

SOLIDS MASTER PLAN - UPDATE

JUNE 2017



PRESENTATION OVERVIEW

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

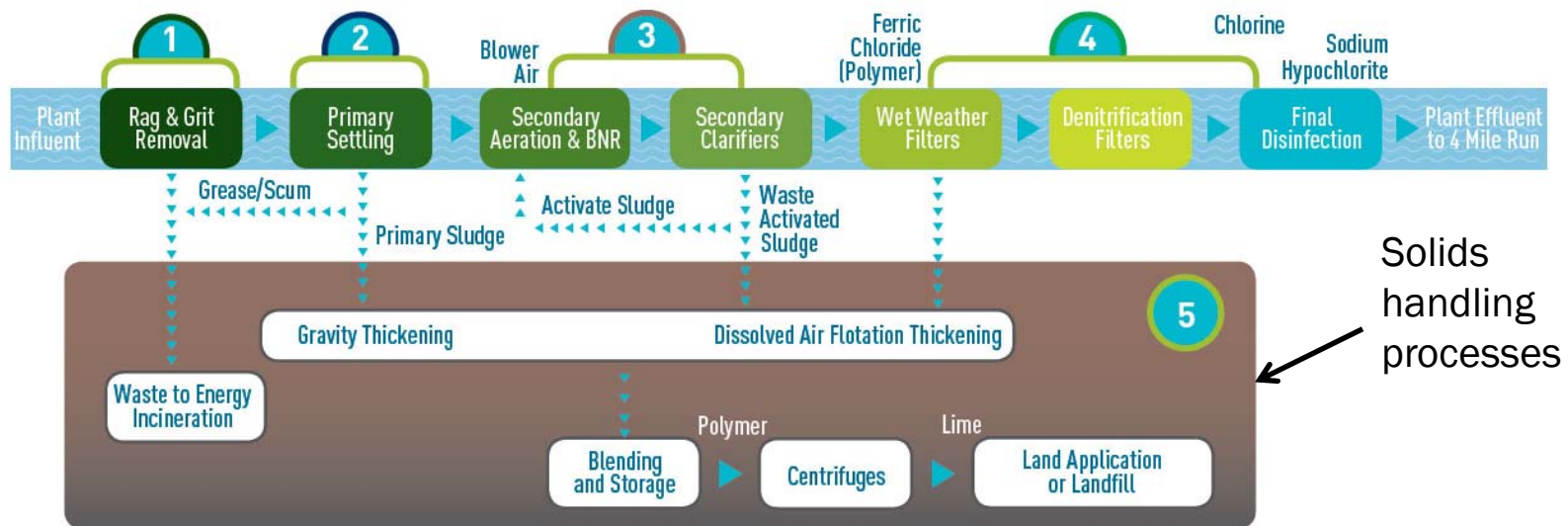
WATER POLLUTION CONTROL PLANT

- 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*



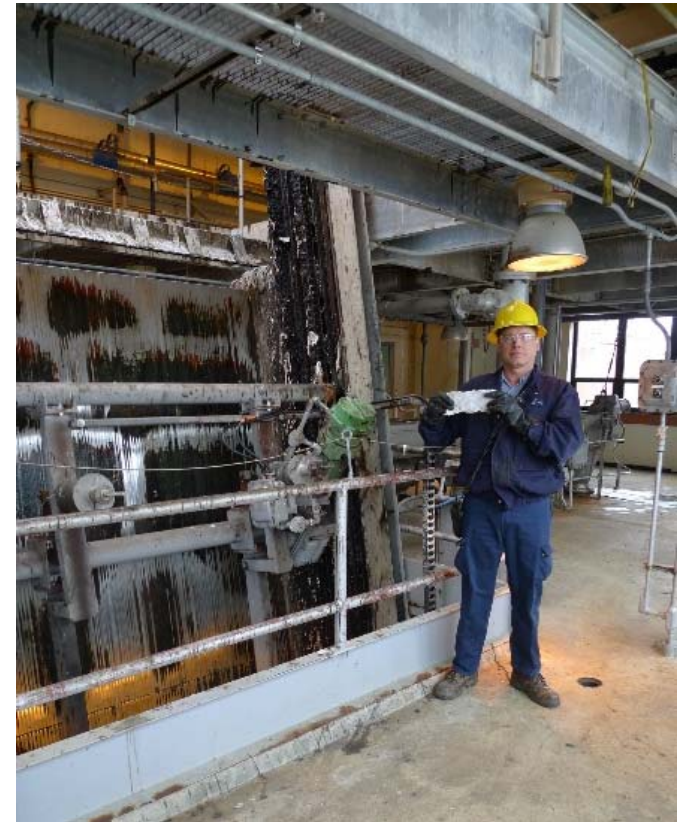
WHAT ARE “SOLIDS?”

