



Fate of Non-organic Packaging Materials from De-packaging
Operations – How Much is Recycled and Into What ?
November 8, 2021

Ray Duerr:
Vice President of Sales
rduerr@vanguardrenewables.com





- Vanguard Renewables Background

 - Our Team*

 - Farm Partners*

 - Mission and Vision*

- Farm Powered Anaerobic Digestion Process
- Challenges in the Organic Waste Industry
- Explore Depackaging and Vanguard's Organics Recycling Facility (ORF)
- Panel Discussion
- Q/A

Vanguard Renewables Co-digestion – Developers, Owners, Operators

FARM POWERED SUSTAINABILITY



- Institutionally funded by mission-driven investors seeking to impact climate change
- Farm-based anaerobic digestion company that builds, owns, and operates all its projects
- One of the largest organics recyclers in the U.S. with current capacity to process 1,000 tons per day of organic waste
- Six successfully-operating Farm Powered anaerobic digestion facilities and 10 currently in permitting and construction nationwide
- Organics depackaging capability including most advanced ORF in the Northeast
- Strategic Alliances with Dominion Energy and the Dairy Farmers of America
- Works with leading food manufacturers and retailers including Starbucks, Unilever, Dairy Farmers of America, Cabot, and Stonyfield
- Launched Farm Powered Strategic Alliance in December 2020 with founding members Dairy Farmers of America, Unilever, and Starbucks



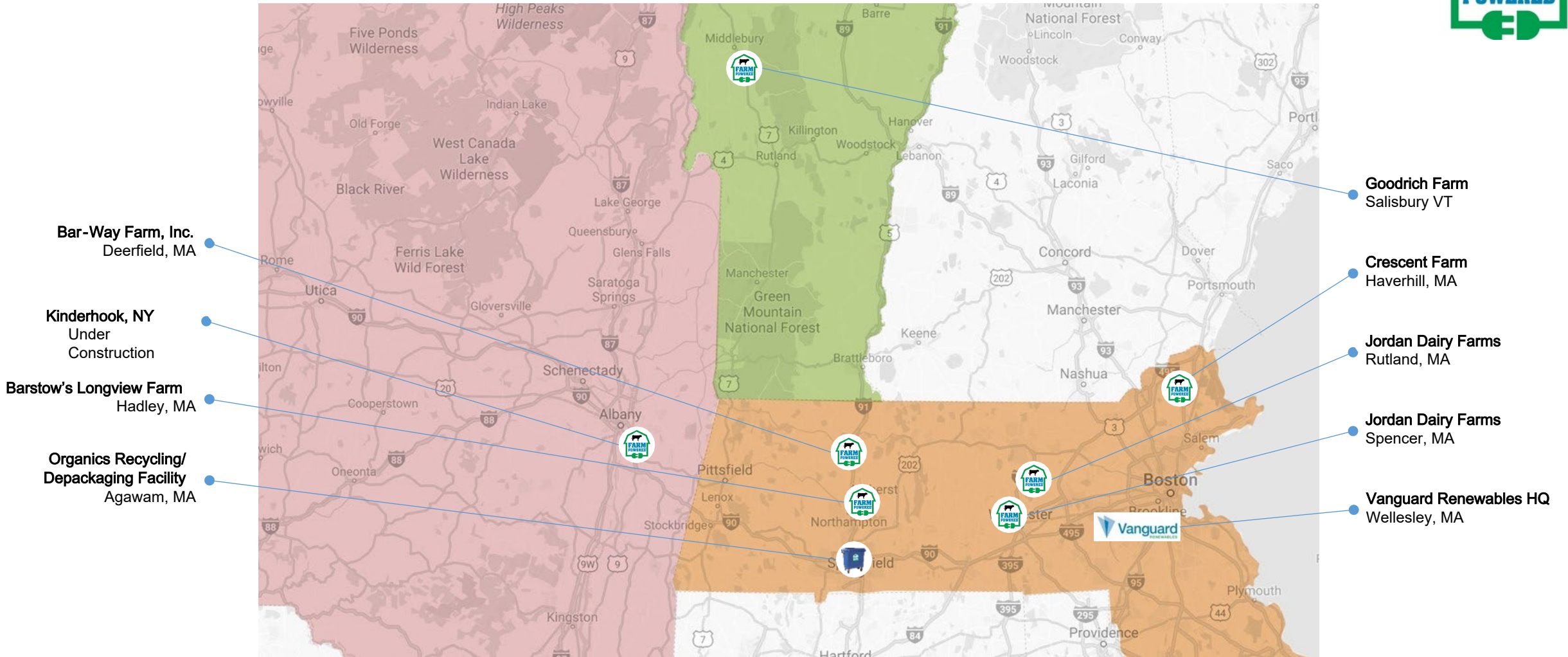
2021 Outstanding Dairy Sustainability Award Goodrich Farm, Salisbury, Vermont

