

# SOLIDS MASTER PLAN - UPDATE

APRIL 2017



ARLINGTON  
VIRGINIA

# PRESENTATION OVERVIEW

- Water Pollution Control Plant Overview
- Master Plan History
- Current Master Plan
  - Goals
  - Process
  - Timeline
- Status of Project

# WATER POLLUTION CONTROL PLANT

- We treat 25 million gallons of wastewater each day
- Our mission is to safely and economically process wastewater and hazardous waste materials to protect our environment
- County vision refers to:
  - *secure, attractive residential and commercial neighborhoods*
  - *participating, sustainable community*

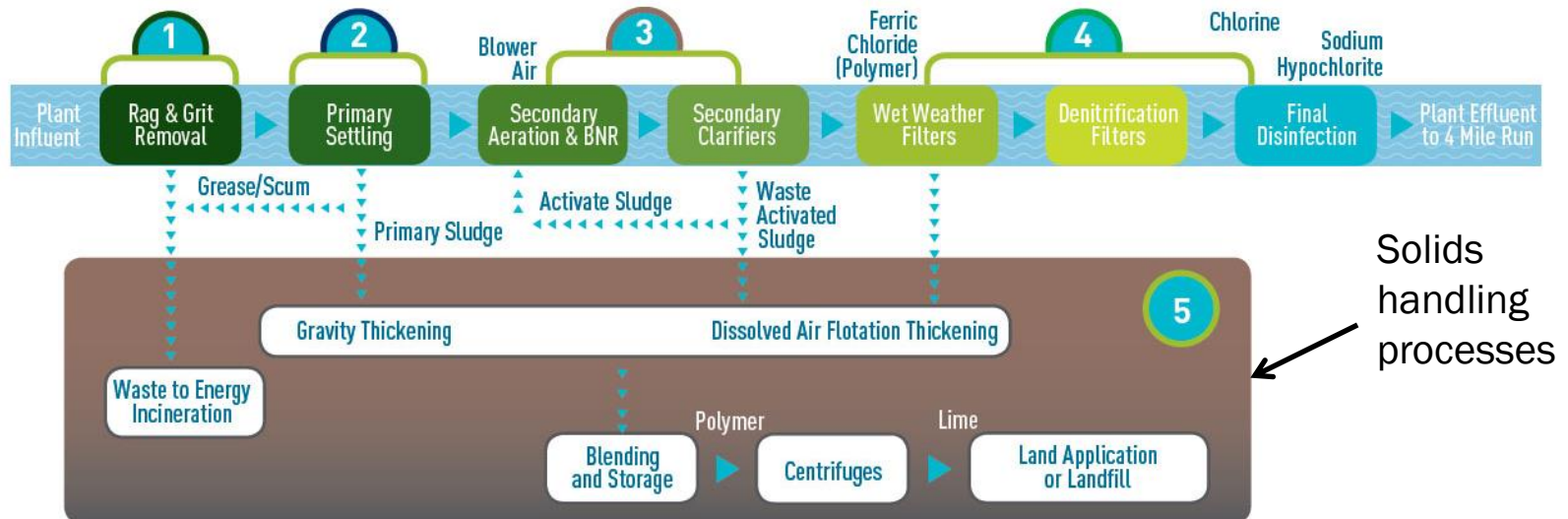


# MASTER PLAN HISTORY

- Master Plans provide long-term future direction
- Last master plan completed in 2001 – plant upgrade to liquid side
- Focus of current Master Plan to upgrade the solids handling process in a manner that:
  - Replaces failing equipment
  - Provides a sustainable solution that reduces the WPCP's impact on environment
  - Takes advantage of innovations in solids handling
  - Is responsive to community needs (noise, traffic, odor)

# WHAT ARE “SOLIDS?”

- Residual material recovered from the liquid wastewater treatment processes
- In Arlington, they result from the Primary and Secondary liquids treatment processes
- The WPCP produces approximately 200,000 lbs per day of Class B biosolids



