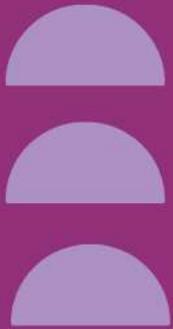


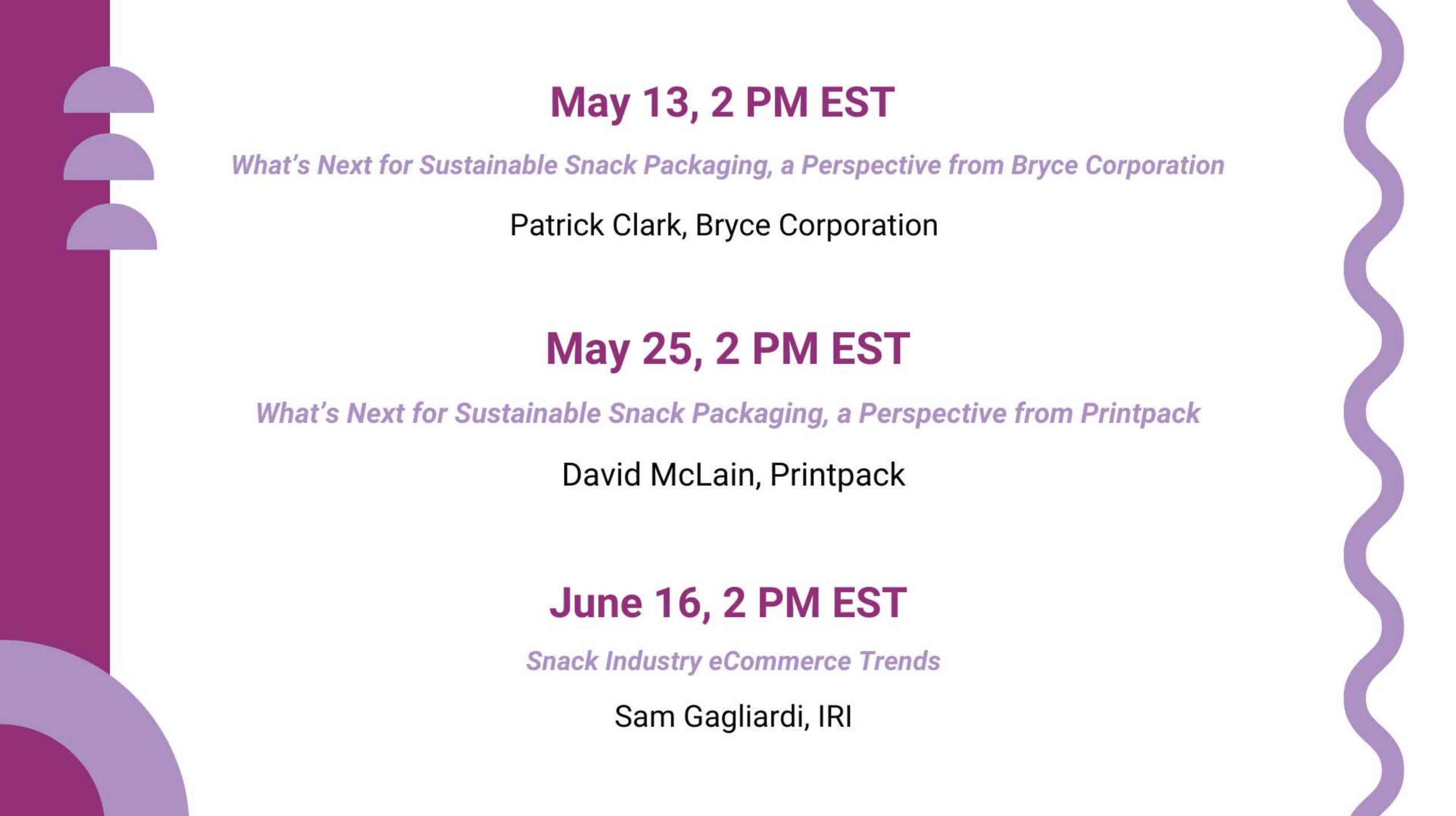


Bite-Sized
INSIGHTS
by SNAXPO21



Webinar
Series





May 13, 2 PM EST

What's Next for Sustainable Snack Packaging, a Perspective from Bryce Corporation

