

WASTE TO ENERGY

Design and Permitting of a New Thermal Treatment Waste to Energy Project in Anchorage, Alaska – A creative solution to multiple regional utility challenges

Mark Spafford, P.E.

Deputy Municipal Manager/ Anchorage
Hydropower Utility Director





LEADERSHIP / DUTIES

Municipality of Anchorage



Suzanne
LaFrance
Mayor



Mark Spafford, P.E.
Deputy Municipal Manager



Becky Windt PearsonMunicipal Manager

PLUS - All the cool Projects like: WTE, Climate Resiliency Plan, Stormwater Utility, Port of Alaska Modernization Program (\$2B)...



Bart RudolphPublic Transit
Director



Mark Spafford, P.E.
Anchorage Hydropower
Utility Director



Dave Persinger, P.E.
Anchorage Water &
Wastewater Utility
General Manager



Mike Abbott
Port of Alaska
Interim Director



Earl MalpassMerrill Field
Director



Brian Pickard
Safety
Director

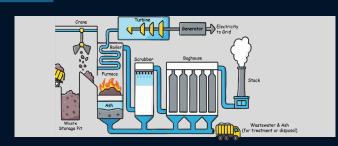


Kelli Toth Solid Waste Services Director

AGENDA



1 Why we are here



04 WTE Technology Overview



WTE Technologies
Evaluation



Anchorage is WorkingToward a WTE Facility



WTE Facilities in the World & USA

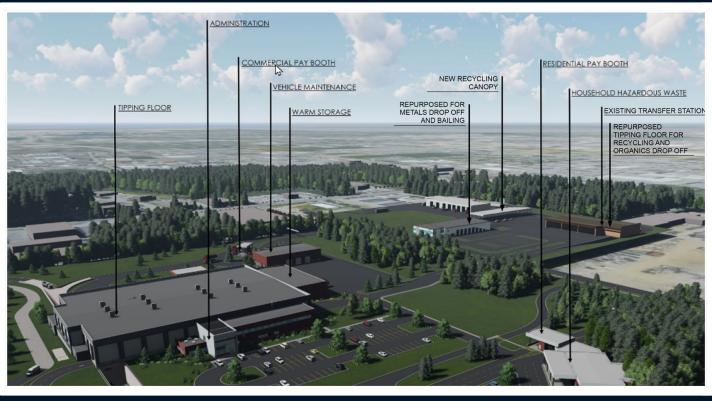


Next Steps for Anchorage





"NEW" CENTRAL TRANSFER STATION - \$120M Planned, Designed, Financed and (started) Constructed 2018 - 2021





Designed Appearance

Final Product

NOW LET'S DO WASTE TO ENERGY!!!

"ANCHORAGE ENERGY RESILIENCE PLAN RECOMMENDATION

(the Plan formerly known as the "Anchorage Climate Action Plan")

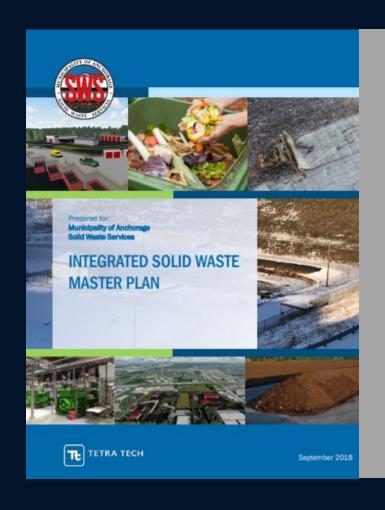


Objective 10. Capture potential energy in collected refuse.

No.	Actions	Co-benefits	Primary Municipal Liaison	Potential Partners	Timeline
10A	Develop leachate evaporator with excess landfill methane to reduce leachate hauling	\$	SWS	Doyon Utilities, Anchorage Water and Wastewater Utility (AWWU), Joint Base Elmendorf-Richardson (JBER)	Mid-term
10B	Identify and implement additional means of energy collection from solid waste (e.g. organics digestion, mass burn).	\$	SWS	Alaska Waste, Alaska Energy Authority, AWWU, Central Environmental Inc., Anchorage electric utilities, local compost makers, entrepreneurs	Mid-term



INTEGRATED SOLID WASTE MASTER PLAN RECOMMENDATION



INTEGRATED SOLID WASTE MASTER PLAN I SEPTEMBER 2018 | DRAFT

New transfer station, administration, mai 30+ year old assets. This improves safety life of the ARL through improved commun year shutdown of the existing facility for i management facility at existing transfer adjacent uses that may impact future CTS

Diversion Program



Increase diversion through food was organics collection/drop-off program compost facility capacity and of development, public sector recycling outreach and education programs reuse. Increase SWS diversion rate 27% and reduce per capita disposal 5.4 lbs_/day (for those within the Area).

