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Sustainable Materials Management

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CONTENTS

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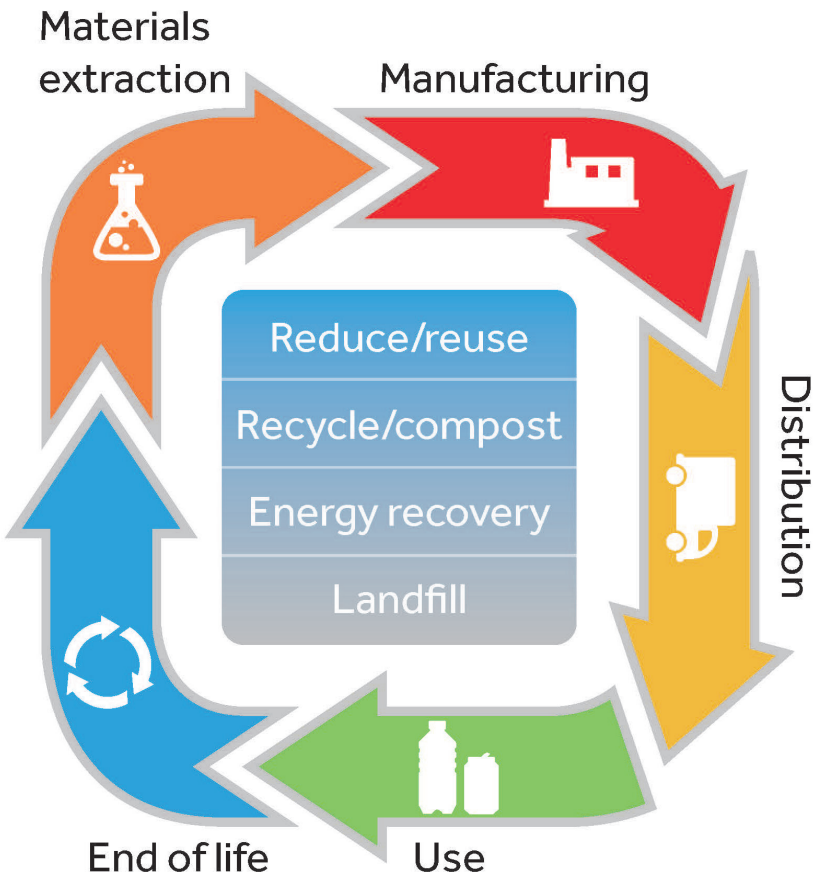
INTRODUCTION TO

Sustainable Materials Management

Sustainable materials management (SMM) is an approach to using and reusing materials more productively over their entire life cycles. SMM is, at its core, a way to think about how to manage materials to maximize potential, reduce waste and ensure use in the most productive way.



Tribal leaders often use the Seventh Generation Principle, which says decision makers should consider the effects of their actions and decisions for seven generations into the future. This philosophy is integral to many Native American cultures. SMM takes a similarly holistic, life-cycle approach to materials and waste management. SMM principles can help guide how we select and use materials in a productive way by emphasizing using less materials and preserving resources for future generations. Understanding how products are made and what happens after they have been used is vital to ensuring adequate resources to meet the needs of today and the priorities of tomorrow.

By applying SMM approaches, tribes can reduce costs, save resources and reduce waste because SMM considers each stage of a product's life cycle – from material extraction and processing, to product design and production, through use and reuse to recovery, recycling and disposal. Each of these life-cycle stages requires energy, water and materials; produces environmental impacts such as wastes and emissions; and may have societal or economic costs as well.

By implementing SMM principles and practices, tribal governments and communities can use and reuse materials as efficiently as possible while also minimizing environmental, societal and financial impacts.

This issue of the *Tribal Waste Journal* provides tribal environmental managers and communities with a range of options for integrating SMM principles and practices into their materials and waste management programs. It looks at SMM in several different contexts – across food systems, the built environment (buildings, homes, roads and other infrastructure) and recycling – as several tribes share their advice and expertise. Case studies include Haskell Indian Nations University's waste reduction efforts, the Miigwech Aki organization's building deconstruction and recycling services, the Saint Regis Mohawk Tribe's abandoned structure assessment and reuse program, and the Choctaw Nation of Oklahoma's recycling program.

About EPA's SMM Program

EPA's SMM Program protects human health and the environment by advancing the sustainable use of materials throughout their life cycles to minimize waste and environmental impacts. The Resource Conservation and Recovery Act (RCRA) provides the basis for EPA's SMM Program, setting a strong preference for resource conservation over disposal.

EPA has a shared responsibility with tribal governments to support the protection and restoration of tribal lands and resources that are under tribal stewardship. The SMM Program is part of EPA's broader efforts to strengthen tribal capacity and develop sustainable waste management programs.

To learn more about the SMM Program, please visit www.epa.gov/smm.

Sustainable Management of Food

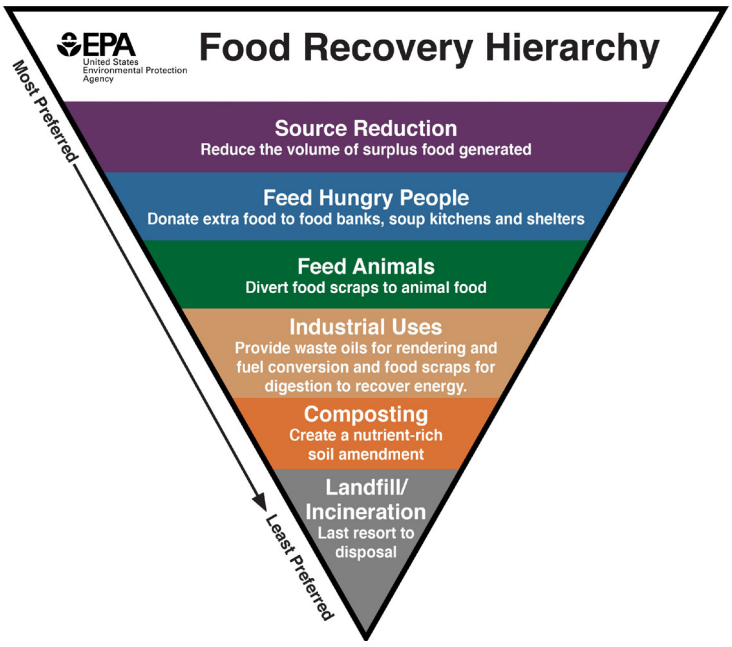
Food loss and waste adversely affect food security, the economy, our communities and the environment.

Food is the largest part of the municipal solid waste stream, accounting for about 22% of the waste in our landfills. Nationally, in 2017 alone, Americans generated more than 40.7 million tons of food waste, with only 6.3% diverted from landfills and incinerators for composting.[1] In total, 30% to 40% of all available food goes uneaten through loss or waste. The estimated value of that uneaten food is over $161 billion.[2] The food that we buy from stores and eat every day represents a vast and complex web of businesses and distribution systems, starting with the farm and leading all the way to our tables. In addition to the economic costs, there are environmental costs as well, with water and energy resources used throughout this system.

The impact of wasting wholesome, nutritious food is even more significant considering that, according to the U.S. Department of Agriculture (USDA), there are over 37 million Americans who live in households with limited access to adequate food due to financial limitations and other challenges.[3] EPA's efforts to support the sustainable management of food encourage people and organizations to see food as a valuable resource.

Through the sustainable management of food, businesses and consumers can save money and conserve resources for future generations. Building on the familiar concept of "Reduce, Reuse, Recycle," this approach more fully recognizes the impacts of the food we waste.

EPA's Food Recovery Hierarchy allows people to prioritize actions that organizations can take to prevent and divert wasted food. Each tier of the Food Recovery Hierarchy focuses on different management strategies for wasted food. The top levels of the hierarchy are the preferred ways to prevent and divert wasted food because they have the potential to create the most benefits for the environment, society and the economy.



[1]—www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/food-material-specific-data.
[2]—www.usda.gov/oce/foodwaste/faqs.htm.
[3]—www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.

Organizations, communities and individuals can each do their part to manage food more sustainably. EPA's Food Recovery Challenge is a voluntary incentive program in which EPA works with over 1,000 businesses and organizations to set data-driven goals, implement targeted strategies to prevent and divert wasted food in their operations, and report results to compete for annual recognition. EPA regional representatives provide technical assistance to help participants achieve their goals in the program. In 2017, Food Recovery Challenge participants diverted over 647,000 tons of food, with over 200,000 tons of that food donated (www.epa.gov/sustainable-management-food/food-recovery-challenge-frc).

Haskell Indian Nations University is one of the participants recognized by EPA's Food Recovery Challenge. It tackles food waste as part of a comprehensive waste reduction plan.

A Practical Guide to Save Money and the Environment

The Commission for Environmental Cooperation's W*hy and How to Measure Food Loss and Waste: A Practical Guide* is an easy-to-use tool for businesses to apply in measuring the quantity of food wasted in their process activities. This tool can help an organization alter its practices, reducing operational costs while also helping to reduce the environmental impacts of our food production system. The *Guide* is available at www3.cec.org/flwm.

Tribal Food Sovereignty and Sustainable Management of Food

Sustainable management of food and food sovereignty have common elements. Food sovereignty can be described as the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems (content excerpted from the *Declaration of Nyéléni*, 2007 Forum for Food Sovereignty in Sélingué, Mali, nyeleni.org/spip.php?article290).

Exploring how people grow, harvest, distribute and prepare food, and how people manage food waste systems, helps support tribal food sovereignty. For many tribes, food sovereignty means recognizing, celebrating and revitalizing rich cultural traditions tied to seasonal growing and gathering practices that have sustained tribal communities for generations.