Innovation Center for US Dairy



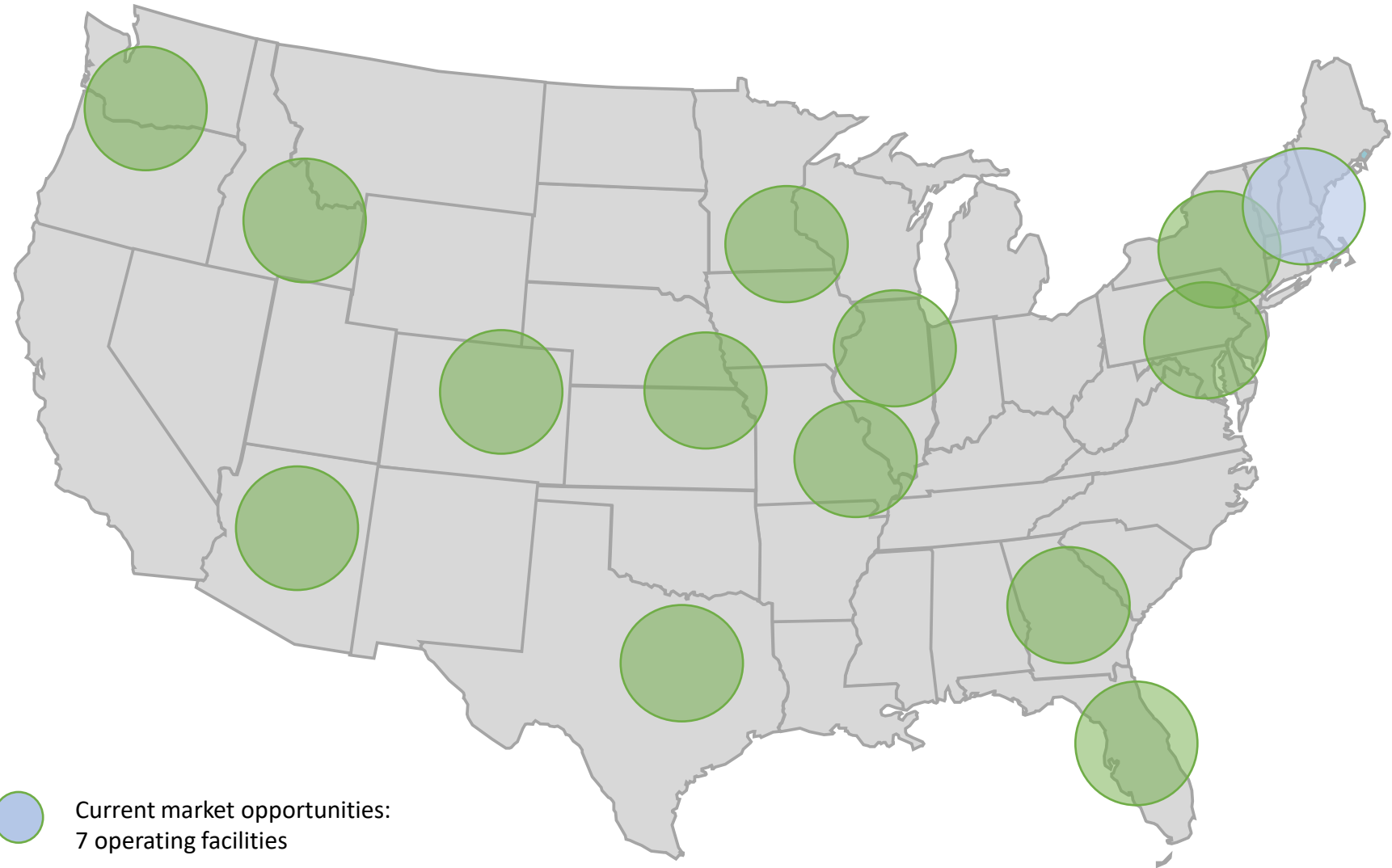
Vanguard AD Portfolio in New England/New York



FARM POWERED SUSTAINABILITY



Vanguard Renewables National Expansion Opportunities – 2021-2023

FARM POWERED SUSTAINABILITY



-  Current market opportunities:
7 operating facilities
-  New market opportunities/projects
under development 2021- 2023

Confidential



“**Every day**, we set out to change the way the world views waste and how each of us powers our lives. We are committed to **reducing** on-farm and food-generated **greenhouse gas emissions** from waste by as much as 95 percent and **recycling organic waste** into a powerful source of **renewable energy** and low-carbon fertilizer. We work alongside farms to manage manure, enhance regenerative agriculture practices, improve soil health, protect watersheds, and support herd wellness.”



