



**COLER &  
COLANTONIO** INC

ENGINEERS AND SCIENTISTS

# U.S. Water Mission Romania - Moldova



March 2012

COLER &  
COLANTONIO <sup>U.S.</sup>

ENGINEERS AND SCIENTISTS



**COLER &  
COLANTONIO** INC  
ENGINEERS AND SCIENTISTS

**We are a Consulting Firm of Engineers, Scientists and  
Wastewater & Water Treatment Facility Operators**





**COLER &  
COLANTONIO** INC.  
ENGINEERS AND SCIENTISTS

- **150-200 Employees**
- **Eight offices across the United States**
- **Completed projects in North and South America, Europe, and Africa**

# Our Global Project Locations



U.S.A

CANADA

VENEZUELA

PERU

POLAND

ROMANIA

KENYA



**COLER &  
COLANTONIO** CO  
NZ  
ENGINEERS AND SCIENTISTS

## Expertise:

- Water and Wastewater
- Energy Infrastructure
- Land Information Systems
- Land Development and Planning
- Environmental Science



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NZ  
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## Area Of Emphasis:



# Our Organization



# Our Organization

## MARKET SEGMENT FOCUSED

Energy Infrastructure

Geospatial Technology

Land Development

Government

## DISCIPLINED FOCUSED

Environmental Services

Wastewater Operations

Engineering Surveys



Taunton Wastewater Treatment Plant  
Taunton, Massachusetts



Wastewater Treatment Testing

## What We Do:

- Facility Design and Construction
- System Startups and Assessments
- Operations and Maintenance (O&M)
- Performance Review and System Optimization

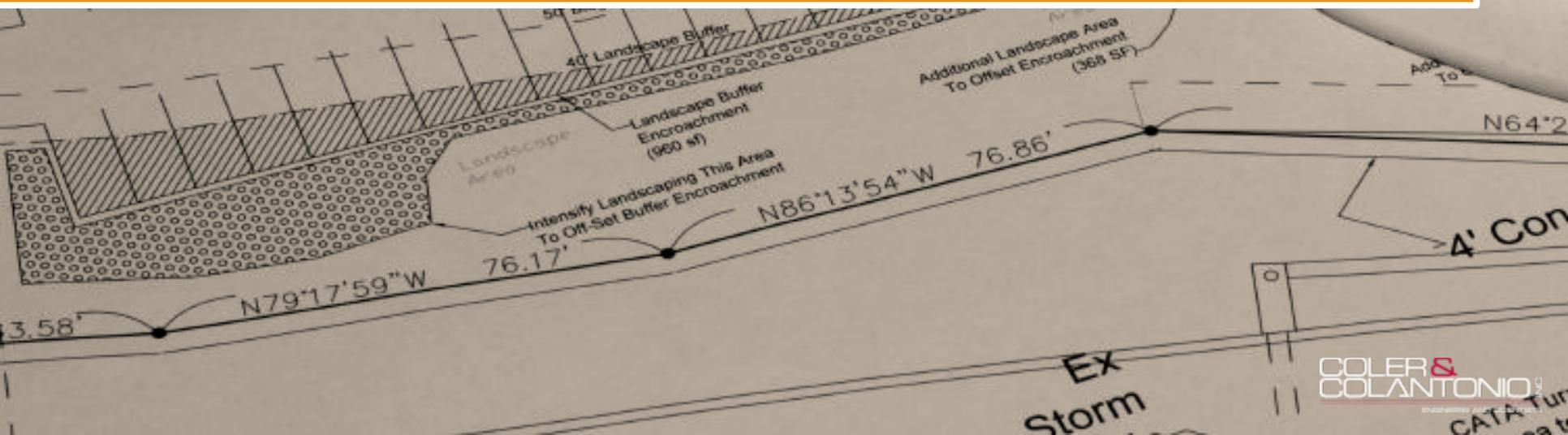
## Projects:

- Amphidrome™ System Design and Operation
- Solar Aquatics System Design and Training
- Staffing and Performance Evaluation at facility converting food waste to organic fertilizer



# Representative Projects

## Wastewater & Energy Focus



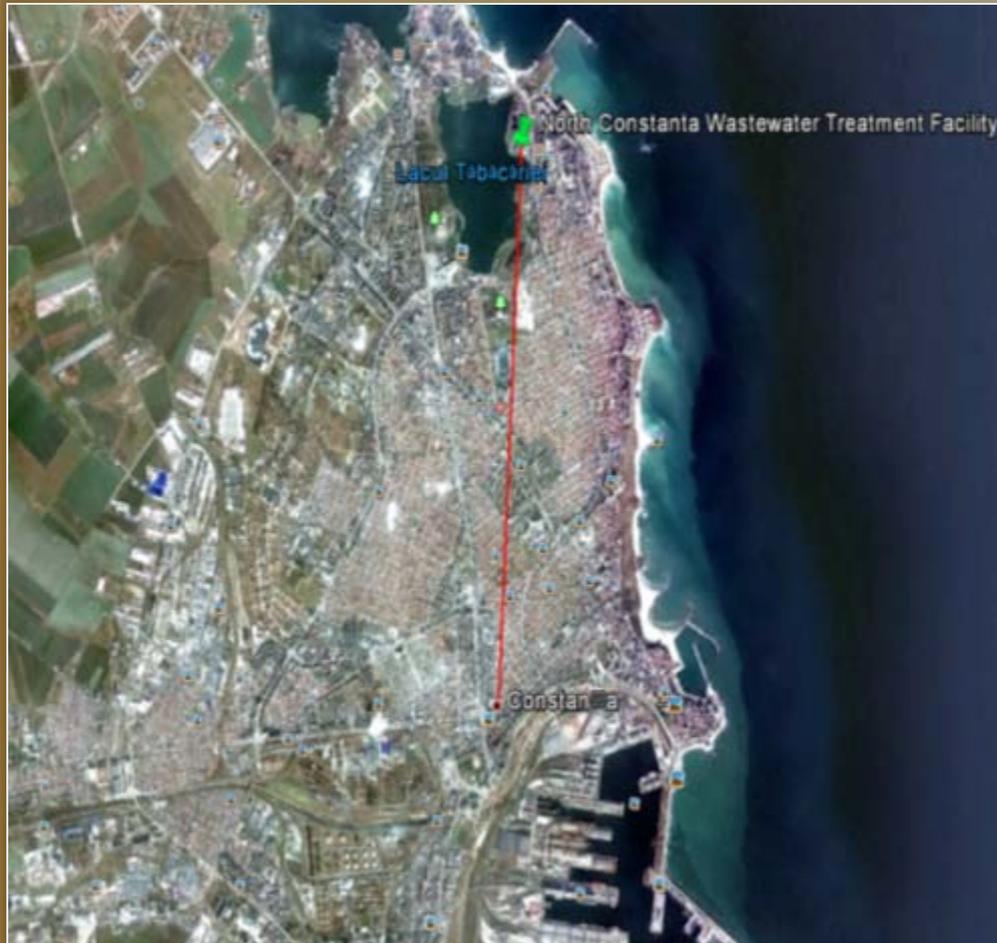
# Representative Projects

*Constanta North*

*Wastewater Treatment Facility*

*RAJA Constanta, Romania*

Project Cost: \$13.6 M (USD)



Scope of Work Includes

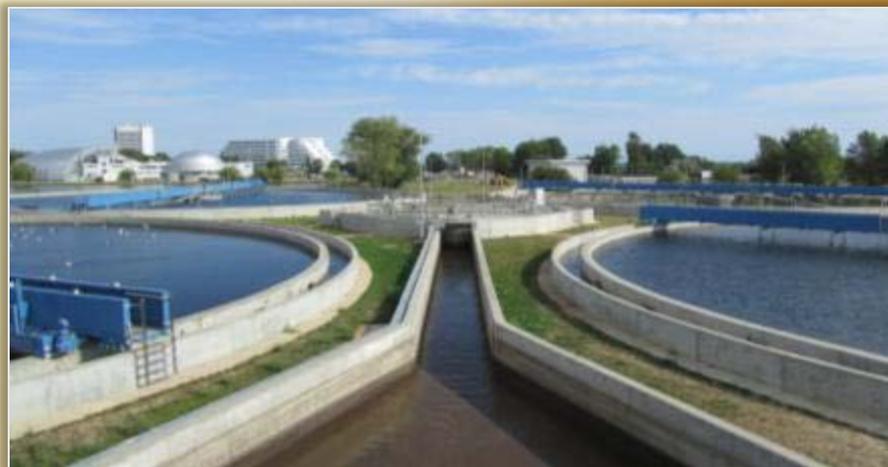
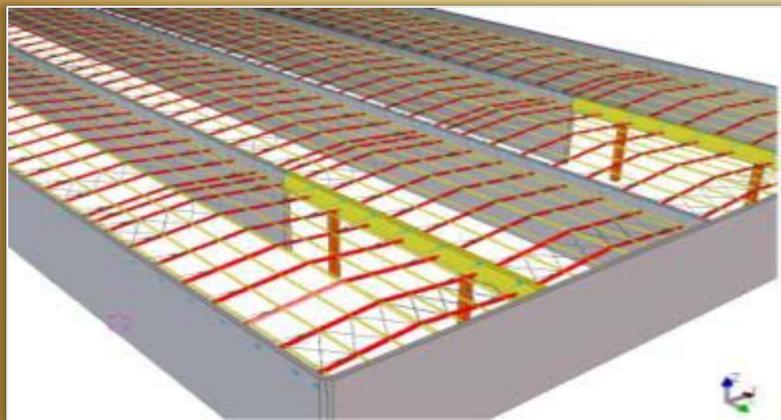
- Design / Build
- Odor Control (Covers)
- Sludge Pump Station & Conveyance

# Representative Projects

**Constanta North  
Wastewater Treatment Facility  
RAJA Constanta, Romania**



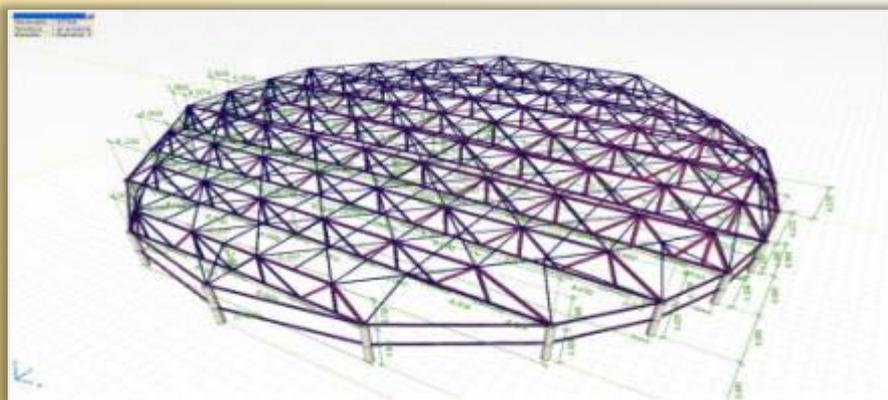
Facility Design: 140,000 cm/d  
Work in progress scheduled for completion in  
October 2013



## Scope of Work Includes

- Design / Build
- Odor Control (Covers)
- Sludge Pump Station &

Project Cost: \$13.6 M (USD)





#### Legenda

-  Lokalne oczyszczalnie ścieków
-  Ciek i zbiorniki wodne
-  Mysłowice
-  Nazwy gmin
-  Korady

# Representative Projects

## Feasibility Study Upper Raba River Watershed, Poland

### Project Details:

- Dobczyce Reservoir, in early stages of eutrophication, provides 60% of water to Krakow and other communities in the watershed
- Work with US Trade and Development Agency (USTDA)
- Evaluated cost-effective, innovative U.S. technologies for wastewater management

# Representative Projects

## Modular Wastewater Treatment Tokarnia, Poland



### Project Details:

- Wastewater Treatment Facility to treat 180 m<sup>3</sup>/d using an Amphidrome™ system
- Facility built to blend in with surrounding landscape / local architecture
- Operating since 2005

# Amphidrome<sup>®</sup> Technology

Tokarnia, Poland



# Representative Projects

## Solar Aquatics Wastewater Treatment Alberta, Canada



### Project Details:

- Replaced failing lagoon system
- System consists of a series of tanks, engineered streams and constructed marshes which break down complex compounds