Food sovereignty recognizes the value of food and the resources that go into growing it (soil, energy, water), emphasizing the importance of conserving these resources for future generations. Examples of complementary approaches include composting to return organic nutrients back into soils and distributing food in ways that improve efficiency and reduce waste and its impacts (e.g., local production of food).

Campus-Wide Energy and Commitment to Youth-Led Initiatives

National Tribal Leadership in Food Waste Reduction – Haskell Indian Nations University

Located in Lawrence, Kansas, Haskell Indian Nations University ("Haskell") is a national center for Indian education, research and cultural preservation. American Indians and Alaska Natives have attended Haskell for more than 117 years, and Haskell has responded by offering innovative curricula oriented toward American Indian/ Alaska Native cultures. Currently, Haskell has an average enrollment of over 1,000 students each semester.

In 2015, as part of a series of Memoranda of Understanding between EPA Region 7 and Haskell, Haskell launched its Food Recovery Program that transformed the campus. Haskell's Food Recovery Program – which includes food audits, development of a compost program, food service system changes, and campus-wide education and outreach – has been remarkably successful. The composting operation, for example, created in partnership with EPA Region 7, diverts more than 2,000 pounds of food waste from the landfill each year.

"We are living in a world that is facing a waste crisis. Here on campus, we need to embody our ancient and cultural wisdom today. Being respectful of the land, the air and the water is not only a part of the past. That's who we are today. Each of us has a responsibility to make a difference for our planet through the choices we make every day."

- Dr. Daniel Wildcat, Acting President, Haskell Indian Nations University

EPA's Food Recovery Challenge

To learn more about and join the Food Recovery Challenge, visit: www.epa.gov/sustainable-management-food/food-recovery-challenge-frc.

Haskell staff and students working together as part of the composting program.

Haskell students receiving EPA's Food Recovery Challenge Regional Award.

In April 2019, EPA recognized Haskell's Food Recovery Program with a Food Recovery Challenge Regional Award. "Haskell Indian Nations University has taken tremendous steps to reduce food waste and increase efficiency in their campus dining operations," said EPA Region 7 Administrator Jim Gulliford at the award ceremony. "I am particularly proud of the students who have played a leadership role in earning this recognition for the University."

Early Days: Student Leadership Sets the Tone

In 2015, a student group at Haskell – the ecoAmbassadors – set out to create what would become Haskell's Food Recovery Program with the help of partnership and grant assistance from EPA's Tribal ecoAmbassadors Program. The EPA program provided funding for tribal student internships as well as EPA staff expertise to help guide tribal student project activities.

The first step was to perform two food waste audits, the first in September and the second in November 2015. During these cafeteria audits, students sorted, weighed and logged the amounts of discarded food and drink. The audits provided Haskell with valuable data to analyze and use to develop strategies to divert food from the landfill.

Jamie Colvin, one of the program's long-running student leaders, recalls that these early activities established a strong baseline for its success. "Student leadership has been at the heart of everything," she noted. "From the start, we had a group of committed students working on this. That teamwork meant that we could take on major challenges, such as scaling up efforts for the entire University and reaching out across campus to build support for the project."

The results of the food waste audits were striking. At some meals, people threw away carbohydrates more than twice as frequently as fruits and vegetables, dairy/protein, desserts and soups. Portion sizes were often too large. Students rarely purchased some types of food.

The food audits resulted in roundtable discussions with Haskell students and professors, EPA staff, and dining services staff to develop food waste reduction strategies. "The goal was to make sure everyone would be on board with any changes," Dr. Wildcat recalled. "Cafeteria staff were concerned that changes to the food system could mean more work for them, for example. When we made some trial changes, staff found that they could work more effectively and efficiently." By 2016, Haskell's Food Recovery Program was officially up and running.

Haskell Food System Changes

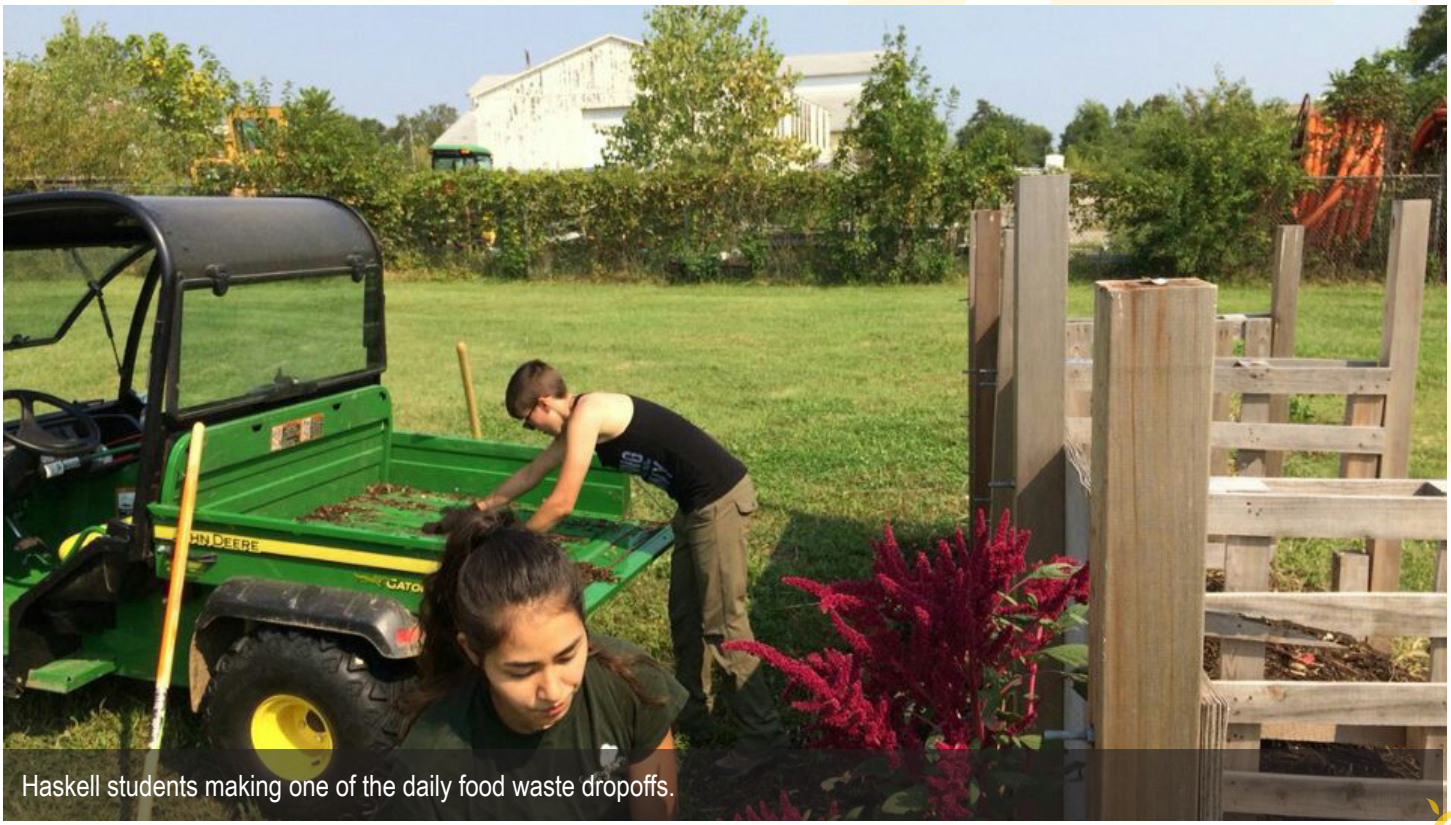
- Frequently discarded carbohydrates, such as bread and rolls, became options available on request.
- Portion sizes were reduced.
- Unpopular food items were taken off the menu.

Composting: Improving Waste Management, Targeting Pollution Prevention and Reduction

According to Dr. Wildcat, the other key takeaway from the food audits was that Haskell could compost much of the remaining uneaten food in the cafeteria (Haskell's Food Services Department). In turn, a successful composting program would need to be able to manage a significant amount of food waste – more than 40 pounds a week, on average.

To tackle this challenge, Haskell students sought assistance from their environmental science professors, nearby tribal nations, and EPA Region 7 and Kansas Department of Health & Environment staff for ways to create an effective composting program scaled to handle the volume of Haskell's food waste. Based on what they learned, students built three side-by-side bins with reused untreated wood pallets (above and below). The pallets allow for airflow, which keeps the compost from producing methane.

Haskell students maintaining the composting bins.



Haskell students making one of the daily food waste dropoffs.

Having three bins allows for older piles to break down while a new one begins. "I would like us to repurpose more materials in the future," Colvin noted. "It reduces waste and helps our budget. We also adapted trash cans for winter composting, using them as tumblers. 'Let's try this!' we said. And it worked."

Currently, compost from Haskell's Food Recovery Program is used in a nearby garden focused on indigenous plantings and in flowerbeds campus-wide. Up to five students manage the composting program, coordinating daily food waste pickups and maintaining the compost bins. The students use a small utility vehicle to transport food waste from the cafeteria to the composting area.

"Every day, we get to see the results of our work," Colvin reflected. "Over time, even the smallest activities can make a big difference. This project is something we work on together, not just for today, but for tomorrow as well, thinking seven generations down the line. Bit by bit, we are getting so much done together."

The Benefits of Food Recovery

Once in landfills, food breaks down to produce methane, a potent greenhouse gas. Other benefits of food recovery include the reduction of food disposal costs, the opportunity to feed community members in need through food donation, the conservation of resources used to grow food, and the return of nutrients to the soil via composting.