- 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 PLAN HISTORY

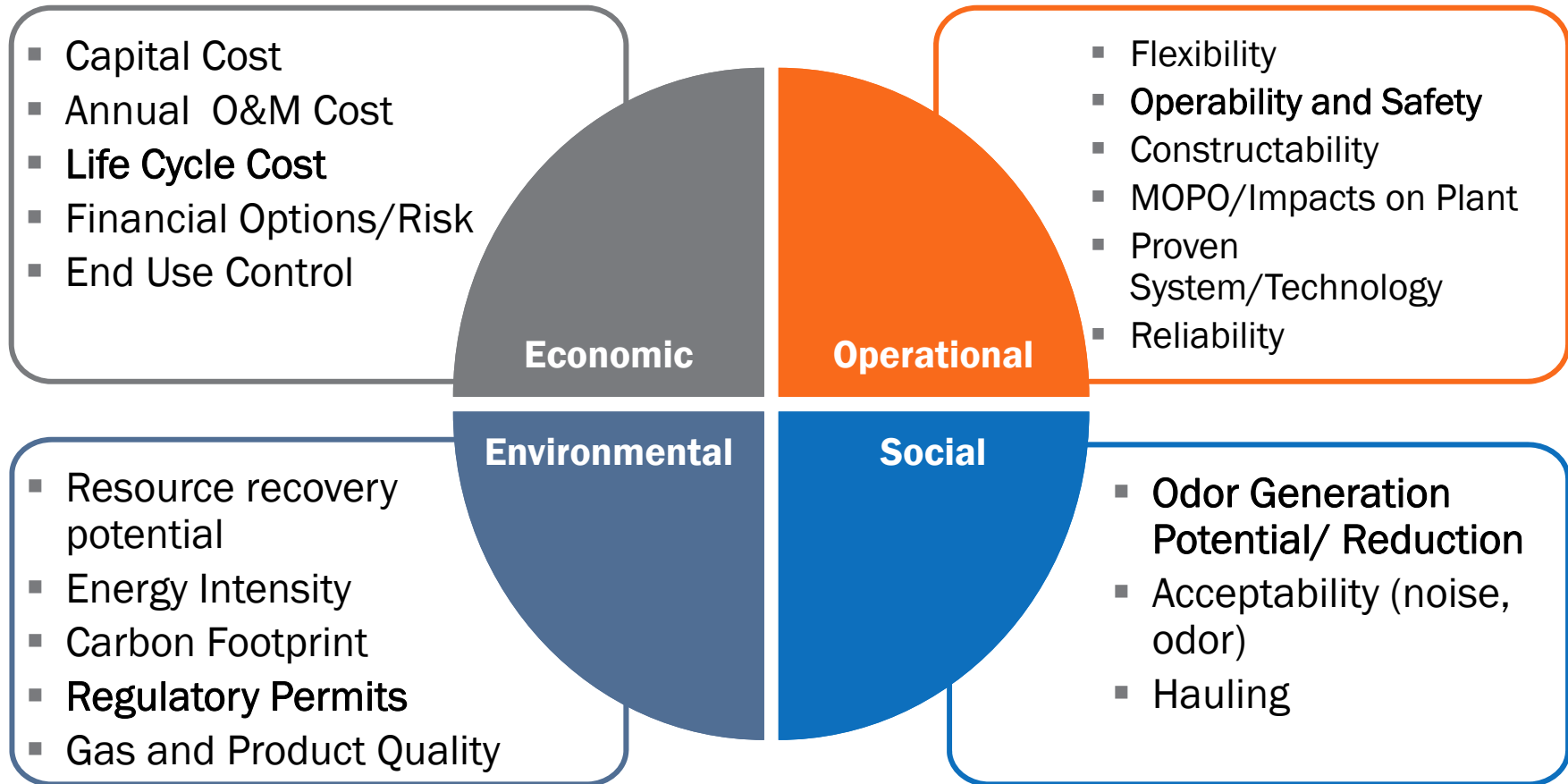
- Master Plans provide long-term future direction
- Last master plan completed in 2001 – plant upgrade to liquid side
- Focus of current Master Plan to upgrade the solids handling process in a manner that:
 - Replaces failing equipment
 - Provides a sustainable solution that reduces the WPCP's impact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