# Representative Projects

Converted Organics  
Woodbridge, New Jersey

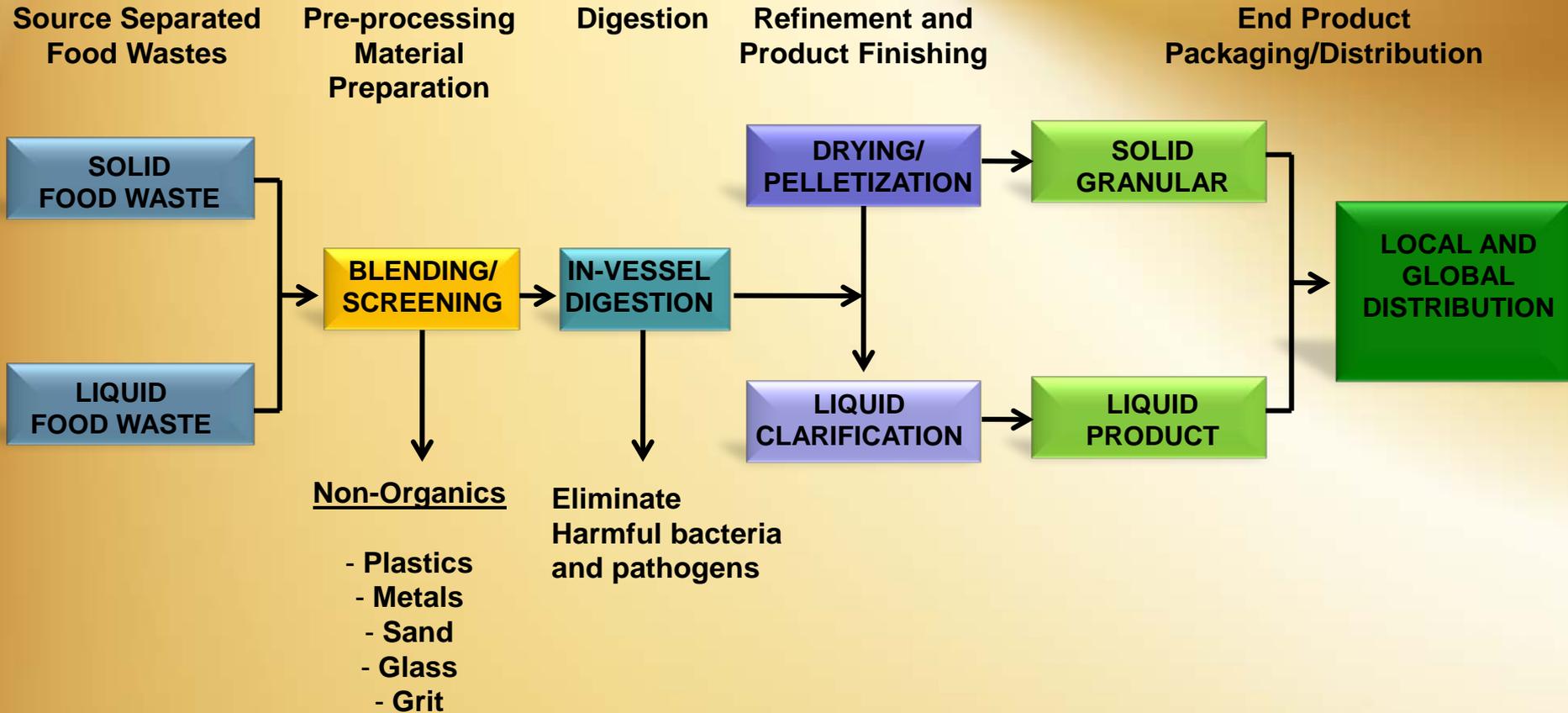


## Project Details:

- Converts food waste to certified organic fertilizer
- New Jersey Plant licensed to process 500 tons of food waste per day
- Mimics natural composting process
- Oxygen added to accelerate digestion process
- Product uses: professional, residential, and agricultural applications

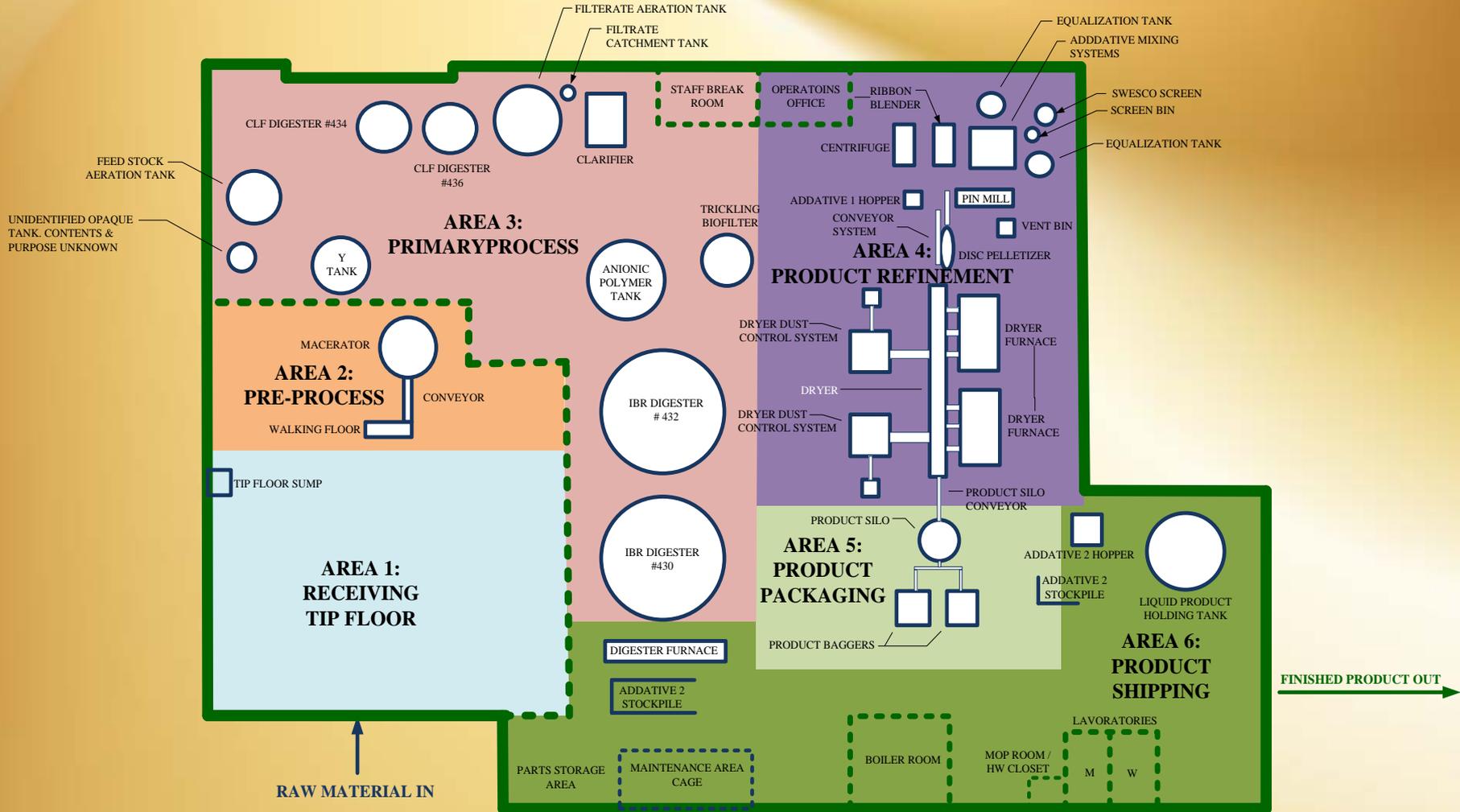
# New Jersey Facility

## Process Flow Diagram



# New Jersey Facility

## Process Area Delineation



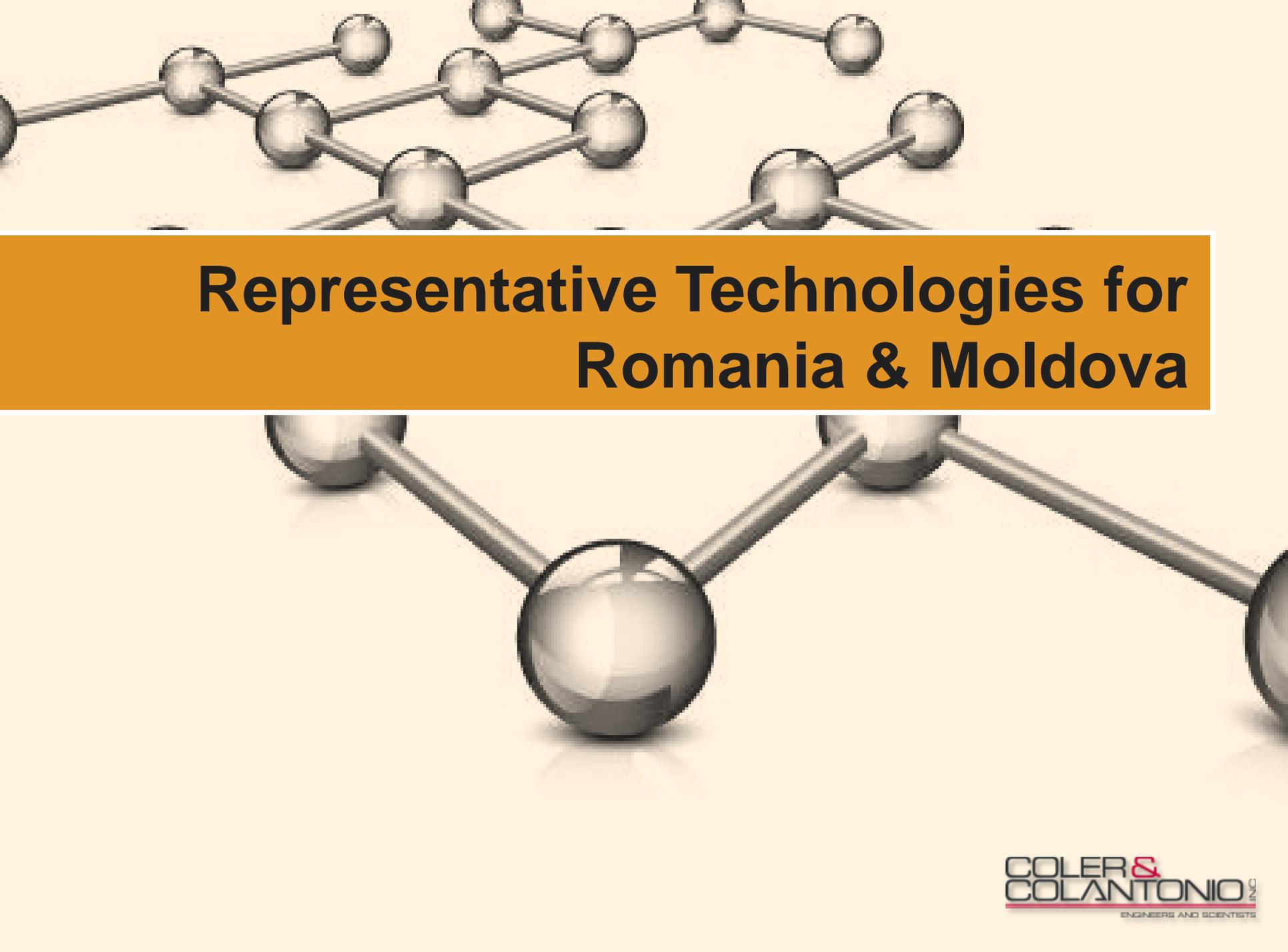
# Representative Projects

## Low Pressure Sewer System Zakliczyn, Poland

### Project Details:

- Demonstration project of U.S. wastewater technologies
- Connected six homes along the Dobczyce Reservoir to an existing gravity system via low pressure collection system
- Houses were connected without the need for redundant piping and a large pumping station