HOW FARM POWERED[®] ANAEROBIC DIGESTION WORKS



40% OF AMERICA'S WASTE IS ORGANIC MATERIALS

FARM POWERED SUSTAINABILITY



PROCESS
WASTE



FATS, OILS,
GREASE



WASH
WATER



PACKAGED
WASTE



DISCARDED FOOD
Front of House

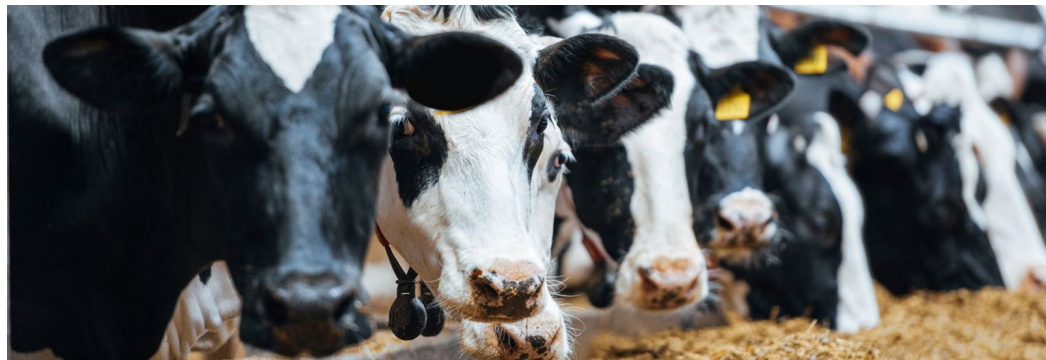


DISCARDED FOOD
Back of House



Everyone Wants Clean Organics!

FARM POWERED SUSTAINABILITY



Organic Waste Challenges – Contaminated Streams

FARM POWERED SUSTAINABILITY



Vanguard Renewables Advanced Organics Recycling Facilities



- One of the most advanced Organics Recycling Facilities in the Northeast. Expanding organics recycling/depackaging facilities nationwide.
- Depackages and processes expired goods, off-spec batches, or unsafe to eat food and beverage products. Items we couldn't take before.
- Extracted food is transported to a Farm Powered anaerobic digester, combined with farm waste, and converted into renewable energy



Industry Challenges and Lessons Learned

FARM POWERED SUSTAINABILITY



- Approximately 10% residue left to manage from packaging – work to find highest & best use
- Pre-sorting of inbound material one way to isolate unwanted packaging but very labor intensive
- Different packaging types is still an issue. Standardization of material types would be helpful, but not happening in the short term.
- Rigid plastics can be difficult to work with. Glass requires a separate process. We have solutions for both, but it's an industry challenge.
- Tracking the data and creating sustainability and recycling reports is becoming more critical each year so that you can learn and adjust and work with suppliers to reduce hard to manage packaging
- Building relationships is key to success. The ability to communicate issues/problem materials in a timely manner allow for best path to continuous improvement



Vanguard Renewables Advanced Organics Recycling Facilities



- Vision: Recycle and transform all underutilized food and beverage waste that is being sent to landfill, incineration, or WWTP
- Focus on the “hard to process” organics that many anaerobic digestion, compost facilities, and small farms avoid, due to contamination
- We separate the organics, the recycled packaging, and the residuals that cannot be recycled. We recycle everything we can and track everything for the companies we work with.
- More and more companies require this data for their own sustainability reporting. “More than 1,000 businesses are working with the Science Based Targets initiative (SBTi) to reduce their emissions in line with climate science.”



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Case Study: Industry Challenges during 2020 -2021

FARM POWERED SUSTAINABILITY



- Restaurants, bars, stadiums / tournaments were shut down in March 2020 – leaving full and half-full kegs.
- A “tsunami of kegs” was the result, leaving distributors and brewers scrambling for commercial decanting operations.
- Vanguard was opening a depackaging facility, we had the infrastructure already in place, so we added commercial decanting to our services.
- Added logistics cost to return barrels and re-use or return of pallets.
- Stretch wrap left as difficult to manage item unless you have large quantities





Ray Duerr
rduerr@vanguardrenewables.com
617-659-1222

Vanguard Renewables, 15 Walnut Street, Suite 300, Wellesley MA 02481
www.vanguardrenewables.com