

Plastic Bags & Film: Nuisance or Resource

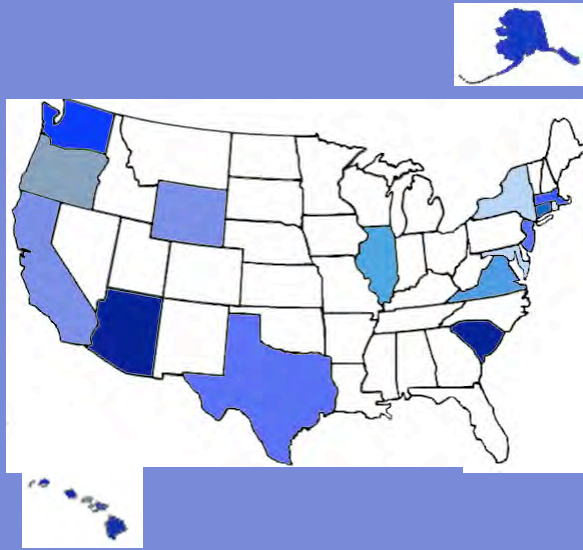
Plastic Bags: Searching for an Effective Policy
CRRRA 2007
Nina Bellucci (consultant to ACC)



Overview

- Policy Analysis
- Marketplace
- Recovery Programs
- Resources for Recovery

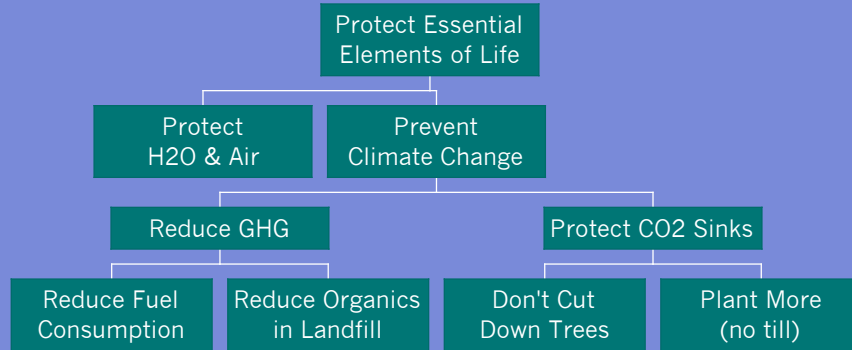
Proposed Legislation



- 1 approved citywide ban in San Francisco
- 13 cities are investigating a potential ban
- 6 cities are considering a mandate for compostable bags
- 5 states are considering a mandated statewide recycling program
- 3 cities are considering implementing a fee per bag used

Image from Progressive Bag Alliance

Consider Overall Objective (Sample objective hierarchy chart)



Consider:

- Means to your objective
- How to address goals with conflicting elements

(e.g., banning bags in attempt to conserve fossil resources may actually result in more fossil resource use if customers switch to paper)

Will a ban lead to less fuel consumption?

Will it lead to less waste in a landfill?

Not if people use paper instead.

21% recovery of bags and sacks for paper

Sample Comparison of Programs

	Take Back	Take Back w/ Fee	Ban	Curbside	Other?
Cost to Municipality					
Convenience to recycle					
Resource Efficiency					
Solid Waste					
Litter					
Other?					
Total					

3-Very Favorable 2-Favorable 1-Acceptable 0-Unfavorable

After identifying objectives and means, an objective hierarchy chart ends with measurable attributes which can be used to develop a matrix like the one above. For simplicity consider a simple comparison such as the one shown.

Considerations

- Plastic problematic as litter and creates compost contamination
- Paper bags can be made with 100% recycled content
- Biodegradables (No 100% biobased bags)
- Paper is natural and renewable but has a heavy footprint
- 79% paper bags end up in landfill
 - Organics in landfill off-gas methane

Discuss actual % of litter.

Bags .13% of litter (Toronto study)

Considerations

- Virgin plastic bag manufacture use <3% of the fresh water needed for paper bags
- Virgin plastic bag manufacture generate 24% of GHG produced to make paper
- Virgin plastic bag manufacture means only 47% as much SOX and NOX acid rain/ozone generating gases compared to paper
- Fuel for transport largest use of fossil resources
 - To decrease oil use, reduce shipping & transport
 - Plastics used because of light weight

Based on the unit of use

Data from DD Cornell Associates, LLC

Considerations

- Film—growing portion of plastic waste stream
- Most film is recyclable
- Strong demand from domestic markets
- Recycling creates jobs

