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 Pearson
Municipal Manager

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

Bart Rudolph
Public 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 Malpass
Merrill Field Director

Brian Pickard
Safety Director

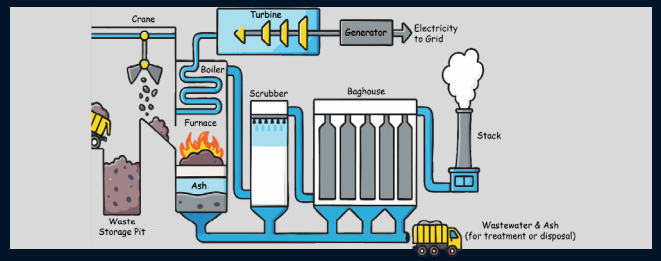
Kelli Toth
Solid Waste Services Director

AGENDA

01 Why we are here

02 WTE Technologies Evaluation

03 WTE Facilities in the World & USA



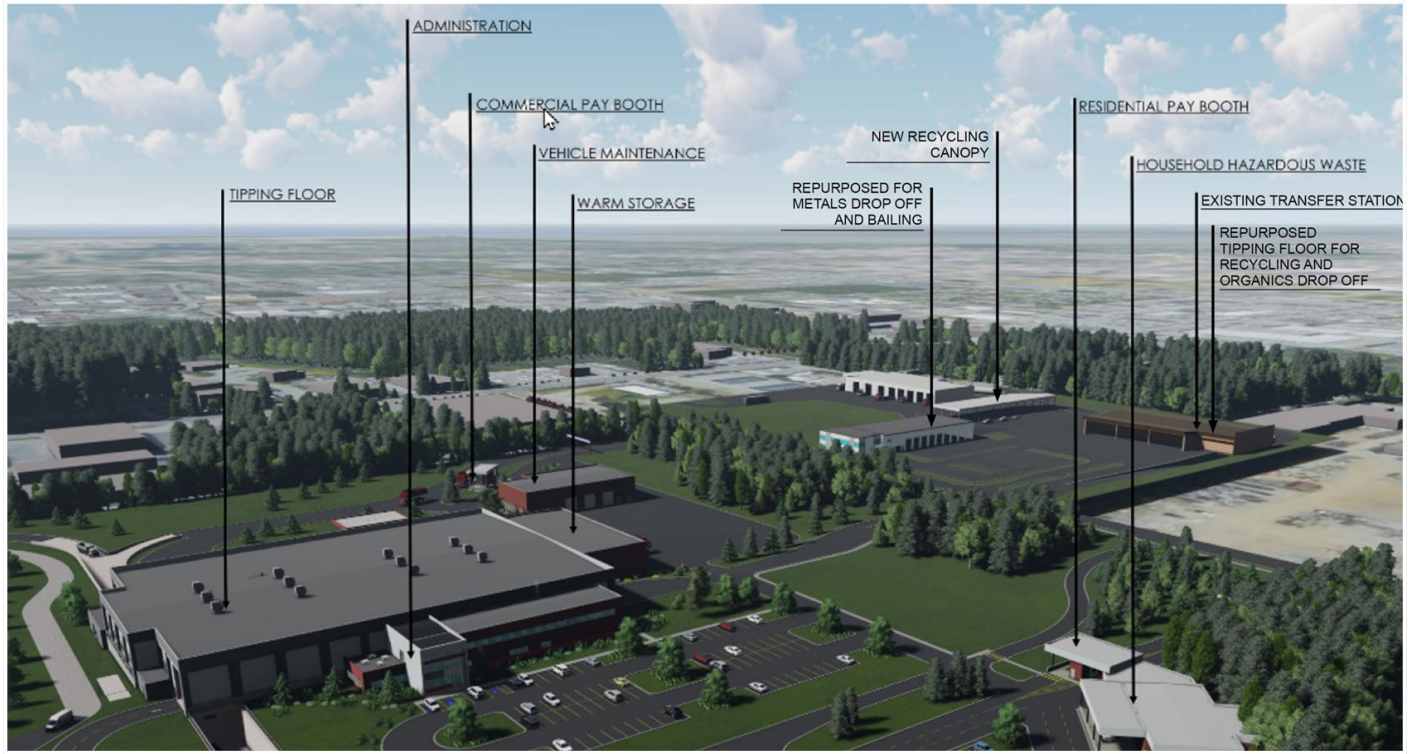
04 WTE Technology Overview

05 Anchorage is Working Toward a WTE Facility

