MSW Recycling Haulers & MRFs

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RRSL Communities

Rural - Different lifeways, local foods)

Remote - Costly and difficult logistics

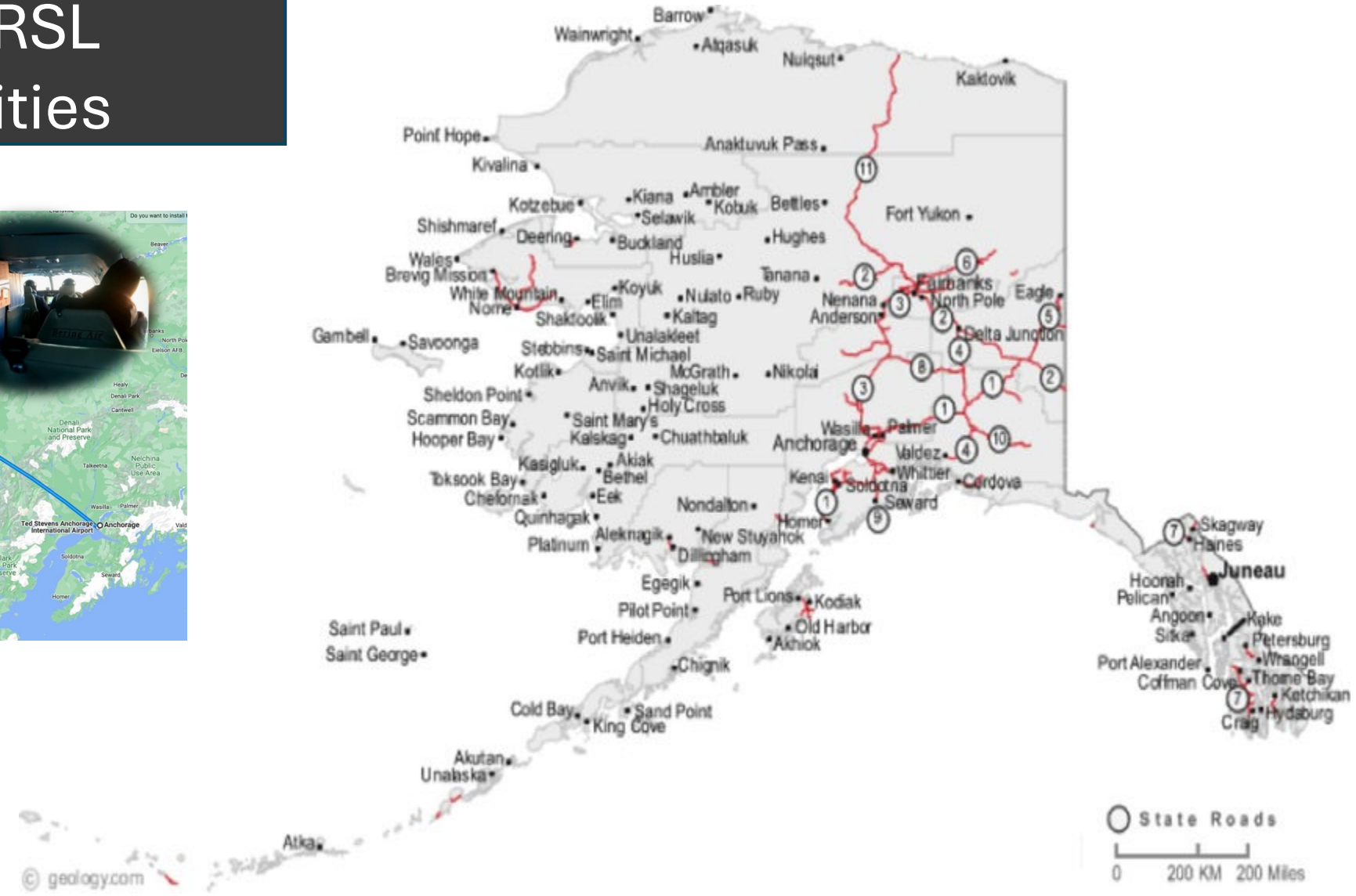
Small - Poor economy of scale, ability to staff

Low Income - Health disparities, ability to pay

Recycling may have an opportunity cost of public health in RRSL communities

- Same pot of money for landfill & public works
- Inadequate solid waste facilities, and/or unauthorized disposal sites.
- Eat and drink from local sources (hunting, fishing, farming, etc.)
- Small populations don’t significantly impact global or national measures.

How products arrive in Alaska RRSL communities



Where they’re used.

Interior

Northwest Arctic

Yukon Kuskokwim Delta

Where waste goes.

- Disposal sites in rural Alaska are unlined and mostly uncovered. And close to town – 3/4ths within 1 mile.
- Add poor equipment, fencing, logistics, and more to make “Lower-48 management” impossible.

Broken Equipment

Breakup

Broken Fence

And to the Air....

85% of communities burn their waste -- contained or not -- because it is the ***only affordable option.***

- *1/4th of sites are within ¼ mile of town.*
- **Smoke can be smelled in *25% to 50% of towns at least weekly.*** .
- Burning plastics this way also also creates a local source **microplastics problem**.
- Creates **black carbon**, accelerating local melt conditions that contribute to food insecurity and drownings.

Legal burning.

Not legal, but no option

Legal burning.

Location is clos to town and wat

- 3/4ths of landfills wit mile of town
- 1/4th within 1250 ft.
- 27 out of 129 in a Sta Drinking Water Datab less than 100 ft from primary water body.

And then potentially to People…

- All ages
- All year
- Nearby and far
- Animals & plants
- Tied to healthy economy
- Well-being

What waste has highest health value in recycling….not the highest GHG reduction?