# WHY EVALUATE CURRENT PROCESS?

- Land application may get more expensive
- Some solids handling processes 50+ years old – maintenance issues
- Solids quantity will continue to increase
- More focus County-wide on sustainability and energy management

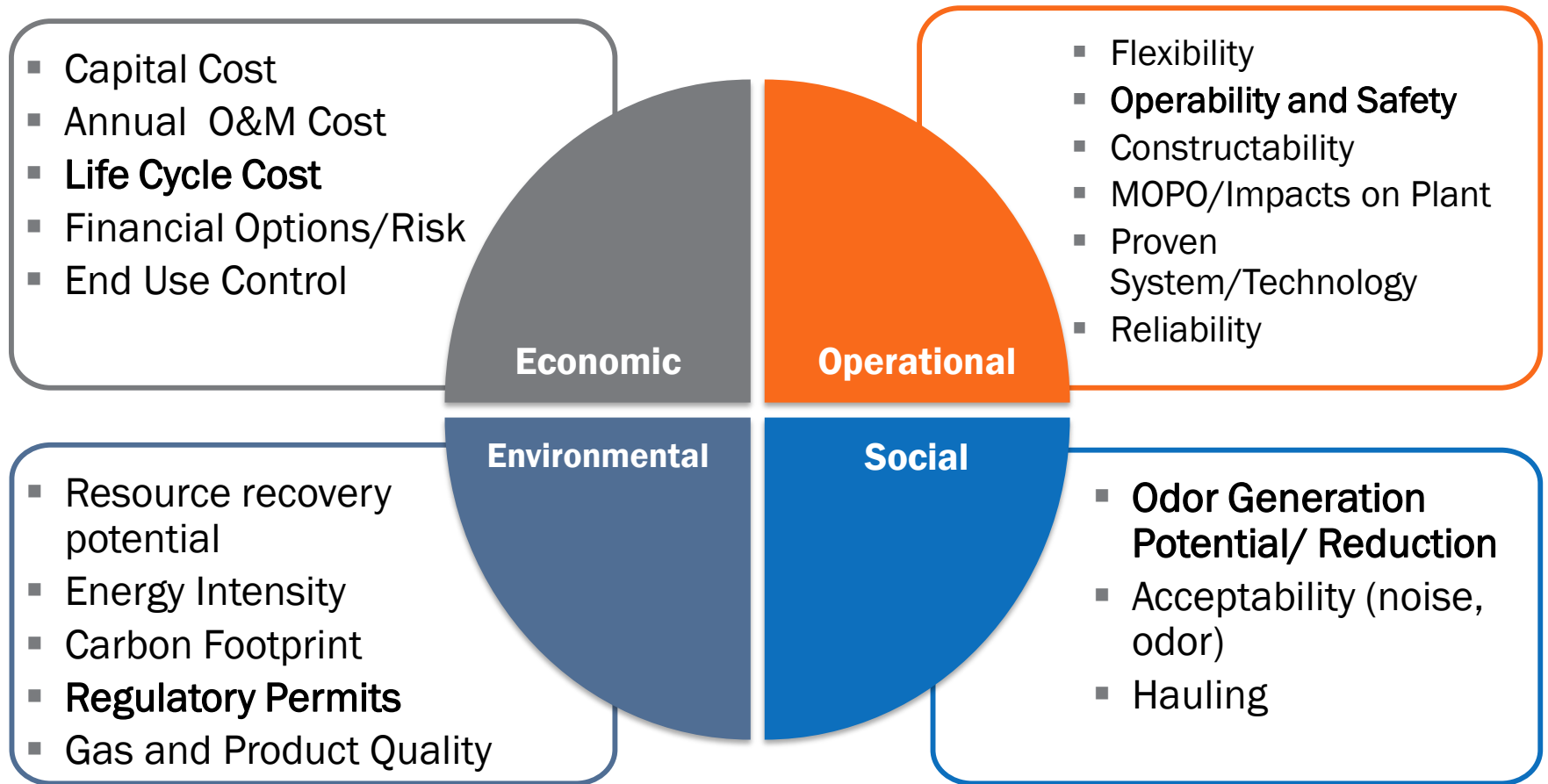


# MASTER PLANNING EFFORT

- Obtained input from WPCP staff, DES staff, County Management, and Community Stakeholders
- Studied existing infrastructure to determine changes needed
- Developed evaluation criteria for new technologies
- Determining which technology will be implemented at the WPCP

