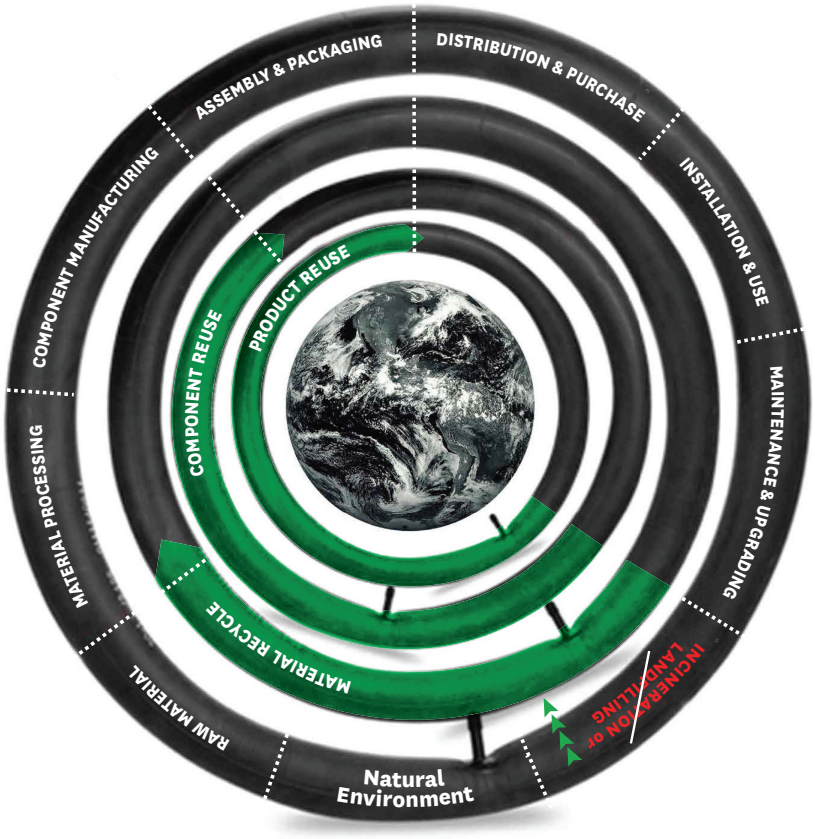


Infographic:
Expanded Inner Tube Lifecycle for a Circular Transportation Rubber Economy

## STANDARDS, PRINCIPLES, AND CONCEPTS:

### California's Department of Resources Recycling and Recovery (CalRecycle) Education and the Environment Initiative - Environmental Principles and Concepts

**Principle 3**

**Natural Systems Change in Ways that People Benefit From and Can Influence**

Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

**Concept C.** Human practices can alter the cycles and processes that operate within natural systems.

**Principle 4**

**There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing Between Systems.**

The exchange of matter between natural systems and human societies affects the long-term functioning of both.

**Concept A.** The effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.

**Concept B.** The byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral, or detrimental in their effect.

**Concept C.** The capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope, scale, and duration of the activity and the nature of its byproducts.

**Principle 5**

**Decisions Affecting Resources and Natural Systems are Complex and Involve Many Factors.**

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

**Concept A.** There is a spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions.

**Concept B.** The process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.



Rubber Impact Project

## Common Core State Standards

*College and Career Readiness Anchor Standards for Reading*

- **Key Ideas and Details 1:** Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- **Key Ideas and Details 2:** Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
- **Integration of Knowledge and Ideas 7:** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- Range of Reading and Level of Text Complexity 10: Read and comprehend complex literary and informational texts independently and proficiently.

*College and Career Readiness Anchor Standards for Speaking and Listening*

- **Comprehension and Collaboration 1:** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- **Comprehension and Collaboration 2:** Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- **Presentation of Knowledge 4:** Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

*College and Career Readiness Anchor Standards for Language*

- **Conventions of Standard English 1:** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- **Vocabulary Acquisition and Use 6:** Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

## Next Generation Science Standards (NGSS)

**Physical Science**

**2-PS1, 5-PS1: Matter and Its Interactions**
**PS1.A: Structure and Properties of Matter**

**Earth and Space Sciences**

**K-ESS3, 3-ESS3, 4-ESS3, 5-ESS3: Earth and Human Activity**
**ESS3.C: Human Impacts on Earth Systems**

**K-2:** Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.
**3-5:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

**Engineering Design**

**K–2 ETS1 Engineering Design**
Students who demonstrate understanding can:

- **K–2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K–2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- K–**2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

**3-5 ETS1 Engineering Design**

- **3-5 ETS1-1:** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- **3-5 ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- **3-5 ETS1-3:** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

## California Arts Standards–VISUAL ARTS

**CREATING–Anchor Standard 1:** Generate and conceptualize artistic ideas and work.

**1.1 Enduring Understanding:** Creativity and innovative thinking are essential life skills that can be developed.
**Essential Questions:** What conditions, attitudes, and behaviors support creativity and innovative thinking? What factors prevent or encourage people to take creative risks? How does collaboration expand the creative process?
**Process Component:** Imagine, Plan, Make

- **K.VA:Cr1.1:** Engage in exploration and imaginative play with various arts materials.
- **1.VA:Cr1.1:** Engage collaboratively in exploration and imaginative play with various arts materials.
- **2.VA:Cr1.1:** Brainstorm to generate multiple approaches to an art or design problem.
- **3.VA:Cr1.1:** Elaborate on an imaginative idea.
- **4.VA:Cr1.1:** Brainstorm individual and collaborative approaches to a creative art or design problem.
- **5.VA:Cr1.1:** Combine ideas to generate an innovative idea for art-making.

