

Recommendations to the Baltimore County Council on Single Use Shopping Bags

Plastic Bag Working Group
Baltimore County Advisory Commission on Environmental Quality



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EXECUTIVE SUMMARY

The increasing environmental and economic impact of single-use plastic bags prompted the Commission on Environmental Quality (CEQ) to examine the effects of plastic bags on the environment and suggest ways to deal with this problem. Reducing the effects of plastic bag use on the environment will not, in most areas, be achieved by a single and simple solution. All single-use bags are part of an interconnected waste-reduction, waste-management problem and this report addresses them as one issue. Alternatives are considered and objections to reusable bags are addressed. The success or failure of initiatives to reduce single-use plastic bags in many places often depends on awareness and commitment of the local community to environmental issues (e.g., communities with coastal ocean-based tourist economies or other “green living” initiatives). A comprehensive approach with advance preparation and wide public support has proven as workable in many places (e.g., Washington DC and San Francisco). Therefore, any plastic bag initiative would be part of a broader public education and outreach campaign. The Committee recommends Baltimore County Council and Executive to support programs promoting: 1) reusable bags, 2) re-use and recycling of existing plastic bags, 3) curbside recycling for plastic bags, and 4) community and commercial environmental awareness for plastic bag use and litter reduction.

INTRODUCTION

Plastic bags are easy to use and are popular with shoppers, but their use comes at an increasingly high cost. EPA data show that between 500 billion and one trillion plastic bags are consumed worldwide each year and less than 1% of these are recycled (Roach 2003). These sturdy bags have a long life, taking hundreds of years to decompose – a long time considering the effective use time of about 20 minutes for which many are designed. They make up 10% of debris washed up on shorelines and up to 13% of the general waste stream (California Integrated Waste Management Board 2009). They hang from tree branches and impact storm drains. They clog landfills and waterways, litter beaches, endanger wildlife, and can impact the local economy. To address this problem the CEQ formed a subcommittee to address the issue of plastic shopping bags and their impacts on the environment.

As the subcommittee members began researching the issue, we realized that the impact of plastic shopping bags could not be addressed alone; all single-use bags had to be considered. Even reusable bags had to be examined as part of the issue and as part of possible solutions. We addressed issues associated with single use and reusable bags.

PROCEDURE

- The committee studied the 2010 Green Cities California Environmental Assessment.
- Local, national, and international experiences were analyzed, along with reasons for their success or failure.
- We drew conclusions based on our review of available information its application to Baltimore County.
- We recommend ways that Baltimore County can decrease the environmental impacts of single-use plastic bags.

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OVERVIEW OF BAG TYPES

As the committee assessed the impacts of single-use plastic bags, we reviewed types of bags: their uses, benefits, recycling, re-use, and environmental and economic impacts.

Bag Type	What is it?	Uses	Other Benefits/ Drawbacks	Environmental Impact	Recycling and Re-use	Economic Impact
<p>Single- use plastic (HDPE)</p>	<ul style="list-style-type: none"> product of the petrochemical industry made of light-weight high-density polyethylene (HDPE). 	<ul style="list-style-type: none"> Larger ones (the majority) used as shopping bags smaller ones used for wrapping messy, perishable items 	<ul style="list-style-type: none"> convenient sturdy hygienic odorless 	<ul style="list-style-type: none"> 500 billion - 1 trillion plastic bags consumed worldwide each year Pre-production materials (pellets, powders, and production scraps) are mistaken for food by wildlife Bags suffocate, entangle, and are swallowed by marine mammals (including whales), turtles and birds. Because of their light weight, the bags get blown away. of all single-use bags, plastic bags cause the most litter 	<ul style="list-style-type: none"> some re-used reusing and recycling plastic more costly than producing it less than 1% of these are recycled (5% in the US (EPA) reused for collecting dog and other pet waste 	<ul style="list-style-type: none"> most end up in landfills or as litter; costly to clean up costs greatest in coastal areas costs more to recycle than to produce new bags
<p>Single-Use paper</p>	<p>from Kraft paper* pulp produced by the chemical separation of cellulose from lignin</p>	<ul style="list-style-type: none"> shopping bags 	<ul style="list-style-type: none"> convenient sturdy hygienic odorless takes up more space than plastic in stores 	<ul style="list-style-type: none"> production depletes natural resource; emits greenhouse gas (GHG) and waterborne wastes from paper-making process contribute to atmospheric acidification and ozone, in greater amounts than plastic bags if not recycled or reused, land-filled or composted since heavier than plastic bags, less likely to be blown off landfills as litter reusing and recycling paper less costly than producing it may be made of post-consumer recycled paper Kraft paper bags have 30% post-consumer content and 40% content bags are also available. recycled at a significantly higher rate than plastic bags – about 21 % nationwide. Those left as litter may decompose. 	<ul style="list-style-type: none"> Research paper recycling rates for Baltimore County reused as garbage liners and holders of other recycled materials put out for collection garden mulch; slow degradation asset if not recycled or reused, land-filled or composted those left as litter may decompose 	<ul style="list-style-type: none"> More expensive than plastic