# Representative Technologies for Romania & Moldova

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

- Amphidrome<sup>®</sup> Technology
- SEQUOX System
- Low Pressure System

## BioSolids Management

- Fertilizer
- Energy Generation

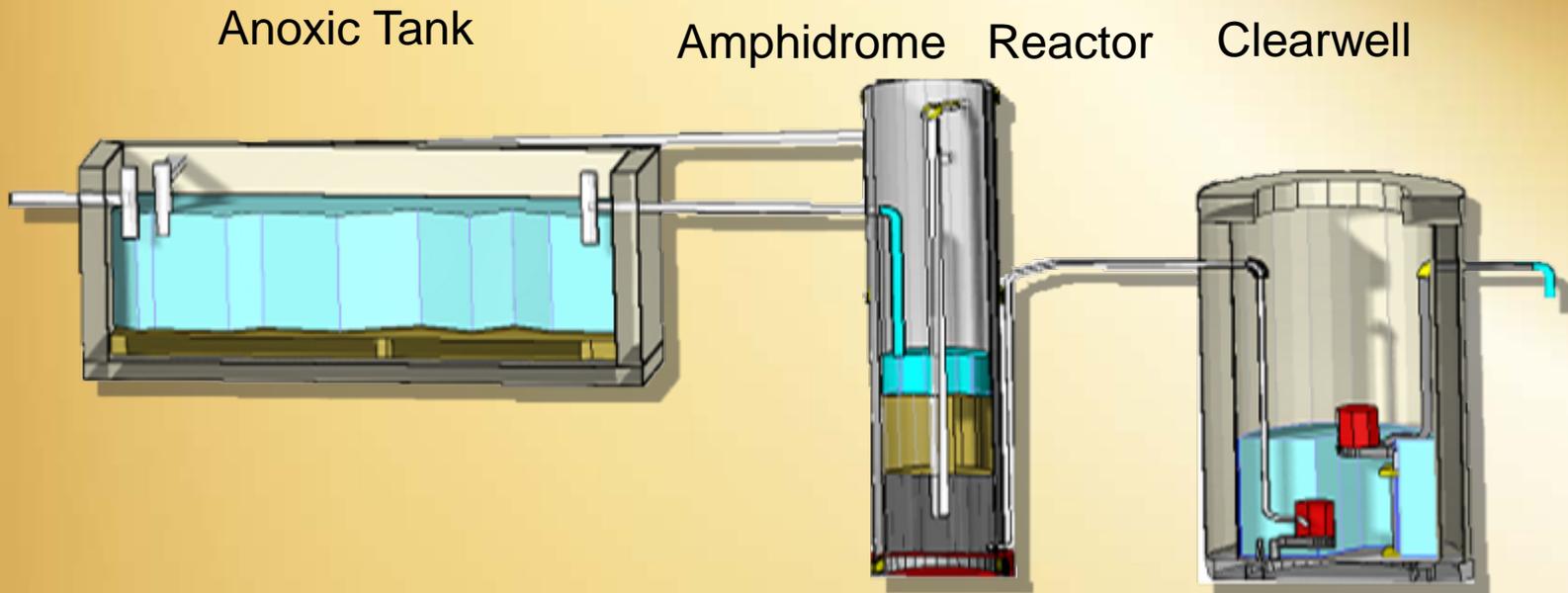
## Alternative Energy

- Solar
- Wind

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### Amphidrome<sup>®</sup> Technology



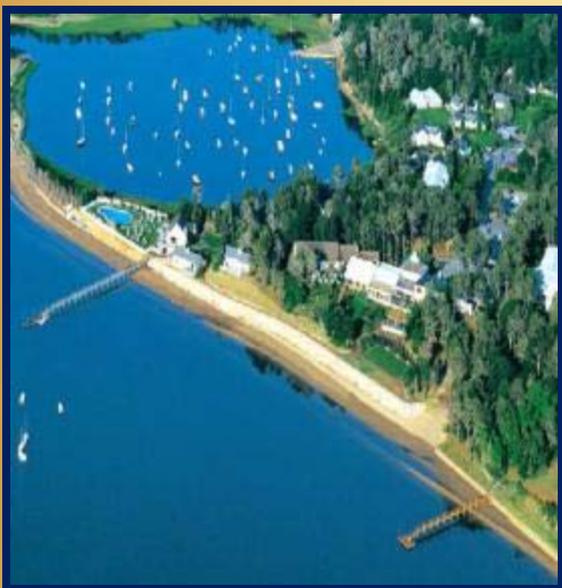
# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### Amphidrome® Applications



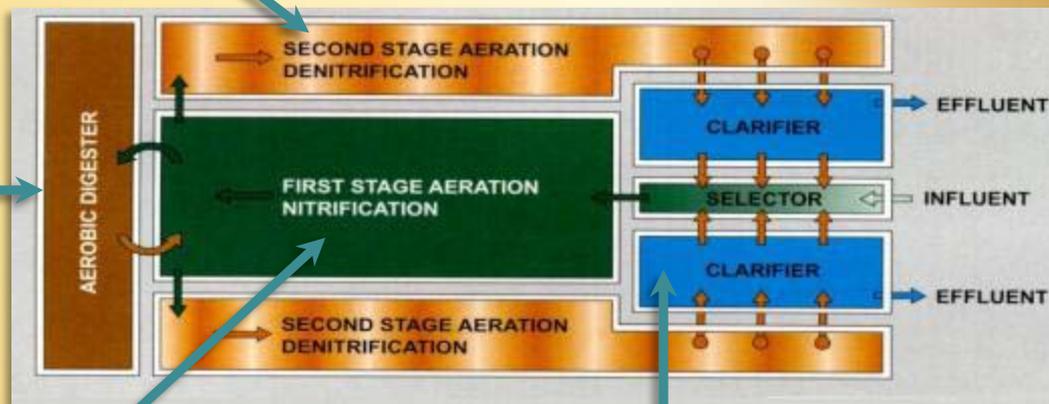
- Hospitals
- Schools
- Residential
- Restaurant
- Commercial
- Hotel / Resort



# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### The SEQUOX System



**Aero-Mod®**  
Wastewater Process  
Solutions

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System



## The SEQUOX System

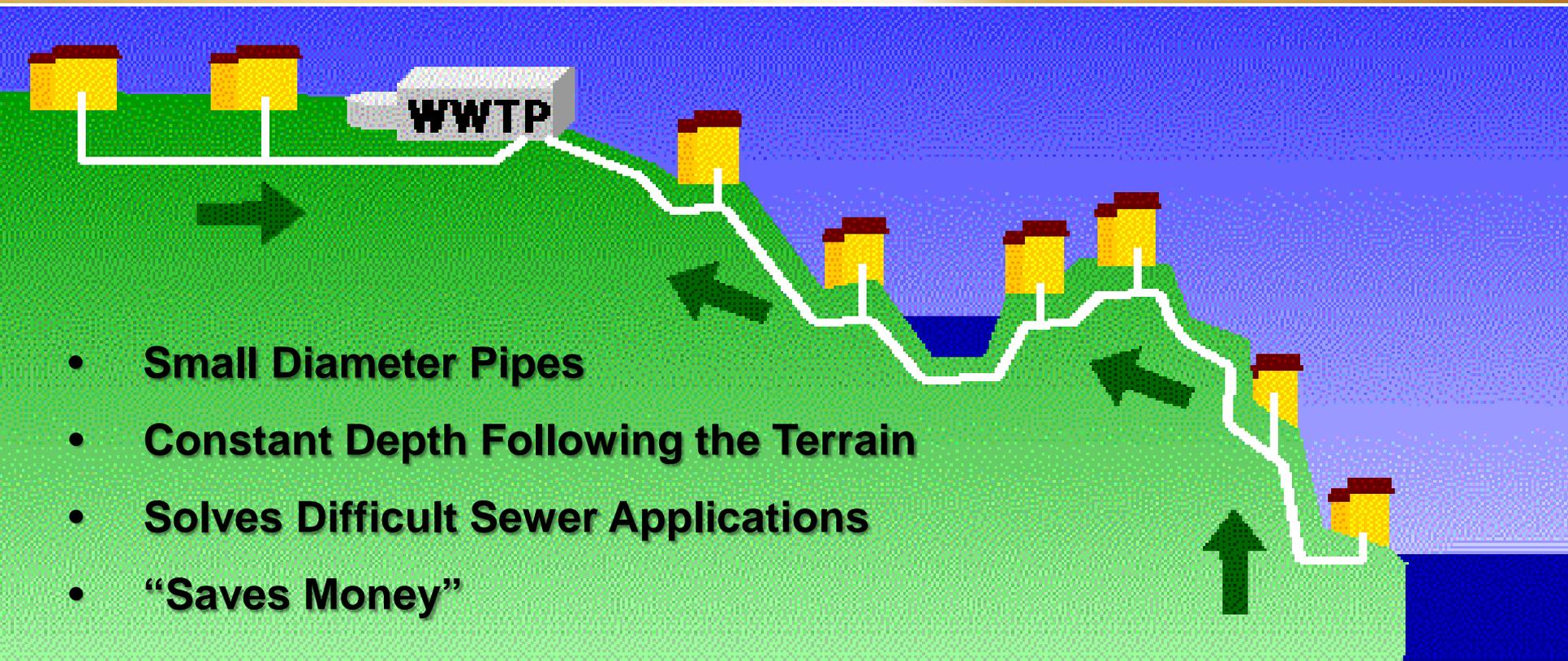
St. Marys, KS  
0.5 MGD Sequox  
(1,900 m<sup>3</sup>/d)

**Aero-Mod®**  
Wastewater Process Solutions

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## Small Wastewater Treatment System

### Low Pressure Sewer System



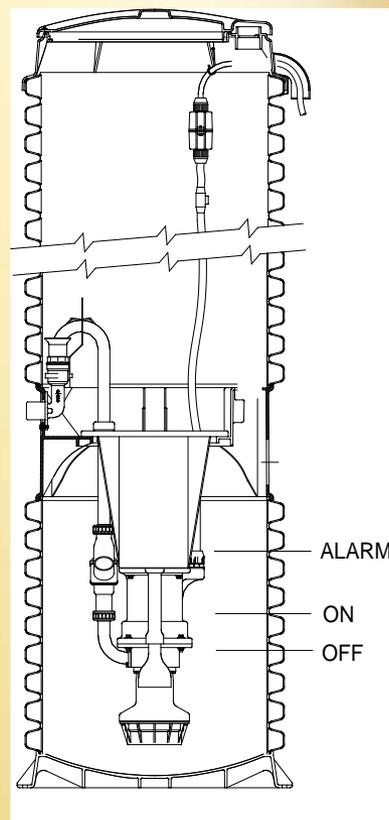
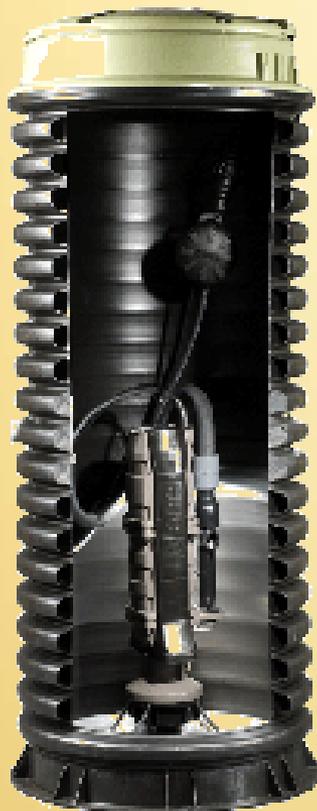
- **Small Diameter Pipes**
- **Constant Depth Following the Terrain**
- **Solves Difficult Sewer Applications**
- **“Saves Money”**

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### Low Pressure Sewer System

E-One Pumps



# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

- Amphidrome<sup>®</sup> Technology
- SEQUOX System
- Low Pressure System

## BioSolids Management

- Fertilizer
- Energy Generation

## Alternative Energy

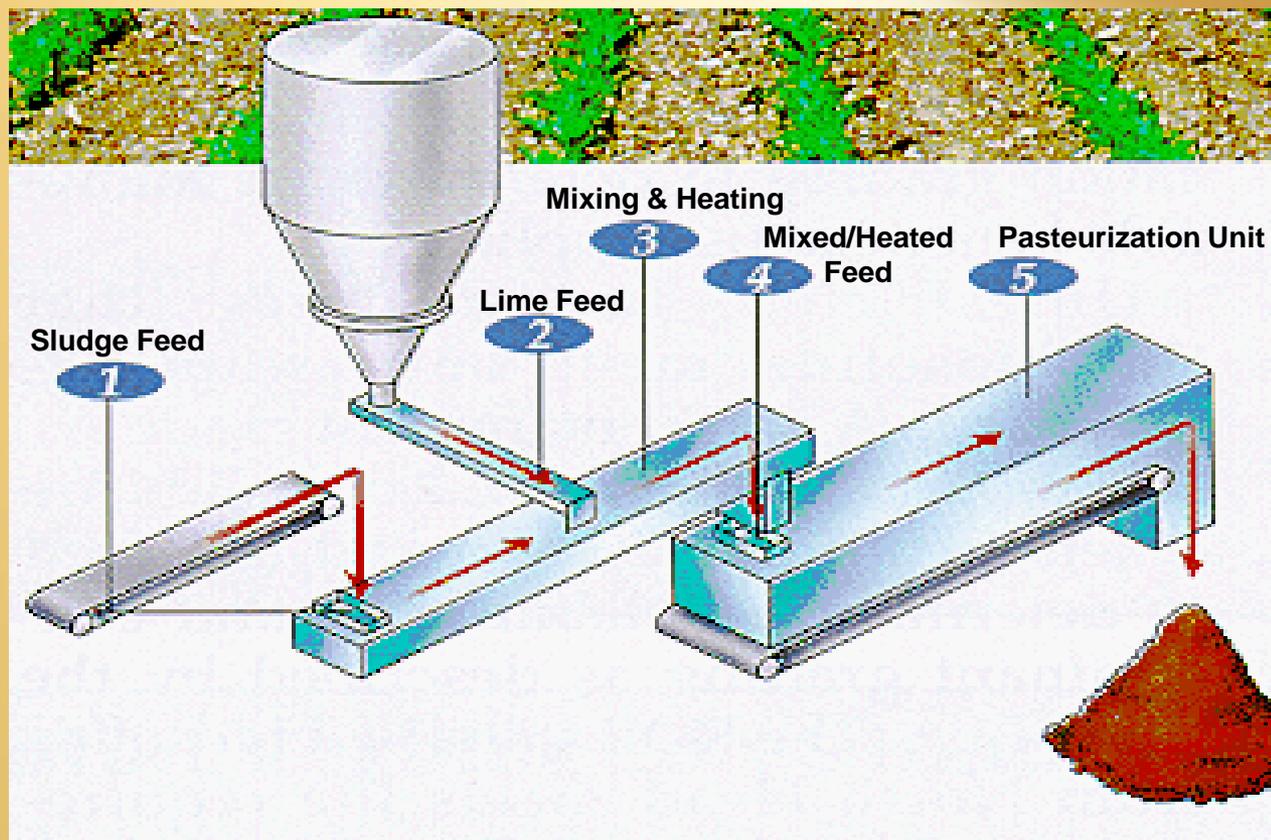
- Solar
- Wind

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### BioSolids Management - Fertilizer

