Alternatives to Disposable Shopping Bags and Food Service Items Volume II, Appendices

Prepared for

Seattle Public Utilities

January 2008

Note:
Some pages in this document have been purposefully skipped or blank pages inserted so that this document will copy correctly when duplexed.

Alternatives to Disposable Shopping Bags and Food Service Items Volume II, Appendices

Prepared for

Seattle Public Utilities
Seattle Municipal Tower
700 Fifth Avenue, Suite 4900
P.O. Box 34018
Seattle, Washington 981240-4018

Prepared by

Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121
Telephone: 206/441-9080

January 29, 2008

Contents

Volume II, Appendices

APPENDIX A

Policy Options Adopted By Other Jurisdictions to Address Plastic Bag Use

Policy Options Adopted By Other Jurisdictions to Address Plastic Bag Use.

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
Curbside Recycling	Seattle Bellevue	Programmatic and Contractual	Clean, dry shopping bags, newspaper bags, dry cleaning bags	Contract with waste processor and haulers to provide curbside collection and separation of plastic bags for recycling markets, promotion of residential program.	▪ Diversion utilizes existing infrastructure ▪ Versatile recycled feedstock ▪ Material in demand for recycled plastic products like decking ▪ Already implemented	▪ Produces lower quality recycled feedstock ▪ May contaminate other recycled commodity streams ▪ Low participation ▪ Problematic for recycling equipment ▪ Does not accommodate compostable alternatives		http://www.plasticbagrecycling.org/01.0/
Curbside Recycling	San Jose, CA	Programmatic and Contractual	All bread, dry cleaning, fresh produce, grocery, and newspaper bags	Contract with waste processor and haulers to provide curbside collec-tion and separation of plastic bags for recycling markets, promotion of residential program.				http://www.sjrecycles.org/residents/rec_garb.asp#plastics
Deposit System	- -	Voluntary Retailer Program Regulation	Plastic Shopping Bags	A plastic bag deposit strategy, where cus-tomers pay for plastic carrier bags and are refunded if they re-use them		▪ No identified successful examples		
Education	Hong Kong	Programmatic	Plastic Carrier Bags	Implemented a campaign of “No plastic bag, please” and “Use Fewer Plastic Bags” designed to educate the public on alternatives to plastic bags and to encourage				

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				customers to make environmentally friendly decisions and purchases. A goal of 10% reduction in first year is established.				
Fee	San Francisco, CA	Regulation	Paper And Plastic Bags	An ordinance requiring a 17¢ fee on each bag provided at supermarket checkout counters. Requires supermarkets to submit the fee to the San Francisco Treasurer to then be distributed by the San Francisco Department of the Environment (SF Environment) for related purposes and programs, but allowed to keep half (8.5 cents) of the fee for SF Environment approved programs such as to provide discounted durable reusable checkout bags, in-store collection of bags and other packaging for recycling, free compostable bags in produce and bulk aisles, discounted compostable bags and food service ware on store shelves, and outreach on waste prevention and recycling programs.	▪ Reduce litter ▪ Reduce threats to marine life ▪ Reduce 'batch contamination' that costs the City $649,000 per year ▪ Climate benefits may be significant	▪ American plastics council, California grocers association oppose a tax ▪ Fee levied on suppliers and passed on to consumers. No specific requirements for itemization. ▪ Not compatible with existing recycling programs ▪ May affect customer convenience ▪ May transfer business to surrounding communities	▪ Scuttled with passage of California Assembly Bill AB2449 (see above).	Resolution No. 007-04-COE (draft 2004) - http://sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/03/28/MNGDROT5QN1.DTL

