

Lessons Learned in Seeking “Nontraditional” Investments in Nonpoint Source Reductions

Hypoxia Task Force Meeting

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Newtrient LLC
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NEWTRIENT'S MISSION

Reduce the environmental footprint of dairy and make it economically viable to do so.



What Newtrient Believes...

the lowest-cost, voluntary environmental benefit should be economically incented by those who have high-cost pollution prevention obligations



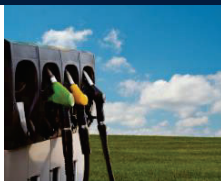
Agriculture (Dairy) Can and Must be Part of the Solution

- Farms help **resolve societal issues** (water pollution, GHG emissions, e.g.)
- Farmers **realize economic benefits** from on-farm, voluntary actions
- Farmers **improve their social license to operate** and increase consumer trust

Valuing the Whole Farm



SOIL HEALTH



ENERGY



AIR QUALITY,
BIODIVERSITY,
WEATHER RESILIANCE,
RECREATION



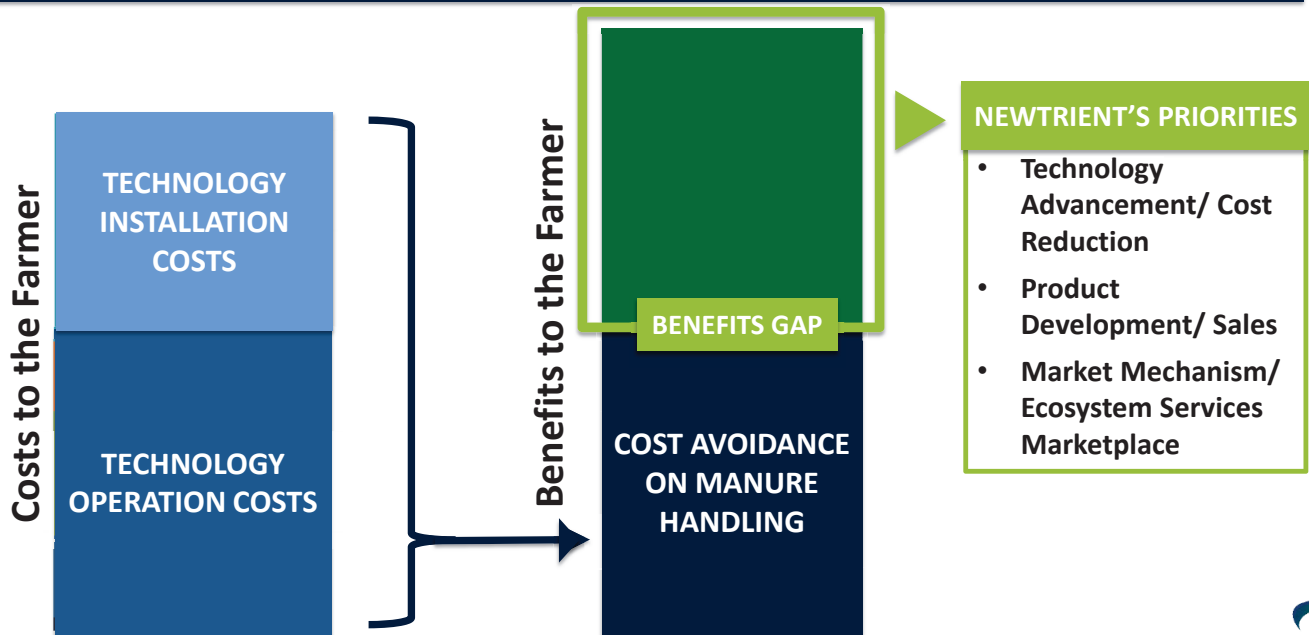
IMPROVED
WATER
QUALITY



WATER
QUANTITY
CONSERVATION

Focus Needs to be on Closing the Economic Benefits Gap

Annual Cost and Benefits Gap of Technology & Practice Adoption



Dairy Technology and Practices Deliver Ecosystem Benefits

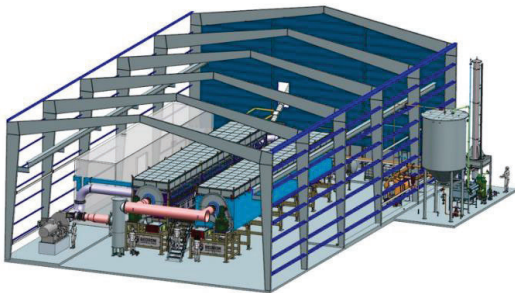
Bio-Filtration (Nitrification/Denitrification)



