

Zero Emission Environmentally Friendly Energy Efficient Power Plants

Georgia Conference of Black Mayors

2007 Annual Convention

March 29 – 31, 2007

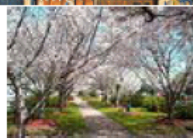
MACON, GEORGIA



The Macon Centreplex



Panoramic Macon, Georgia



Cherry Blossoms

EVCS Technologies, Inc

"Environmentally Conscious Solutions"



Georgia Conference of Black Mayors, Inc.

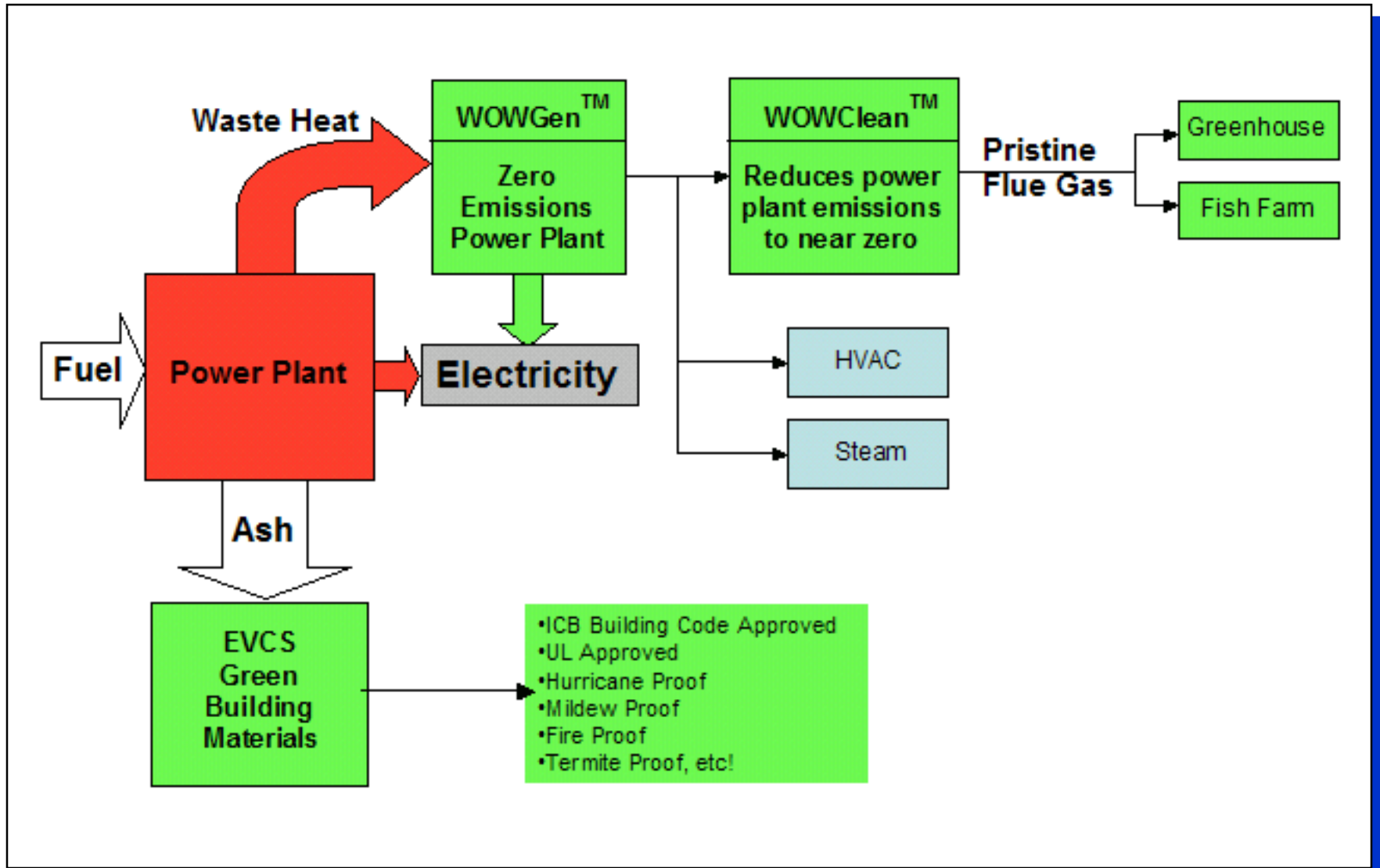


... Balanced Government for Georgia



"MEETING THE WORLDS ENERGY & ENVIRONMENTAL CHALLENGES"

WOWGen™/WOWClean™/EVCS Environmentally Friendly & Energy Efficient



Enviro-Fusion

- Develop Environmentally Conscious Solutions
 - Recycled Waste
 - Recycled Water
 - Recycled Heat
- Develop 21st Century Building Products
 - Convert Power Plant Ash to “Green” Building Materials
 - Low Cost Energy Efficient Building Materials
 - ICB Building Code Approved
 - UL Approved
 - Hurricane Proof
 - Mildew Proof
 - Fire Proof
 - Termite Proof

WOW Energies

1. Develop technology to convert waste heat to electrical power
 - Technology did not exist to efficiently convert waste heat to power in the 300 F to 700 F temperature range
 - **WOWGen™** combined cycle turbo-expander system – 2 patents issued to date
 - Single stage turbo-expanders for low temperature heat
2. Develop efficient Renewable Energy power plants
 - Solar & Geothermal Energy (SAGE) - **WOWGen™**
 - Biomass power plants - **WOWGen™**
 - Solar power plants - **WOWGen™**
3. Develop multi-pollutant control technology to remove pollutants from flue gases
 - **WOWClean™**