Alternative Technologies



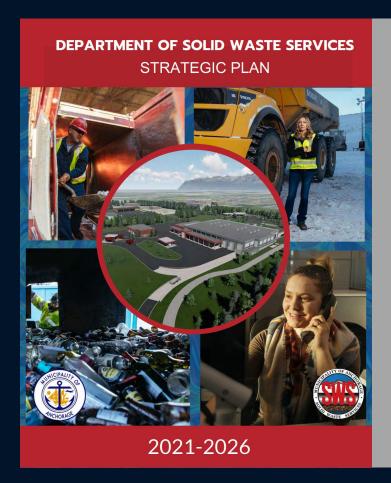
Conduct feasibility study of technology alternatives to landfill disposal (including biological or thermal treatment) for addressing SWS and potentially AWWU (Anchorage Water & Wastewater Utility) needs. A 20% to 90% reduction in landfill disposal (by volume) may be achieved with biological or thermal treatment, respectively.

Integrated Solid Waste Master Plan



GOAL OF THE SOLID WASTE SERVICES STRATEGIC PLAN

("What we do and how we do it.")



PLAN AT-A-GLANCE

GOAL AREA ONE

Community Sustainability

All Solid Waste Services efforts contribute to the sustainability of the Anchorage community.

FLEET

Prioritize the development of a successful electric/hybrid fleet of vehicles.

RECYCLING

Develop and implement results-based tactics that make recycling more accessible to the community.

LANDFILL

Take action to extend the life of the Anchorage Regional Landfill.

CLIMATE ACTION PLAN

Coordinate with the Municipality of Anchorage on implementation of the climate Action plan.





GOAL AREA TWO

Operational Excellence

Solid Waste Services is an inspired and empowered team committed to high standards throughout all operations.

SAFETY

Continue our commitment to the safety of our employees, sustomers, and community.

COMPLIANCE

Improve regulatory compliance through enhanced permit management practices.

NEW FACILITIES

Prioritize the opening and integration of new facilities to moreove operational excellence.

WORKFORCE

Adapt and meet the needs of our workforce by allowing and understanding the value of flexible work practices to include remote teleworking when feasible.

SHARED SERVICES

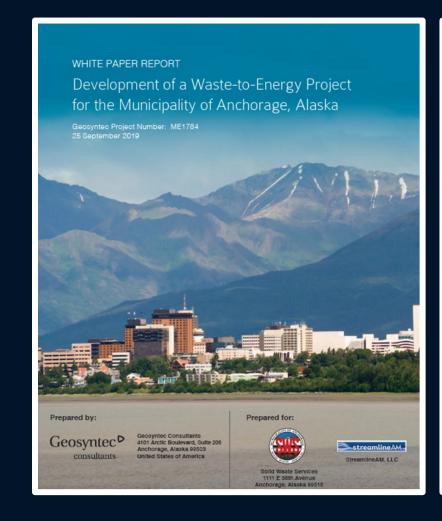
Reinforce and leverage the value of our shared services with the Anchorage Water & Wastewater Utility (AWWU).

