



# WASTE REDUCTION AND RECYCLING

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## Project Toolkit



# Campus Curbside Recycling



## Generation Earth Program

Generation Earth is a Los Angeles County Public Works environmental education program presented by TreePeople. Our goal is to educate and empower youth in Los Angeles County to be an active part of the solution to environmental concerns in their community. We offer do-it-yourself environmental projects that help youth make a positive difference at school, at home and out in the world. Our programs are built to support the needs of teachers, students, schools and community youth groups.

## Generation Earth Project Guides

Generation Earth Project Toolkits are designed to assist teachers and students in the completion of an environmental project. These guides provide the instructions, tools and support materials needed for students to learn about important environmental subjects and to take steps necessary to complete projects that will positively impact the community.



## What is Waste Reduction?

There is no such thing as throwing an item “away.” It all must go somewhere. Being disposed into landfills with our massive amounts of trash are recyclable materials and other reusable resources. The U.S. EPA reported a 32.1 percent recycling rate in 2018.<sup>1</sup> That figure could be higher if instead of landfilling “trash” we could recycle and reuse these materials.

Waste reduction is more than recycling. It involves minimizing the use of packaging that are not reusable or recyclable. This results in money saved and resources conserved.

## Waste in Los Angeles

Waste is a vital issue in Los Angeles County. Each of us generates an average of five pounds of waste per day. This may not sound like much, but when multiplied over a period of a year, the amount of waste each person creates is staggering.<sup>2</sup> Waste is generally transported to one of ten solid waste landfills around Los Angeles County. It costs money to dispose of it and valuable open space is used to create landfills to store waste.

## History of Waste in California

In 1989, Assembly Bill 939 (AB 939) was passed. Hence it required a diversion rate of 50% of all solid waste through source reduction, recycling and composting activities by January 1, 2000.<sup>3</sup> In 2012, California adopted AB341 and SB1018 which required that any business or public entity that generates over four cubic yards of waste per week must implement a recycling system. Additionally, AB341 set a new goal of a state-wide diversion rate of 75% by 2020.<sup>4</sup> AB1826 was signed in 2014, requiring businesses, including local jurisdictions, to recycle their organic waste. In 2016, SB1383 established targets to achieve a 50% reduction level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025.

## Waste at School

California school districts dispose large amounts of waste. This waste represents a significant loss of natural resources and school district funds, as well as a potential threat to student/staff health and the environment. The cafeteria is one of the largest areas on campus where waste is produced. Food, trays, cups, cans and straws are just a few of the items that are wasted. Classrooms and offices use tons of paper products each year. These materials are expensive and costly. In planning a campus waste reduction program, it is important to create goals that are realistic and progressive. It is vital to establish a good working relationship among students, staff, facilities managers and waste haulers to ensure opportunities for program expansion through purchasing power, new ideas and information.

## Waste Reduction and Recycling Project Toolkit

This toolkit explores the waste on a typical school campus – from what can be found in the trash cans after each meal is served, to classrooms and school offices. This exploration will help your group reduce waste on campus by creating goals, relationships with key stakeholders and offering a variety of options to reduce waste on campus.

## The Steps!

### 1. Check This Out

Students explore the subject of waste by working in teams to learn a specific topic related to waste reduction and share what they have learned through the creation of an infographic.

### 2. Site Assessment and Waste Audit

Using a map of the site, students indicate where there are specific waste-collection elements on campus. They continue the process by conducting a Waste Audit to identify the different types of waste found.

### 3. Get More Information

The site assessment and waste audit are just part of the waste picture at a site. Students add more information by conducting an interview with key site stakeholders, including the Principal, local Recycling Coordinator, Waste Hauler Contract Manager and more.

### 4. Choose a Project

Using the site assessment, waste audits and interview information, students use a dichotomous project tree to determine which recycling project is most appropriate. They will answer specific questions that lead through a process of elimination to reveal specific choices for recycling.

### 5. Finalize Your Plan And Get Permission

If it is determined that a campus curbside recycling program is the chosen project, students answer specific questions and make decisions that build a plan to share with key stakeholders, including those that provide final permission for the project.

### 6. Make It Happen

Once permission is given, students follow the steps given to make the project happen!

### 7. Evaluation

Students complete their project by answering questions that serve to evaluate the process and offer next steps for potentially taking on additional waste reducing projects.

### 8. Resources

Some resources are provided for materials and support.

# CHECK THIS OUT

Students explore the subject of waste by working in teams to learn a specific topic related to waste reduction and share what they have learned through the creation of an infographic.

## Procedure

1. Divide students into six working groups. Groups should be as close to equal in size as possible.
2. Pass out a different topic sheet to each group.
3. Each group has 15 minutes to:
  - Learn and discuss the topic
  - Use poster paper and markers to create an infographic answering the questions listed on the topic sheet.
4. Each group shares and explains their infographic with the rest of the class.
5. As a class, discuss the need for waste reduction, at home and in the community.

## Materials

- Topic Sheets (pages 5 - 9)
- Poster paper or dry erase board – one per group
- Markers – one set per group





# Piles of Paper

## Start Here!

You're doing your homework and make a mistake in the first paragraph. So, you crumple the piece of paper and toss it in the trash. Did you think about the tree that the paper came from?

### Create an infographic that answers the following questions:

- How are paper products created?
- Why is it an issue?
- How much of this paper is wasted in Los Angeles County?
- What is something that can be done on campus to reduce paper waste?



- Trees are harvested and sent to mills to be processed into lumber. The wood waste is sent on to paper mills where it is manufactured into lunch bags, notebooks, paper, magazines, napkins, towels, etc.
- Making paper from raw materials (trees) requires large amounts of water and energy. Paper manufacturing uses more water per ton than any other product in the world,<sup>5</sup> and is the third largest industrial consumer of energy.<sup>6</sup>
- The average American uses seven trees and 680 pounds of paper per year.<sup>7</sup> Paper and paperboard make up 23.05 percent of waste generated.<sup>8</sup>
- Paper made from waste paper is called “post-consumer” recycled paper because it has been used and recycled instead of being landfilled. New paper made from recycled paper instead of trees creates 35% less water pollution and 74% less air pollution and 75% less energy is used.<sup>9</sup>
- To reduce the amount of paper going to landfills, find sustainable alternatives such as using a reusable canvas bag, cloth napkins, purchasing post-consumer products, buying items in bulk to reduce packaging waste or collect paper products for recycling.

