Electronics product stewardship in Alaska

February 5th

Senate Resources Committee

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What is the Solid Waste Alaska Taskforce (SWAT)?

Formed in December 2014, SWAT is a team of multiple organizations with statewide solid waste programs that work together for sustainable waste solutions in rural Alaska:

- **Alaska Department of Environmental Conservation (ADEC)**
- **Alaska Native Tribal Health Consortium (ANTHC)**
- **Zender Environmental Health and Research Group**
- **Kawerak, Inc**

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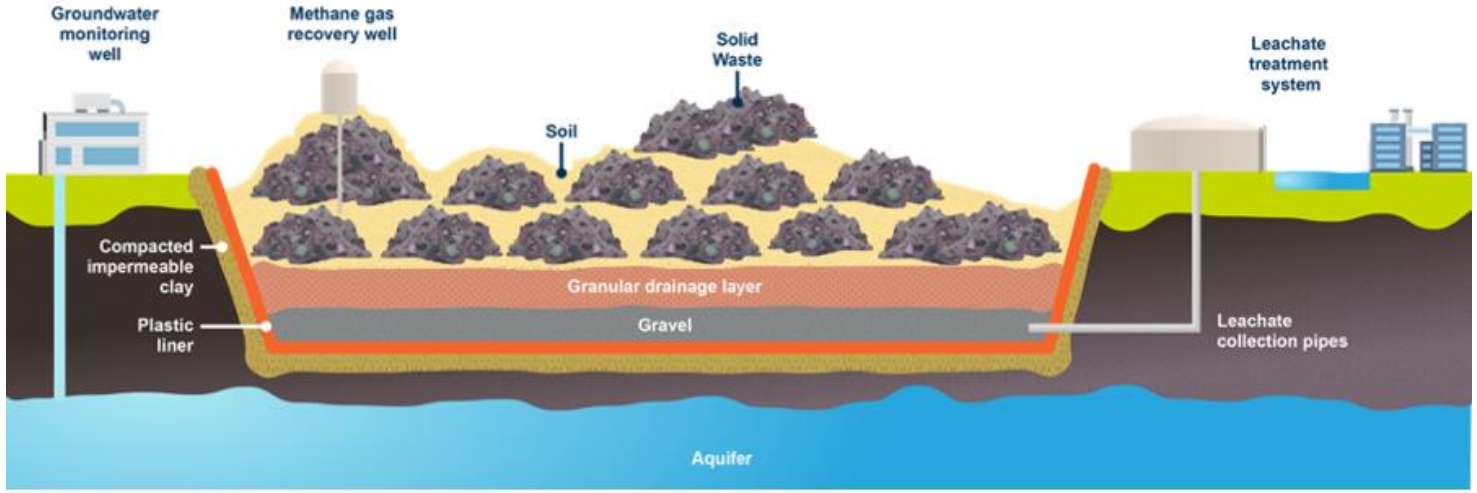
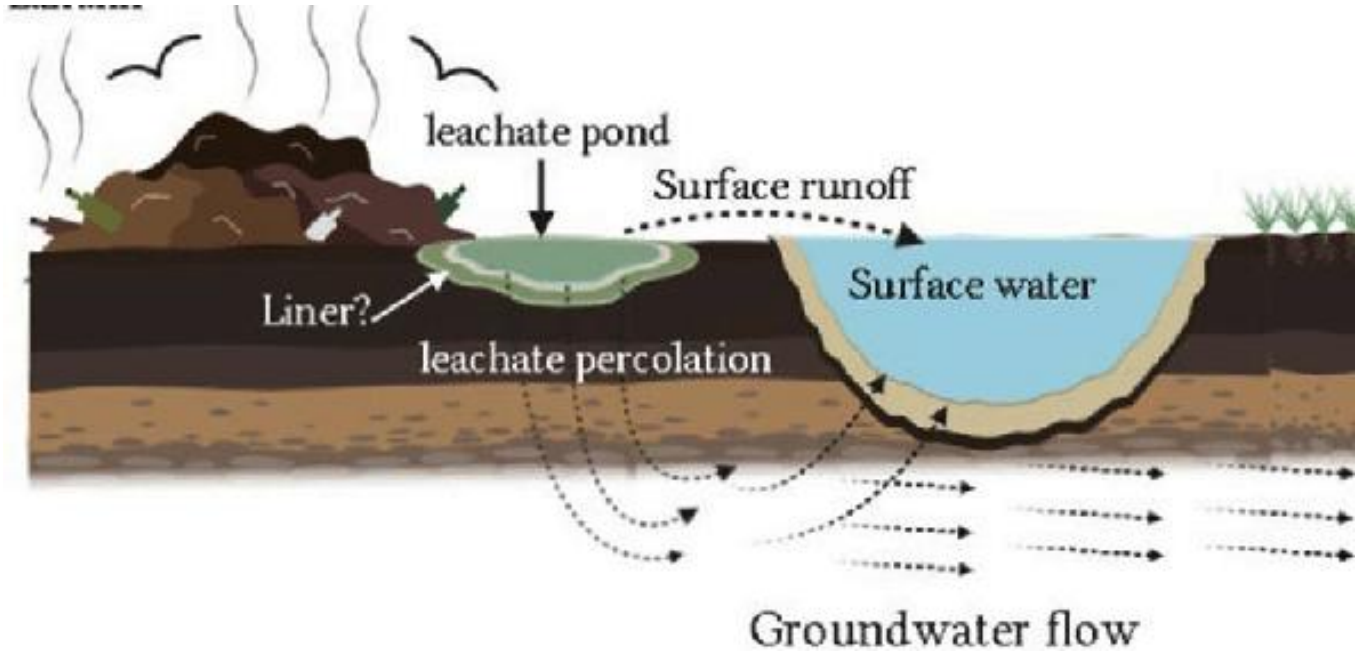
Compound	Range (µg/l)	References[d]
Aromatic hydrocarbons		
Benzene	1–1630	a,b,d,f,h,i,k,l,m,n,o,p,q
Toluene	1–12300	a,b,d,f,h,i,k,l,m,n,o,p,q