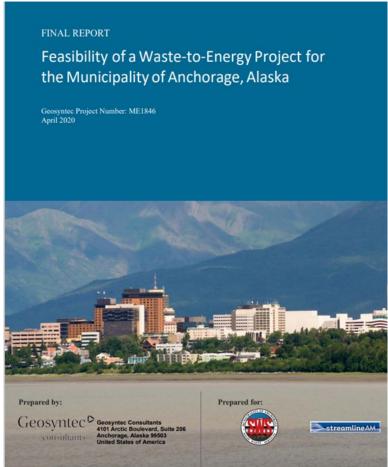
Strategic Plan /2021-2026





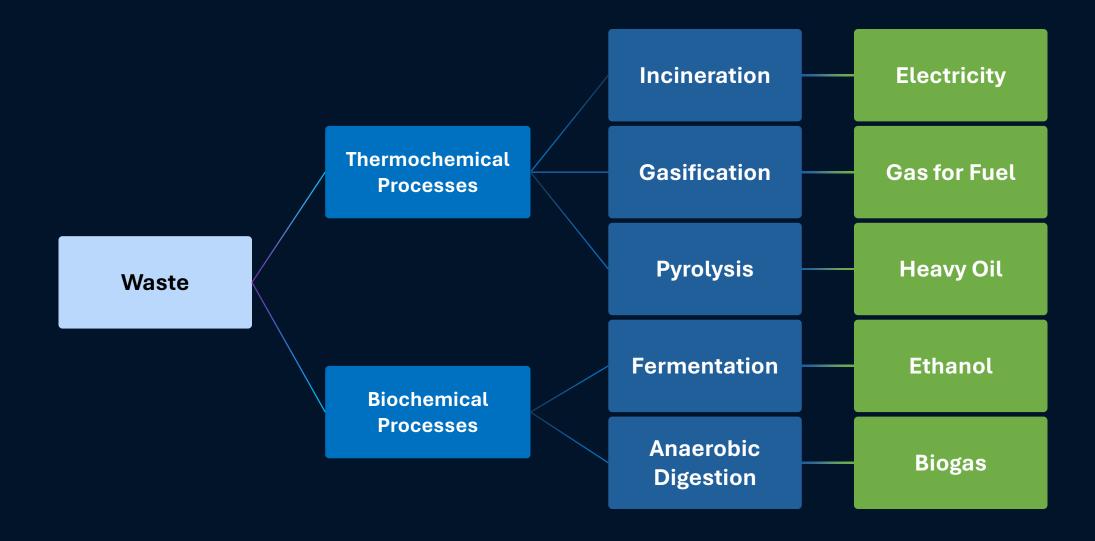
THESE PLAN RECOMMENDATIONS RESULTED IN TWO WTE REPORTS



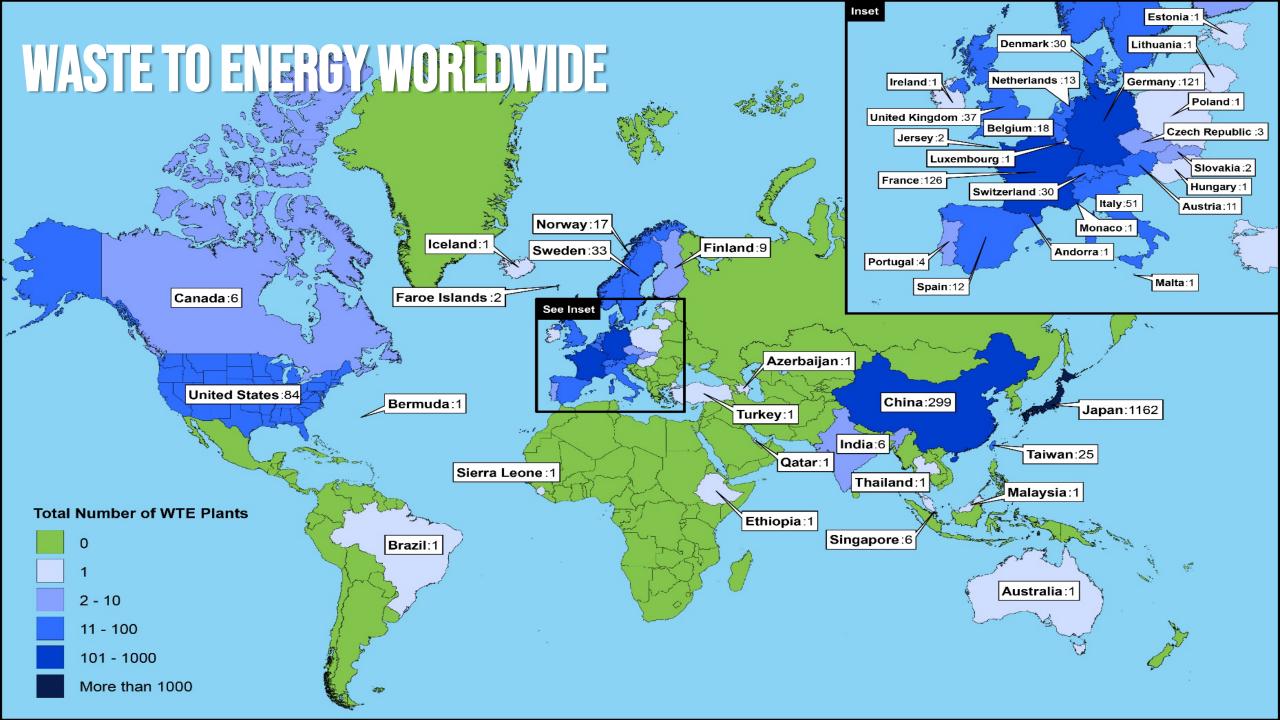




WASTE TO ENERGY TECHNOLOGIES EVALUATED IN REPORTS







WASTE TO ENERGY IN THE U.S. OPPORTUNITIES IN ANCHORAGE, AK



- ~75 Waste to Energy Plants in 25 States
- ~14% Solid Waste Managed
- 3 Facilities in the West
 - Spokane
 - Vancouver
 - Honolulu (burns wastewater sludge)
- Municipality of Anchorage Landfill Gas to Energy Plant at Anchorage Regional Landfill Could Double Capacity
 - Existing gas production is 7.2-MW (max output)