### InVessel Pasteurization System Flow Sheet

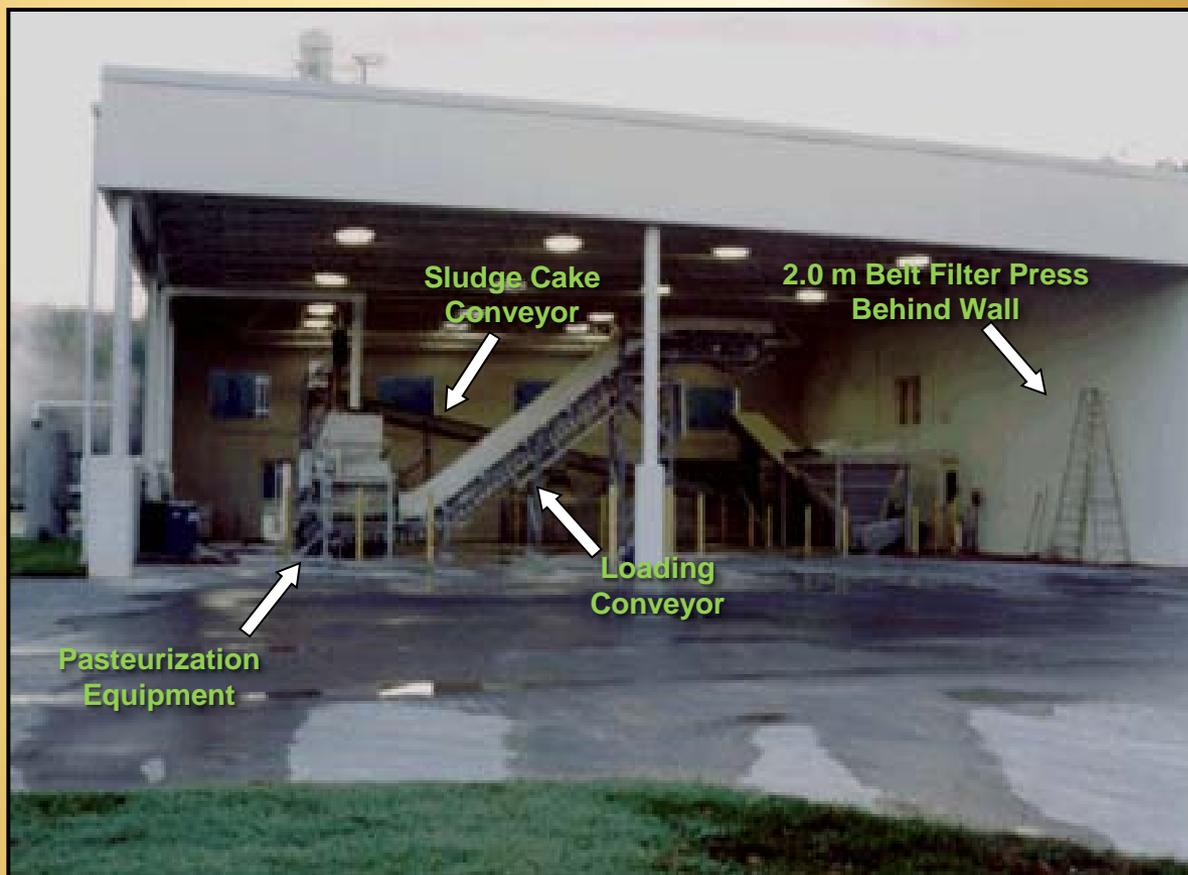


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## Small Wastewater Treatment System

### BioSolids Management - Fertilizer

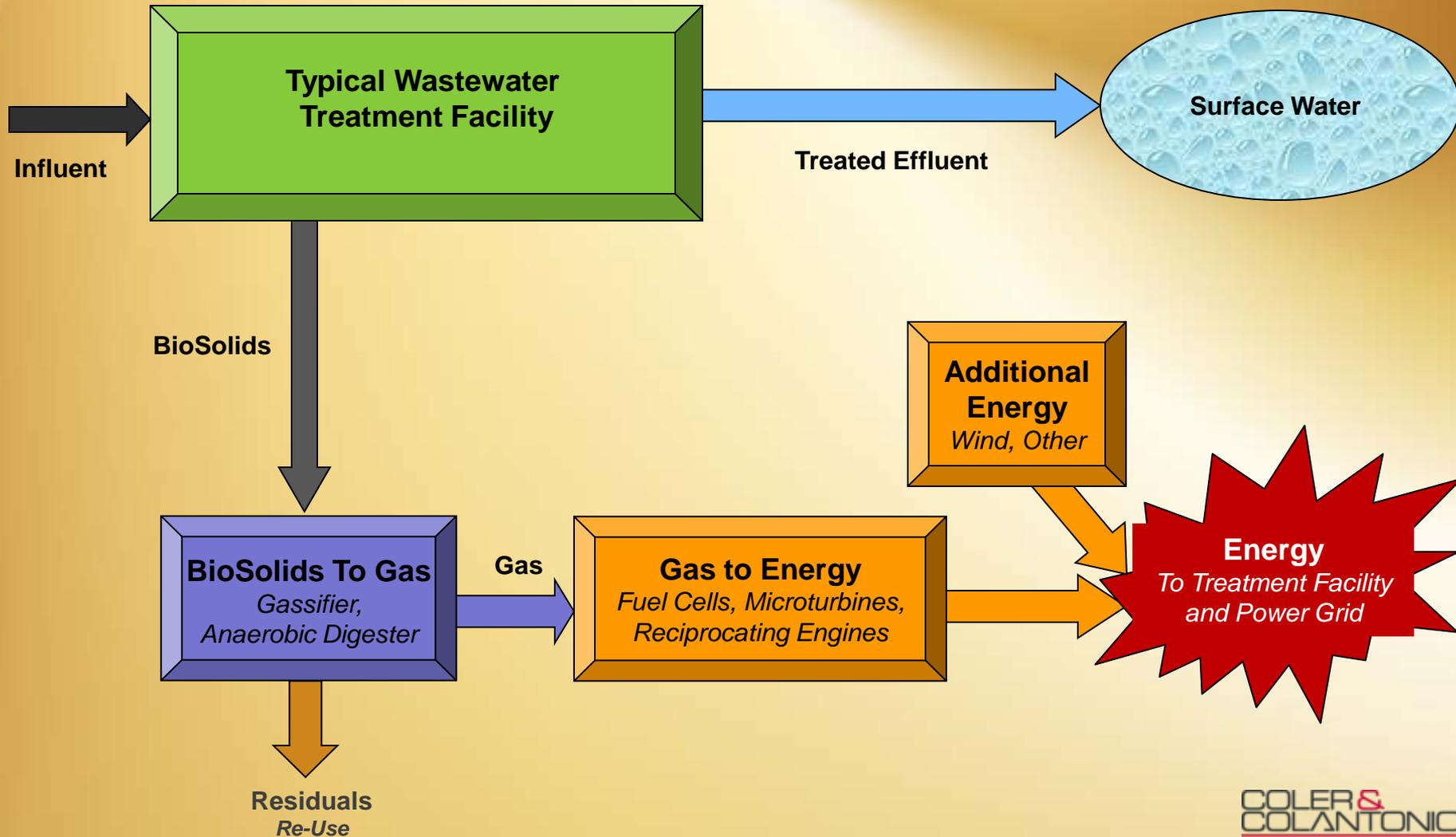
### EnVessel Pasteurization Process Facility



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## Small Wastewater Treatment System

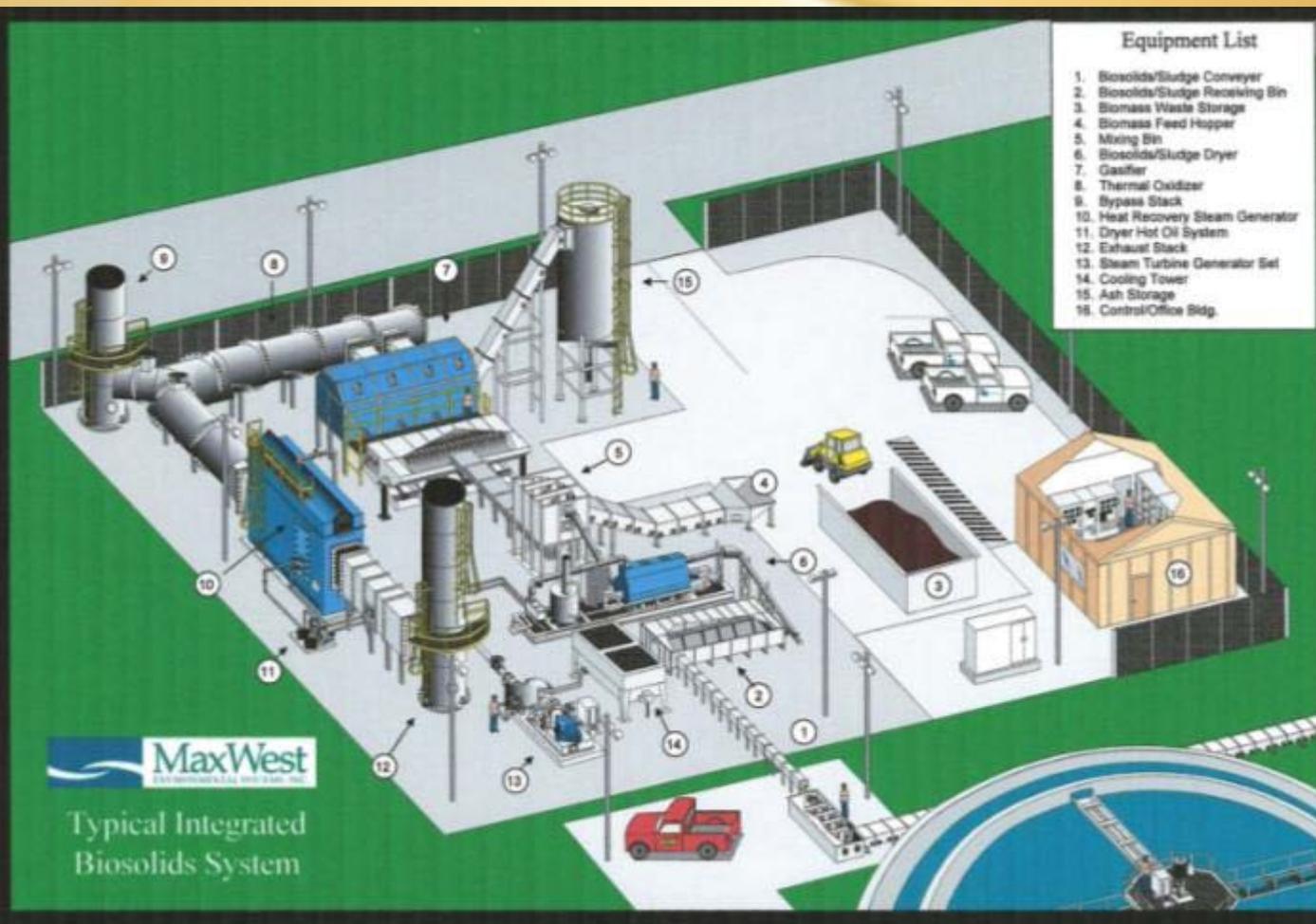
### BioSolids Management - Energy Generation



