

Creating a Sustainable Future: The CETS Regional Waste to Renewable Energy Utilities Project





OUR MISSION

To provide the region with leading
Waste-to-Energy solutions, supporting
a sustainable future for South Carolina

MEETING OBJECTIVE



To Present an Overview of the CETS
Waste-to-Energy Regional Project and
Invite Your Participation

CETS's EXPERTISE:
SYSTEMS INTEGRATION,
INDUSTRIAL DESIGN, IT,
WASTE & RENEWABLE
ENERGY

OUR TEAM: OVER 100
COMBINED YEARS AND
OVER 20 PROJECTS FOR
100 CLIENTS



COURTESY: GENERAL ELECTRIC

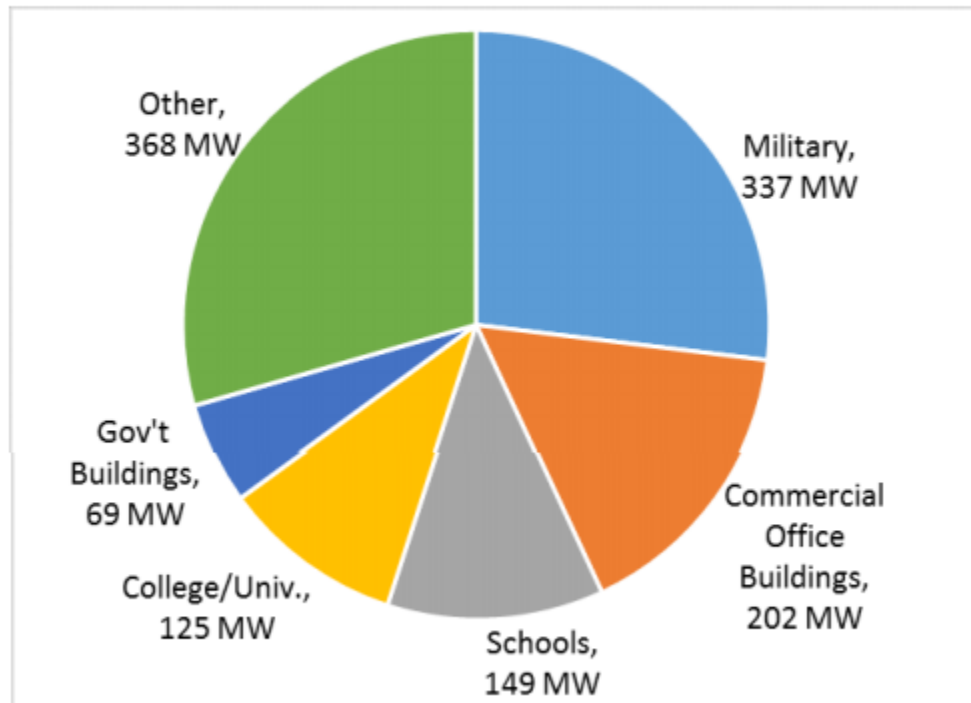


CETS IS AN INNOVATIVE
RENEWABLE ENERGY &
WASTE RECYCLING
US COMPANY

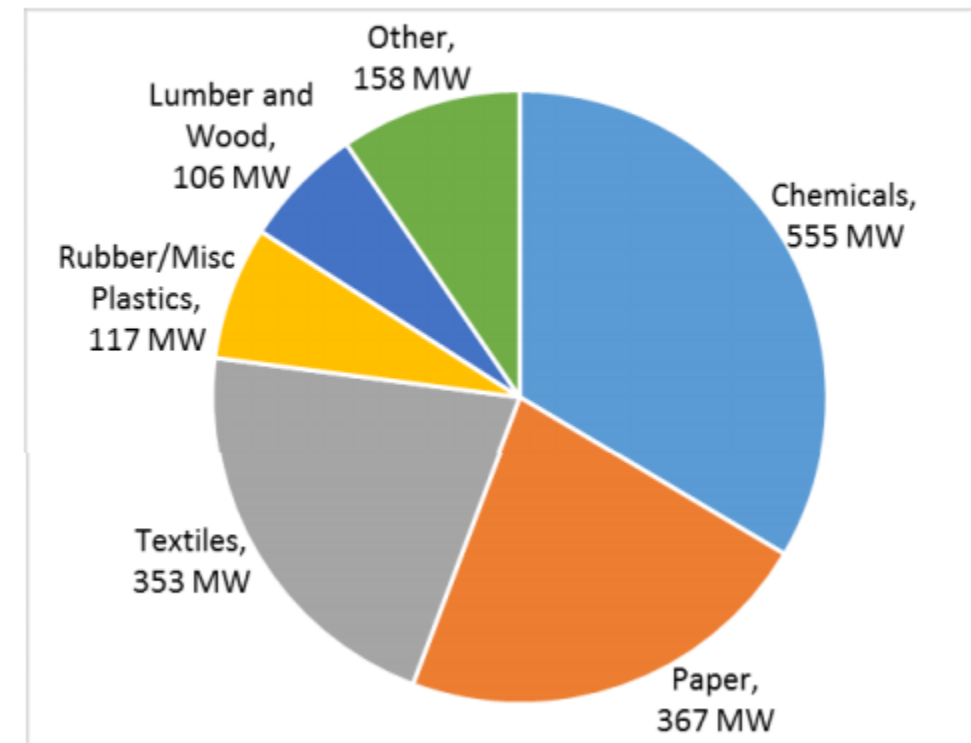
The Township of
Lane has
Contracted with
CETS for a 25-year
Net-Zero-Waste to
Energy Project

SOUTH CAROLINA'S GROWING WASTE PROBLEM

Top Commercial Business Types with On-site CHP Potential



Top Industrial Types with On-site CHP Potential



CETS CAN HELP THE REGION MEET IT'S WASTE PROBLEM NOW—AND FOR THE FUTURE



Landfills Closing: The state of South Carolina is closing landfills.

A Growing Waste Problem: South Carolina is losing the capacity for waste containment.

Decarbonizing State Goal: To reduce carbon emissions from waste disposal by forty-percent (40%).

Township of Lane Leadership: Intends to recycle nineteen metric tons of waste (19 MT) daily.

Enterprise Waste Increasing: We assist large companies waste and carbon emissions challenges.