# The Problem with Plastic

## Start Here!

When your grandparents were growing up, plastics weren't a big part of their lives. Today, plastics are used for everything from milk jugs and soda bottles to bicycle helmets and auto parts.

### Create an infographic that answers the following questions:

- How are plastic products created?
- Why is it an issue?
- What is the problem with plastic waste?
- What is something that can be done to reduce plastic waste?



- Plastics are made from oil, a non-renewable natural resource limited in supply.
- Manufacturing plastic requires large quantities of water and energy resources. Plastic manufacturing also produces harmful chemicals that if not properly treated may pollute our water and air systems.
- Ninety-one percent of all plastic is not recycled.<sup>10</sup> In Los Angeles alone, ten metric tons of plastic fragments (bags, straws and soda bottles) are carried into the Pacific Ocean every day.<sup>11</sup>
- Plastics are only designed to break down into smaller pieces when exposed to sunlight; therefore, they generally do not decompose when disposed of in landfills.<sup>12</sup>
- Purchasing products with less packaging minimizes plastic from becoming litter on the streets and in the ocean. Marine animals sometimes mistake six-pack rings, plastic bags and other plastic items floating in the ocean as food.
- By recycling plastic, it can be used to make other plastic products such as water bottles and food containers into t-shirts. By collecting these products for recycling and then buying new products made from recycled goods, we are fully participating in the recycling process.

# Pollution Going Down the Drain

## Start Here!

Street gutters are more important than you may realize. They drain water off the streets through catch basins and storm drains. These openings lead to flood control channels that, in turn, carry the water directly to the ocean. Water picks up debris as it travels through streets and into the ocean.

### Create an infographic that answers the following questions:

- What is stormwater?
- Why is it an issue?
- How is motor oil part of the issue?
- What is something that can be done to reduce the effect of urban runoff?



- In urban environments, most rainfall hits our streets and runs across pavement, through gutters and into storm drains. This water is called urban runoff.
- Storm drains help prevent flooding by carrying large volumes of urban runoff through concrete flood channels to the ocean. This water is carried directly to the ocean without treatment.
- Urban runoff is a significant source of ocean pollution. Litter, dog waste, cigarette butts, fast food packaging, plastic shopping bags, pesticides, leaking motor oil – anything on the ground – can end up in the ocean.
- Used oil is a major source of oil contamination of waterways and can result in pollution of drinking water sources. In fact, one oil change can contaminate one million gallons of fresh water.<sup>13</sup>
- Eliminating the use of harmful pesticides and fertilizers on plants, recycling motor oil and picking up trash are ways to prevent polluted urban runoff from reaching the ocean.

# There is No “Away”

## Start Here!

When we throw things “away”, they don’t vanish into thin air. When items are tossed into the garbage, they are sent to a landfill. A landfill is a carefully engineered structure, designed to be the final option for disposing waste.

### Create an infographic that answers the following questions:

- What is leachate?
- Why is it an issue?
- Why is methane an issue?
- What can be done to reduce the items that are landfilled?



- Landfills are lined on the bottom and sides with thick layers of plastic and clay. As garbage is dumped, it is covered with layers of soil, foam, plastic or crushed glass to prevent litter and water, soil and air pollution. This also prevents trash from breaking down by minimizing oxygen and moisture levels inside.
- Leachate is the toxic fluid that is formed in landfills when moisture from rain mixes with plastics, chemicals and other hazardous wastes. This poisonous liquid trickles down to the bottom where it is pumped out and treated. If the plastic liner should fail or be punctured, the leachate could leak into the soil and underground water system, creating a health risk.
- When tiny bacteria break down food, paper, clothing, wood, yard waste or pet waste, gasses are produced and escape into the air. Most of this gas is methane, a greenhouse gas that is 84 times more potent than carbon dioxide.<sup>14</sup> Landfills are the third largest source of man-made greenhouse gas emissions.
- Recycling is one way to reduce the amount of waste going to landfills. Household hazardous waste collection events also help by ensuring this waste is disposed of properly.



# Do Not Trash the Neighborhood

## Start Here!

Have you ever taken a walk in your neighborhood and saw abandoned furniture, tires, appliances or other unwanted items dumped in alleys, vacant lots and other open spaces? Dumping these items is unsafe and illegal! People caught illegally dumping trash or unwanted items may be subject to a \$10,000 fine and six months in jail.<sup>15</sup>

### Create an infographic that answers the following questions:

- What is illegal dumping?
- Why is it an issue?
- Why is E-waste an issue?
- What is something that can be done to prevent illegal dumping?



- Properly disposing of large items requires disposal fees to a recycling facility or landfill. It is illegal for residents, contractors and waste haulers to leave their stuff wherever they want.
- Los Angeles County and local cities spend millions of tax dollars to clean up trash and unwanted items illegally dumped.
- Illegally dumped trash and unwanted items attract insects and rodents creating health and safety concerns. Rodents spread diseases, chew through wiring and harm the environment and human health.
- Televisions, computers and other electronic waste (e-waste) have cathode ray tubes, which contain lead. E-waste items are hazardous to the environment and should be properly recycled or disposed of by a certified hazardous waste hauler.
- People caught dumping illegally can be fined up to \$10,000 and/or jailed for six months. However, it is often difficult for local law enforcement agents to catch these criminals. Report illegal dumping by calling local law enforcement agencies.
- Periodic neighborhood cleanup projects may discourage illegal dumping. It is believed that illegal dumping is less likely to happen in clean, watched neighborhoods than in areas that continuously have large volumes of trash in streets, sidewalks and alleys.

# Recycling Business

## Start Here!

Most of the trash generated every day are disposable items made from materials that can be pulped, melted, or mixed again into a new item. Facilities were made to process these types of waste into new items.

