

US EPA ARCHIVE DOCUMENT

bcr

ENVIRONMENTAL

A New Way



BCR Environmental Corporation

U.S. EPA Water Technology Innovation Cluster Leaders Workshop

March 25, 2014

The World We Live In & Why Innovation is Needed

Infrastructure is Underfunded and Facing Cost Escalations Greater than GDP Growth

Estimated \$1 trillion over next 20-years

Traditional Infrastructure Innovation focused on Complex Solutions for Large Facilities

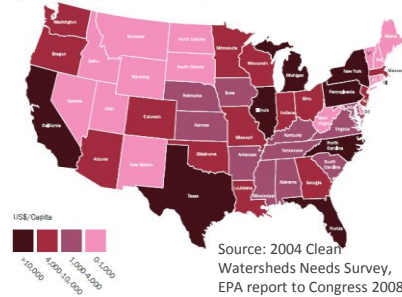
Only address ~400 of the total 16,800 facilities in the U.S.

Landfill Capacity, Increasing Regulations and Escalating Energy

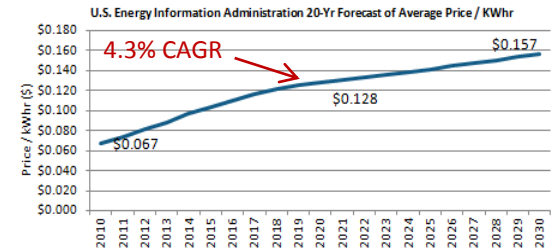
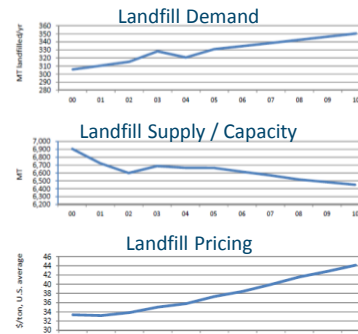
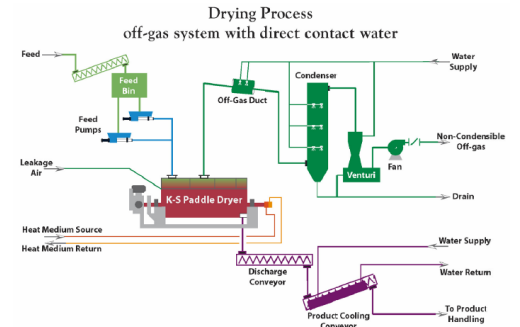
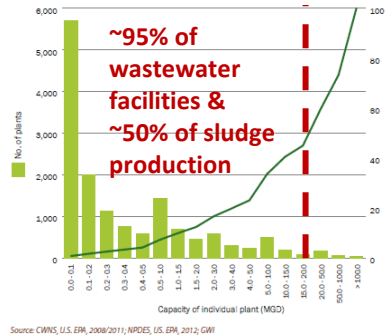
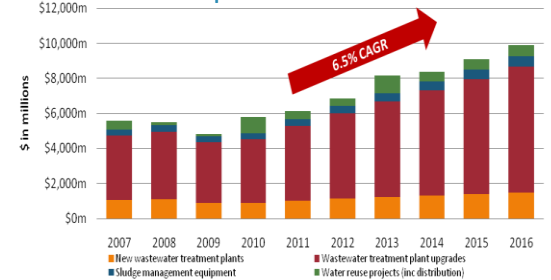
The 'Do Nothing' Scenario is no longer an option

"Infrastructure Innovation" = Doing More With Less (Less Money & Less Risk)

Figure 5.4: Per capita wastewater needs by state



Forecast of U.S. Wastewater Treatment Plant Capital Expenditure 2007 - 2016



Who We Are / I Am

BCR's Vision: To be the leading long-term Whole Solution provider that converts organic waste into environmentally responsible products enabled by superior technology.