CETS SCOPE OF WORK

CETS Provides All
Project Planning,
Design, Financing,
Construction &
Management



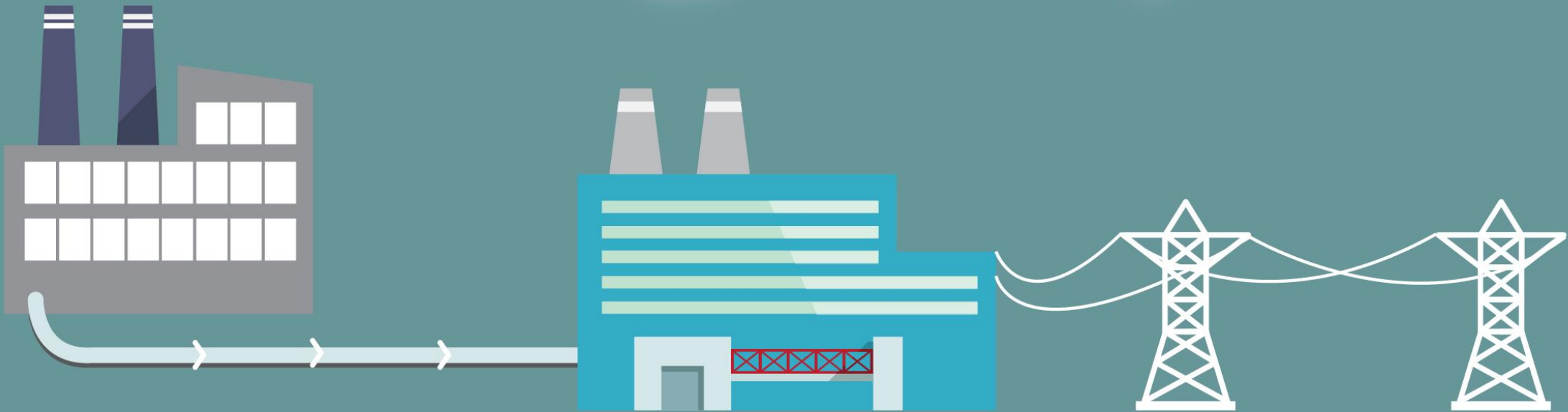
CETS

CUTTING-EDGE TECHNO SOLUTIONS



COGENERATION IMPROVES

energy efficiency



1 Extra heat and steam from a refinery are moved to a cogeneration facility.

2 At a cogeneration facility, heat and steam are used to create more electricity.

3 That electricity is used to power nearby facilities and is provided to the electric grid.