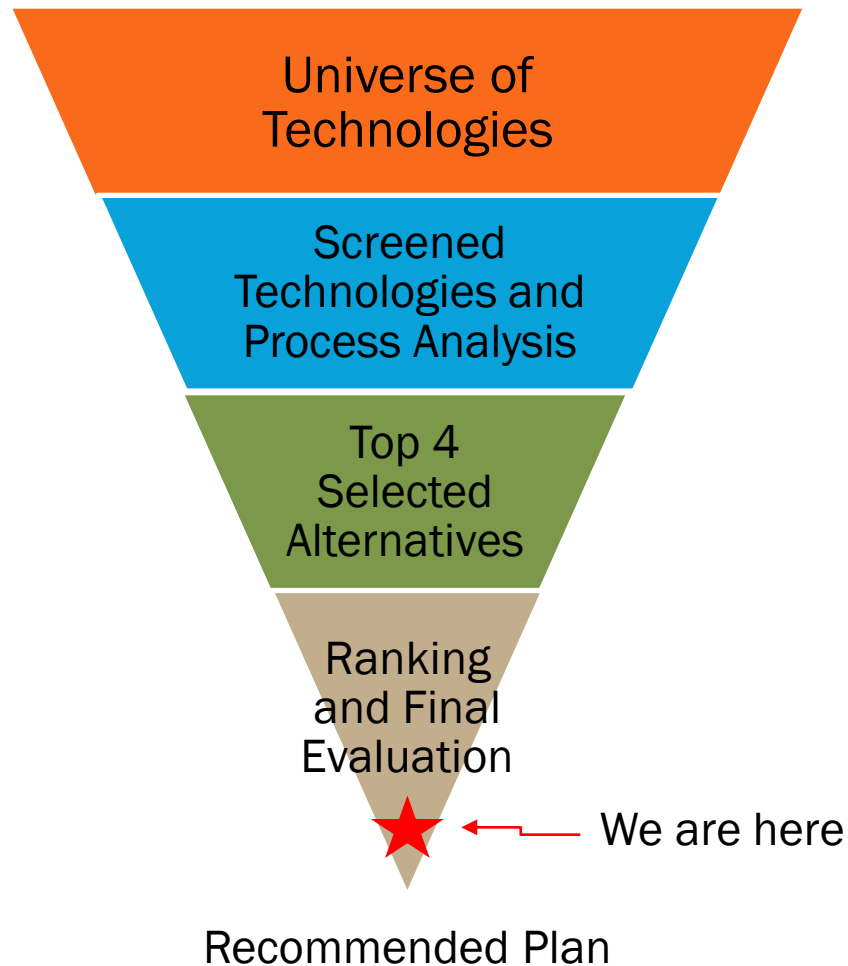


# EVALUATION CRITERIA





# SOLIDS MASTER PLAN – EVALUATION PROCESS



# SOLIDS MASTER PLAN – TIMELINE

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Immediate Needs (Phase I)	Study	Design and construction									
Short term improvements (Phase II)			Design and construction								
Long-term improvements (Phase III)				Design and construction							

# SELECTED LONG-TERM ALTERNATIVES FOR FURTHER EVALUATION

Name	Biosolids quality	Major features
Lime Stabilization rehab-only	Class B	What we have now; most trucks for biosolids hauling; no gas production odorous
Anaerobic Digestion (AD)	Class B	Biosolids volume lower; gas production; less odors
Thermal Hydrolysis (THP) + Anaerobic Digestion	Class A	Biosolids volume reduced further; more gas production; less odors
Anaerobic Digestion + Heat Drying	Class A	Least amount of biosolids; gas production (used in process—no export); less odors