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				The proposed ordinance would apply to supermarkets that create a recycling convenience zone under California's bottle bill. As defined by the California Department of Conserva-tion, a convenience zone originates around a supermarket that is identified in the Progressive Grocer Marketing Guidebook, has gross annual sales of $2 million or more, and sells a "full line" of dry groceries, canned goods, or non-food items and perishable goods.				
Fee	Shanghai, China	Voluntary Retailer Program	Plastic carrier Bags	Supermarkets charge for plastic bags	▪ Reduces bag consumption ▪ Reduces litter			
In-Store Recycling	California	Regulation	Plastic grocery bags	AB2449. The law establishes a six-year pilot program requiring large supermarkets in California to offer in-store recycling of plastic grocery bags in return for the pre-emption of local ordinances mandating a bag tax or other recycling efforts.	▪ Diversion utilizes existing infrastructure ▪ Versatile recycled feedstock ▪ Material in demand for recycled plastic products like decking ▪ Already wide-spread ▪ Produces moderate quality recycled feedstock	▪ May be costly to stores ▪ Does not accommodate compostable alternatives ▪ Low participation		
In-Store Recycling	Canada	Voluntary Retailer Program	Plastic grocery bags	Most big grocery chains in Canada accept bags for recycling.	▪ Diversion utilizes existing infrastructure ▪ Versatile recycled	▪ May be costly to stores ▪ Does not		Environment Australia – Plastic

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
					feedstock ▪ Material in demand for recycled plastic products like decking ▪ Already wide-spread ▪ Produces moderate quality recycled feedstock	accommodate compostable alternatives ▪ Moderate participation		Shopping Bags Analysis of Levies and Environmental Impacts
In-Store Recycling	California Washington Oregon United States	Voluntary Retailer and Manufacturer Education Program	Plastic grocery bags	Voluntary partnership between the Progressive Bag Alliance (manu-facturers supported) to advance in-store and curbside recycling programs nationwide. Separate program called Bag2Bag (supported by Hilex Poly, number one manufacturer of grocery bags in the US) pursuing similar goals.	▪ Diversion utilizes existing infrastructure ▪ Versatile recycled feedstock ▪ Material in demand for recycled plastic products like decking ▪ Some emphasis on bag-to-bag recycling ▪ Produces moderate quality recycled feedstock ▪ Educates grocers on proper minimum usage of bags ("environmentally responsible bagging.").	▪ May be costly to stores ▪ Does not accommodate compostable alternatives ▪ Moderate participation		http://www.progressivebagalliance.com/ http://www.hilexpoly.com/b2b_loop.htm
Producer Responsibility Mechanisms	Germany and Other EU States	Regulation	All Plastic Packaging	Producer responsibility mechanisms are used by EU states to implement the Packaging Directive, aimed at encouraging the recycling and recovery of plastics. In most states, parts of the packaging industry make payments to designated entities who are	▪ Reduces litter ▪ Increase in recycling jobs ▪ Produces recycled feedstock available for manufacturing	▪ Focused on post-consumption ▪ Level of fee is not intended to alter pre-consumption behavior		

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				responsible for the collection, separation, recycling and recovery of a targeted fraction of packaging. The model for this program is the "Green Dot" program in Germany.				
Product Ban	Taiwan	Regulation	Plastic Shopping Bags thinner than 0.1mm.	Ban on distribution of free plastic shopping bags - includes fines of up to $9,000 on companies distributing bags, and public education program stressing the use of reusable bags. First phase applied to government agencies, schools, and military; second phase applies to supermarkets, fast food outlets, and department stores; third phase applies to peddlers and food dealers.	▪ Reduces the 16 million bags given out each day	▪ No emphasis on alternatives ▪ May promote shift to other disposable alternatives	69% drop in bag use vs. 24-29% drop	69% ref: http://www.commondreams.org/headlines04/0721-04.htm 24-29% ref: http://en.beijing2008.cn/96/33/article212063396.shtml Environment Australia – Plastic Shopping Bags Analysis of Levies and Environmental Impacts
Product Ban	Bangladesh	Regulation	All Polyethylene Shopping Bags	Ban implemented in March of 2002 on the manufacture and use of all polyethylene shopping bags. First stage applied to the capital of Dhaka, with the second phase applied to the rest of the country.	▪ Reduced flooding and costs associated with clogged storm and sewer drains ▪ Increased use of Jute bags, a major fiber produced in the Country, and the disposal of which is environmentally benign. ▪ Increased the number			http://www.ealingfoe.org.uk/Campaigns/BagBanNotBin.htm