06 Next Steps for Anchorage

"NEW" CENTRAL TRANSFER STATION - $120M

Planned, Designed, Financed and (started) Constructed 2018 - 2021



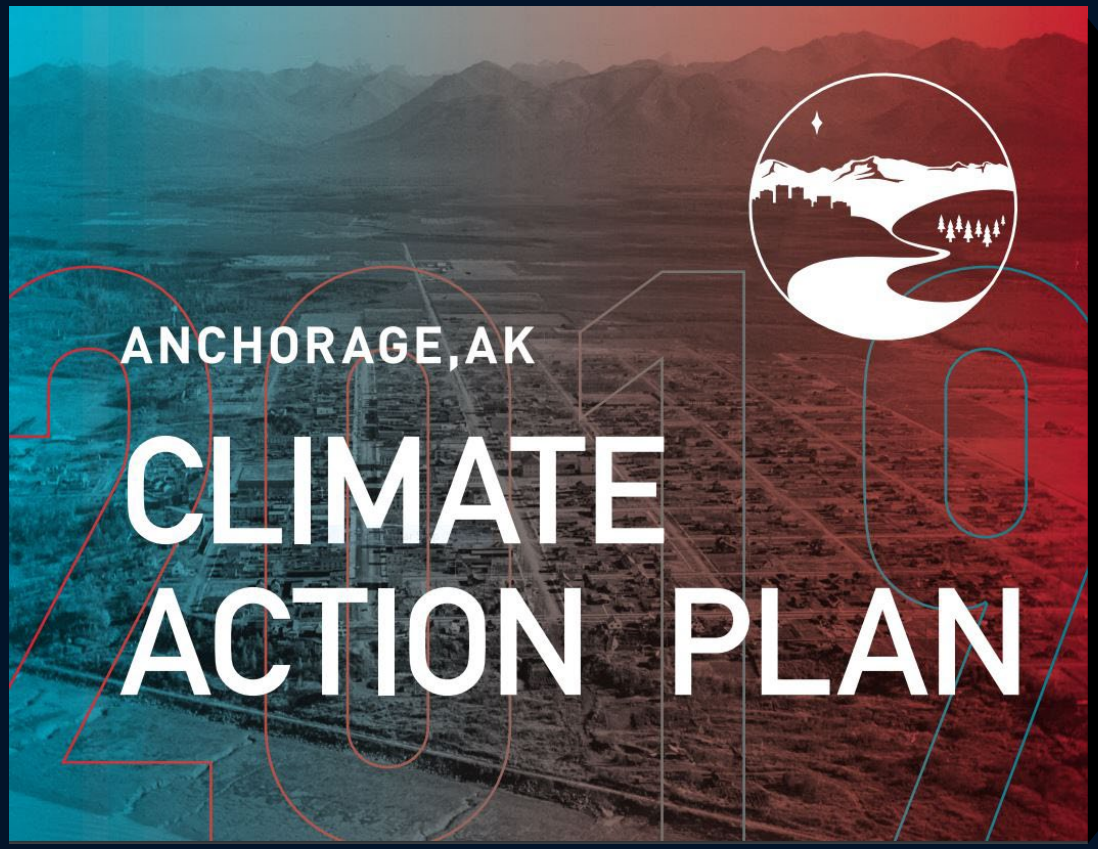
Designed Appearance

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

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, customers, and community.

COMPLIANCE
Improve regulatory compliance through enhanced permit management practices.

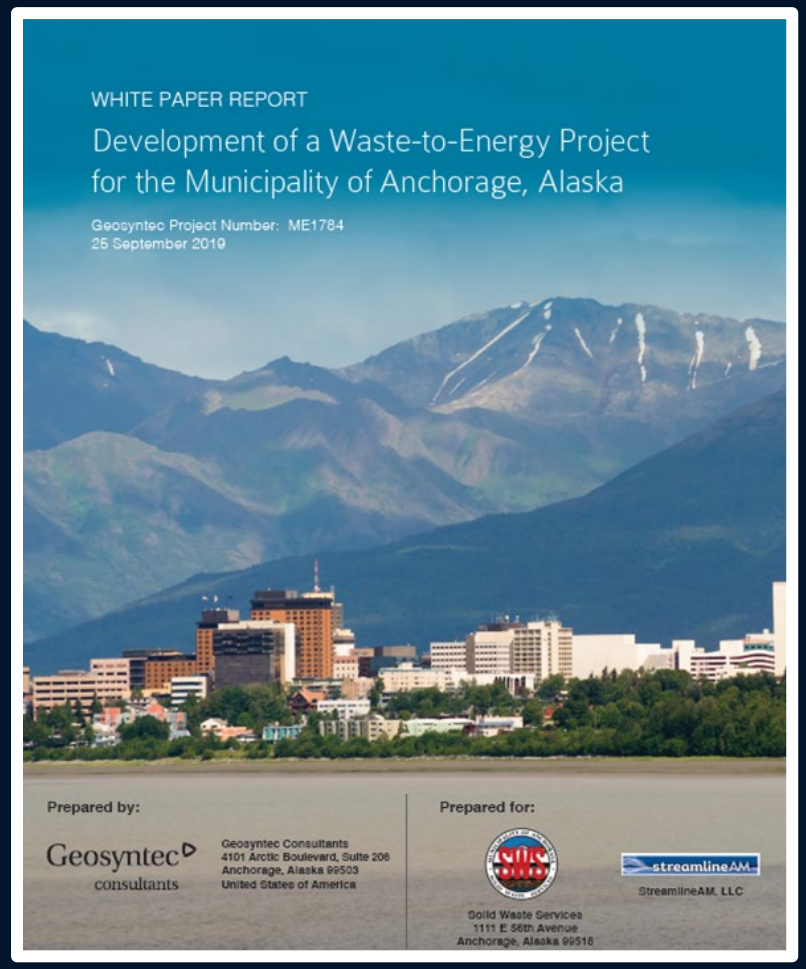
NEW FACILITIES
Prioritize the opening and integration of new facilities to improve operational excellence.