# POTENTIAL BENEFITS TO COUNTY

## Arlington Operations Energy Plan (2016):

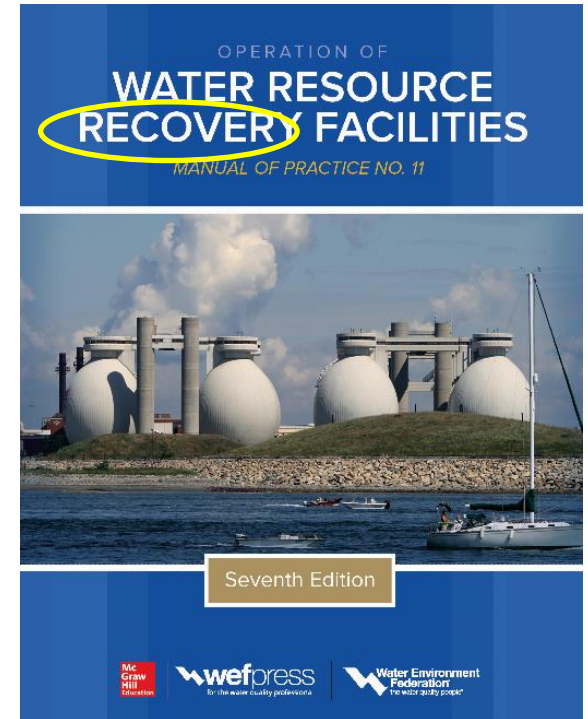
“The wastewater treatment plant is the single largest energy user in County operations, consuming 13% of all energy use”

## Arlington Community Energy Plan Analysis (2016):

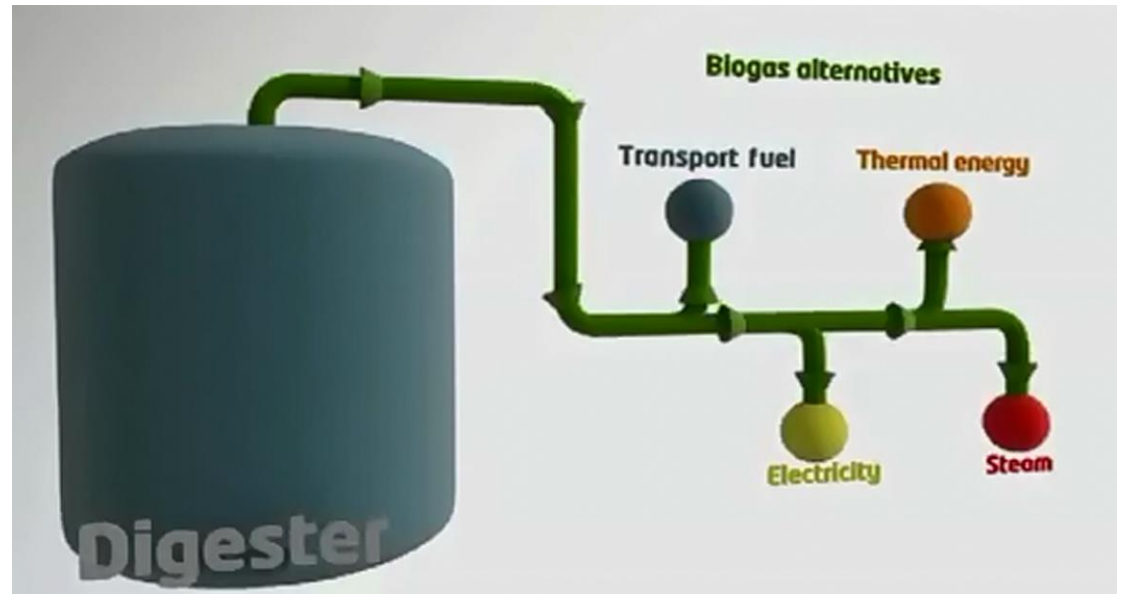
“In 2007, total emissions from the WPCP were nearly 21% of the total government operations’ net emissions”