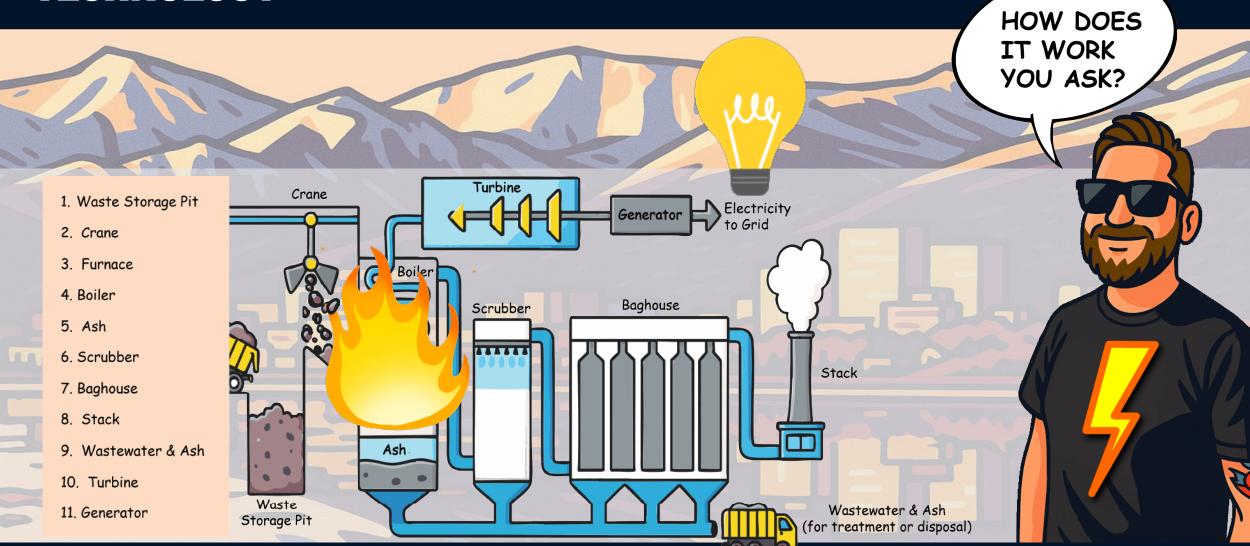
ADVANTAGES OF WASTE TO ENERGY PLANTS



- ✓ Commercially proven, 90% capacity factor
- ✓ Mature technology
- ✓ High gross energy output
- ✓ U.S./Europe/Asia based vendors
- ✓ Pool of experienced professionals (mostly outside U.S.)
- ✓ "Ultimate" recycling program that increases diversion
- ✓ Reduces leachate and no LFG production
- ✓ Offsets energy and heat production from petroleumbased fuels (natural gas, coal, etc. in Alaska)
- ✓ Is a Qualifying Facility renewable energy source (under 75 MW)



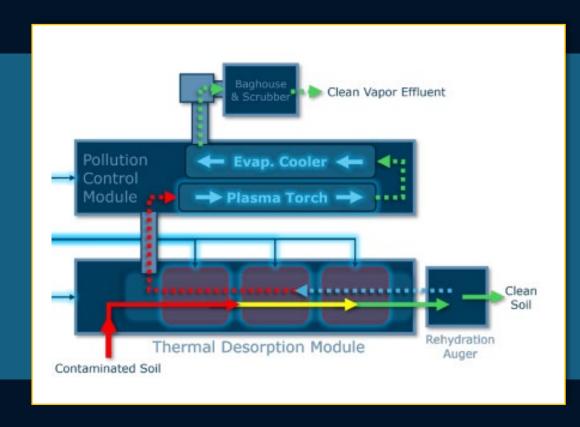
TECHNOLOGY





BIOSOLIDS/PFAS DESTRUCTION

(System will use power produced from WTE to treat it)