WASTE HEAT & ASH SOURCES

Cement Plant



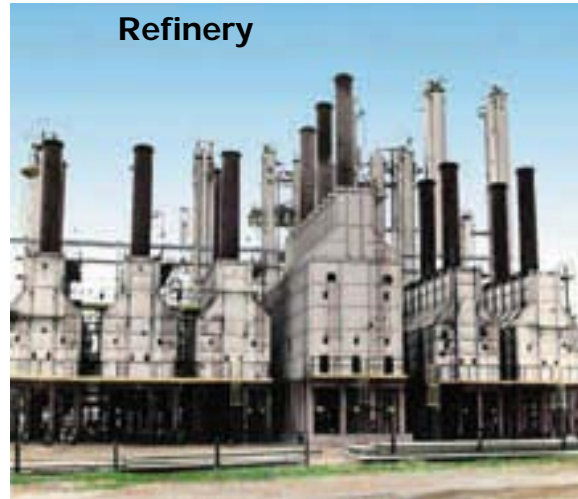
Petrochemical Plant



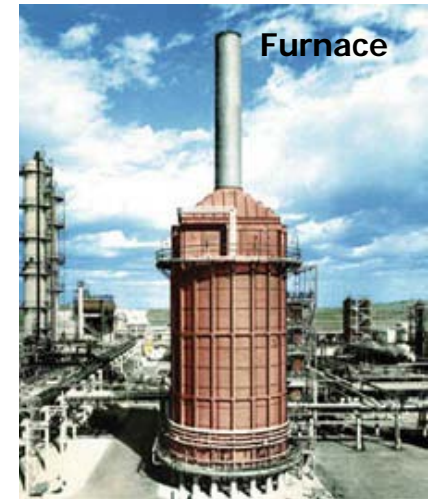
Coal Fired Power Plant



Refinery



Furnace



WOWGen™ Generates Electricity From Any Heat Source

Typical Industries Generating Waste Heat

- Power and Utility Industries
- Heavy Industries: Steel, Aluminum, Copper, Cement, Pulp & Paper, Glass, Soda Ash and Waste Recycle
- Refinery, Petrochemical and Gasification plants
- Chlor-Alkali & Vinyl plants
- Incinerators, Waste to Energy

Typical Waste Heat Sources

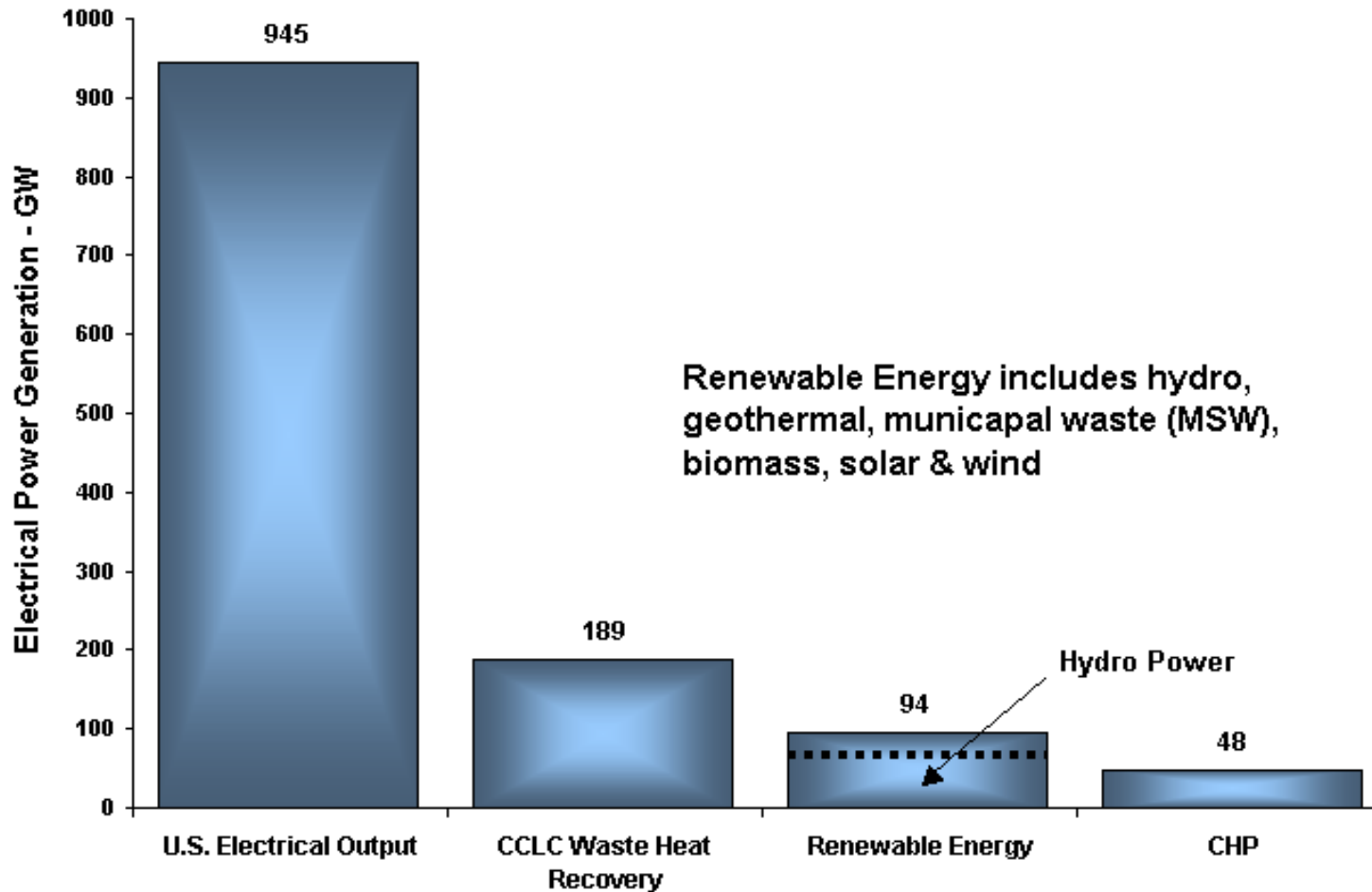
- Fired boilers, gasifiers, heaters/furnaces (gas, diesel, coal, nuclear, refuse, pet coke)
- Gas turbine exhaust - continuous, standby, peaking, combined cycle units
- Steam turbine exhaust: and vented steam
- Internal Combustion (IC) engine exhaust

