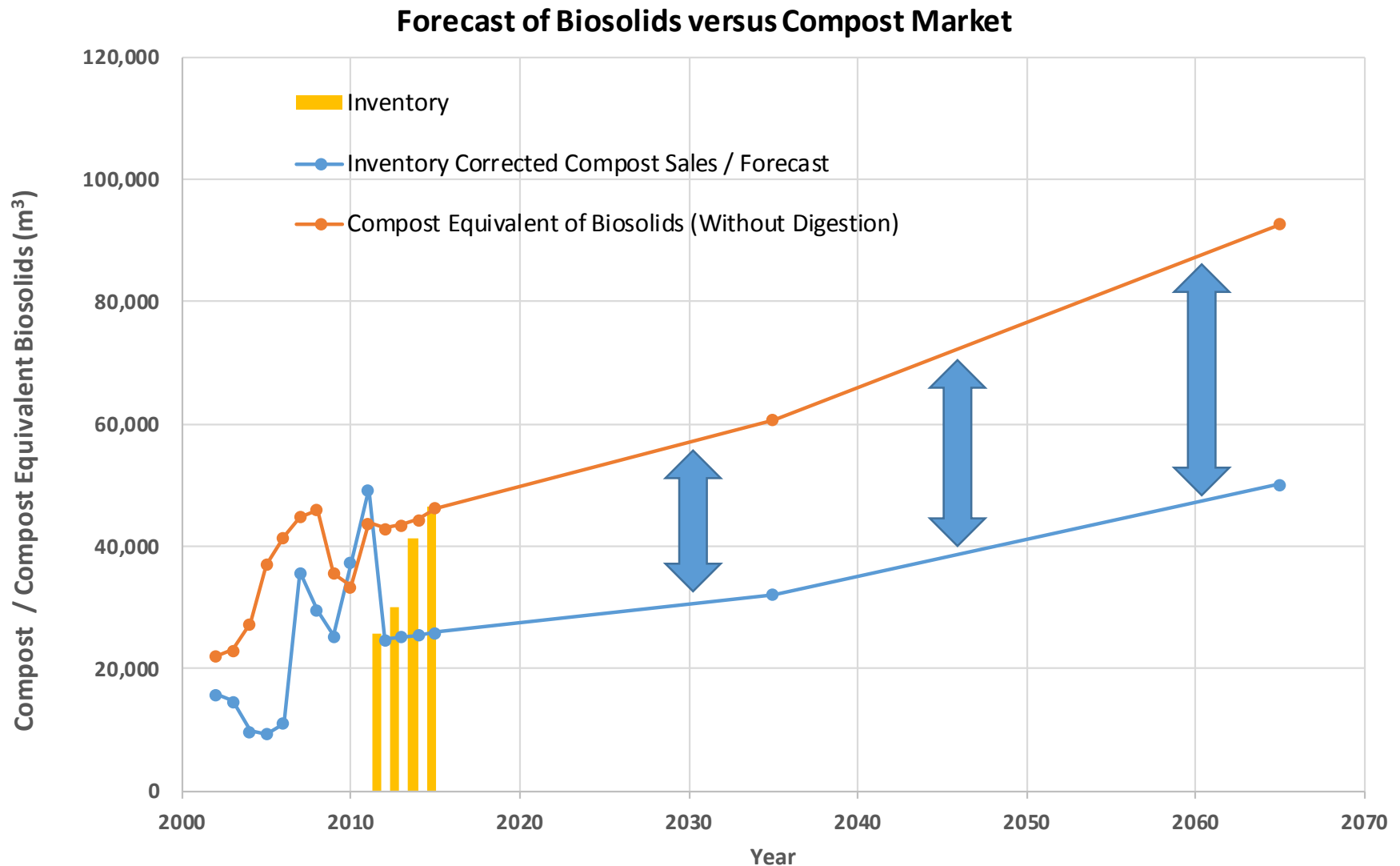
# Project Schedule



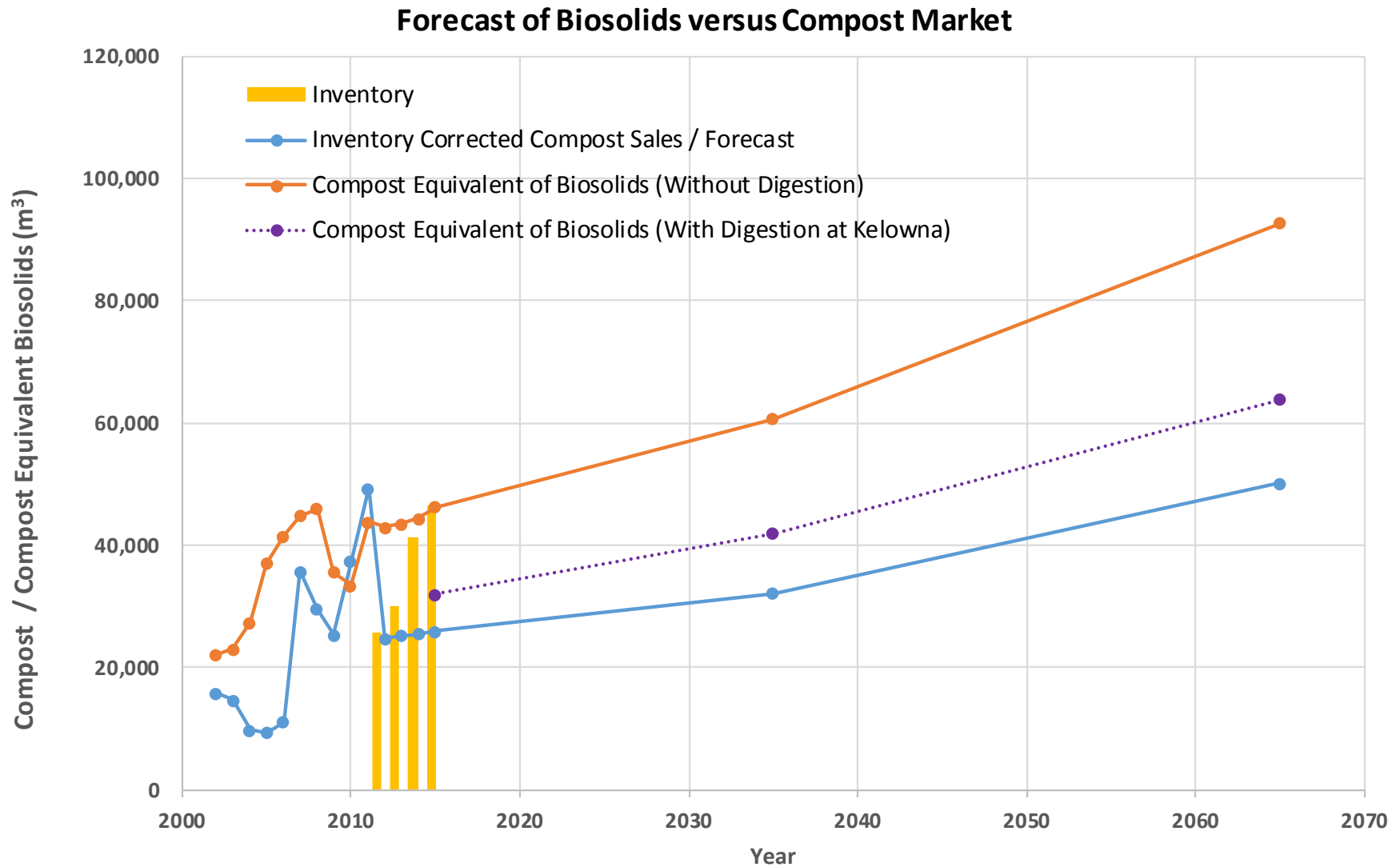
# • “Why”

- Commonage Facility is near or at capacity
- OgoGrow<sup>®</sup> inventory is increasing
- Kelowna and Vernon are continuing to grow
- Cities are planning for growth

# Market versus Production



# Example Result



# • **Project Objective**

- Look at ALL Options
- Identify and Assess RISKS
- Present defensible recommendation for next steps

# • **Where We Are At**

- Still in the planning/evaluation stages
- All considerations will be undergoing an evaluation process



# Biosolids Management Study – Work Plan

TM-1

- Analysis of historical and forecast production;
- Technology Screening; and
- Initial criteria discussion.