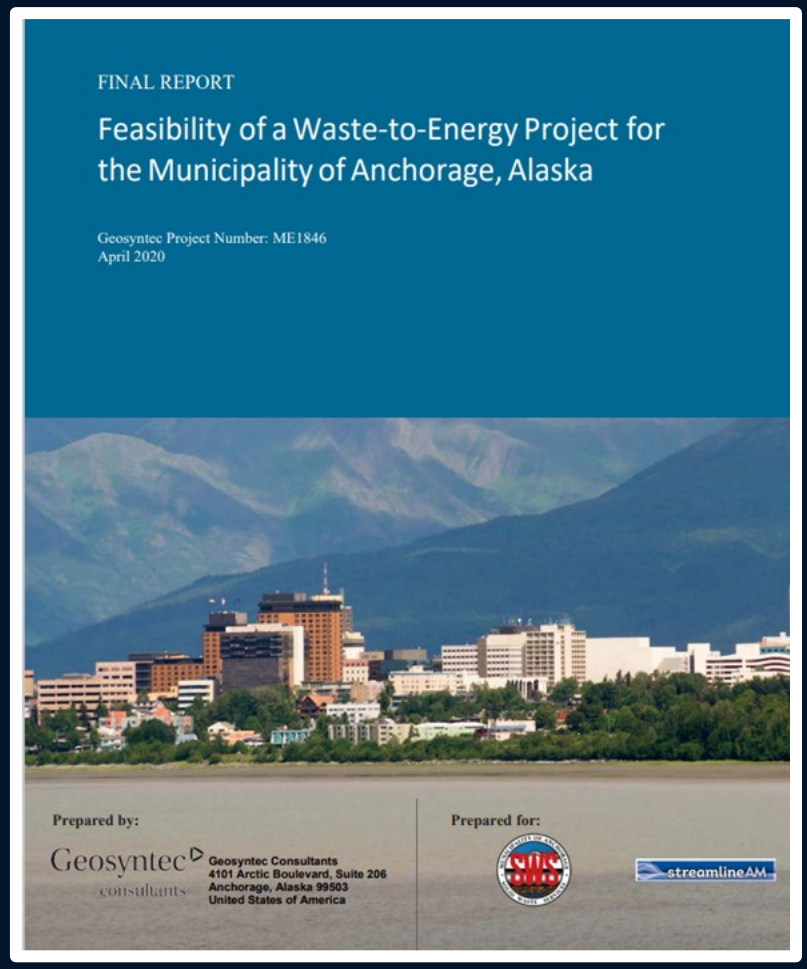
WORKFORCE
Adapt and meet the needs of our workforce by allowing and understanding the value of flexible work practices to include remote teleworking when feasible.