Xylenes	4–3500	a,b,d,f,h,i,k,l,m,n,o,p,q
Ethylbenzene	1–1280	a,b,d,f,m,n,o,p,q
Trimethylbenzenes	4–250	b,f,o,p
Naphthalene	0.1–260	c,d,f,m,n,o,p
Halogenated hydrocarbons		
Chlorobenzene	0.1–110	a,d,f,m,o
1,2-Dichlorobenzene	0.1–32	a,c,d,f,o
1,4-Dichlorobenzene	0.1–16	a,c,d,f,m
1,1,1-Trichloroethane	0.1–3810	a,b,d,f,m,o,p,q
Trichloroethylene	0.7–750	a,b,d,f,l,m,n,o,p
Tetrachloroethylene	0.1–250	a,b,f,i,l,m,n,o,p,q
Methylene chloride	1.0–64	a,b,d,k,m
Chloroform	1.0–70	a,b,d,h,i,k,o,p,q
Phenols		
Phenol	1–1200	c,f,g,k,m,n
Cresols	1–2100	c,g,j,k,l,m,n
Pesticides		
Mecoprop[a]	2.0–90	c,e,l, n
Miscellaneous		
Acetone	6–4400	a,i,k,o
Diethylphthalate	10–660	c,g,j,m
Di-*n*-butylphthalate	5.0–15	c,g,i,j,m
Tetrahydrofuran	9–430	a,i,k,o
Tri-*n*-butylphosphate	1.2–360	c,f,j,l,m
Camphor[b]	I[c]	c,f,j,n





