

U.S. DEPARTMENT OF ENERGY

## Re-X Before Recycling Prize

**Phase 2 Informational Webinar**  
**May 29, 2024**

This webinar will be recorded and posted on HeroX

# Informational Webinar Presenters



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# Housekeeping

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Under “Select a Speaker,” click “Same as System.”
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- Technical difficulties: Chat the webinar host for additional support.
- A video/audio recording of this webinar and the slide deck will be made available on HeroX shortly after the event.

# Topics

- 1 Prize Background
- 2 Prize Overview
- 3 *Phase 2: Prepare!* – What You Need to Know
- 4 Phase 3– What to Expect
- 5 Get Started Today!
- 6 Questions

# Who Is Behind the Prize?

- The Re-X Before Recycling Prize was established by:
  - The [U.S. Department of Energy's \(DOE's\) Office of Energy Efficiency and Renewable Energy \(EERE\)](#)
  - EERE's [Advanced Materials and Manufacturing Technologies Office \(AMMTO\)](#).
- The prize is a part of the [American-Made Challenges](#) family of prizes.
- The prize is administered by the [National Renewable Energy Laboratory \(NREL\)](#).



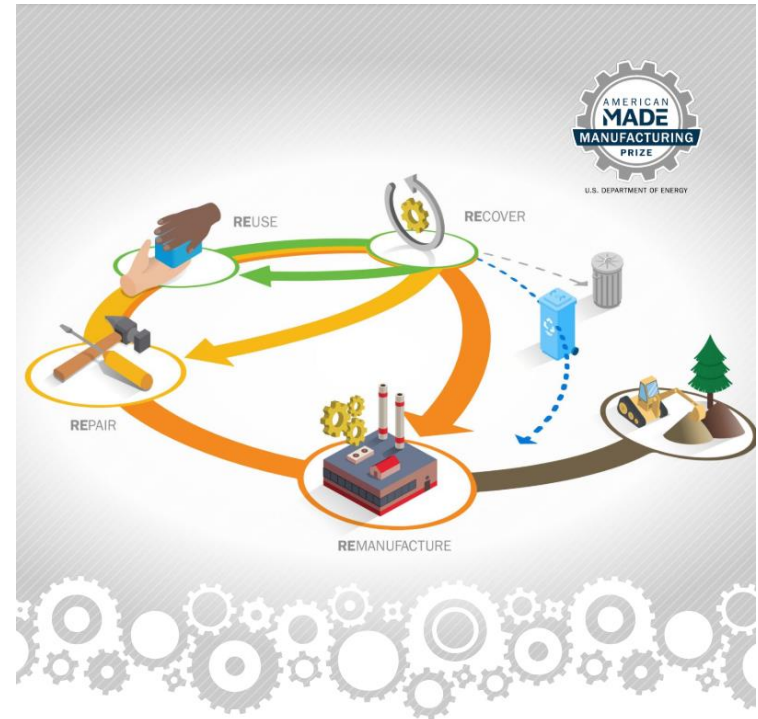
# Read the Rules

Official Rules of the Re-X Before Recycling Prize  
are available online:

<https://www.americanmadechallenges.org/challenges/re-x-before-recycling/docs/Re-X-Before-Recycling-Prize-Rules.pdf>