The composting program's utility vehicle in action.

Looking Forward, Expanding Campus Opportunities

"The time to act is now. Our home, our Turtle Island, needs help. The voices of youth are vitally important in making change happen."

- Jamie Colvin, Student Leader, Haskell Indian Nations University

In 2019 and 2020, Haskell students and their faculty advisors are taking a comprehensive look at the Food Recovery Program, assessing current capacities and outcomes and looking for opportunities to expand its scope. A food audit will enable a direct comparison with outcomes from the 2015 audit, allowing students to evaluate the extent to which the program has reduced Haskell's food system costs as well as the total volume of food purchased and prepared and reductions in the amount of food waste. Moving forward, food audits may take place annually.

"Expanding the composting program beyond the cafeteria is high on the list of priorities," Dr. Wildcat noted. "Students would like to explore ways to recover food from classrooms, dorms, athletic facilities and administration buildings." Creating a food donation program is also under consideration, with Haskell students and faculty reaching out to the nearby University of Kansas to learn from its experience with its Campus Cupboard program, which serves as a food pantry for students, faculty, staff and affiliates.

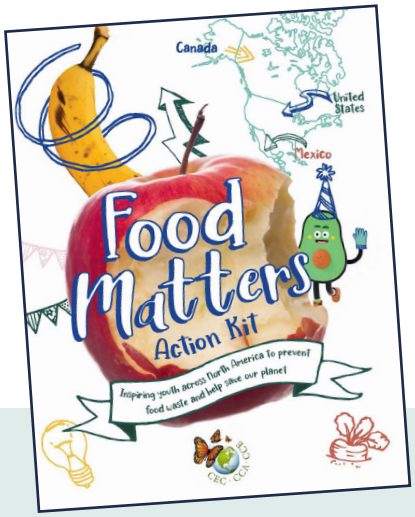
"The time to act is now," Colvin said. "Our home, our Turtle Island, needs help. The voices of youth are vitally important in making change happen. Based on my experiences here at Haskell, I would tell people looking to do something similar to stay strong, look for resources, build relationships and don't be afraid of change."

Enhancing education and outreach on the sustainable management of food is also a priority for Haskell. The students and faculty are planning regular composting workshops as well as an expanded curriculum on food recovery and waste reduction as part of a broader focus on sustainability, food security and tribal sovereignty. "If we have little control over where our food comes from or how it's grown and processed, then we are vulnerable; we are not fully able to exercise our rights or more fully recognize our responsibilities to each other and our communities," noted Dr. Wildcat. "We are deeply connected to each other and our plant and animal relatives through the food and human life cycles."

These connections are evident throughout the Food Recovery Program, with student leadership continuing to drive project activities. "The key is community leadership. Successful waste reduction has to be community-driven, and at Haskell, students have been the leaders of our efforts," said Dr. Wildcat. "Tribal waste reduction projects are going to be successful if they start from the ground up and are community-driven."

The lessons learned for SMM projects and the sustainable management of food from Haskell Indian Nations University's Food Recovery Program are clear.

- Enable community leadership.
- Recognize skills in your community and use them.
- Seek out resources when needed.
- Continue to learn, adapt and strengthen project activities over time.



Join the Youth Movement!

The Commission for Environmental Cooperation launched the *Food Matters Action Kit*. This toolkit contains activities designed for youth across North America to prevent food waste in their homes and communities. There are 20 activities arranged for two age groups, one for children ages 5 to 13 and another for youth and adults ages 14 to 25. Individuals, teams of friends, or clubs and organizations can register to document their achievements, earn shareable Food Waste Hero badges and challenge others.

For more information, visit: www3.cec.org/flwy.

"I would tell people looking to do something similar to stay strong, look for resources, build relationships and don't be afraid of change."

- Jamie Colvin, Student Leader, Haskell Indian Nations University

The Sustainable Management of Food:

WHAT CAN I DO?

Individuals and households can follow these tips to reduce wasted food.

Planning Tips

By simply making a list with weekly meals in mind, you can save money and time and eat healthier food. If you buy no more than what you expect to use, you will be more likely to keep it fresh and use it all.

- Keep a running list of meals and their ingredients that your household already enjoys. That way, you can easily choose, shop for and prepare meals.
- Plan your meals for the week before you go shopping. Create your shopping list based on how many meals you will eat at home. Will you eat out this week? How often?
- Include quantities on your shopping list, noting how many meals you will make with each item to avoid overbuying. For example: salad greens – enough for two lunches.
- Look in your refrigerator and cupboards first to avoid buying food you already have, make a list each week of what needs to be used up and plan upcoming meals around it.
- Try to buy only the things on your shopping list needed for those meals.
- Buying in bulk only saves money if you can use the food before it spoils.

Storage Tips

It is easy to overbuy or forget about fresh fruits and vegetables. Store fruits and vegetables properly for maximum freshness; they will taste better and last longer, helping you to eat more of them.

- Find out how to store fruits and vegetables so you know which produce stays fresh longer inside or outside of your refrigerator. Check out Further with Food – www.furtherwithfood.org – for tips!
- Freeze, preserve or can surplus fruits and vegetables, especially abundant seasonal produce.
- Many fruits give off natural gases as they ripen, making other nearby produce spoil faster. Store produce such as onions, bananas, apples and tomatoes by themselves, and store fruits and vegetables in different bins.
- Wait to wash berries until you want to eat them to prevent mold.
- If you like to eat fruit at room temperature, but you store it in the refrigerator for maximum freshness, take what you will eat for the day out of the refrigerator in the morning.

Preparation Tips

Prepare perishable foods soon after shopping. It will be easier to make meals or snacks later in the week, saving time, effort and money.

- When you get home from the store, take the time to chop, dice, slice and place your fresh food items in clear storage containers for snacks and easy cooking.
- Befriend your freezer and visit it often. For example:
    - Freeze food such as bread, sliced fruit or meat that you know you will not be able to eat in time.
    - Cut your time in the kitchen by preparing and freezing meals ahead of time.
    - Prepare and cook perishable items, then freeze them for use throughout the month. For example, bake and freeze chicken or fry and freeze taco meat.

Thriftiness Tips

Be mindful of older ingredients and leftovers you need to use up. You will waste less and may even find a new favorite recipe.

- Shop in your refrigerator first! Cook or eat what you already have at home before buying more food.
- Have produce that is past its prime? It may still be fine for cooking. Think soups, casseroles, stir fries, sauces, baked goods, pancakes or smoothies. Search for websites that provide suggestions for using leftover ingredients.
- If safe and healthy, use the edible parts of food that you normally do not eat. For example, use stale bread to make croutons. Sauté beet tops for a delicious side dish. Make vegetable scraps into stock.
- Are you likely to have leftovers from any of your meals? Plan an “eat the leftovers” night each week.
- At restaurants, order only what you can finish by asking about portion sizes and be aware of side dishes included with entrees. Take home the leftovers.
- At all-you-can-eat buffets, take only what you can eat.

The Built Environment

Another key area where SMM efforts can make a big difference in reducing waste and maximizing the use and reuse of materials is in the built environment.

The built environment touches all aspects of our lives. Our built environment is the buildings we live in, the distribution systems that provide us with water and electricity, and the roads, bridges and transportation systems we use to get from place to place. Creating these spaces and systems requires enormous quantities of materials. The basic maintenance and growth of our built environment will require billions of tons of materials in the coming decades. Without careful attention, this maintenance and growth will result in significant negative environmental impacts and unnecessary costs.

Countries around the world are recognizing how critical it is to improve resource efficiency. SMM in the built environment focuses on the importance of recycling, repurposing and reusing construction and demolition (C&D) debris and other materials in the most productive and sustainable way over their entire life cycles to help address local material and resource needs for projects such as new developments and community facilities. It also encourages the use of design and construction techniques to build more sustainable structures that minimize the negative environmental impacts of buildings.

Groups interested in SMM in the built environment are wide-ranging and diverse. They include architects and developers creating innovative and efficient designs and projects, transportation and public works professionals constructing stronger, more resilient structures, contractors and construction companies seeking to reduce waste in their own operations, government agencies and officials developing policies and practices to incentivize material recovery, standard-developing organizations fostering shared understanding of sustainable construction approaches, and recyclers and waste management experts dedicated to finding new opportunities and markets for materials at their end of life.

To make reuse and recycling possible, it makes sense to consider designing and building new structures so that they can be easily taken apart at their end of life. For many tribes, there is also great benefit in assessing and deconstructing existing abandoned structures, including mobile homes, and finding markets to extend the life cycle of a wide range of construction materials, keeping them out of landfills. These projects provide social and economic benefits, including jobs, local and regional partnerships, and tax benefits based on the value of the donated materials.

Tips for Developing a Successful C&D Program

- Capitalize on existing infrastructure such as storage and processing facilities.
- Collaborate with other tribal departments on operation and maintenance activities for C&D recycling programs.
- Look for inexpensive and creative ways to procure necessary equipment, such as through the U.S. General Services Administration (GSA) government surplus website (gsaauctions.gov).
- Obtain the proper training and technical expertise needed.
- Take advantage of available technical assistance and federal funding (see the Resources section).

Miigwech Aki workers follow deconstruction best practices for safety as part of their work.

Miigwech Aki

The work of Miigwech Aki (its name translates to "Thank You Earth") in Bemidji, Minnesota, highlights several of these benefits in action. This environmentally conscious social enterprise provides deconstruction services for residential and commercial buildings. Its innovative by-hand approach extends the life cycle of a wide range of construction materials, keeping them out of landfills. The organization targets a reclamation rate of 85% across its projects. Reclaimed materials are then resold to clients and the general public. Starting with two projects in 2012, when the company was established as part of the Northwest Indian Community Development Center, it now averages five to 10 projects a year, with some projects employing as many as 18 people. The company's success to date has been built on a strong foundation of local and regional partnerships, extensive community outreach, and creative resource leveraging.