CONVENTIONAL GENERATION

EFFICIENCY 35%
91 UNITS FUEL

137 UNITS FUEL

46 UNITS FUEL
EFFICIENCY 80%

Overall Efficiency

50%

EFFICIENCY
IMPROVEMENT
19%

69%

Overall Efficiency

CONVENTIONAL COMBINED HEAT AND POWER

15MW Natural Gas
Combustion Turbine and
Heat Recovery Boiler

STEAM/HOT
WATER

Heat
Recovery
Unit

HOT
EXHAUST
GASES

Engine
or
Turbine

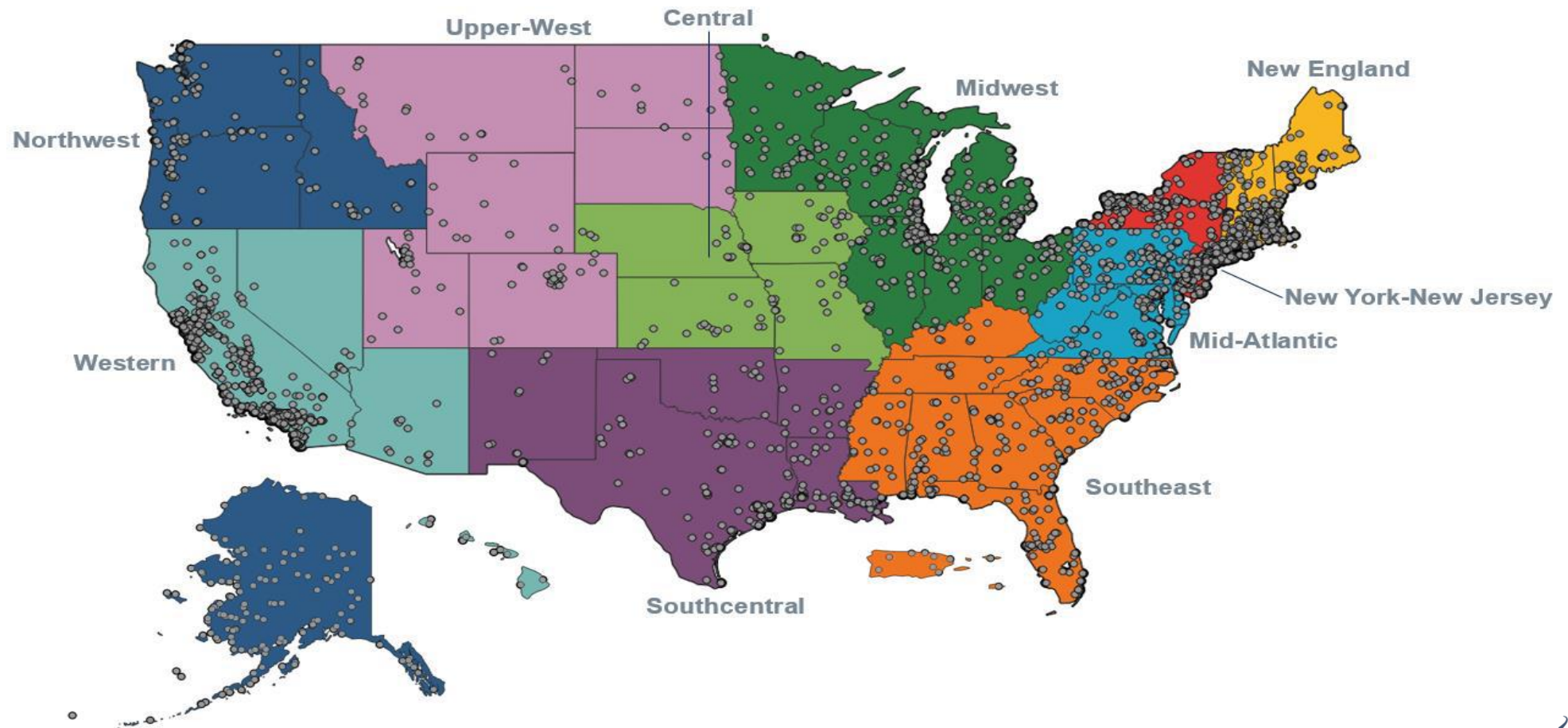
Generator

100 UNITS FUEL

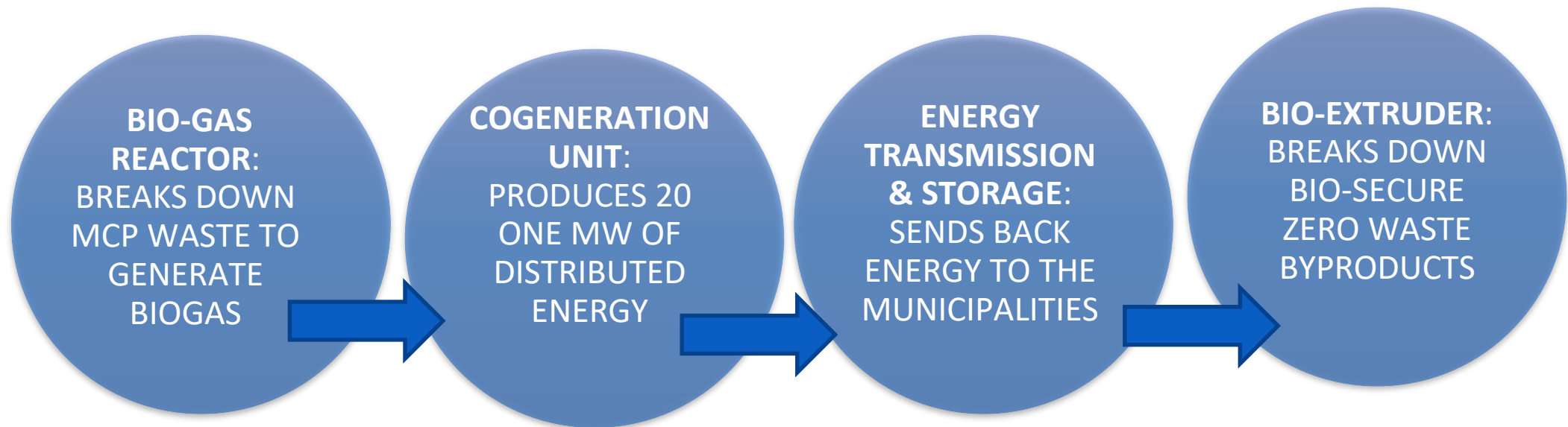
32 UNITS OF
ELECTRICITY
37 UNITS OF
STEAM

