Colorado Department of Public Health and Environment

Colorado Solid Waste and Materials Management Program 2010 Annual Report to the Colorado General Assembly

This document was modified to update the web address on page 5.

A Message from Charles Johnson

Program Manager, Solid Waste and Materials Management

Solid waste management is an ever expanding universe. In the past, managing solid waste focused primarily on disposal and the efficient operation of landfills. In the 21st Century, our focus is on managing materials, finding innovative ways to balance disposal, recycling and reuse of everything from household trash to surplus electronics. Therefore, the new watchwords for the Solid Waste and Materials Management Program (SW&MMP) are "Material management innovation is everywhere all the time."

The program saw changes in every aspect of our business including new legislation, regulation and implementation. Three new laws were passed during the 2010 legislative session that directly impacted solid waste management in Colorado. New volume-based fee authorities were passed by the legislature along with creation of an expanded waste tire program and new waste grease program. In addition we have been conducting stakeholder groups for the new waste tire, compost, and waste impoundment regulations. We also hosted medical waste and geotechnical guidance development workgroups. We have drafted recycling regulations that will be introduced to stakeholders during early 2011.

We have worked diligently over the last several years to be more inclusive and transparent in our operations and activities. More than ever before, we try to include both internal and external customers in our processes. These efforts involve including customers from other groups within our own division, other state divisions and departments, federal partners, concerned citizens, interest groups, legislators, industry representatives, city and county representatives and others in our activities.

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Each and every day we strive to stay current with industry advances and new business opportunities. One of our key goals is to update the solid waste and material management regulations to include the material management practices of today with flexibility for tomorrow's innovations — while being protective of Colorado's health and the environment. Therefore, in addition to industry's advances, we also strive to improve ourselves and our operating efficiencies.

We look forward to developing more workgroups to support interactive development and implementation of the solid waste and material management regulations. I believe these workgroups will be the key to constant improvement and successful material management in Colorado. Our door is always open for your input and suggestions.

Charles G. Johnson, Manager,
Solid Waste and Materials
Management Program

Colorado Department of Public Health and Environment
Solid Waste and Materials Management Unit
Contact Information

Joe Schieffelin
Solid & Hazardous Waste Program Manager
303-692-3356
joe.schieffelin@state.co.us

Charles Johnson, Solid Waste and Materials Management Program Manager
303-692-3348
charles.johnson@state.co.us

Roger Doak
Solid Waste Permitting Unit Leader
303-692-3437
roger.doak@state.co.us

Colorado Department of
Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Impacts and Success Stories

Permitting

The number and types of solid waste facilities in Colorado increased during 2010, along with technical and management innovations in solid waste disposal and management. One of this year's success stories was the Heartland Agricultural Waste to Energy Digester. The agricultural digester represents a real win-win for Colorado.

When agricultural waste, food waste, and restaurant fat and oils are used as feedstocks in an anaerobic digester, they produce biogas (methane), a renewable energy source. The Heartland facility, Colorado's first commercial waste-to-energy facility and one of the largest of its kind in the U.S. was successfully permitted in 2010. The 80-acre facility is located east of the town of Gilcrest. Twenty-four covered anaerobic digesters, each the size of an Olympic swimming pool, will produce enough natural gas to supply natural gas needs for approximately 18,000 Colorado homes. The anaerobic digestion process also will produce a nutrient-rich organic residual material that will be further processed into compost.

At full build out, the facility will accept 419 tons of manure; 44 tons of food waste and meat processing waste; and 41 tons of cooking fat, oil and grease each day. The facility will yield about 290 tons of organic residual and 4.7 million cubic feet of finished biogas daily. The continued development of similar waste-to-energy facilities will positively enhance energy production for Colorado's future.

Solid waste permitting also embraced innovation in the treatment of oil and gas exploration and production waste. The first commercial solid waste in-vessel oil and gas brine treatment facility was permitted during 2010. This facility will treat oil and gas brine waters, yielding an effluent of irrigation-quality treated water and a high-concentration brine. The brine solution may be evaporated to produce industrial-quality salts. This facility will help the oil and gas industry with its ongoing waste treatment and disposal needs.