Bag Type	What is it?	Uses	Other Benefits/ Drawbacks	Environmental Impact	Recycling and Re-use	Economic Impact
<p>Single Use Bio-degradable</p>	<ul style="list-style-type: none"> Biodegradable plastics degrade in the presence of naturally occurring organisms; process results in carbon dioxide (CO₂), methane, water, inorganic compounds or biomass 	<ul style="list-style-type: none"> shopping bags 	<ul style="list-style-type: none"> biodegradable in theory; less so in practice³ 	<ul style="list-style-type: none"> production has a larger environmental impact than HDPE bags, resulting in greater greenhouse gas emissions (GHG) and water consumption Those that end up in the ocean do not decompose fast enough to prevent harm to marine animals, and are not better in this regard than conventional plastic bags. 	<ul style="list-style-type: none"> may take months or years to degrade, depending on composition Some decompose only under ideal composting conditions 	<ul style="list-style-type: none"> few benefits
<p>Compost-able Plastic</p>	<ul style="list-style-type: none"> subset of biodegradable plastics; defined as those that decompose during composting at a similar rate as other materials generally considered to be compostable; no obvious or toxic residue. many types of chemical characteristics of compostable bag types 	<ul style="list-style-type: none"> shopping bags 	<ul style="list-style-type: none"> biodegradable in theory; less so in practice; better than biodegradable bags³ 	<ul style="list-style-type: none"> some bag types with starch additives will leave small plastic bits in the compost after decomposition; these bits are consumed by wildlife. if any residual plastic bits are blown away from compost or gets into streams, it would also find its way to the oceans and marine animals several bag types may degrade in oceans and on open lands in time others will degrade only under ideal composting conditions. 		<ul style="list-style-type: none"> lower clean-up costs but can cause significant environmental damage
<p>Reusable Bags</p>	<ul style="list-style-type: none"> can be made of: plastics, cloth from natural and man-made fibers (cotton canvas, 100% cotton, jute, nylon, hemp, etc.) can be mesh, net, or string Reusable plastics can be made from polyethylene (PE), polypropylene (PP) or recycled beverage containers from polyethylene terephthalate (PET).³ 	<ul style="list-style-type: none"> shopping bags 	<ul style="list-style-type: none"> designed to be used up to hundreds of times in warm climates allow unobstructed air flow potential health issues – bacteria and/or lead 	<ul style="list-style-type: none"> when used multiple times, these bags have a lower environmental impact on a per bag basis than single-use bags. this is an important consideration as reusable bags are heavier and require much greater material consumption on a per-bag basis than HDPE bags. It is the longevity and reduction of litter that suggest that a switch to reusable bags would result in the best environmental outcome. It is likely that these bags would form the basis for and largest component of a comprehensive solution to a complex problem. 	<ul style="list-style-type: none"> can be used many times proper and regular laundering (cloth) check origins and content of plastics (from China) to eliminate lead concerns 	<ul style="list-style-type: none"> lowest overall cost

Overview

Each of the major bag types is described in Table 1. These include single-use plastic, single-use paper, single-use biodegradable, compostable, and reusable bags. Below is a short summary of how each bag type was reviewed in the California study.

• **Single Use Plastic Bags**

The most common single use plastic bag type is made from high-density polyethylene (HDPE), which is thin, flexible, and light-weight. The California study was prompted by the 20 billion single use plastic bags consumed in that state alone and an estimated \$88 per consumer annual clean-up and landfill costs. These costs do not include recycling. The \$25 million needed just to collect and land-fill plastic bag waste does not address external costs such as resource extraction and depletion, economic loss due to litter, human health, and quality of life issues. Of the four bag types considered, single use plastic bags had the greatest impact on litter.