Or

[Re-X Before Recycling HeroX Page](#) → Resources



Re-X Before Recycling Prize  
Official Rules

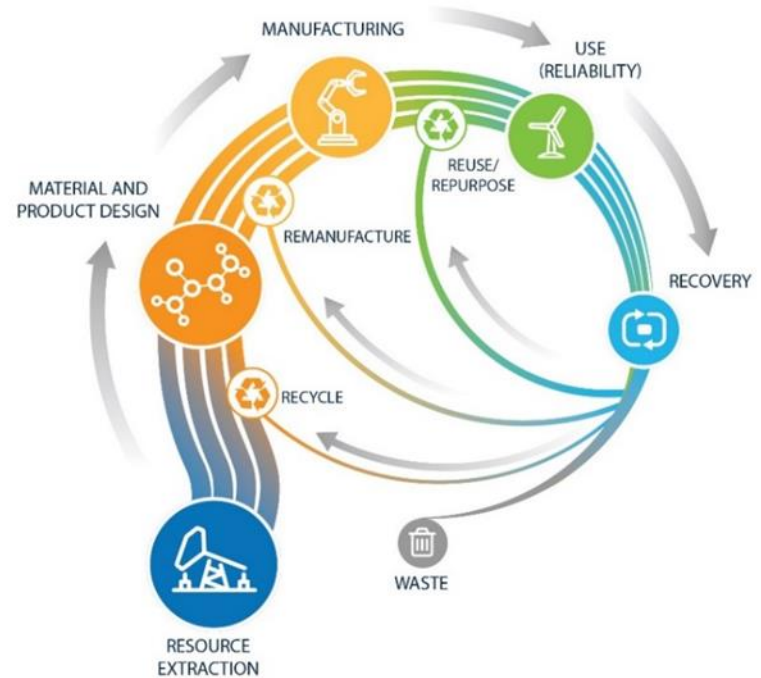
Modified February 2024

# Re-X Before Recycling Prize Background



# Prize Background

- The U.S. manufacturing sector predominantly follows a linear model of production in which raw materials are mined, transformed into manufactured goods, used, and discarded.
- To fully decarbonize the U.S. economy, the country must create new, circular supply chains to keep materials in use beyond a single life cycle.
- While recycling plays an important role in this circular economy, approaches that extend the lifetimes of goods could save more energy and emissions over time than recycling alone.



Upasani et al., 2022. *Mapping the Opportunity Space to Model the Circular Economy Using Tools Funded by the DOE Office of Energy Efficiency and Renewable Energy*. Golden, Colorado: National Renewable Energy Laboratory. <https://doi.org/10.2172/1863766>.



# Prize Goals

- The prize is designed to stimulate innovation and private investment in circular economy approaches that can transform waste streams into diverse, integrated circular supply networks and contribute to a robust, environmentally sustainable economy.
- The prize is seeking innovations to unlock new or expanded supply chains that can reintegrate end-of-use products into the economy via reuse, repair, refurbishment, remanufacturing, and/or repurposing (“Re-X”) before recycling.

# Re-X Before Recycling Prize Overview



# Prize Overview

- The Re-X Before Recycling Prize is a \$5.6 million prize, with a total of \$4.5 million in cash prizes and \$1.1 million in technical assistance from national laboratories.
- The prize is designed to spur innovations to extend the lifetimes of products or parts to overcome difficulties with transitioning the United States from a linear to more circular economy.



# 3 Phases: *Identify!*, *Prepare!*, and *Develop!*



## *Phase 1: Identify!*

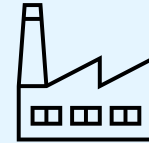
Competitors will identify a new or expanded Re-X supply chain opportunity, including potential community benefits, and create a plan to develop the innovation needed to realize the opportunity.

**CLOSED**



## *Phase 2: Prepare!*

Competitors will deepen their insight into the opportunity, refine their plan to develop their innovation, and activate a network of partners and mentors to help advance their proposed innovation.



## *Phase 3: Develop!*

Competitors will progress to executing their plan, further their network development and community engagement, and prepare a plan for how they will continue to advance the innovation post-prize.

**Phase 1 Winners is anticipated to announce in June 2024**

# \$5.6 Million in Prizes

Prize Phase	Duration	Winners	Awards
<i>Phase 1: Identify!</i>	3.5 months	Up to 20	\$50,000 in cash and up to \$5,000 of analysis consulting to use in <i>Phase 2: Prepare!</i>
<i>Phase 2: Prepare!</i>	6 months	Up to 10	\$150,000 in cash and up to \$100,000 in analysis technical assistance to use in <i>Phase 3: Develop!</i>
<i>Phase 3: Develop!</i>	12 months	Up to 4	\$500,000 in cash

Competitors have the opportunity to each win up to \$700,000 in cash and \$105,000 in national laboratory analysis consultation and technical assistance.

# Analysis Technical Assistance

In addition to cash prizes, **winners will be able to access support from national laboratories for analysis** such as life cycle analysis (LCA) or techno-economic analysis (TEA) to help accelerate their innovation development and maximize environmental and economic benefits.

- LCA is a methodology for assessing the environmental impacts associated with the entire life cycle of a product or process.
- TEA is a method for evaluating the economic performance of a technology, allowing analysis to objectively weigh benefits against costs.

Note: Lab technical assistance can only be used for analysis and not for other activities such as material characterization or engineering design

# Topic Areas

## Established Waste Streams

- Innovations focusing on how to utilize products that are currently available in U.S. waste streams.

