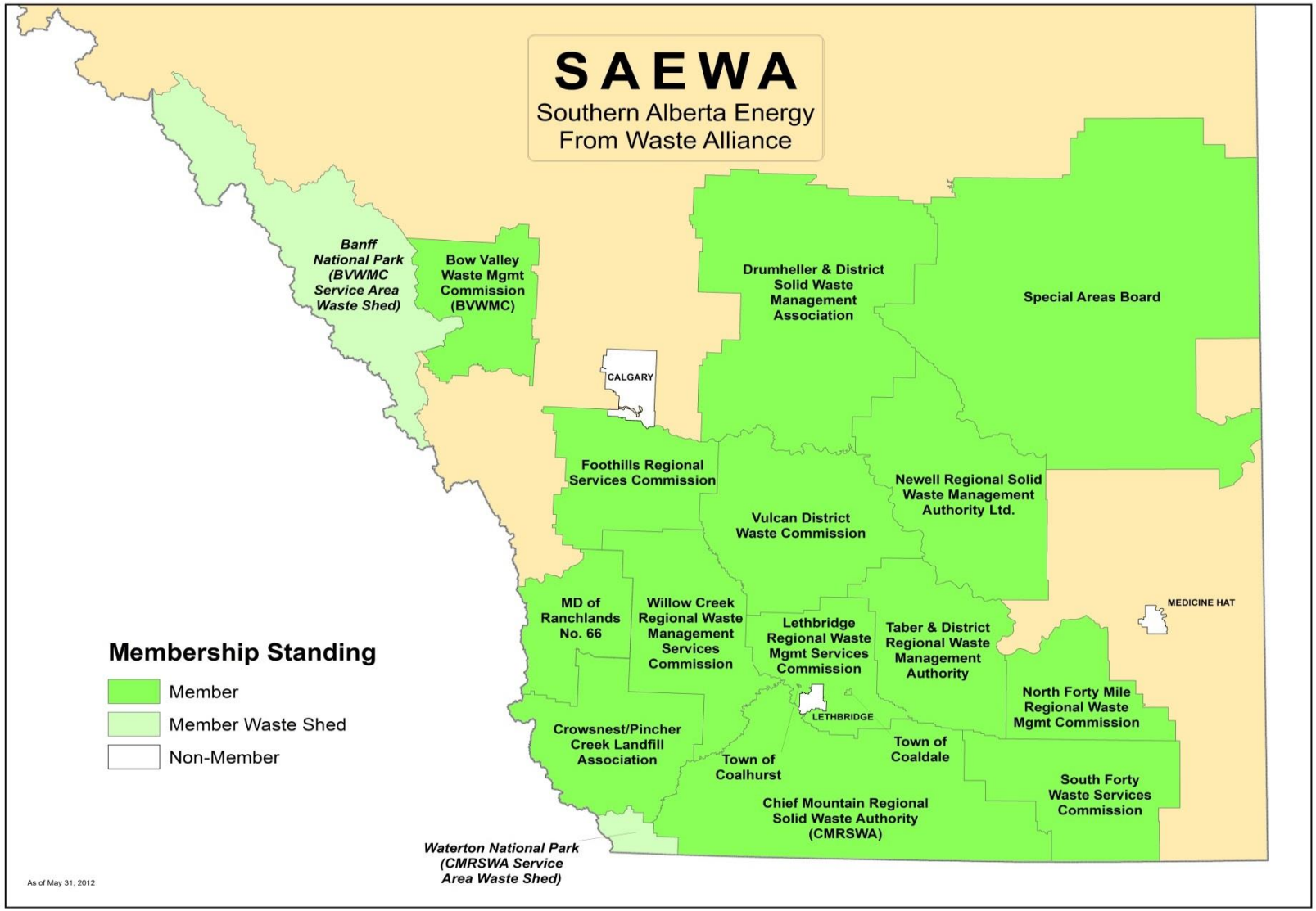
The SAEWA Project

Research and implementation of energy recovery from NON-RECYCLABLE WASTE MATERIALS to reduce long term reliance on landfills.