MASTER PLANNING EFFORT

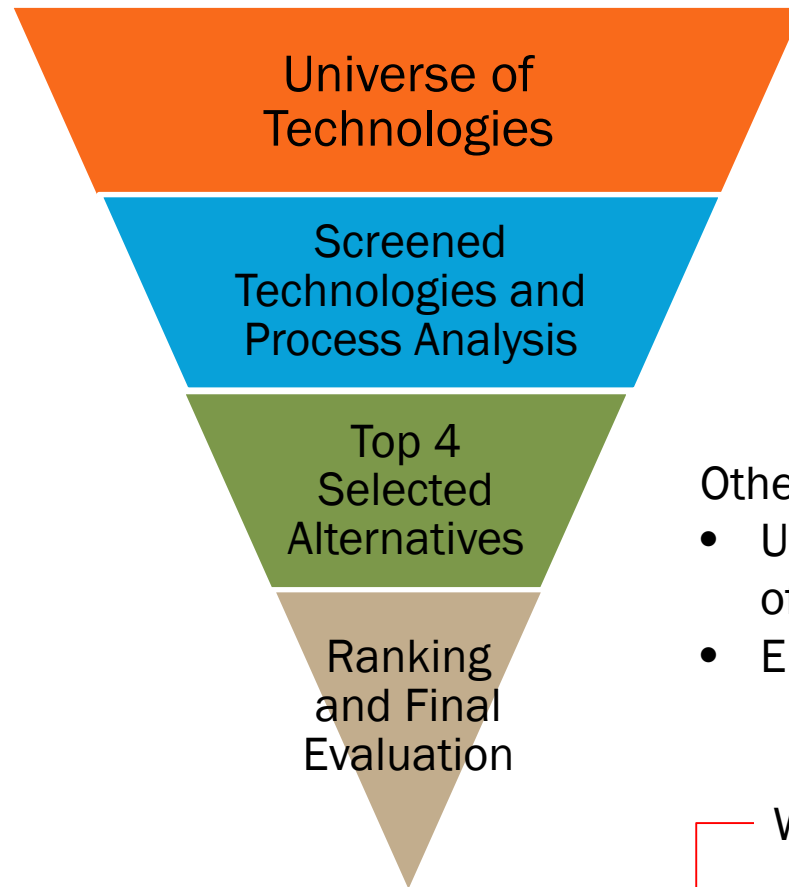
- Obtained input from WPCP staff, DES staff, County Management, and Community Stakeholders
- Studied existing infrastructure to determine changes needed
- Developed evaluation criteria for new technologies
- Determining which technology will be implemented at the WPCP