## Emerging Waste Streams

- Innovations focusing on how to utilize products that will be available in the future waste streams.

# Areas of Interest

The prize is interested in innovations that **enable new or expanded** economically viable **supply chains** that **extend the lifespan of products and parts**.

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<b>Reuse</b>	Reuse, by another consumer, of a discarded product still in good condition, fulfilling its original function.
<b>Repair</b>	Repair and maintenance of defective product to be used with its original function.
<b>Refurbish</b>	Restore an old product and bring it up to date.
<b>Remanufacture</b>	Use parts of a discarded product in a new product with the same function.
<b>Repurpose</b>	Use a discarded product or its parts in a new product with a different function.

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# Areas of Interest: Examples

Areas of Interest	Examples
Extend the lifespan of clean energy technologies	<ul style="list-style-type: none"><li>• Refurbishing and installing solar panels or wind turbines in a new location</li></ul>
Extend the lifespan of manufactured products and parts	<ul style="list-style-type: none"><li>• Recovery of components from end-of-use devices, requalification, and reuse in new devices</li><li>• Reuse of foodservice items such as cups</li><li>• Recovery and repurposing of building materials</li></ul>
Replicate and improve	<ul style="list-style-type: none"><li>• Establishment of a community reuse program in a new location modeled after a successful effort elsewhere</li></ul>
Deploy new technologies	<ul style="list-style-type: none"><li>• Advanced sorting to reduce costs and increase the number of Re-X products produced</li></ul>
Improve access to wastes and markets via improved data and analysis, logistics, and collection	<ul style="list-style-type: none"><li>• Effective outreach to consumers and entities within the supply chain, potentially drawing from social science approaches.</li></ul>

# Areas **NOT** of Interest: Examples

- Approaches or innovations **relying on recycling** to recover materials from end-of-life products and convert the materials into feedstocks to produce new products. **Approaches that involve grinding, shredding, or remelting products and materials will be considered recycling.**
- Approaches or innovations that focus on **redesign without unlocking end-of-use supply chains** based on reusing, repairing, refurbishing, remanufacturing, and repurposing.
- Innovations targeting food, yard, and organic agricultural waste.
- Approaches that rely on conversion of waste to fuel or energy.

See further examples of Areas of Interest (Section 1.4.3) and Areas Not of Interest (Section 1.4.4.) in the [Official Rules](#).

# Who Can Participate?

- *Phase 2: Prepare!* is open to:
  - Private entities (for-profits and nonprofits)
  - Nonfederal government entities (states, counties, tribes, municipalities, and academic institutions.)
  - Individuals or groups of individuals **are not** eligible to compete.
- Full eligibility can be found in the [Official Rules](#).



# ***Phase 2: Prepare!* – What You Need to Know**



# Phase 2: Prepare! Overview

- *Phase 2: Prepare!* will offer a total of \$1.5 million in cash and up to \$1 million in technical assistance for analysis
- Any competitor, including winners and nonwinners from *Phase 1: Identify!* as well as new competitors, can compete in *Phase 2: Prepare!*
- *Phase 2: Prepare!* will focus on three key areas:
  - **Deepen Insight:** Leverage national laboratory expert analysis consultation and other resources to deepen insight into environmental, economic, and community benefits of the innovation and Re-X supply chain.
  - **Plan Refinement:** Refine your plan for how to advance innovation toward implementation in a supply chain based on progress made and insights gained.
  - **Network Activation:** Cultivate a network of mentors and partners to help advance the proposed innovation and understand the potential impacts on communities.

## Phase 2: Prepare! Prizes

- Up to 10 winners
- \$1.5 million in total cash prizes
- \$1,000,000 in analysis technical assistance
- Each winner receives a cash prize of \$150,000 and up to \$100,000 in analysis technical assistance from a national lab.

# Phase 2: Prepare! Timeline

Launch:  
April 11, 2024



Submission  
Deadline:  
Fall 2024  
(anticipated)



Winners  
Announcement:  
Winter 2024  
(anticipated)

Phase 1 winners will receive up to \$5,000 of analysis consultation from a national laboratory to use during Phase 2.

# What to Submit for *Phase 2: Prepare!*

1

**Cover Page**

Not public.  
Not scored.

2

**90-Second Online Video**

**Public.**  
Not scored.

3

**Submission Summary Slide**

**Public.**  
Not scored.

4

**Analysis Support Work Slide**

Not public.  
Not scored.