BCR's Principles:

bcr

In everything we do we believe in being:



Simple



Environmentally
Responsible



Economically
Viable



Scalable



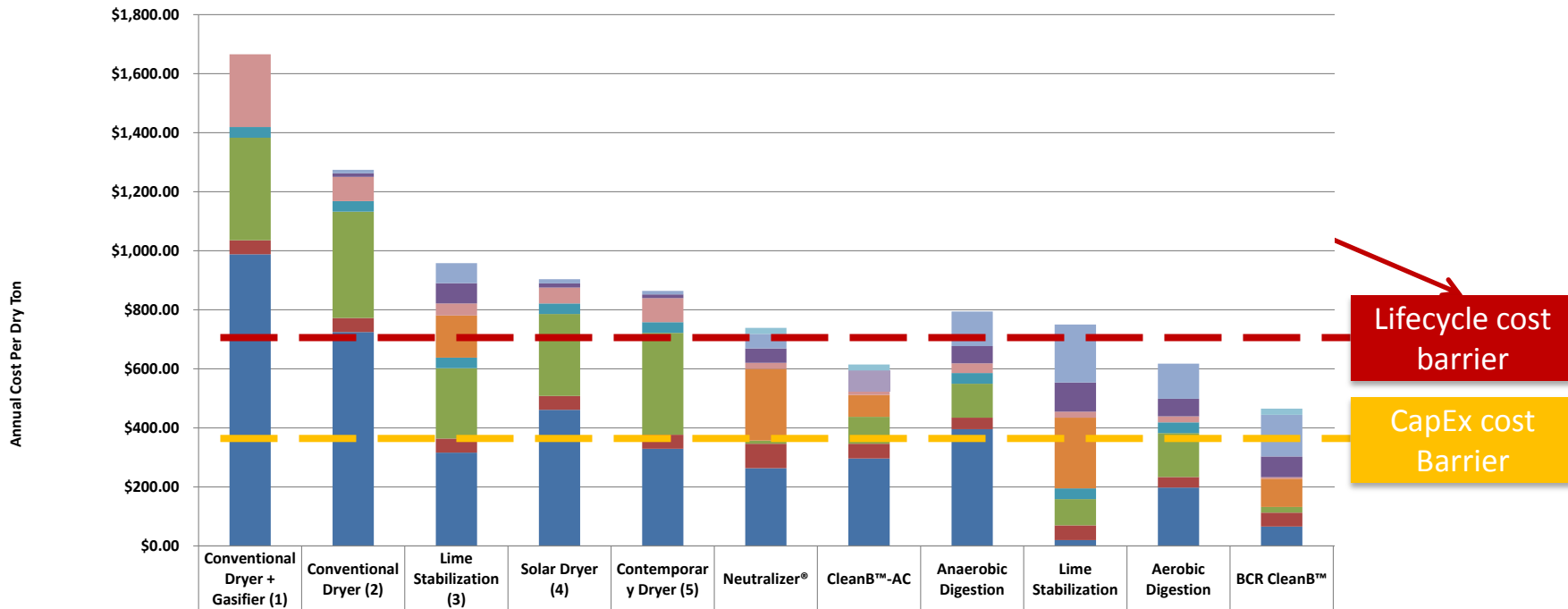
Our Vision and Core Principles make our Company Unique

What Exists & What is Sustainable?

There are fundamental economic barriers to the majority of the market

BCR Environmental Estimated Reconciliation of Wastewater Plants Excluding Collection Facilities

	< .1 mgd (Note 8)	>.1 - <.3 mgd (Note 8)	>.3 - <1.0 mgd (Note 8)	1-10 mgd (Note 8)	10-100 mgd (Note 8)	100+ mgd (Note 8)
# of Facilities	6,828	4,290	2,181	2,757	725	40
Cumulative # of Facilities	6,828	11,117	13,298	16,054	16,779	16,819
% of Facilities	40.6%	25.5%	13.0%	16.4%	4.3%	0.2%