### Create an infographic that answers the following questions:

- What is a MRF?
- What happens to our recycled materials?
- What is the issue now?
- What is something that can be done to keep recyclables out of the landfill or burned?



- Materials Recovery Facilities (MRF) are the recycling factories items go to when picked up curbside for a recycling program. High-tech machinery is used to identify and sort out materials. The extra is bundled into a “bale” of high-quality material that is sold to manufacturers to create new materials such as shoes, bags and new plastic products.
- These large compressed bales are loaded into shipping containers and sent to other countries around the world. In 2016, the United States was exporting almost 700,000 tons a year to China alone. Overall, China imported 7 million tons from around the world.<sup>16</sup>
- In January of 2018, China put a ban on almost all imports – banning shipments of recyclables that have a contamination level of .05 percent or higher. Since recycling bins are almost always contaminated, this means that 99 percent of the recyclable materials we used to sell to China is no longer being recycled. If no alternative is found, these materials will be sent to the landfill and/or incinerators.
- It is critical that we decrease our dependence on single-use plastics and other recyclable products. Reducing the use of single-use plastics such as straws, plastic bottles and other disposable goods, reduces the risk of recyclables ending up in landfills.

# SITE ASSESSMENT AND WASTE AUDIT

Using a map of the site, students indicate where there are specific waste-collection elements on campus. They continue the process by conducting a Waste Audit to identify the different types of waste found.

## Procedure

1. Plan to work in groups when mapping and auditing the site.
2. Create a map using one of the following:
  - An existing map and remove any unnecessary information.
  - Online map of the site.
  - Hand-made map using a large sheet of paper.
3. Make sure each group has a map, Site Assessment Guidelines, Waste Audit Tally Sheet, gloves and pencils.
4. Have students locate specific waste-collection elements and mark them on the map.
5. Have students conduct the audit to identify and tally the type of waste collected.
6. Familiarize students with the areas they are observing and demonstrate how to gather the data.
7. Have groups report their findings.
8. Create a combined tally representing the site as a whole.

## Materials

- Site Assessment Guidelines (page 12)
- Waste Audit Tally Sheet (page 13)
- Pencil
- Gloves
- Map of site

## Helpful Hint

Break the site maps into different parts of the campus for each group.

# Site Assessment Guidelines

Look for and add the following letter symbols to your site map:

## OUTSIDE

- Trash can **X**
- Recycle bin **R**  
Indicate whether it is for paper, plastic and/or glass bottles, aluminum cans or all types of recyclables
- Compost bin **C**
- Food waste bin **F**
- Trash dumpster **TD**  
Indicate if there is cardboard and other recyclables inside and how full it is
- Recycling dumpster **RD**  
Indicate if there is only cardboard inside or other recyclables as well

## INSIDE

If possible, indicate on your map which classrooms/offices have the following:

- Trash can **X**
- Recycle bin **R**  
Indicate which items can be recycled inside
- Ink Cartridge bin **IC**
- Battery bin **B**
- Food waste bin **F**

## ALSO INDICATE:

- If any other collection/waste reduction is happening on campus and where.
- If there are any signs or instructions written on or around the bins.
- If any recycling bins are stand-alone or next to a garbage can.



# Waste Audit Tally Sheet

Name(s)

Date

Location

1. Put on gloves before checking trash cans.
2. Under each column, keep a tally of each item that is found. Place additional items under "other."
  - Items marked with \* indicate that these items may or may not be recycled with your waste hauler.
3. Take note:
  - Are garbage cans contaminated with recyclables?
  - Are recycling bins/dumpsters contaminated with garbage?
  - Is any paper contaminated with liquid or food?

Trash	Items	Quantity	Notes
	Plastic Wrappers/ Foil Wrappers		
	Chip/Snack Bags		
	Straws		
	Napkins		
	Plastic bags*		
	Other		
<b>Curbside Recyclables</b>			
	Glass bottles/jars		
	Metal/alum. cans		
	Plastic bottles		
	Clean paper/ cardboard products		
	Styrofoam Products*		
	Beverage cartons/ Juice boxes		
	Hard plastic food containers		
	Food soiled paper trays/boxes*		
	Other		

<b>E-Waste</b>	<b>Items</b>	<b>Quantity</b>	<b>Notes</b>
	Cell Phones		
	Electronic toys		
	TV/Computers		
	Other		
<b>Hazardous Waste</b>			
	Batteries		
	Cleaning Products		
	Nail polish/Beauty products		
	Paint		
	Ink Cartridges		
	Other		
<b>Compostables /Green Waste</b>			
	Food Scraps*		
	Grass clippings/ Landscape waste		
	Other		
<b>Food to Donate</b>			
	Unopened packaged food		
	Whole produce		
	Other		
<b>Other</b>			
	Reuseable books / items		
	Textiles, clothes and shoes		
	Other		

# GET MORE INFORMATION

The waste audits and site assessments are the first steps to gathering information. It is important to find out more by interviewing key site stakeholders. Stakeholders are people who may affect or be affected by the recycling program.

## Procedure

1. Set up interview opportunities with the suggested stakeholders.
  - Principal
  - Local/City Recycling Coordinator
  - Waste Hauler Contract Manager
  - On-site Maintenance/Plant Manager
  - Office Manager
  - Cafeteria Manager/Food Service Manager
  - Teachers
2. Divide students into groups to conduct interviews.
3. Have groups share what they learned.

## Materials

- Interview questions for each group (pages 16 - 22)
- Pencil/pen

## Helpful Hints

Check with the Principal for the names and contact information for the Waste Hauler Contract Manager and others.

In some cases, plant personnel have been separating, collecting and redeeming CRV containers. This may be a good way to promote recycling, but it doesn't provide the schools with an accurate measure of what is being recycled on their campuses. Also, it provides no incentives to students and misses an opportunity for education and behavior change.

# Waste Reduction Interview

Name(s)

Date

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## Principal

1. Has there previously been a recycling program on campus? If so, what were the successes and failures?
  
2. Which company or companies currently haul campus waste?
  
3. Do they offer recycling services?
  - a. If no, could we switch to a company that recycles?
  
  - b. If yes, how much does it cost per month?
  