The number of solid waste permits and plan modifications continued to increase through 2010 (Page 4, Figure 3). This growth is partly due to businesses seizing the opportunity for innovative waste operations, and partly due to businesses optimizing operations to increase their return on investment.

Materials Management

Traditional solid waste disposal is shifting to alternative forms of material management, such as recycling, composting, and beneficial use of solid waste in the Centennial State.

In the recycling category alone, the number of registered recycling facilities grew 57 percent over 2009 levels, bringing the total number of recycling facilities statewide to 126. Meanwhile, the types of materials recycled and local markets utilizing recyclable materials are growing too.

With Colorado still lagging the national recycling average at 19.8 percent versus 33.2 percent[1], the Materials Management Group is working with stakeholders to promote new and innovative ways to recycle and divert materials properly.

One notable new trend in Colorado is recycling asphalt shingles for use in asphalt pavement. Working with the recycling industry and other government entities, the department has put together guidance to promote recycling of this large waste stream.

The department promotes the use of difficult to recycle materials through beneficial use. Beneficial Use Determinations (BUDs) are made for items such as coal combustion fly ash, oil and gas produced water, and sugar beet lime waste. The BUD process ensures that wastes are used in a manner that protects human health and the environment and is

Colorado recycling facilities such the new Eagle County Material Recovery Facility, above, are on the increase.

[1] *U.S. EPA. MSW Generation, Recycling and Disposal in the US: Facts and Figures. November 2009*

Continued on page 6...

By the Numbers: Overview of Colorado's Solid

Regulatory Authority and Program Elements

The program is located within the Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment. The program is responsible for ensuring compliance with laws pertaining to the management of solid waste. Primary program elements include compliance assistance; compliance monitoring and enforcement; remediation, permitting and information management.

The program does not receive any monies from Colorado's General Fund, and is 100 percent fee supported. The Act and the Regulations (6-CCR 1007-2) provide three means of collecting fees to support the program. These include the Solid Waste User Fee (SWUF) or "tipping fee," the Hourly Activity Fee and the Annual Facility Fee. During 2010 the Solid and Hazardous Waste Commission received authority for and passed regulations setting the SWUF. The SWUF supports approximately 78 percent of the program's funding (Figure 1) and the program is expected to have adequate revenue for at least five years.

During 2010, the program continued its efforts to improve efficiency and effectiveness following the passage of HB 07-1288. Examples of these activities include:

- Improved facility assistance delivered on inspections;
- Streamlined inspection and reporting process;
- Increased team training to remain current with industry practices;
- Development of workload tracking tools;
- Development of new database (ongoing);
- Continued improvement of data collection;
- Improved customer and facility outreach;
- Cross-media integrations with internal and external customers;
- Integrated meetings with owners and air, water and waste regulators to expedite issue resolution; and
- Continued refinement of workplans.

