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DEPARTMENT OF COMMERCE

**Harry Lightsey**  
Secretary

**Recycling Market Development Advisory Council (RMDAC) Meeting**  
**Thursday, March 17<sup>th</sup>, 2022**  
**10:00 AM – 11:30PM**

**Meeting ID: 895 7896 3090**  
**<https://us06web.zoom.us/j/89578963090>**  
**+1 646 876 9923 US (New York)**

**RMDAC**

Wes Westbrooks, BMW  
Angel Lara, Mid-Carolina Steel  
Tina Green, Mumford Industries  
Norman Chandler, Republic Services  
Chris Fisher, GlassWRX SC  
Brad Dutton, Dutton Polymers  
Carol James-Gilchrist, Sonoco Recycling  
Elizabeth Morgan, City of Rock Hill  
Joseph McMillin, Atlas Organics  
Jay Spears, Continental Tire  
Dr. Andy Spicer, USC Darla Moore School of Business  
Vic Carpenter, Kershaw County

**ABSENT**

Chad Prescott, Mid Carolina Steel  
Kristen Brown, WasteZero  
April Chaffins, SC Department of Commerce

**GUESTS**

Glenn Odom, Retired  
Dean Britt, Enerra  
Cheryl Britt, Enerra  
Wendy Worley, NC Department of Environmental Quality

**STAFF**

Anna DeLage, SC Department of Commerce  
Ashley Jenkins, SC Department of Commerce  
Jazlyn Gallishaw, SC Department of Commerce



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## **CALL MEETING TO ORDER**

Wes Westbrooks motioned to call the meeting to order at 10:03 AM.

## **MINUTES**

The January 11<sup>th</sup> RMDAC meeting minutes were approved.

Wes Westbrooks: Introduced RMDAC's new tire representative, Jay Spears, and welcomed the guests and speakers.

## **Dean and Cheryl Britt presented information on Enerra.**

Dean: Has over 30 years in the transportation industry, and worked in the renewable fuel industry. Cheryl grew up in South Carolina and spent 30 years in the nuclear medicine field. Work

Build a small commercial unit in California for 3 years. They wanted to bring the technology to the east. Enerra, Inc. is the exclusive US license for the plastic-to-fuel (P2F) patented technology.

### The Team:

Sergio Perez, President  
Mark Mill, Chief Financial Officer  
Michael Brown, EVP, Business Development

### The Problem:

- 40 million tons of plastic are dumped annually in the US alone.
- Less than 10% of plastic has ever been recycled
- Plastic in landfills leak toxic chemical, into the ground water and waste supply as it decomposes
- An estimated 8 mm metric tons of plastic end up in the ocean every year
- 5.25 trillion pieces plastic float on ocean's surface, creating massive plastic island
- Clandestine plastic burning releases toxic gases into the atmosphere
- Plastic has been found in at least 180 marine species, including 100% of sea turtles

### High Daily Transportation Fuel Consumption:

- California
  - 48 million gallons of gasoline
  - 10 million gallons of diesel
- United States:
  - 390 million gallons of gasoline
  - 115 million gallons of diesel

### The Solution:



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- A Plastic to Fuel (P2F) Recycling Plant with patent-pending technology that converts plastic back to its hydrocarbon state.
- Removing the problem of non-recyclable, dirty waste plastic
- Eliminating the need for the US to export waste plastic to Asian and African countries
- Producing clean, high-performance gasoline and certified diesel for automobiles, commercial trucks, and buses

#### Enerra's Solution:

- Ours is the only demonstrated technology in the world that converts dirty waste plastic into finished, certified drop-in fuel.
- We have an operating pilot plant in Southern California.
- We are building two commercial plants in Southern California that are 80% complete.

#### Timeline of Development:

- 1998 (Development): Started developing the process of converting plastic to fuel.
- 1998-2008 (Theory): Completed numerous laboratory tests and trials. Successfully isolated gasoline, diesel, kerosene and paraffin from plastic.
- 2008-2012 (Production): Built first pilot plant. Scaled plant for industrial use.
- 2012-2017 (Testing): Environmental Analysis ASTM Standards Fuel Refined Kerosene to Jet Fuel. Fuel Production Log
- 2018 (Market): Ready for Market. US Patent Pending.

#### The Conversion Process:

- The process starts with shredding the plastic waste into pellets or chips.
- Able to process ALL types of plastics at the same time
- No hazardous chemicals (catalysts) are used.
- A small amount of the gas produced, provides ALL the energy needed for the process.
- The REFORMER is filled with waste plastic and through a thermal-physical process plastic is converted back into hydrocarbons of several forms (gas, liquids and wax).
- Closed loop system, no harmful emissions produced

#### Obtaining Gasoline and Diesel with Waste Plastic:

- Our process plant was designed and patented using waste plastic as raw material. 13,200 tons of non-recyclable waste plastic per year produces:
  - Gasoline – 1.4 million gallons
  - Diesel – 690,000 gallons
  - Kerosene – 295,000 gallons
  - Paraffin -870,000 gallons
  - LPG – 185,000 gallons
  - Residue – 175 tons



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Plastic Pre-Processing System Overview:

- Designed by Bulk Handling Systems
- Supplied on a turnkey basis
- On-going O&M support
- Guaranteed performance

Processing Plant Overview:

- Enerra Plants designed to American Petroleum Institute specifications
- Construction plans, process manuals, specification sheets, and concepts catalog available.
- Licensor guarantees process and provides on going technical support
- Safe design and easy operation
- Minimal personnel required

Benefit to the Participants:

- Participate in the demonstration of a game-changing diversion technology
- Divert locally generated waste plastic
- Participants can utilize some of the diesel and gasoline fuels produced
- Local jobs and taxes
- Opportunities for local suppliers of goods and services
- Greenhouse Gas footprint reduction