Miigwech Aki's work also addresses abandoned structures, a major priority for many tribes. These structures, including mobile homes, are often unsafe, attract trespassers and illegal dumping, negatively impact local property values, and are an impediment to redevelopment. Reclaiming materials from these structures can help support the revitalization of land and natural resources as well as result in the benefits discussed above.

Miigwech Aki focuses on making a difference in area communities in other ways as well. It prioritizes job training, higher wages and safe working conditions for employees. The company helps staff build career skills and serves as a reference for future employment. "We value our employees," said Christopher Bedeau, Miigwech Aki's Crew Chief. "They make everything possible, and our approach gives people a sense of broader well-being. This is not just about a paycheck. This is about taking care of the planet and providing for the next generation."

Miigwech Aki workers reclaiming lumber from a vacant building.

Revitalizing a Community's Future, One Property at a Time

National Tribal Leadership in Abandoned Structure Removal and Reclamation – The Saint Regis Mohawk Tribe (Akwesasne, New York)

For the Saint Regis Mohawk Tribe in northernmost New York, interest in SMM in the built environment grew out of efforts to address safety, public health, trespassing and other concerns associated with abandoned structures. Deconstructing these structures offers opportunities to reduce those risks while also finding ways to keep usable materials out of landfills and in use. The first step is to identity abandoned structures and then assess if reuse and recycling is possible. The Saint Regis Mohawk Tribe has taken on such a project.

The Saint Regis Mohawk Tribe's holistic approach includes extensive information gathering and community education and outreach, building broad support for cleaning up many long-vacant eyesores and returning the lands to productive use.

The Saint Regis Mohawk Tribe is also known by its Mohawk name, Akwesasne, which roughly translates to "land where the partridge drums." The Saint Regis Mohawk Tribe has a robust government that administers its own environmental, social, law enforcement, economic, health and educational programs, policies, laws and regulations.

One of the vacant buildings prioritized for removal.

"We were astonished by the number [of abandoned structures]. So many had faded into the background and were taken for granted as part of everyday life."

- Julia Jacobs, Brownfields Redevelopment Specialist, Saint Regis Mohawk Tribe

The Saint Regis Mohawk Tribe manages an EPA Brownfields Tribal Response Program. The program has been in place since 2010 when it received its first funding agreement under the EPA Brownfields Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 128(a) grant funding program. The focus of the Brownfields program is to expand, redevelop or reuse a property that may be complicated by the presence or potential presence of a hazardous substance, pollutant or contamination. Cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, uses existing infrastructure, takes development pressures off undeveloped open land, and improves and protects the environment.

In October 2014, following a Tribal Council request to identify abandoned structures in the community, Julia Jacobs, the Tribe's Brownfields Redevelopment Specialist, and other Brownfields Program staff drove through Akwesasne. "We were astonished by the number [of abandoned structures]," she recalled. "So many had faded into the background and were taken for granted as part of everyday life." Through this several-months-long assessment, Julia and her team identified about 150 abandoned structures. They conducted follow-up interviews with property owners about the challenges they faced with the abandoned structures. They identified building removal costs, personal and family attachments, and gradual deterioration over time as the primary challenges.

Did You Know?

EPA's *Abandoned Mobile Homes Toolkit* provides a step-by-step process for addressing abandoned units, including assessment guides and best practices for reclaiming and salvaging recyclable materials.

www.epa.gov/smm/toolkit-about-abandoned-mobile-homes

Getting the Word Out, Identifying and Prioritizing Projects

In early 2015, Ms. Jacobs started an initiative to formally identify and prioritize abandoned structures for cleanup and track them in a database. "We started with outreach and education," she said. "The Tribe's Brownfields Program put out a call for people interested in having a Phase I Assessment conducted for old structures on their properties." A Phase I Assessment includes a background and historical investigation and site inspection. The Tribe's Brownfields Program staff focused their education efforts on highlighting the dangers of trespassing and crime, drug activity, rodents, mold, arson and potentially hazardous materials posed by abandoned structures. Staff made presentations to school children and seniors, to other tribal program staff and to community organizations. "People get it, they understand the impacts," Jacobs noted. "If there is a fuel tank and it spills, you don't want to just cover it up. At some point, it is going to affect their family members or the larger community, seven generations down the line."

To work on prioritization criteria for the properties identified, the Tribe's Brownfields Program staff convened an Akwesasne Brownfields Committee, inviting community members and staff from various tribal programs to participate. The committee used a series of large maps to identify potential properties to clean up and to spur discussion and consideration of prioritization criteria. Committee members ended up prioritizing properties with abandoned structures located near cultural and horticultural areas, brownfield sites, natural resources, health and school buildings, and community resources and activities.

The Tribe's Brownfields Program also worked with a second tribal organization, the Akwesasne Tourism Working Group, which considered these areas of concern:

- Proximity to infrastructure and roads
- Structure condition
- Property history of drug activity or other trespassing
- Health and safety hazards
- Fuel tanks
- Proximity to other homes and public places

One of the most deteriorated structures in the community.

"The two sets of criteria helped us look at the properties in different ways and made us think comprehensively about which ones to prioritize for further assessment."

- Julia Jacobs, Brownfields Redevelopment Specialist, Saint Regis Mohawk Tribe

The Tribe's efforts paid off. In 2016, EPA awarded the Tribe a $10,000 grant to conduct Phase I Assessments for 10 properties, and the Tribe was well positioned to move forward. All the assessments were finished by 2018.

Getting the Job Done, Recognizing Opportunities for Collaboration

In 2018, the outreach efforts of the Tribe's Brownfields Program also began to see long-term results. Following regular status updates on the property assessment and prioritization process, the Tribal Council allocated $127,000 from the Tribe's Community Development Investment Fund to safely take down and remove 15 priority-abandoned structures – 10 original properties plus five additional structures. Many of these properties were in irreparable condition – burned out, rotted or contaminated – and had to be demolished. For those in better condition, owners were encouraged to remove windows, doors, cabinets and other salvageable material for reuse, sale or donation.

"Having a safe and healthy environment for every tribal member continues to be a priority for us," noted the Tribal Council. "We are proud to support the Brownfields Program in completing their work of safely removing dangerous structures in the community. This would not have been possible without funding from the Community Development Investment Fund and represents the most recent opportunity to utilize patent funds to improve the well-being of tribal members."

To date, based on the assessments, several deteriorated structures have been taken down. Whenever possible, owners retrieved usable materials prior to removal of the structures. Several remaining structures may need a possible Phase II Assessment due to the presence of potential hazards. A Phase II Assessment typically requires collection and testing of soil or groundwater samples or building materials to determine if contamination is present. Several tribal programs have partnered with the Saint Regis Mohawk Tribe's Brownfields Program to make the removal effort work go as smoothly and cost effectively as possible. The Tribe's Agriculture Program has loaned an excavator. The Tribe's Planning and Infrastructure Department provided a dump truck. Its Emergency Planning Office supplied a list of unsafe structures for prioritizing. The solid waste transfer station received the usable materials to sort for other uses and prepared the unusable materials to be transported to a landfill.

"It is all about building relationships and connecting people – making regular contact and seeing where there are opportunities to address shared interests and achieve overlapping goals."

- Julia Jacobs, Brownfields Redevelopment Specialist, Saint Regis Mohawk Tribe

Today, the Tribe's Brownfields Program staff continue to track, update and add abandoned structures in Akwesasne to its maps and database. They reach out regularly across the community to help people understand the dangers posed by the buildings. Ms. Jacobs says that outreach is even more effective now, as people start to see the benefits of the Phase I Assessments and the recent removal efforts.

"People feel more certain and secure, and they start to see opportunities. Maybe it is leaving the land as green space. Or the property owner sees a day when their grandchild could build a home there. Or someone says this is a great location for a new business. As properties get cleaned up, economic development follows."

- Julia Jacobs, Brownfields Redevelopment Specialist, Saint Regis Mohawk Tribe

A fire destroyed this building in the community.

Looking Forward, Building Long-Term Capacities

In addition to applying for funding for the next rounds of the Brownfields Program's abandoned structure assessment and removal efforts, the Saint Regis Mohawk Tribe is also focused on building its own long-term capacities. Tribal programs are working together on plans for a materials exchange facility, so that wood, windows, concrete, siding and other materials reclaimed from abandoned properties can be recycled or reused and serve as a revenue source in the future. The Tribe's housing program is expanding efforts to work with property owners on preventive maintenance and improvement projects. These projects help keep materials in the economy longer and prevent the need for communities to source new materials. Similarly, materials exchange facilities help extend the useful lifespan of materials and avoid unnecessary landfilling as well as waste disposal fees.

The Brownfields Program is also looking to add training opportunities so that staff can become certified environmental professionals, enabling the Tribe to conduct its own site assessments, rather than relying on contractors. "We are already doing most of the work," Jacobs noted. "Doing the interviews, conducting research and looking up property records."