- Cardboard and paper packaging can drive more open burning
- Plastics blow to land or water, endanger animals, blight the community, microplastics go up food chain.
- Toxic -Batteries, E-waste, used Oil
- Safety - Reactive, Ignitable, Flammable

It’s community specific

Can the community recycle?

- Low human capital available. Too many duties for too few folks.
- What haul mode and is there a hauler?
- Is there a facility willing to accept it?
- Jurisdictional issues? (Tribal sovereignty)?

Chignik Lagoon, AK – Loading Fishing Vessel with Escrap & Lead Acid Batteries

Chignik Lagoon is an isolated community without regular barge service or a reliable barge landing. Material had to be loaded on a local fishing vessel and then transferred to the Trident Seafoods Dock in Chignik Bay to await pickup by Coastal Transport

Alaska rates – the more remote and small, the costlier it is.

Annual Electronic Recycling for For 500-person village	
Location	Mixed Scrap
Anchorage	$ 9,625.00
Anchorage	$ 16,625.00
Fairbanks	$ 12,250.00
Haines	$ 7,875.00
Kodiak	$ 8,750.00
Kent, WA	$ 6,125.00
Tacoma	$ 4.900.00

Shipping E-scrap cost per 20 ft container			
Region	Hubs	Hub	Outlying Community
Southcentral	Anchorage	$ 3,300.00	$4,530
Interior	Fairbanks	$ 3,950.00	$4,890
Southern Southeast	Ketchikan	$ 1,250.00	$1,800
Northern Southeast	Juneau	$ 1,850.00	$1,825
Kodiak	Kodiak	$ 3,400.00	$5,300
Unalaska	Unalaska	$ 4,100.00	$6,500
Kuskokwim River (BET)	Bethel	$ 4,100.00	$6,663
Y-K Coastal (BET)	Bethel	$ 4,100.00	$8,815
Bristol Bay (DIL/NAK)	Dillingham/ Naknek	$ 4,200.00	$6,993
Bering Strait (Nome)	Nome	$ 5,000.00	$8,625
NW Arctic (Kotz)	Kotzebue	$ 6,500.00	$11,400
Arctic	Utqiagvik	$ 12,500.00	$14,000

Should the community recycle if it doesn't impact local health?

Small town life

- Does the waste present a problem?
- Negative externalities?
  - Composting
  - Community patterns
- Reduce/reuse/refuse possible?

Household burden

- Small homes, little space, overcrowded.
- Stress and/or time burden of low-income, poverty, farming or subsistence lifeway
- Gas to get there?
- Service fee?

RRSL Community Recycling (local MRFs)

- **High per person fixed costs to run a program**
- **Batch/Event** driven – process & equipment need to work that way
- **Less Control** over contamination
  - Self-haul
  - Unstaffed transfer stations
- **Part-time staff** – maybe no backup
- **Minimal equipment**
- **Small** facility (shed or van?)
- **Reliance on county or other regional programs** common, esp. for HHW
- **Less material types** recycled
- **On-site** processing technologies have **poor economy of scale**
- **Variable** throughput
- N**o subsidy** from commercial, and little institutional sector

Facility: Fit the community

- Don’t oversize
- Throughput of each waste type is small.
- If event-based and weather-flexible, heated indoor space for staging/packing not as critical, *but desired.*
- Flexibility– lots of ups and downs
- Outdoor storage with snow roof?
- Modular e.g. retrofitted vans, or building sections heated/cooled

Fit and serve the community

Threshold Facility Needs

- **A place to segregate and Store materials and work on them.**
- **A way to Load(Pallet Jack w/scale or small Forklift or small totes if manual loading)**
- **A way to Haul out materials (truck, plane boat)**
- **PPE (gloves goggles, spill kits,etc.)**
- **Shelter is highly desirable**
- **Something to Stage & Pack with (pallets, totes, shrinkwrap, bander, etc.**

Special Waste or Regular HH Waste

- **Batch/event** driven
- **Non-baleable** – so totes, pallets, shrinkwrap
- **Transport Mode** determines packing for Universal waste
- **Typically drop-off** during staff hours, but can be collected will-call.
- **Local fees** ?
- Transporter can have **special requirements**

- **Regular throughput,** though more variable than larger cities
- Collected or drop-off (**typically voluntary** if a fee is attached)
- HHW may be operated by another entity (e.g. county) or contracted.
- Loose materials might be accepted at regional facility - less cost/hassle if hauling works out.
- Baler often needed or advisable.

First Luxury: A baler

	Vertical	Horizontal
Benefits	• Less expensive • Takes up less room • Can do what is needed. • Can serve very small populations • Works better for switching material types or purchasing more than 1	• Possible around 700 pp but typically higher. • Easier to load • Conveyor belt works easier • Big bales for full material value • Higher compaction (usually)
Cons	• Harder to load • Low cost – lower compaction • Small bales may not get the same $$	• Takes up more space • Ties up baler longer for single streams • Not as versatile

Gustavus, AK

- Considered Model Recycling Center/Landfill
- Almost breaks even with thrift store earnings.
- Not low income.

Vertical baler

Haz waste storage

Special Waste - Backhaul Alaska – Unalaska

Wet gaylords due to outside loading

Bander

Backhaul Alaska – Glennallen

Skid Steere with attachments

Backhaul Alaska – Deering

Outdoor storage when barge doesn't come

Backhaul Alaska – Kipnuk

Repacking, shrinkwrapping batteries, e-wastes)

Second Piece – Depends on what the needs are

- 2nd baler
- Baler improvements (Conveyor belt, etc., sorter, etc.)
- Glass crusher, athough pelletizer is good for art projects
- Haul truck (if not owned already)
- Forklift/Skid Steere vs. pallet jack