SAEWA

Southern Alberta Energy from Waste Association

SAEWA incorporated in 2012 as a coalition of 57 Municipal entities, with 12 Waste Commissions, representing a population of approximately 300,000 people in Southern Alberta generating waste volumes in excess of 350k TPY .



SAEWA Membership in 2012

01. MD of Bighorn No. 8
- MD of Bighorn No. 8
- Town of Canmore

02. Mountain View County
- Mountain View County
- Town of Olds
- Village of Cremona

03. Kneehill County
- Kneehill County
- Town of Three Hills
- Town of Trochu
- Village of Acme
- Village of Carbon
- Village of Linden

04. Starland County
- Starland County
- Village of Delia
- Village of Morrin
- Village of Munson

05. Special Areas 2
- Special Areas Board

06. Special Areas 3
- Special Areas Board

07. Special Areas 4
- Special Areas Board

08. Wheatland County
- Wheatland County
- Village of Hussar
- Village of Rockyford
- Village of Standard

09. County of Newell
- County of Newell
- Town of Bassano
- City of Brooks
- Village of Duchess
- Village of Rosemary

10. Vulcan County
- Vulcan County
- Village of Champion
- Village of Arrowwood
- Village of Carmangay
- Village of Lomond

11. MD of Ranchland No. 66
- MD of Ranchlands No. 66

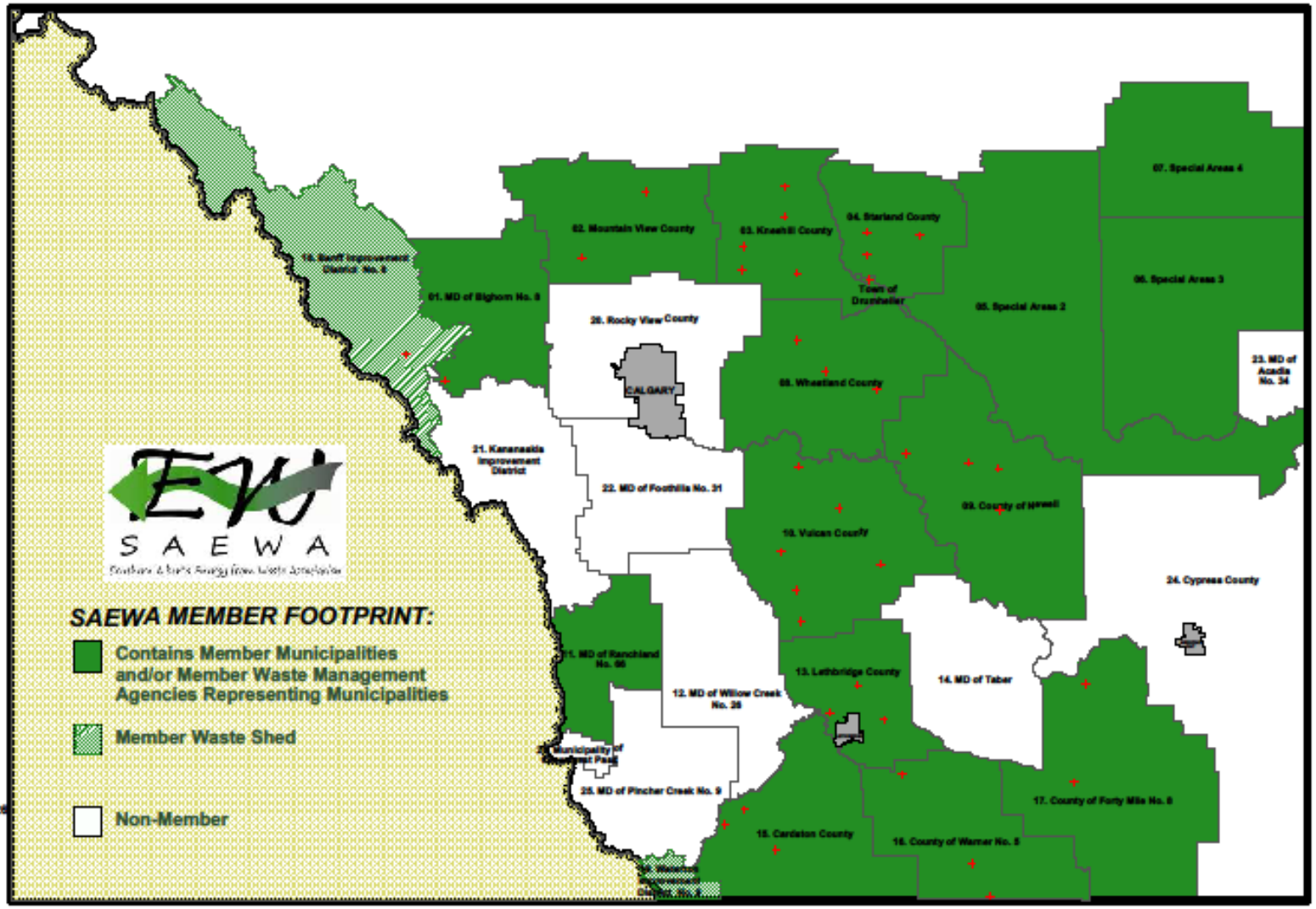
12. MD of Willow Creek No. 26

13. Lethbridge County
- Lethbridge County
- Town of Coaldale
- Town of Coalhurst
- Town of Picture Butte

14. MD of Taber

15. Cardston County
- Town of Cardston
- Village of Glenwood
- Village of Hillspring

16. County of Warner No. 5
- Village of Coutts
- Town of Milk River
- Village of Stirling



17. County of Forty Mile No. 8
- North Half of County of Forty Mile
- Town of Bow Island
- South Half of County of Forty Mile
- Village of Foremost