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

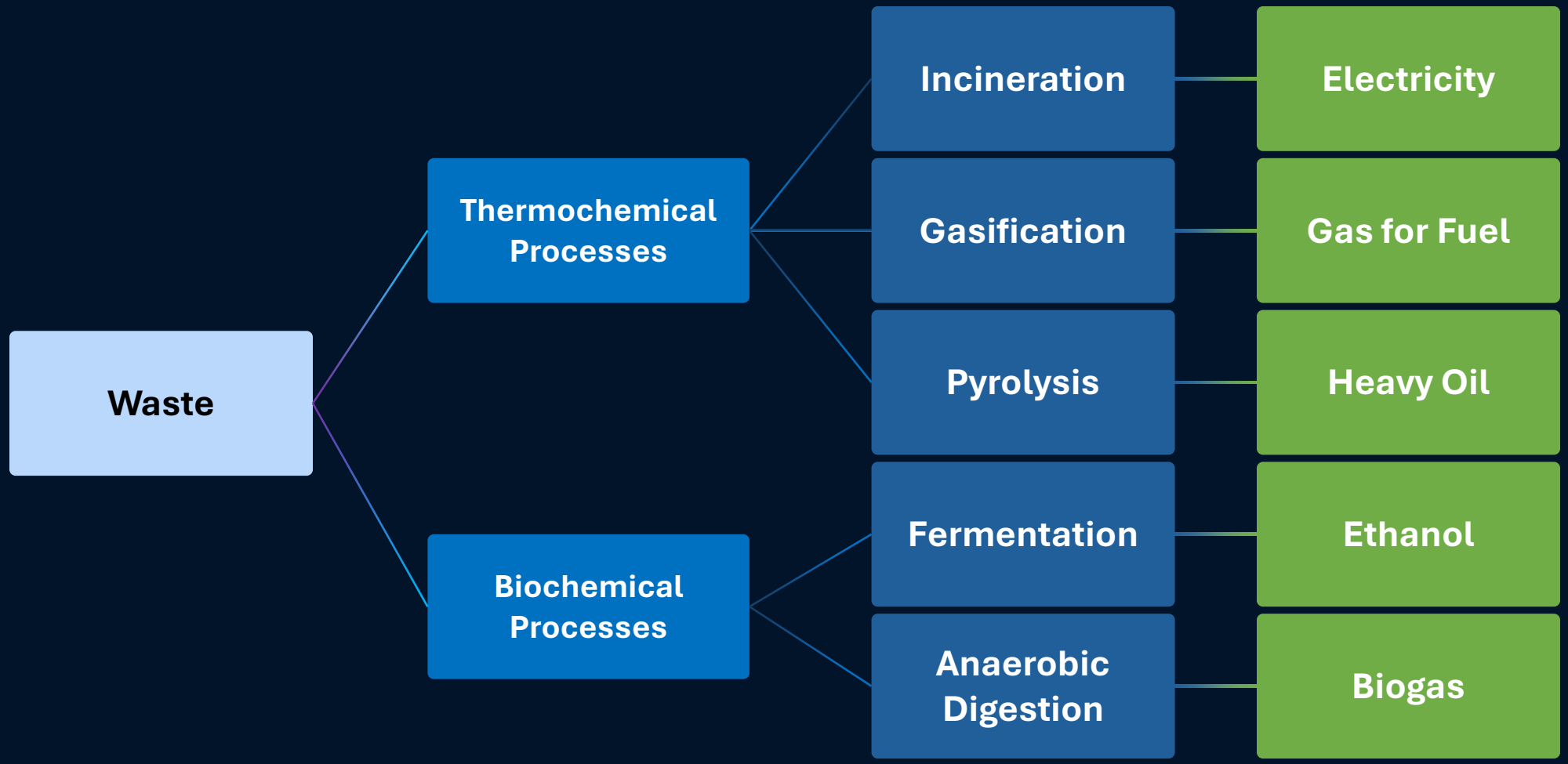
“DOOMSDAY CLOCK” FOR LANDFILL CLOSURE

THESE PLAN RECOMMENDATIONS RESULTED IN TWO WTE REPORTS

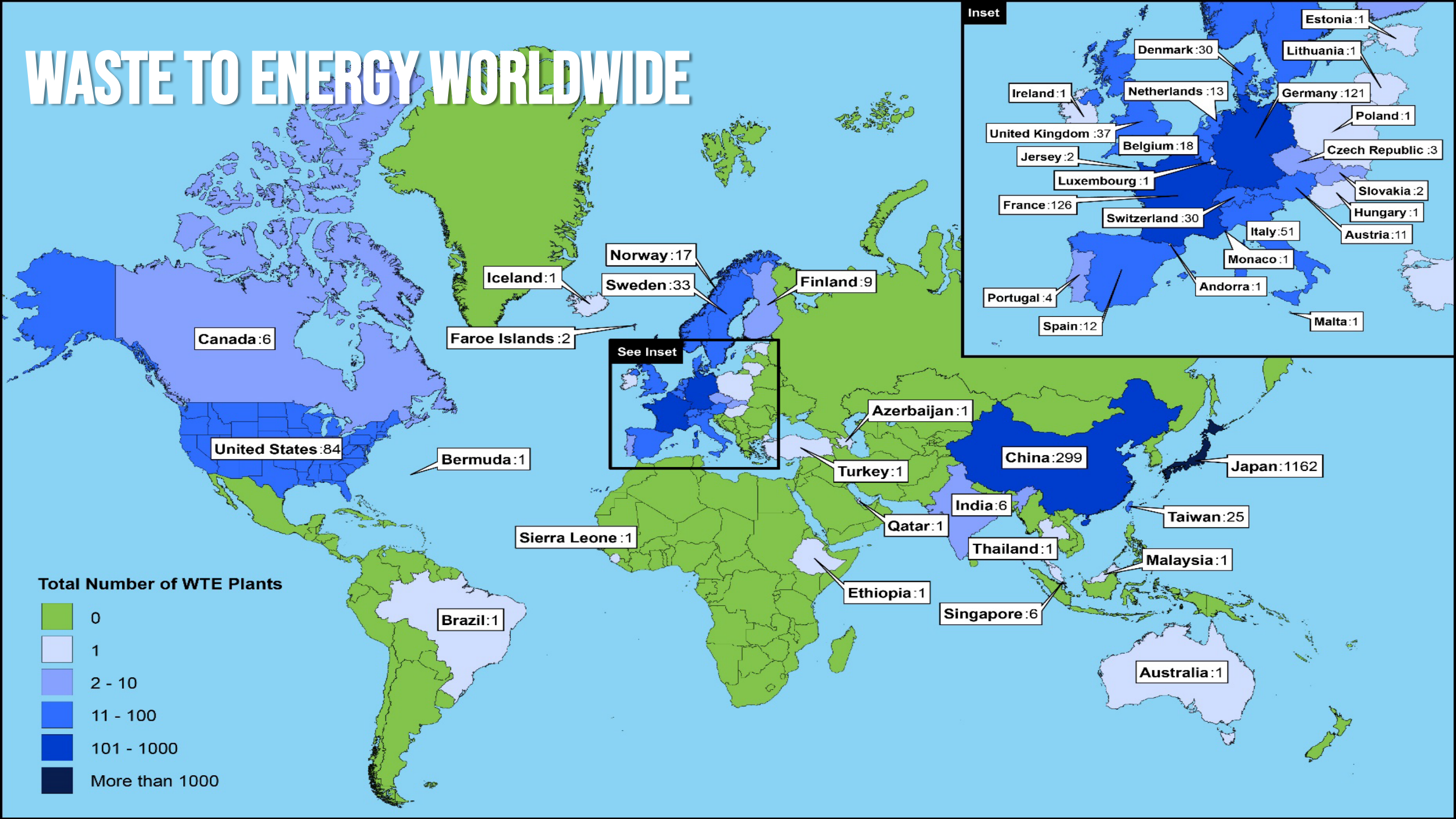




WASTE TO ENERGY TECHNOLOGIES EVALUATED IN REPORTS



WASTE TO ENERGY WORLDWIDE



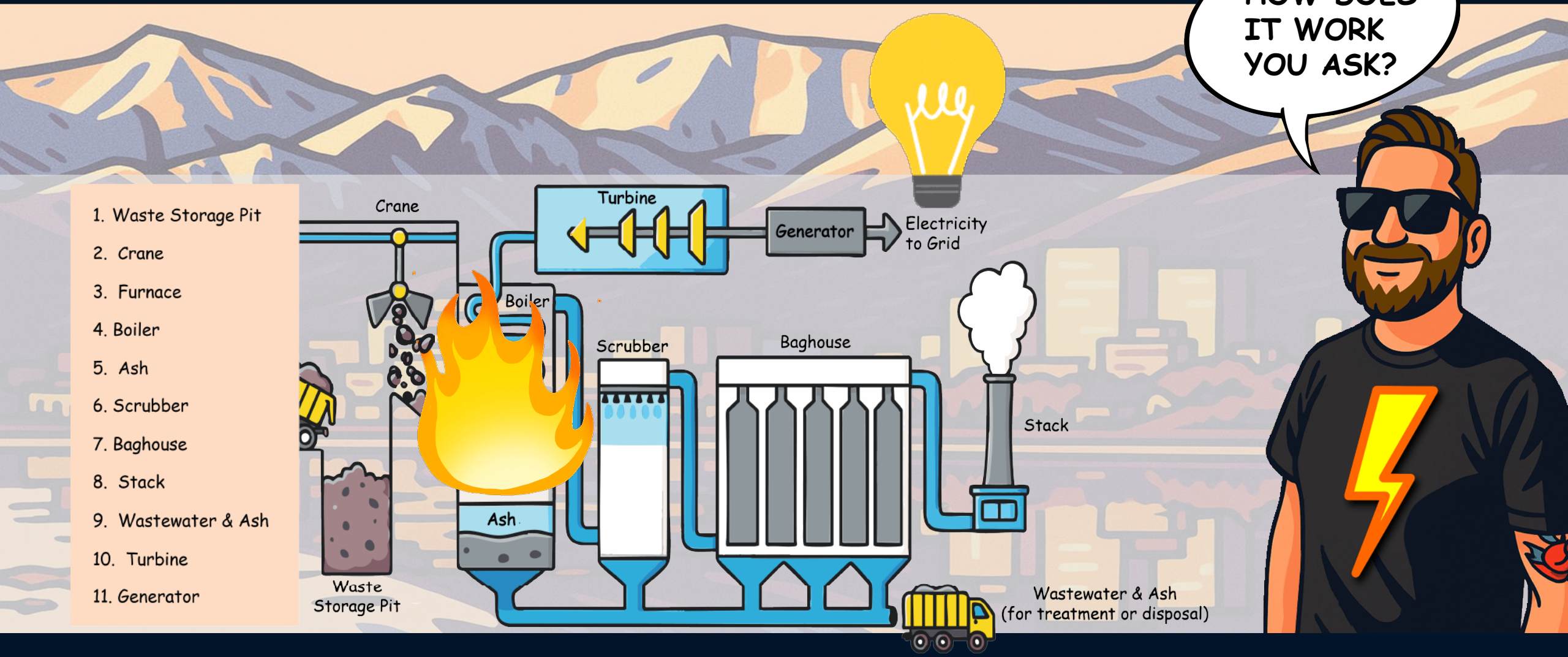
WASTE TO ENERGY IN THE U.S.