Chemicals migrate because there is nothing stopping them.

	Methylenechloride	17.00
	o-Xylene	16.25
	Styrene	527.50
	Toluene	372.00
SVOCs (1)	2,4,6-Trichlorophenol	0.19
	2,4-Dichlorophenol[a]	0.24
	2,4-Dimethylphenol[a]	17.58
	2,6-Dichlorophenol[a]	0.04
	2-Chlorophenol[a]	0.95
	2-Methylnaphthalene[a]	8.53
	2-Cresol	24.59
	3- or 4-Cresol	44.18
	Acetophenone	4.69
	Benzylalcohol[a]	4.46
	Bis(2-ethylhexyl) phthalate	23.79
	Di-*n*-butylphthalate	3.45
	Dibenzofuran	3.64
	Isophorone	9.25
	Pentachloro nitrobenzene	0.01
	Phenol	112.66
Chlorobenzenes (1)	1,3-Dichlorobenzene	0.08
	1,4-Dichlorobenzene	0.03
	1,2-Dichlorobenzene[a]	0.16
	1,3,5-Trichlorobenzene[a]	0.01
	1,2,4-Trichlorobenzene	0.10
	1,2,3-Trichlorobenzene[a]	0.11
	1,2,3,5-Tetrachloro benzene[a]	0.03
	1,2,4,5-Tetrachloro benzene[a]	0.02
	1,2,3,4-Tetrachloro benzene[a]	0.08
	1,2,3,4,5-Pentachloro benzene[a]	0.08
	Hexachlorobenzene	0.04
PAHs (1)	Acenaphthene	0.64
	Formaldehyde	445.05
	Isovaleraldehyde[a]	10.20
	p-Tolualdehyde[a]	5.85
	Propionaldehyde	112.60
PCDDs/Fs and PCBs (2)	Total PCDDs/Fs	5.80×10^{-3}
	TEQ PCDDs/Fs	7.68×10^{-5}
	Total PCBs	1.26×10^{-1}
	TEQ PCBs	1.34×10^{-6}

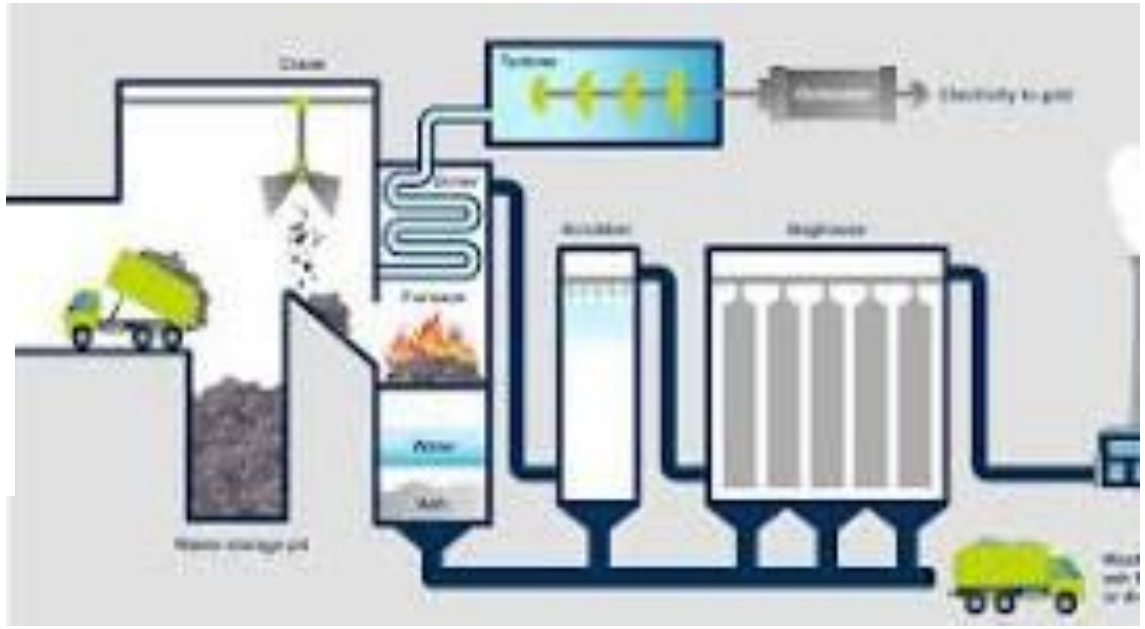
Source. (1) Ref. [34]. (2) Ref. [37].