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
					of jobs producing jute bags			
Product Ban	Nepal	Regulation	All Polyethylene Bags	Immediate ban on all polyethylene bags. Includes fines up to $13,800 or a 10-year jail sentence for people distributing bags	▪ Reduces litter and threat to marine life ▪ Promotes return to biodegradable packaging material, like jute, cloth and paper bags - widely used before plastic ▪ May enhance job gains in jute and alternative paper manufacturing ▪ Increases the productivity of arable land	▪ Loss of jobs in plastic bag manufacturing and plastic recycling industries		
Product Ban	Mumbai, India	Regulation	All Plastic Shopping Bags	Immediate ban on the manufacture and use of plastic shopping bags. Large fines and the suspension of trading for one month apply if retailers are caught using plastic bags.	▪ Reduced flooding and costs associated with clogged storm and sewer drains	▪ Loss of jobs in plastic bag manufacturing and plastic recycling industries		
Product Ban	Karachi, Pakistan	Regulation	All Polyethylene Bags	Complete ban on the sale and use of polyethylene bags in the city after June 2004	▪ Reduced flooding and costs associated with clogged storm and sewer drains	▪ Loss of jobs in plastic bag manufacturing		
Product Ban	Himachal Pradesh/Jammu/Kashmir, India	Regulation	All Polyethylene Bags, including colored recycled bags	Ban on the import, manufacture and use of polyethylene bags in a phased manner.				
Voluntary Product Restriction	Coles Bay (Tasmania, Australia	Countrywide Voluntary Retailer Ban	All Plastic Shopping Bags	Partnership among citizens and retailers to protect local environment by having	▪ Protects adjacent whale breeding grounds and Freycinet National	Costs money to enforce, paper alternative may be more energy intensive to	90% of retailers have signed up, extremely effective - nearly 100%	Coles Bay: http://www.planetark.com/campaignspage.cfm/n

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				all retail outlets in Coles Bay, including both supermarkets, ban plastic check-out shopping bags.	Park	produce?		ewsid/58/newsDate/7/story.htm Australia as a whole: http://www.commondreams.org/headlines04/0721-04.htm
Product Ban	Galena, Alaska	Regulation	All plastic bags	Full ban on distribution of all plastic bag. Tribal council distributed canvas bags to help phase out plastics. Galena is one of 40 other Alaskan local governments that have worked with the State Department of Environmental Conservation to formulate bans.	▪ Controls litter problem ▪ Protect marine environment			http://www.chilkatvalleynews.com/archive/2003-19-2.html
Product Ban	Clinton Township, Michigan	Regulation	Large Plastic Lawn Bags	Ban on the use of plastic bags for yard waste, and encouraging the use of compostable paper bags	▪ Alternative paper yard waste bags easily compost ▪ Reduces contamination of the composting process ▪ Reduces composting costs because windrow turning is less frequent and filter screens can be avoided.			http://www.propertyrightsresearch.org/for_leaves.htm
Product Restriction	San Francisco, CA	Regulation	Plastic and Paper Shopping Bags	Ordinance 8107 (Plastic Bag Reduction Ordinance, passed 4/20/07) requires the use of compostable plastic,	▪ Protects marine environment	▪ May not address litter problem ▪ May add cost to retail operations	Too early to tell.	http://www.sfgov.org/site/uploadedfiles/bdsupvrs/ordinances07/o0081-07.pdf