EVALUATION CRITERIA



SOLIDS MASTER PLAN – EVALUATION PROCESS



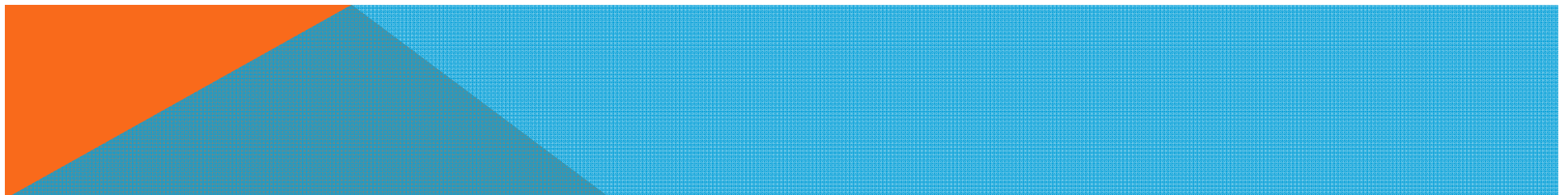
Other ongoing activities:

- Understanding pros/cons of regional solution
- Emission study

We are here

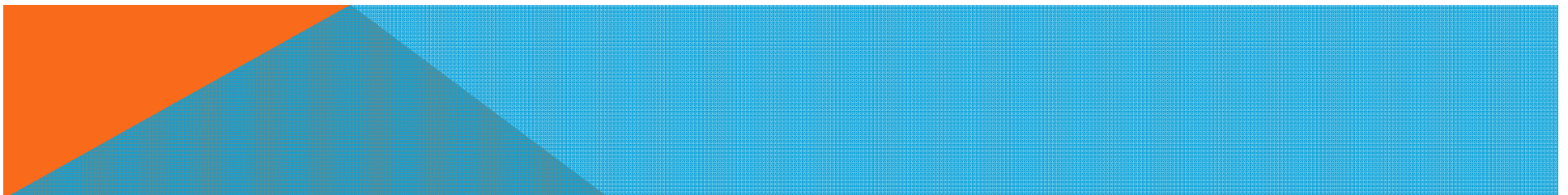


Recommended Plan



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):

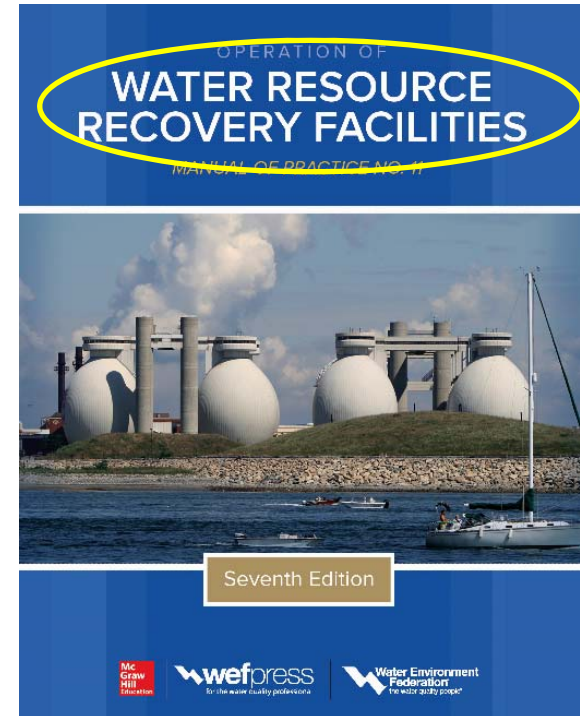
“The wastewater treatment plant is the single largest energy user in County operations, consuming 13% of all energy use”

Arlington Community Energy Plan Analysis (2016):