OPPORTUNITIES IN ANCHORAGE, AK

- ~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

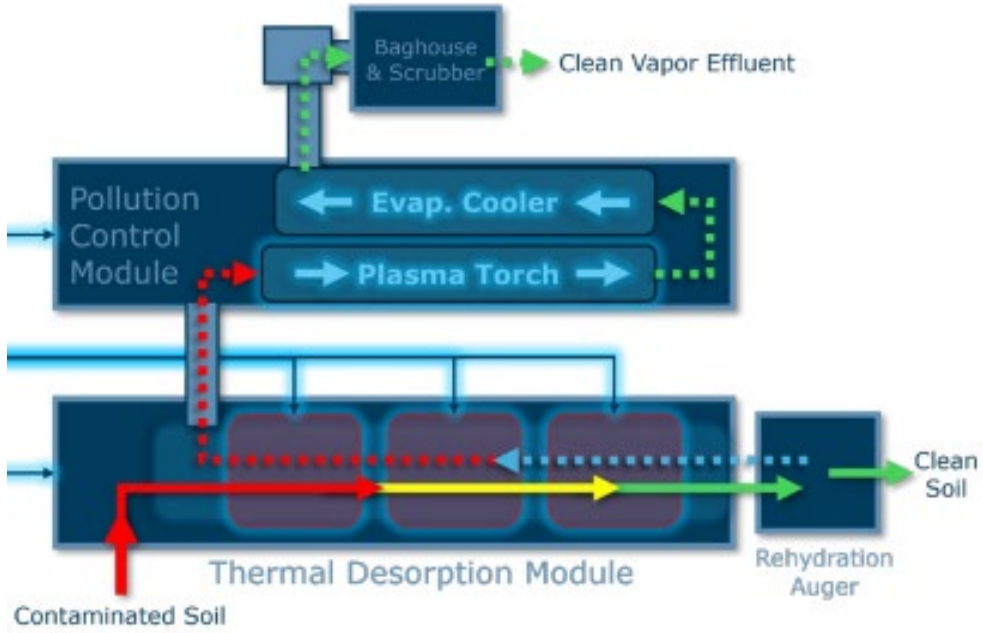
- ✓ Commercially proven, 90% capacity factor
- ✓ Mature technology
- ✓ High gross energy output
- ✓ U.S./Europe/Asia based vendors
- ✓ Pool of experienced professionals (mostly outside U.S.)
- ✓ “Ultimate” recycling program that increases diversion
- ✓ Reduces leachate and no LFG production
- ✓ Offsets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

TECHNOLOGY


HOW DOES IT WORK YOU ASK?
1. Waste Storage Pit
2. Crane
3. Furnace
4. Boiler
5. Ash
6. Scrubber
7. Baghouse
8. Stack
9. Wastewater & Ash
10. Turbine
11. Generator
Crane
Turbine
Generator
Electricity to Grid
Boiler
Scrubber
Baghouse
Stack
Ash
Waste Storage Pit
Wastewater & Ash (for treatment or disposal)