Renewable Energy Heat Sources

- Solar energy
- Geothermal steam
- Biomass combustion
- Syngases

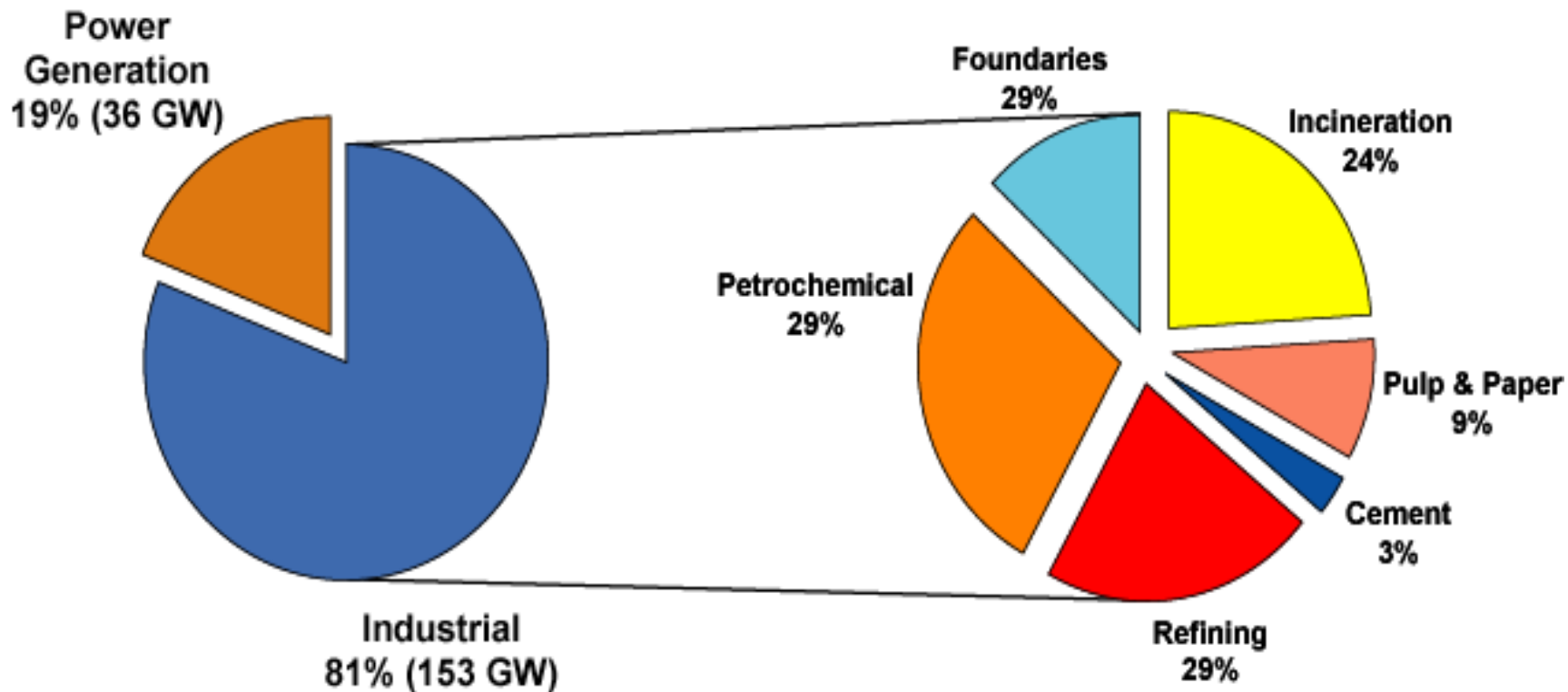
Potential in USA: Power Generation

BASED ON THE CAPTURE OF 20% OF THE WASTE HEAT FROM ENERGY INTENSIVE INDUSTRIES



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BASED ON THE CAPTURE OF 20% OF THE WASTE HEAT FROM ENERGY INTENSIVE INDUSTRIES