Most approved solutions do not have sustainable economics @ scale

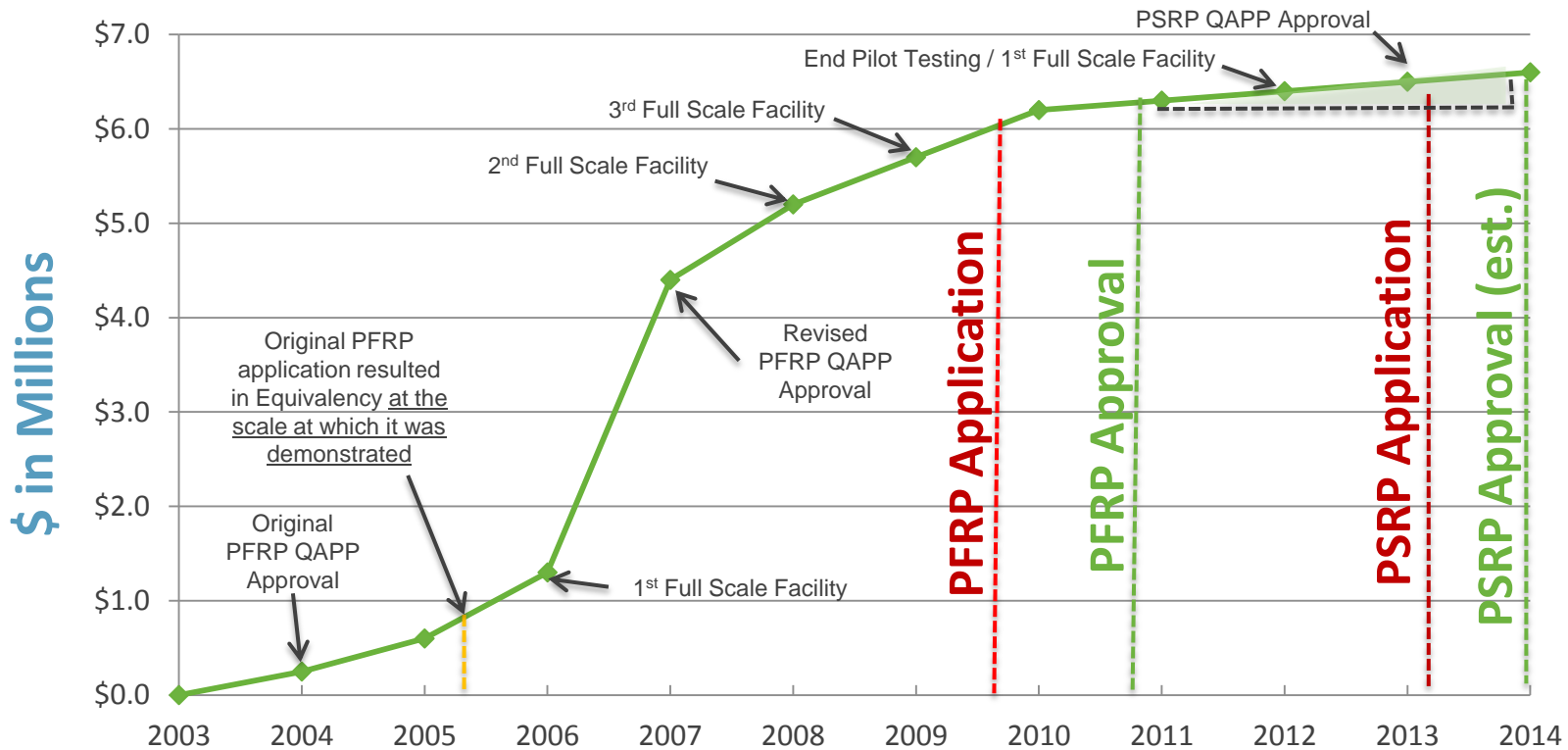
BCR Views the EPA and State DEPs As Partners to Innovation

- Permitting Ease
 - Nobody wants to risk writing an operating permit for a process that is not ‘EPA approved’
- Consulting Engineer Acceptance
 - Data aggregation required for PFRP and PSRP application process and designation by EPA PEC experts as a National Equivalent Processes enhances CE acceptance
- Industry Acceptance
 - National Equivalency designation makes the process ‘accepted’ in the industry
- Protection against long-term Regulatory Change
 - Reduce potential risk to BCR and clients of contemplated future federal rule changes

Regulatory acceptance and approval is part of the “Innovation”

