Advancing Florida Biosolids Management through **Public-Private Partnerships**

Presented by:

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OVERVIEW

- Merrell Bros History
- Public-Private Partnerships
- Innovative Drying Technology
- Future of Biosolids

MERRELL BROS.®

Driven by Integrity, Proven by Results

- 40+ Years Experience
- 4 US Patents
- Family Owned & Led
- Biosolids Management Leader
- PPP, DBOO, & DBO
- 250+ Team Members

Specializing in **Transforming Waste** into valuable resources

CORE VALUES

- Integrity Driven
- Stewardship
- “Try Harder”
- Intentional Customer Service
- Commitment to Excellence

Make It Apparent That We Serve God In All We Do.

Romans 12:1-2

Florida's Biosolids Challenges

Regulatory drivers:

- Florida DEP's Biosolids Rule (Chapter 62-640, FAC) restricts Class B land application in areas prone to nutrient runoff.
- Heightened oversight of phosphorus loading into impaired watersheds (e.g., Lake Okeechobee Basin Management Action Plans).
- National momentum toward resource recovery and beneficial reuse rather than disposal.

Operational pressures:

- Rising costs of hauling biosolids to landfills or distant Class B application sites.
- Increasing NIMBY (Not In My Back Yard) resistance to conventional land spreading.
- Limited landfill capacity and escalating tipping fees.

Strategic imperative:

Municipalities need local, resilient, and sustainable biosolids treatment solutions that:

- Comply with DEP requirements,
- Reduce long-term costs,
- Minimize environmental impacts,
- Create pathways to beneficial reuse and potential revenue.

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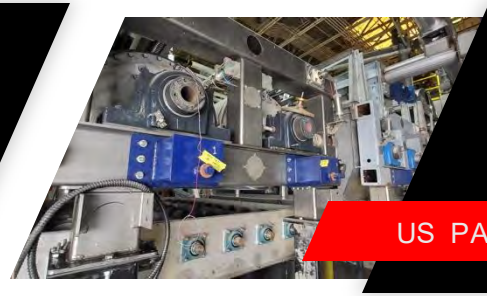
TECHNOLOGIES

Solar Thermal

Simple Process, Proven Results, Large Volumes

US PATENT



Double Drum

Energy Efficient, Small Footprint, Low OpEx

US PATENT

Pasteurization

158ºF for 30 Min & 75% TS

Guaranteed Class A

US PATENT

Pelletization

Highly Desirable Pellet
Increased Bulk Density
Low Dust

Exclusive License

Marketing & Distribution

FloridaGreen

FloridaGreen Plus

Beneficial Reuse

Tech Goals: Simple – Efficient – Beneficial Reuse – Additive Free

The 3P's

Public-Private Partnership

A long-term contract between a public agency and a private consortium in which the private sector designs, builds, and often operates/maintains an asset or service, in exchange for performance-based payments and risk transfer.

When Should Municipalities Consider a P3?

NOW

Benefits of a Public-Private Partnership with Merrell Bros.

- Local Sustainability
- Lifecycle alignment
- Risk Transfer
- Innovation
- Long-term disposal and treatment options
- Cost predictability
- Flexibility
- Transparency
- Risk Mitigation
- Expertise and Innovation
- Revenue Potential

Progressive Design-Build

Phase 1 – Design-Build team works with the owner to collaboratively develop the project's design, cost model, schedule, and risk allocation

Phase 2: Once scope, price, and terms are agreed upon, the team proceeds with final design & construction under a guaranteed maximum price

- Facilitates early contractor involvement and collaborative problem-solving before costs are locked in
- Allows municipalities to influence design outcomes & ensure stakeholder alignment
- Shared basis for decision-making
- PDB allows for open-book accounting

Integrating Progressive Design-Build into P3 Structures

Municipalities can blend **PDB principles into a P3** framework:

- Use PDB during the **development phase** (collaborative design + cost modeling).
- Transition into a **DBOM contract at financial close,** once the scope and budget are mature.
- Benefits: More **accurate financial models**, reduced “bid premium” (since bidders don’t need to price uncertainty), and stronger public trust.