Patrick Clark, Bryce Corporation

May 25, 2 PM EST

What's Next for Sustainable Snack Packaging, a Perspective from Printpack

David McLain, Printpack

June 16, 2 PM EST

Snack Industry eCommerce Trends

Sam Gagliardi, IRI

What's Next for Sustainable Snack Packaging: *A Perspective from Bryce Corporation*



Patrick Clark



bryce corporation

Recap From the Last Webinar

Sustainable Snack Packaging: *Current State of Play*

- Flexible Packaging is still a great solution for Snack Food, but it has a problematic end of life story
- Tremendous pressure to make a change toward plastic alternatives
- Sustainable packaging goals driving change
- There are a number of options available



The **Bryce** Approach To Sustainable Packaging

Bryce Commitment to Sustainability

Bryce is committed to:

- Developing and commercializing sustainable packaging solutions that protect our planet and enable brands to achieve their sustainable development goals
- **Eliminating waste** in our manufacturing process and the flexible packaging solutions we provide
- **Providing structures that are not over-engineered**, but that adequately protect our customer's products to prevent food waste
- **Leading the development** of bio-based resins, compostable, recyclable, and PCR films



How Bryce is Closing the Loop

- Strive to be Landfill-Free
- Industry-Leading Environmental Footprint and Pioneer in Post-Industrial Recycling
- Operate EREMA systems to recycle our waste for various injection molding channels
- Significant investments in resources and technology to develop sustainable solutions



Let's Review the Options

Source Reduction

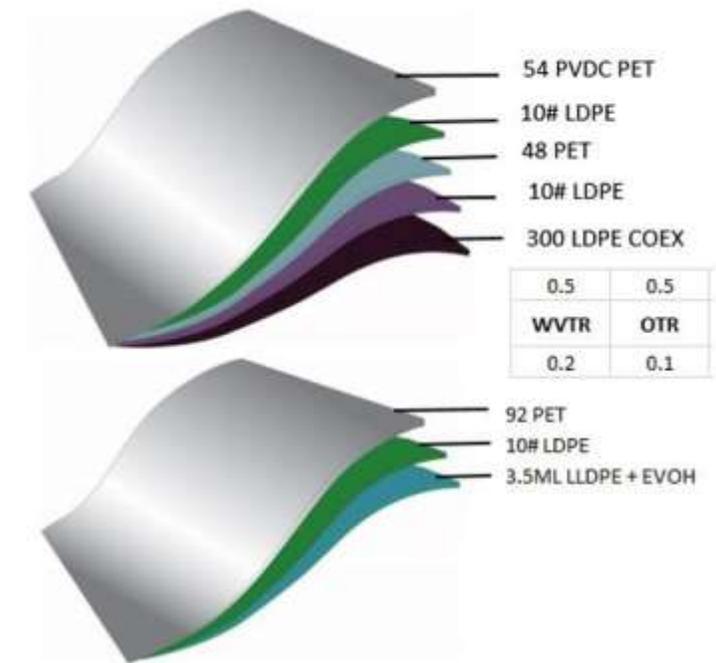
- Many times, the most immediate, effective, and sustainable solution is through Source Reduction
- In simple terms, Source Reduction is referring to the steps taken to reduce waste before it is produced

➤ Bryce Source Reduction Examples:

- Structure harmonization and optimization
- Light-weighting or down-gauging through resin development
- Shelf-life improvement through advancements in barrier technology
- Post-industrial waste recycling
- Eliminate processes that contribute to excessive manufacturing waste

Source Reduction Example:

1. Eliminate PVDC PET
2. Downgauge
3. Improved barrier properties



Store Drop-Off Recyclable

Plastics that can be recovered and reprocessed into useful products.