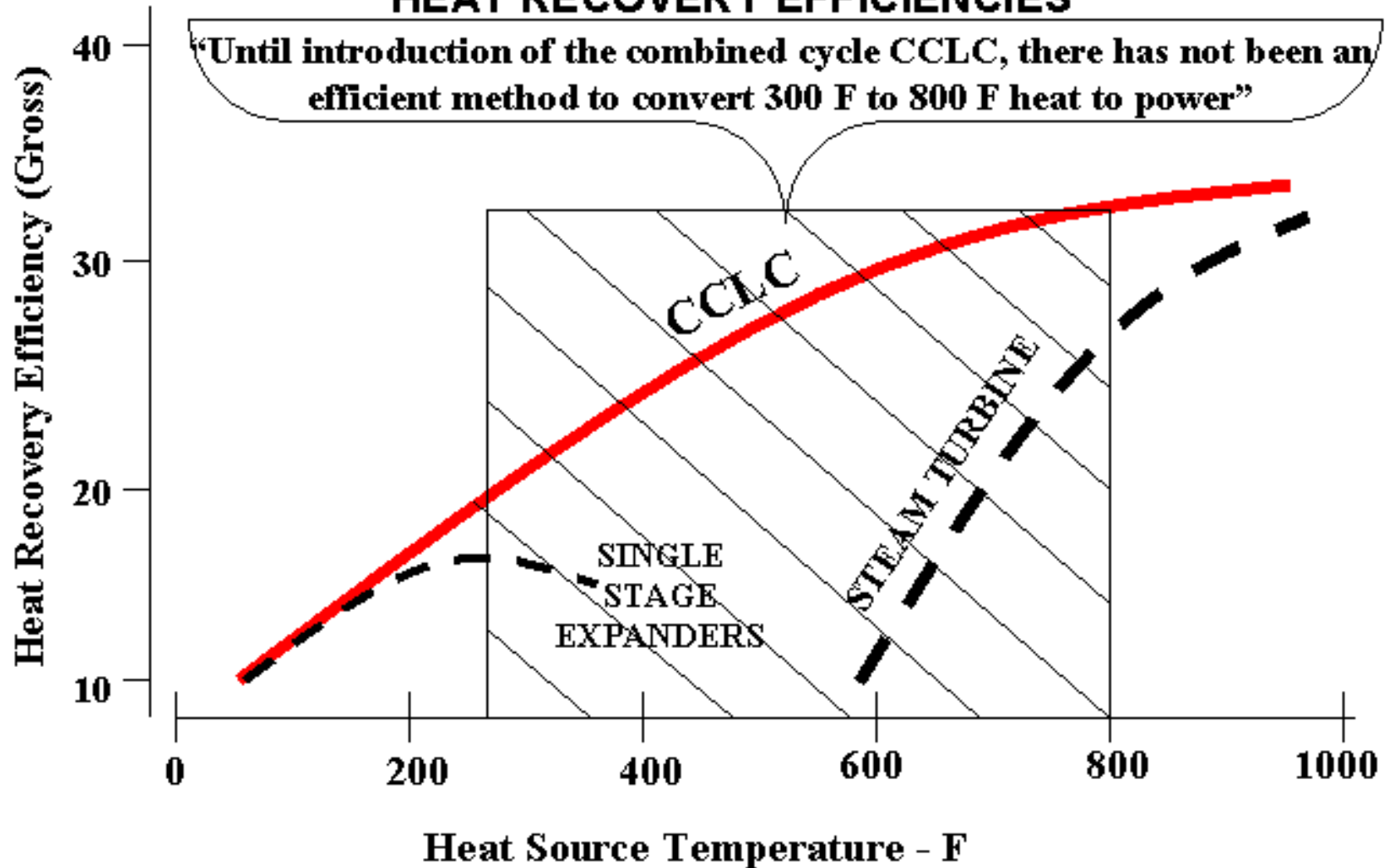
Total Potential = 189 GW

Total Industrial = 160 GW

Reference: EIA Annual Energy Outlook 2005

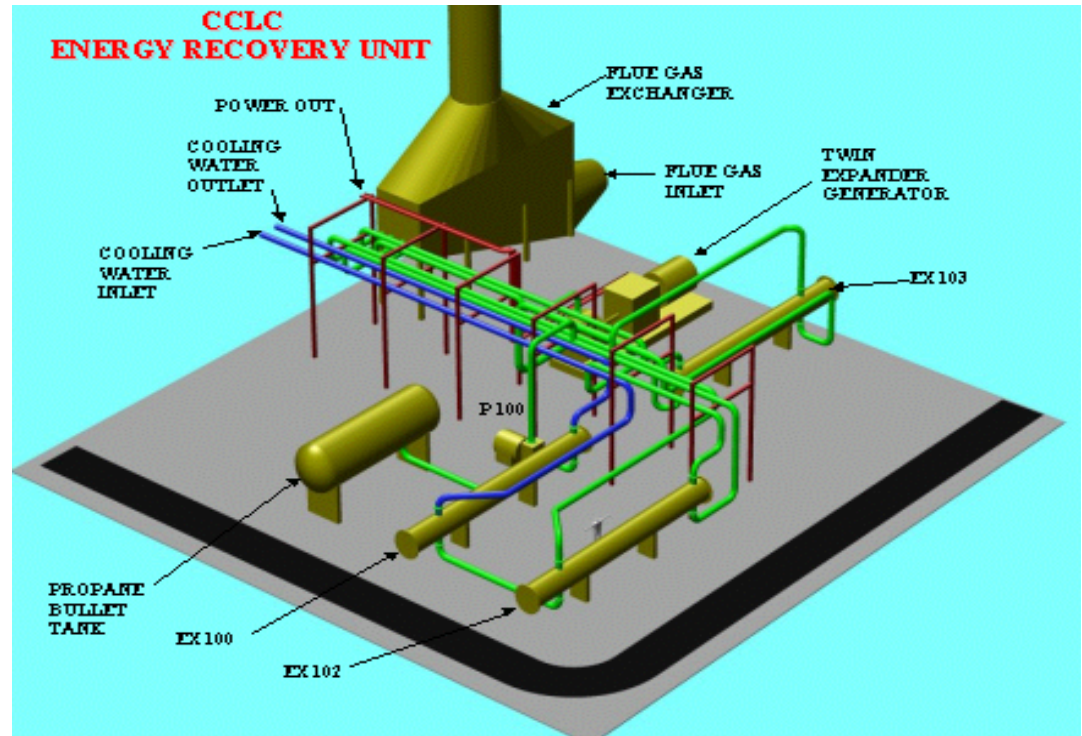
WOWGen™ Generates Electricity From Any Heat Source

HEAT RECOVERY EFFICIENCIES



WOWGen™ HEAT RECOVERY SYSTEM

Flue Gas Heat Exchanger (EX101)



Heat Exchanger (EX102)