4. What recycling program would you like to see on campus?
  
5. Would you consider launching or improving a campus recycling program?



# Waste Reduction Interview

Name(s)

Date

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## Local/City Recycling Coordinator

Visit [lacs.org/solidwaste/swfacilities/recyclecontact/recyclingcontacts.asp](http://lacs.org/solidwaste/swfacilities/recyclecontact/recyclingcontacts.asp) for a list of County Recycling contacts.

1. Are there currently any programs in place or local partners to support or increase school recycling?
2. Are there any available resources like incentives, speakers, partners, free bins or signs to help schools increase recycling?

# Waste Reduction Interview

Name(s)

Date

## Waste Hauler Contract Manager

1. Are the waste and recycling materials you collect separated at your facility?
  - Do recyclables need to be in a separate dumpster/bin for collection?
2. What materials can be recycled?

• Beverage cartons?	Styrofoam?	Paper trays with food residue?
• Plastic bags?	Plastic forks?	Napkins?
3. What percentage contamination rate of non-recyclable materials in the recycling bin is too high to accept for recycling?
4. Can you offer any small bins, dumpsters or resources to the school to help increase the waste diversion rate?
  - If yes, what would any associated costs be?
5. If we increased the recycling rate on campus, what savings could be extended to the school?
6. What is the difference between the service/hauling cost for landfill material vs. recycling?
7. What services do you provide for food waste/yard waste?
8. What contaminates your recycling waste stream the most?
9. Where does our waste go after it is hauled away?
  - If it goes to a landfill, is it mixed with waste from other schools or other businesses first?

# Waste Reduction Interview

Name(s)

Date

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## On-site Maintenance/Plant Manager

1. What recycling programs do you manage or engaged with on campus?
2. Are bottles and cans collected from the waste stream?
  - If yes, would bins specifically for recycling or just bottles and cans placed around the campus be helpful?
3. Do you have a special collection for any hazardous waste such as paint, light bulbs, chemicals and cleaners?
  - If yes, what items?  
where are they collected?  
where do they go when disposed?  
who is in charge of their disposal?
  - If no, could we help you create a hazardous waste collection program?
4. What is done with green waste such as grass clippings?
  - Would you consider using a compost program for green waste and/or food scraps?
5. What size and color bags do we currently use on campus for waste bins? Recycling bins?
6. What is the waste and recycling collection schedule on campus? Weekly? Daily? Time?
7. If our group were to start or expand on the campus recycling program, would the maintenance team be able to help with the collection of the recyclables from bin and disposal into the right dumpster?
  - What help would you need from students, teachers and parents to maintain the recycling program?
8. Are there any garbage cans on campus that can be removed to focus the garbage output to fewer areas?
  - If so, can any of these be turned into recycling bins and placed next to another garbage can?

# Waste Reduction Interview

Name(s)

Date

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## Cafeteria Manager/Food Service Manager

1. What is the current disposal system for boxes, food cans, plastic containers and food waste for recycling?
  - If none, would you consider starting a cafeteria kitchen waste recycling program with us?
2. Is food prepared on site or delivered pre-made to the campus?
3. Is there a compost program for cafeteria food preparation scraps?  
If no, would you consider letting us start one?
4. Is there leftover food that could be donated to a charity from any food preparation in the kitchen or any unserved food?
5. What kind of unserved food from the cafeteria could be shared or donated?
6. What resources and assistance would you need from us to start or improve a food share or donation program?



# Waste Reduction Interview

Name(s)

Date

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## Office Manager

1. Does the office currently collect recyclables such as ink cartridges, batteries and paper?

- If yes, what items?

Where are they collected?

Where do they go when disposed?

Who is in charge of their disposal?

- If no, would you consider a special recycling program in the office?

2. Does staff currently print on one or both sides of paper?

# Waste Reduction Interview

Name(s)

Date

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## Teachers

1. Are you currently working on any recycling projects with your class?
  - If yes, please share what you are doing.
  
2. Would you be willing to have a recycling bin in your classroom?
  
3. Would your class like to help in a multi-classroom or cafeteria recycling program?
  - Promotion?
  - Auditing/tracking?
  - Contests?
  - Collection?
  
4. Is there a lot of food waste from your classroom that could be used to feed others in need?
  - If yes, would you be willing to participate in a classroom food share table and donation project.

# CHOOSE A PROJECT

Using the site assessment, waste audits and interview information, determine with the group what they would like to achieve at their site using a project tree.

## Procedure

1. Inform the class that they can choose from a variety of recycling projects. Recycling projects include:
  - Campus recycling program for bottles, cans, plastic and paper
  - Cafeteria Food Waste Rescue
  - E-Waste Collection
  - Community Swap
  - Textile Collection
  - Alternative Recycling
  - Resource Reduction
  - Composting
  - Litter Abatement and Campus Cleanup
2. Explain to the group that choosing the right project requires answering some key questions first:
  - How long will the project last?
    - Short Term: a one day to three month project that has an end date.
    - Ongoing: a long-term project that is designed to continue beyond the school year.
  - Who is the audience?
    - Student body
    - Facilities and office staff
    - Community members
3. Continue the process by answering these and more questions while working through the Project Tree. Use what was learned from the site assessment, waste audit and interviews to answer questions that will lead to a suggested project.
4. If the suggested project is curbside recycling of cans, bottles, plastic and/or paper, continue using this Project Toolkit. Otherwise, get the appropriate Project Guide from your Generation Earth Teacher Facilitator or download from the Generation Earth website.