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				recyclable paper (>40% PC), or reusable checkout bags by stores within the City and County of San Francisco. Provides penalties for violations. Compostable required to meet ASTM standards and carry SF specific labeling indicating consistency with composting system and color-coded band. Phase in Supermarkets after six months; phase in pharmacies after one year		▪ Composting not required		
Product Restriction	Hong Kong	Regulation	Plastic Carrier Bags	Prohibits retailers over a specified size from providing bags to customer free of charge. Also includes an "environmental tax" on products for which an environmentally friendly alternative is available.				
Product Restriction	South Africa	Regulation	Plastic Carrier Bags	Immediate ban on sale of plastic bags with thicknesses of less than 30 microns - includes fine of nearly $14,000 or 10 years in prison. The government wanted to ban all plastic bags thinner than 80 microns, but the proposal caused an outcry among trade unions and business. Cost of the thick plastic	▪ Reduces litter ▪ Retains jobs in bag manufacturing ▪ Thick bags easier to reuse or recycle, and more profitable to do so. ▪ Increase in recycling jobs	▪ Reduces litter ▪ Reduces the ability for poor South Africans to use the bags to make hats, handbags, purses and scrubbing brushes, which they have been selling		http://www.plasticshoppingbagfree.org.nz/index.php?PageID=63

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				bags will be carried by the customer, whereas previously they were free. Ban phased in over 12 months.				
Product Restriction	Taipei City, Taiwan	Regulation	Plastic Shopping Bags	Beginning on July 1, 2002, implemented the "Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy," imposing restrictions on the use of plastic shopping bags, disposable tableware, and styrofoam in phases.				
Reusable Bag Credit	New York, New Jersey, Maine	Voluntary Retailer Program	Grocery Bags	Voluntary retailer program providing 2¢ credit for each reusable bag brought in by the customer.	▪ Proactive to avoid need for legislation ▪ Attractive to customers ▪ Incentive aimed at changing behavior			http://abcnews.go.com/sections/SciTech/US/plastic_bags_waste_garbage_031209-3.html
Reusable Bag Credit	Rhode Island	Voluntary Retailer Program	Grocery Bags	Voluntary retailer program providing 3¢ credit for each reusable bag brought in by the customer.	▪ Applies to both paper and plastic, potentially reducing both types of bag consumption ▪ Incentivizes using cloth or other reusable bags			
Reusable Bag Credit	Belgium	Voluntary Retailer Program	Plastic Shopping Bags	Award loyalty credits to shoppers when they bring their own bag	▪ Encourages reuse ▪ Encourages customer loyalty			
Reusable Bag Giveaway	New Zealand	Programmatic	Shopping Bags	Free reusable bags given away at stores where traditionally paper or plastic are given away				

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				free.				
Tax	Ireland	Regulation	Plastic Shopping Bags	Enacted a point-of-sale levy on plastic shopping bags, requiring shops, supermarkets, and service stations to charge customers 15 Euro cents (approximately 21 US cents) per bag, to be itemized on the bill. Exceptions were made for smaller bags used to package non-packaged goods, reusable shopping bags, bags to contain fresh meat, fish, or poultry, fruit and vegetables, and ice. Revenues generated from the "PlasTax" go into an environmental fund and are used to support waste management, anti-litter programs, and other environmental initiatives. Levy is enforced by local authorities through warnings and fines. Accompanied by significant public information effort concerning the tax itself and the environmental rationale.	▪ Tax borne by consumer, which also helps to change behavior toward consumption ▪ Widespread public support ▪ Allows for containment method for spontaneous shopping ▪ Effectively bans plastic without removing packaging options ▪ No data currently available on litter reduction, but the 90% reduction in retailer purchases stands to imply a substantial reduction in litter from bags also. ▪ Increased sale of reusable bags ▪ Product security and theft has been minimal.	▪ Grocers opposed ▪ Reported increase in garbage bags (for which disposable shopping bags were used as a substitute). However, base level of increase for garbage bags was significantly less than the base level for the decrease in shopping bags	▪ 90 - 95% reduction in consumption of single-use bags	
Tax	California	Regulation	Plastic carrier	2¢ tax on all plastic bags	▪ Tax revenue applied	▪ Opposed by grocers		