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## Small Wastewater Treatment System

### BioSolids Management - Energy Generation

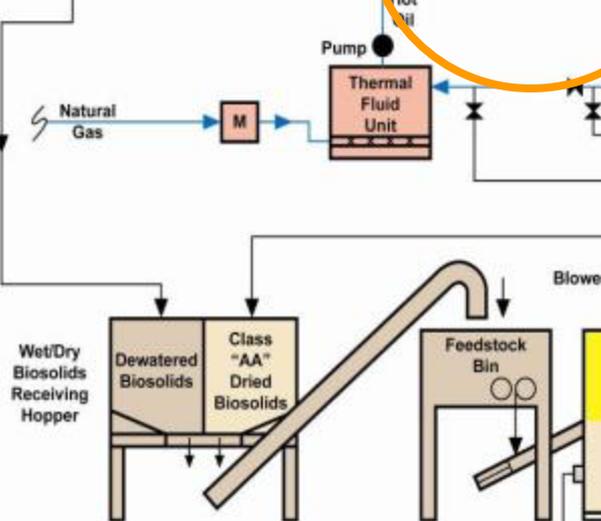
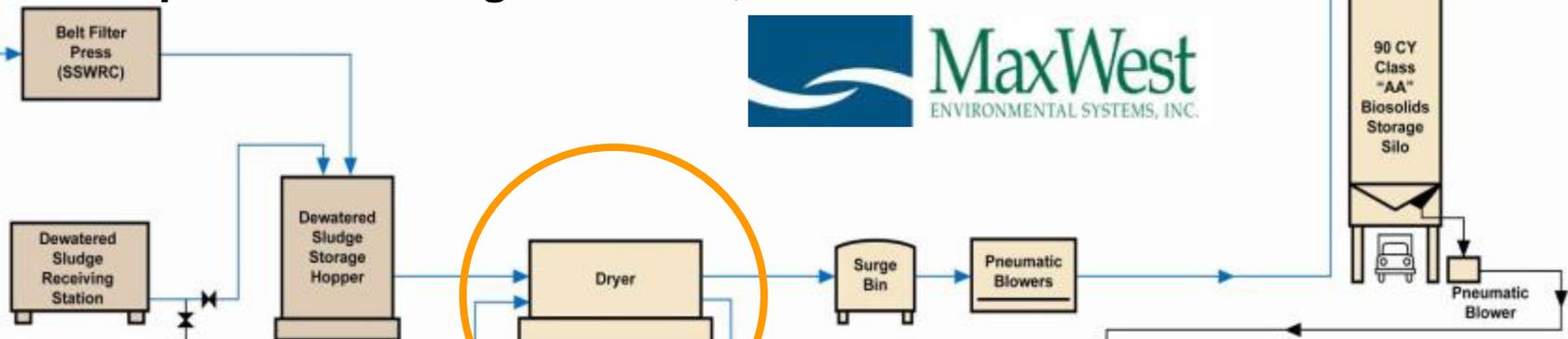




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## Small Wastewater Treatment System

### Current Operational Design : Sanord, Florida USA



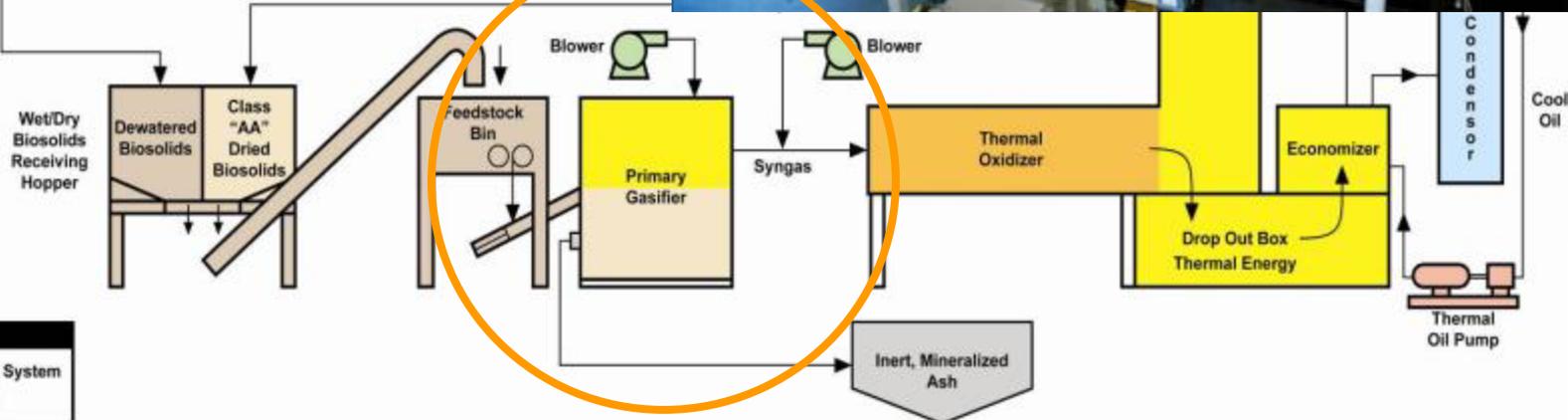
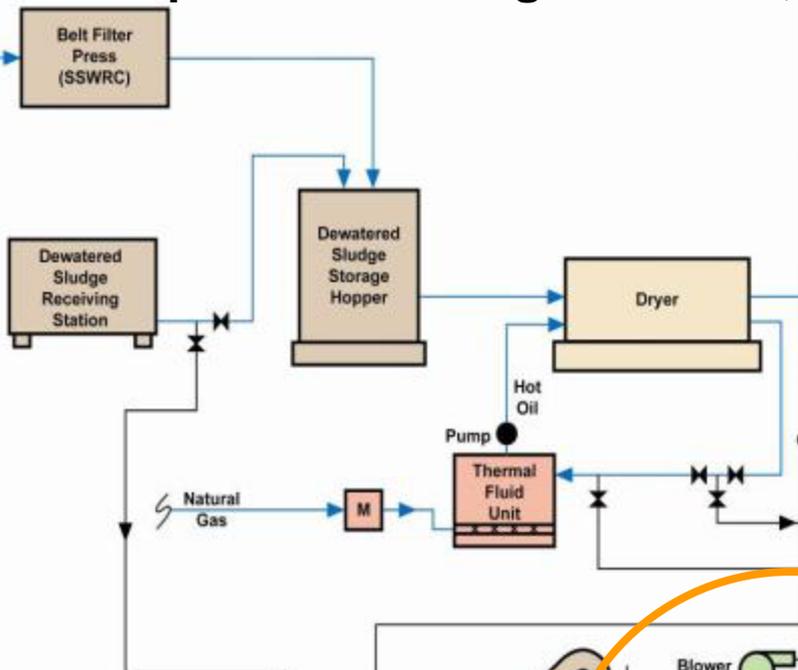
#### Legend

- ▶ Existing Class "AA" System
- ▶ Gasification System

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## Small Wastewater Treatment System

### Current Operational Design : Sanord,



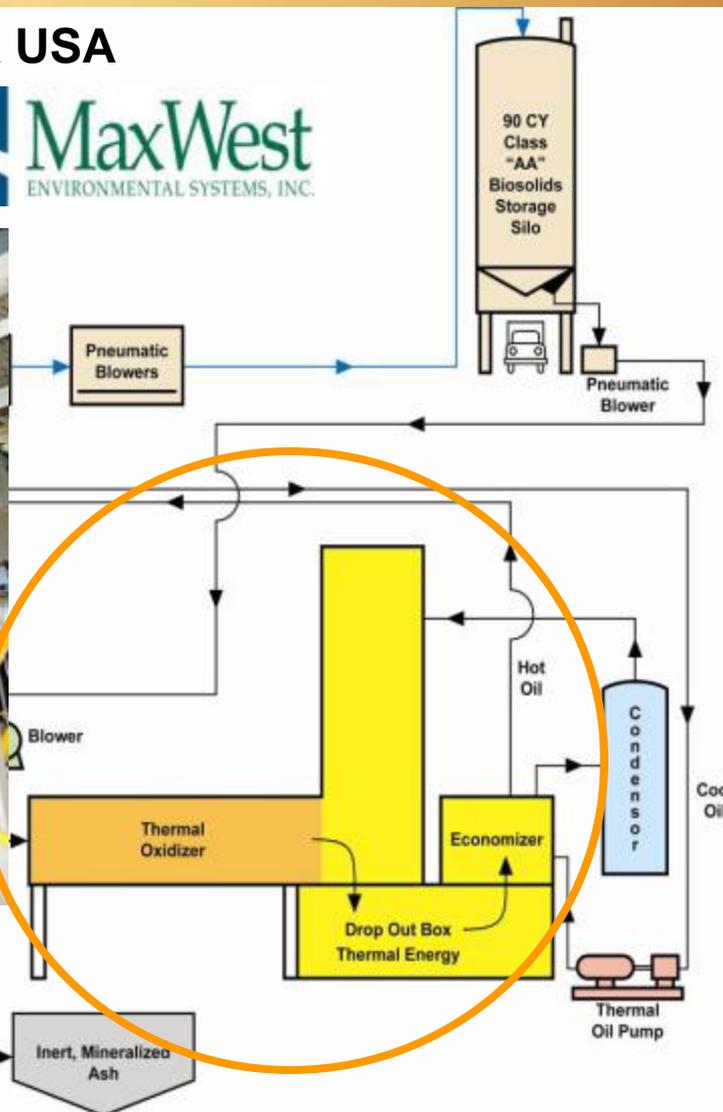
#### Legend

- ▶ Existing Class "AA" System
- ▶ Gasification System

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### Current Operational Design : Sanord, Florida USA