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

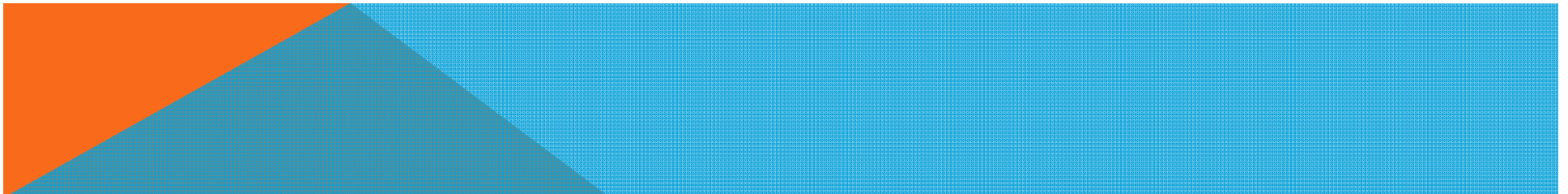
Community Energy Plan Analysis for the Solids Master Plan (2016):

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



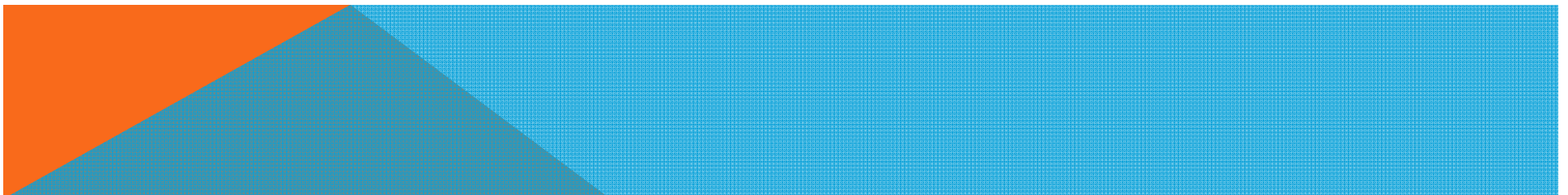
OPERATIONAL PROJECTIONS

	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/day	228 million BTU/day	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 year in 2021	2080	1350	990	620