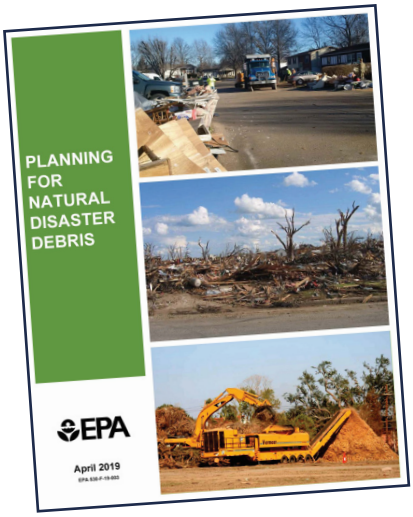
Lastly, the Tribe's Brownfields Program's efforts are spurring broader community interest in land revitalization. When the Tribe's fire department moved to a new location, several tribal programs worked together to convert the space into a small park and decommission an old adjacent power dam, allowing salmon to thrive in the St. Regis River for the first time in several generations. "The dam was a different kind of abandoned structure," noted Julia Jacobs. "People love the new access to the river; we're seeing people fishing and kayaking and bringing their kids there to play." The Tribe is now looking at ways to expand the park and install artwork as well as trails, restrooms and a boat launch.

The creative, sustained efforts of the Saint Regis Mohawk Tribe show how education, partnership-building, and grant and tribal funding can result in projects that illustrate the key pillars of SMM in action – strengthening environmental protection, fostering economic development and addressing community priorities. At the broadest level, these efforts help communities see long-standing challenges in new ways and envision new opportunities for the future.

DISASTER DEBRIS TOOLS

The built environment can contribute to the creation of debris during disaster events and can impact a community's infrastructure. When infrastructure fails and must be rebuilt, it requires additional products, materials and resources for recovery and rebuilding efforts.

Disaster management has four phases: preparedness, mitigation, response and recovery. Using SMM during each of these phases can increase a community's resiliency to natural disasters.



Pre-incident planning helps a tribe to know what sort of debris to expect and what to do with it in the event of a disaster. EPA's *Planning for Natural Disaster Debris Guide* (www.epa.gov/homeland-security-waste/guidance-about-planning-natural-disaster-debris) is a good place to start. Tribes can use the *Guide* to plan for debris before a natural disaster occurs to improve the effectiveness of pre-incident planning efforts, increase community preparedness and enhance community resiliency. Pre-incident planning also significantly aids decision-making during a response, and helps communities recover faster, spend less money on cleanup and debris/waste management, and use fewer resources to rebuild and recover.

EPA has developed an interactive mapping tool of 12 types of recyclers and landfills that manage disaster debris. *The Disaster Debris Recovery Tool* (www.epa.gov/large-scale-residential-demolition/disaster-debris-recovery-tool) provides information and locations for thousands of facilities across the United States that are capable of managing different materials that may be found in disaster debris. The tool enables responders to find viable recycling options during a response, increasing recycling levels and saving time, money and landfill capacity. Several tribes in the Midwest, including the Mille Lacs Band of Ojibwe in east-central Minnesota, have used the tool to include recycling facilities in disaster debris plans and training events.

Additionally, EPA Regions have been able to support some tribal disaster debris management training in partnership with tribes. The training is geared towards tribal staff involved in emergency management, waste management, public works, planning and other areas.

Lessons Learned

- Plan before a disaster occurs.
- Contact waste management facilities to determine what debris they will accept.
- Properly segregate the debris as early as possible to improve waste and materials management.
- Reuse and recycle disaster debris as much as practicable.

Recycling

At its most basic level, recycling turns items such as bottles, paper and cans into new products. More specifically, recycling is the separation and collection of materials that otherwise would be considered waste, the processing and remanufacturing of these items into new products, and the use of the recycled products to complete the cycle.

Recycling includes the recovery of a wide range of materials, such as paper, glass, plastic and metals, as well as C&D materials. Transforming these materials into new products reduces the amount of virgin raw materials needed to meet consumer demand. It also reduces the amount of materials that are considered wastes and thrown in a landfill. The recycling system plays a critical role in enabling SMM progress.

Despite this critical role, the nation's recycling infrastructure, including recycling programs on tribal lands, faces a variety of challenges. Many consumers see recycling as the best way to help the environment, but even with the best intentions people sometimes mistakenly place recyclable items in the trash and non-recyclable items in their recycling bins. Education and outreach on what can and cannot be recycled in a given area is a key component of a successful recycling program.

Additionally, recent international policy changes have reduced available markets for recyclable materials and recycling infrastructure is not well equipped to process the materials consumers purchase in the marketplace today. These changes have impacted the effectiveness and profitability of recycling programs in the short term, as markets change and prices paid for recyclable materials fluctuate.

Regardless of the challenges, recycling is a valuable industry in the United States. According to EPA's 2016 *Recycling Economic Information (REI) Report* (www.epa.gov/smm/recycling-economic-information-rei-report), there are an average of 1.57 jobs, $76,030 in wages and $14,101 in tax revenues attributable for every 1,000 tons of recyclables collected and recycled in the United States. In total, recycling and reuse activities account for 757,000 jobs, produce $36.6 billion in wages and produce $6.7 billion in tax revenues annually.

Developing a recycling plan with short-term, mid-term and long-term goals and strategies will help your tribe to identify what materials to collect, how to collect them, and when and how to recycle them in a manner that will benefit the community and the bottom line.

EPA's America Recycles Efforts

Since 2018, EPA has been working with stakeholders from across the recycling system on four key action areas.

1. Promoting Education and Outreach
2. Enhancing Materials Management Infrastructure
3. Strengthening Secondary Material Markets
4. Enhancing Measurement

Over the course of 2019, stakeholder workgroups identified key actions and implementation strategies to address the challenges facing the recycling system. On November 15, 2019, EPA released the *National Framework for Advancing the U.S. Recycling System*, which describes the progress made to date and potential actions in 2020. This framework includes insights and recommendations that may be transferable to tribal recycling programs. For more information about the *National Framework*, visit: www.epa.gov/americarecycles/national-framework-advancing-us-recycling-system.

Interested organizations have also been signing the America Recycles Pledge. Forty-five signatories signed the pledge in 2018 and over 200 have signed it as of February 2020. In November 2019, EPA also hosted the first-ever America Recycles Innovation Fair. It brought together more than 40 innovative organizations in recycling to showcase new products and technologies. Over 600 people attended to learn about what's new in the recycling industry.

Today, tribal recycling programs are developing innovative recycling systems, pursuing partners and resources, and tackling recycling challenges. Over the past decade, for example, the Choctaw Nation of Oklahoma has built one of the most successful tribal recycling programs in the country.

Sign the America Recycles Pledge Today!

To learn more and sign the America Recycles Pledge, please visit: www.epa.gov/americarecycles/forms/america-recycles-pledge.

EPA Highlighted Oklahoma Tribal Recycling Programs during 2019 ARD Events

Modoc Nation, formerly the Modoc Tribe of Oklahoma: www.youtube.com/watch?v=DpIO0xKhTDM&feature=youtu.be

The Choctaw Nation of Oklahoma: www.youtube.com/watch?v=NOUseTfP7Is&feature=youtu.be

Muscogee (Creek) Nation: www.youtube.com/watch?v=qfQvPe6apig&feature=youtu.be

AMERICA RECYCLES PLEDGE

My organization pledges to work together with EPA and the other America Recycles Pledge signatories to build on our existing efforts to address the challenges facing our nation's recycling system and to identify solutions that create a more resilient materials economy and protect the environment. My submission of this form indicates the interest and willingness of my organization to participate in an ongoing dialogue to identify specific actions that we can take collectively with EPA and the other signatories, and within our respective organization, to improve the nation's recycling system.

Taking Program Development Step by Step, Building Strong Foundations for Success

National Tribal Leadership in Recycling – The Choctaw Nation of Oklahoma

The Choctaw Nation of Oklahoma is a federally recognized tribe whose service territory covers more than 10,000 square miles in ten-and-a-half counties in rural southeast Oklahoma. The Nation has nearly 200,000 members worldwide; it is the third-largest tribe in the United States.

Today, the Nation manages one of the largest tribal recycling programs in the country. Facilities in Durant and Poteau, Oklahoma, recycle almost 300,000 pounds of materials each month. As of January 2019, the two centers had processed a remarkable 20,548,832 pounds of recycling in the past 10 years.

Tracy Horst, the Nation's Program Director for Natural Resources, remembers just how far the program has come. "At first, we had no money, no budget, but we were blessed with tribal leadership that believes the Nation is responsible for maintaining the land and the environment in the way it was shared with us," she recalled.

Bags of shredded paper ready for recycling, picked up during the program's early days.

"We started with printer cartridges and aluminum cans to generate revenue for our budget. We drove around in a little Chevy Impala to pick up recyclables at first. You can start out small. Just start somewhere."

- Tracy Horst, Program Director for Natural Resources, Choctaw Nation of Oklahoma

Choctaw Nation Green Vision

"The Choctaw Nation is committed to being a responsible steward of the environment in order to minimize our impact on the environment for future generations."

The program was soon named Choctaw Nation Going Green, an interdisciplinary environmental team open to staff in all tribal departments. At first, in 2009, the Nation's recycling program lacked facilities; the team collected materials and moved them to the nearest recycling facility in Ada, about an hour's drive away.

"We had big goals from the start," noted Jason Lilley, the Nation's Recycling Manager. "We wanted to recycle as many different materials and as much of them as possible. We wanted to provide recycling pickups across as much of the Nation as possible, and in nearby communities as well. And we wanted to separate and process the materials ourselves, to then generate revenue from them."

To get there, Choctaw Nation Going Green took two key steps. Through outreach to area localities, including the city of Durant, the city of McAlester and Coal County, the team found limited recycling facilities and substantial community interest in saving money and diverting waste from area landfills. The team then coordinated closely with the Nation's Grants Department and identified promising funding opportunities for recycling facilities and equipment.

From there, Choctaw Nation Going Green was able to turn their big goals into reality.