Legend	
▶ Existing Class "AA" System	
▶ Gasification System	

# Representative Technologies for Romania & Moldova

Emission Control Equipment

Small Wastewater Treatment System

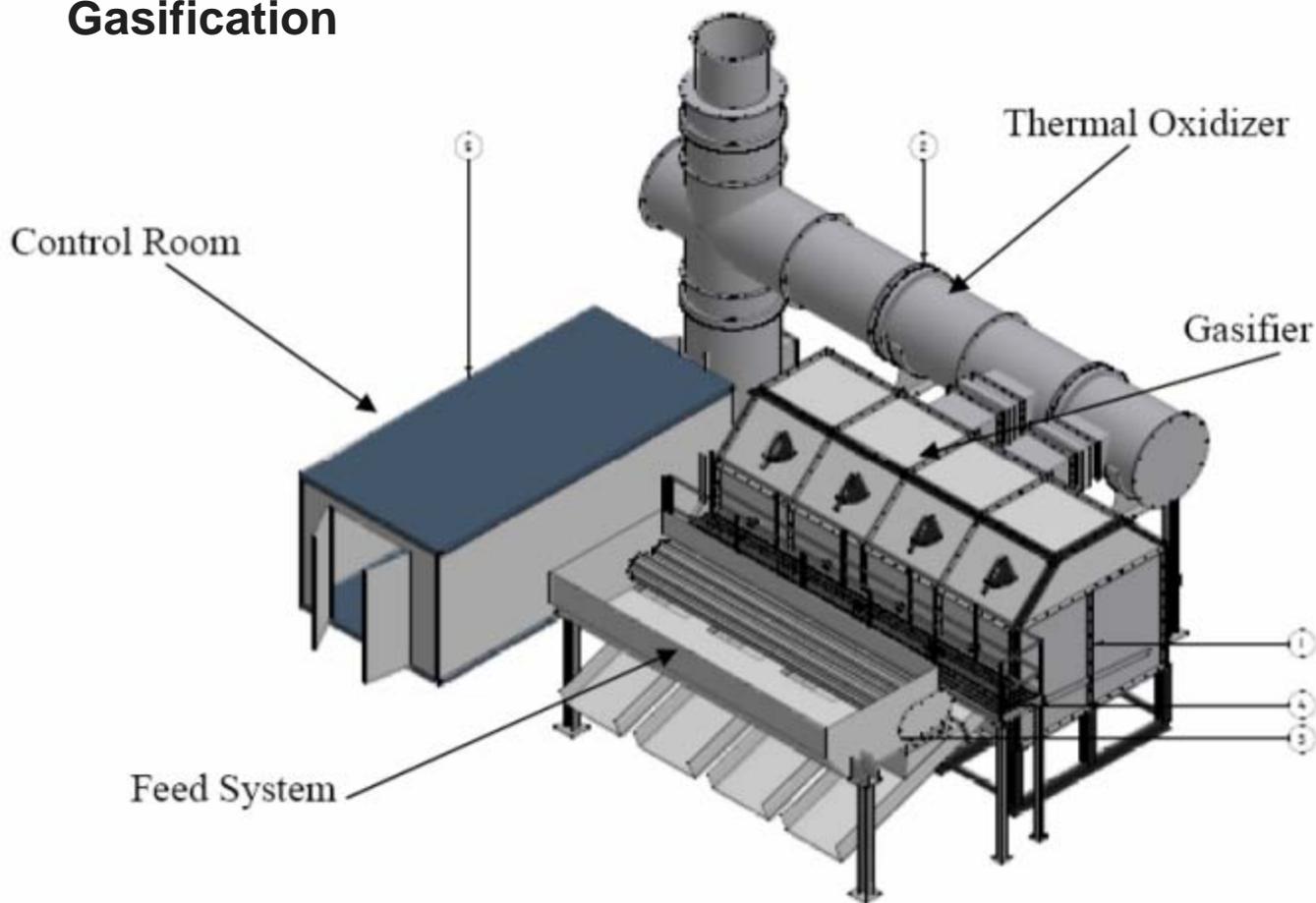


**MaxWest**  
ENVIRONMENTAL SYSTEMS, INC.

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### Gasification



Westwood Model 144 Gasifer Section

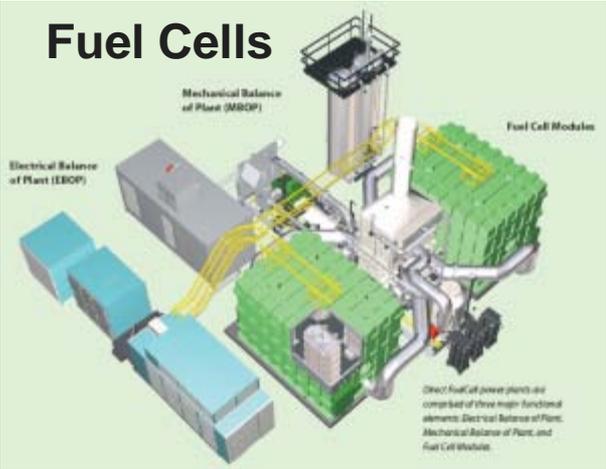
**BioSolids  
Management  
- Energy  
Generation**

# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

### BioSolids Management - Energy Generation

#### Fuel Cells



#### Reciprocating Engine



#### Microturbines



# Representative Technologies for Romania & Moldova

## Small Wastewater Treatment System

- Amphidrome<sup>®</sup> Technology
- SEQUOX System
- Low Pressure System

## BioSolids Management

- Fertilizer
- Energy Generation

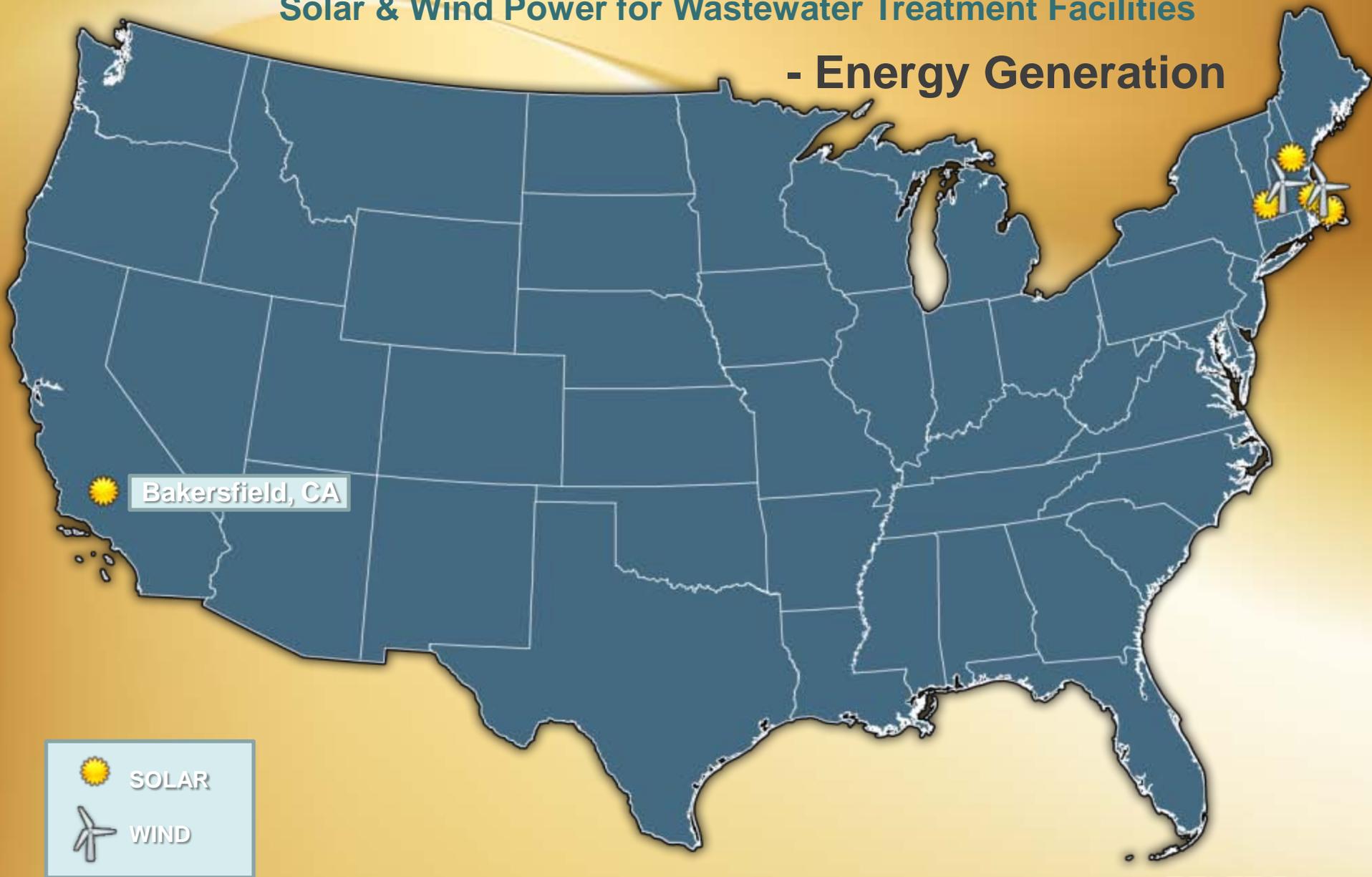
## Alternative Energy

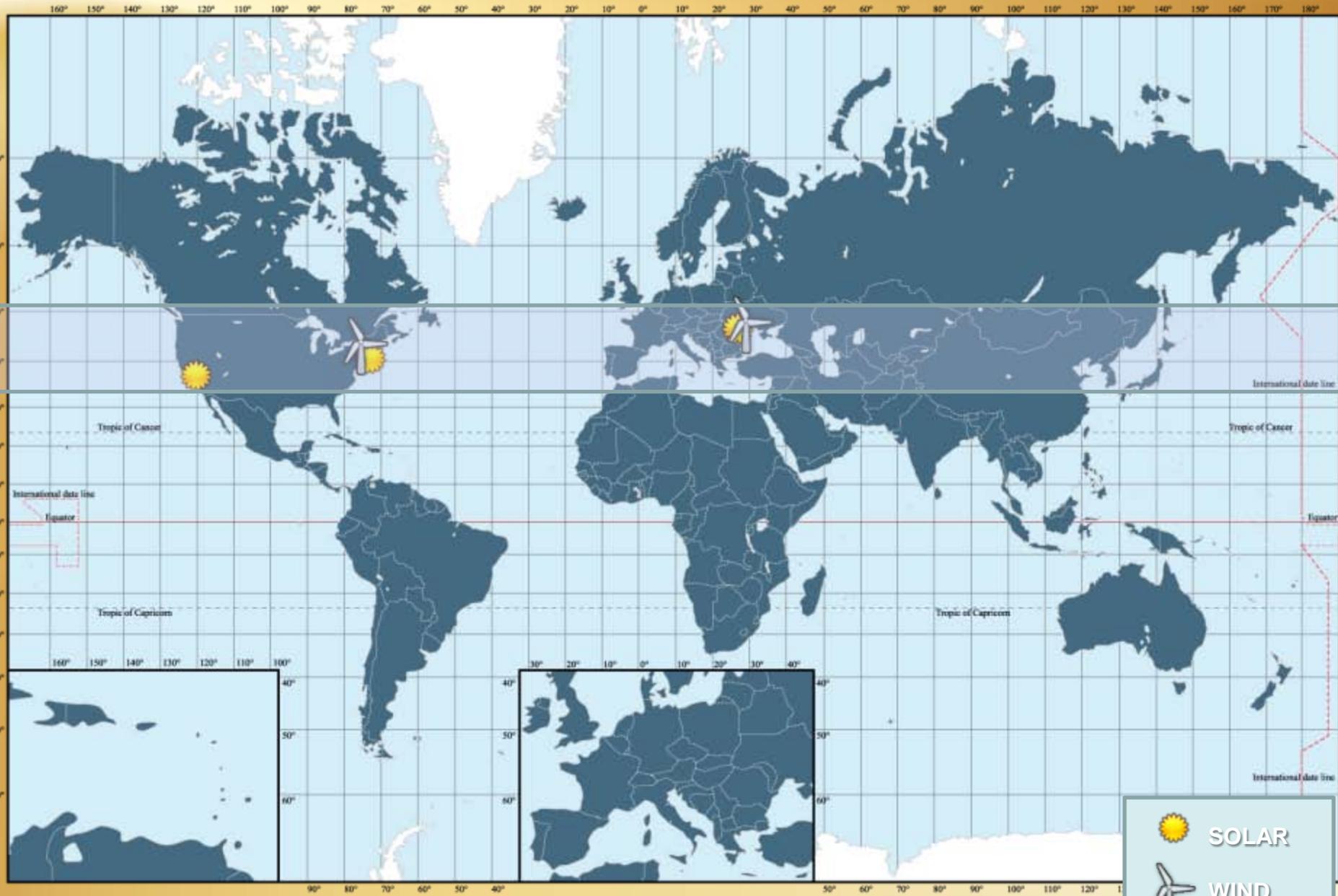
- Solar
- Wind

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Solar & Wind Power for Wastewater Treatment Facilities