Cost of Obtaining National PFRP and PSRP Approval

Total Expenditures to Obtain Regulatory Approval

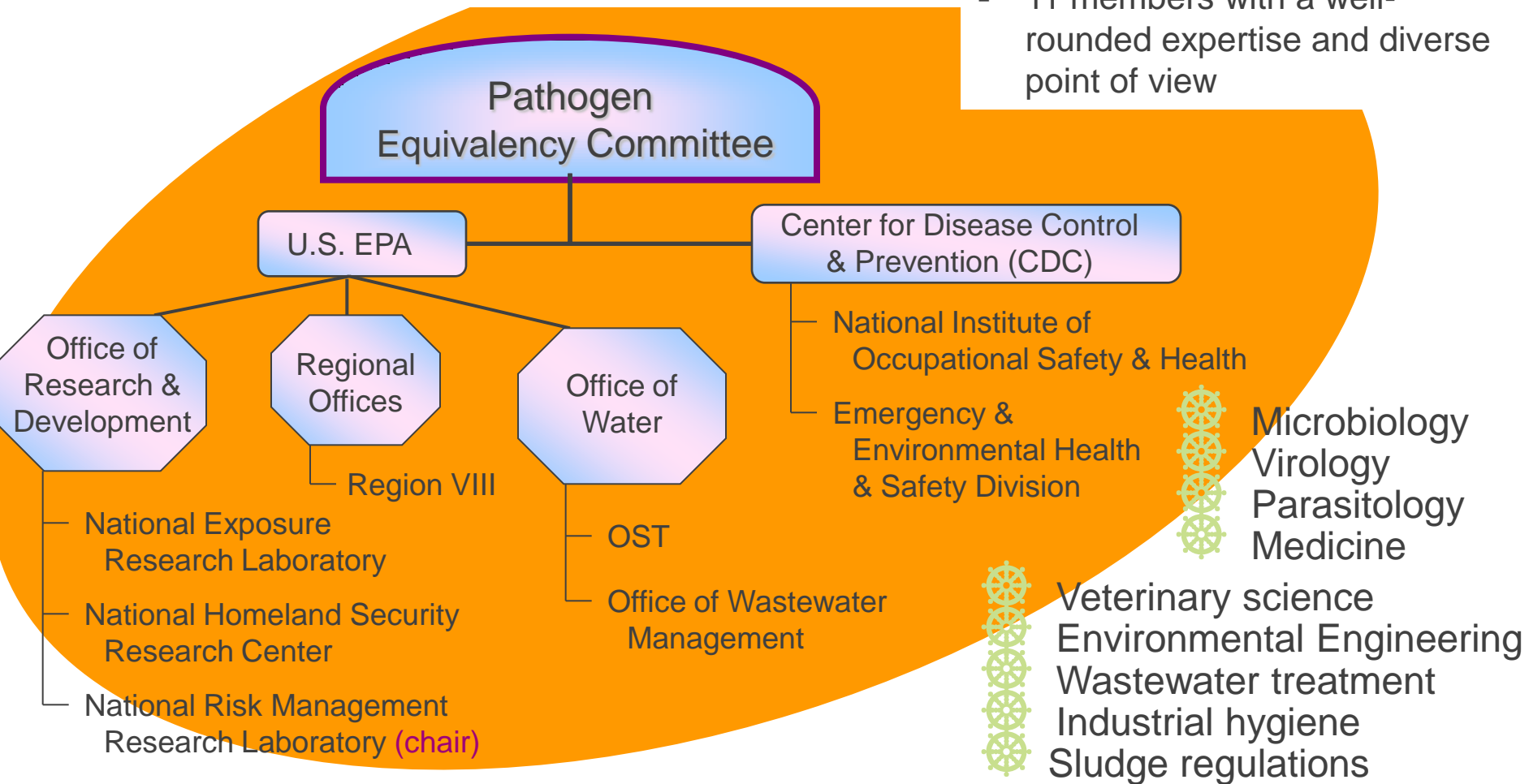


← Venture Capital Will Not Take this Risk

WARNING - Enter at your own risk! Part Science / Part 'Know How'