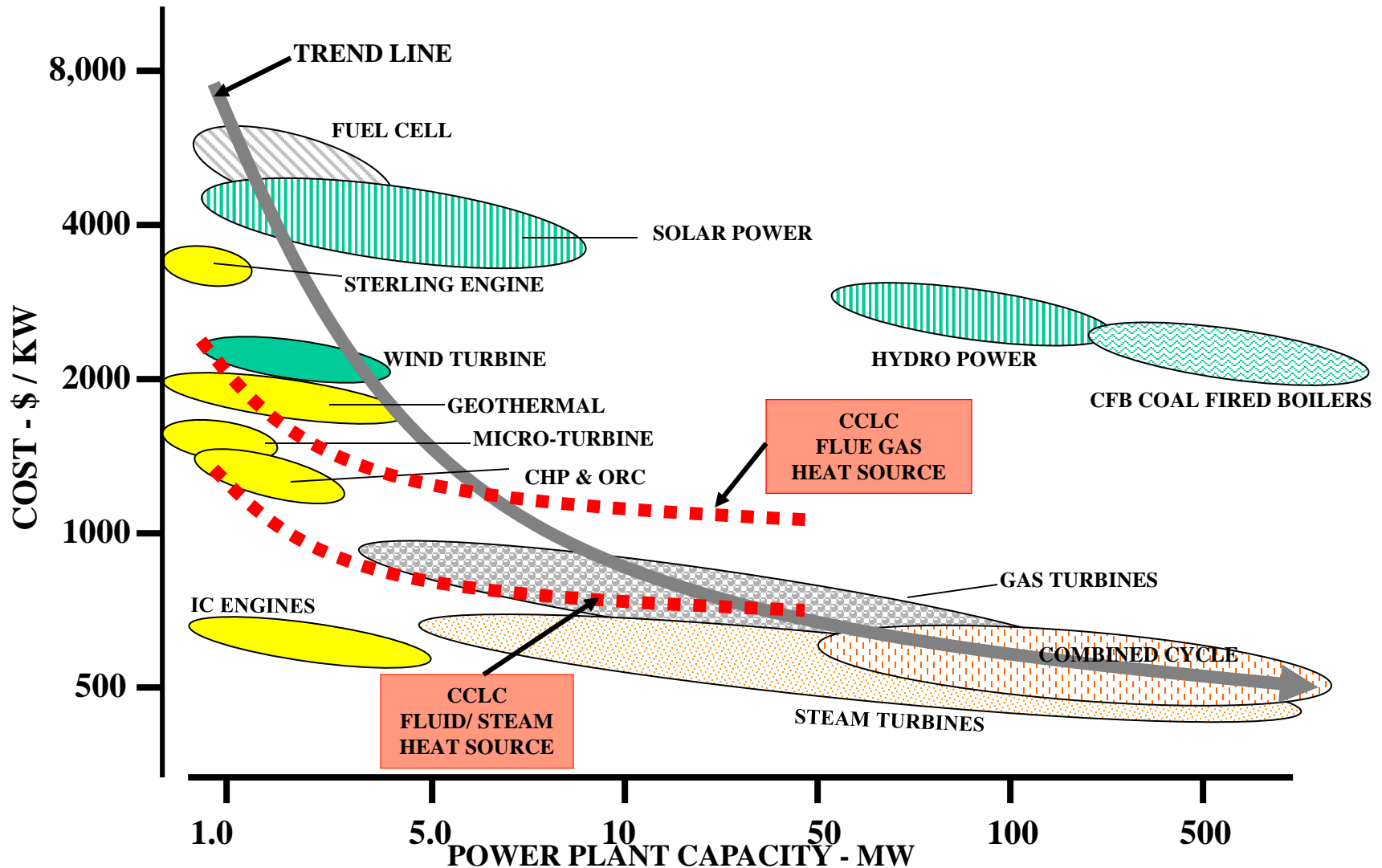


WOWGen™ Reduces Thermal and Air Pollution

- Turns Thermal Pollution into Useful Electricity
- Additional Power Generated with no Incremental Emissions
- Each MW of Power Generation (compared to coal fired plant) Eliminates
 - 21 Tons NO_x
 - 59 Tons SO_x
 - 8615 Tons of CO₂
- Improves Feasibility of Distributed Generation
 - Reduces transmission line congestion and losses
 - Eliminates power losses due to central generation

WOWGen™ Capital Investment is Competitive

POWER PLANT COST COMPARISON



RENEWABLE / REUSABLE ENERGY

TYPE	ENERGY SOURCE AVAILABILITY	CONVERSION EFFICIENCY	GENERATES EMISSIONS	CAPITAL COST PER KW	CAPITAL COST ADJUSTED FOR AVAILABILITY	TAX CREDITS
RENEWABLE ENERGY:						
SOLAR (CSP) (1)	25%	25% to 35%	NO	\$3,000 to \$6,000	\$12,000 to \$24,000	YES
WIND (1)	25%	25% to 35%	NO	\$1,500 to \$2,500	\$6,000 to \$10,000	YES
GEOTHERMAL	100%	5% to 15%	NO	\$2,000 to \$3,000	\$2,000 to \$3,000	YES
HYDRO (SMALL)	100%	25% to 35%	NO	\$1,500 to \$2,500	\$1,500 to \$2,500	YES
BIOMASS (2)	100%	25% to 35%	YES	\$1,500 to \$2,500	\$1,500 to \$2,500	YES
REUSABLE ENERGY:						
WASTE HEAT RECOVERY (3)	100%	25% to 35%	NO (4)	\$ 600 to \$1,800	\$ 600 to \$1,800	NO

- (1) Limited geographically
- (2) Dependant on fuel source
- (3) Dependant on heat source & power plant size
- (4) Can reduce existing emissions

WHY NOT CLASSIFY “REUSABLE” ENERGY AS “RENEWABLE”?

Potential Tax Credits, Emission Credits & Incentives

NO_x/SO_x/Particulate Emission Credits/Offsets

Provides Ability to Meet CO₂ Commitments

- **Generate power with zero Greenhouse Gases**
- **Generate power with zero emissions**
- **Carbon Credits**

Power Generated Applies to Renewable Portfolio Standards (RPS)

- **Percentage of utility output must come from renewable energy or utility pays fee of cents/kw-hr**
- **States can qualify waste heat recovery as applicable**

Renewable Energy Credits

- **Municipal Solid Waste (MSW)**
- **Biomass fuels (wood waste, construction debris, etc.)**
- **Solar & Geothermal Renewable Energy**