5

**Narrative**

Not public.  
**Scored.**

# Cover Page

List basic information about your submission:

- Project name
- Two sentence description of your innovation
- Link to your 90-second online video
- Organization Name
- Team members (names, contacts, and links to their LinkedIn profiles)
- Your city, state, and nine-digit zip code
- The topic area you are addressing
- Website (if applicable).

Required	✓
Scored	✗
Public	✗

### Section 3: Cover Page

**Project Name \***

 0/3000

**Provide a two sentence description of your Innovation \***




0/500

**Link to your 90-second online video \***

To be completed via HeroX



# 90-Second Online Video

Required	
Scored	
Public	

The video should answer the question: **What is your innovation?**




- Suggested content you provide includes:
  - The real-world opportunity for a Re-X supply chain that your innovation will enable
  - Your solution and why it is transformative
  - Who you are and why you will be successful.
- Post your *publicly accessible*, 90-second video online (e.g., YouTube).
- *Phase 1: Identify!* participants are encouraged to update their previous video.

## TIP





Focus on the **required content**, not the production quality

# Submission Summary Slide

Required	
Scored	
Public	

- The summary slide should be a PowerPoint slide submitted as a PDF. It will be made public.
- Make your own public-facing, one-slide submission summary that contains technically specific details but can be understood by most people.
- There is no template.

# Analysis Support Work Slide

Required	
Scored	
Public	


The analysis support work slide should be a PowerPoint slide submitted as a PDF.


It should:

- Briefly describe any analysis, such as LCA or TEA, that has been done. Include any insights gained or progress made during *Phase 2: Prepare!* (either via national laboratory consultation or separately).
- Describe the LCA/TEA, or other analysis you would like a national laboratory to perform during Phase 3: Develop! to help you deepen your insights and improve your innovation and/or increase the impact in a viable Re-X supply chain.
- In order of preference, list your top three choices for which lab (NREL, ORNL, Argonne, LBNL, or PNNL) you'd like to provide analysis support and the reason for the preference.

The purpose of the Analysis Support Work Slide is to facilitate matching winning teams with appropriate national laboratory support during Phase 3.

# Narrative

Required 

Scored 

Public 

Answer each of the five questions:

## 1. Opportunity & Innovation

- How does your innovation advance a Re-X supply chain and what benefits will it bring?

## 2. Team

- Does your team have the knowledge and experience to be successful? How have you grown?

## 3. Progress

- What progress have you made to advance your innovation?

## 4. Plan

- What is your plan to achieve your goals?

## 5. Community Benefits Plan

- What community benefits would implementing your innovation in a Re-X supply chain bring? What is your plan to maximize them?

### TIP

- ✓ Include SMART goals, metrics, and risks & mitigations
- ✓ Be specific and concise
- ✓ Pay attention to the word count

**5,000 word maximum**  
with up to 5 supporting  
images, figures, or graphs.

Template available: [www.herox.com/ReXBeforeRecycling/resource/1566](http://www.herox.com/ReXBeforeRecycling/resource/1566)

# Community Benefits Plan

- The competitor's narrative should consider the following community benefits aspects and must address **at least one** of the following topic areas in their Community Benefits Plan:
  - **Diversity, Equity, Inclusion, and Accessibility**
  - **Environmental Justice**
  - **Workforce Implications.**
- See Appendix B in the [Official Rules](#) for further discussion of topic areas.
- See the [Community Benefits Plan Information](#) document on HeroX for resources to help develop your Community Benefits Plan.

# Metrics for Assessing Impacts

- A successful Re-X Before Recycling Prize competitor should demonstrate pathways by which their innovation will reduce waste, promote greater resource productivity, show cost competitiveness, advance resiliency to resource/scarcity issues in the future, and reduce environmental impacts of production and consumption.
- **Competitors must identify and justify appropriate target metrics** for their innovation and Re-X supply chain, and clearly indicate how the proposed innovation will satisfy the metrics.
- See Appendix C in the [Official Rules](#) for example metrics.



# SMART Goals

- When developing SMART goals, each of the attributes (specific, measurable, attainable, relevant, and time-based) should relate to the same goal

## Committed Partnership or Support Letter

- For Phase 2, submission of a committed partnership or support letter is optional, but it is **required** to win Phase 3.