- Limited infrastructure available to collect and repurpose flexible packaging curbside
- One readily available solution is through Store Drop-Off recycling
- Bryce has developed alternatives to metallized films to enable recycling



- BryCyclable[™] Store Drop-off Recyclable Solutions:
 - Several commercially available all-PE solutions available that are pre-qualified by How2Recycle for Store Drop-off recycling
 - All-PE solutions are available with and without barrier



Post-Consumer Recycle

Post-Consumer
Recyclable



Post-Consumer Recycled (PCR) – Recovered plastics repurposed into plastic film

- Interest in incorporating post-consumer recycled content into flexible packaging has grown tremendously
- Currently limited to PET and PE films, but other film grades are on the horizon through advanced recycling
- Must increase recycling rates and processing capacity to keep up with demand

➤ Bryce Post-Consumer Recycled Content Solutions:

- PET film options are available with up to 90% PCR content
- PE film options are available with up to ~30% PCR content
- Recycled content sources include chemical, mechanical, and ocean-bound waste
- Barrier versions of PCR PET and PCR PE film options are available



Industrial Compostable

*Plastics that biodegrade in
180 days in an industrial
compost environment.*

ASTM-D6400



Compostable

- Access to Industrial Composting is extremely limited, but infrastructure is developing
- If compost is pulled from industrial compost system – conditions may not be adequate for biodegradation to continue
- Many industrial compostable films produced from bio-based resins
- Compostable film structures require third-party lab testing and certification

➤ Bryce Industrial Compostable Solutions:

- Barrier and non-barrier versions of bio-based PLA, and Cellulose films
- Compostable solutions available for a variety of packaging formats, including roll-stock and premade pouches
- Home Compostable solutions in development



Biodegradable

Plastics that are capable of being decomposed by bacteria or other living organisms.

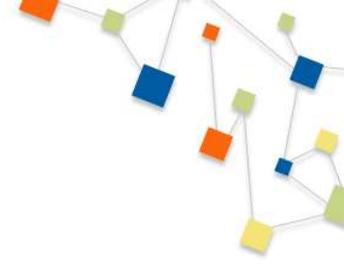


Biodegradable

- Commercially-viable and purely biodegradable resin sources are very limited
- PHA has been proven to be biodegradable in freshwater, saltwater, and soil
- Other biodegradable resins include PBAT, PBS, and PCL
- Several film suppliers have developed additives that promote biodegradation in anaerobic and aerobic environments (ASTM D5511/ 5338)
 - Films that use these additives break down into humus, CO₂, CH₄, and water when disposed into controlled landfill sites
 - OPP and PET solutions available
 - Mixed views regarding the environmental impact

Polyhydroxyalkanoates, or PHA, are polyesters produced in nature by numerous microorganisms, including through bacterial fermentation of sugar or lipids. These plastics are biodegradable and are used in the production of bioplastics.

Where Do We Go From Here?



- Continue to develop **eco-friendly packaging solutions** that make sense for the environment, and align with customer sustainability goals
- Dial in sustainability goals that align with what is **available and realistic**
- Collaborate to **effectively identify** eco-friendly solutions
- Educate consumers on how to **recycle plastic packaging** to increase recovery rates
- Educate consumers on the **benefit of flexible packaging** and the life cycle advantages
- Promote **development of waste management systems** to address marine debris and litter issues