• **Single-Use Paper Bags**

Most supermarkets in California have now switched to 40% recycled content Kraft paper bags¹. They could have a role to play in a larger comprehensive solution. The bags are recycled at a higher rate than plastic bags. However, paper bag production uses more resources and emits more greenhouse gases.

• **Single-Use Biodegradable or Compostable Bags**

Biodegradable bags use more energy and resources to manufacture than non-degradable HDPE plastic bags, but may only degrade in composting conditions. Many areas do not have the processing facilities to deal with biodegradable bags. They cannot be recycled with other plastic bags and can contaminate regular recycled materials. Many characteristics of biodegradable plastics (including compostable bags, discussed below) should be weighed as they are considered as a substitute for HDPE plastic bags.

• **Reusable Bags**

Reusable bags are designed to be used many times and are made from cloth or plastic. This is generally the best solution, but involves changing public behavior and attention to cleanliness. Promoting increased use of these bags is a major part of a comprehensive solution.

¹The **kraft process** describes a technology for conversion of wood into wood pulp consisting of almost pure cellulose fibers (en.wikipedia.org/wiki/Kraft_process)

INTERNATIONAL INITIATIVES

Many countries are considering or have initiated bans, fees, mandatory recycling and combinations of these with varying degrees of success; some examples that are instructive follow:

• Australia

Plastic bag usage has been a major issue since 2002. No nationwide system has been adopted, but a number of policies have been proposed. A 10¢ levy was proposed by Victoria, and in May 2009 South Australia placed a ban on lightweight plastic checkout bags. As a result of the ban, the number of shoppers bringing re-usable bags for shopping increased from 60% to 90% (Sharp 2009).

• Republic of Ireland

Ireland was one of the first countries with a plastic bag tax, introducing a 15¢ per bag levy March 4, 2002. The “plas-tax” goes to the Environment Fund for waste-management and anti-litter programs. It has resulted in a 90% reduction in retailer purchases of plastic bags and a substantial increase in the sale of reusable bags (Ireland Dept. of Environment, Community and Local Government 2007). Litter has been substantially reduced, with individual usage dropping from an estimated 328 bags per capita to 21. The key point is widespread acceptance by consumers, retailers, and the government.

• Scotland

A plas-tax similar to that of the Irish Republic was proposed in 2005 but was withdrawn a year later. Instead, retailers implemented a voluntary program to reduce the number of bags handed out with a target of 50% reduction. By 2009, they had reduced from 10.7 billion bags to 6.1 billion bags, but the number rose to 6.4 billion in 2010, prompting calls for a bag fee (Grant and Cohen 2011).

• Canada

Canada is discussing a national bag fee, following on the success of the local plan implemented in Toronto. Starting in June 2009, Toronto stores charged 5¢ per bag. Customers have largely adjusted to the new situation by bringing their own bags. Plastic distribution in Ontario stores has fallen 70-80%. The charge does not apply to produce bags, nor to bags used to wrap meat, fish, frozen foods, plants, bakery products or prepared foods (Draaisma 2010). Montreal is considering a similar fee.

• Other Countries

Some countries (Bangladesh, China, South Africa, Thailand, Italy, etc.) have banned plastic bags. Before the ban, China used 37 million barrels of oil every year on plastic bag production. Their reason for the ban had much to do with lowering oil demand and dependence. Many other countries (e.g., Austria, France, Belgium, Bulgaria, England, Netherlands, Spain, etc.) are considering bans or fees to reduce the use of single use plastic bags (WtERT Deutschland GmbH 2011); other countries outside Europe or North America addressing the issue include Kenya, Israel, and Taiwan.

SAMPLE OF UNITED STATES INITIATIVES

There are many different policies and attitudes in the United States on the topic of single use bags. Examples of US initiatives include the following:

- **Seattle**

A 20¢ fee on plastic and paper bags was adopted by the City Council in 2008 (Conlin 2008), in hopes that the single-use bags and their litter would be reduced. The fee and public response resulted in a referendum in which the voters rejected the fee in February, 2009 and it did not take effect.