## Materials

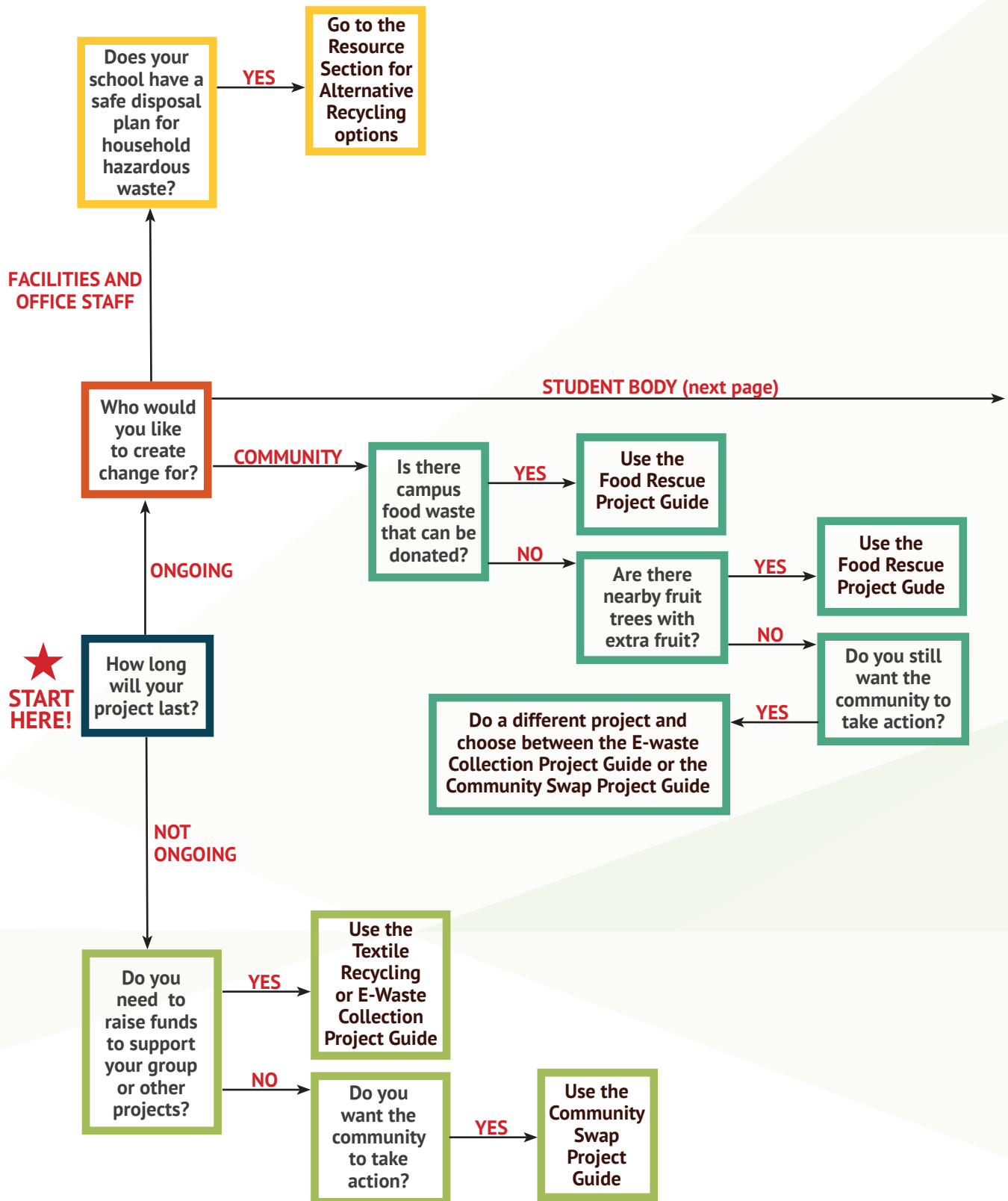
- Site assessments
- Waste Audit Tally Sheets
- Interview answers
- Project Tree (pages 24 - 25)

## Helpful Hints

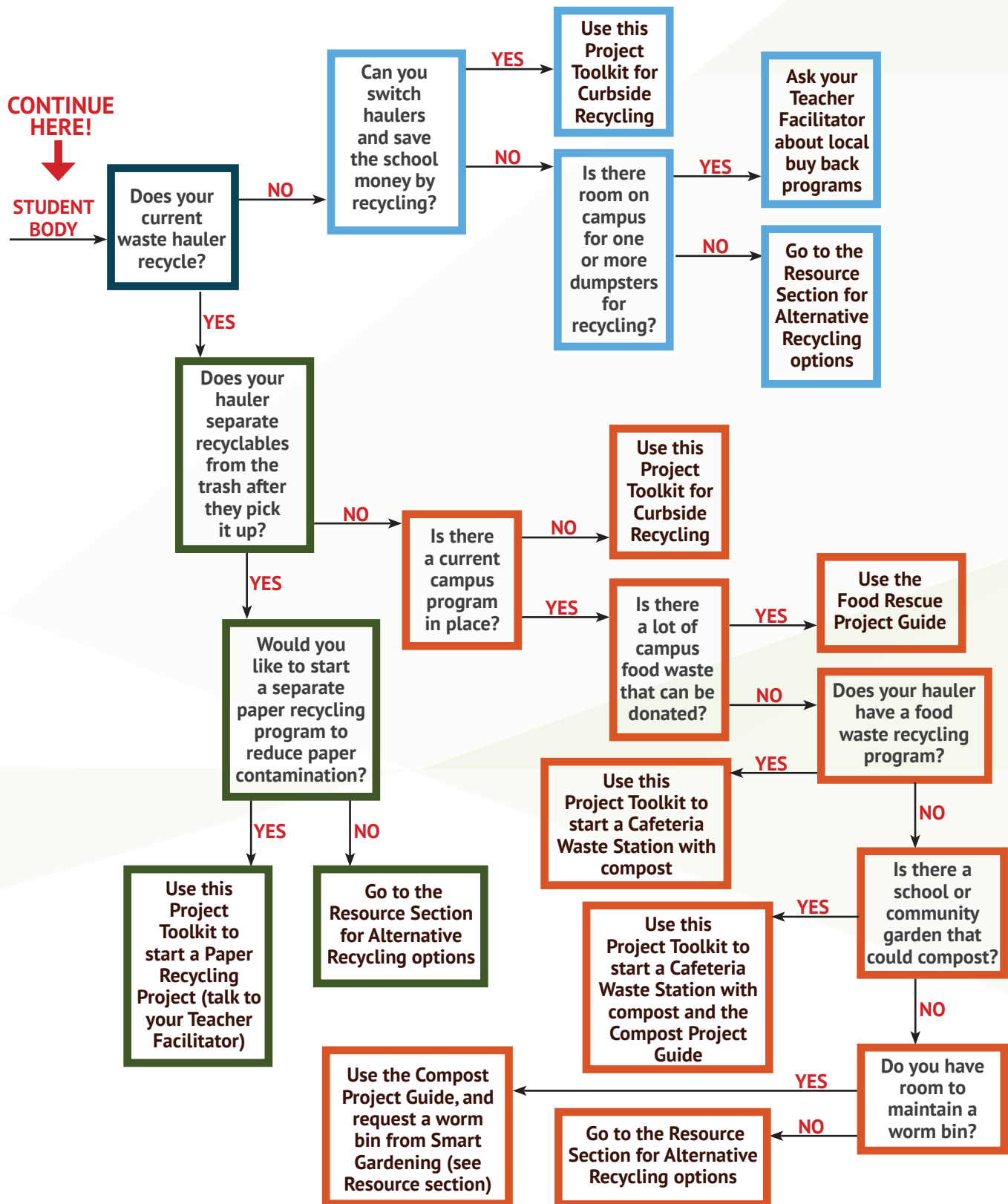
Review the Project Tree ahead of time to understand how it flows.

