WASTE TO ENERGY ON STEROIDS

IEUOC MEETING DECEMBER 19, 2024

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AGENDA

01 Why are we here?

Don't quit talking about a good idea

02 WTE Technologies Evaluation

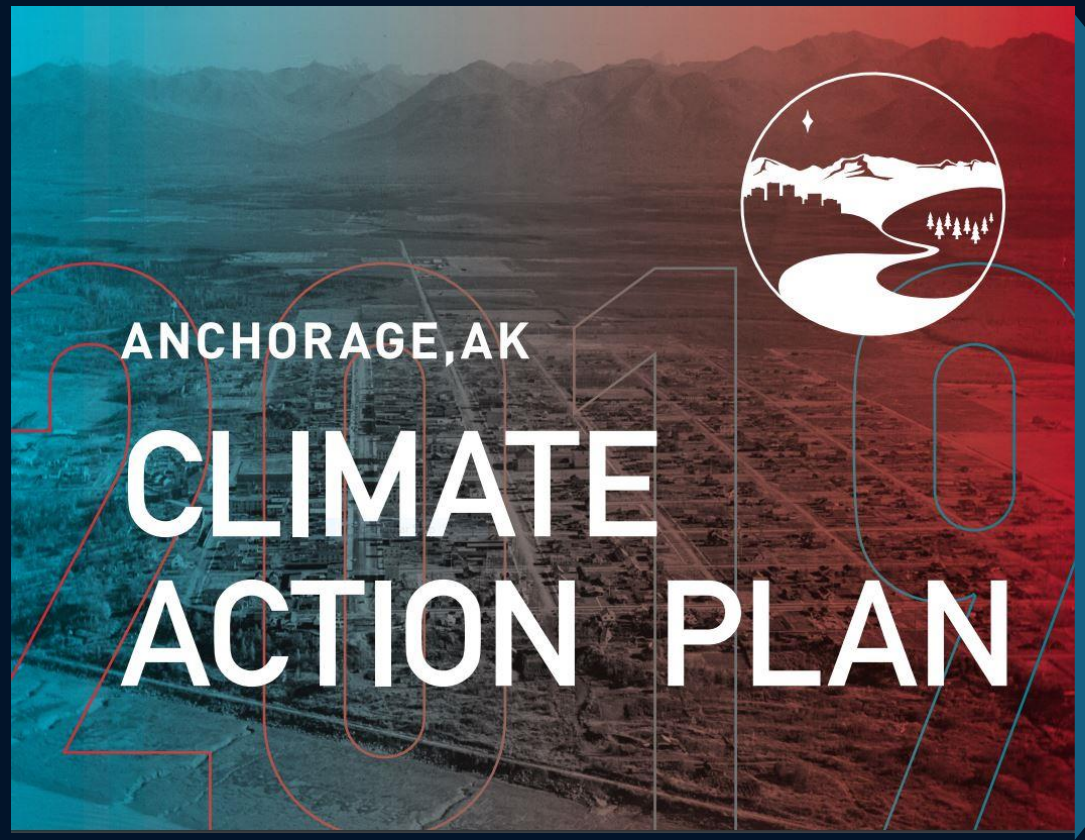
03 WTE Facilities in the World & USA

04 Clean-Burn Technology Overview

05 Economics of WTE

06 Next Steps

ANCHORAGE CLIMATE ACTION PLAN RECOMMENDATION



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

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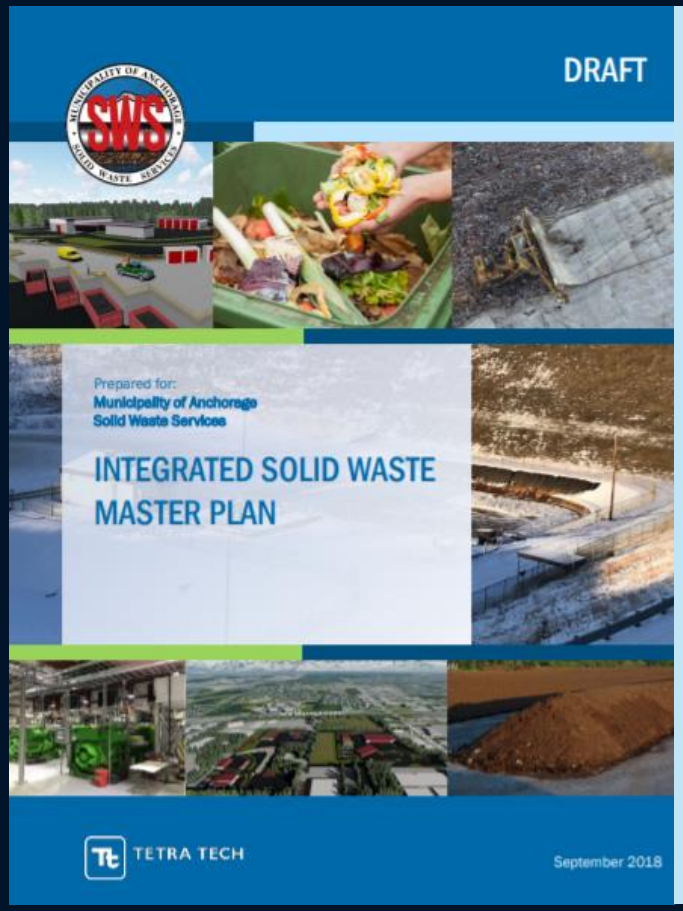
MOA SWS MASTER PLAN RECOMMENDATION