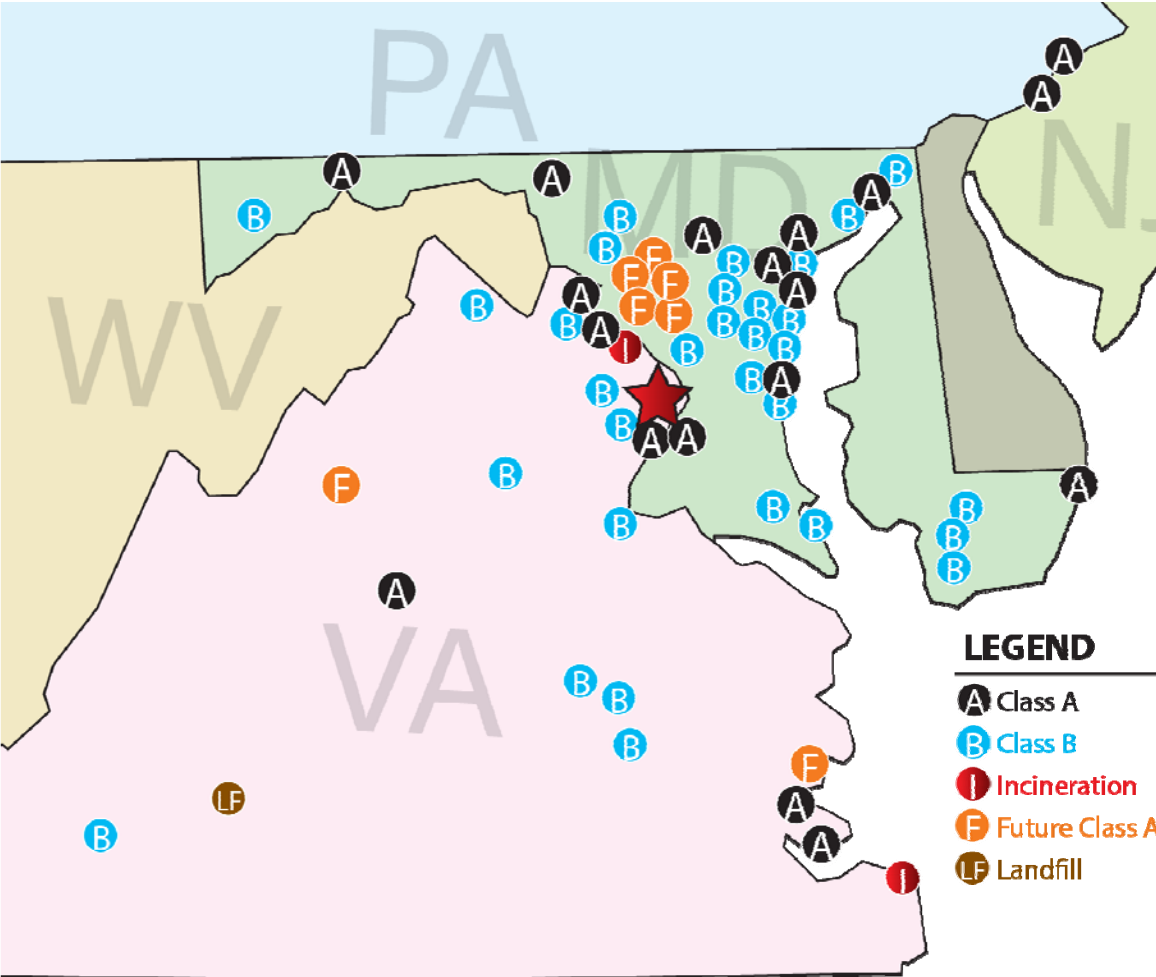


FINANCIAL PROJECTIONS

	Lime	Anaerobic Digestion	THP + Anaerobic Digestion	Anaerobic Digestion + Heat Drying
Capital Costs	\$35	\$68	\$94	\$109
Operating Costs, Net Present Value (NPV)	\$54	\$37	\$39	\$25
Life-cycle Cost (base), NPV	\$89	\$105	\$133	\$134
Life-cycle Cost with CHP, NPV	\$89	\$116	\$143	\$152
Life-cycle Cost with CNG, NPV	\$89	\$104	\$130	\$140

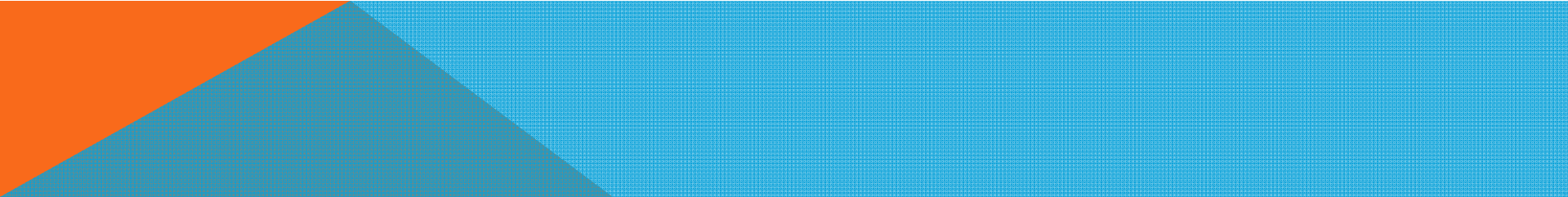
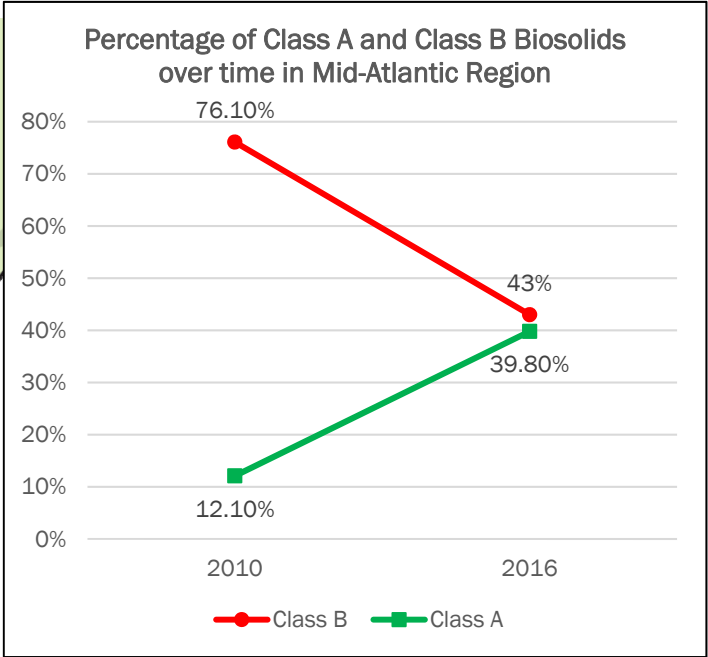