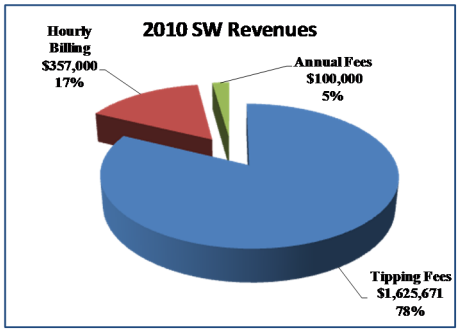

Figure 1: 2010 Solid Waste Revenues

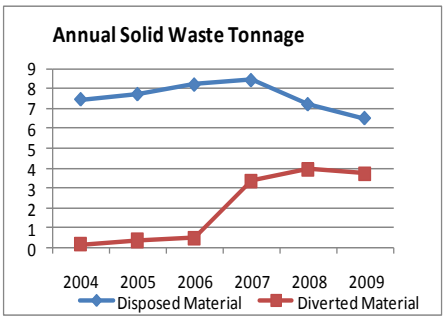

Figure 2: Annual Solid Waste Tonnage

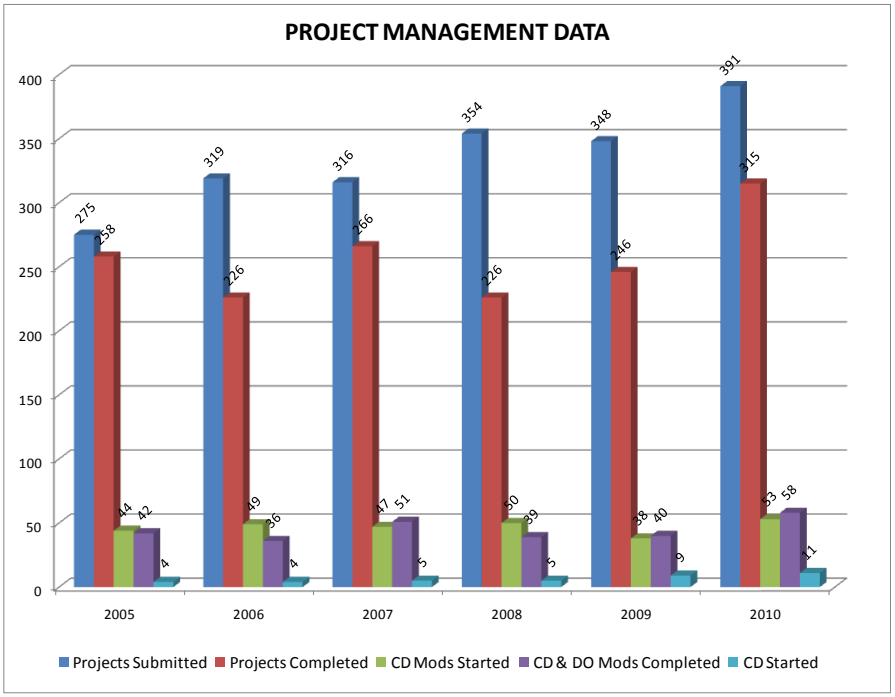

Figure 3: Project Management Data

Waste and Materials Management Program

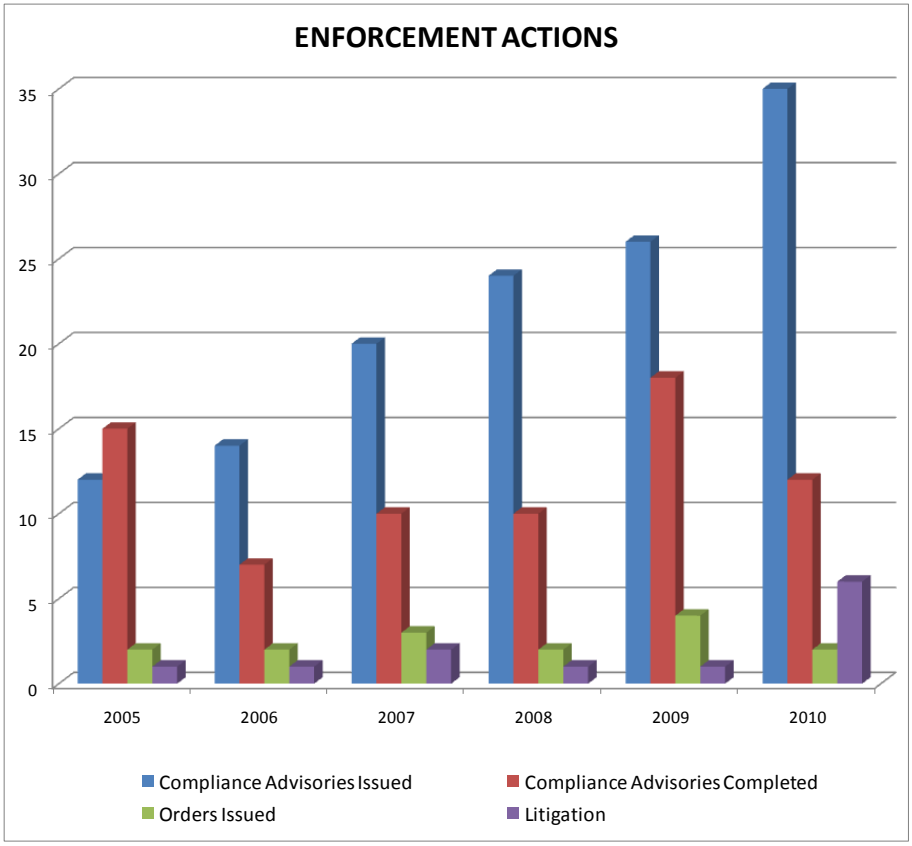

Figure 4: Enforcement Actions 2005-2010

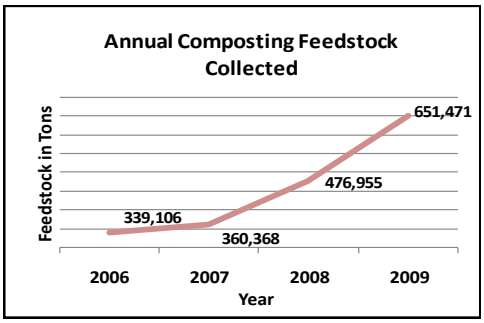

Figure 6: Composting Feedstock Collected 2006-2009

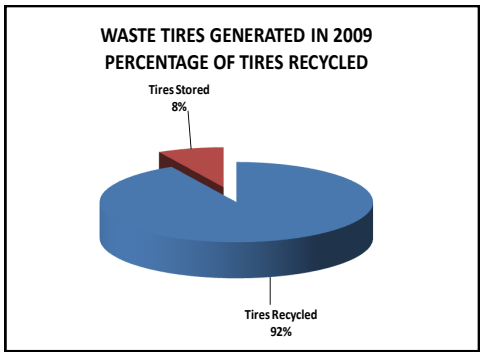

Figure 7: Waste Tires Generated and Recycled in 2009

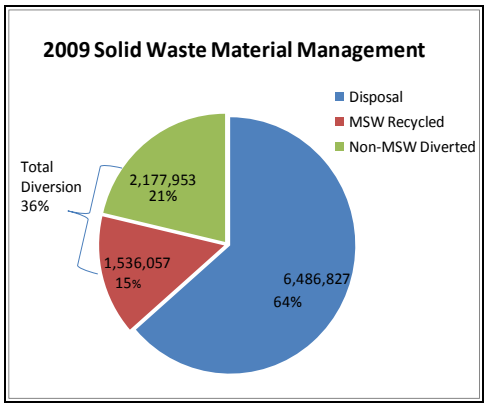

Figure 8: 2009 Solid Waste Material Management

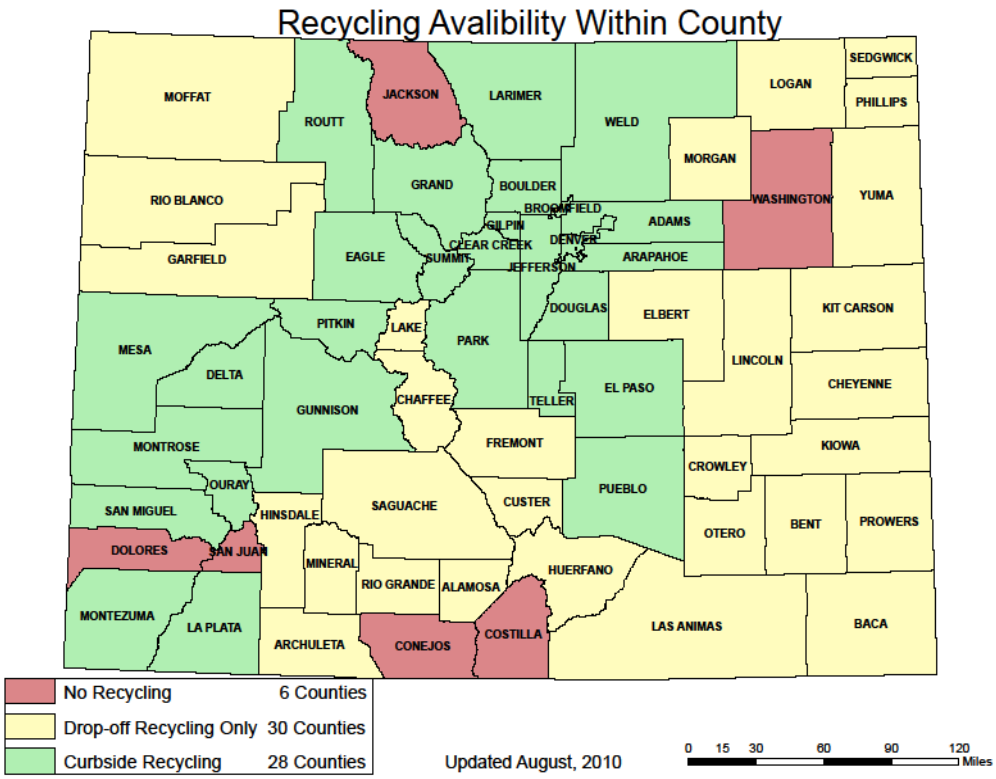

Figure 5: Recycling Availability by County

Additional Information

This report and additional data not reproduced here are available on the Colorado Department of Public Health and Environment website. Please visit us at: www.colorado.gov/cdphe/solidwaste and www.recycle4colorado.info.

Impacts and Success Stories

Materials Management

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consistent with accepted engineering or agricultural practices.

For example, Leprino Foods sought regulatory approval to use sugar beet waste as a backfill material at the former Western Sugar site in Greeley. After fine tuning the backfill specifications under guidance from the department, the contractor received approval and rehabilitated a 35-acre brownfield site.

Solid waste personnel began reaching out to tire retailers in late 2008 and early 2009, informing retailers of their obligation to use waste tire haulers registered with the department. The department saw a 100 percent increase in the use of registered waste tire haulers by May of 2009.

