PUTTING TEXTILES TO GOOD USE
Summary of the Problem

The linear supply chain, from the production of virgin materials to the landfill and incineration of textile waste, has huge negative environmental and social impacts on our communities.

In recognition brands have made ambitious targets to reduce these harms but lack a clear path to meet them.

**CURRENT STATISTICS:**

ACP estimates that:
- 13.1 million tons of textile in US landfills and incineration (EPA, 2019)
- 35% (4.6 million tons) is currently recyclable
- 45% (5.9 million tons) is recyclable with advanced recycling tech

**VIRGIN MATERIALS HAVE HIGH ENVIRONMENTAL IMPACTS**

Virgin material produced (global, 2019):
- Cotton - 25.5 million tons
- Polyester - 57.7 million tons
- MMCF - 7.1 million tons
- Social inequities along the supply chain

**Commitments vs. Capacity**

**COLLECTIVE COMMITMENTS AND APPROACHES**

- Textile Exchange & UN FICCA 2025 Recycled Polyester Challenge aims to increase rPET uptake by 45% to 17.1 million metric tons by 2025
- WRAP Textiles 2030 Roadmap sets ambitious carbon and water reduction targets along a “Circularity Pathway”
- Brands have made individual commitments, including:
  - 100% of the cotton, linen, viscose and polyester used in products will be recycled or will have a more sustainable origin by 2025
  - Source 50% of nylon and polyester from recycled materials by 2025
  - Climate neutral supply chain for manufacturing and processing factories by 2030
Changes Coming

The industry must adopt circular approaches to even begin to meet these commitments. What will the changes be?

The Business Case for Circular Economy

**Environmental**

<table>
<thead>
<tr>
<th>LINEAR</th>
<th>CIRCULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virgin materials</td>
<td>Spent textiles</td>
</tr>
<tr>
<td>Landfill/Incineration</td>
<td>Post-industrial and post-consumer textile diverted to reuse, resale, repair, and recycling</td>
</tr>
<tr>
<td><em>Recycled lowers GHG ~12%, water ~18%</em></td>
<td></td>
</tr>
</tbody>
</table>

**Social Impacts**

<table>
<thead>
<tr>
<th>LINEAR</th>
<th>CIRCULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore manufacturing and used textile processing, resale, and disposal</td>
<td>Nearshoring shifts some jobs from Global South to consuming countries</td>
</tr>
<tr>
<td>Diversion from landfill/incineration in consuming countries</td>
<td>Increased employment for processing additional material in Global South</td>
</tr>
</tbody>
</table>

**Economic Impacts**

<table>
<thead>
<tr>
<th>LINEAR</th>
<th>CIRCULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent textile as waste generates tipping and incineration fees ($53.72/ton in 2019)</td>
<td>Spent textile as rFeedstock generates revenue</td>
</tr>
<tr>
<td>Subsidies ($670MM in 2019) incentivize virgin cotton production</td>
<td>Chemically processed rFiber costs the same or slightly more than virgin fiber, while mechanically processed rFiber costs the same or less than virgin.</td>
</tr>
<tr>
<td>US$20 billion in direct fossil fuel subsidies incentivize virgin polyester production</td>
<td>Investment in collection and mechanical sorting systems brings down feedstock costs</td>
</tr>
<tr>
<td>Sustainably-marketed products are 16.1% of the market</td>
<td>54.7% growth in Consumer Packaged Goods market share between 2015-2019</td>
</tr>
<tr>
<td>High demand for rPET from bottles</td>
<td>New rPolyester feedstock adds market choice and stability</td>
</tr>
</tbody>
</table>

**Policy**

<table>
<thead>
<tr>
<th>LINEAR</th>
<th>CIRCULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing trade regulations create perverse incentives for textile production and use</td>
<td>Extended producer responsibility schemes mean higher costs to brands (France’s EPR is a model; Netherlands will adopt a similar proposal in 2023)</td>
</tr>
<tr>
<td></td>
<td>MSW textile bans require alternative solutions for spent textiles (EU 2025, Mass, CA for home textiles)</td>
</tr>
<tr>
<td></td>
<td>Recycled Content Benchmarks: industry standards or duty rate discounts lower cost to brands</td>
</tr>
</tbody>
</table>

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Testing Circular System Flows

Facilitating Commercial Textile-to-Textile Product Trials

OBJECTIVE: To utilize post-consumer and post-industrial textiles as feedstocks for circular textile recycling processes available today, at scale and in pre-commercial stages, with output to fiber, yarn, fabric, and ultimately product for market.