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

Diversion Programs

Increase diversion through food was
organics collection/drop-off program
compost facility capacity and
development, public sector recycling
outreach and education programs
reuse . Increase SWS diversion rate
27% and reduce per capita disposa
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.

GOAL OF SWS STRATEGIC PLAN

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.

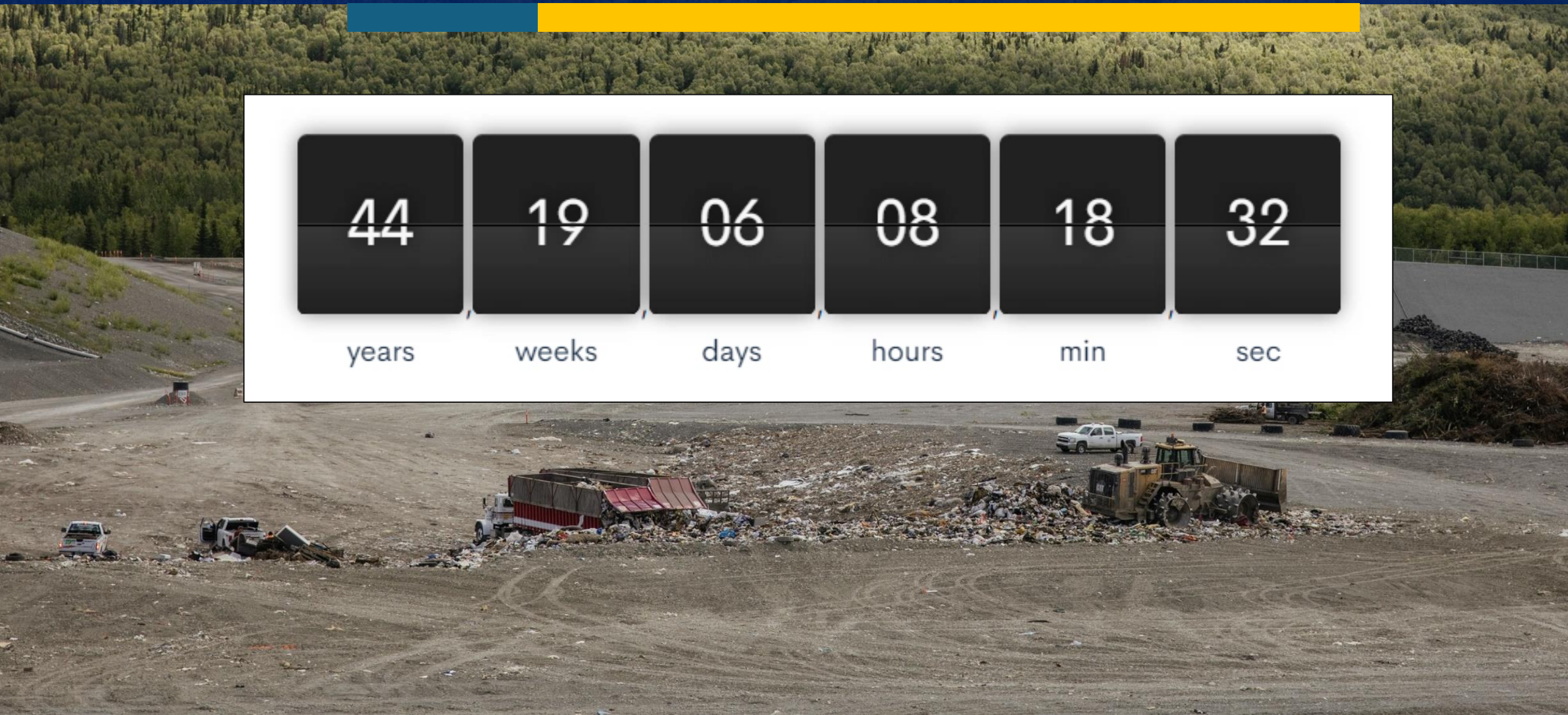
COMPLIANCE
Improve regulatory compliance through enhanced permit management practices.