The Materials Management Group also monitors composting activity at facilities registered with the department. Organic solid waste sent to composting facilities increased by nearly 175,000 tons in 2009 over 2008 levels (Page 5, Figure 6). This increase is the result of companies taking the initiative to treat solid waste using methods other than land disposal, and also because additional compost facilities have registered with the department.

Program staff expect to see continued improvements in the amounts and types of material reused and recycled.

Inspections

The solid waste inspectors are responsible for inspecting solid waste facilities, following up on complaints, reviewing ground water and gas reports, and reviewing and inspecting asbestos-contaminated soil projects. The number of inspections in 2010 dropped from 135 to 125. The number of compliance advisories increased from 26 to 35 while compliance orders decreased to only two. Ongoing litigations increased from one to six (Page 5, Figure 4).

One of the primary reasons for the drop in the number of inspections is because the number of complaints received increased from an average of 40 per year to more than 120 per year during 2009 and 2010. This increase is partly due to reduced local code-enforcement staff, forcing citizens to turn to the state with complaints. This dramatic workload increase reduced the number of formal solid waste facility inspections completed.

Program staff were also reallocated staff resources to address the demands of the waste tire business sector. Program staff worked to educate and inspect the waste tire haulers, generators and recyclers regarding the existing and pending waste tire regulations. This outreach effort appeared to have a significant positive impact on tire management in Colorado.

The information gained through self certification will facilitate developing more focused facility training while optimizing inspections.

The year 2010 saw six new or ongoing litigation cases. The department's preferred enforcement approach is negotiating a return to compliance, using litigation only when faced with recalcitrant facilities. Unfortunately, recalcitrant facilities were the primary cause of the increase in new and ongoing litigations in 2010.

Efforts to address and improve the operations of the solid waste inspection group include adding two staff allocated through 2010 legislation for waste tire and waste grease management. This action will dedicate inspectors to specific waste-management sectors, improving overall inspection efficiency.

For the first time ever in Colorado, plans are to develop and deploy a solid waste self-certification system modeled after the one already in use by the Hazardous Waste Compliance Assurance Unit. The information gained through self certification will facilitate developing more focused facility training while optimizing inspections.

Trends to Watch

Material management concepts addressing solid waste transportation, storage, treatment, disposal, reuse and recycling are an ever-increasing target of interest in Colorado's legislative landscape. There are many interested parties seizing the available opportunities to massage one aspect or another of Colorado's existing material management structure.