Overall Efficiency - Based on Higher Heating Value of Fuels

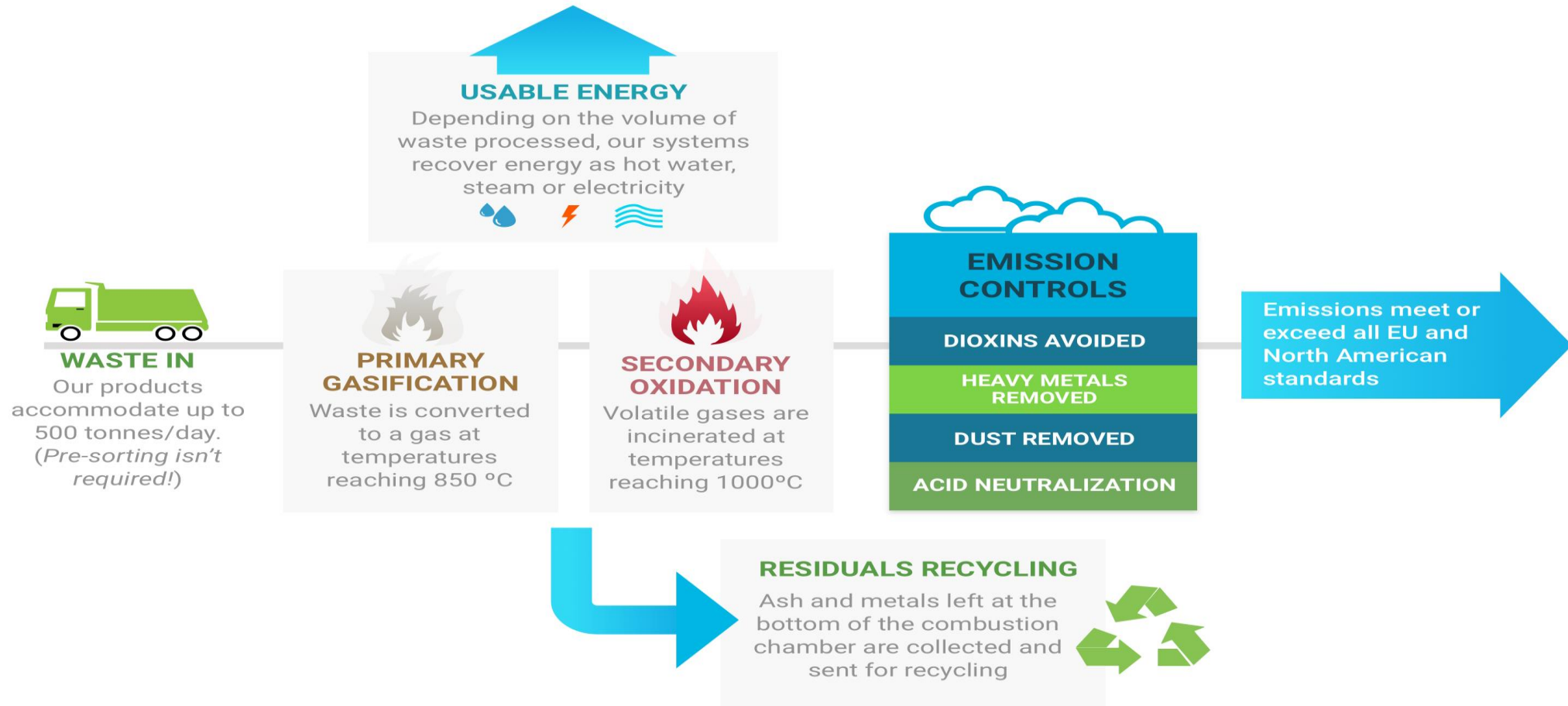
4,400 ENERGY COGENERATION UNITS EFFECTIVELY WORKING TODAY



CETS REGIONAL WASTE TO RENEWABLE ENERGY UTILITY: FOUR PHASES



WASTE IN ENERGY OUT: SUSTAINABLE COGENERATION



CETS PROJECT DELIVERABLE

20-1 Megawatt CHP
Cogeneration Stations
Input | Output Per Day

720 MT Waste Input
440 MW of Energy Output
880 MW of Heat Output
40,680 Gal of Water
Output

Delivering Low Carbon
Zero Waste Utilities for
the Region

CETS W2E UTILITY REGIONAL SERVICE

| 1 Megawatt Per Hour Waste to Energy Generation Per Year Service Agreement | | | | | |
|--|----------------------------|---|--|---------------------|-----------------------------------|
| Processing | Waste Input Per Day | Product Potential Output Per Day | Product Potential Input / Output Per Year (365) | Market Price | Total Client Cost Per Year |
| Waste Disposal | 36 MT | | 13,140 MT | \$60 | \$788,400.00 |
| Renewable Energy | | 22,000 kw | 8,030,000 kw | \$0.06 | \$481,800.00 |
| Thermal Waste Heat | | 44,000 kw | 16,060,000 kw | \$0.06 | \$963,600.00 |
| Distilled Water | | 2,034 Gal | 742,410 Gal | \$0.40 | \$296,964.00 |
| Total Waste to Energy Utilities Service Agreement Annual Cost | | | | | \$2,530,764.00 |
| Discount on a 25-year Term Service Agreement Contract Annual | | | | | \$30,764.00 |
| Total Waste to Energy Utilities Service Agreement Annual Cost | | | | | \$2,500,000.00 |