ANCHORAGE BENEFITS

- ✓ Offsets wastewater capital and operations cost (pays for it)
- √ Keeps money local
- ✓ Alaska has environmental liabilities
- Economic Opportunity Revenue to Fund facility
- ✓ No currently available PFAS treatment system in AK



BENEFITS OF WASTE TO ENERGY FOR ANCHORAGE/ALASKA

WTE is Renewable Energy, Will Offset Natural Gas Usage ~20-30MW

(sell Power)

Reduces Greenhouse Emissions

(as compared to landfilling)

Significantly
Extends Life of
Landfill
>100-yrs

Can Treat
PFAS/PFOA
Contaminated
Soils, WW
Biosolids

Capacity Factor of 90%

Allows Space for Hazardous Waste Landfill Cell



THIS IS WHAT IT'S GONNA' TAKE!

WTE PROGRAM ADVISORY BOARD

WTE PROGRAM **SPONSOR**

WTE PROGRAM STEERCO

WTE PROGRAM

Economics & Financing & **Deal Structure**

Primary Objective:

Determine & drive program economic & financial solution(s) to fund development and deliver required ROI.

Key Responsibilities:

Management and oversight of all economics & financing effort.

Financial. WTE Deal SMEs funding Structure roadmap Financial Economic SMEs Feasibility Model **Business Case** Identify Grant SMFs Additional Applications Sources Coord with Benefits / Fin SMFs Fed/State Performance Funding Reps Reporting Related RFP Related SMEs specification Contractor development Management

Commercial, Procurement & Legal

Primary Objective:

Streamline & drive commercial, procurement & legal effort to minimise impact to critical path.

Key Responsibilities:

Coordination and oversight of all commercial procurement & legal effort.

Commercial 8 Manage RFP Procurement Processes roadmap Supplier Develop vetting / Procurement market **Packages** sounding Negotiate Commercial Contracts Partnership MOUs, etc Agreements Contractor Contract Invoices / Admin Claims Coord of Legal Related RFP Advice & specification Artefacts development

Design & Integration

Primary Objective:

Determine technical feasibility and drive technical solution that meets political and socioeconomic constraints.

Key Responsibilities:

Management and oversight of all design and technical effort.

Technical Design roadmap	Technical Feasibility Business Case	
Design Management & Integration	Overall Technical Solution	
Related RFP specification development	Design Review & QA / Oversight	
Siting Study Mgt	Related Contractor Management	
Waste Char. Study Mgt	Waste Shed Analysis Mgt	

ESG, Approvals & Permitting

Primary Objective:

Streamline & drive ESG & approvals & permitting efforts to minimise impact to critical path

Key Responsibilities:

 Management and oversight of ESG and associated approvals and permitting effort.

ESG & Approvals roadmap	Pathway options, analysis & solutions			
ESG Feasibility Business Ca				
Cultural Heritage / Native Titl approvals	e Construction			
Land / zonii manageme	- I engagement I			
AQ Study	spare			

Communications, PR & Stakeholder

Primary Objective:

 Anticipate & drive public engagement and messaging to maximise support for the program

Key Responsibilities:

· Management and oversight of comms. PR and stakeholder effort

Comms, Stakeholders & PR Roadmap	Stakeholder & Community engagement			
Program messaging and artefacts	Customer, community and people experience			
Polling & Political Messaging	Rail Belt engagement			
Video Series	Program Website & Social Media			
Comms & PR Firm Mgt	spare			

Primary Objective:

 Anticipate & drive delivery / operations engagement and effort to ensure worker safety and streamline delivery / handover

Key Responsibilities:

Management and oversight of delivery and operations effort

Delivery & Shadow Operator roadmap	ECI / Delivery Partner involvement			
Shadow	Operational			
Operator	Systems			
involvement	Integration			
Construct-	Construction &			
ability Review	Logistics			
& Efficiencies	Management			
Asset Mgt	Health &			
design	Safety			

spare

Health &

Safety

Management

Program Controls (MOA PMO extension)

Primary Objective:

Streamline program controls to ensure accurate. timely and transparent data management and reporting

Key Responsibilities:

Management and oversight of project & program controls effort

Program Controls Establishment roadmap	Scope, Cost, Schedule & Risk Baseline
Program & Project Performance Reporting	Scope, Cost, Schedule, Risk & Doc Control
Program finance mgt & reporting	Property and facilities management
Manage overall / phase budgeting	Coordinate MOA Business planning and
Finance, invoicing and payments	Onboarding & Systems Support



ANCHORAGE IS WORKING TOWARDS A WASTE TO ENERGY FACILITY

#dosomething, no more studying, that work is done!