# How to Read the Scoring Rubric

Topic and Percent of Score	Suggested Content to Include	What the Score Will Be Based On
<p><b>Question 1: <i>Opportunity &amp; Innovation</i></b></p> <p>How does your innovation advance a Re-X supply chain and what benefits will it bring?</p> <p>This section is 35% weight of your total score</p>	<ul style="list-style-type: none"> <li>Describe your innovation, its value proposition, how it will enable a new or expanded viable Re-X supply chain, the benefits of the supply chain, anticipated challenges, and how the challenges can be overcome. Explain how your concept for the innovation has evolved.</li> <li>Show how you know this is a significant opportunity using evidence-based validation. Describe how the activities during the prize have informed your understanding of significance of realizing this opportunity. Incorporate relevant insights from national lab analysis consulting, if applicable.</li> </ul>	<ul style="list-style-type: none"> <li>The competitor clearly explains the innovation, why it would represent significant progress toward a viable Re-X supply chain, and how their concept has evolved during the prize.</li> <li>The competitor demonstrates understanding of the key challenges to be overcome and provides compelling reasoning and evidence that the innovation has potential to overcome the challenges.</li> <li>The competitor has substantially refined their understanding of the significance of the Re-X opportunity using real-world evidence to validate key assumptions.</li> </ul>
<p>Question to address.</p> <p>Weight % of this section on your total score.</p>	<p>On the left-hand side is suggested content you could provide to address the judging criteria. </p>	<p> On the right-hand side are the judging criteria that reviewers will use to score your submission.</p>



# Phase 2: Prepare! Submission Scoring Overview

- Scoring
  - A panel of expert reviewers will read, score, and comment on each submission.
  - Expert reviewers will evaluate your submission by assigning a single score for each scored submission section, based on their overall agreement or disagreement with a series of statements.

0	1	2	3	4	5
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

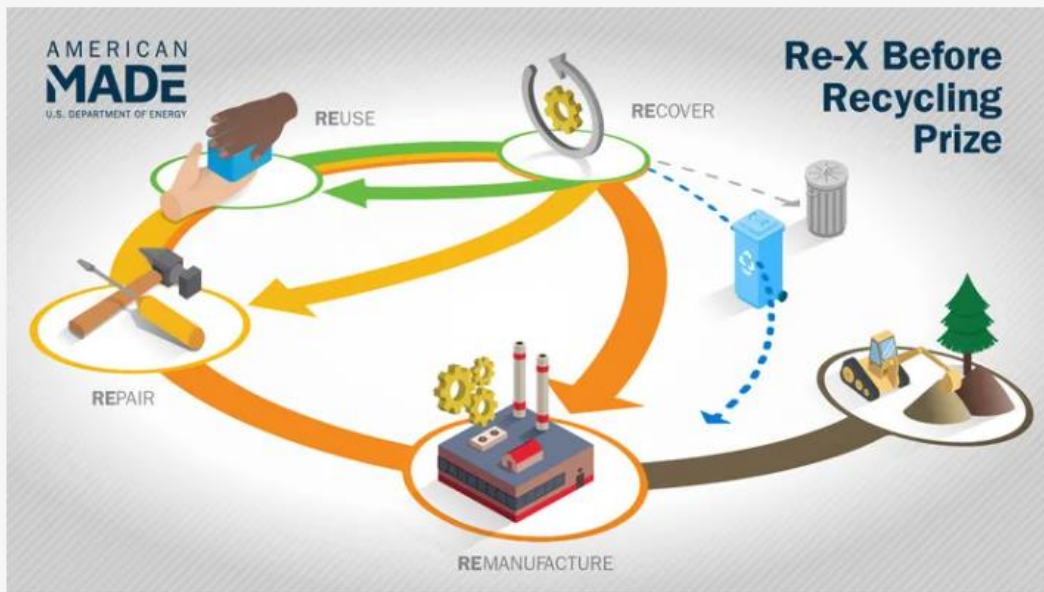
# Phase 2: Prepare! Submission Scoring Overview

- The final score from an individual reviewer for a submission package will be calculated based on the weighting shown.