TARGETED OUTCOMES: Demonstration of circular textile-to-textile systems that are feasible and worth engaging in for each member of the system; and reduction in GHG emissions, chemical and water dependence when compared to production of virgin materials.

Who - Entire Circular Textile-to-Textile System
- Collectors/Sorters/Preprocessors
- Recyclers
- Yarn/Fabric/CMT
- Brands & Retailers

What - Commercial Trials
- Feedstocks: spent post-industrial and post-consumer textile
- Recycling processes: mechanical and chemical

When - NOW
- Two year project kicks off June 2021

Outputs
- Definition of functioning effective circular textile supply system
- Circular textile model applicable in multiple geographies
- Circular system trial products take up 50 tons of spent post-consumer textiles

Outcomes
- Spent textiles diverted from landfill or incineration in alignment with the ACP Textile Use Hierarchy
- Collaborative industry trials deliver commercial products that contain recycled inputs
- Adoption of robust traceability tools achieves textile use transparency
- Reduced need for virgin fibers
- Reduction in the textile industry’s greenhouse gas emissions and water and chemical impacts
## Trial Guidelines

### What does it mean to join the trials?

<table>
<thead>
<tr>
<th><strong>Minimum recycled content</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• A minimum of 40% recycled blend is targeted for all trials. They can include both post-industrial and post-consumer from any feedstock, e.g. textiles or PET bottles.</td>
</tr>
<tr>
<td>• A minimum of 20% recycled post-consumer textiles is targeted for all trials.</td>
</tr>
<tr>
<td>• When technically feasible, higher levels of recycled content should be included.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Traceability</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Outputs will potentially include a blend of post-consumer, post-industrial, and virgin inputs.</td>
</tr>
<tr>
<td>• Documentation of each change of custody/transaction is required.</td>
</tr>
<tr>
<td>• Any potential traceability claims will be transactional (vs. physical).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>All Trial Products include an end-of-life pathway.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Products are identified with information needed for recycling, deconstruction, decomposition, and/or biodegradation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Collection through fiber to be generated within North America.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Collection, sorting, processing and manufacturing activities in wasteshed of origin whenever technically feasible.</td>
</tr>
<tr>
<td>• Product manufacturing outside of North American must include reporting on production location, final product fiber content and volumes produced.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Volumes will be standard minimum order quantities or higher (not sample volumes). TBD based on specific product type.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Spent materials - TBD</td>
</tr>
<tr>
<td>• Recycled materials - TBD</td>
</tr>
<tr>
<td>• Yarns - TBD</td>
</tr>
<tr>
<td>• Fabrics - TBD</td>
</tr>
<tr>
<td>• CMT – TBD</td>
</tr>
</tbody>
</table>

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## Roles and Responsibilities

<table>
<thead>
<tr>
<th>Trial Participants</th>
<th>Brands &amp; Retailers</th>
<th>Collectors/Sorters/Preprocessors (Spent Textile Partners)</th>
<th>Recyclers</th>
<th>Fiber Producers &amp; Yarn Spinners</th>
<th>Fabric Mills</th>
<th>CMT Factories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial Benefits</td>
<td></td>
<td>• Ability to purchase circular materials or finished product to spec.</td>
<td></td>
<td>• Showcase validating their capabilities and fit to the circular system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Validate commercial circular system.</td>
<td></td>
<td>• Market exposure to brands and other Trial Partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Opportunities to participate in the development of rFeedstocks.</td>
<td></td>
<td>• Ability to market test rFeedstock products.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Access to circular inputs that meet their trial specification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Trial Benefits

- • Ability to purchase circular materials or finished product to spec.
- • Validate commercial circular system.
- • Opportunities to participate in the development of rFeedstocks.
- • Ability to market test rFeedstock products.