Scaling Up: Harnessing Grants and Partnerships

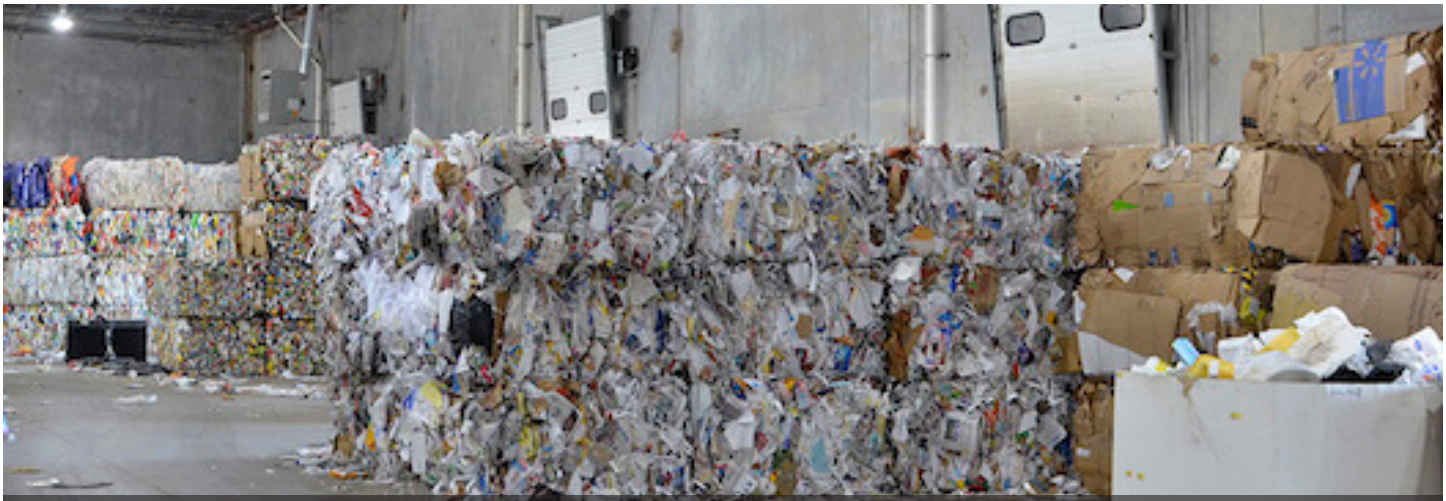
Choctaw Nation Going Green's partnership with the Nation's Grants Department led to a series of grant applications and resulted in $800,000 in Energy Efficiency and Conservation Block Grant funding from the U.S. Department of Energy (DOE). The Nation used the three-year grant to build a state-of-the-art recycling center in Durant, Oklahoma. The 30,350-square-foot center opened in December 2010. The facility is open to tribal and non-tribal businesses and individuals in the area. It accepts newspaper, office paper, shredded paper, magazines, catalogs, plastics #1, 2 and 5, aluminum cans, steel cans, polystyrene, cellphones, printer cartridges, used tires and cardboard. The center also hosts regular events to collect and recycle electronic waste as well as household hazardous wastes.

The Nation's recycling mascot, Luksi the turtle, at a community event at the Nation's recycling center in Durant.

For local governments in the area, opening the facility meant that starting or expanding their own recycling programs was now more financially and logistically feasible. Several localities pursued their own recycling grants and used the resources to purchase "roll-offs," which are large recycling bins that are taken to the facility where the contents are emptied and sorted. Facility staff include several drivers who travel across the Nation to pick up the roll-offs when they are full and replace them with empty roll-offs.

"We would not have been able to scale up and grow like we have without our partnerships," noted Tracy Horst. "Whether we pick up the recyclables or local governments bring us the material, we accept it at no cost to them, bale it, and turn it around and sell it." As Choctaw Nation Going Green has built its capacities, it has also started advising area localities on equipment and program design as well as broader community education and outreach and job training.

For example, in 2011, Choctaw Nation Going Green started work on a joint effort with the city of McAlester and Ki Bois Developmental Disabilities, a community action program. The program provides employment for mentally challenged young people to collect and hand-sort plastic and paper products to recycle. Once collected and sorted, the McAlester recycling materials are brought to the Durant facility.



Processed bales of recycled material at the Durant recycling center ready to be shipped to manufacturers.

Choctaw Nation Going Green also continued working with the Nation's Grants Department to identify funding opportunities for constructing a second recycling facility. Given the size of the Nation (10,485 square miles), the Durant facility faced eventual geographic limitations for its service area. The team identified Poteau, Oklahoma, a community 125 miles north of Durant, as the ideal location for the second center, which could provide service to up to 120,000 people.

In 2013, the Nation received a three-year, $151,000 Social and Economic Development Strategies (SEDS) grant from the Administration for Native Americans (ANA), which is part of the U.S. Department of Health and Human Services. The funding, known as Project IMPACT, enabled construction of the facility. It also provided funding for two employees as well as community education and outreach efforts focused on recycling. The Poteau recycling facility opened in January 2013. The facility separates the materials by type – paper, cardboard, tin/steel cans, aluminum cans, plastics #1, 2 and 5, printer cartridges and polystyrene. The facility also prepares the materials for recycling by bundling and storing the separated materials.

"We called it Project IMPACT because there was zero recycling activity in the area, and we wanted to track the impact of our recycling activities in the community."

- Jason Lilley, Recycling Manager, Choctaw Nation of Oklahoma

A waste audit kicked off the project to help make the case for recycling. Center staff hauled away trash from local businesses for sorting. "We were able to report back with numbers, pointing out that if the businesses recycled most of their trash, their tipping fees would go down. They would save money," he recalled. "People responded to the bottom line – they could save money on their trash bills by recycling a large part of their waste."

Did You Know?

Recycling used aluminum cans and returning them to store shelves as new cans takes as few as 60 days.

Durant recycling center staff in front of a large pile of recyclable materials.

Choctaw Nation Going Green created and updated goals for both facilities, tracking their progress on an electronic dashboard. Today, both facilities have monthly goals.

The Durant recycling facility.

The Durant facility strives for 165 tips per month. A tip is when a recycling roll-off container is brought to the facility floor for sorting. In addition, the Durant facility has a goal to process 250,000 pounds of baled material a month.

The Poteau recycling facility.

The Poteau facility's target is 75 tips a month and it aims to process 75,000 pounds of baled material a month.

Building Capacities, Planning for the Long Term: Education and Outreach

Tracy Horst emphasizes that the Nation's recycling activities and successes would not be possible without one key ingredient: community education and outreach. "If people don't know you're there, and they don't know why recycling is important for the environment and the economy and public health, no one will show up," she noted. "And the outreach has to be sustained over time, regular updates and regular events, held in as many different places as possible." Most of the recycling grants received by the Nation, including the DOE and ANA grants that built the Durant and Poteau recycling facilities, have included dedicated funding for education and outreach efforts.

Schools are a big part of all recycling outreach efforts. "On the administration/program side, it's about helping schools reduce waste and getting recycling infrastructure in place," Lilley notes. "With the kids, it's about having fun while raising awareness about what they can do to make a difference." Classroom recycling contests are fueled by the incentive of ice cream sundae and pizza parties. Choctaw Nation Going Green works with the Nation's Forestry, Agriculture and Water departments to host education stations at environmental carnivals in area schools. Similar stations at career fairs help high-school students think long term about careers in fields such as sustainability, public health and environmental planning. In addition,

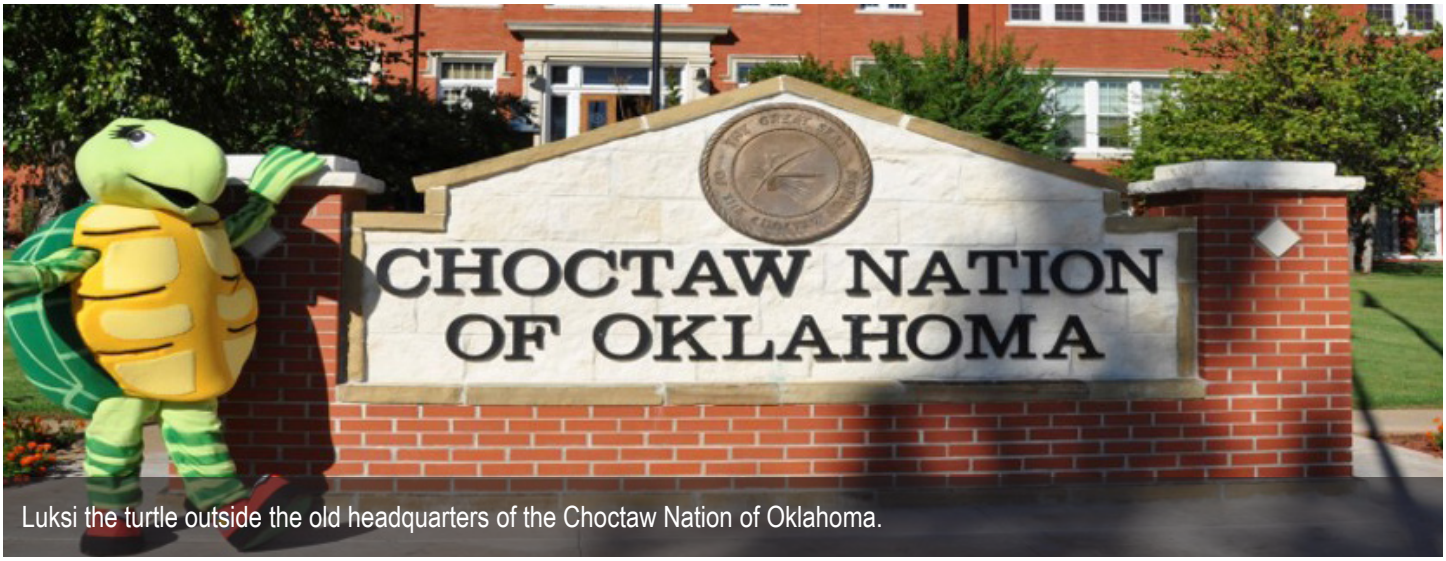
Community recycling event.