- Energy Generation





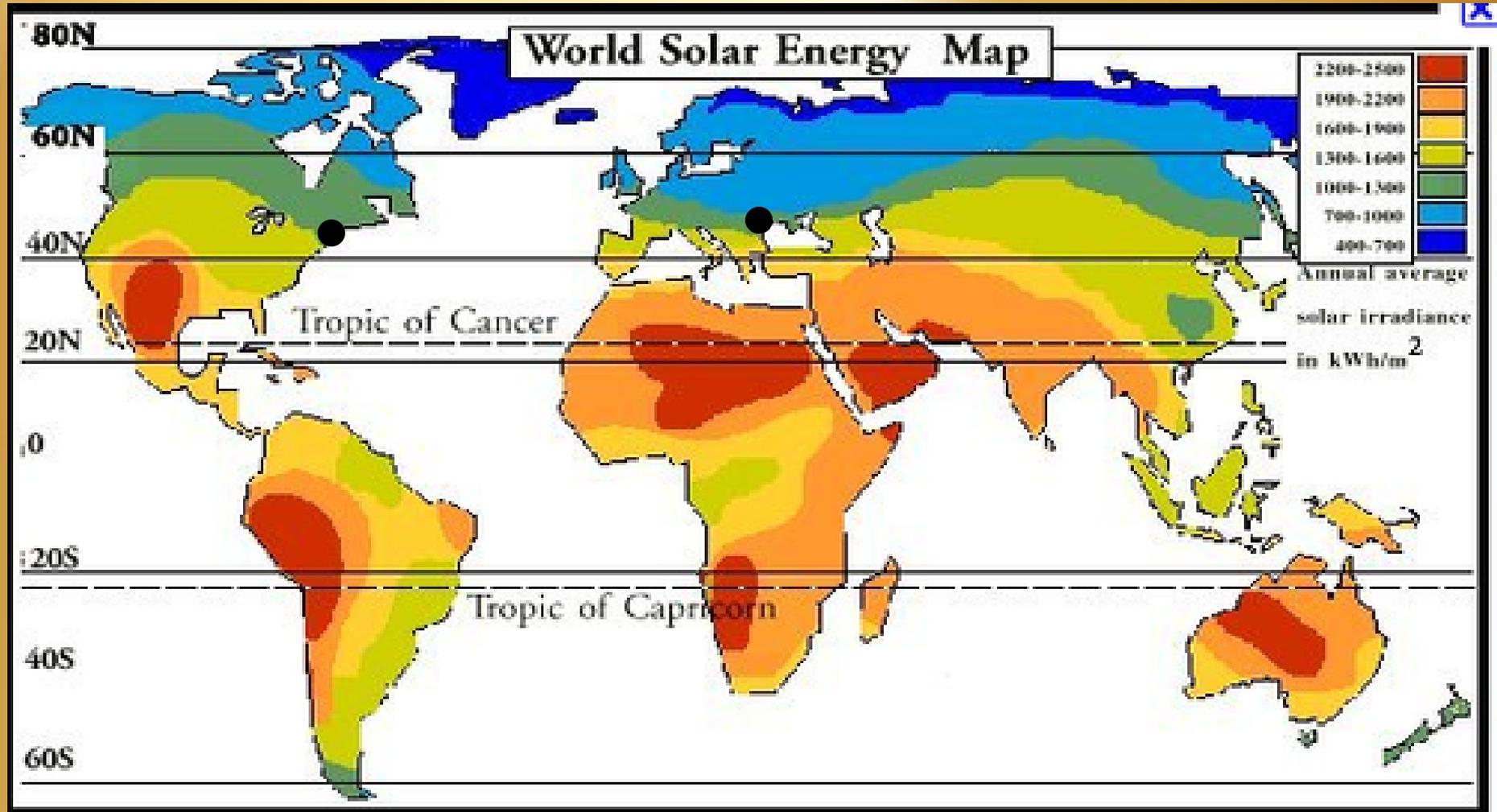
 SOLAR

 WIND

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Solar & Wind Power for Wastewater Treatment Facilities

- Energy Generation

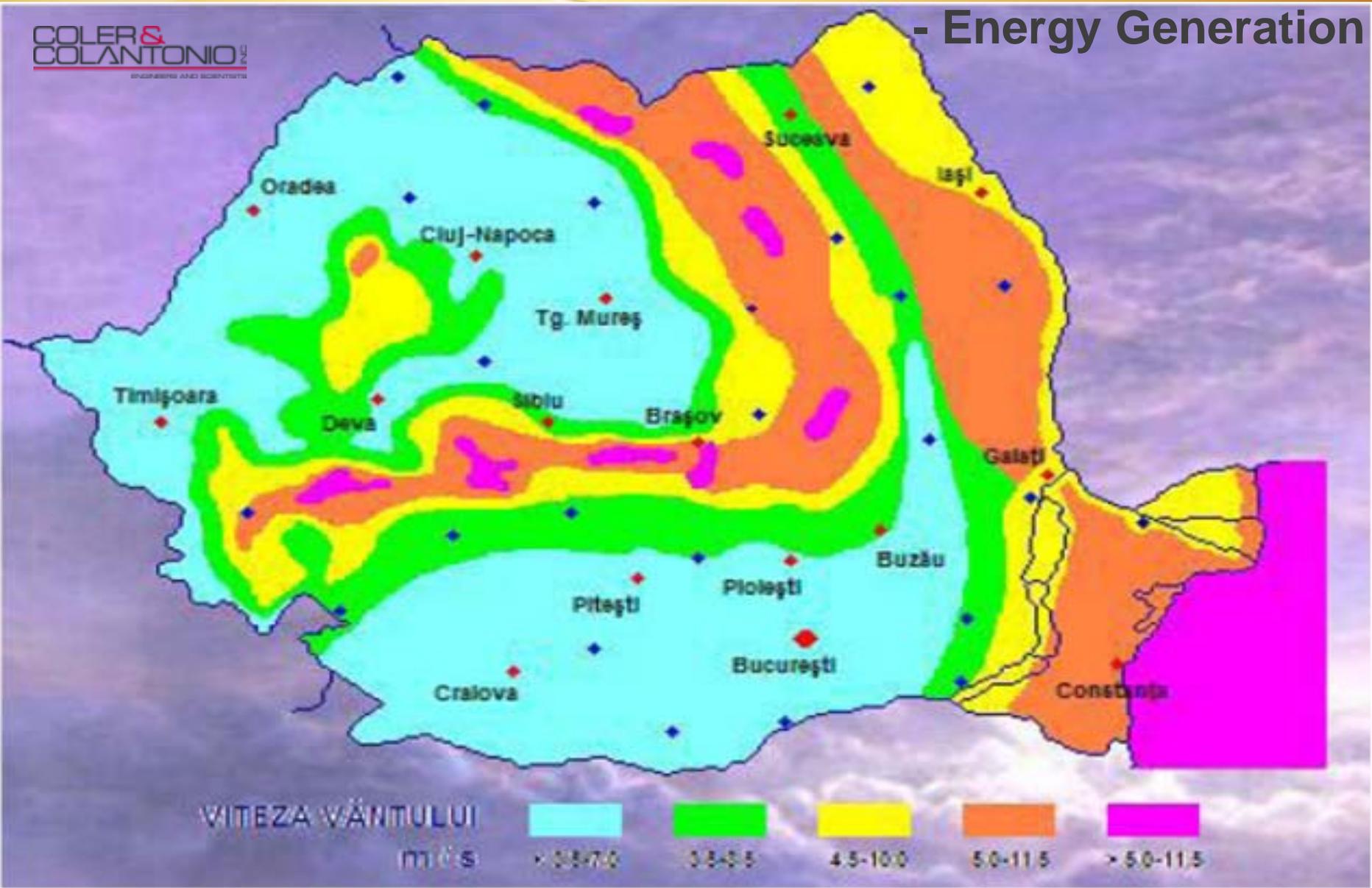


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Solar & Wind Power for Wastewater Treatment Facilities

- Energy Generation

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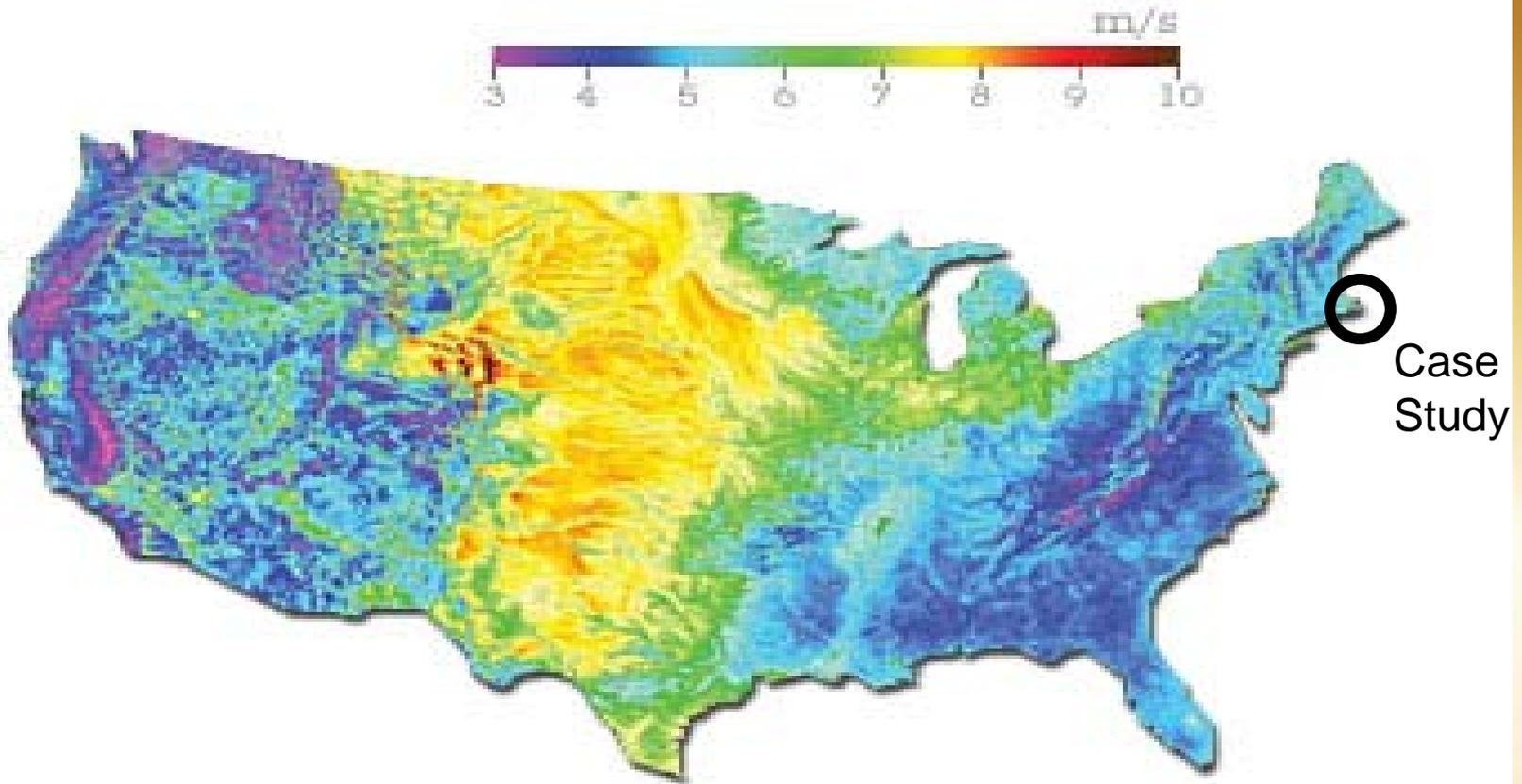


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## Solar & Wind Power for Wastewater Treatment Facilities

### - Energy Generation

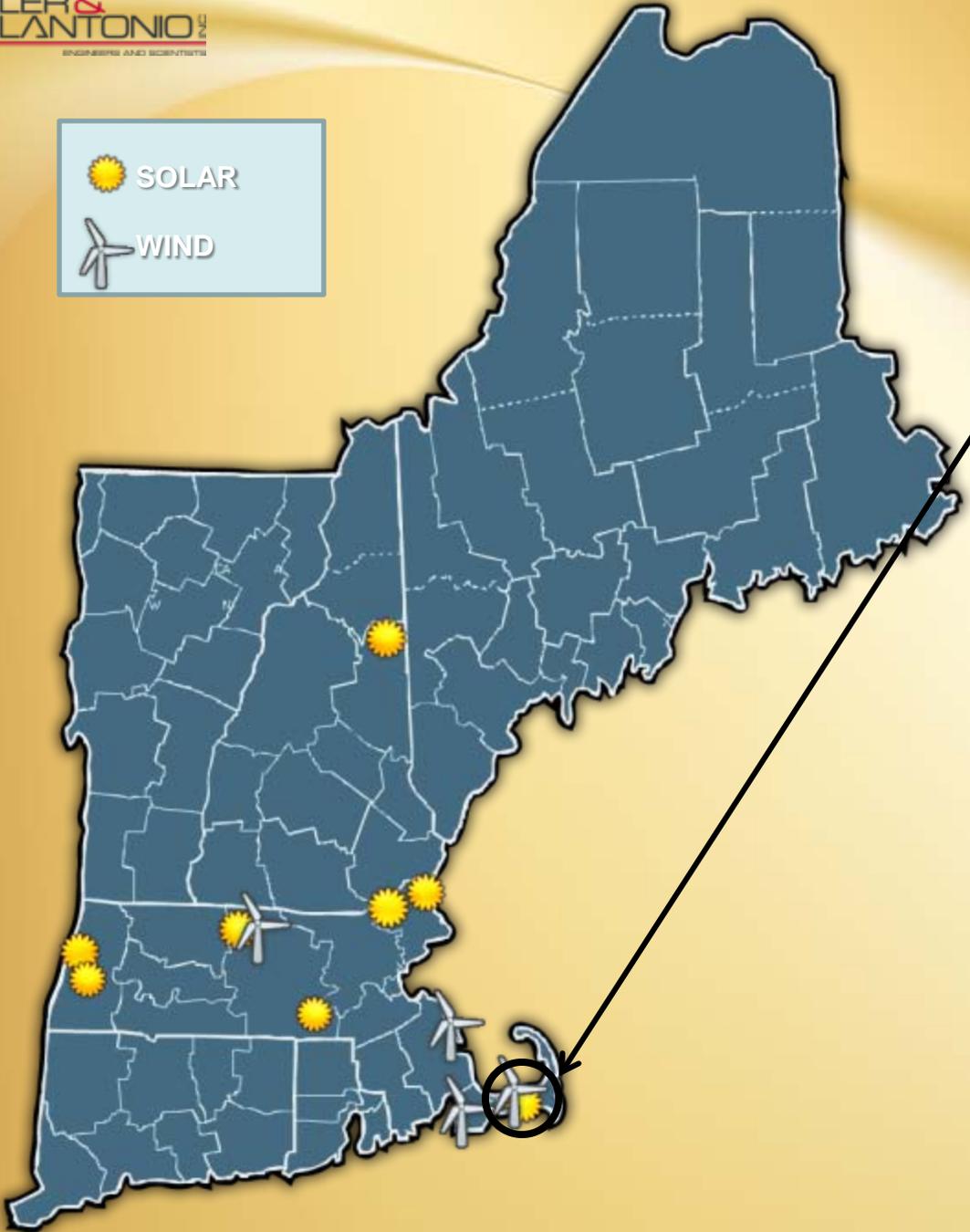
Mean annual wind speed at 80 meters height