18. Banff Improvement District No. 8
- Town of Banff

19. Waterton Improvement District No. 9

20. Rocky View County

21. Kananaskis Improvement District

22. MD of Foothills No. 31

23. MD of Acadia No. 34

24. Cypress County
- Cypress County

25. MD of Pincher Creek No. 9

26. Municipality of Crowsnest Pass

Town of Drumheller

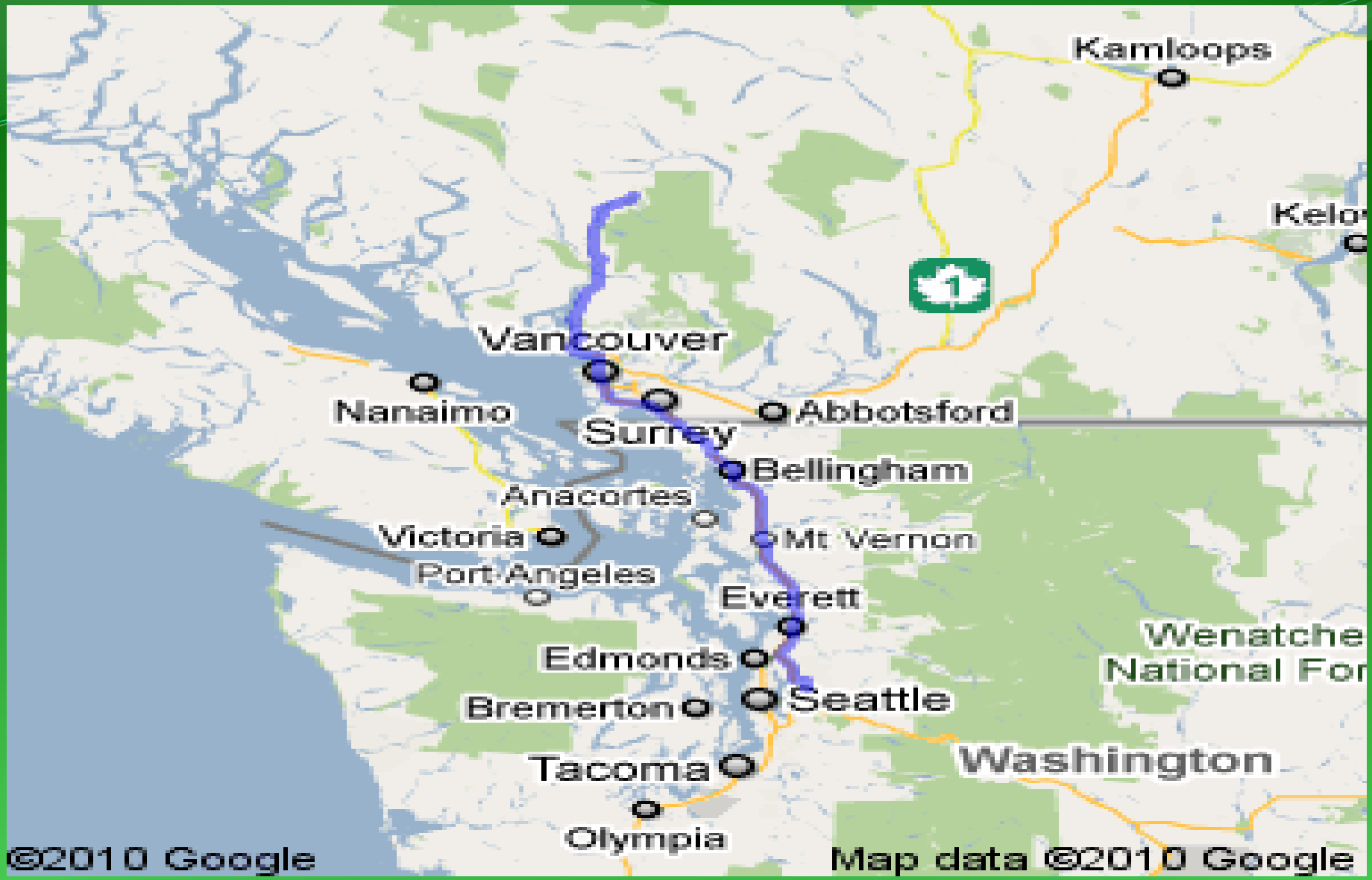
Why Are We Doing This

New waste management facilities are virtually impossible to site creating conflict between urban and rural neighbors and expanding existing Landfills is becoming ever more difficult

High end developments grow up around existing landfills creating conflicts where none existed before