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).

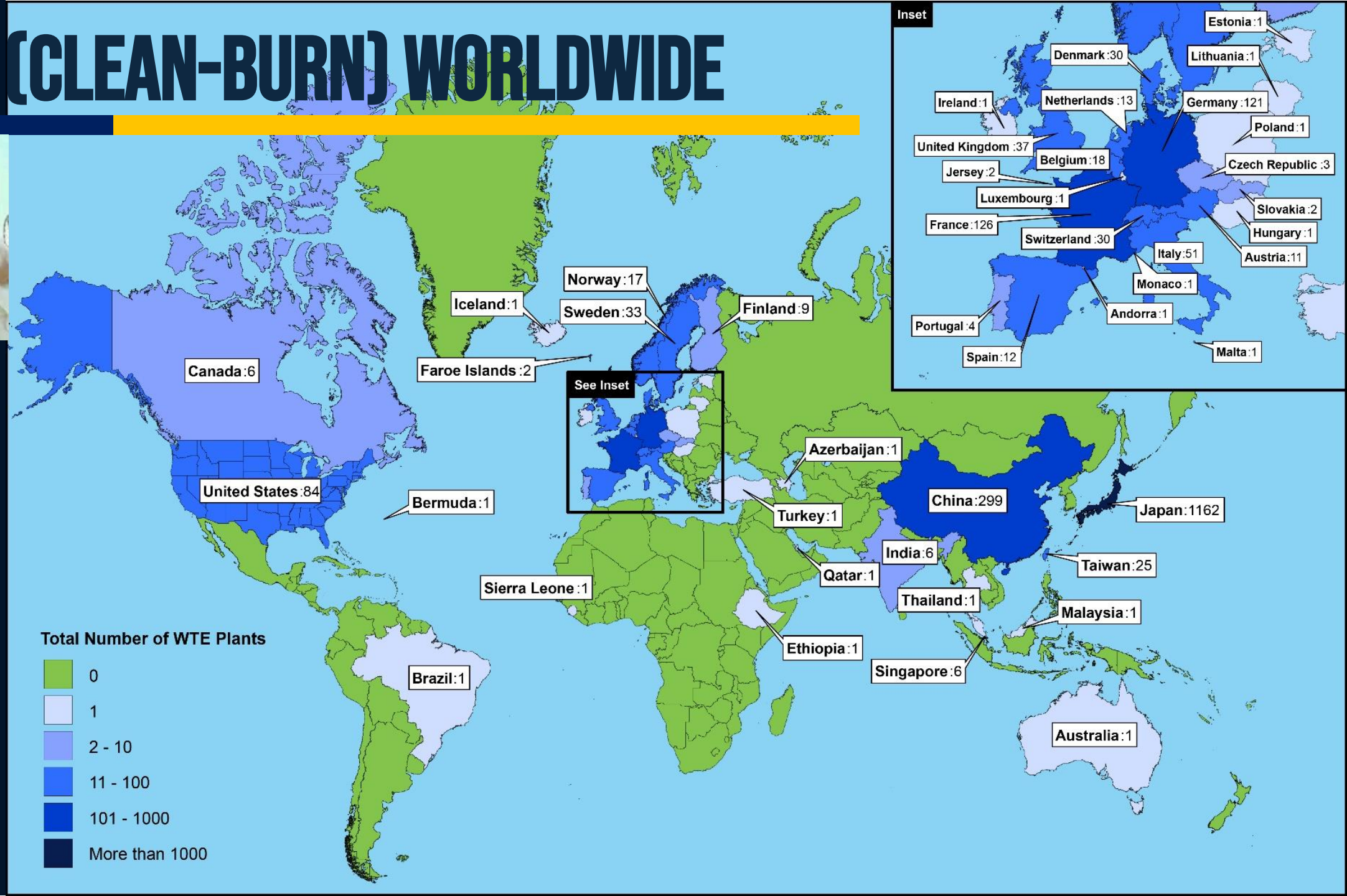
“DOOMSDAY CLOCK” FOR LANDFILL CLOSURE



PRE-FEASIBILITY AND FEASIBILITY STUDY

STEPS

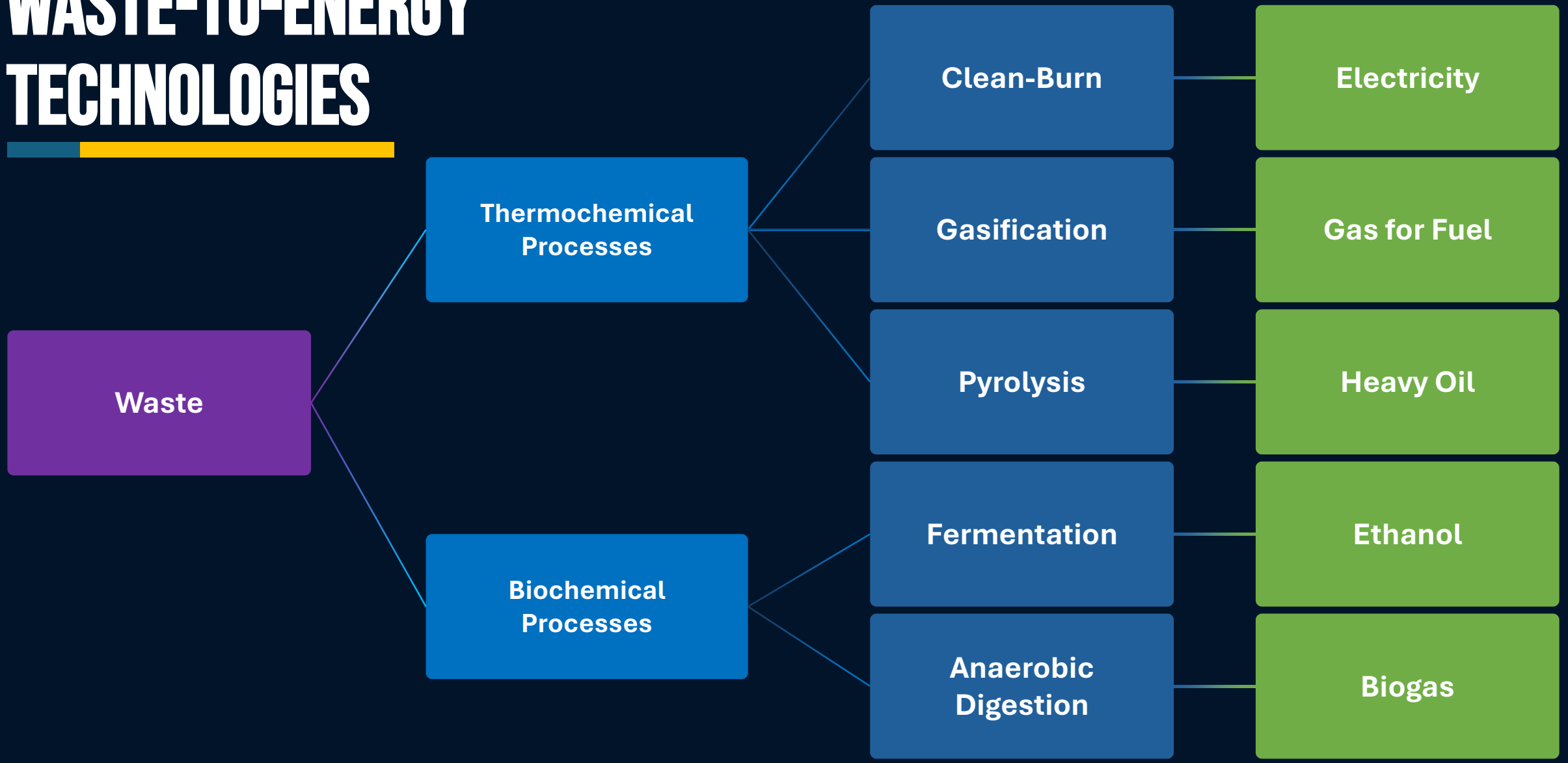
WTE (CLEAN-BURN) WORLDWIDE



WTE/(CLEAN-BURN) IN THE U.S. AND OPPORTUNITIES IN ANCHORAGE, AK

- 75 WTE (Clean-Burn) plants in 25 states
- ~14% (solid waste managed)
- 4 facilities in Western States:
  - Spokane
  - Vancouver
  - Portland
  - Modesto
- Honolulu (island like Anchorage, burns wastewater Sludge)
- MOA LFGTE Plant at Anchorage Regional Landfill, could double capacity with existing gas production there 7.2-MW currently.

WASTE-TO-ENERGY TECHNOLOGIES



EVALUATION CRITERIA

State of Technology

- Degree to which technology has been proven on a commercial scale
- Operating History
- Freedom from high failure models
- Demonstrated reliability of entire system

Technical Performance

- Compatibility with full spectrum of solid waste system
- Ability to produce marketable byproducts
- Need for pre-processing