Source: AWS Truewind for windNAVIGATOR

 SOLAR

 WIND



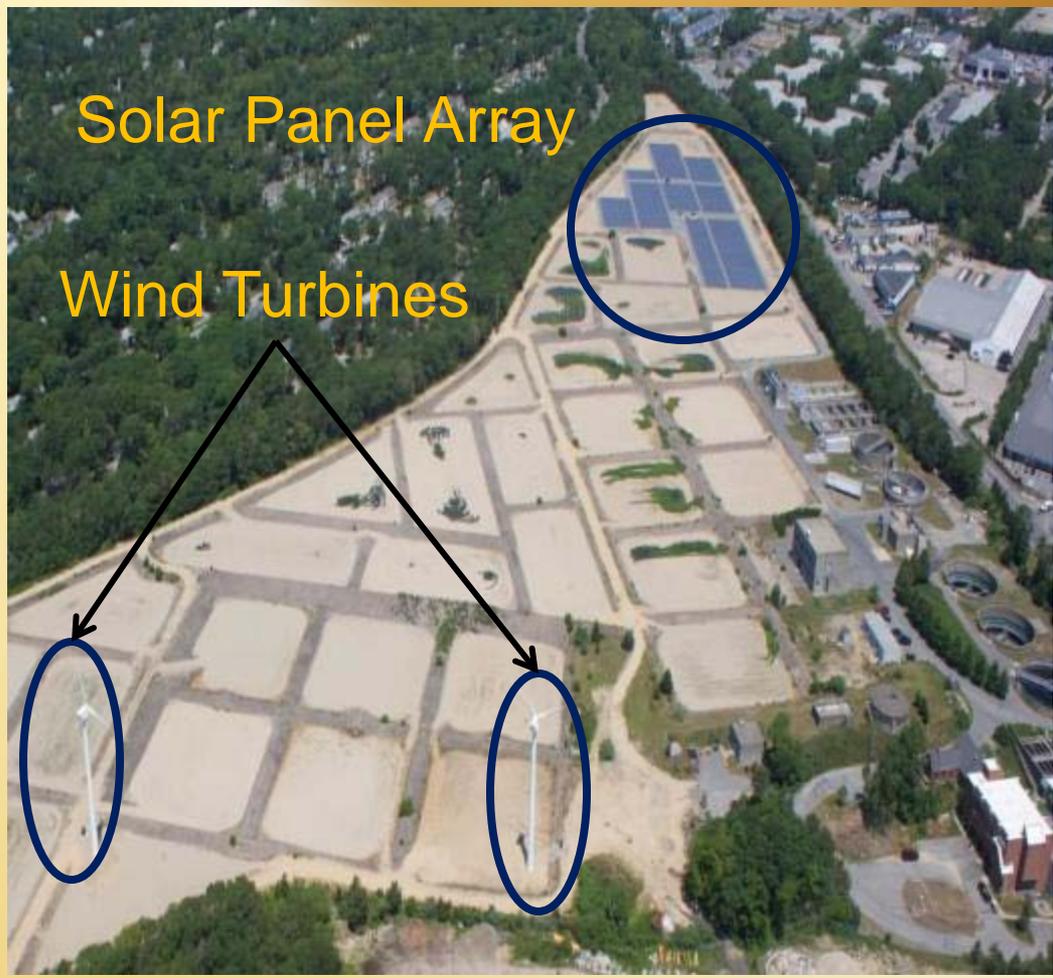
-  North Conway, NH
-  Pittsfield, MA
-   Hyannis, MA
-  Kingston, MA
-  North Andover, MA
-  Lee, MA
-  Athol, MA
-  Templeton, MA
-  Sutton, MA
-  Newburyport, MA
-  Falmouth, MA

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## Solar & Wind Power for Wastewater Treatment Facilities

### Cape Cod, Massachusetts

### - Energy Generation



Solar Panel Array

Wind Turbines



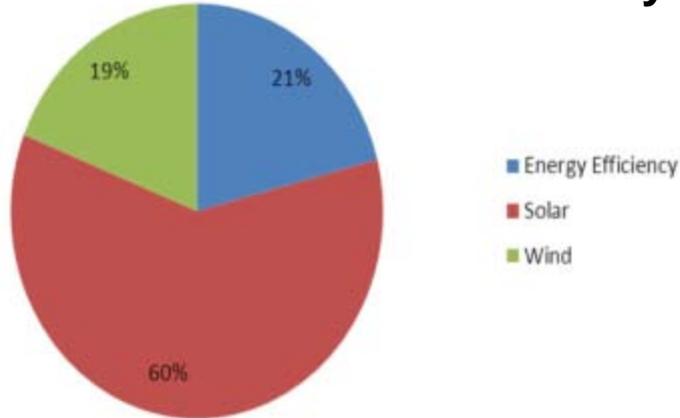
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## Solar & Wind Power for Wastewater Treatment Facilities

### Cape Cod, Massachusetts

### - Energy Generation

Carbon Reduction = 650 tons / yr



### Green Energy Project Costs

#### Component Cost

Wind Turbines \$1,500,000

Photovoltaic Array \$4,240,000

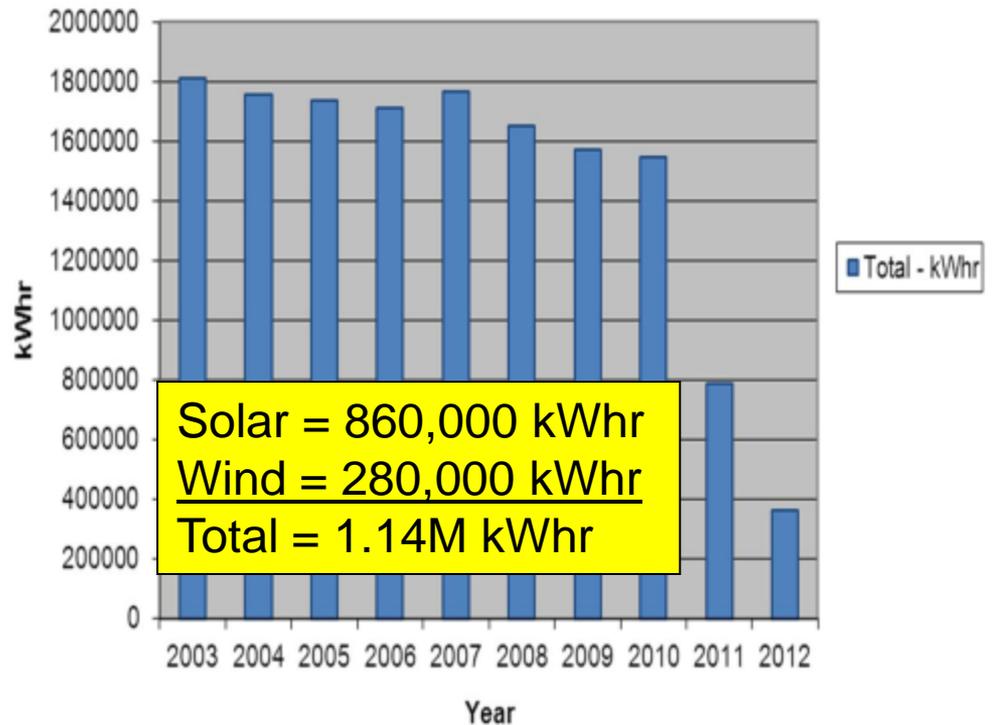
Energy Efficiency

Improvements

\$60,000

**Total \$5,800,000 / Project Duration = 2 Years**

Energy Reduction = 1.5M kWhr / yr  
(80%)

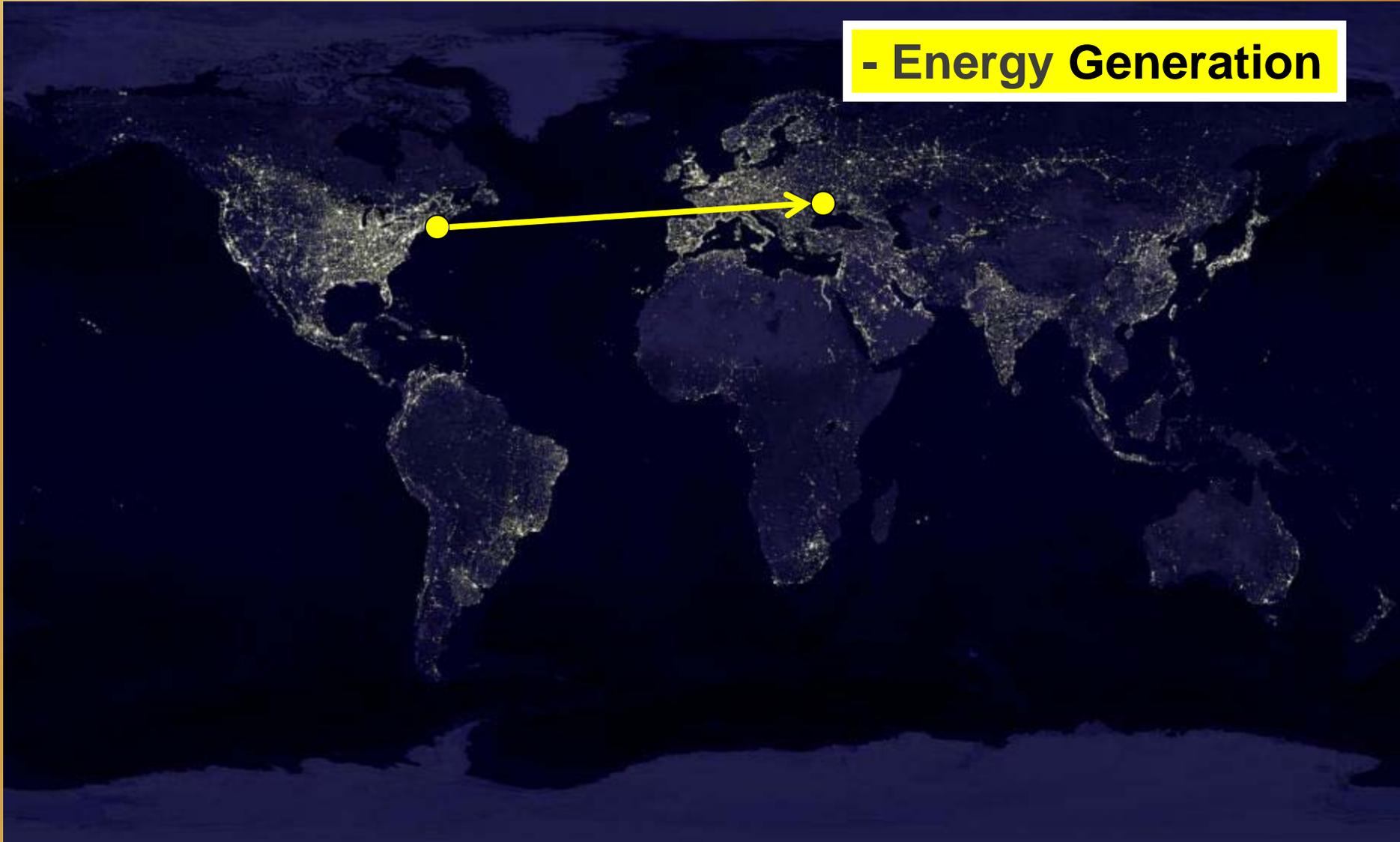


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## Solar & Wind Power for Wastewater Treatment Facilities

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- Energy Generation



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**Thank You**



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