Choctaw Nation Going Green hosts school trips that bring students to see the recycling facilities firsthand – almost 1,000 schoolchildren visited the recycling facilities in 2018. "These small investments help build habits and knowledge that can last a lifetime," Horst reflected.

Luksi the turtle greeting children at the community recycling event.

Outreach Lessons Learned

- Seek out collaboration opportunities among tribal departments, so that programs focused on water quality, litter cleanups and other priorities include recycling information.
- Use community and tribal government collection events and recycling contests to raise awareness and get people involved. Event advertising includes flyers, posters, radio ads and articles in community newspapers.
- Use social media to reach people. The Nation's "Recycling" Facebook page shares recycling information and provides event update reminders.
- Connect in person. The Nation's recycling mascot, Luksi the turtle, helps share information with children of all ages.
- Invite diverse event partners, including businesses, youth groups, senior citizen centers and other community organizations.



Luksi the turtle outside the old headquarters of the Choctaw Nation of Oklahoma.

Looking Forward

Over the past decade, the Choctaw Nation of Oklahoma and Choctaw Nation Going Green have built one of the country's leading tribal recycling programs. The Nation's facilities in Durant and Poteau, Oklahoma, continue to recycle almost 300,000 pounds of materials a month. In January 2019, the two centers surpassed the 20-million-pound milestone. In total, the two centers service 150 roll-off containers in southeast Oklahoma and north Texas. Meanwhile, Choctaw Nation Going Green continues to sustain and expand its partnership and community outreach and education efforts. "Never stop trying to grow, learn and share," Tracy Horst noted. "You can never tell people enough. If you don't reach them today, get them tomorrow." All proceeds from the recycling program go back into the Nation's annual budget and are used to help fund health clinics, community centers and other priorities.

In turn, the program's successes have been recognized by a host of awards, including "Best of the Environmentally Best" and "Environmental Excellence" from Keep Oklahoma Beautiful, a statewide nonprofit organization dedicated to environmental improvement. The Nation has also been recognized as the "Recycling Government of the Year" by the city of Tulsa, Oklahoma's Metropolitan Environmental Trust and "Community Partner of the Year" by the city of McAlester.

Looking forward, the team is focused on facility expansion, expansion of curbside recycling opportunities, equipment upgrades, and long-term community outreach and education. "We would love to build a third facility, to reach more people and to bring down transportation costs," Horst notes. Potential equipment upgrades include a conveyor sorting system for the Poteau facility (the Durant facility has already been upgraded), optical sorting capacity for the conveyors, adding trucks for curbside recycling and structural modifications to allow those trucks to pull into the buildings.

For tribes looking to start their own recycling programs, Tracy Horst, Jason Lilley and Choctaw Nation Going Green recommend pursuing resources and partnerships, evaluating your waste stream, and identifying your potential service area. "Drive around facilities, look at the trash, see what you have to work with," Lilley stated. "Do a waste audit so that you can make the case to the community, and funders, that your program is going to benefit the environment and the bottom line. Then keep building relationships and take everything one step a time."

More than a decade after the Nation's Durant recycling center opened its doors, its recycling program highlights the remarkable places those steps can lead.

Learn more about the Choctaw Nation of Oklahoma's recycling program:
www.youtube.com/watch?v=NOUseTfP7Is&feature=youtu.be

RECYCLING TIPS!

Keep the Recycling Stream Clean

Recycling is the process of collecting, sorting and processing materials that would otherwise be thrown away as trash and turning them into new products. Recycling can benefit your community, the economy and the environment.

Best Practices

- Shop with reusable bags and clean them with soap and water after each use.
- Take your plastic bags to your local grocery store or other retailer for recycling.

Some Materials Cannot Be Recycled

Putting items in the recycling bin that can't be recycled can contaminate the recycling stream. After these unrecyclable items arrive at recycling centers, they can cause costly damage to the equipment. Additionally, after arriving at recycling centers, they must be sorted out and then sent to landfills, which raises costs.

Plastic bags are a major problem for recycling facilities. They must be pulled out of sorting facilities and can damage recycling equipment. Putting them in the trash is preferable to using them to bag up recyclables. Some local grocery stores or other retailers may accept plastic bags separately for recycling.

Your local transfer station or recycling facility may not accept some materials. These may include:

- Shredded paper
- Scrap metal
- Hazardous wastes
- Consumer electronics
- Syringes, needles and other sanitary products
- Some plastics

How to Recycle Lithium-Ion Batteries

Every year in the United States, millions of single-use and rechargeable batteries are bought, used and sent to be recycled or disposed of in the trash.

With the rapid increase in the use of portable, cordless and smaller electronics, the demand for batteries has surged. Lithium-ion batteries are commonly found in portable electronic devices such as cell phones, laptops, tablets and power tools.

Did You Know?

Lithium-ion batteries can be problematic because they have a high potential as a fire hazard if they are broken or crushed. EPA recommends sending them to specialized battery recyclers, participating retailers that provide battery takeback services, or local household hazardous waste facilities.

Some lithium-ion batteries in electronics can be easily removed (e.g., power tools) and some cannot (e.g., some cell phones, laptops, tablets). The batteries that can be easily removed can be sent to specialized battery collectors. The batteries that cannot be easily removed should be recycled with the electronic device and sent to a collection program specifically for electronic battery recycling.

Resources for Building SMM Programs

General

Sustainable Materials Management on Tribal Lands – A Life-Cycle Approach to Managing Materials

www.epa.gov/tribal-lands/sustainable-materials-management-tribal-lands-life-cycle-approach-managing-materials

This fact sheet introduces tribal governments, communities and individuals to the concept of SMM, showcases tribal projects that have applied SMM principles and practices successfully, and encourages tribes to consider SMM approaches to their materials management work.

Institute for Tribal Environmental Professionals (ITEP)

www7.nau.edu/itep/main/Home

ITEP strengthens tribal capacity and sovereignty in environmental and natural resource management through culturally relevant education, research, partnerships and policy-based services. ITEP provides a range of SMM-related trainings.

SMM Web Academy

www.epa.gov/smm/sustainable-materials-management-web-academy

The SMM Web Academy series is a free resource for people interested in learning more about SMM principles from experts in the field. From these webinars, you can learn about key issues, successful projects and a variety of best management practices for creating stellar materials and waste management programs.

Non-Hazardous Materials and Waste Management Hierarchy

www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy

EPA developed the hierarchy in recognition that no single waste management approach is suitable for managing all materials and waste streams in all circumstances. The hierarchy ranks the various management strategies from most to least environmentally preferred. It places emphasis on reducing, reusing and recycling as key to sustainable materials management.

Tribal Waste Management Program Sustainability Evaluation Tool

www.epa.gov/tribal-lands/tribal-waste-management-program-sustainability-evaluation-tool

This tool evaluates how tribal waste management programs are currently operating and identifies areas where there is a need for additional support in developing a sustainable tribal waste management program. The tool consists of a spreadsheet, which addresses seven key indicators that are representative of a sustainable tribal waste management program. The tool allows tribal managers to self-evaluate or agree to a third-party evaluation of the sustainability of their waste management programs in these areas. You can use the results of the evaluation to diagnose and target areas to strengthen, to assess improvements over time, and to aid in funding decisions.

The Sustainable Management of Food

Food Recovery Hierarchy

www.epa.gov/sustainable-management-food/food-recovery-hierarchy

EPA's Food Recovery Hierarchy prioritizes actions that organizations can take to prevent and divert wasted food. Each tier of the hierarchy focuses on different management strategies for wasted food.

Reducing Wasted Food at Home

www.epa.gov/recycle/reducing-wasted-food-home

This EPA website provides information on the benefits of reducing wasted food, ways to reduce wasted food, planning, storage and preparation tips, and a toolkit for home and your community on reducing wasted food.

Food: Too Good to Waste – Implementation Guide and Toolkit

www.epa.gov/sustainable-management-food/food-too-good-waste-implementation-guide-and-toolkit

This EPA guide and toolkit focus on ways to reduce wasteful household and community food management practices.

EPA's Food Recovery Challenge (FRC)

www.epa.gov/sustainable-management-food/food-recovery-challenge-frc

As part of EPA's Food Recovery Challenge, organizations pledge to improve their sustainable food management practices and report their results. Any business or organization can join the FRC as a participant or endorser. Participants prevent and divert wasted food in their operations. Endorsers promote sustainable management of food by educating organizations and businesses about the environmental, social and economic benefits of preventing and diverting wasted food. Endorsers also recruit organizations and businesses to join the FRC.

A Guide to Conducting Student Food Waste Audits: A Resource for Schools

www.epa.gov/sustainable-management-food/guide-conducting-student-food-waste-audits-resource-schools

This guide is for students and school personnel about the amount of food wasted in their cafeterias. The guide provides information on why and how to do a food waste audit and what to do with the data collected, and offers food waste prevention ideas.

Further with Food: Center for Food Loss and Waste Solutions

furtherwithfood.org

This site enables users to find and share information about proven solutions and innovative new approaches to reducing food loss and waste. By joining together and learning from one another, we can reach our national goal of cutting food loss and waste in the United States in half by 2030.