ZERO WASTE SUSTAINABLE ENERGY SOLUTIONS

CETS will deliver: waste elimination, recycling, electricity generation, thermal waste heat, distilled water, with .01% CO2 emissions.

REDUCED UTILITY BILLS

REDUCED EPA PENALTIES

SUSTAINABLE AND RENEWABLE
ENERGY SOLUTIONS

WORLD CLASS CETS VENDOR
NETWORK

30% CARBON REDUCTION

COST-EFFECTIVE WASTE
MANAGEMENT SERVICES

SUSTAINABLE ENERGY ATTRACTS
BUSINESS AND GROWTH

W2E UTILITIES CREATE LOCAL
SELF-RELIANCE

THE CIRCULAR ECONOMY: CETS CARBON REDUCED ZERO WASTE SMART UTILITIES



Waste



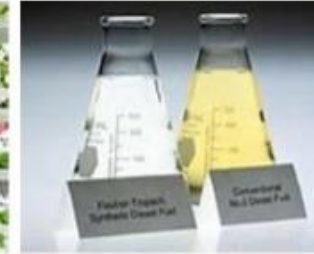
Energy



Water



Food



Fuel



Raw Material

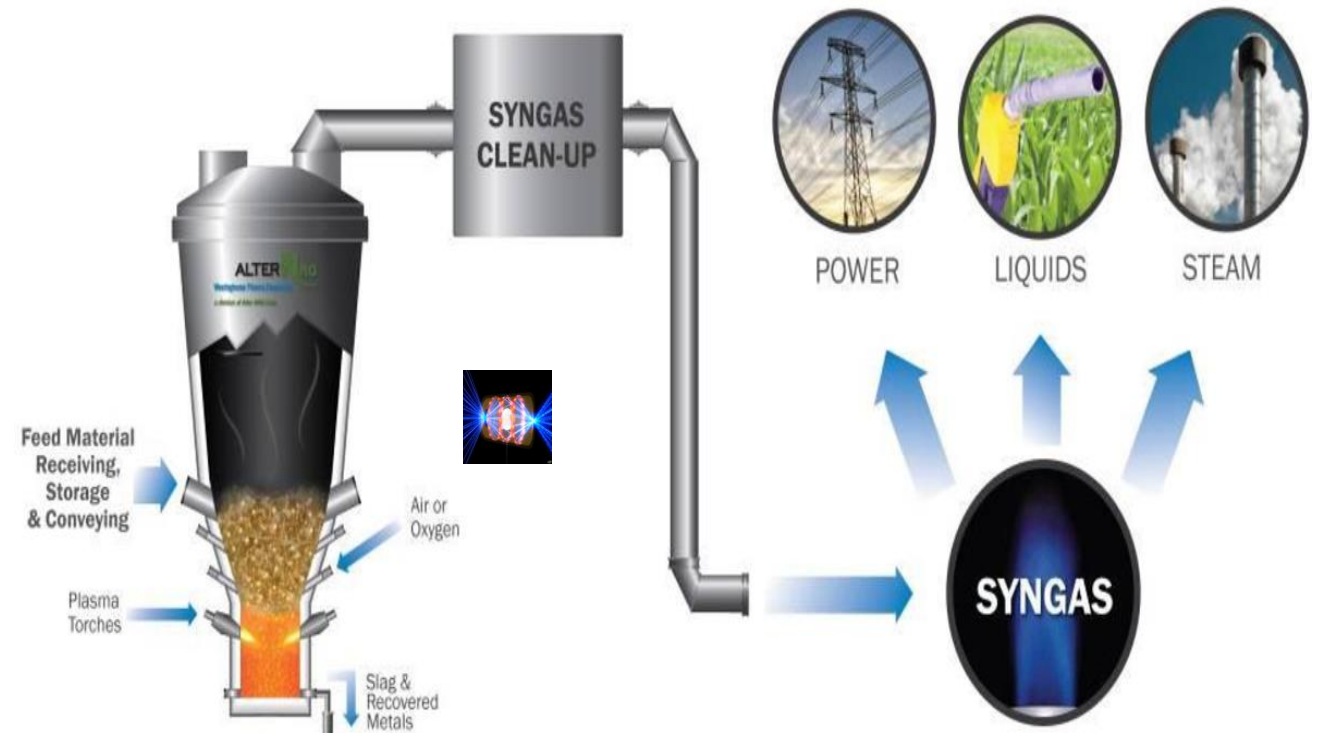
SMART GRID AND
DISTRIBUTED ENERGY
TRANSMISSION