Workshop A

TM-2

- Summary of Workshop A;
- Short-list of Options,

TM-3

- Review of **markets** and **risks**.

Public Engagement

TM-4

Final Evaluation & Recommendation



**we are here**



# • **TM-1 Technology Summary**

# • **Management Options Reviewed**

## • **Pre-treatment** – 4 methods considered

- Digestion - 45% reduction in mass
- Thermal drying - 90% reduction in volume
- Lime stabilization - 0% reduction in mass
- Chemical (Chlorine Dioxide) - 0% reduction in mass

## • **Final Disposal** – 3 methods considered:

- Compost Sales (i.e. OgoGrow);
- Land application;
- Thermal Destruction:
  - Incineration, Gasification, Pyrolysis.

# • **Workshop A**

- City of Kelowna Staff
  - City of Vernon Staff
  - Technology Experts
- 
- Capital & Operating **Costs** for Options
  - Review of Market **Risks**



# TM-2 Evaluate Options

# • Wastewater Solids Management

- Five schematics involving a combination of:

- **3 pre-treatment options:**

- *Digestion (at Kelowna WWTP only)*
    - *Thermal Drying*
    - *Chemical (BCR) Pre-Treatment*

- **2 outlet options:**

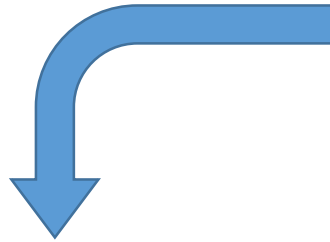
- *Land Application*
    - *Composting*

- Technologies Dropped

- Incineration
  - Gasification
  - Pyrolysis
  - Digestion at Vernon (*to be confirmed*)

# • Evaluation Criteria

- 17 evaluation criteria were aggregated to 7



Group	Criteria	
Cost	• Capital	• Annual Operation and Maintenance
	• 20 Year Present Worth Operation and Maintenance	• Total Lifecycle
Environmental	• Air Quality/Odour	• Water Quality
	• Greenhouse Gas Emissions	• Spillage Potential
	• Soil Quality	• Waste Streams
Social	• Public Acceptance and Perception	• Integration and Zoning
Risk	• Markets	• Funding / Economic
	• Regulatory	
Operation	• Operability / Ease of Operation	• Flexibility
	• Synergy Potential	• Expandability
	• Longevity	• Staffing