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

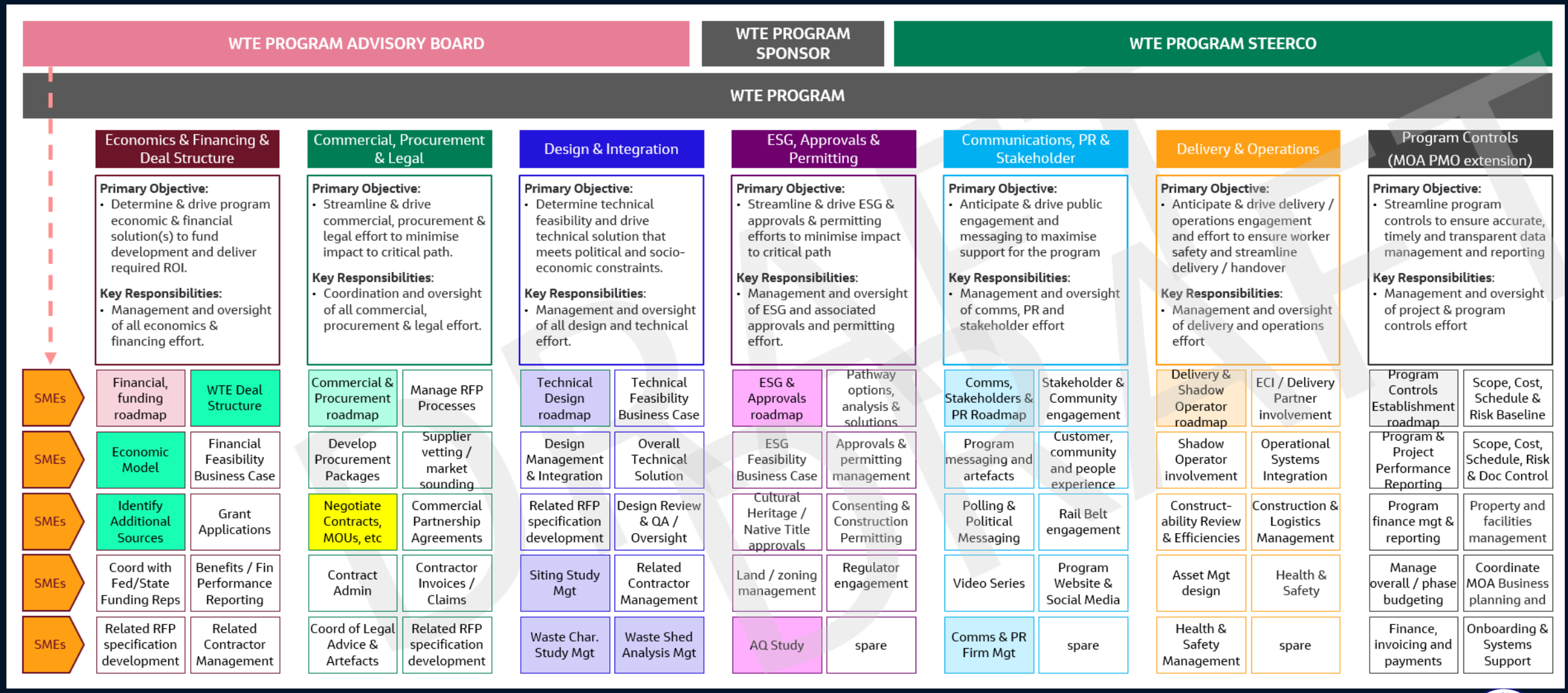
>100-yrs

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!