## Project Guides

- **Food Rescue:** Unwanted produce collection program.
- **Textile Recycling:** Permanent or ongoing textile collection.
- **E-Waste Collection:** E-waste collection event.
- **Community Swap:** Goods exchange event.
- **Education Campaign:** Campus awareness campaign.
- **Compost:** On-site composting program.







# FINALIZE YOUR PLAN AND GET PERMISSION

Now that it has been determined that a campus curbside recycling program is the chosen project, answer specific questions to build a plan to share with key stakeholders.

## Procedure

1. Answer the questions to help build a plan.
2. Plan how to use the waste audit quantities, site maps and the interview results to support the plan.
3. Once students have all the steps thought out and created the plan, have them create a presentation for all the key stakeholders including the Principal, Plant Manager, Teachers, parents or any other important stakeholders.
4. Hold the presentation and get the permission needed to get started.

## QUESTIONS

### How will a campus recycling program help the school?

Start by determining the campus's current cost per cubic yard for disposing of waste in the landfill and the projected costs or revenue from your project. Be sure to highlight how your program can:

- Cut the school's garbage costs.
- Generate additional revenues.
- Provide opportunities for school recognition and awards.
- Reduce campus litter and the amount of space taken up by garbage cans.

## Materials

- Waste Audit Tally results
- Completed Site Maps
- Interview results

## Helpful Hints

Before the presentation have students:

- Practice!
- Be prepared to answer questions
- Know what the roles are of all stakeholders

### Cost Per Cubic Yard

To determine the current cost per cubic yard for disposing waste, obtain a copy of the monthly service fees bill from the principal.

- Multiply the number of garbage containers by the size of the container in cubic yards collected during the billing cycle. Repeat for recycling containers.
- Divide the total disposal cost during the billing cycle by the total number of cubic yards of material collected during the billing cycle.

### Plant A Seed - Let It Grow

Don't hesitate to start small and allow the program to grow over time.

## What is the scope of the project?

Determine which of the following is included as part of the proposed program:

- **Indoor**
  - Single classroom recycling
  - Multi-classroom recycling
  - Office recycling
- **Outdoor/campus-wide**
  - Cafeteria recycling
  - Entire campus/facility
  - Other:

## What materials are to be collected for recycling?

Determine the type of materials that will be collected and recycled. Some things to consider:

- The easiest and most effective campus-wide waste reduction program collects all the different types of materials your waste hauler can recycle.
- While collecting only bottles and cans earn money for the school/club, it misses the opportunity to divert important items like paper, cardboard or beverage cartons from the landfill, as well as the opportunity to raise awareness.

## Where will the bins be located?

Depending on the scope of the program, indicate on the map where proposed bins will be located. Consider:

- A garbage can against a wall or in a corner where there is room for a recycling bin to be placed next to it.
- Convenient areas where there is a lot of foot traffic.
- Within the cafeteria or other eating area as a “cafeteria recycling station.” See page 32 for more information.
- Areas that can be seen and identified easily as you approach, such as near the teacher’s desk.
  - Avoid placing bins right next to a door where signs may be ignored.





## What bins will be used?

Depending on whether they are used for indoor or outdoor use will help determine what type of bins can be used.

- **Outside**

- Weather resistant containers
- Recycle bins opened to be used. This ensures unnecessary trash is not collected
- A trash can to fit assigned locations, to avoid overflow

- **Inside**

- Cardboard boxes, milk carton crates or reuse containers if bins cannot be donated or purchased.
- Try to keep bins uniform across campus, either by color, size and shape or same type of item used (i.e. ALL are made from decorated cardboard boxes, or ALL are made from baskets, etc.)

## What bags are needed to line the bins?

You may need to use clear plastic bags called liners for the recycling bins. Liners come in different thicknesses and sizes. Ask your Generation Earth Coordinator to help you decide which liner is right for your project.

- Purchase liners that do not rip easily. 1.5 mils thick or more is recommended.
- Clear bag liners that are long enough to wrap around the lid, extend to the bottom when full and wide enough to wrap around the whole edge of the opening.
- Coordinate with your on-site Maintenance/Plant Manager and Principal for purchasing, storing and using these bags.

### District Resources

#### LAUSD

To begin a recycling program at your school, have your Principal reach out to OEHS and request services from the contracted waste hauler, including free bins, dumpsters and assistance with all elements of setting up a successful waste reduction plan. [achieve.lausd.net/waste-div](http://achieve.lausd.net/waste-div) (213) 241-3199.

#### Other School Districts

To begin a recycling program at your school, have your Principal contact your Administration for policy and resources available.

## How much will it cost?

It will depend on the school district or situation, what you can get at no cost or what will require funding. Consider the following supplies:

- Classroom Bins
- Curbside/outside Bins
- Waste bags
- Signage (paper, markers, lamination)

## What is the collection plan?

Create a collection schedule and procedures for a weekly and/or monthly collection.