- **North Carolina – Outer Banks**

A total ban on plastic bags in three Outer Bank counties had enough popular and legislative support for a pilot program (General Assembly of North Carolina, 2009). These are fragile coastal areas with a large tourist economy. Other areas of the state have not adopted the same approach. In October 2010, the ban was extended to all businesses in the area. This caused a backlash from economic interests, and a ban repeal law was initiated on March 14, 2011. The new bill would rescind the existing ban and stress re-use, recycling and reusable bags without a ban; and, it would impose littering penalties (General Assembly of North Carolina, Session 2011).

- **New York City**

A proposal in 2008 for a 5¢ fee on plastic bags made by Mayor Bloomberg had little support and opposition from various interests; the mayor withdrew the proposal.

- **California**

The experiences of California in addressing the plastic bag problem are complex and reflect its geographic and human diversity (CalRecycle 2011). California has a large (\$46B) tourist economy, much of which is connected to its coastal and marine environments. Aside from the millions of dollars spent on plastic bag clean-up, there is a bigger threat from pre-production pellets discharged into the ocean and swallowed by seals, whales, sea otters and other marine mammals, turtles and birds.

A 2006 statewide law prohibits fees on plastic bags, but the bill did not prohibit bans, and it mandated recycling wherever plastic bags were distributed. A state initiative to ban single use plastic bags failed in 2010. San Francisco, Los Angeles County and other local California jurisdictions have banned HDPE plastic bags. In July 2011, the California Supreme Court upheld the right of cities to ban plastic bags.

- **Florida**

Some 5 billion plastic and paper bags were used in Florida in 2003, and despite a strong plastic-bag manufacturing industry, there is a proposal to be the first state to ban plastic and paper bags. A recent study by Sole (2010) summarized that bans allow the fastest results, but require the greatest switch in consumer behavior. Florida's actions are motivated largely by the unique economic and environmental factors in the state as a way to protect the coastal-based tourism and wildlife.

LOCAL INITIATIVES

For purposes of this report the State of Maryland and the Baltimore-Washington areas are considered local.

• **Maryland**

The state legislature introduced a bill in 2010 for a 5¢ fee similar to the one in Washington DC, but it died in committee. Steve Lafferty (D-42) introduced a bill to mandate plastic bag recycling in large stores (over 7000 square feet), but he withdrew the bill. A similar bill was introduced in 2011. Both bills can be found at www.mlis.state.md.us. They were not voted on in the 2011 session. A statewide survey by the Chesapeake Bay Trust in 2010 found 64% of state residents would support a 5¢ bag fee (Mullins 2011).

• **Baltimore City**

Baltimore City attempted a 25¢ fee (Bill 08-0208) in 3/16/10 (Wheeler 2010) and ran into stiff opposition from bag manufacturers and from the public. A second Bill (08-0205) prohibited the distribution of plastic bags by retailers. On March 22, 2011, the Baltimore City Council passed an amended ordinance of Bill 08-0205. The ordinance requires stores with food service licenses to enroll in the Plastic Bag Reduction Program to distribute single-use plastic bags. The Plastic Bag Reduction Program, outlined in Bill 08-0205 requires retailers label plastic bags for recycling, provide collection bins for single-use plastic bags, offer reusable bags for sale, post notice of the program, and maintain a log of plastic bag distribution and collection. The amended bill also requires all retailers to post notice that plastic bags will only be distributed upon customer request (City of Baltimore 2010).

In **Baltimore County**, plastic bag recycling is close to 10% - twice the national average. Also reusable bags are available for purchase in most supermarkets and many other stores; many supermarkets offer rebates when shoppers bring reusable bags. Baltimore County legislators also supported the 2011 State bills.

• **Kent County**

The Chestertown Town Council passed an ordinance banning the free distribution of single-use plastic bags at retail checkout. The ban was approved on March 11, 2011 with an effective date of April 11, 2011. In addition, the ordinance allows a six-month grace period from effective start date. The ordinance completely prohibits the distribution of plastic and non-recyclable bags. The ban will be enforced, starting October 11, 2011 through fines to business owners that continue to distribute restricted bags (Chesterton 2011).

• **Montgomery County**

The Montgomery County Council passed a bill on March 2, 2011 that will instate a 5¢ plastic and paper bag tax. The bill will go into effect January 1, 2012. Of the 5¢ tax collected, retailers to cover administration costs will keep 1¢. The tax is not limited to retailers that sell food, but does not include pharmacy or restaurant take-out packaging (Laris 2011).