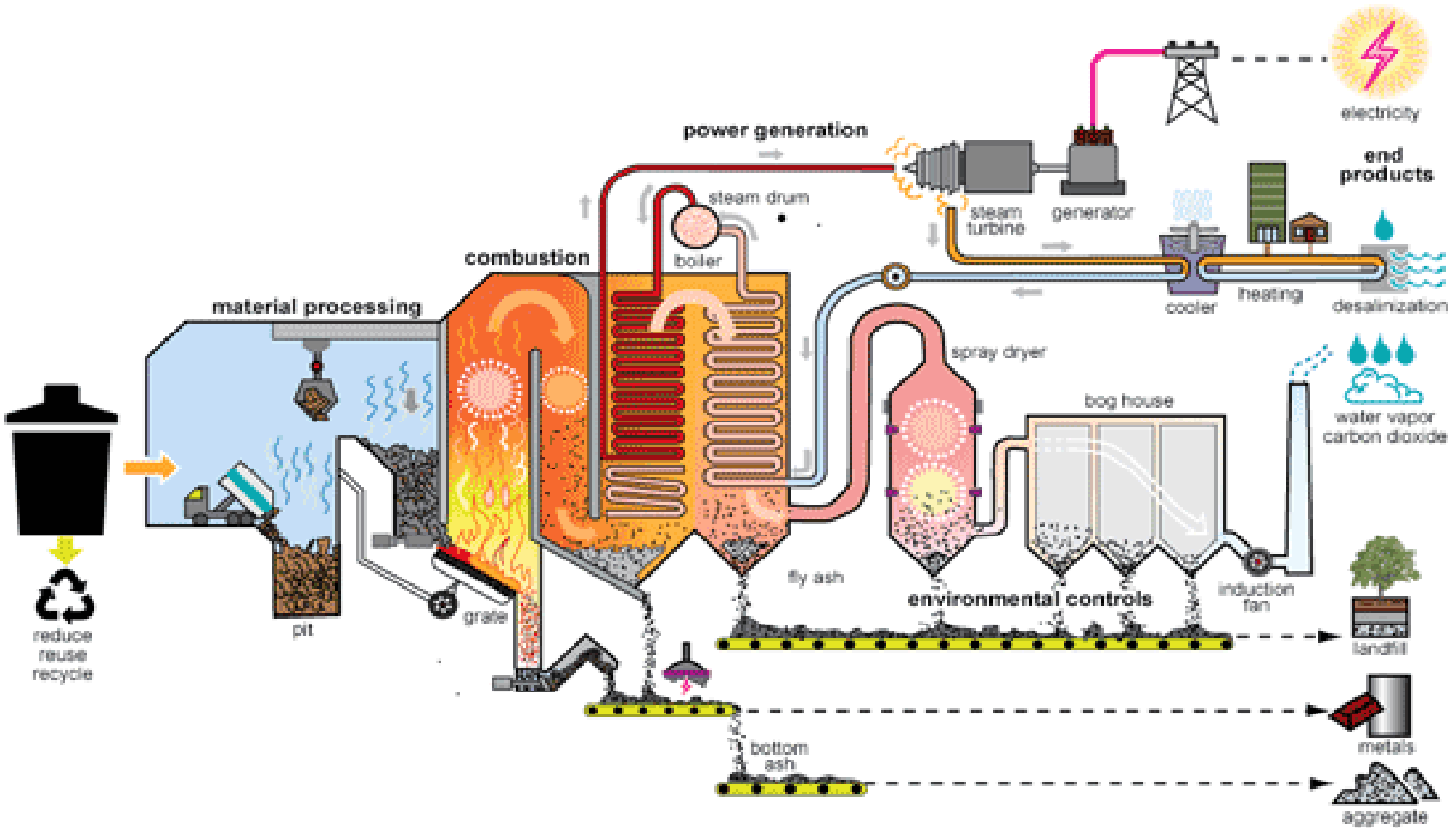
Technical Resources

- Proven contractor experience with technology
- Proximity of technical support
- Ability to provide support on continuing basis