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
			Bags	sold (not yet passed as law)	toward storm drain retrofit to keep plastics out of the marine environment	and plastic manufacturers		
Tax	Denmark	Regulation	Carrier Bags	Indirect tax on manufacturers (absorbed in overall cost of product) instituted on all packaging (part of the EU Packaging Directive). Tax is weight-based and is levied on bags > 5 liters capacity. Tax applies at a rate of 10 DKK per kilo for paper (~ 12 US cents per bag) and 22 DKK per kilo for plastic (~ 3 US cents per bag).	▪ Reduces bag consumption	▪ Tax is included in the price of bags to the retailer and so is not obvious to consumers or aimed at changing consumer behavior.	▪ Reduced consumption of plastic and paper by 66% (1994).	MassPirg article Environment Australia – Plastic Shopping Bags Analysis of Levies and Environmental Impacts
Tax	Finland	Regulation	Plastic Carrier Bags	Supermarkets pay a levy on the amount of plastic bags used, with the proceeds funding recycling.	▪ Reduces bag consumption	▪ Tax is included in the price of bags to the retailer and so is not obvious to consumers or aimed at changing consumer behavior.		Environment Australia – Plastic Shopping Bags Analysis of Levies and Environmental Impacts
Tax	Italy	Regulation	Plastic Carrier Bags	Indirect tax on manufacturers (absorbed in overall cost of product) on plastic bags. Tax levied at 0.0051 Euro per bag (~ 7 tenths of a US cent). (Some reports show that the Italian government taxes every non-biodegradable plastic bag at anywhere	▪ Raises funds for environmental education or recycling	▪ Tax is included in the price of bags to the retailer and so is not obvious to consumers or aimed at changing consumer behavior.	▪ Tax is minimal and so is thought not to have a significant impact on plastic bag consumptions	MassPirg article

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				from 100 to 250 lira (~ 6 - 15 US cents)).				
Tax	New Jersey	Regulation	"Litter Generating" Products	A tax is applied to the manufacture and wholesale and retail distribution of "litter generating" products. Packing guidelines set by the Integrated Waste Management Board encourage plastic over paper if disposable bags are selected, and encourage stores to use recycled content and provide packaging that can be refillable or reusable. Discounts may be offered to customers who bring their own bags and plastic bag collection facilities are available.				
Tax	South Africa	Regulation	Plastic Carrier Bags	A compulsory levy on the manufacturers of plastic bags (two cents per bag) which will be used to generate revenue for a "Section 21 Organization," an NGO with revenue collection responsibilities to emphasize a shift away from elimination of plastic bags toward their management for recycling. Phased in over five years	▪ Levy is passed on to consumers and itemized separately on sales receipts ▪ Reduces litter ▪ Retains jobs in bag manufacturing ▪ Increase in recycling jobs		▪ Reduces the ability for poor South Africans to use the bags to make hats, handbags, purses and scrubbing brushes, which they have been selling	http://www.plasticshoppingbagfree.org.nz/index.php?PageID=63 Environment Australia – Plastic Shopping Bags Analysis of Levies and Environmental Impacts

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
Voluntary Product Restrictions	Northern Ireland	Voluntary Programmatic	Plastic Shopping Bags	A voluntary "Wake up to Waste Retail Partnership" established to educate and promote retailers to commit to promoting re-usable and biodegradable bags.				
Environmental Labeling Requirement	California	Regulation	Plastic Bags	Existing law prohibits a person from selling a plastic bag that is labeled as "biodegradable," "compostable," or "degradable," unless the plastic bag meets a current American Society for Testing and Material (ASTM) the labeled term. Manufacturers and suppliers are required to submit to members of the public, upon their request, information and documentation demonstrating compliance with these labeling requirements within 90 days of the request.				http://www.calrecycles.org/issues/current_legislation/ab2147_06
Voluntary Product Restrictions	Australia	Voluntary Programmatic	Plastic Shopping Bags	Developed the Australian Retailers Association Code of Practice for the Management of Plastic Bags in which the signatories will implement cost-effective initiatives to reduce the issuance of lightweight			About 90 percent of retailers have signed up with the government's voluntary program to reduce plastic bag use.	http://www.environment.sa.gov.au/zerowaste/pdfs/arabagcode.pdf *Plastic Left Holding the Bag as Environmental*

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Bags (Plastic and Paper)								
				HDPE bags not already being recycled or reused.				*Plague; Nations around world look at a ban,* by Joan Lowy. July 21, 2004, Seattle Post-Intelligencer