## Trial Requirements

- • Product and/or material order commitment that meet MOQ requirements across the system
- • Provide finished goods material and testing specifications
- • Provide testing support
- • Grant supply chain partners permission to measure and share key social, environmental, and economic data
- • Post-consumer rFeedstock samples for recycler testing, if required

## Trial Participation Fee

- • Documentation in support of a circular system business case, including logistics, environmental data (LCA access where available), social impact data where available, feedback on economic feasibility and data to support traceability.
- • Outputs of a pre-qualified specification and type, in a pre-determined format, packaged for delivery, with testing and chain of custody documentation prepared.

## Brand Buy-In Menu

<table>
<thead>
<tr>
<th>Stage</th>
<th>Option</th>
<th>PO Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fiber</td>
<td>Individual or collective buy-in from brands</td>
<td>Meets MOQ</td>
</tr>
<tr>
<td>2. Yarn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Fabric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Finished Product</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Optional

- • Take-Back Collaboration Program
- • Digital Identification with EON

## Schedule of Fees

<table>
<thead>
<tr>
<th>System Partner Size (By Total Annual Revenue)</th>
<th>Annual Participation Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $10MM</td>
<td>$1,000</td>
</tr>
<tr>
<td>$10MM - $100MM</td>
<td>$5,000</td>
</tr>
<tr>
<td>$100MM - $500MM</td>
<td>$10,000</td>
</tr>
<tr>
<td>$500MM+</td>
<td>$20,000</td>
</tr>
</tbody>
</table>
System Trial Elements

**TRIAL INPUTS**

**COLLECTION TYPES**
- Commercial Bin
- Contract Commercial/Industrial
- Curbside
- Drop-off
- Event-based
- Mail-in
- Residential Bin
- Take-back

**SORTING RANGES**
- Whole garments
- Mixed color
- Mixed construction
- Mixed fibers
- Knit constructions
- Rolled goods
- Sorted colors
- Yarn waste

**SORTING REQUIREMENTS**
- Sort to grade
- Sort to rFeedstocks
- Feedstock aggregation

**COLOR SORTING GRADES**
- Mixed color
- Dark colors
- Light color
- White
- PC by color group
- PI by color group

**PREPROCESSING REQUIREMENTS**
- Trim removal
- Right sizing
- Shredding
- Disassembly
- Sanitation
- Testing
- Feedstock aggregation

**FEEDSTOCK TYPES**
- Post-consumer
  - Cotton
  - Polyester
  - Polyester/Cotton Blends
  - Polyester/Cotton Blends with <10% other fibers
  - PET Bottles
- Post Industrial
  - Cotton
  - Polyester
  - Polyester/Cotton Blends

**RECYCLER TYPES**
- Chemical Cellulosic
- Chemical PET
- Mechanical Cotton
- Mechanical Poly
- Mechanical PET
- Semi-Chemical Cellulose

**SORTING REQUIREMENTS**
- Virgin
  - Cotton
  - Wood Pulp

**FEEDSTOCK TYPES**
- Recycled
  - rCotton
  - rPolyester
  - rPET Chip
  - Refibra™

**PRODUCT TYPES**
- Knitted
  - T-shirts
  - Jeans
  - Fleece
  - Home Textiles

**FIBER TYPES**
- Recycled
  - rCotton
  - rPolyester
  - rPET Chip
  - Refibra™

**TEXTILE TYPES**
- Knits
  - Jersey
  - Fleece
  - Pique
  - Wovens
  - Denim
  - Canvas
  - Terry

**RECYCLED OUTPUTS**
- Refibra™
- Cellulose Pulp
- Staple Fiber
- Filament Fiber
- PET Monomer
- PET Chip
- Yarn
- Fabric

**PRODUCT TYPES**
- Knitting
  - Naia Renew™/Polyester
  - 20/1 Cotton
  - 20/1 Cotton/Polyester
  - 150D/78F Polyester

**WEAVING**
- 8/1 Cotton
  - 10/1 Cotton
  - 10/1 Cotton/Polyester
  - 10/1 Cotton/Polyester/Refibra™
# Trial Product Proposals