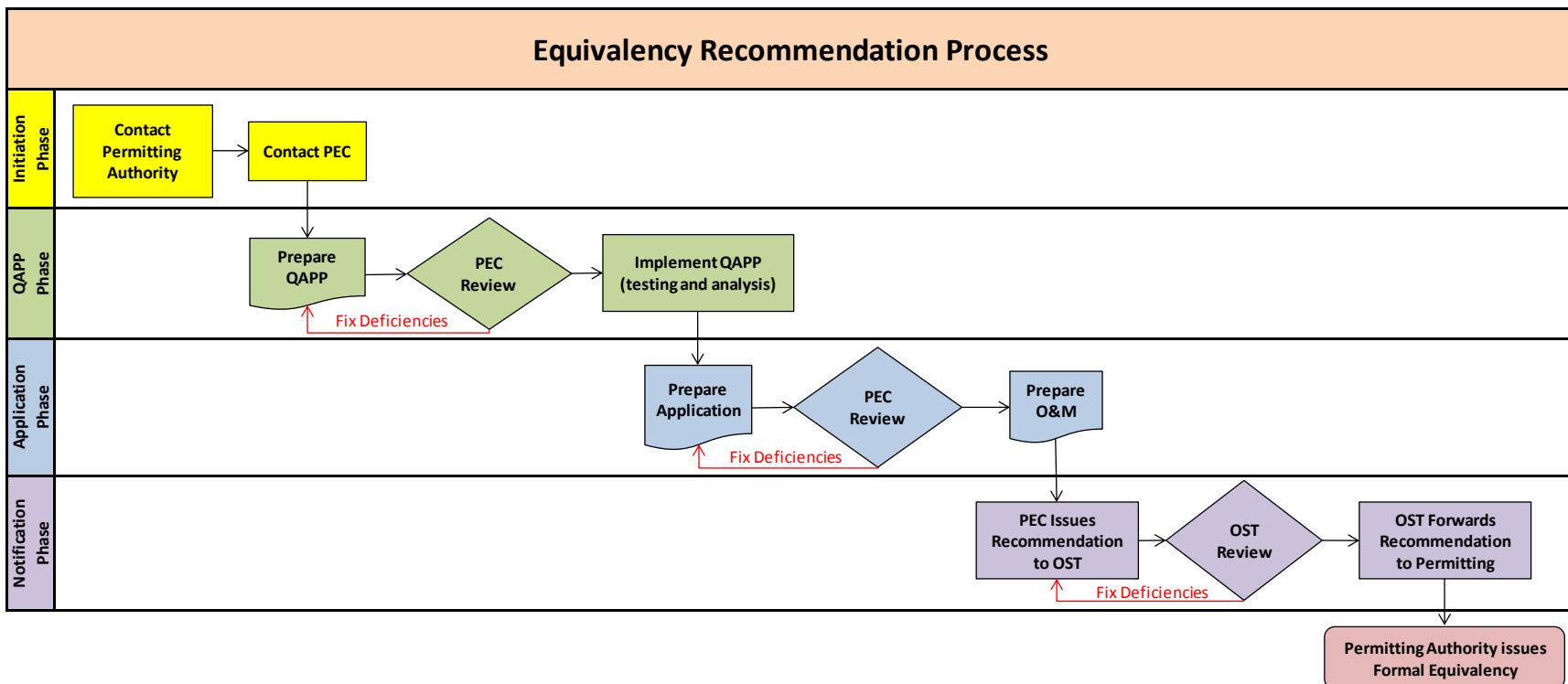
U.S. EPA Pathogen Equivalency Committee

- Created in 1985 to provide technical expertise to permitting authorities on PFRP/PSRP Equivalencies
- 11 members with a well-rounded expertise and diverse point of view