[a] Compound of interest not on HAP list.

processes, such as cement kilns and utility boilers [80–82]. Another potentially attractive option is the use of ground tire material as a supplement to asphalt paving materials. The Intermodal Surface Transportation Efficiency Act [83] mandates that up to 20% of all federally funded roads in the US include as much as 20 lb (9 kg) of rubber derived from scrap tires per ton (907 kg) of asphalt by 1997. Lutes et al. [84] measured the air emissions from adding tire rubber to asphalt. In spite of these efforts, less than 25% of the total amount of discarded tires are reused or reprocessed, and the remaining 175 million scrap tires are discarded in landfills, above-ground stockpiles, or illegal dumps. In addition,

Table 10
Emissions from burning dumps and landfill fires (ng/m^3)

Class	Compound	Controlled landfill fire	Uncontrolled landfill fire
PAHs	Acenaphthylene	90	60
	Acenaphthene	50	30
	Fluoranthene	100	50
	Phenanthrene	520	30
	Anthracene	160	85
	Fluorene	120	180



Harmful chemicals release into the air through Open Burning

These circumstances are common. Many landfills present worse exposure risks and management challenges.

About three-quarters of landfills are within one mile of town and one-quarter are within 1000 ft of town.

Proximity to Water

Proximity: Nearly 30% are within 100 ft of a primary water body, about half flood yearly during breakup.

YK Delta Landfill

Worker safety concerns.

Sites with the most hazardous wastes were linked with a ***4 times greater chance of certain types of birth defects,*** *as well as other negative birth outcomes.*

E-wastes make up the biggest volume of hazardous waste.

They contain chemicals like lead, cadmium, flame retardants, phthalates, that can cause cancer, developmental delays, IQ loss, reproductive problems, and more.

Limited space to store e-waste.

- A 500-person village can generate 20,000 lbs of e-waste each year.
- Alaska makes around 25 million pounds of e-waste each year.


Safety is also a problem even
if it doesn't look like it.


Lithium Battery Air Incidents
involving smoke, fire, or extreme heat
Cellular Phone
86
Other Electronic Device
75
Laptop
72

About 90% of communities can't afford to operate a backhaul program on their own and still run their landfill properly.

Backhaul creates jobs, increases Alaska transporter revenues, protects people, and reduces future liability concerns.

Backhaul Alaska helps to leverage logistics and supplies but is grant funded also…

Trainings

Logistics

Site Visits and Safety Checks

Supplies and Inventory Assistance

Regional Coordination & Guidance

The E-waste problem in Urban Alaska

- Even the best urban landfill liners fail and will eventually release toxic chemicals to water and land.
- Alaskans depend on the environment for their food – salmon, moose, berries can all be impacted.
- It’s a big liability risk.

The E-waste problem in Alaska

- it is i**nconvenient** because there are few locations and there are restrictions on what is accepted.
- But making people pay to drop-off their electronics is a big disincentive. We want to **capture the full wastestream**.
- Our schools and small businesses pay when they are struggling.
- Our big cities pay for e-waste disposal when those funds could go to balance budgets.

We want to recycle , but it is so expensive.

Disposal costs are burdening our governments, our schools, small businesses,non-profits, and the public.