## T-Shirts

<table>
<thead>
<tr>
<th>Trial</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4</th>
<th>Trial 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Type</strong></td>
<td>Color Sort T-Shirt</td>
<td>Dyeable T-Shirt</td>
<td>Dark Heather Overdyed T-Shirt</td>
<td>Dark Heather Overdyed T-Shirt</td>
<td>Dyeable Lightweight Activewear T-Shirt</td>
</tr>
<tr>
<td><strong>Inputs</strong></td>
<td>80% Post-Consumer 20% Virgin</td>
<td>10% Post-Consumer 90% Post-Industrial</td>
<td>100% Post-Consumer</td>
<td>100% Post-Consumer</td>
<td>49% Post-Consumer 27% Post-Industrial 24% Virgin</td>
</tr>
<tr>
<td><strong>Recycling Processes</strong></td>
<td>Mechanical Cotton + Semi-Chemical Cellulosic</td>
<td>Mechanical Cotton (White) + Chemical PET + Mechanical PET (Bottles)</td>
<td>Mechanical Polyester + Mechanical Cotton</td>
<td>Mechanical Polyester + Chemical PET</td>
<td>Chemical Blends + Mechanical PET (+ Polyester)</td>
</tr>
<tr>
<td><strong>Material Output Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fiber</strong></td>
<td>100% Cotton Fiber (80% Cotton+20% Virgin)</td>
<td>60/40 Cotton/Poly Fiber Blend</td>
<td>60/40 Cotton/Poly Fiber Blend</td>
<td>100% Recycled Polyester Fiber</td>
<td>(r)Polyester 60/Naia™ Renew 40</td>
</tr>
<tr>
<td><strong>Yarn</strong></td>
<td>20/1-100% Cotton Yarn</td>
<td>20/1 Blended Cotton/Poly Yarn</td>
<td>20/1 Blended Cotton/Poly Yarn</td>
<td>150D/78F 100% Poly Yarn</td>
<td>20/1-40/1 Staple Blend or Filament Yarn</td>
</tr>
<tr>
<td><strong>Fabric</strong></td>
<td>140GSM Jersey</td>
<td>140GSM Jersey</td>
<td>140GSM Jersey</td>
<td>150GSM Polyester/Naia Renew™ Knit Fabric</td>
<td></td>
</tr>
<tr>
<td><strong>Product Description</strong></td>
<td>80% targeted recycled cotton content w/ limited color range and high-quality hand feel</td>
<td>100% recycled content w/ custom color flexibility</td>
<td>100% Post-Consumer materials with potential for overdyed heather effect</td>
<td>100% Post-Consumer polyester filament or staple fiber with overdyed heather effect</td>
<td>Custom dyeable, fine gauge knit with high content post-consumer input</td>
</tr>
<tr>
<td><strong>Trial Goals</strong></td>
<td>• Test Semi-Chemical Cellulosic technology • Test yarns with shorter staple fiber lengths • Maximize post-consumer content</td>
<td>• Demonstrate supply relationships between recycling technologies • Test demo scale Chemically recycled PET as feedstock for commercial scale Mechanical PET process</td>
<td>• Test highest threshold for post-consumer content using polyester as a stabilizing fiber • Work with color palette restrictions imposed by the technology</td>
<td>• Test demo scale Chemically recycled PET as feedstock for commercial scale Mechanical PET process • Work with color palette restrictions imposed by the technology • Design for Mono-Material recycling end of life</td>
<td>• Test Eastman's Naia Renew™/Polyester blend in staple or filament form • Prioritize handfeel and lightweight potential • Target yarn sizes: 20/1-40/1</td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td>Limited Color Palette</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Sorting Complexity</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Price Challenges</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>High MOQ’s</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Trial Product Proposals