Procurement Roadmap

1. Strategic Assessment
2. Preliminary Feasibility
3. Value-for-Money (“VFM”) & Affordability
4. Market Sounding
5. Authorization & Approvals
6. RFQ - Qualification
7. RFP – Proposal
8. Evaluation
9. Financing & Agreements
10. Construction Phase
11. Operations Phase

Implementation Plan & Timeline

Phase 1: Assessment, preliminary feasibility, procurement strategy memo.

Phase 2: VfM/Affordability, stakeholder plan, draft output specs, risk allocation matrix.

Phase 3: RFQ issuance, shortlist, data room setup, draft Project Agreement.

Phase 4: RFP with interactive dialogues, final bids, evaluation.

Phase 5: Preferred proponent selection, financial close.

Phase 6: Construction and commissioning with Independent Certifier oversight.

Phase 7: Operations period with active performance monitoring and annual public reporting.

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SOLAR THERMAL PASTEURIZATION

Pasco County, FL

Combines greenhouse solar thermal technology & oven pasteurization to achieve a Class AA product.

$250,000+	50,000+	7+
Annual Savings for Pasco County	Wet tons per year	Years of operation

SOLAR THERMAL DRYING

SIMPLE PROCESSES:

- Greenhouse Drying: Incoming 16% Total Solids dried to ~50% Total Solids
- Tractors & Falc Tillers to Turn Biosolids Daily
- Emission Control System –Coconut Shell Carbon
- Large HVLS Fans - Air Circulation in Greenhouses

Energy Efficient - Simple Process – Guaranteed Class A – Low OpEx

EFFICIENCY

~3.5 S.F.
of Greenhouse Per Wet Ton of Biosolids (annually)

6-6-1 *CLASS AA FERTILIZER*
Ag Spec Nutrient-rich Marketable Class A Biosolids

SOLAR THERMAL DRYING

GREENHOUSE EXPANSION PROJECT

- Heated Concrete Floors
- One Additional Acre of Greenhouse Capacity
- Goal: Maximize Pasteurizer Capacity

EFFICIENT & SCALEABLE

2.5M BTU
IN FLOOR HEAT BOILER SYSTEM

15,000 WT
ADDITIONAL BIOSOLIDS CAPACITY PER YEAR

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PELLETIZATION

Pasco Milling & Bagging Facility

Class AA Biosolids from the Solar Thermal Pasteurization plant will be pelletized to produce FloridaGreen Fertilizer