Considerations

	Paper	Bioplastic	HDPE/LDPE
Recyclable	Yes	No	Yes
Recycled Content	Yes	No	Very little
Renewable	Yes	Partially	No
Energy Use	High	Low	Medium/low
H2O consumption	High	Medium	Low
GHG emissions	High	Low	Medium/low
MSW	Medium	Low	Low
Methane in landfill	Yes	Yes	No
Litter/Marine Debris	Not persistent	Somewhat Persistent	Persistent

Consider the estimated impact of various bag materials. Not all biobased materials break down in nature so some might be persistent. Also most life cycle analyses consider GHG and energy based on production of pellet which does not incorporate end of life recycling/compost impact on energy savings nor does it incorporate the potential unit comparison of bio versus conventional plastics in a product application. Some bio must be made thicker to achieve similar performance.

Of course local economies where we could reduce use of resources would be ideal approach, but we need to consider our current state of affairs (global transport and the role of plastics) and focus on developing an infrastructure so that we don't waste what we have.

Plastics: Integral Material in Globalized Society



**Dr. Green, Chico State Commissioned by CIWMB
Conclusions about Bioplastics**

- Compost; don't recycle!
- Support compost certification system
 - Use effective labeling for composting
 - NO Recycling symbols or RIC codes
- Use in controlled venues (stadium)
- Use in place of clamshells, trays, food service items

Marketplace

- 2005 Production
 - Conventional Plastics: >100 billion lbs*
 - Film: ~11 billion lbs*
 - Bio-based Plastics: <300 million lbs
- 2005 Recovered Film
 - ~700 million lbs

*Note: does not include imported material

92% of American consumers reuse plastic bags (trash can liners, pet waste disposal, etc.)

The 11 billion lbs includes material that cannot readily be recycled such as trash bags or nylon and PVC films.

Production of Film By Resin

APC Resin Review (2005)

- 68% L(L)DPE (#4)
 - e.g., stretch wrap
- 16% HDPE (#2)
 - e.g., grocery bags
- 10% PP (#5)
- 5% PVC (#3)
- ? PET (#1)
- <1% Nylon (#7)
- <1% biobased (#7)

Readily Recyclable

Less So...

Note: %'s do not include imported material. The % of readily recyclable material would likely go up.

Film Applications

88% of film market is non-shopping bag material and much can be recycled such as:

- Stretch wrap
- Toilet paper wrap
- Newspaper bags
- Dry cleaning bags
- Electronic wrap

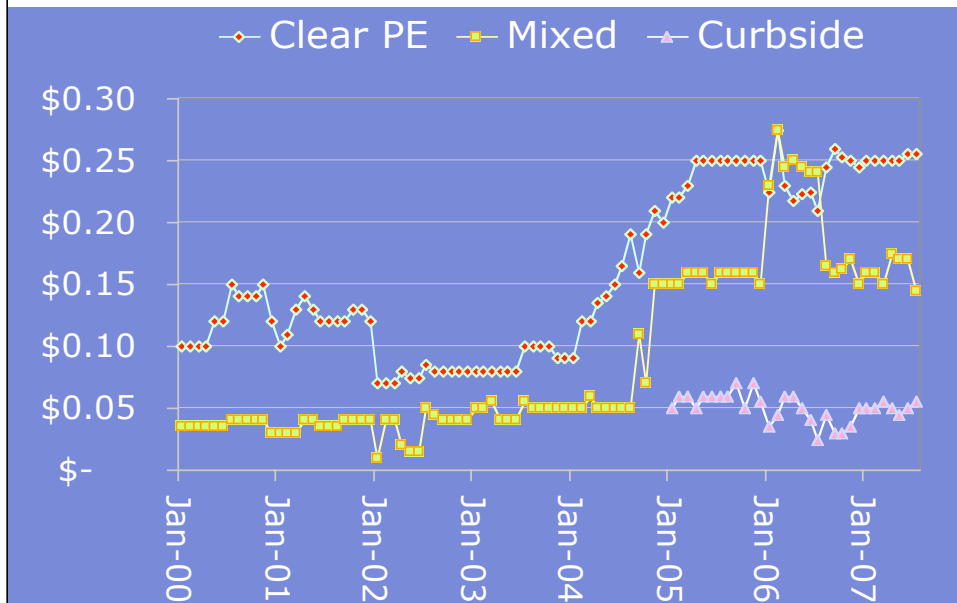
Grades of Film

- **Commercial Film** = Clear, clean PE film including stretch wrap and poly bags
- **Mixed Film** = Mixed color, clean PE film including grocery bags
- **Curbside Film** = Mixed PE film generated at a MRF
- **Clean Ag Film** = Ag PE film, dry from uses that do not touch the ground - up to 10% contamination
- **Dirty Ag Film** = Ag PE film from the ground up to 30% contamination

Commodity terms

West Coast Historical Pricing

(2000-2007) Baled/truckload quantities. Quality is key!