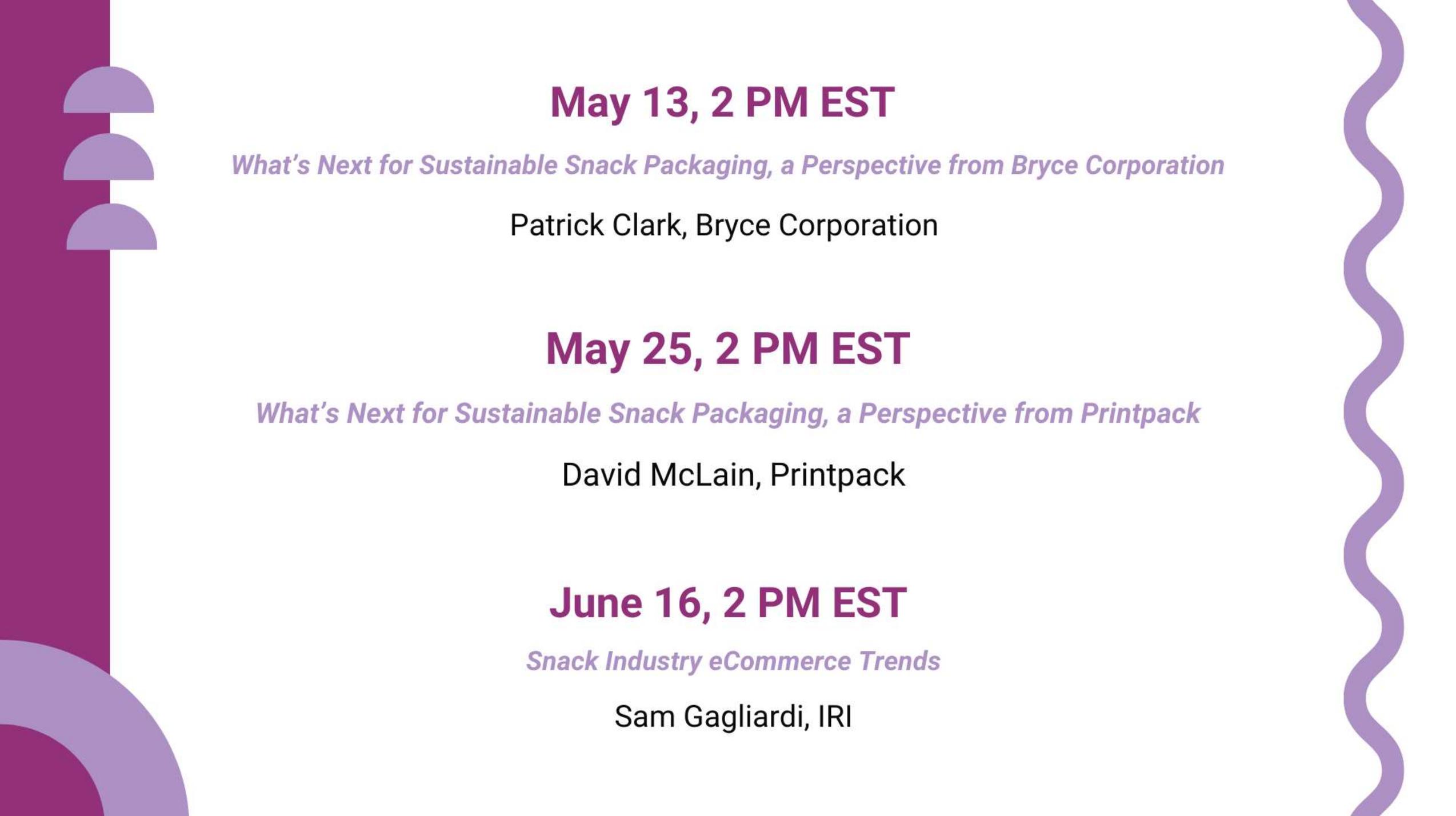
Questions?

Thanks for your time today!

Ready to make the switch to sustainable packaging?
Let us know how Bryce can help you create an eco-friendly solution.



Patrick Clark
pclark@brycecorp.com



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