APPENDIX B

Policy Options Adopted By Other Jurisdictions to Address Disposable Food Service Items

Policy Options Adopted By Other Jurisdictions to Address Disposable Food Service Items

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
Advanced Recovery Fees		Regulation	Single-Use Food Service Containers	Advanced recovery fees levied on disposable food service ware at the point of sale or at the distribution level to raise revenue for litter control, recycling education, handling, and market development.				
Curbside Recycling/ Composting	Los Angeles, CA	Programmatic and Contractual	All Clean Polystyrene (cups, containers, and packaging such as egg shell cartons, block packaging, and clamshell packaging)	Contract with waste processor and haulers to provide curbside collection and separation of plastic clean polystyrene for recycling markets, promotion of residential program.	▪ Diversion utilizes existing infrastructure ▪ End market actively looking for feedstock sources.	▪ Produces lower quality recycled feedstock ▪ May contaminate other recycled commodity streams ▪ Low participation ▪ Limited end markets ▪ Difficult processing and transportation economics		http://www.lacity.org/san/solid_resources/recycling/what_is_recyclable.htm
Curbside Recycling/ Composting		Programmatic and Contractual	All compostable food service ware	Contract with compost processor and haulers to provide curbside collection and separation of compostable food service ware and composting, promotion of residential program.				
Education		Programmatic	All food service ware	Through the Resource Venture, create special City directory and advertising/promotion to highlight businesses that distribute and/or use compostable single-use food service ware.	▪ Creates marketing incentive for businesses, other businesses will eventually have to join the trend to stay competitive	▪ Unfair for businesses that "can't afford to change"		

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
Education		Programmatic	All food service ware	Through the Resource Venture, educate businesses about environmental benefits and cost savings (waste disposal) of using compostable products	▪ Creates momentum for change ▪ Reduces resistance	▪ Cost to the City		
Education			All food service ware	Initiate campaigns at all schools, universities, sporting events, and events hosted by the City. "All food service used here today is compostable." Qwest Field, Safeco Field	▪ Reach a wide audience and the younger generation that is more open to adopt new trends.	▪ Cost to the City		
Environmental Labeling Requirement	California	Regulation	Plastic Food Or Beverage Containers	AB 2147. Prohibits labeling plastic food or beverage containers as "biodegradable," "degradable," or "compostable," unless the container meets the current ASTM standard for the term used on the label. Manufacturers and suppliers are required to submit to members of the public, upon their request, information and documentation demonstrateing compliance with these labeling requirements within 90 days of the request. Similar law already exists for Plastic Bags.	▪ Reduces contamination of existing recycling stream ▪ Gives consumer clear incentives for environmentally preferential purchasing	▪ Despite ASTM label, may not be consistent with local composting process, allowing contamination in system		

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
Environmental /Compostable Product Labeling Requirement		Regulation Programmatic	All Single-Use and/or Compostable Food Service Containers and Service Ware	Mandate environmental labels that display a package's recycled content, reduced volume or weight, or recycle-ability, compostability, biodegradeability, or degradability to help stimulate demand for such products or packaging. Coordinate with municipalities in the Pacific Northwest to institute a regional color-code system for compostable products, consistent with composting system capabilities. Coordinate with manufacturers and retailers.	▪ Easier to sort and separate from traditional plastics ▪ Educational value	▪ Slow to implement ▪ Resistance from retailers		
Environment-ally Preferable Packaging Mandate	California Oregon Wisconsin	Regulation	Single-Use Food Service Containers	Mandates that disposable food service containers meet a list of criteria, such as: packaging is reduced in weight or volume by a certain percentage rate; is recycled at a specific rate, or recyclable within the City. Includes defining requirements for compostability, biodegradability, degradability.				