9,000
Dry Tons Per Year

500,000+
32 lbs. bags of FloridaGreen Annually

+4.5 Ton/Hr.
Three 24” Pellet Mills

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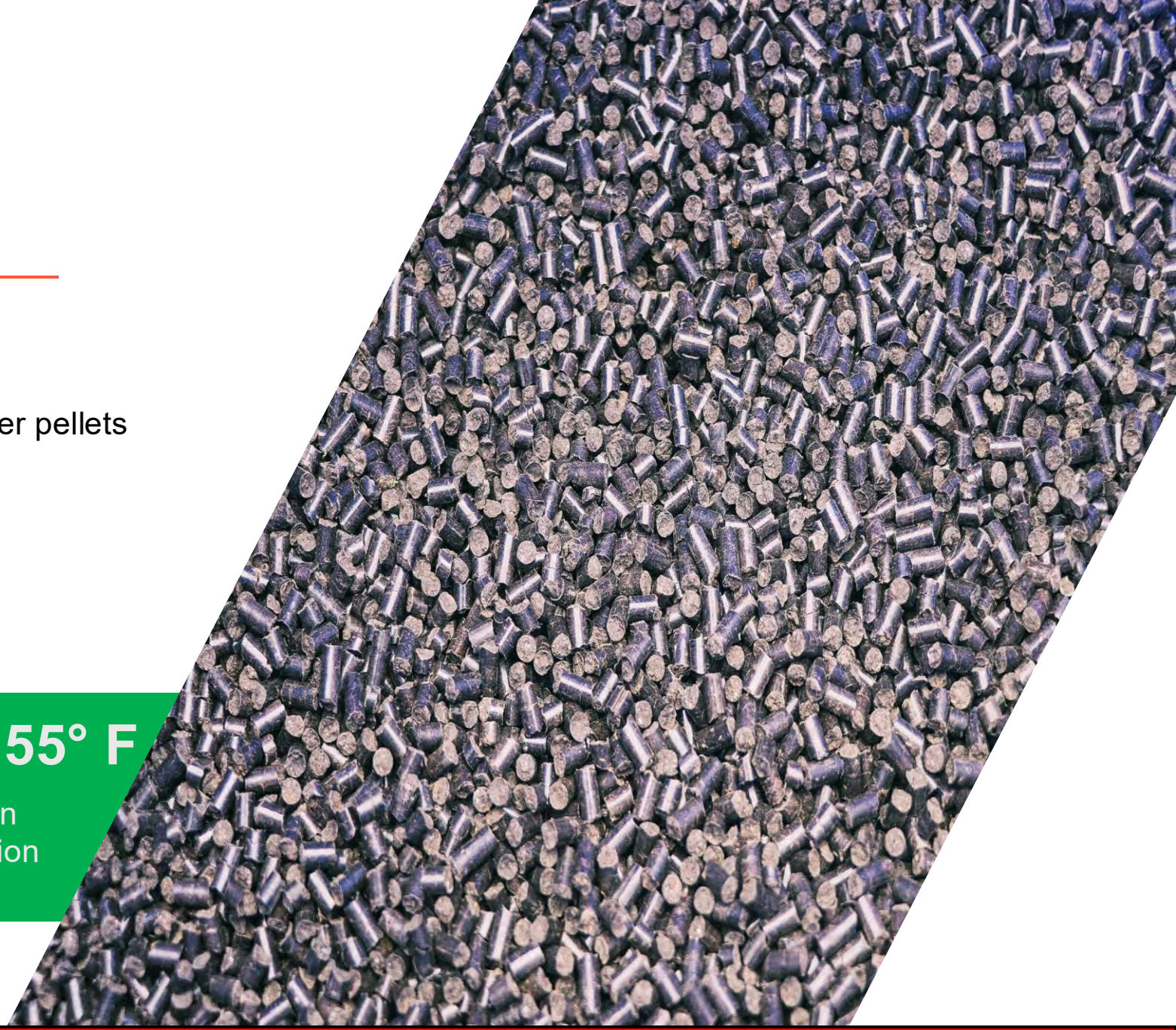
Pelletization



Milling & Bagging Technology

- Pellet Mills produce 1/8”, 1/4”, or 3/8” diameter pellets
- Dust Reduction
- Consistent Sizing
- Increased Bulk Density & Marketability
- Drier Agnostic (80%+ TS Required)

~50	$500+	145°-155° F
Lbs. Per Cubic ft. Bulk Density	Bagged Product Sells for Per Ton	Lignon Activation

Marketing & Distribution For Beneficial Reuse

Milling & Bagging

Many drying technologies produce a final product that is dusty and not uniform in size. Pelletization is a great solution. Once pelletized, the final product can be easily marketed and distributed for beneficial reuse.

32 lbs.
Residential & Commercial Bags

1500+
Runtime hours per die & rollers

Up to 2.0
Tons per hour per pellet mill

Marketing & Distribution

For Beneficial Reuse

- Fully Automated Bagging Line
- American-Newlong Bagging System
- Fuji Robot Cell
- Production: 6-10 bags per minute
- 32 lbs. - 50 lbs. bags