DC METRO AREA BIOSOLIDS TRENDS



LEGEND

- A Class A
- B Class B
- I Incineration
- F Future Class A
- LF Landfill

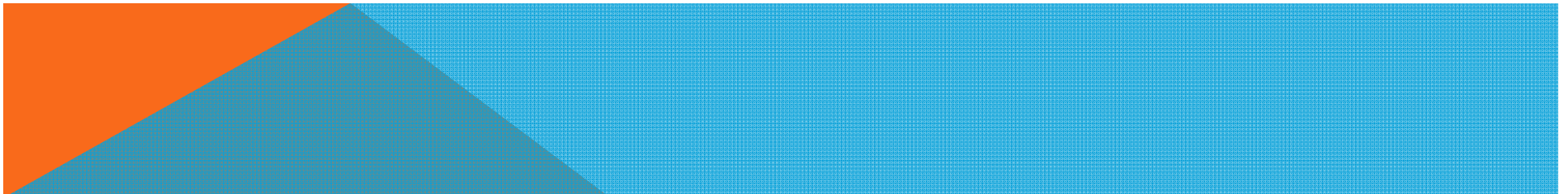


RECOMMENDATION

- Implement a future solids alternative with digestion (i.e. discontinue lime stabilization process)
- Proceed with THP + AD alternative

Rationale:

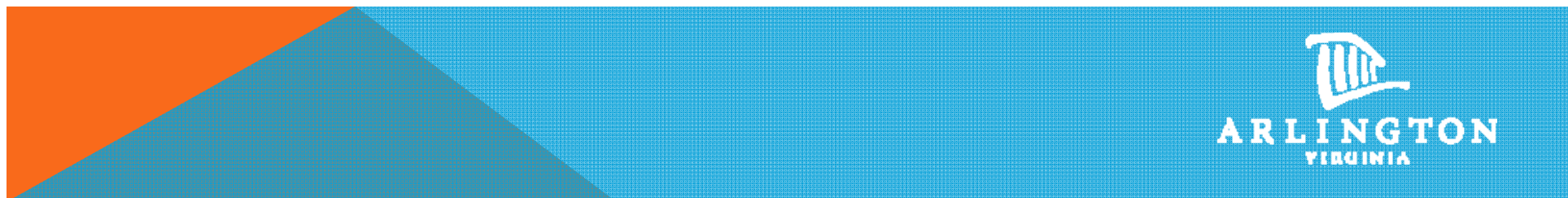
- Long term positioning for regulatory compliance
 - Facilities within the region are at (or trending to) Class A
 - Innovative technology to meet Arlington's and WPCP's energy reduction goals
 - Benefit to the community – possible give back - soil amendment product
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- County Manager has asked us to continue to evaluate potential regional options
 - Emissions study to be conducted on recommended alternative in order to understand impacts of upgrades



SOLIDS MASTER PLAN – TIMELINE FROM LAST CAPITAL IMPROVEMENT PLAN

	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							

Master Plan does not conclude the opportunities for involvement—we will continue to request stakeholder input during future project phases.



THANK YOU!

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

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

Mary Strawn
mstrawn@arlingtonva.us