COMPLETED ACTIVITIES

- Feasibility Study/Preliminary Engineering Report
- Initial Investment of Funds (\$8M from SWS and AWWU)
- ✓ Hire Program Manager (Jacobs)
- RFPs Issued (more coming soon)

Site Selection

Wasteshed Analysis

Waste Characterization Study

Baseline Air Monitoring

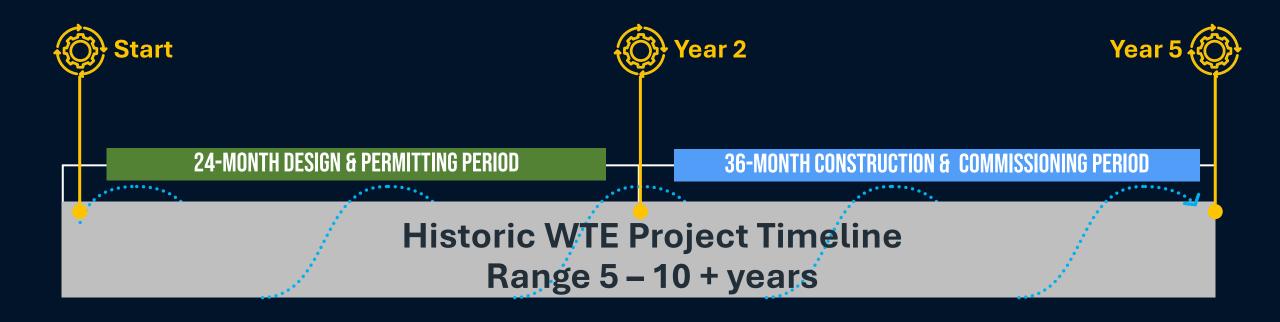
Public Relations & Communications

- Project Schedule
- ☑ Implementation Cost Estimate/Schedule

MOST IMPORTANT ACTIVITIES

- Long Range Financial Plan How to pay for it (>\$600M)
- Operator Scope

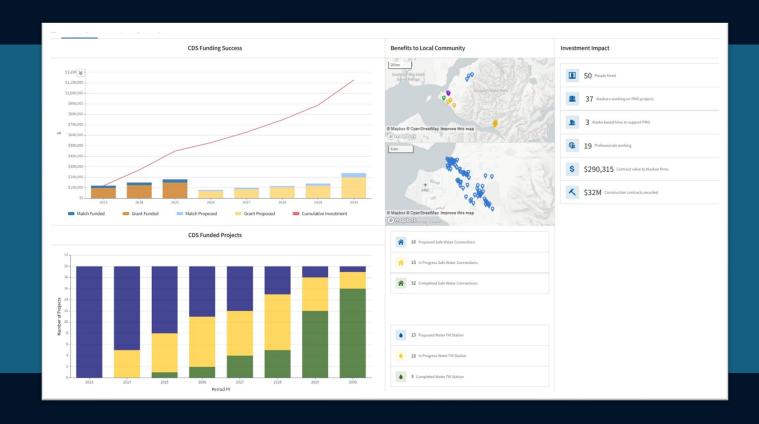
TARGET TIMELINE





PROJECT DASHBOARD

We are thinking BIG and reporting outcomes!





Investment Impact



Community Benefits



Funding



Jobs Created



Project Management Metrics



NEXT STEPS FOR ANCHORAGE (GO BIG OR GO HOME)

#dosomething



Tokyo, Japan-April 2025

Lyon, France-November 2025

I take my GF to see the most fun places...

Request land from military base (JBER) to the Municipality of Anchorage Identify power plant operator for planning, design, construction, and operations

Identify financial plan (how to pay for it)

- Capital
- Cash flow
- Power sales
- Identify other garbage and soil customers throughout AK

Continue to release RFPs to get the work done

Get the work done as quickly as possible – What better place than here what better time than now





THANK YOU!! AND QUESTIONS?

(Reach out to me anytime, this is my favorite thing to talk about...)

Spaffdaddy.com for more information and dates!!!