Our Three Initial Projects:

Bloomington, CA

- Based on community generated plastic waste
- 14,000 SF
- Initially 10 tons of plastic feedstock per day
- Expandable to 40 TPD
- Currently under construction

Victorville, CA

- 25,000 sf
- Initially 35 TPD
- Expandable to 105 TPD
- Currently under construction

Salinas, CA

- Based on Ag field plastic
- New building at Crazy Horse closed landfill
- Initially 35 TPD
- Expandable to 105 TPD
- Construction to begin in Q4 2021



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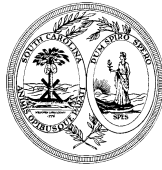
Our License and Pipeline:

- We have an exclusive license for the US
- Currently discussing extending our territory to Mexico
- With adequate capitalization, we could obtain European license

Business Model:

- Each Enerra plant will be established as an individual LLC
- The plant receives tipping fee revenues for the waste plastic from the municipalities and waste management companies
- Base contract: Minimum 10-year term for location and operations with 10-year renewal option
- Full onsite operating control by Enerra ensures consistency and stability of process/production
- Offtake/sales agreement with transportation partners
- Onsite fueling station, where appropriate, for immediate consumption

Dean: We can take medical waste and make fuels out of red bags medical waste. Jay: Is this post-consumer or industrial waste? Dean: We take both. Post-consumer and industrial waste. Angel: Were you part of a plastic fuel company out of California? Dean: No, we were not. I am not familiar with the company in California. Tina: Can you tell me what is considered non-recyclable? Dean: I can tell you what we do recycle. We can take anything from 3-7. Anything that I landfill. They can take PET, LDPE, and PVC. We cannot take acrylic. Vic: Can you take commingled mix loads dumped on the tipping floor? Dean: Yes, we use a bunker. We have a separation process. Jay: Your out put numbers are million gallons. Is that per plant total? Dean: That total is per project, based on a 7 ton a day, 35 ton a day. Each project comes with two reformers. Enerra is a batch process, not a continuous process. Enerra is 24 hours a day operation. Running full capacity with all three phases, it would produce around 12 million gallons a year of gasoline. Tina: Who are you reaching out for feedstock? Dean: Glenn Odom has been a great resource. Register on the SC Recycling Markets site, and had people reaching out to use. We are still searching. Tina: Are you working with municipalities? Dean: We are working with Dillion County. We have a signed contract to their municipal waste plastics. They have agreed to do a joint program with us to place 10 boxes at their sites. Do a joint venture in advertising, radio ads, and trying to get people to start recycling their plastics. Cheryl: As a return Enerra is going to provide gasoline and diesel for Dillion County. Dean: The great benefits is you can sell the fuel for a great price. The gasoline is certified. Glenn: They can also take PET post-consumer carpet and use as a feedstock. Tina: I would like to understand the process a little more, so we can keep all the plastic bottles for the SC industries that need bottles. Tina: What does the box look like? Dean: It's a five-yard container with the Enerra brand painted on the containers. Tina: The boxes would not say 3-7, they would say we take your plastics. Dean: That is correct, and the tipping fee is \$20-\$25 a ton tipping fee.



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### **Wendy Worley presented information on the NC Plastic Ban Legislation.**

Wendy: Provided information concerning the NC Plastic Bottle Ban legislation. She reviewed the legislation and went over the steps on how NC went through the process of educating the citizens on the Ban. At this point there is no enforcement concerning the legislation, but with education NC noticed an increase in recycling plastic bottles.

### **RMDAC Items for Discussion**

Cardboard Ban: Working on legislation, scheduling meeting, and stakeholder engagement.

### **RMDAC UPDATES**

#### CRA Legislative Day Recap:

- Wednesday, February 9, 2022
- Palmetto Club Ball Room
- 55 Recyclers attended the event
- 22 Legislators attended the event
- 10 Sponsors

RMDAC Annual Report: Reviewed the 2021 RMDAC Annual Report. The report found on the recyclinginsc.com website. Link provided:

[https://issuu.com/sccommerce123/docs/2021\\_rmdac\\_report](https://issuu.com/sccommerce123/docs/2021_rmdac_report)

SWIX update: SC Commerce is working with SWIX to create a material exchange platform for South Carolina. The platform is called the Southern Waste Information Exchange. Meeting are being held to determine next steps.

May 24<sup>th</sup> Meeting: Palmetto Synthetics: The next RMDAC meeting will be held in Kingtree, SC at Palmetto Synthetics on Tuesday, May 24.

### **MARKET UPDATES**

Paper: OCC the market dropped to \$160-\$150 per ton.

Tire: Decrease for recycled products due to the market.



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Solid Waste: Solid waste continues to grow. We have required Eco-flow and US Ecology so we can be more involved in the sustainability aspect. Waste volumes continue to grow. Fuel is a problem. Fuel is going to be the determining factor on what we do.

Carpet: Nylon 66 is in high demand, but short supply. Nylon 6 is in strong demand right now and price is stable. Polypropylene carpet, is in high demand. PET carpet is still a challenge.

Plastics: The virgin side of is going up. It's getting difficult to find the PET material. Gas prices are going up. Containers ships are going up. Need oil to be above \$65 to have a good movement for recycling PET.

Metal: Steel is up \$125 per ton. Aluminum is \$1.60 lb. and aluminum can market price is \$1.20 lb.

Organics: Increase in fuels with allows increase in tip fees. Slow season, right now.

#### **OLD BUSINESS**

None.

#### **NEW BUSINESS**

None.

#### **ADJOURN**

The RMDAC board meeting was adjourned at 11:46 am.

The next RMDAC meeting will be on May 24, 2022.