## Community Energy Plan Analysis for the Solids Master Plan (2016):

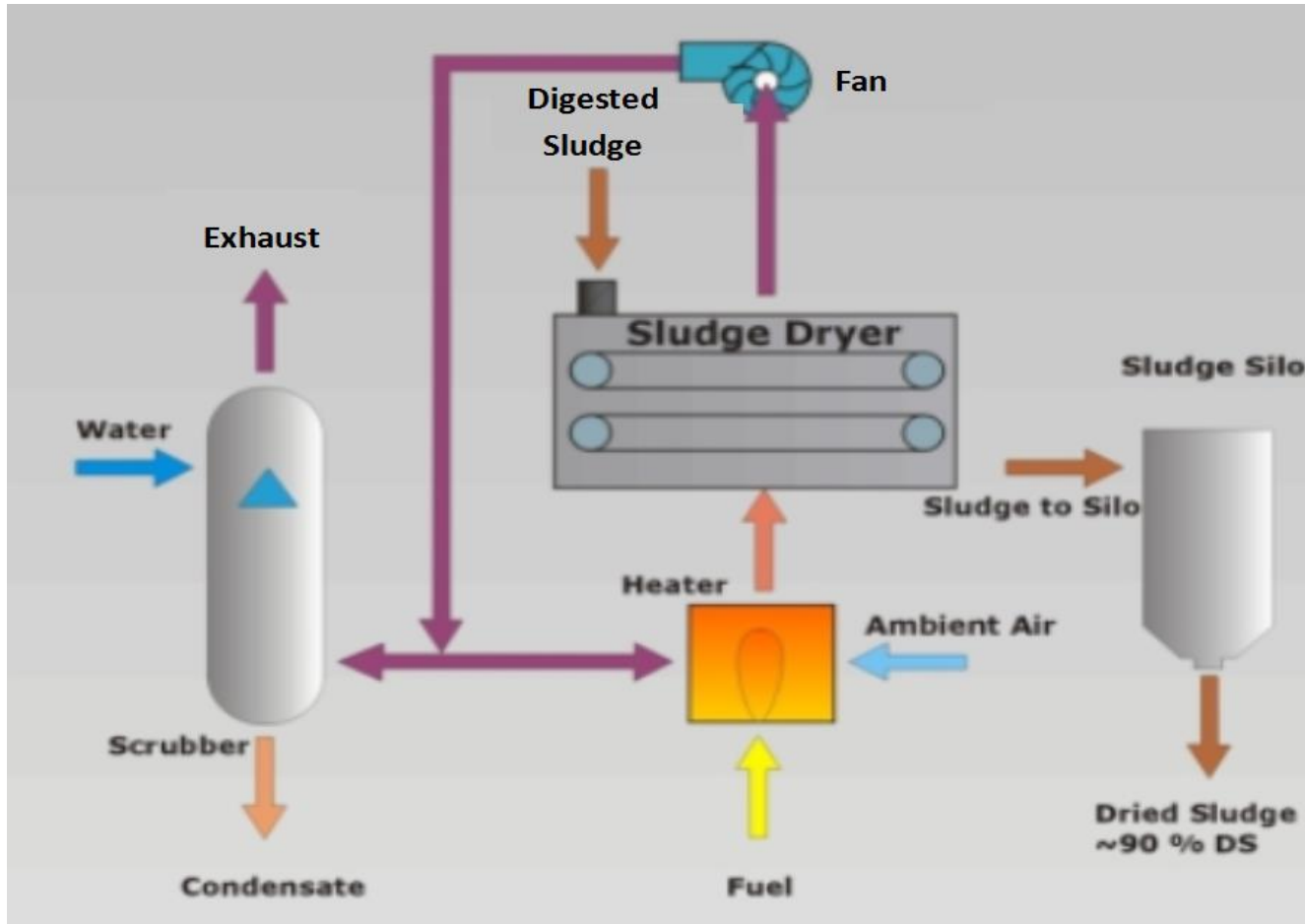
“Offsetting either natural gas or electricity, AD and THP/AD will provide extremely significant reductions to the plant’s carbon footprint.”