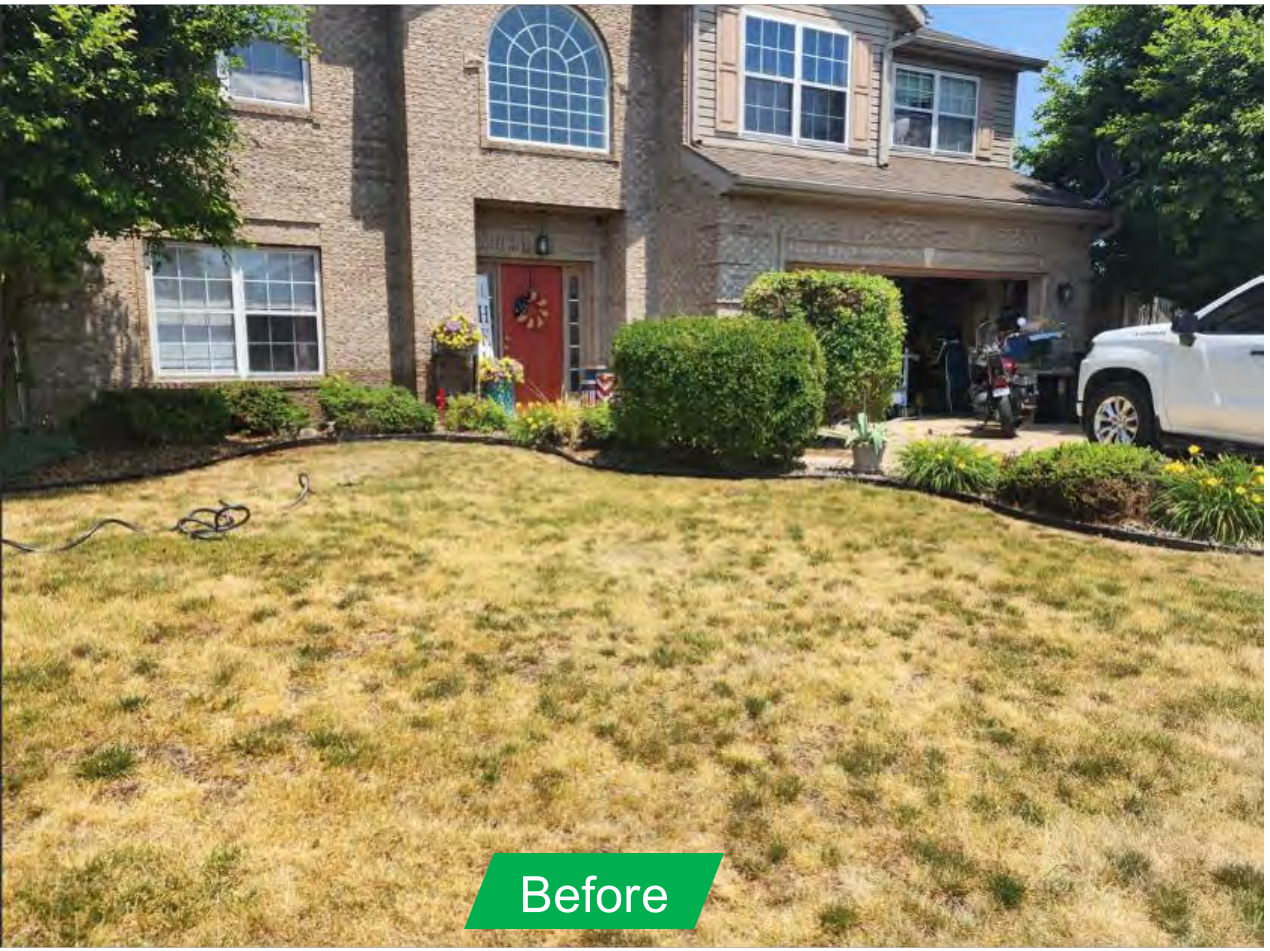
Marketing & Distribution
For Beneficial Reuse

Bagging and selling pelletized biosolids creates a valuable revenue stream by transforming waste into a marketable, eco-friendly fertilizer product. This approach supports sustainable waste management while meeting consumer demand for organic based nutrient-rich soil amendments.

Recovered Resource Marketability

Lawn & Landscape
Beneficial Reuse

After applying FloridaGreen on her home lawn, the City of Kokomo Wastewater Plant Superintendent saw significant improvements. Here are the before and after results.



Marketing & Distribution
For Beneficial Reuse

What about PFAS?

- We monitor the biosolids that produce FloridaGreen to ensure its safety and compliance. As state regulations evolve, marketing and distribution will be adjusted accordingly.
- Substantial volume reduction positions facility advantageously no matter what the future of PFAS regulations entail.