Dissolved Air Floatation (DAF)



Evaporative



Conservation Buffers



Realistic Revenue Streams from Manure

Energy	Manure-Based Products	Environmental Services
<ul style="list-style-type: none"> • Electricity • Heat • Renewable Natural Gas • Aviation Fuel • Biodiesel • Hydrogen • Methanol • Syngas 	<ul style="list-style-type: none"> • N – Ammonium Nitrate, Ammonium Sulfate • P – Ammonium Phosphate, Mono-ammonium Phosphate • Compost • Bedding • Custom Fertilizer Products • Worm Castings • Biochar • Water • Cow Pots (fiber) • Magic Dirt (fiber) • Zeolite • Struvite • Digestate algae • Humus  	<ul style="list-style-type: none"> • Carbon • Renewable Identification Numbers • Low Carbon Fuel Standard • Renewable Energy Credits • Nutrient trading: Water quality credits (N & P) • Other monetizable attributes (e.g. flood control, water quantity management) • Soil health attributes 



Most Promising Ecosystem Service Markets Today

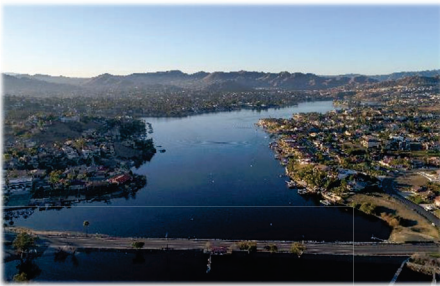
ECOSYSTEM SERVICES		ECOSYSTEM SERVICES BUYERS
<ul style="list-style-type: none"> RENEWABLE ENERGY WATER QUALITY WATER QUANTITY AIR QUALITY GHG REDUCTION CARBON SEQUESTRATION SOIL HEALTH RECREATION WEATHER RESISTANCE BIODIVERSITY 		<ul style="list-style-type: none"> REGULATED MUNICIPALITIES PERMIT HOLDERS STATES NON-REGULATED NON GOVERNMENTAL ORGANIZATIONS PHILANTHROPISTS COMPANIES WITH CORPORATE SOCIAL RESPONSIBILITY (CSR) GOALS INVESTORS

Market-Based Programs Surging Globally

“Global market for ecosystem services surges to \$36-42 billion in annual transactions”

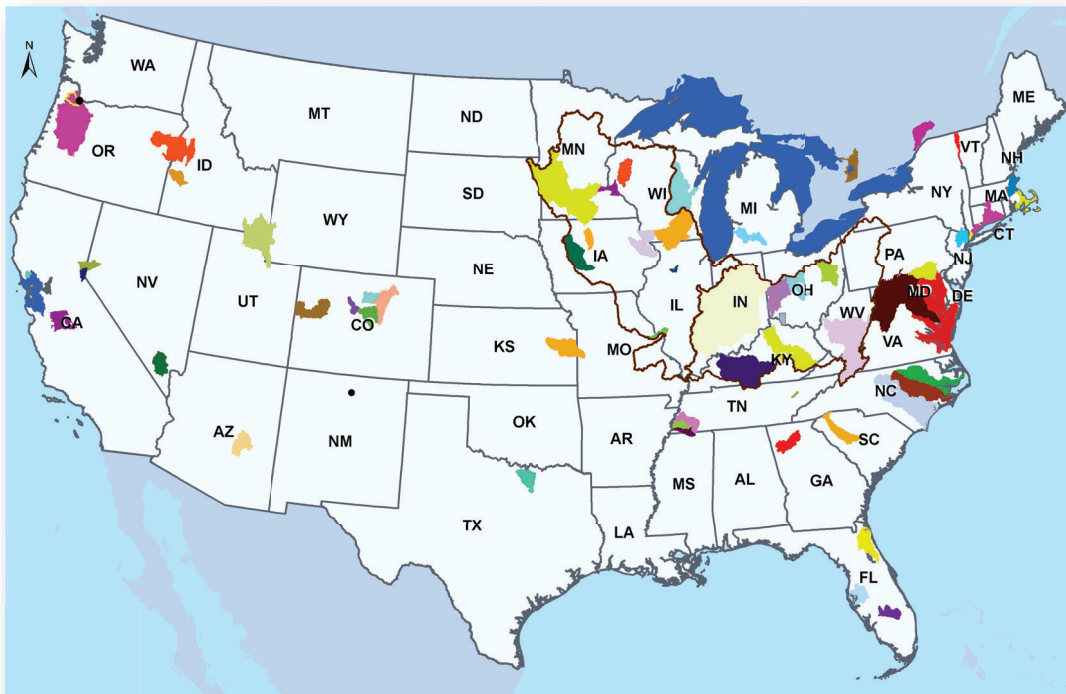
“over 550 programs are active worldwide”

“watersheds has the largest volume of global transactions, with \$24.7 billion in transactions annually”



The global status and trends of Payments for Ecosystem Services; James Salzman, Genevieve Bennett, Nathaniel Carroll, Allie Goldstein & Michael Jenkins
<https://www.nature.com/articles/s41893-018-0033-0>

Years of Water Quality Market Attempts



How do Market-based Solutions Flourish?