ReFED

www.refed.com

ReFED was formed to build a different future, where food waste prevention is recognized as an untapped strategy that can save resources, create jobs, alleviate hunger, conserve water and reduce greenhouse gas emissions while also stimulating market opportunities.

The FoodKeeper App

www.foodsafety.gov/keep-food-safe/foodkeeper-app

The FoodKeeper helps people explore ways to store food and beverages more effectively. It was developed by the USDA's Food Safety and Inspection Service, with Cornell University and the Food Marketing Institute.

Food Matters Action Kit

www3.cec.org/flwy

This kit is loaded with informative resources and hands-on, creative activities to inspire youth of all ages to prevent food waste at home, at school and in their communities.

Why and How to Measure Food Loss and Waste – A Practical Guide

www3.cec.org/flwm

This guide walks users through seven steps for measuring food loss and waste in their business, city, state or country.

The Built Environment

Forum on Life-Cycle Approaches to Sustainably Manage Materials in Building and Infrastructure Projects

www.epa.gov/smm/summary-report-forum-life-cycle-approaches-sustainably-manage-materials-building-and

This 2018 forum and resulting summary report explore key areas related to SMM in the built environment, including collaboration and partnerships, innovation and research, life-cycle data and tools, and enhancing secondary materials markets.

Abandoned Mobile Homes Toolkit

www.epa.gov/smm/toolkit-about-abandoned-mobile-homes

The toolkit includes videos, a Best Management Practices Resource Guide, assessment guide checklists and a resource bibliography that cover salvage and recycling of C&D materials as part of the deconstruction of abandoned mobile homes.

SMM Webinar – Sustainability in the Built Environment: Why Materials Matter

www.epa.gov/smm/sustainable-materials-management-smm-web-academy-webinar-sustainability-built-environment-why

This 2018 webinar features presentations from the Carbon Leadership Forum, the Building Materials Reuse Association, and EPA's Office of Resource Conservation and Recovery.

EPA Managing Materials and Wastes for Homeland Security Incidents

www.epa.gov/homeland-security-waste

This website provides debris management and recycling information for communities planning for and responding to natural disasters.

Sustainable Management of Construction and Demolition Materials What You Can Do: Reduce, Reuse, Recycle and Rebuy C&D Materials

www.epa.gov/smm/sustainable-management-construction-and-demolition-materials#WYCD

Sustainable Management of Industrial Non-Hazardous Secondary Materials

www.epa.gov/smm/sustainable-management-industrial-non-hazardous-secondary-materials

Recycling

EPA's America Recycles Effort

www.epa.gov/americarecycles

The Recycling Partnership

recyclingpartnership.org

Keep America Beautiful

www.kab.org

EPA Sustainable Packaging Resources

www.epa.gov/smm/sustainable-packaging

EPA Recycling Basics and Benefits

www.epa.gov/recycle/recycling-basics

EPA Frequent Questions on Recycling

www.epa.gov/recycle/frequent-questions-recycling

Funding and Technical Assistance Resources

Tribal Waste Management Funding Resources Directory

www.epa.gov/tribal-lands/tribal-waste-management-funding-resources-directory

The Directory is a searchable resource listing waste management financial assistance sources (grants, loans, cost-sharing) available to tribes and nonprofit organizations. Subject matter criteria-based searches and general word-based searches of the funding programs are both possible. Criteria searches can be done by funding agency, type of organization, type of assistance sought and keywords. Searches result in a listing of programs by name.

Tribal Waste Management Technical Assistance Directory

www.epa.gov/tribal-lands/tribal-waste-management-technical-assistance-directory

The Directory provides information on both national and regional-specific assistance available to tribes.

Indian Environmental General Assistance Program (GAP)

www.epa.gov/tribal/indian-environmental-general-assistance-program-gap

The Indian Environmental General Assistance Program Act authorized EPA to provide GAP grants to federally recognized tribes and tribal consortia for planning, developing and establishing environmental protection programs in Indian country, and for developing and implementing solid and hazardous waste programs on tribal lands. The goal of GAP is to assist tribes and tribal consortia in developing the capacity to manage their own environmental protection programs and to develop and implement solid and hazardous waste programs in accordance with individual tribal needs and applicable federal laws and regulations.

Fun with SMM!

Compost

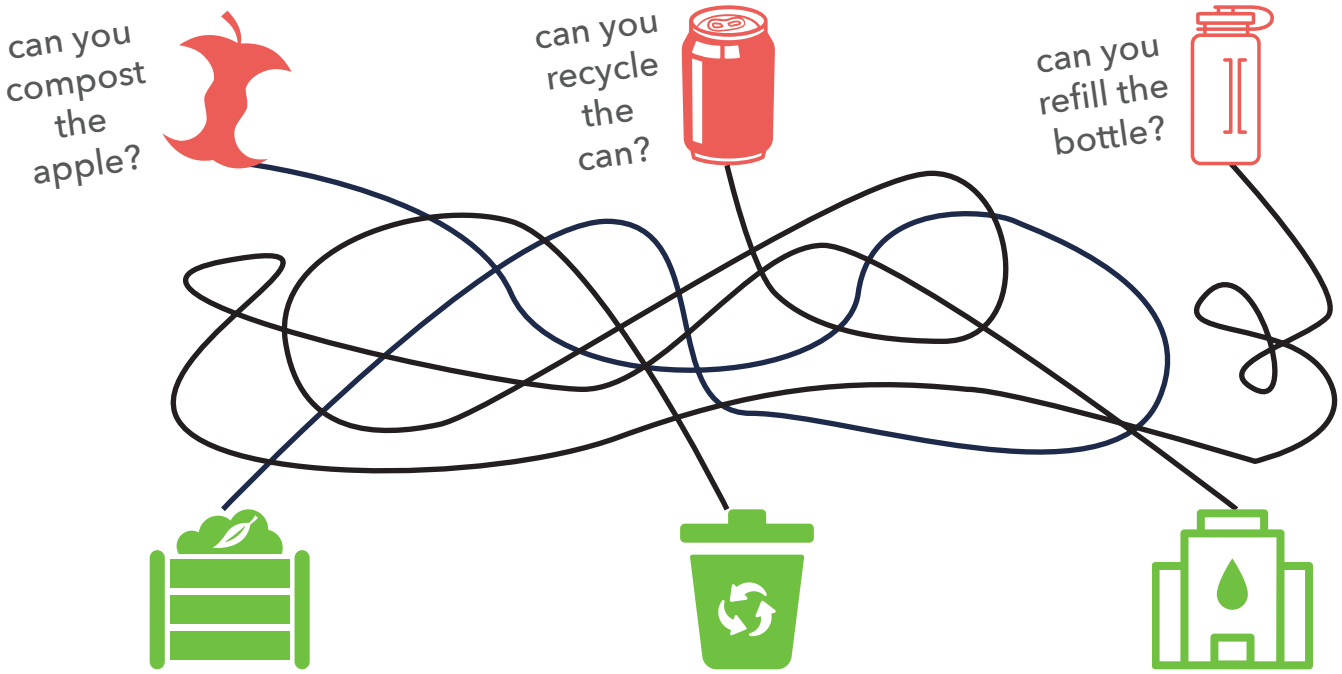
Compost is organic material that can be added to soil to help plants grow. Food scraps and yard waste make up about 30% of what we throw away. You can compost them instead. Making compost keeps these materials out of landfills where they take up space and release methane, a potent greenhouse gas.

Recycle

Recycling means taking materials that would otherwise be thrown away as trash and turning them into new products. Recycling can benefit your community and the environment. It keeps waste out of landfills and conserves natural resources.

Reuse

The best way to reduce waste is to not create it in the first place. Making a new product requires a lot of materials and energy. As a result, reduction and reuse are the most effective ways you can protect the environment and save money.



Did You Know???

About half of the trash you set out at the curb is compostable. This includes food scraps, paper waste, yard trimmings and wood waste.

The Numbers:

On average, 123,097 aluminum cans are recycled every minute. We recycle two out of every three cans we use. More than half of the aluminum in every can has been recycled.

Big Impact!

One person switching to a reusable water bottle saves 217 plastic water bottles from going to the landfill each year.

Word Search

S R C M C X Q B B I F E E H E
J U W I P A P E R A W N R Y B
F P S N T E N R K S D V C J A
X H S T S S E S Q M I I M C Y
J N O U A C A Z C M F R H T N
D A E B Y I D L R H V O L G K
G R T C T C N S P D O N A J B
F W L O S A M A Z X H M J E N
E E H I Z A E M B I R E G C L
C S N T W G L R K L G N Y U Y
O C R F V L M I W G E T J D D
O D E J X Z E Y Q S L G U E J
T H A N K Y O U E A R T H R N
A M M S E G R Z C H I W B D Y
T S O P M O C V W P E S Y U P

Circle the words from the list in the search to the left

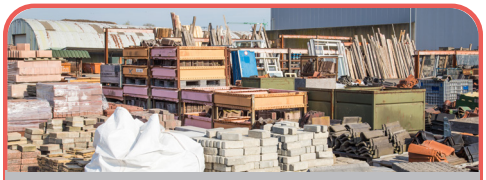
Hint: words can be diagonal and backwards. HAVE FUN!

Sustainable
Environment
Reduce
Reuse
Recycle
Thank You Earth
SMM
Compost
Paper
Cans
Plastic

What in the World? Can you unscramble these words?

OOTMPCS

_____



SLMAATREI

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ALLNFILD

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YCCRLEE

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EANUTR

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ERLLIF

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U.S. EPA Office of Resource Conservation and Recovery
EPA 530-F-20-006
September 2020

www.epa.gov/tribal-lands