Question	Weight (%)
Narrative Question 1 – Opportunity	35
Narrative Question 2 – Innovation	15
Narrative Question 3 – Team and accomplishments	15
Narrative Question 4 – Plan	15
Narrative Question 5 – Community Benefits Plan	10
Reviewer Recommendation	10

- All reviewer scores will then be averaged for a final reviewer score for the submission package.
- DOE is the final judge and will make selections based on reviewer scores and comments, and program policy factors.
- Interviews:** The Prize Administrator may decide to hold a short virtual or in-person interview with a subset of the teams prior to the announcement of winners to clarify any questions the Prize Administrator may have. Attending interviews is not required, and interviews are not an indication of winning.

A full list of Program Policy Factors can be found on page 39 of the [Official Rules](#)



## Re-X Before Recycling Prize

Seeking innovations to unlock new or expanded supply chains that can reintegrate end-of-use products into the economy before recycling

Energy, Environment & Resources

Government

Stage:  
Enter

Prize:  
\$5,600,000

BEGIN ENTRY

JOIN A TEAM

[www.herox.com/ReXBeforeRecycling](http://www.herox.com/ReXBeforeRecycling)

# Phase 3 – What to Expect



# Phase 3: Develop!

- Overview:
  - *Phase 3: Develop!* will offer a total of \$2 million in cash prizes.
  - Only winners of *Phase 2: Prepare!* can compete in *Phase 3: Develop!*
- Goals:
  - **Plan Execution:** Demonstrate that the innovation is advancing by making progress executing the plan refined during previous prize phases.
  - **Network Development and Community Engagement:** Work to ensure the supply chain innovation can be implemented by cementing ecosystem partnerships with focus on community engagement.
  - **Post-Contest Planning:** Develop a long-term plan for implementing the innovation in a viable Re-X supply chain that provides a compelling case that there is or will soon be sufficient resources to keep the effort going beyond this prize contest. Incorporate insights gained from analysis performed at a national lab to improve your innovation and maximize benefits from realizing the supply chain.

## Phase 3: Develop! Prizes

- Up to four winners
- \$2 million in total cash prizes
- Each winner receives a cash prize of \$500,000

# Phase 3: Develop! Timeline

Launch:  
January 2025  
(anticipated)



Submission  
Deadline:  
December 2025  
(anticipated)



Winners  
Announcement:  
January 2026  
(anticipated)

Phase 2 winners will receive \$100,000 in technical assistance for analysis consulting from a national laboratory to use during Phase 3.

# What to Submit for *Phase 3: Develop!*

1

Cover Page

Not public.  
Not scored.

2

90-Second Online Video

**Public.**  
Not scored.

3

Submission Summary Slide

**Public.**  
Not scored.

4

Committed  
Partnership or  
Support Letter

Not public.  
**Required.**

5

Environmental  
Questionnaire 1

Not public.  
Not scored.

6

Narrative

Not public.  
**Scored.**

# Get Started Today!





## Resources – Teaming, CBP

Participate in resources and upcoming events to connect with other interested competitors:

- Check out [HeroX](#) → Teaming tab for more information.

Additional information to support development of Community Benefits Plan is available under

- Check out [HeroX](#) → Resources → [Community Benefits Plan Information Document](#)



# Get Started Today!

Get signed up:

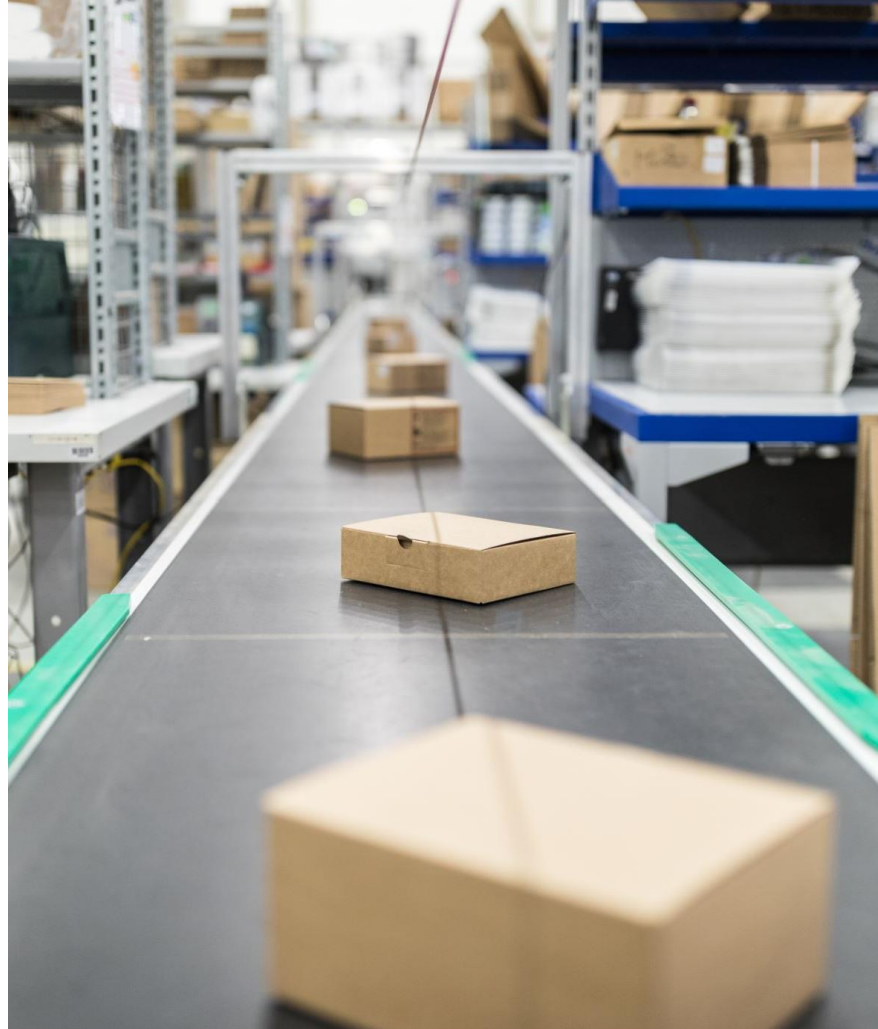
- Follow the [challenge on HeroX](#).

Submit your *Phase 2: Prepare!* Submission:

- Read the [Official Rules](#) – keep eye out for any revisions
- Submit by

Have additional questions?

- Post your questions on the [HeroX forum](#)
- Contact us at [before.recycling@nrel.gov](mailto:before.recycling@nrel.gov)

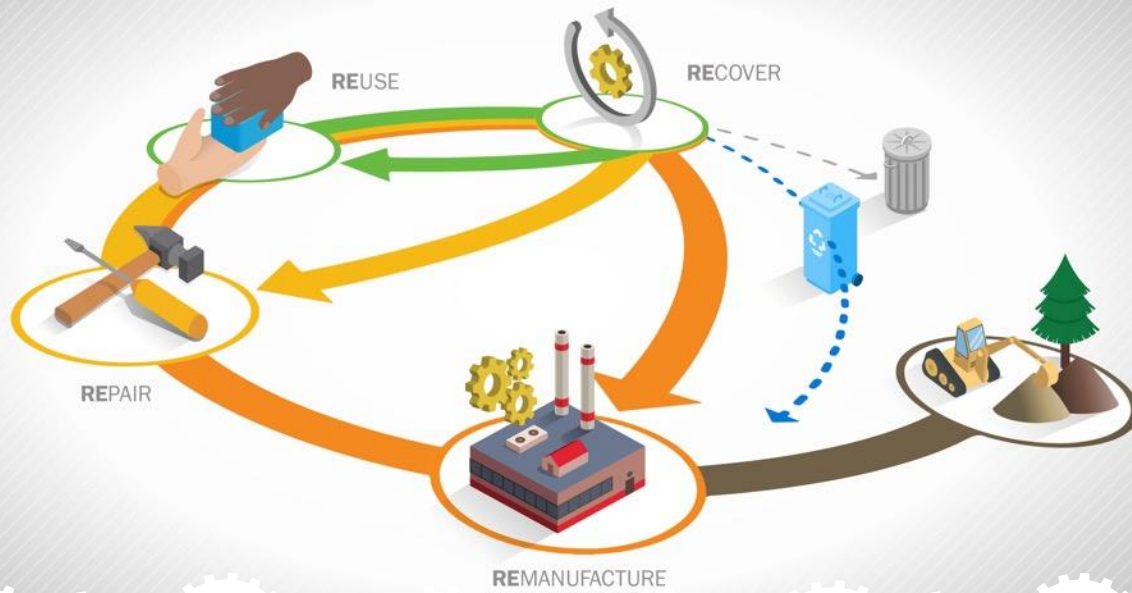


# Questions?

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U.S. DEPARTMENT OF ENERGY

## Re-X Before Recycling Prize

Thank You!