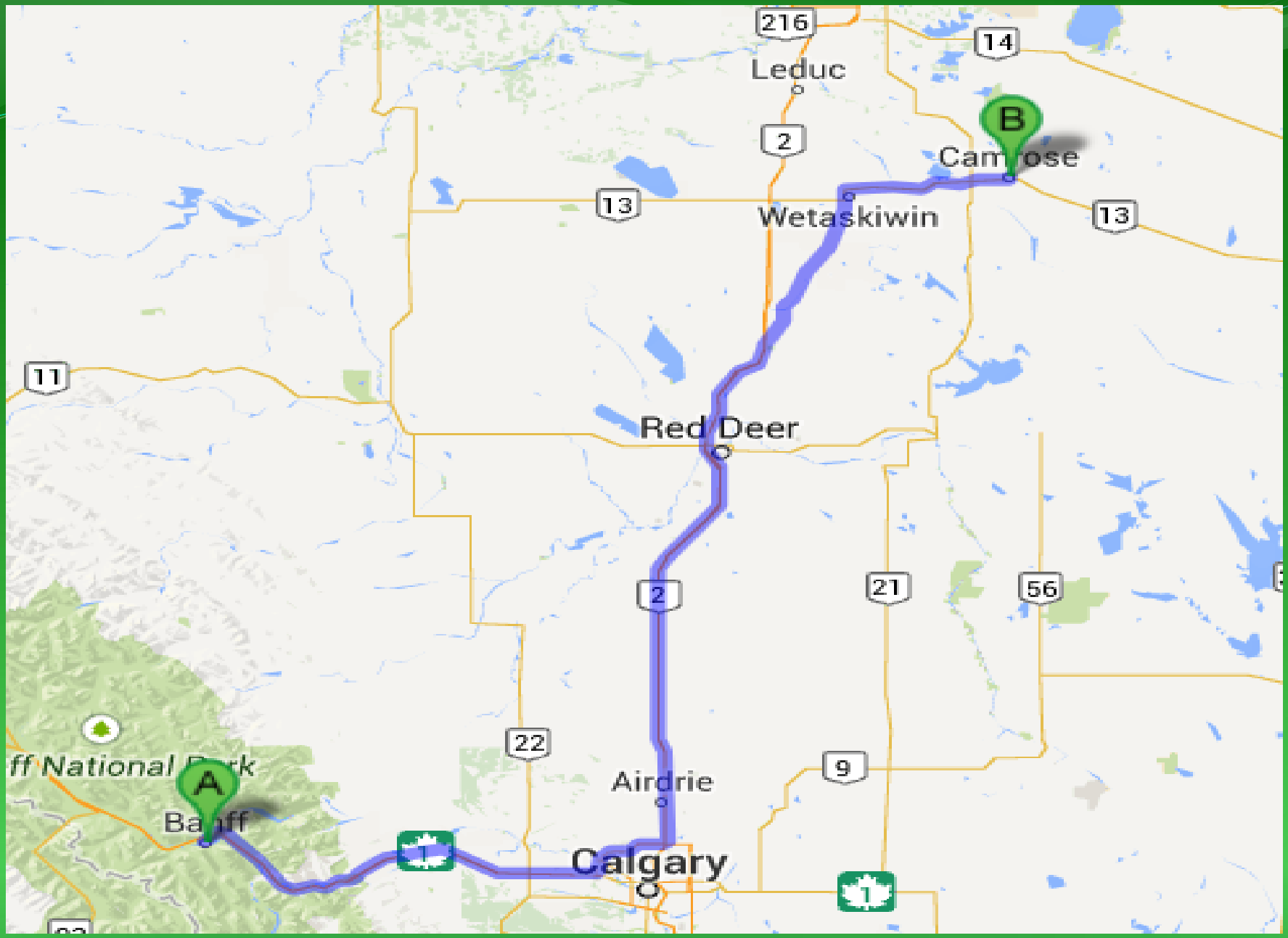
Some municipalities have to truck their waste many hundreds of kilometers to landfills in other jurisdictions, even other countries

The cost of landfilling is spinning out of control.