Allows Burning Lower Cost High Sulfur Coal & Petcoke

WOW ENERGIES / EVCS TECHNOLOGY

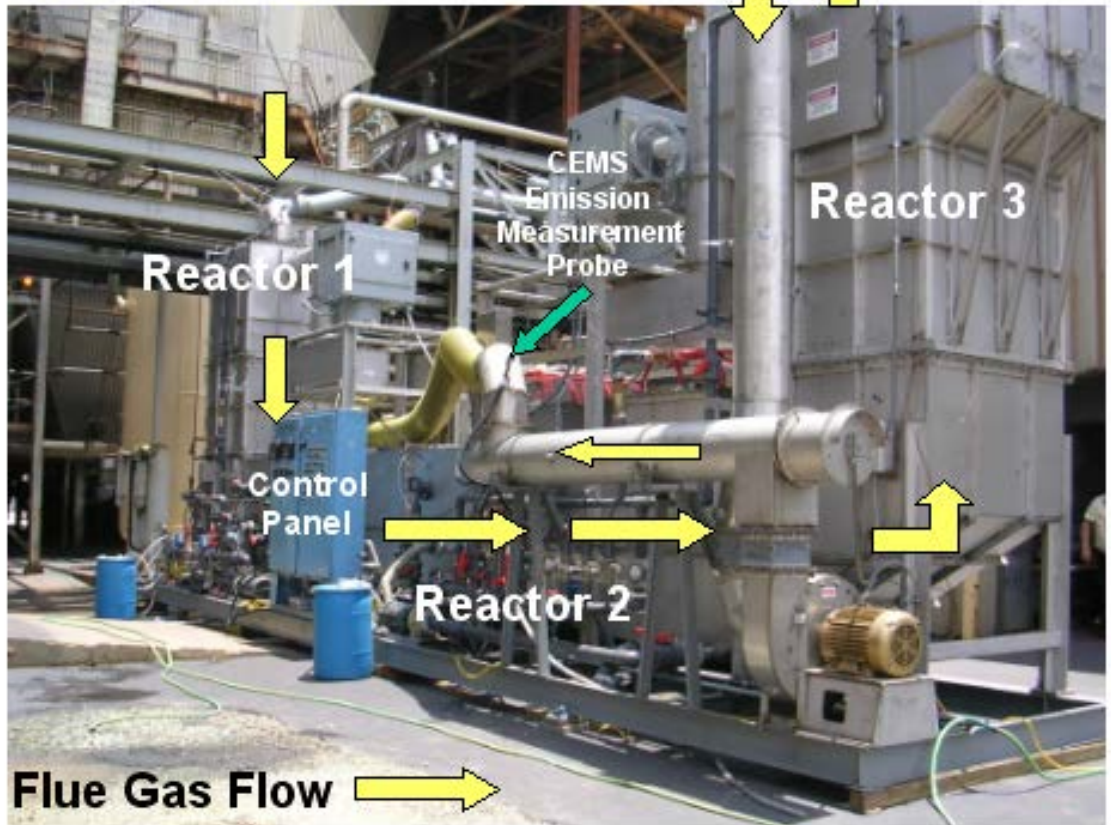
- **WOWGen™** reduces/eliminates flue gas pollutants by reducing final exhaust temperatures to near ambient
 - At reduced temperatures, vaporized pollutants such as Mercury, Vanadium, Cadmium, Chromium, Zinc and Lead are forced to condense
 - Low flue gas temperatures are favorable for elimination of pollutants in flue gas using **WOWClean™**
- **WOWGen™** eliminates water pollution/usage
 - 75% of all electricity produced with steam - 2nd only to irrigation in water usage
 - produces power without using water/steam
- **WOWClean™** removes remaining pollutants
 - **95% NO_x & SO_x (tested 100% removal)**
 - **85% Mercury**
 - **90% Vaporized heavy metals**
 - **99.5% Particulate removal**
 - **25% CO₂ (tested 85% removal)**
- **EVCS Technology**
 - Converts Ash to “Green” Building Materials

WOWClean™ Pilot Plant

- Texas Commission on Environmental Quality (TCEQ) Grant of \$ 1.6 MM (\$ 350 K in WOW Energies matching funds) – April 2005
- Built mobile pilot plant to demonstrate and commercialize WOW Energies' multi-pollutant reduction technology
 - Design/build pilot plant with flexibility to test a broad range of emission reduction capabilities
 - Identified two host sites for trials
 - (1) AES Deepwater, Pasadena, TX – 150 MW petcoke fired power plant
 - (2) Boralex, Livermore, MA – 40 MW wood fired power plant
 - Independent third party verification of test results
 - Final report issued December 2006

WOWClean™ Pilot Plant Advantages

WOWClean™ Pilot Plant



WOWClean™ Test Results

Test Site - AES 150 MW Petcoke Fired Power Plant

WOWClean™ Test Results AES 150 MW Petcoke Fired Power Plant

<u>Pollutant</u>	<u>Inlet</u>	<u>Exhaust (3)</u>
SO ₂	2200 ppm to 2500 ppm	~ 0 ppm
NO (1)	350 ppm to 450 ppm	~ 0 ppm
NO _x (2)	350 ppm to 450 ppm	50 ppm to 75 ppm
CO ₂ - %	13.9	~ 11.3% (19% reduction)
Particulates/SFC	-	~ 0 (1.0 x E-7)
Vaporized Metals (3)	-	~ 0

- (1) Converted to water soluble NO_x
- (2) NO converted to water-soluble NO_x (NO₂, NO₃, N₂O₅). Reduced to zero at Boralex test site.
- (3) Verified by third party testing per EPA/TCEQ test procedures
- (4) Vanadium/Copper/Zinc/Cadmium/Aluminum and others precipitated out in the wastewater effluent