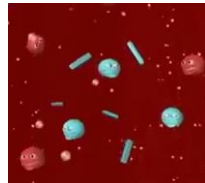
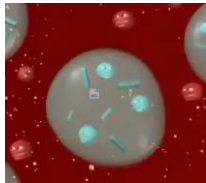
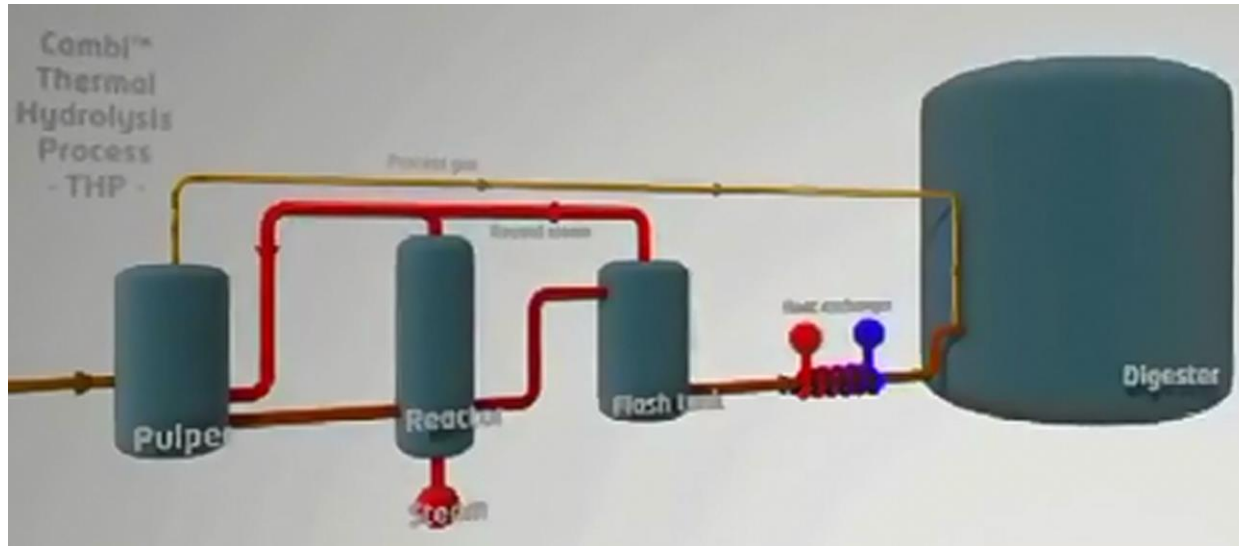
# ANAEROBIC DIGESTION



# HEAT DRYING



# THERMAL HYDROLYSIS PROCESS



# OPERATIONAL PROJECTIONS

	Lime	Anaerobic Digestion	THP + Anaerobic Digestion	Anaerobic Digestion + Heat Drying
Solids production in 2021	259,000 lbs/day	155,000 lbs/day	115,000 lbs/day	43,000 lbs/day
<u>Net</u> gas production in 2021	N/A	192 million BTU	228 million BTU	N/A (no export)
Greenhouse gas impact for WPCP in 2020	N/A	-8% (natural gas)/-33% (electricity)	-9/-39%	+14%/-11%
Number of trucks per week in 2021	40	26	19	12



# THANK YOU!

<https://water.arlingtonva.us/locations/water-pollution-control-plant/>

<https://projects.arlingtonva.us/projects/water-pollution-control-plant-solids-master-plan/>

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