The Approval Process for Biosolids Treatment Methods

Theoretical



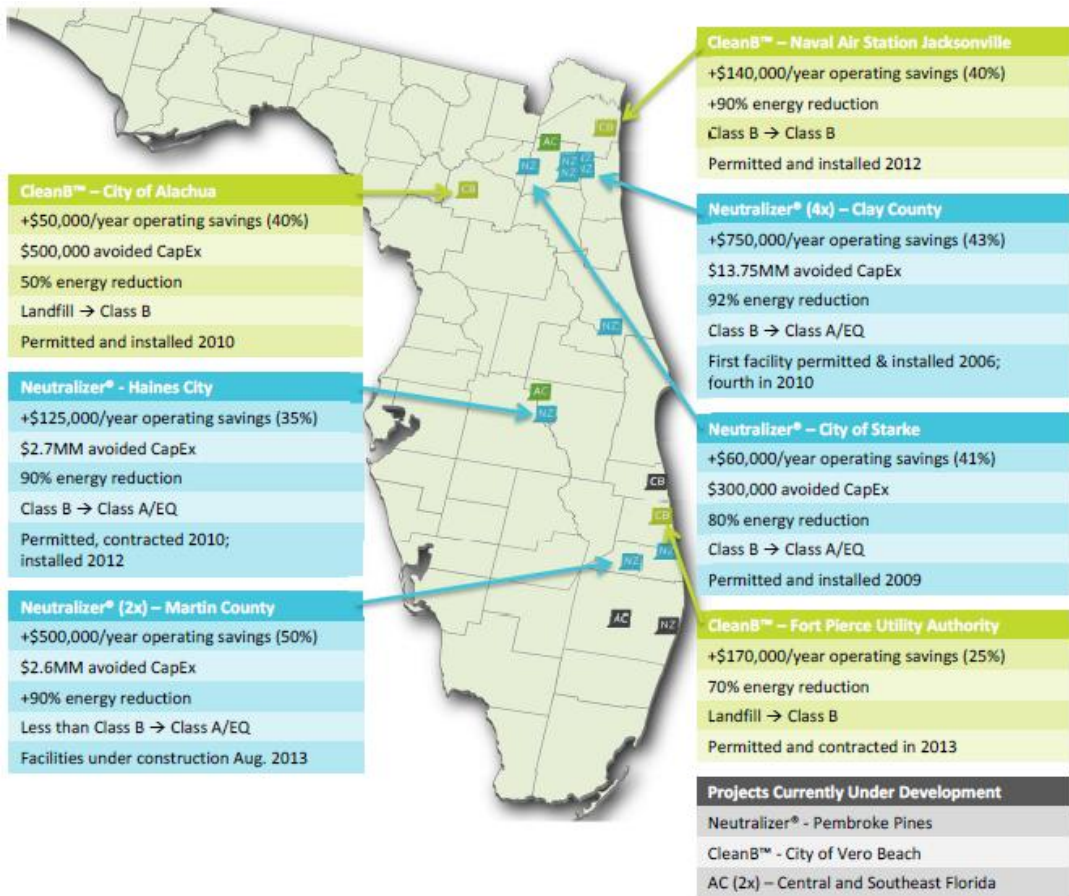
Real Life



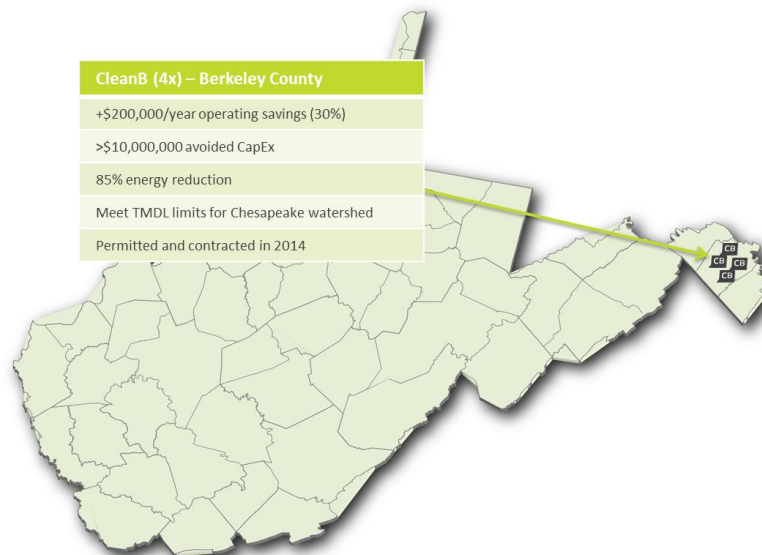
The theoretical process is simple compared to the practical process

EPA Approval is Critical to Innovation Success → Business Velocity

BCR has contracted ~8% of the Florida Market / 3 Times More Installations in Florida than any single Company



2014 Expansion into West Virginia



3 → 20+ installations in 4 years post National PFRP Approval

Recommendations for Improvement

- Clarity

- Implement Vector Attraction Reduction Equivalency Committee (all disinfected biosolids are not the same)
- EPA interaction with Regions? States? Districts?

- Process

- Do not shortcut the Approval Process or Criteria in an effort to drive innovation → unintended consequences



Best Available Resource for Reading: PEC Website

<http://water.epa.gov/scitech/wastetech/biosolids/pathogen.cfm>

There is no better resource than 'Past Experience'

Thank you

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