Note: 6% Sulfur Fuel

WOWClean™ Test Results

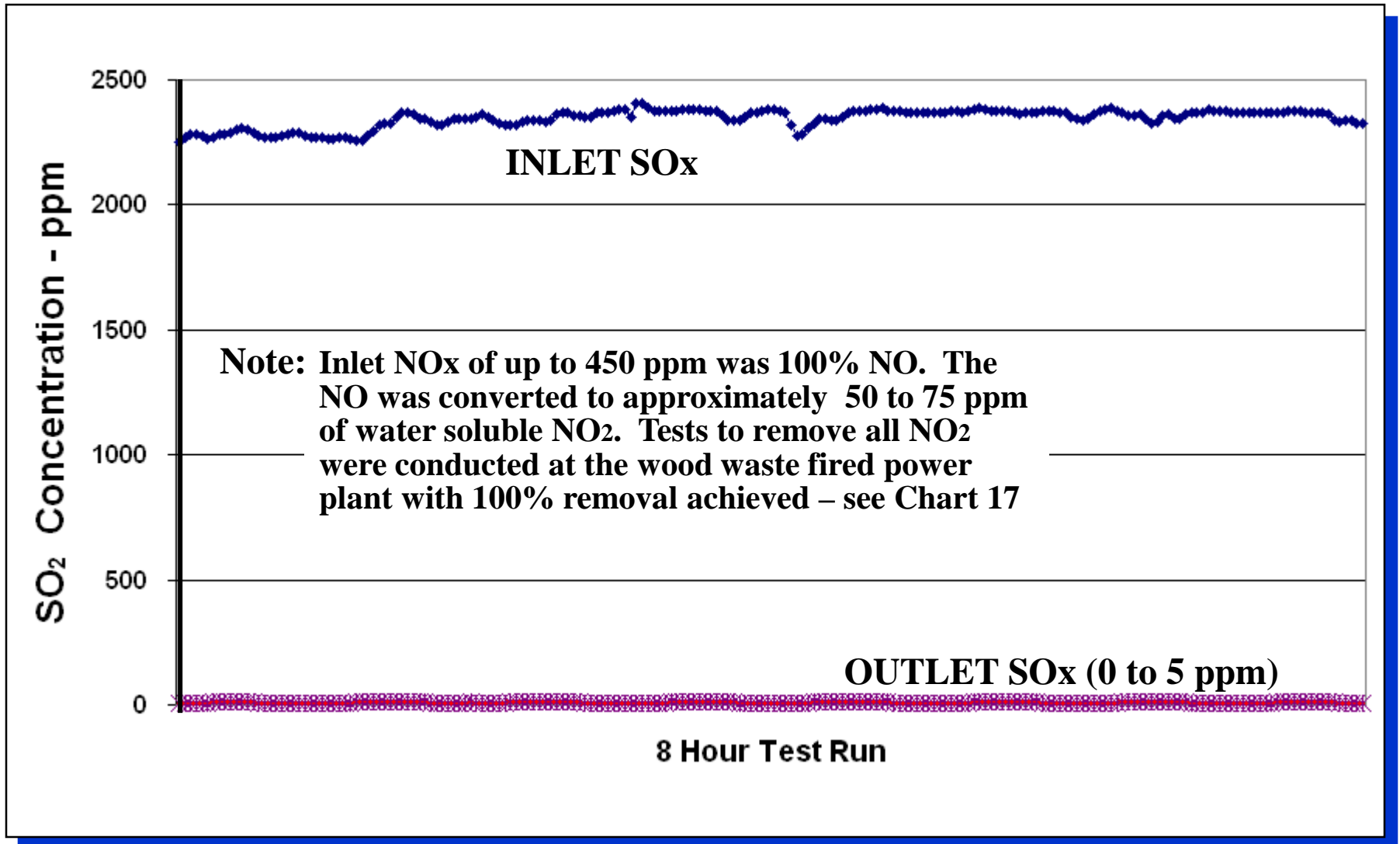
Test Site – Boralex 40 MW Wood Waste Power Plant

WOWClean™ Test Results Boralex 40 MW Wood Fired Power Plant

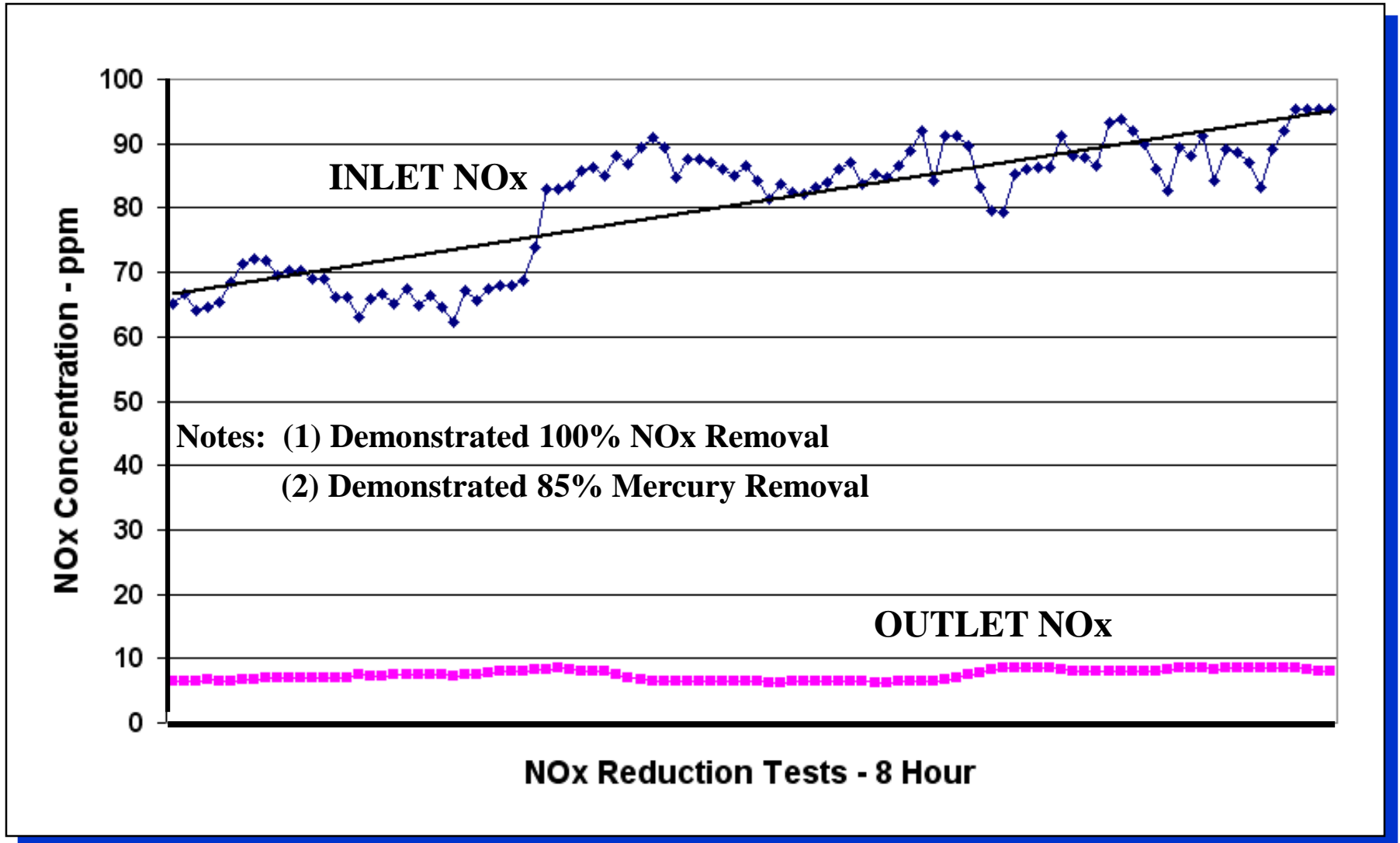
<u>Pollutant</u>	<u>Inlet</u>	<u>Exhaust (7)</u>
SO ₂	< 20 ppm	~ 0 ppm
NO (1)	130 ppm	~ 0 ppm
NO _x (2)	80 ppm	~ 7 ppm
Total NO _x (3)	130 ppm	~ 0 ppm
Vaporized Metals (4)	-	~ 0
Mercury µg/DSCM (5)	2.18	0.37 (83% reduction)
CO ₂ - % (6)	11.6	7.25 (38% reduction)