#### Fleece, Denim, Home

<table>
<thead>
<tr>
<th>Trial</th>
<th>Trial 6</th>
<th>Trial 7</th>
<th>Trial 8</th>
<th>Trial 9</th>
<th>Trial 10</th>
<th>Trial 11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Type</strong></td>
<td>Poly Fleece Hoodie</td>
<td>Sweatshirt Hoodie</td>
<td>Black Denim Jean</td>
<td>Soft Denim Jean</td>
<td>Standard Denim Jean</td>
<td>Bath Towel</td>
</tr>
<tr>
<td><strong>Inputs</strong></td>
<td>100% Post-Consumer</td>
<td>45% Post-Consumer, 22% Post-Industrial, +23% Virgin</td>
<td>40% Post-Consumer, 38% Post-Industrial, +24% Virgin</td>
<td>20% Post-Consumer, 13% Post-Industrial, +67% Virgin</td>
<td>5% Post-Consumer, 35% Post-Industrial, +60% Virgin</td>
<td>80% Post-Consumer, +20% Virgin</td>
</tr>
<tr>
<td><strong>Recycling Processes</strong></td>
<td>Chemical PET • Mechanical PET (+ Polyester*)</td>
<td>Mechanical Cotton (White) • Chemical PET • Mechanical PET (Bottles)</td>
<td>Mechanical Cotton • Chemical PET</td>
<td>Chemical Cellulosic • Mechanical Cotton</td>
<td>Mechanical Cotton • Mechanical PET</td>
<td></td>
</tr>
<tr>
<td><strong>Material Output Type</strong></td>
<td>Fiber</td>
<td>Yarn</td>
<td>Fabric</td>
<td>Product Description</td>
<td>Material Type</td>
<td></td>
</tr>
<tr>
<td><strong>Fiber</strong></td>
<td>100% Recycled Polyester Fiber</td>
<td>Blended (50% Cotton/50% Virgin)/(35% Polyester/PET) Staple Fiber</td>
<td>60/40 Cotton/Poly Fiber Blend</td>
<td>Black Cotton/Polyester Denim Jean-style fabric can be added with overdyed options.</td>
<td>150D/78F/100% Poly Yarn</td>
<td></td>
</tr>
<tr>
<td><strong>Yarn</strong></td>
<td>10/1 Yarn</td>
<td>10/1 Cotton, 20% Virgin Cotton, 36% Poly, 4% Sorona® Yarn</td>
<td>12/1 46% Cotton/50% Refibra/4% Sorona® Yarn</td>
<td>Soft hand, over-dyeable denim jean.</td>
<td>12/1 46% Cotton/50% Refibra/4% Sorona® Yarn</td>
<td></td>
</tr>
<tr>
<td><strong>Fabric</strong></td>
<td>150GSM Polyester Fleece Fabric</td>
<td>360GSM Denim Fabric</td>
<td>360GSM Denim Fabric</td>
<td>100% Cotton Heavy Duty Denim. Can be over-dyed.</td>
<td>280GSM 65/35 Cotton/Poly Fleece Fabric</td>
<td></td>
</tr>
<tr>
<td><strong>Product Description</strong></td>
<td>100% Recycled Polyester Fleece Pile can be custom dyed.</td>
<td>Cotton/Polyester Sweatshirt with overdyed option.</td>
<td>Black Cotton/Polyester Denim Jean-style fabric can be added with overdyed options.</td>
<td>Soft hand, over-dyeable denim jean.</td>
<td>100% Recycled Polyester Fleece Pile can be custom dyed.</td>
<td></td>
</tr>
</tbody>
</table>

#### Trial Goals

- **Trial 6**
  - Test demo scale of chemically recycled PET as feedstock for commercial scale Mechanical PET process.
  - Work with color palette restrictions imposed by the technology.
  - Trial can be designed to allow for custom dyeing, or push post-consumer polyester textile inputs and test for resulting color limitations.

- **Trial 7**
  - Demonstrate supply relationships between recycling technologies.
  - Test demo scale chemically recycled PET as feedstock for commercial scale Mechanical PET process.
  - Test reduction of virgin inputs on a heavier yarn weight and fabric construction.
  - Work with color palette restrictions imposed by the technology.

- **Trial 8**
  - Test highest threshold for post-consumer content using polyester as a stabilizing fiber.
  - Work with color palette restrictions imposed by the technology, specifically potential of pre-color black poly fibers.
  - Offer brand R&D collaboration on a shared warp.