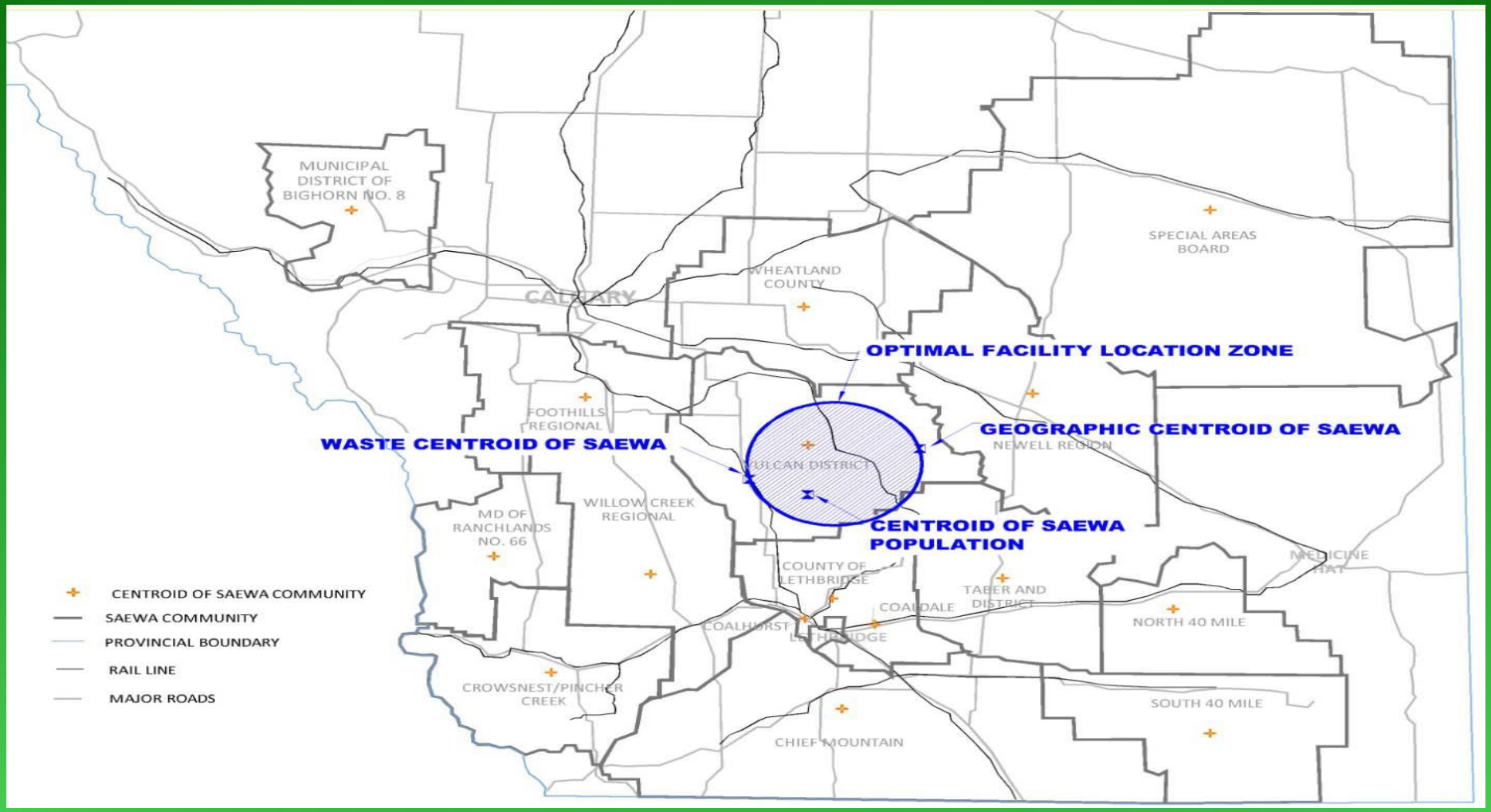
Whistler BC to Redmond Washington 700km round trip

Vancouver BC to Cache Creek BC 700km round trip



800 km round trip Banff to Dried Meat Lake Landfill at Camrose

Center of Mass Haul for SAEWA Footprint



Banff to Vulcan County 500km round trip

Getting Started

Initiated by Vulcan District Regional Waste Commission

Established in 2009 as an ad hock committee

The initial project funding to do a feasibility study was a Rural Alberta Economic Development grant from Alberta Agriculture that was managed by Vulcan County

Membership grew quickly as a result of the common desire to move away from landfilling

What Did The Experts Say

Edmonton Waste Management Center of Excellence provided the Terms of Reference for the Feasibility Study

HDR Inc. provided engineering services as a result of a competitive bidding process

Protecting the Environment

Greenhouse Gas Emission Reductions

Summary of Estimated GHG Annual Emissions	Refuse Derived Fuel with Combustion	Mass Burn Combustion	Gasification	Plasma Arc Gasification	Landfill
Disposal (MTCO2/yr)	7,030	0	7,030	7,030	58,587
Combustion (MTCO2/yr)	84,140	78,116	84,140	84,140	0
Transportation (MTCO2/yr)	2,483	2,456	2,483	2,474	1,635
Facility Fuel Usage (MTCO2/yr)	244	228	244	238	532
Electrical Purchase and Sales (MTCO2/yr)	-92,276	-104,265	-76,894	-45,650	0
Ferrous & Non FerrousRecovery (MTCO2/yr)	-31,906	-31,906	-31,906	-31,906	0
Net GHG Estimated Emissions (MTCO2E/yr)	**-30,300**	**-55,400**	**-14,900**	**16,300**	**60,800**
GHG Emissions Reduction Relative to the Landfill (MTCO2E/yr)	91,100	116,200	75,700	44,500	-
Percent Reduction	150%	191%	125%	73%	-