**1.2 Enduring Understanding:** Artists and designers shape artistic investigations, following or breaking with traditions in pursuit of creative artmaking goals.
**Essential Questions:** How does knowing the contexts, histories, and traditions of art forms help us create works of art and design? Why do artists follow or break from established traditions? How do artists determine what resources and criteria are needed to formulate artistic investigations?
**Process Component: Imagine, Plan, Make**

- **K.VA:Cr1.2:** Engage collaboratively in creative artmaking in response to an artistic problem.
- **1.VA:Cr1.2:** Use observation and investigation in preparation for making a work of art.
- **2.VA:Cr1.2:** Make art or design with various art materials and tools to explore personal interests, questions, and curiosity.
- **3.VA:Cr1.2:** Apply knowledge of available resources, tools, and technologies to investigate personal ideas through the art-making process.
- **4.VA:Cr1.2:** Collaboratively set goals and create artwork that is meaningful and has purpose to the makers.
- **5.VA:Cr1.2:** Identify and demonstrate diverse methods of artistic investigation to choose an approach for beginning a work of art.

**CREATING–Anchor Standard 2:** Organize and develop artistic ideas and work.

**2.1 Enduring Understanding:** Artists and designers experiment with forms, structures, materials, concepts, media, and art-making approaches.
**Essential Questions:** How do artists work? How do artists and designers determine whether a particular direction in their work is effective? How do artists and designers learn from trial and error?
**Process Component:** Investigate

- **K.VA:Cr2.1:** Through experimentation, build skills in various media and approaches to artmaking.
- **1.VA:Cr2.1:** Explore uses of materials and tools to create works of art or design.
- **2.VA:Cr2.1:** Experiment with various materials and tools to explore personal interests in a work of art or design.
- **3.VA:Cr2.1:** Create personally satisfying artwork using a variety of artistic processes and materials.
- **4.VA:Cr2.1:** Explore and invent art-making techniques and approaches.
- **5.VA:Cr2.1:** Experiment and develop skills in multiple art-making techniques and approaches through practice.

**2.2 Enduring Understanding:** Artists and designers balance experimentation and safety, freedom and responsibility while developing and creating artworks.
**Essential Questions:** How do artists and designers care for and maintain materials, tools, and equipment? Why is it important for safety and health to understand and follow correct procedures in handling materials, tools, and equipment? What responsibilities come with the freedom to create?
**Process Component:** Investigate

- **K.VA:Cr2.2:** Identify safe and non-toxic art materials, tools, and equipment.
- **1.VA:Cr2.2:** Demonstrate safe and proper procedures for using materials, tools, and equipment while making art.
- **2.VA:Cr2.2:** Demonstrate safe procedures for using and cleaning art tools, equipment, and studio spaces.
- **3.VA:Cr2.2:** Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment for a variety of artistic processes.
- **4.VA:Cr2.2:** When making works of art, utilize and care for materials, tools, and equipment in a manner that prevents danger to oneself and others.
- **5.VA:Cr2.2:** Demonstrate quality craftsmanship through care for and use of materials, tools, and equipment.

**2.3 Enduring Understanding:** People create and interact with objects, places, and design that define, shape, enhance, and empower their lives.
**Essential Questions:** How do objects, places, and design shape lives and communities? How do artists and designers determine goals for designing or redesigning objects, places, or systems? How do artists and designers create works of art or design that communicate effectively?
**Process Component:** Investigate

**CREATING–Anchor Standard 3:** Refine and complete artistic work.

**Enduring Understanding:** Artists and designers develop excellence through practice and constructive critique to reflect on, revise, and refine work over time.
**Essential Questions:** What role does persistence play in revising, refining, and developing work? How do artists grow and become accomplished in art forms? How does collaboratively reflecting on a work help us experience it more completely?
**Process Component:** Reflect, Refine, Revise

- **K.VA:Cr3:** Explain the process of making art while creating.
- **1.VA:Cr3:** Use art vocabulary to describe choices while creating art.
- **2.VA:Cr3:** Discuss and reflect with peers about choices made in creating artwork.
- **3.VA:Cr3:** Discuss, reflect, and add details to enhance an artwork's emerging meaning.
- **4.VA:Cr3:** Revise artwork in progress on the basis of insights gained through peer discussion.
- **5.VA:Cr3:** Use art vocabulary to describe personal choices in artmaking and in creating artist statements.

## National Council for the Social Studies (NCSS) Curriculum Standards for Social Studies

- **Theme 1:** Culture
- **Theme 2:** Time, Continuity, and Change
- **Theme 3:** People, Place, and Environments
- **Theme 5:** Individuals, Groups, and Institutions
- **Theme 7:** Production, Distributions, and Consumption
- **Theme 8:** Science, Technology, and Society
- **Theme 10:** Civic Ideals and Practices