Outlook & Recommendations

1. More regulations, less land app, full landfills
2. Plan with a long-term solution in mind
3. Volume & moisture reduction is key
4. Consider beneficial reuse, if possible, prepare as if it’s not.

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Questions?

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Thank You,

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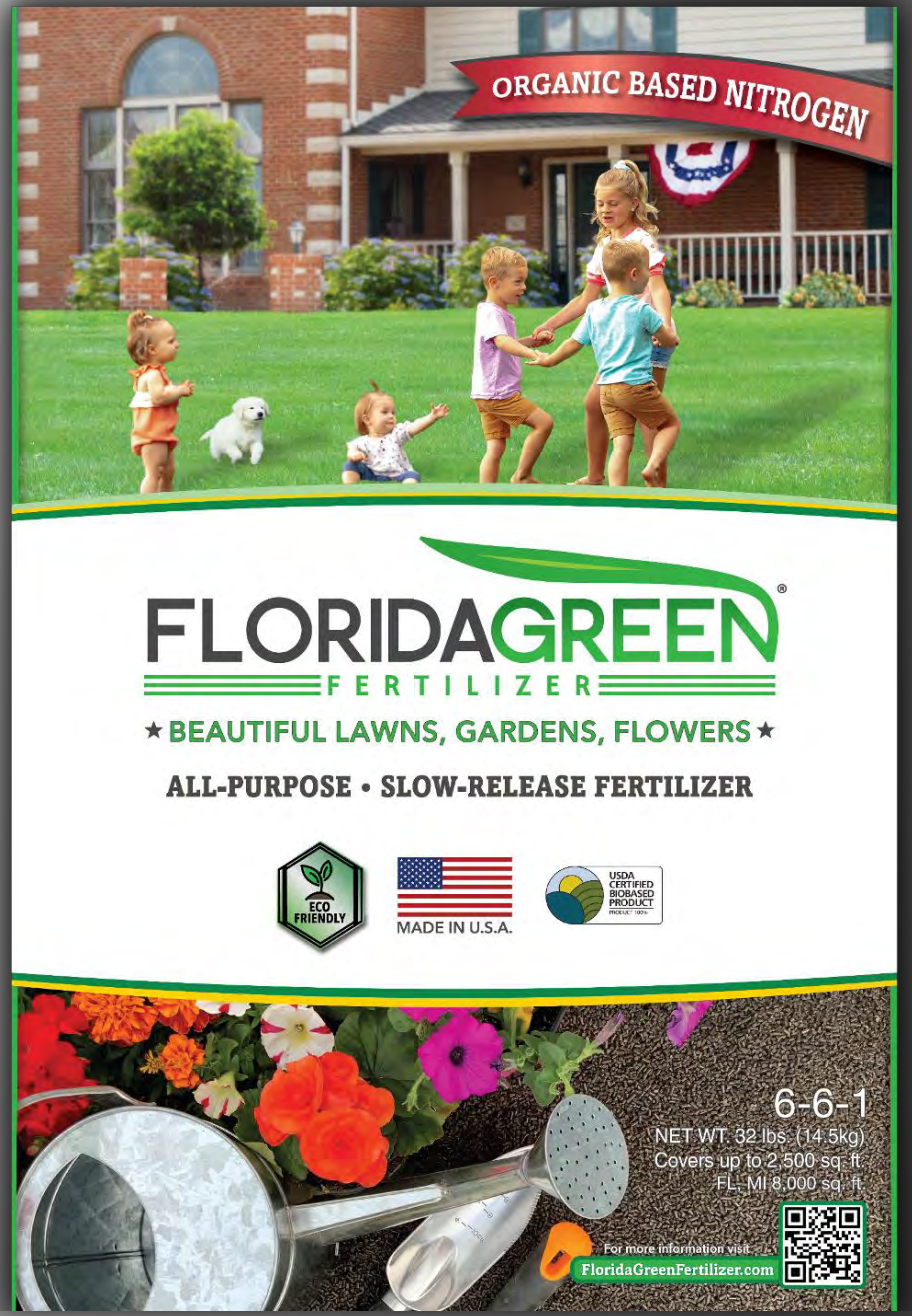

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