ANCHORAGE IS WORKING TOWARDS A WASTE TO ENERGY FACILITY

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

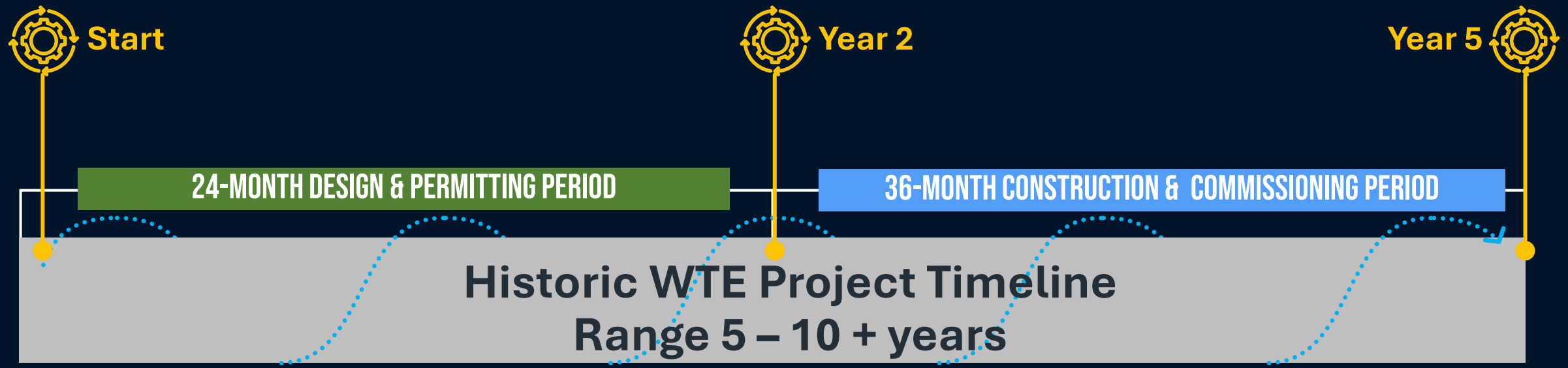
COMPLETED ACTIVITIES

- ☑ 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

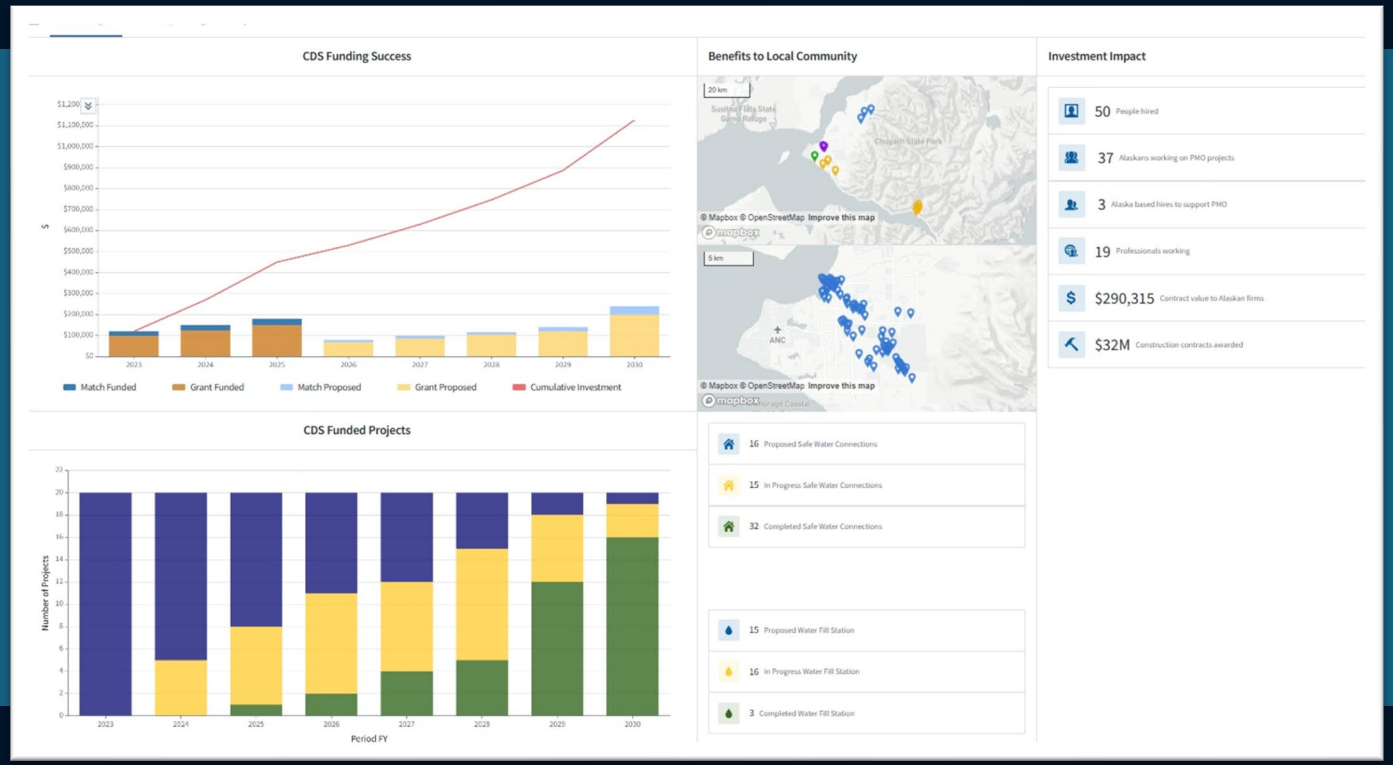
- ⏩ Long Range Financial Plan - How to pay for it (>$600M)
- ⏩ Operator Scope

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!!!