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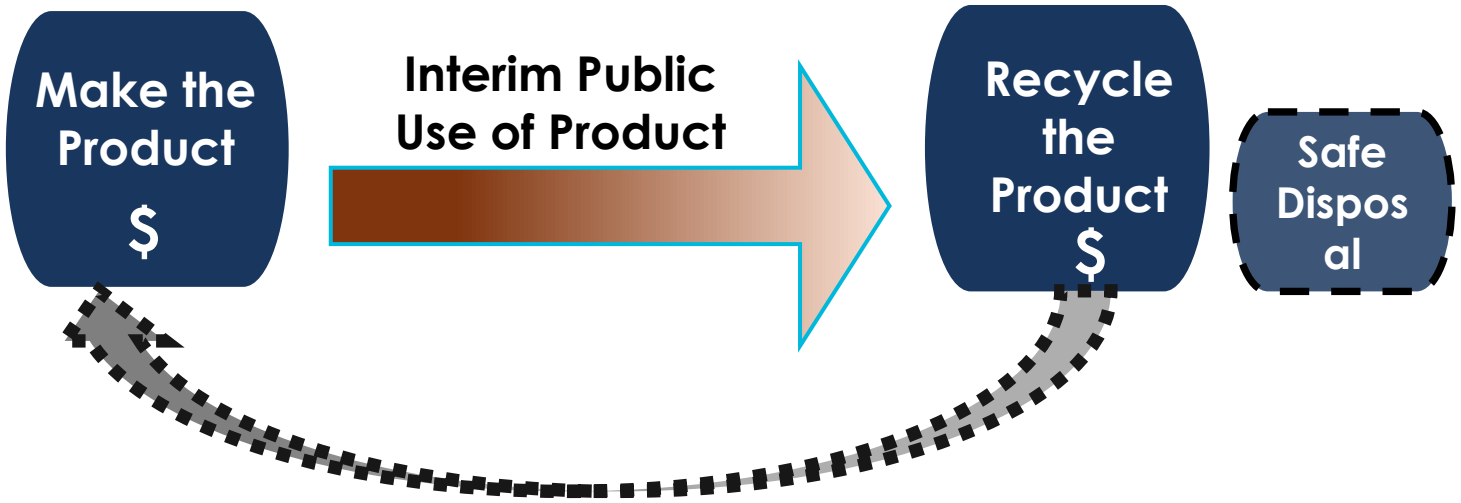
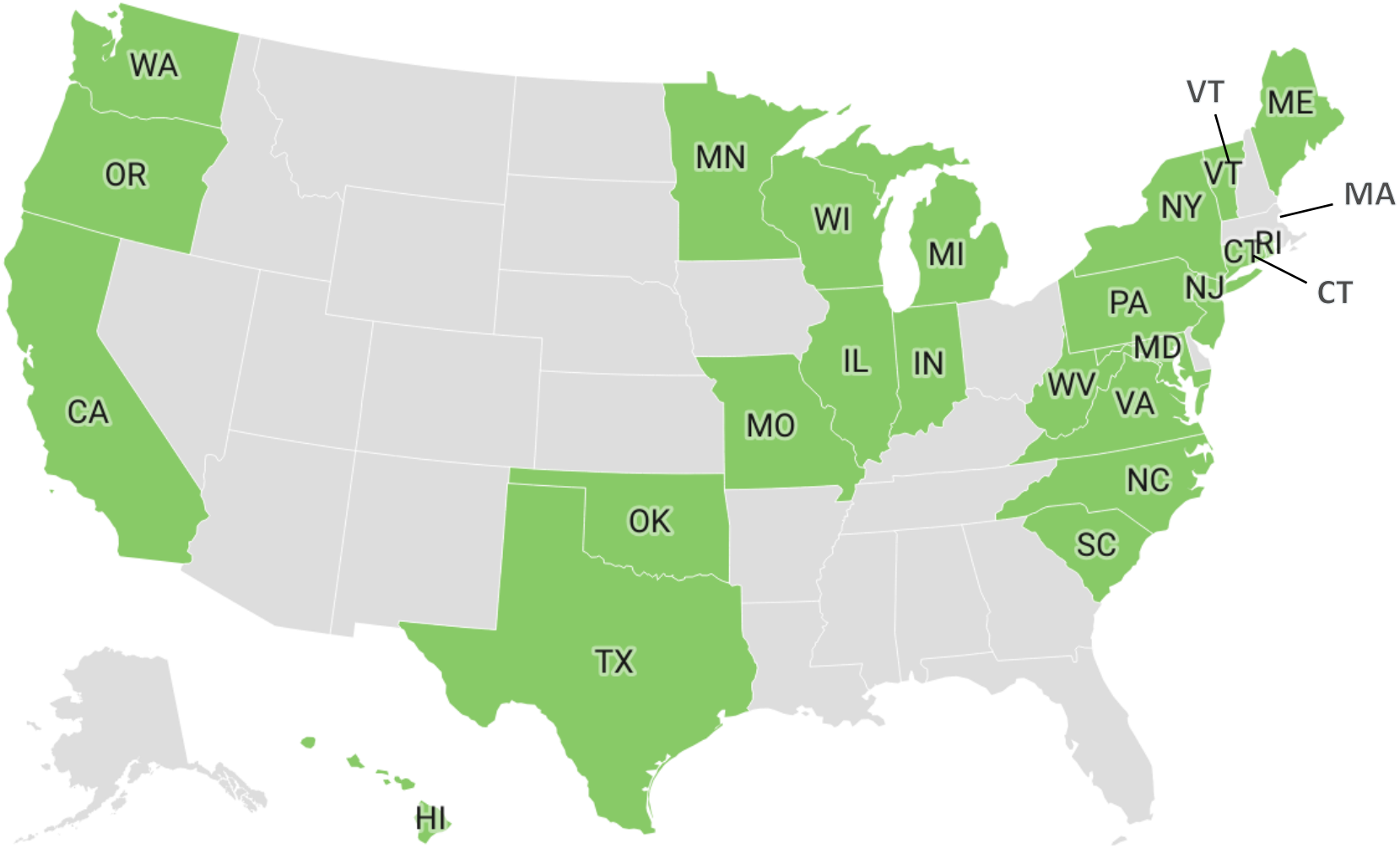
#1. Product Stewardship.