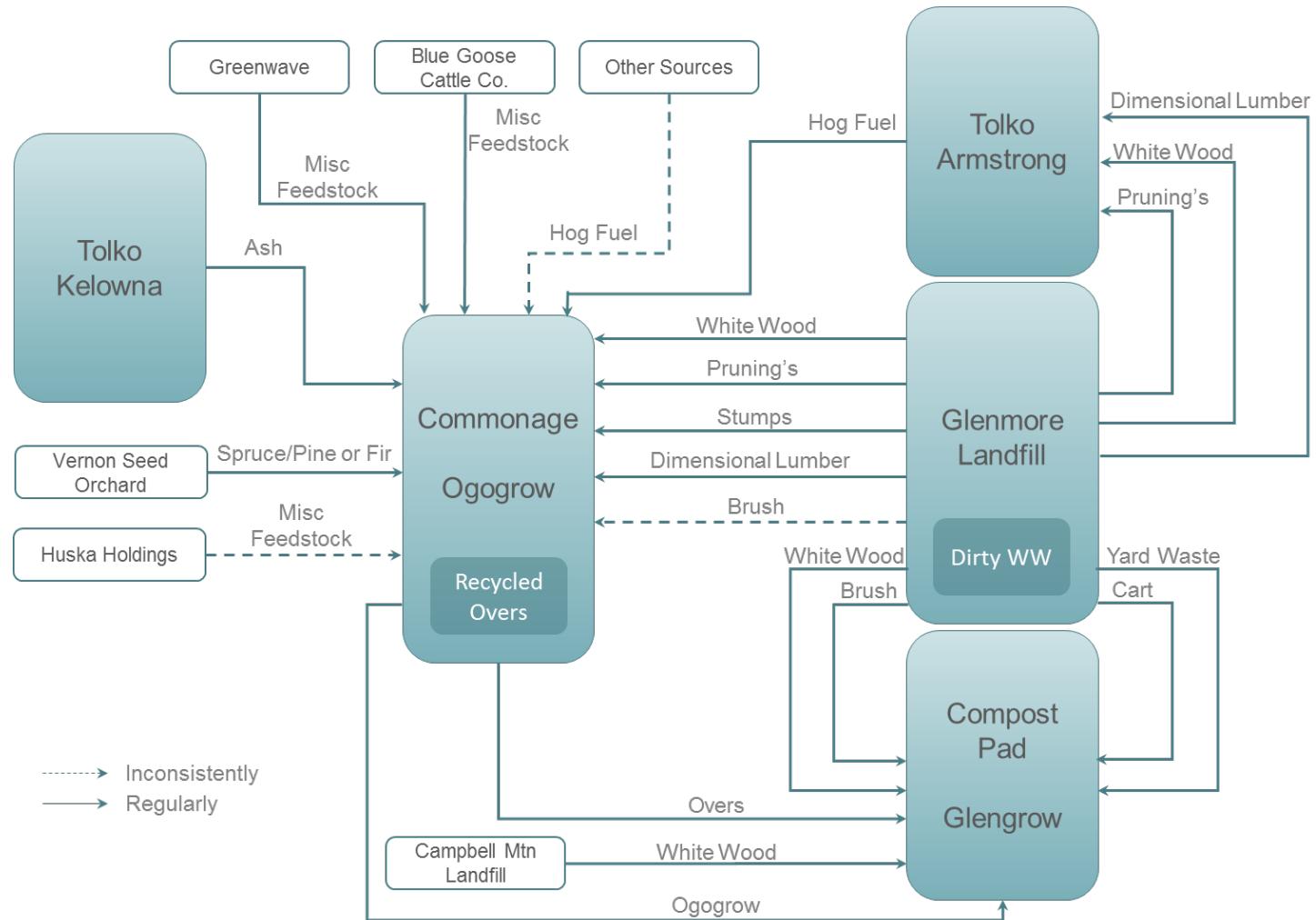
- Odour
- Environmental Quality - Air, Water, and Soil
- **Social (Public Acceptance and Perception)**
- Market Risks - Supply and Demand
- Regulatory and Bylaw Risk
- Environmental Risks
- Operations