- **Collection Schedule**

If student recycling team members are responsible for the collection of recyclable materials, create a schedule including:

- Time and location of pickup
- Location of where the items will be stored and delivered or picked up

- **Collection Procedures**

Create procedures for the collection of recycled items to include:

- Bag replacement and area cleanup
- How items will be collected and transported
- Tracking progress for quantity of items recycled
- Determine if some of the recycled items must be delivered to an off-campus location and if so, who will deliver them and when.

- **Collection Plan Ideas**

- Transport classroom recyclables to bins or dumpsters at the same time after school each week.
- Ask teachers to leave their recycling bins outside of the classroom on designated days to be picked up after school.
- Have an Eco-Club dedicate one meeting per month to recycling.
- Check with the Plant Manager to see if the campus maintenance crew can assist in the recycling plan. If yes, make sure all maintenance staff members understand the procedure for replacing bags, keeping the bins in the correct location and transferring the recyclables to the right dumpster or storage area.
- Create a dedicated recycling team to collect recyclables and/or compost during lunch break every day. Consider offering service or credit hours for volunteering.

## How will the recycling program be promoted?

Determine how the program will be promoted to ensure everyone who is involved with using the bins will be informed of the changes and how to properly recycle, including which items to recycle:

- **Signs**

Use signage to keep contamination of recycling bins down and help serve as a reminder to the audience. When using signs, consider the following:

- Create a visual cue at each of the recycling bins to attract attention.
- Ensure they are easy to read – large, clear and concise.
- Color coded: blue for recycling, green for compost, black for landfill.
- Utilize pictures of the items that go in the container along with text.
- Use multiple languages, whenever necessary..
- Make them fun.

## Promotion

Contact your Teacher Facilitator for help with setting up a cafeteria waste monitor system.

Plan to be part of a back-to-school assembly to share the recycling plan and guidelines each new school year.

## • Other Media

Consider:

- Announcements
- Awareness posters
- Classroom guest speakers
- Youtube videos
- Contests, relay races, recycling olympics
- Recycling stations in the cafeteria
- School newspaper
- Social media
- Assemblies

## Who will help?

If outside partners are needed to help, consider the following:

- Local non-profits that facilitate educational assemblies.
- Local businesses that can sponsor signs, bins, or bags.
- Contests that will reward your school or club for waste reduction results.
- Grants for resources.
- Parents.
- Ask your Generation Earth Coordinator for guidance.

## What is the sustainability plan?

To keep the program going next year and beyond, consider the following:

- Talk with the Plant Manager or others in decision –making positions.
- Create a plan to ensure the future of the program when students, teachers, plant managers or the principal leaves the school.
- Write a toolkit with instructions for new students and staff to create a recruitment plan for future students to continue the recycling team. Include ideas for program growth.
- Utilize strong multi-level partnerships with all stakeholders involved. Hold meetings throughout the planning process.





# MAKE IT HAPPEN!

Use the plan created and the following steps to get started.

## Procedure

1. Using the Plan as a guide, work with the students to create a task list to accomplish the steps listed below.
2. Ask students to organize the tasks, grouping similar tasks together.
3. Create a timeline and calendar for students to put tasks in order by completion date.
4. Have students assign themselves tasks to complete following deadlines.

## STEPS

### Gather Supplies

- Bins
- Promotional posters and signs
- Clear plastic garbage liners
- Gloves

### Place Bins and Signs

- In strategic locations.
  - Use bin liners.
- Display the recycling signage.
  - Signs should be easy to see from ten feet away, placed over the bin or close to the lid.

## Materials

- Recycling Plan
- Calendar
- Paper
- Pencil/pen
- Other supplies depending on the plan

## Cafeteria Recycling Station

- Create one or more main stations for sorting lunch waste. The easier it is for participants to sort and recycle their waste, the higher the participation rate. Stations should include:
  - Monitors to assist at the stations every day for at least one month.
  - Table for setting down trays while separating items and as a place to stack trays.
  - Bucket for pouring leftover milk and beverages.
  - Recycling bin with a liner and lid.
  - Small container for food scraps.
  - Cooler or table for food donation collection.
  - Garbage can and any other containers for Alternative Recycling projects (See resources section).
- Display the recycling signage.
  - Signs should be easy to see from ten feet away and placed over the bin.



Sample cafeteria recycling station: liquids bucket, recycling, landfill, compost and food donations.

## Conduct an Awareness Campaign

- Spread the word and get everyone on board!
- Promote the recycling program in the same week that the bins and signs are placed.
- Conduct classroom visits or an assembly sharing the program.
  - Create a game by challenging students to determine which items are trash and which are recyclable. Provide prizes.
- Conduct a poster contest.
  - Challenge students to create posters that teach which items are trash and which are recyclable, why recycling is important and the importance of conserving resources.
  - Hang posters near the recycling bins and vending machines.
- Keep reinforcing the message for a few weeks at the beginning of the launch.
- Redo the campaign at the beginning of each school year.

## Follow Collection Schedule and Plan

- Make the collection process easy.
  - Adjust the schedule/plan as necessary.
- Rinse out bins to eliminate odors.
  - Wash the bins lightly with water and eco-safe cleaner.
  - Place the bins outside to air dry with the lid open.

## Track Progress

- Keep a log of your progress!
  - How many bags of recycling and compost were created?
  - How many fewer garbage dumpsters or bags were used?
  - Track the weight (ask the Generation Earth Teacher Facilitator for help calculating the weight using number of bags or bins full).
- Create a chart to track your results.
  - Display the results on campus.
- Keep track of areas/bins that are not working.
  - Contaminated bins with trash or trash cans that have a lot of recyclables.
  - Make adjustments to location and/or signage.

## Reward and Recognize

- Organize a school-wide recycling contest.
- Promote the contest timeline, reward, rules and reason.
- Ask local businesses for prize donations.
- Submit a story about your project to the local newspaper. Submit your results weekly/monthly to Generation Earth and your school principal.
- Invite school district, city or state public officials to attend a recognition ceremony.
- Tell the Generation Earth staff about your completed projects! Take pictures and tell us your project's story.