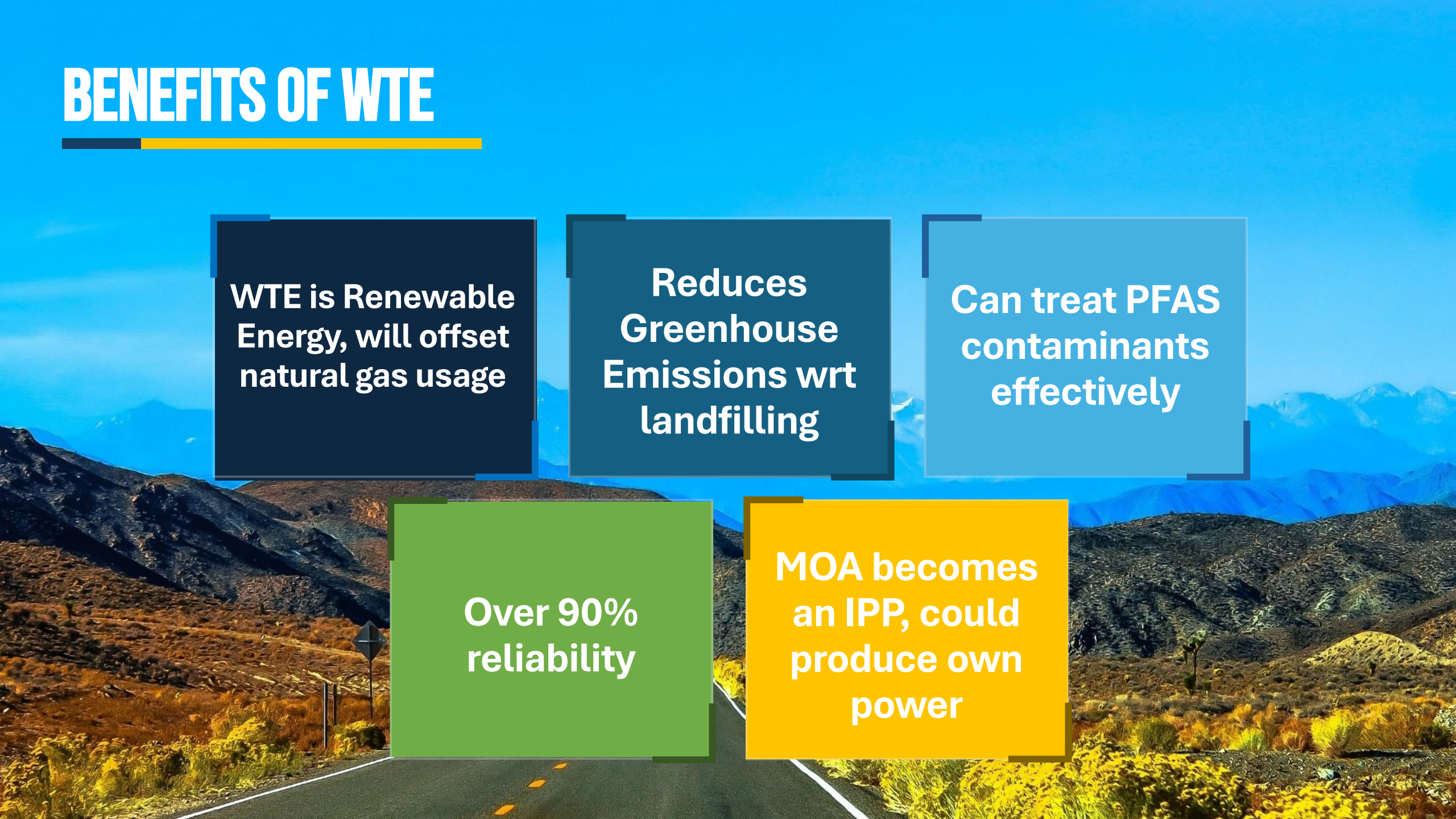
ADVANTAGES OF CLEAN BURN PLANTS

- Commercially proven (been around a long time)
- Mature technology addressing high risks with design and operational procedures
- High gross energy output and high reliability
- U.S. based vendors
- Pool of experienced professionals
- “Ultimate” Recycling Program that increases overall amount diverted
- Reduces Leachate and LFG Production
- Offsets energy production from petroleum sources
- Depending on size (under 75MW), is considered a renewable energy source