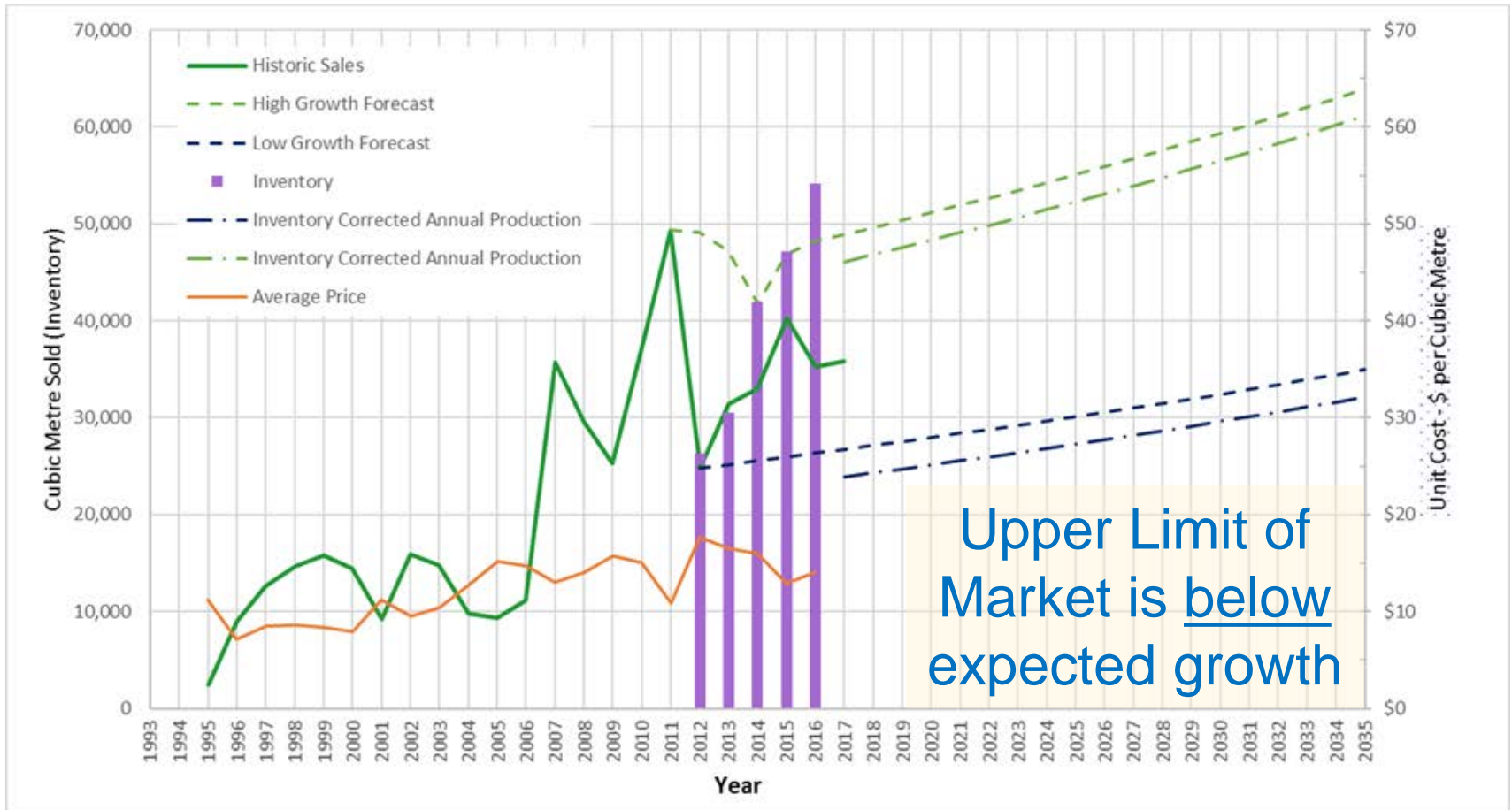
# • **TM-3 Market Review**



# Wood Chip Suppliers



# Compost Consumer Market



# • Soil Amendment Markets

- Examples of beneficial biosolids reuse

Market	Description	Size
Wood Lot	Purpose grown woody debris	150,000 ha
Siviculture	Forestry – 150 km radius	30,000 ha
Soil Reclamation	Mine/Gravel Pits – 200 km radius	100,000 ha
Agriculture	Fertilizer application – 400 km radius	>200,000 ha



# • **Public Engagement**

# • Engagement Plan

- Provide council & Public with Information
- Communication Through:
  - City Websites
  - On-line Survey
  - Media Release
  - Meet directly with Key Stakeholders

# • Stakeholders

- City of Kelowna Residents
- City of Vernon Residents
- Direct Meetings
  - Residents near Commonage Facility
  - First Nations

# • Stakeholders - Others

- Okanagan Basin Water Board – Stewardship Council
- Agriculture Advisory Committee
- RDNO
- RDCO
- Fortis BC
- Interior Health
- Ministry of Environment

# • **Feedback and Input**

- Input will be summarized in a final report.
- Report back to Kelowna and Vernon Councils