- All energy from waste options considered offer substantial GHG emission reductions compared to landfill
- Mass burn combustion achieves the greatest reductions due primarily to higher energy generation efficiency

Life Cycle Operating Costs

2.3 Costs and Revenue

	ENERGY FROM WASTE BASED SYSTEMS			
FINANCIAL LIFECYCLE SUMMARY ($2014)	RDF AND COMBUSTION	MASS BURN COMBUSTION	GASIFICATION	PLASMA ARC GASIFICATION
Total Waste Disposed (tonnes)	*16,425,000*	*16,425,000*	*13,687,500*	*12,775,500*
Operating Lifespan (years)	*50*	*50*	*50*	*50*
Lifecycle Expenditures				
Capital	$485,211,318	$472,078,618	$476,856,468	$436,630,548
Operating	$1,701,063,914	$1,386,790,125	$1,300,688,771	$1,445,816,655
Total Expenditures	$2,186,275,232	$1,858,868,743	$1,777,545,239	$1,882,447,203
Gross Lifecycle Unit Cost($/tonne waste)	133	113	130	147
Lifecycle Revenues				
Electricity Sales	$715,502,565	$792,652,860	$524,481,047	$329,798,960
Sales of Recyclables	$84,190,000	$84,178,125	$70,148,438	$65,471,875
Total Revenue	$799,692,565	$881,830,985	$594,629,484	$395,250,835
Residual Asset Value	$25,550,000	$25,550,000	$25,550,000	$25,550,000
Net Lifecycle Cost	$1,361,032,667	$951,487,758	$1,157,365,755	$1,461,646,368
Net Lifecyle Unit Cost ($/tonne waste)	83	58	85	114

What is Your Budget

Where do we get the money to go forward and pay for our own Administrative team

Initial membership fee introduced at $0.40 per capita

Regional Collaboration grants from Municipal Affairs to do a Project Development Plan, Governance Model and Detailed Business Plan and Waste Stream Characterization

Testing the Waters

Request for Expression of Interest

Willing Hosts for facility; Do you want an Energy from Waste Facility in your Municipality

Technology Vendors; Do you want to do business with SAEWA

Who wants to work with SAEWA

Willing Hosts for facility; 8 positive responses

Technology Vendors; 24 positive international responses

The Playing Field

- Largest Municipal Cooperative in Alberta
- Membership Predominately Small Urban and Rural Municipalities
- Fluctuation in Membership/Support
- Large footprint
- Large Quantities of Industrial Waste not Associated with Municipalities
- Ability to Manage SRM's Similar to BSE Outbreak or Avian Flue and Hoof and Mouth Disease

Where are We Today

P3 Canada

Technology Vendors offering equity investment

Governance Model

Detailed Business Plan and Detailed Waste Stream Characterization

Next set of Challenges

Provincial Support

Internal Politics

Organised opposition

Passive aggressive opposition

Not so passive aggressive opposition

The Day After Tomorrow

Test the waters again

Complete DBP and WSC by April 2016 and make a recommendation to our members.

Landfill Siting and Expansion vs. WTE Facility

Recycling Improves with WTE's

In September 2008 the Solid Waste Association of North America released *A Compatibility Study: Recycling and Waste-to-Energy Work in Concert*.

Covered 82 waste-to-energy facilities in 22 states. Recycling data was obtained from 567 local governments, including 495 cities, towns and villages and 72 counties, authorities or districts.

"Communities using waste-to-energy have recycling rates above the national average"

How do we Pay for it?

Municipal infrastructure routinely amortised 20 yrs. WTEs have a 30 to 50 year lifespan with no post closure costs like landfills.

Utility model shares cost over many Municipalities

Public/Private is often used

Private sector Design/Build/Operate is often used

We are almost there

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QUESTIONS