- A **law** that **shifts the cost** of safe recycling/disposal **to the producers.**
- **Producers pay for the product development and they pay for its disposal – the full life cycle of the product.**
- Because producers have to pay for disposal – they are motivated to produce less toxic, more durable, repairable, and /or more recyclable products. **Market Efficiency.**

US ELECTRONICS LAWS 2024



PRODUCT STEWARDSHIP INSTITUTE

E-waste legislation for Alaska

- SWAT researched product stewardship in Maine, BC, Hawaii and consulted with stakeholders around the state over several years.
- PSI helped incorporate experiences from other states through a template
- A stakeholder advisory group discussed and drafted a framework that fits Alaska.

PRODUCT STEWARDSHIP INSTITUTE

Resolutions: Alaska Federation of Natives, Alaska Municipal League, multiple small communities, the **Solid Waste Association of North America**, A**laska Chapter**

Some of the Groups, Tribes, Organizations who have provided input for a Framework that will work for Alaska. 2018 - 2023

- Alaska Support Industry Alliance
- UAA Cooperative Development Center
- Alaskans for Litter Prevention and Recycling
- Maniilaq Association
- Saltchuk
- Alaska Marine Lines
- Aleut International Association
- ANVCA
- Alaska Air Carriers Association
- Denali Commission

- TetraTech
- Waste Management
- Alaska Municipal League
- Knik Tribe
- AVCP
- Anchorage Municipality
- Curyung Tribe
- Solid Waste Assoc. N. America
- Total Reclaim
- Interior Greenstar
- Central Recycling

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Every community is covered.

- Larger communities (over 5,500) get year-round drop-off centers
- Offroad communities would have essentially a shipping van(s) to store waste, and recycling, shipping, supplies, and labor would be covered to ship out accumulated electronics annually.
- Schools would be included as would smaller business and nonprofits.

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To know

- **Producers covers all costs : collection, transportation, processing, recycling, education, program administration, and ADEC oversight/administration.**
- **There has never been a documented price increase in computers/electronics after a bill has passed – here or worldwide.**

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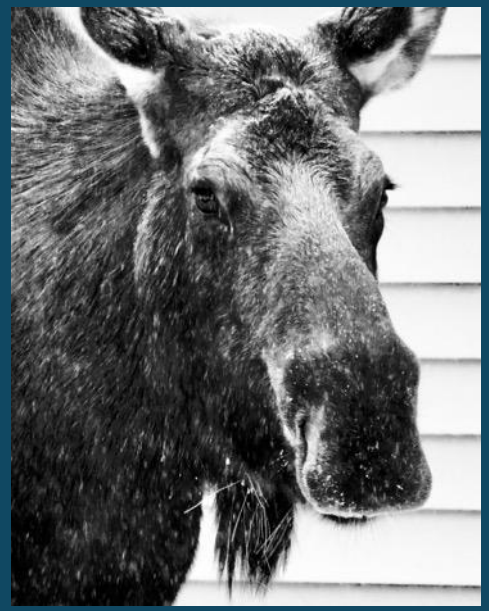
The Bottom Line…Why not?

By incorporating disposal costs into the product, the Market makes health protection and cost much more efficient than what we could otherwise do.



- **No obligations on Alaska Retailers.**
- **No taxes or fees for Alaska consumers.**
- **No additional cost for the State.**

Annual Electronic Recycling for For 500-person village

Location	Mixed Scrap/lb
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

$3,500 in annual training & supplies on average

Annual Total: $17,500 to $37,500

Staff time: $7500 to 15,000

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