# • **TM-4 Final Evaluation**

# • **Management Options**

- **Summary of Final 5 Options / Combinations**

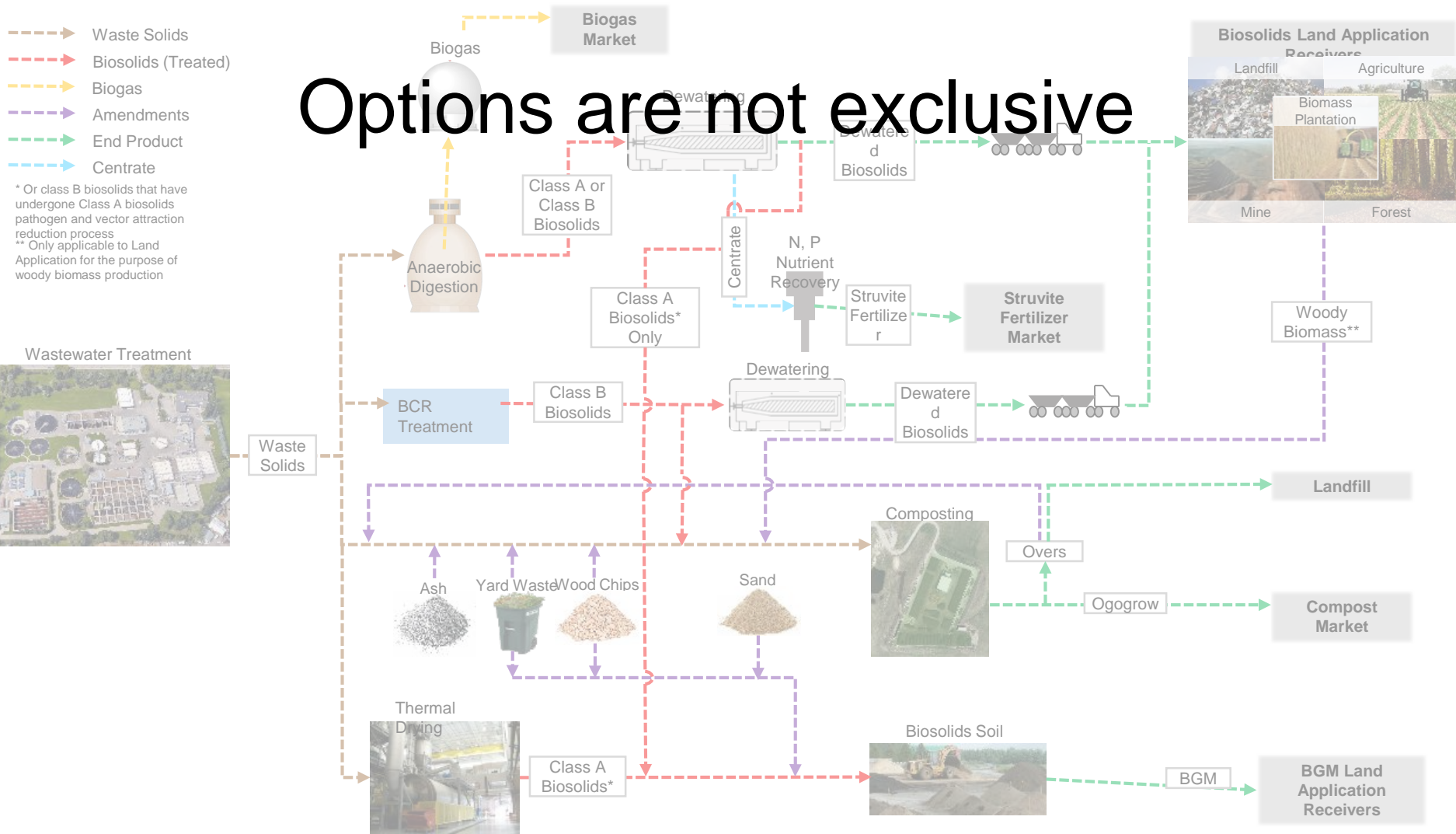
- Capital and Operating Costs
- Triple-bottom-line comparison of 7 Evaluation Criteria
- Relative Risk Analysis

- **Financial Model**

- How costs will be shared between Kelowna Vernon

# “Roadmap” of Options Considered

Options are not exclusive





• **Thank You**