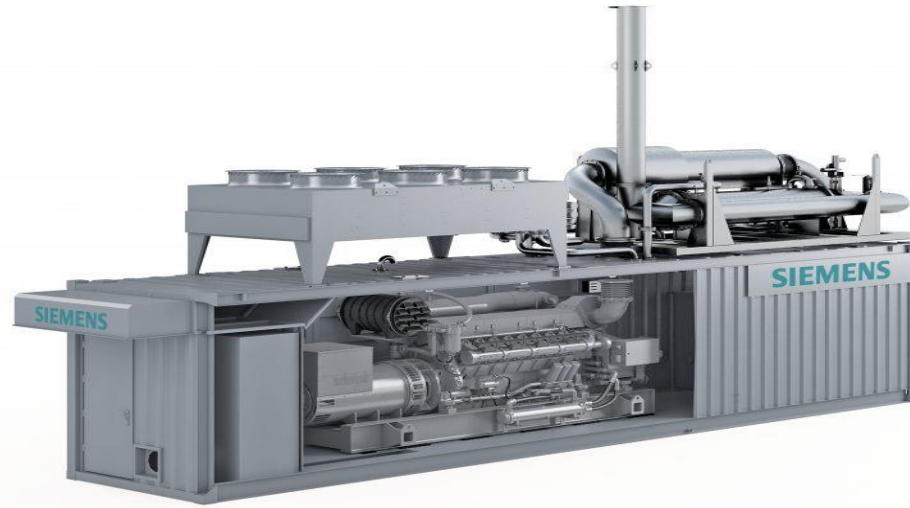
ORGANIC WASTE
TRANSFORMATION INTO
COMBINED HEAT AND
POWER (WCHP)
COGENERATION

WASTE TRANSFORMATION
INTO ENERGY AND
INDUSTRIAL PRODUCTS

W2E TECHNOLOGY SOLUTIONS

- Sustainable Biomass
- CHP Cogeneration
- Smart Grid Ready
- Distributed Utility Units
- Big Data Cloud Monitoring





COGENERATION CHP UNITS

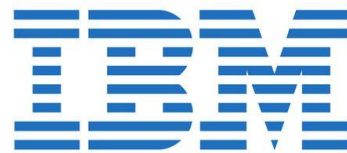
WORLD CLASS VENDORS

SIEMENS
Ingenuity for life



HITACHI
Inspire the Next

CATERPILLAR®



SGT-300, Fuel Flexibility with Low Emissions University of New Hampshire (UNH)

SIEMENS



The cogeneration plant provides:-

- 95% of steam demand
- 75% of electrical load
- Fuel efficiency of nearly 80%
- 30% reduction in Nox & 60% Sox

- 7.6 MW electrical power output
- 35 MW_{th} steam output
- Overall CHP efficiency >77%
- Tri-fuel: Nat Gas or Nat Gas/Landfill Gas blend (Gas Wobbe Index range 32 to 49 MJ/Nm³) or Liquid Fuel
- Low Emissions to atmosphere: Nox > 15 ppmv
- Ambient temperature: -28°C to +32°C



