

The background of the slide is a faded, high-contrast image of industrial machinery. A prominent feature is a circular pressure gauge with a needle and numerical markings, located in the center-left area. The machinery consists of various pipes, valves, and structural frames, all rendered in a light, almost white tone against a slightly darker background.

# Integrated Resource Management

CRD Core Area Liquid Waste Management  
Committee

Dr. Jon O'Riordan

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# Outline of Presentation

- What is IRM?
- Why undertake IRM?
- How is IRM different?
- Key outcomes of IRM
- Risks
- Benefits
- Recommendations
- Questions and answers

# What is Integrated Resource Management (IRM)?

- IRM is a different way of thinking that maximizes net values from managing the following resources
  - ◆ water (drinking water, rainwater, streams)
  - ◆ sewage
  - ◆ wet and dry organic solid waste
  - ◆ garbage
  - ◆ heat
  - ◆ electricity
  - ◆ fuels
  - ◆ fertilisers

# Why Did the Province Undertake the IRM Study?

- Reduce GHG emissions
- Contribution to 50% energy conservation target
- Bioenergy Strategy
- Carbon neutral government operations
- Make RGSs and OCPs consistent with climate action charter commitments

# Why Did the Province Undertake IRM Study?

- Contribute to Living Water Smart BC
- Contribute to Live Smart BC
- Reduce costs to tax-payers of infrastructure replacement and development
- Apply IRM concept to all communities in the Province

# How is IRM different from Liquid Waste Management? (Nature has no wastes!)

- Infrastructure is designed to produce revenues
- Treatment plants are sized for energy clients
- IRM integrates planning and infrastructure for:
  - ◆ Solid and liquid waste, sewer collection systems
  - ◆ Potable water
  - ◆ Energy needs for buildings and transportation
  - ◆ Greenhouse gas reductions
- Flexibility in meeting future demand by adding capacity when and where needed

# What Does IRM Look Like?

- A series of small, decentralized tertiary sewage treatment plants
- Heat recovery from treated wastewater for local users
- Future houses with pipes for drinking water and reclaimed water
- Neighbourhood streams with healthy summer flows of water from:
  - ◆ Recharged groundwater
  - ◆ Addition of clean, disinfected, reclaimed water



**Dockside Green treatment plant**

# What Does IRM Look Like?

- Produce bio-fuels at centralised anaerobic digesters from organic solid wastes – requires curbside collection
- Other residuals (bio-solids) and dry organic wastes to produce electricity and heat
- Clean residuals as fertilizers
- Ultimate goal of zero waste discharge



Creek discharge from treatment plant, Dockside Green

## What are the main outcomes of IRM for the CRD?

- Heat the equivalent of 30% of homes
- Electricity to power 10% of homes
- Bio fuels to run 10% of community cars
- Reduce GHG emissions by 25%
- Reduce electricity required for pumping sewage by 33%
- Treatment plants reduce land requirements by 80%

# What are Estimated Costs and Benefits?

- Treatment plants - \$615 million
- Resource recovery infrastructure - \$255 million
- Total capital cost - \$870 million
- (Estimated capital costs are after inflation and contingency)
- Annual net revenues - \$61 million
- (Before carbon tax)

## What are the Risks of IRM?

- The IRM study is at a concept level of analysis
- IRM can be implemented through detailed design of infrastructure in communities
- The optimal number of plants must be determined
- Values from resource recovery require more detailed market analysis

## What are the Risks of IRM?

- Public response to neighbourhood treatment plants
- Management of Inflow & Infiltration (I&I) flows
- Implementing curbside organic waste collection
- Organizational change to integrate solid, liquid and water management functions
- Barriers in current provincial and local government regulations and by laws

## What are the Benefits of IRM?

- Lower capital cost, since capacity = today's needs
- Lower ongoing cost, since revenues cover costs
- Benefits are maximized through integration
- CRD has unique advantage of no sewage treatment infrastructure
- Tertiary level sewage treatment for less \$\$ than secondary treatment

## What are the Benefits of IRM?

- Reduces wet weather flows by removing water at distributed treatment plants
- Maintain healthy watersheds resilient to climate changes
- No need for additional water supply or filtration
- Reduces waste to the landfill

## Benefits of IRM in the CRD

- Contributes significantly to climate action charter targets
- Less incremental costs associated with meeting GHG reduction mandated targets
- In keeping with Live Smart, Water Smart and Energy Smart BC targets
- Adapting to climate change will be a condition for future provincial funding

# Is Anyone Doing IRM?

- Yes! It is in our own backyard
  - ◆ Dockside Green treats its own sewage, produces its own energy, and is building a new creek with reclaimed water
  - ◆ Royal Roads proposing to come off the grid
  - ◆ Vantreight Farms proposes to be the first energy farm in BC
  - ◆ Bruce Jank designing three Calgary subdivisions using IRM
- Sweden is a leader in resource recovery as shown to the CRD delegation last month

# Recommendations

- Integrate liquid and solid waste
- Re-open the terms of reference to maximize value & recovery
- Compare current and IRM approaches, using objective Evaluation Criteria
- Issue Expressions of Interest
  - ◆ UVIC and Western Communities
  - ◆ Remaining Core Area

Evaluation Criteria	Liquid Waste	Sewer Collection System	Solid Waste	Drinking Water	TOTAL
GHGs Reduced	?	?	?	?	?
Electricity Produced	?	?	?	?	?
Heat Produced	?	?	?	?	?
Biofuels Produced	?		?	?	?
Potable Water Consumed				?	?
Reclaimed Water Produced	?				?
Waste Reduced	?		?		?
Nutrients Produced	?		?		?
Revenues	?	?	?	?	?
Taxpayer Costs - Capital	?	?	?	?	?
Taxpayer Costs - Ongoing	?	?	?	?	?