- **Trial 9**
  - Test high percentage of Refibra™ content for performance and hand feel.
  - Pilot Lenzing’s Refibra production in Mobile, AL.
  - Trial ratios of PC to PI cotton content in the P-Cotton.

- **Trial 10**
  - Test reduction of virgin inputs on a heavier yarn weight and fabric construction.
  - Subject finished goods to exhaustive wear and wash testing.
  - Provide test data to support long-life durability story.

- **Trial 11**
  - Dedicate trial for Home and Hospitality, Uniform, and Laundry industries.
  - Create a demo range of yarn qualities, and turn a selected spec into a commercial product for the market.
  - Identify leverage points for collection and sorting unique to these industries to support consistent quality feedstocks.

#### Considerations

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Trial 6</th>
<th>Trial 7</th>
<th>Trial 8</th>
<th>Trial 9</th>
<th>Trial 10</th>
<th>Trial 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited Color Palette</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>Sorting Complexity</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Price Challenges</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>High MOQ’s</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>
Trial 3: 60% Cotton/40% Polyester Dark Heather Overdye T-Shirt

100% Post-consumer fiber content

**TIMELINE FOR TRIAL STAGES**

- **Start September 2021**
  - Collecting
- **Through October 2021**
  - Sorting & Preprocessing
- **November 2021 - February 2022**
  - Textile-to-textile recycling
- **March 2022 - August 2022**
  - Yarn Spinning & Fabric Production
- **September 2022 - October 2022**
  - CMT
- **August 2022 - November 2022**
  - Attach ID Hardware

**TRIAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Volume:</th>
<th>100% Post-Consumer Polyester</th>
<th>100% Post-Consumer Cotton</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Fiber Sort Specification:</th>
<th>rPoly feedstocks, &gt;80% Polyester</th>
<th>rCotton feedstocks, &gt;95% Cotton Knit Construction</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Color Sort Specification:</th>
<th>Light Mixed</th>
<th>Whites</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preprocessing:</th>
<th>Full Garments Sorted and Baled</th>
<th>Mutilated Garments Sorted and Baled</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MOQ Feedstock:</th>
<th>5000lbs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Feedstock Blend %:</th>
<th>50% PC polyester/50% Bottle flake</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Output:</th>
<th>rPoly/rPET Staple Fiber</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MOQ*:</th>
<th>X lbs. Poly/Cotton Staple Fiber</th>
</tr>
</thead>
</table>

**PRODUCT SPECIFICATION:**

- **Yarn Output:** 20/1 Blended Polyester/Cotton Yarn
- **Fabric Output:** 140GSM Jersey
- **Color Options:** Dark Heather Overdye
- **Target Recycled Content:** 100% Post-Consumer

*Trying to limit excess material along the chain

1. **Trial partner brands receive procurement options at points 1, 2, 3, and 4**

**Product Output:** Spec to be supplied by Brand x CMT Partner

- **MOQ:** 5000 units / 1500 yds per color

**ID Hardware Type:** TBD

*Optional

**Start September 2021**

**Collecting**

**Through October 2021**

**Sorting & Preprocessing**

**November 2021 - February 2022**

**Textile-to-textile recycling**

**March 2022 - August 2022**

**Yarn Spinning & Fabric Production**

**September 2022 - October 2022**

**CMT**

**August 2022 - November 2022**

**Attach ID Hardware**
Envisioning Circular Systems

**NEEDS**
- Downstream Demand for Feedstocks
- Standardized Feedstock Fractions
- Multiple Paths for Sorted Materials
- Clearly Defined Costs
- Logistics

**TRIAL DEMONSTRATES**
- Feedstock Availability and Quality
- Sorting Capabilities
- Paths for Material Flows
- Process Costs
- Transportation Routes

**FUTURE**
- Circular Commercial Products
- Consistent Quality Bales
- Optimized Material Flows
- Systems-based Costs
- Maximized Coverage and Efficiency
ACKNOWLEDGMENTS

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Shelly Gottschamer, Managing Director, Treadle Tree
Liz Savage
Ria Stern
ACP Spent Textile Working Group
ACP Brand and Retail Working Group

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Jason Brown, Sarah Coulter, Karla Magruder, and Janel Twogood

PHOTO CREDITS

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