SIEMENS
Ingenuity for life

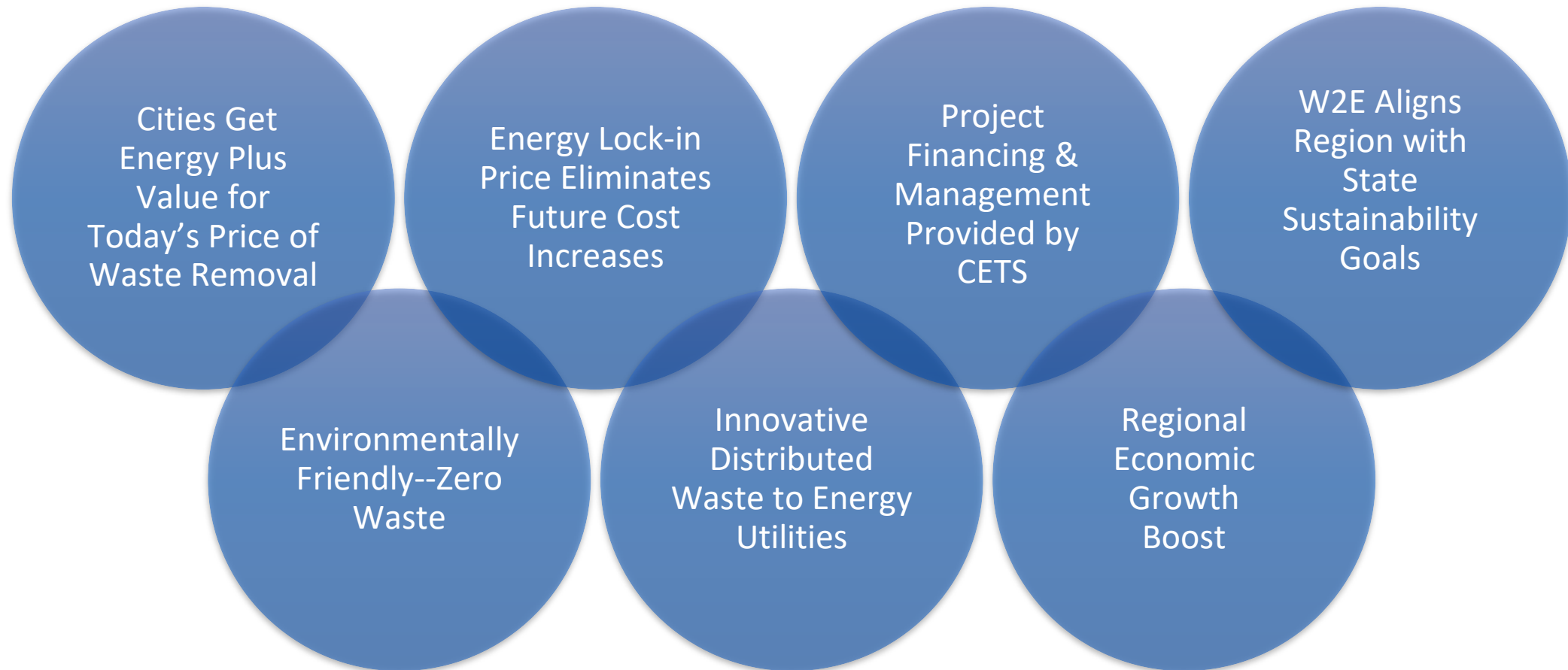
Case Study

CHP Solution Helps University Meet Carbon Emissions Goals

Siemens engines and gen-sets

[siemens.com](https://www.siemens.com)

KEY BENEFITS FOR MUNICIPALITIES & REGION



FINANCING

CETS WILL PROVIDE
APROX. \$300
MILLION IN
PROJECT
FINANCING IN 2020
TO DEVELOP THE
W2E UTILITIES



CETS

CUTTING-EDGE TECHNO SOLUTIONS

CONTRACTING

CETS MUST SECURE
W2E SERVICE
CONTRACTS WITH
COUNTIES TO
FINALIZE
FINANCING AND
DEVELOPMENT

CALL TO ACTION

Let's Transform the
Region's Growing
Municipal Waste
Problem with W2E
Sustainable Utilities

Sign On with Lane
Township & CETS