During 2007 the program proposed successful legislation that provided two additional staff to track the flow of material in Colorado. Since then there has been at least one bill per year impacting solid waste and material management in Colorado, with three different bills being passed in 2010. Two examples include the waste tire and waste grease laws passed during the 2010 legislative session, which will drive recycling of these materials.

Improved tracking demonstrated an increase in material reuse, as well as a decrease in disposal volumes. Arguably the significant decrease in waste disposal was most strongly attributable to the economic downturn over the last several years. However, there has been a documented upsurge in the amount of material being recycled and reused (Page 4, Figure 2). Additionally, Colorado has a variety of materials and sources for materials diverted from landfills to recycling (Figure 9, above).

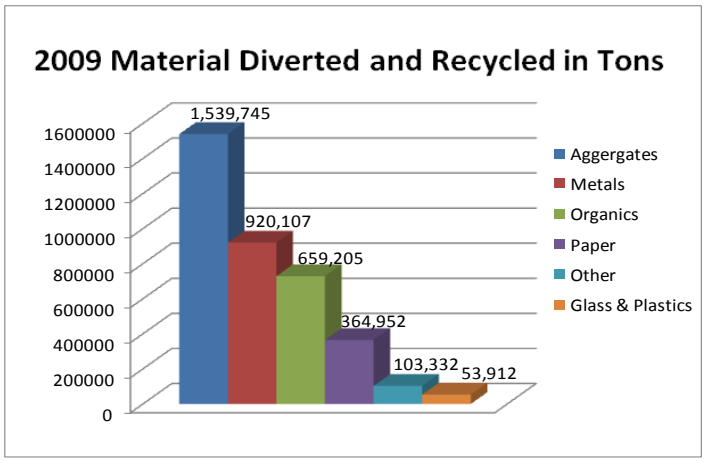


Figure 9: Material Diverted and Recycled

The fact that recycling has come of age is demonstrated by the fact that the same company disposing of the largest volume of solid waste is also Colorado's largest recycler.

Program staff are rewriting the recycling regulations to incorporate current industry practices and to facilitate future innovation in the recycling marketplace. The program's improved data collection and reporting ability, plus an improved recycling regulatory framework and new laws will promote material reuse in Colorado. We believe this trend is expected to continue in the future.

Legislation, Regulations and Workgroups

New laws directly impacting solid waste and material management in Colorado were passed during the 2010 legislative session. The laws required regulatory programs to track waste tires and waste grease.

The program develops regulations to implement new legislation through a robust stakeholder process. Owners, operators, interested citizens, consultants and other stakeholders are invited to provide our technical staff with input regarding the draft regulations. The process includes multiple partnering meetings to review and refine the draft regulations. All parts of the state are in engaged, using teleconferencing and interactive web-based communications. Program staff strive to develop regulations meeting legislative mandates while balancing protection of human health and the environment with industry needs.

House bills 10-1018 and 10-1125 created a cradle-to-grave/reuse management construct for waste tires and waste grease in Colorado. The tire bill included manifests, generator and hauler registration and decals, and funding for waste tire reuse and abandoned tire cleanup. In addition, the bill created a Waste Tire Advisory Committee. New waste tire regulations will be before the Solid and Hazardous Waste Commission for rulemaking on Feb. 16, 2011.

House Bill 10–1125 created a similar cradle-to-grave/reuse construct for waste grease. The waste grease regulations are under development and are required to be promulgated by Dec. 31, 2011.

These laws use no general funds, are solely fee based and authorize two staff positions for regulation development and long-term implementation.

In addition, the program is hosting workgroups to address the issues of medical waste and geotechnical guidance. Staff anticipate finalizing guidance in 2011 and additional stakeholder workgroup meetings to develop regulations.

2009 Recycling and Waste Diversion Facts

Municipal Solid Waste (MSW) Annual Totals

Total MSW Generated
7,765,445 tons

MSW Recycling Rate
19.8 percent (9.3 percent with scrap metal excluded)

Total Diversion Rate
36.4 percent

Per Capita Generation

MSW Disposed:	6.8 lbs.
MSW Recycled:	1.7 lbs.
MSW Generated:	8.5 lbs.