Baled/truckload quantities (40,000 lbs)

The key to good pricing is quality. You must put an emphasis on keeping contamination to a minimum. There is no price index for scrap plastic. Many large suppliers put their material out for bid.

We have directory of film markets on www.plasticbagrecycling.org

Recycling Infrastructure

- MRF system designed for collection of containers and paper — not bags or film
- Bag & film recycling depends on recovery of quality material (low contamination)

decrease 74% in value with curbside

Wash systems are imperative for curbside film materials. Very costly to operate and wash contaminated film and plastic bags. Even end users of composite lumber cannot use much curbside material due to heavy contamination.

113% increase in feedstock costs

Currently export market takes most of curbside material from the few programs. Seattle, WA and Takoma, WA both have had curbside programs since early 2000s – however, costs are high and system won't work everywhere. Seattle is currently considering a ban. Not good to rely on export market exclusively as it is getting harder to export post-consumer material.

Single Stream Processing



Operators at MRFs need to shut down systems every few hours to remove bag and film materials. Downtime is costly to MRFs – additional cost besides low material value.

In addition, plastic bags get stuck in screens, jam sorting process which also adds to costs of other materials, e.g. plastic bottles, other containers, quality of paper grades.



Discuss the environment of a MRF and how it's not conducive to the production of clean film scrap for use in domestic markets without the wash line capacity.

Municipal Drop-Off in CA



Example of Santa Monica, CA municipal drop-off for bags/film. Clean material – can accommodate small businesses as well as consumers.

Commercial Collection



At Store Recycling

- Uses existing infrastructure
- Cost-effective (generates \$)
- Efficient
- Provides valuable feedstock to domestic manufacturers (composite decking, auto components, etc.)
- Harris Teeter in NC has a 30% recovery rate of bags
- About 40% of store loads consist of bags

MN Program
"It's In The Bag"
1 million lbs recovered





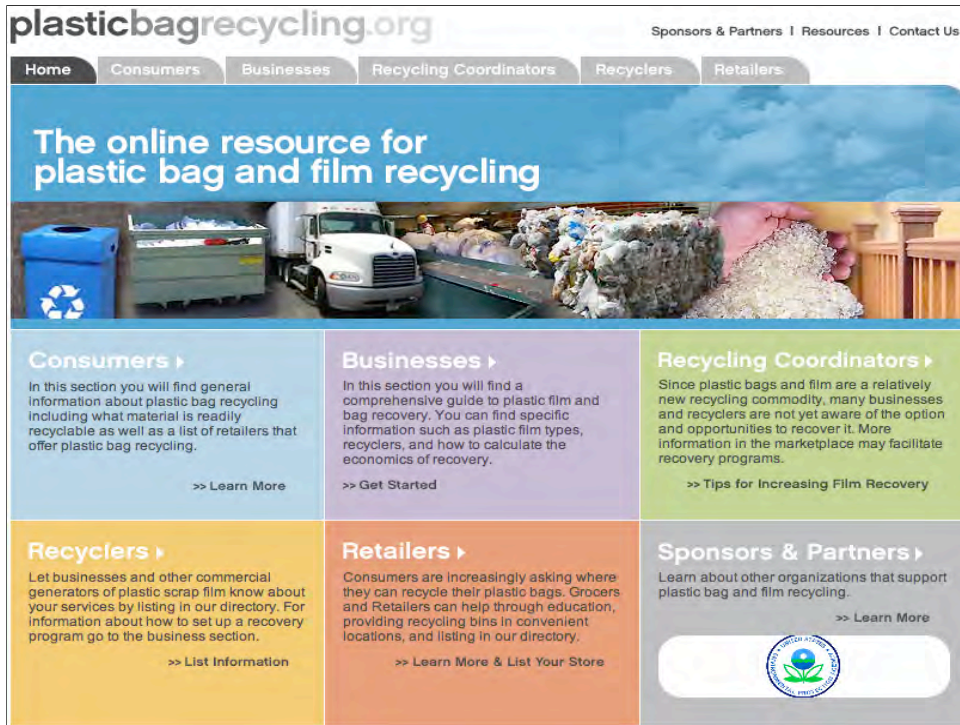
Focus group tested signage (left image) and then the Bring it back is from the Progressive Bag Alliance. Ideally the two images/messages can be incorporated into one.