- (1) Converted to water soluble NO_x
- (2) Water soluble NO_x (NO₂, NO₃, N₂O₅) – client required 35 ppm
- (3) Demonstrated subsequent to 3rd party testing
- (4) Verified via effluent assaying
- (5) Hg precipitated out in the wastewater effluent
- (6) Reduced by as much as 85% during CO₂ reduction trials
- (7) Verified by third party testing per EPA/TCEQ test procedures

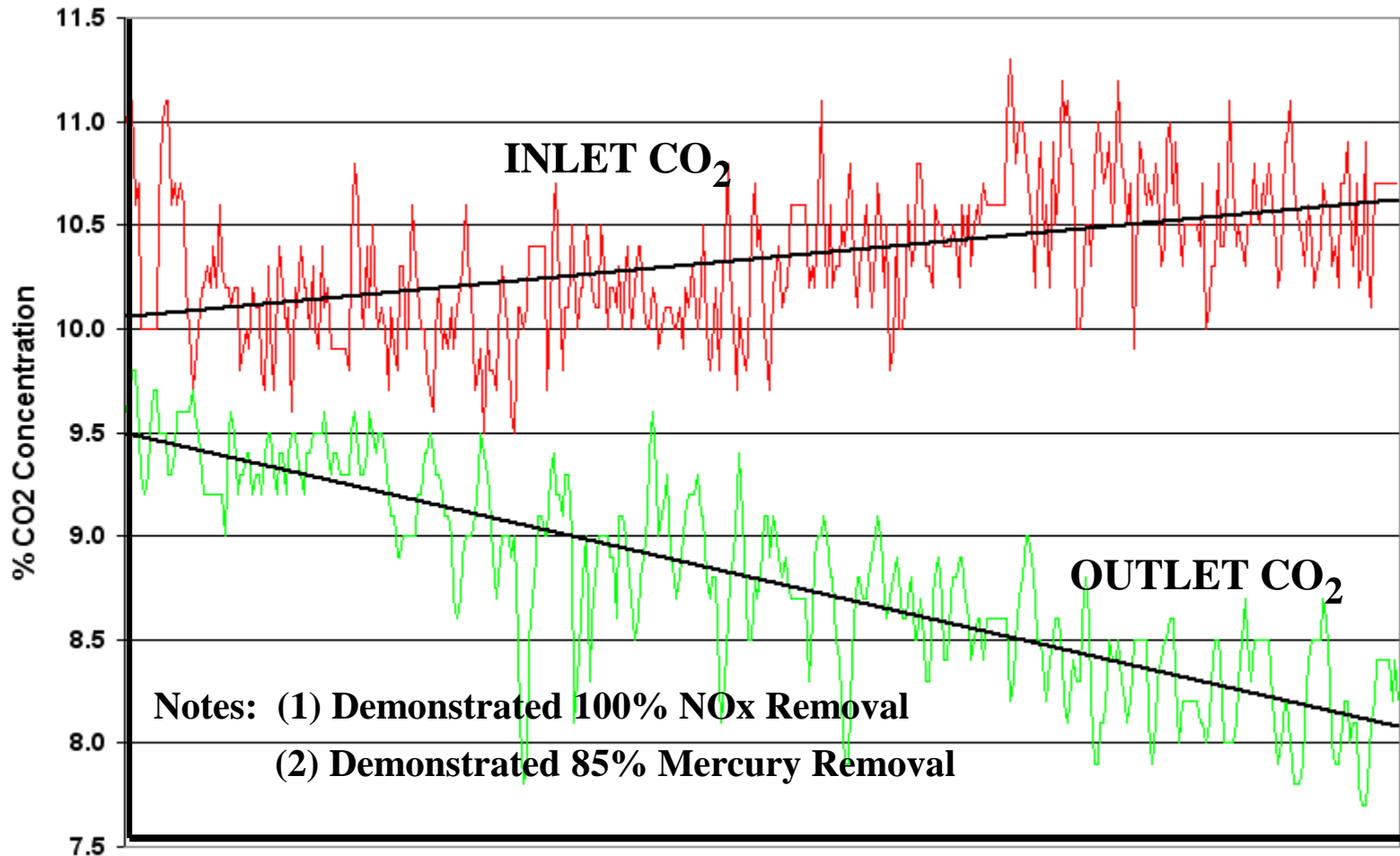
**WOWClean™
SOx Removal Tests
Petcoke Fired Power Plant (6% Sulfur Fuel)**



WOWClean™ NOx Removal Tests Wood Waste Fired Power Plant



WOWClean™ CO₂ Removal Tests Wood Waste Fired Power Plant



8 Hour Test Run - Increasing CO₂ Scrubbing

Georgia Conference of Black Mayors

**Zero Emission
Environmentally Friendly
Energy Efficient
Power Plants
Available
“TODAY”**

EVCS Technologies, Inc
"Environmentally Conscious Solutions"

NexGen WoWTech LLC

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