1,536,057 tons of MSW was recycled in Colorado for the year.

3.7 million tons of asphalt, scrap metal and organic material was diverted from Colorado landfills for recycling.

961,000 tons of recyclable material was used in manufacturing glass and metal products statewide.

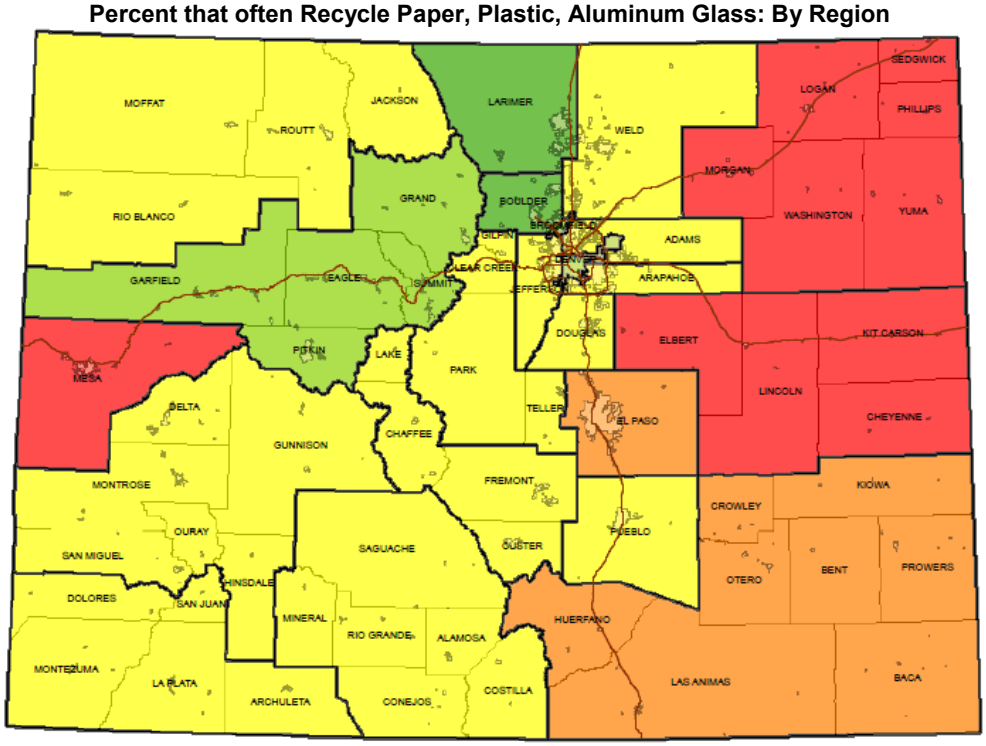
Durango residents drop off recyclables at one of the local recycling centers.

218,000 tons of single-stream recycling was collected.

66,800 tons of municipally generated material including food waste was composted.

15.7 million pounds of electronic waste was collected for recycling.

Percent that often Recycle Paper, Plastic, Aluminum Glass: By Region



Colorado 2009 BRFSS Health Statistics Section CDPHE

Red: 48.4-50.6% | Orange: 50.7-54.4% | Yellow: 54.5-65.1% | Lime: 65.2-77.1% | Green: 77.2-92.3%

Benefits of Recycling

Energy Savings
Recycling in Colorado for the year saved 31 trillion BTUs of energy[1]

Energy savings were equivalent to energy used by 310,000 homes in a year[1]

■■■■■

Natural Resources Conserved
33,000 acres of forest[2]

640,000 tons of coal conserved from using recycled steel and glass in Colorado[1]

■■■■■

Greenhouse Gas Emissions Avoided
3.5 million metric tons of carbon-dioxide emissions prevented, which equates to emissions from 679,000 cars[2]

■■■■■

[1]NERC "Estimating the Environmental Benefits of Source Reduction, Reuse, and Recycling"

[2] USEPA "Greenhouse Gas Equivalency Calculator" updated March 2010