• Washington DC

The Nation's Capitol charges 5¢ for plastic bags and encourages recycling (Craig and Turque 2009). The fee is used for restoration of the local Anacostia River environment. The levy took effect January 1, 2010 and there was a reduction from 22 Million bags per month to 3 million bags per month (Merchant 2010). There was a significant reduction of plastic bag use – 50% – in the first year. The fee itself gives 1¢ to retailers and 2¢ if they give rebates for using reusable bags. The rest goes towards the Anacostia project. There is also curbside recycling of plastic bags. There was essential support by the City Council, and reusable bags were distributed to low income and elderly residents to help prepare for this initiative. The levy took effect January 1, 2010 (Merchant 2010).

CONCLUSIONS

Single use bags provide an affordable convenience to consumers, but have a great environmental cost. Both plastic and paper bags have pros and cons depending on the context, but paper bags, according to life cycle analysis, have a greater environmental impact than plastic bags. A one-size-fits-all approach may not decrease the environmental impacts of single-use plastic bags in Baltimore County. Bans of plastic bags (single-use) HDPE have been implemented on a local scale in some communities where graphic images of damaged wildlife and sensitive environments (beaches) influence public opinion (see North Carolina). Nonetheless, there are economic and other interests which need to be addressed to achieve viable solutions all stakeholders will support.

The Washington, D.C. model is instructive; these combined factors created a workable plan:

- Instituting a modest (5¢) fee tied to an environmental project with wide public support (the Anacostia restoration)
- Receiving solid support of its City Council
- Preparing the public
- Supplying vulnerable populations with reusable bags (123,000 distributed)
- Involving merchants and rewarding them with some of the fee for recycling and encouraging use of reusable bags
- Initiating curbside recycling of plastic bags

A year after the D.C. fee was instated, 78% of business owners surveyed by The Chesapeake Bay Trust reported that the fee had either a positive or no effect on business. Further, The Trust reported a 66% decrease from 2009 to 2010 in plastic bags during bag removal from the Anacostia River and an 80% decrease in plastic bag usage in Washington D.C. (Mullins 2011) Although, there was some initial public complaint and outcry by the plastic bag industry, there has been no legal action taken against the District.

Conversely, failed plans had in common:

- large bag fees;
- widespread public hostility or indifference to environmental impacts;
- hostile and persistent opposition from the plastic bag industry and special interests;

- competing political and economic viewpoints about how best to deal with the plastic bag problem.

The environmental impacts of plastic bag impacts need to be addressed locally because attitudes and perceptions are local. A better idea of public attitudes and actions in our area would help assess public support for policy addressing the environmental impacts of single use plastic bags. We also need better information on how plastic bag usage affects the Chesapeake Bay, particularly shoreline communities.

A comprehensive solution will require a combination of methods. The preferred environmental choice is **reusable bags**. A single reusable bag, which can last for years, has the potential to replace over 1,000 single-use bags in its lifetime. This saves a significant amount of resources and reduces litter. The challenge is to discover the best method for promoting reusable bags. Education of shoppers and sellers is needed, and the reusable choice should be convenient. Financial incentives can include credit for using reusable bags or fee for plastic bags.

Recycling can remove plastic as a source of litter, but claim that plastic bag recycling is an adequate response to litter is not borne out. Aside from economic factors, the Washington DC experience showed that aggressive recycling alone did not significantly decrease HDPE litter. Nonetheless, curbside recycling is part of the Washington DC comprehensive plan where it serves as part of a workable solution to the plastic litter problem. Curbside recycling in Baltimore County would likely increase the plastic recycled, but its need could be phased out with greater reliance on reusable bags

Compostable bags degrade inconsistently, particularly in aquatic environments. They do not act any differently than regular plastic bags and can result in wildlife damage (Jefitic et al. 2009). Their use also maintains a throwaway mentality.

Innovative ideas include promoting the use of providing free or discounted reusable bags or entering reusable bag users in a monthly sweepstake for \$25 gift cards (Heal the Bay 2011).

RECOMMENDATIONS

The committee recommends that the County:

- Institute curbside recycling of plastic bags
- Educate and encourage the public to re-use existing plastic bags, which would extend their use before recycling or entering the waste stream.
- Educate and encourage residents to use reusable bags.
- Survey Baltimore County residents to assess re-usable bag use.
- Assess resident attitudes towards small fees tied to Bay Restoration.
- Encourage store managers in the County to train store clerks to ask if customers want bags – not give them out automatically, even for a few items.

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