# EVALUATION

Once students have their recycling program running, have them answer the following questions to evaluate their project and introduce some possible next steps.

## QUESTIONS

1. What was the most successful part of the project?
2. What was the least successful?
3. What would you do differently next time?

## What's Next?

### Another Project

Are you interested in another project? Consider using the following guides:

- E-Waste Collection Event
- Composting
- Community Swap
- Textile Recycling
- Food Rescue

# RESOURCES

## CALIFORNIA STATE RECYCLING ASSISTANCE

- CalRecycle: [calrecycle.ca.gov](http://calrecycle.ca.gov)

## GRANTS / FUNDING

- EPA: [epa.gov/education/grants](http://epa.gov/education/grants)
- California Office of Environmental Education: [cde.ca.gov/pd/ca/sc/oeaintrod.asp](http://cde.ca.gov/pd/ca/sc/oeaintrod.asp)
- Roots and Shoots Mini Grant: [rootsandshoots.org/minigrant](http://rootsandshoots.org/minigrant)

## PARTNERS

- EPA: [epa.gov/education](http://epa.gov/education)
- California Regional Environmental Education Community (CREEC) Network: [creec.org](http://creec.org)
- Los Angeles Conservation Corps assists schools and teachers in implementing programs on their campuses [lacorps.org/](http://lacorps.org/)

## SIGNAGE

- [printablesigns.net/category/recycle](http://printablesigns.net/category/recycle)
- [recyclereminders.com/Recycling-Signs/Free-Recycling-Signs.aspx](http://recyclereminders.com/Recycling-Signs/Free-Recycling-Signs.aspx)

## Free Materials

LA Shares is a local non-profit materials reuse program that takes donations of goods and materials from local businesses and redistributes them free of charge to schools and non-profits. [lashares.org](http://lashares.org)

## Environmental Information

[cleanla.com](http://cleanla.com)



## ALTERNATIVE RECYCLING PROJECT OPTIONS

- **Terracycle:** Collect normally unrecyclable packaging and other items such as markers, chips bags and granola bar wrappers to be recycled or upcycled into new products.  
–Set up an account and follow the steps at [terracycle.com/en-US/](http://terracycle.com/en-US/)
- **Planet Green Ink Cartridge, Batteries and Portable E-waste Recycling:** [planetgreenrecycle.com](http://planetgreenrecycle.com)  
–Raise funds by collecting and mailing in e-waste and used ink cartridges.
- **Trash for Teaching, Upcycling & Creative Reuse Projects:** [www.t4t.org/](http://www.t4t.org/)
- **Re-Book It:** Used book donation through The Last Bookstore.  
–Raises funds through the sale of each book for libraries, charities, hospitals and schools.  
877-877-4080 [rebookit.org/about](http://rebookit.org/about)

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## NEXT GENERATION SCIENCE STANDARD SKILLS

### SCIENCE AND ENGINEERING PRACTICES

#### ASKING QUESTIONS AND DEFINING PROBLEMS

##### Check This Out (Pg. 4)

Check This Out activity allows students to identify problems in their community and use valuable information to begin to design solutions.

##### Get More Information (Pg. 15)

By conducting interviews with key site stakeholders, including principals, local recycling coordinators, waste hauler contract managers and more, students are able to ask and refine questions that will help them define their goals.

##### Choose a Project (Pg. 23)

Students work as a group to ask specific questions intended to determine what they need to achieve success.

#### DEVELOPING AND USING MODELS

##### Check This Out (Pg. 4)

Check This Out activity allows students to develop infographics as tools for representing waste issues and their solutions.

##### Site Assessment and Waste Audit (Pg. 11)

A map creation of the site helps students to construct and use models as tools for presenting their ideas and explanations, which will serve as diagrams in planning their investigations.

##### Make It Happen! (Pg. 31)

Students are able to create charts to visually track their results.

#### PLANNING AND CARRYING OUT INVESTIGATIONS

##### Site Assessment and Waste Audit (Pg. 11)

Students can investigate the layout of their landscape, systematically collecting data about the elements that impact their current situation and could affect the feasibility of their project by identifying the parameters they have to work within.

##### Get More Information (Pg. 15)

By conducting interviews with key site stakeholders, including principals, local recycling coordinators, waste hauler contract managers and more. Students are able to investigate and clarify what counts as data.

#### ANALYZING AND INTERPRETING DATA

##### Choose a Project (Pg. 23)

By using the site assessment, waste audits, interview information and dichotomous project tree deductive reasoning model, students are able to analyze their data to determine which waste project is most appropriate.

## USING MATHEMATICS AND COMPUTATIONAL THINKING

### Site Assessment and Waste Audit (Pg. 13)

Students can quantify and categorize items collected on their site.

### Make It Happen! (Pg. 31)

Students can log and calculate such as the amount of waste collected, weight of waste collected and number of supplies used.

## CONSTRUCTING EXPLANATIONS AND DESIGNING SOLUTIONS

### Choose a Project (Pg. 23)

Based on the phenomena observed and the data collected and analyzed, students form explanations and conclusions about what project they should carry out and how, and design a plan on how to engineer and implement the solutions to the problems that informed their project choice.

### Evaluation (Pg. 35)

Reflect and examine the project upon completion and evaluate what was successful and unsuccessful about their efforts. Construct theories and explanations promoting them to devise future solutions.

## ENGAGING IN ARGUMENT FROM EVIDENCE

### Toolkit Process (all pages)

Students are able to critically argue why they have designed their specific plan and defend its validity based on the evidence they have produced.

## OBTAINING, EVALUATING AND COMMUNICATING INFORMATION

### Finalize Your Plan and Get Permission (Pg. 26)

Reflect and examine the project upon completion and evaluate what was successful and unsuccessful about their efforts. Construct theories and explanations promoting them to devise future solutions.

### Cross Cutting Concepts

- Patterns
- Cause and Effect
- Scale, proportion and quantity
- Systems and system models
- Energy and matter
- Structure and function
- Stability and change



# Generation Earth

[generationearth@treepeople.org](mailto:generationearth@treepeople.org)

[generationearth.com](http://generationearth.com)

(818) 623-4856