Bin signage, entry door signage, label pin, sign at check-out are all areas where we want to test the signage to determine what consumers actually notice and will they recycle. If not, why not.

At Store Promotion



www.windsorbarrel.com




Home Page of our national web resource with combined technical assistance for consumers, businesses, recycling coordinators, retailers and recyclers - education on types of PE bags and film that are typically recycled and what is not. Assisting businesses and municipalities in increasing film and plastic bag recycling. Launched May 2007. Originally was CA pilot.

Consumers can find stores that they can take their bags to for recycling, e.g. Safeway, Stop N' Shop, Wal-Mart, Costco, Albertson's by state. Businesses can locate markets for their material or a recycler (hauler) that will pick up their film such as stretch film with cardboard.

plasticbagrecycling.org Sponsors & Partners | Resources | Contact Us

Home **Consumers** Businesses Recycling Coordinators Recyclers Retailers

Consumers



We can all make a difference

Plastic bags are recycled into many different products. Most plastic bags are recycled into composite lumber but can also be reprocessed into small pellets, or post consumer resin, which can become feed stock for a variety of products such as new bags, pallets, containers, crates, and pipe.

You can help by returning clean, dry, empty [plastic bags](#) to recycling drop off centers or retailers and municipalities that provide designated plastic bag recycling bins. Use the "Find a drop off location" search box below to find a municipal recycling center, private recycler, or retail store near you. Please note what the drop off location accepts. **While some drop off locations accept all clean #2 and #4 plastic bags, some stores accept plastic grocery bags only.**



Find a drop-off location

In which state are you located?

Please note: This is a new resource and the directory depends on data entry from companies and local jurisdictions. Information may not yet be available for your specific location. We appreciate your patience.

Consumer Page: Consumers can go to their state and find stores that accept plastic bags. Second Page shows what types of plastic bags are collected by stores and what bags are considered contaminants and should not be collected.

plasticbagrecycling.org Sponsors & Partners | Resources | Contact Us

Home Consumers **Businesses** Recycling Coordinators Recyclers Retailers

Businesses

4-STEP PROCESS

- 1** DETERMINE THE TYPE OF PLASTIC FILM
- 2** COMPARE DISPOSAL COST TO BENEFITS OF RECOVERY
- 3** IDENTIFY YOUR RECYCLING OPTIONS AND THEN CONNECT WITH A RECYCLER
- 4** DESIGN YOUR COLLECTION STRATEGY & EDUCATE

Recycling can save your business money and help the environment

Polyethylene plastic film (e.g., pallet wrap and grocery bags) has grown over the years and replaced other materials because of its low weight, high strength, and ability to transport products efficiently. Clean polyethylene film is in demand by the major film markets and it can be recycled into a variety of products.

We have designed this site to assist you in setting up your own recovery program. The amount your company generates and the space you have available will determine your collection method — self haul to recycling facility, recycling pick up service, or self preparation of materials to sell to buyers. Smaller generators or businesses with space constraints will likely need to find a recycler who either accepts clean plastic film at their drop off recycling facility or offers pick up service. Large generators (> a ton per month) might consider baling material for market.

We have developed a 4-step process to help you set up an efficient recovery program

- 1** DETERMINE TYPE OF PLASTIC FILM 
- 2** COMPARE DISPOSAL COST TO BENEFITS OF RECOVERY 
- 3** IDENTIFY YOUR RECYCLING OPTIONS AND THEN CONNECT WITH A RECYCLER 
- 4** DESIGN YOUR COLLECTION STRATEGY & EDUCATE 

[>> Get Started](#)

BUSINESS PAGE: 4 -step process to collect plastic film, e.g. stretch film and plastic bags also, depending on what type of business – e.g. if a retail store, they will have stretch film (pallet wrap) that is highly valued and is more voluminous than the plastic bags that might come back to the store. General businesses may have a drop-off for bags (e.g. some dry cleaning stores might) but many have just pallet wrap and can take to a store that recycles, or set up an internal program if they generate enough. A calculator on the next page shows them how to determine this.

We designed this so businesses could do themselves but provide an option for them to contact us if they need assistance. Same with recycling coordinators. We have a recovery guide, however, provide assistance if they need help.

Other Film Recycling Resources

- American Chemistry Council
 - www.plasticbagrecycling.org
- CWIMB
 - www.ciwmb.ca.gov/Plastic/Film/
- MN Waste Wise
 - www.mnwastewise.org/
- Progressive Bag Alliance
 - www.progressivebagalliance.com
- RI Resource Recovery Corporation
 - www.rirrc.org

Thank You

Nina Bellucci

Nina@MooreRecycling.com