National Support Opens Window of Opportunity for Dairy



December 2018

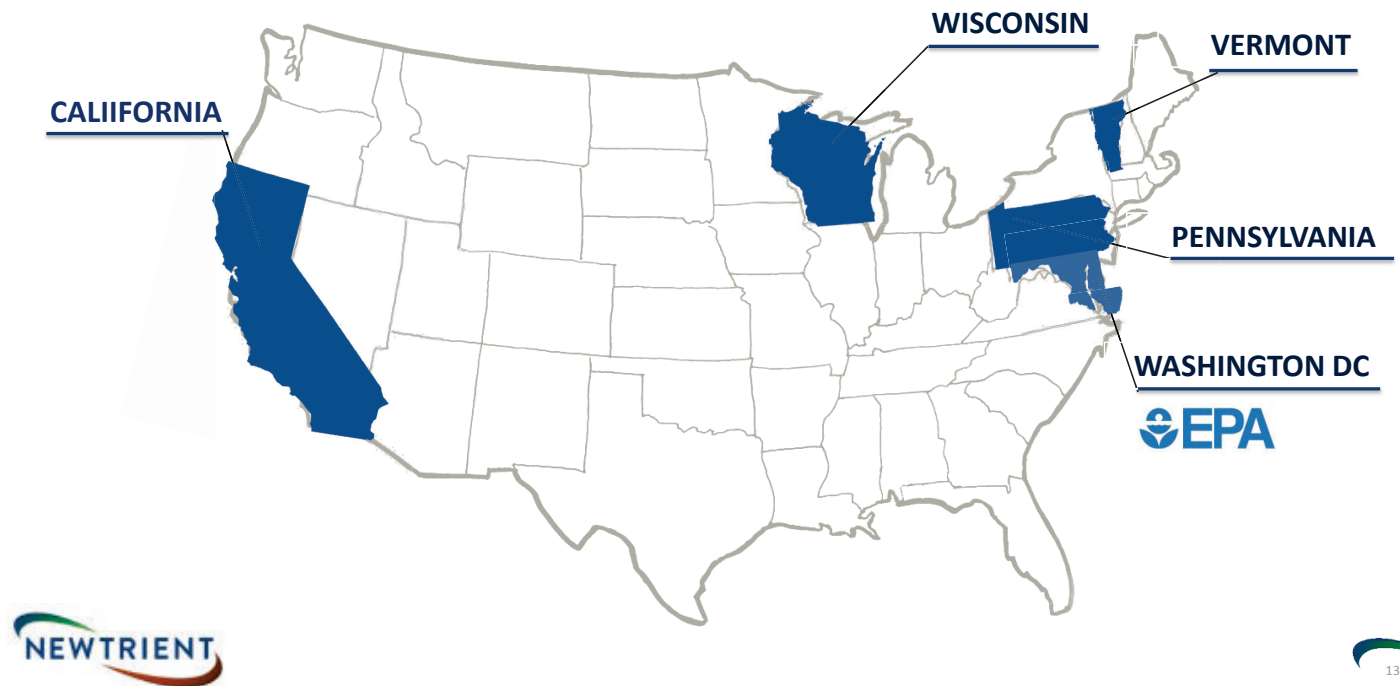
USDA, EPA Partnership Supports Water Quality Trading To Benefit Environment, Economy



February 2019

EPA Announces New Water Quality Trading Policy Memorandum
EPA efforts seek to modernize the agency's water quality trading policies to leverage emerging technologies and facilitate broader adoption of market-based programs

Creating Ecosystem Services Markets Across the U.S.



Key Takeaways

- Food and the environment is an “AND” obligation, not an “OR” choice
- Let natural science, social science and sound economics be our guide
- Any improvement is good – Precisely wrong is okay so long as the path is directionally correct
- Positive drivers drive fast change
- “Demand” drives the economic incentives and thus an effective marketplace
- Buyers require certainty. Sellers require predictability.

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