CLEAN-BURN PROCESS FLOW OVERVIEW



BENEFITS OF WTE



WTE is Renewable Energy, will offset natural gas usage

Reduces Greenhouse Emissions wrt landfilling

Can treat PFAS contaminants effectively

Over 90% reliability

MOA becomes an IPP, could produce own power

TECHNOLOGY

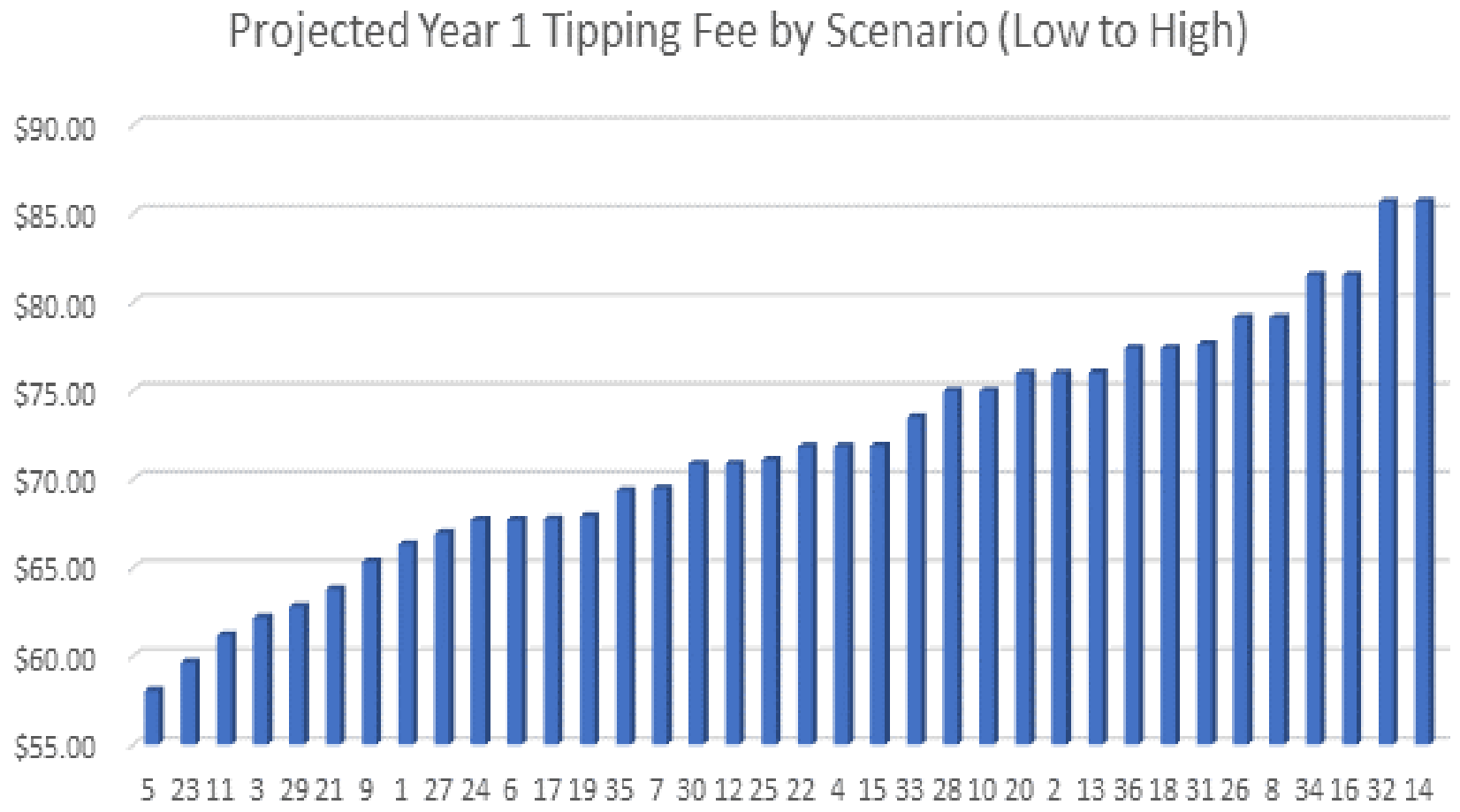
REVENUES

- Increased landfill life
- Electric Sales
- Biosolids (Supplemental) Waste Fees
- Railbelt Solid Waste Disposal
- PFAS Contaminated Materials Treatment
- Recovered Metals
- Ash for road aggregate

EXPENSES

- Debt Service
- Operating Fees
- Potable and Non-Potable Water
- Propane
- Lime Pebble
- Lime Dolomite
- Urea
- Carbon

PRO FORMA RATE MODEL AND TRIPLE BOTTOM LINE FINANCIAL ANALYSIS



PRE-FEASIBILITY AND FEASIBILITY STUDY CONCLUSIONS

01

Clean-burn is the most well established and reliable WTE technology, extends life of ARL by 100 years

02

The MOA generates 1,000 tons per day (tpd); 1,200 tpd with neighboring Boroughs and Municipalities

03

WTE can convert biosolids effectively, save AWWU ratepayers

04

WTE is a practical goal of the MOA SWS Strategic, Solid Waste Master, and Climate Action Plans

05

Various economic scenarios suggest required tipping fees per ton range from $58-$85 (2020 $'s depending on grants)

06

PFAS destruction at temperatures of greater than 1000°F, significantly cheaper than disposal fees for hazardous waste

NEXT STEPS

(#DOSOMETHING, NO MORE STUDYING, THAT WORK IS DONE!)

- Who will own it (MOA “owns” the garbage and sludge)
- Who can finance it (grant funding, loans, bonds), update financial analysis
- Include in regional energy plan (when developed)
- Confirm Project Site
- Confirm Energy Pricing (would sell to CEA/MEA or use it for MOA purposes)
- Confirm Neighboring Boroughs Interest in sending trash to MOA
- Develop Schedule and Implementation Costs
- Confirm Procurement Options
- Develop Financing Plan
- Draft RFP (need to start Permitting and Public Outreach)

THANK YOU!