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
In-Store Recycling		Voluntary Retailer Program Or Regulation	All compostable food service ware	Institute voluntary partnerships or regulations to promote and establish in-store receptacles for compostable food service ware		▪		
Product Ban	Oakland, CA	Regulation	All disposable food service ware products	This ordinance applies to all food vendors in the City of Oakland, including restaurants, itinerant restaurants or retail food vendors and applies to all disposable food service ware products used by them, including: containers, bowls, plates, trays, cartons, cups, lids, straws, forks, spoons, knives and other items designed for one-time use both on and off the food vendors' premises. The ordinance also applies to the City of Oakland and its facilities, departments and franchisees. There are two parts to this ordinance: ▪ A Polystyrene Foam Ban ▪ Required Transition to Biodegradable and Compostable Dispos-able Food Service Ware, as long as it is cost-neutral.	▪ City Administrator can create exemptions based on "undue hardship" ▪ Required Transition to Biodegradable and Compostable Disposable Food Service Ware	▪ Alternatives may cost more than banned products (not including external costs) ▪ Enforcement on a complaint basis only. ▪ City Administrator can create exemptions based on "undue hardship"		An Ordinance To Prohibit The Use Of Polystyrene Foam Disposable Food Service Ware And Require The Use Of Biodegradable Or Compostable Disposable Food Service Ware By Food Vendors And City Facilities City of Oakland, Draft June 2006

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
				Compostable here includes breaking down in a home composting device.				
Product Ban	Berkeley, CA	Regulation	Foamed Polystyrene Takeout Food Packaging	Regulation prohibits restaurants and retail food vendors from providing prepared food to its customers in any polystyrene foam food packaging. Requires at least 50% (by volume) of each restaurant's and food vendor's food packaging (where prepared food is provided to customers) to be degradable or recyclable. "Degradable food packaging" means food packaging which substantially reduces to its constituent substances through degradation processes initiated by natural organisms whose end products are substantially, but not necessarily entirely, carbon dioxide and water; and plastic items designed to degrade when exposed to ultraviolet light. Degradable food packaging does not include cellulose-based items which have a	▪ Reduces Litter ▪ Reduces harmful effects on marine environment and marine life ▪ May reduce toxic emissions due to manufacture	▪ Alternatives may cost more than banned products (not including external costs) ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect existing recycling programs. ▪ City Manager can create exemptions based on "undue hardship"		http://www.ci.berkeley.ca.us/bmc/berkeley_municipal_code/title_11/60/020.html

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
				synthetic or plastic coating comprising more than five percent of the total volume of the item. "Recyclable food packaging" means any food packaging including glass, cans, cardboard, paper, mixed paper, or other items which can be recycled, salvaged, composted, processed, or marketed by any means other than landfilling or burning, whether as fuel or otherwise, so that they are returned to use by society.				
Product Ban	Calabasas, CA	Regulation	Food packaging materials made of expanded polystyrene	Ordinance 2007-233 bans retail food establishments, nonprofit food providers and City facilities from using food packaging materials made of expanded polystyrene. The ordinance requires food service establishments in Calabasas to start using environmentally acceptable packaging (i.e. returnable, recyclable, biodegradable, degradable).	▪ Reduces Litter ▪ Reduces harmful effects on marine environment and marine life ▪ May reduce toxic emissions due to manufacture	▪ Alternatives may cost more than banned products (not including external costs) ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect existing recycling programs. ▪ City Manager can create exemptions based on “undue hardship”		http://www.ci.berkeley.ca.us/bmc/berkeley_municipal_code/title_11/60/020.html
Product Ban	San Francisco, CA	Regulation	Polystyrene foam disposable food service ware	Ordinance 29506 prohibits the use of polystyrene foam	▪ Reduces Litter ▪ Reduces harmful effects on marine	▪ Alternatives may cost more than banned products (not		http://www.cawrecycles.org/files/SF%20Food%20S

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
				disposable food service ware and requires the use of biodegradable/ compostable or recyclable disposable food service ware by restaurants, retail food vendors, City departments, and the City's contractors and lessee, unless there is "no affordable alternative." Provides for penalties for violation. "Affordable" means purchasable for not more than 15% more than the purchase cost of non-biodegradable, non-compostable, or non-recyclable alternatives. Compostable means that the alternatives used must break-down in San Francisco's composting system, meet ASTM standards for biodegradability, and provide a label that indicates it is ASTM certified for compost collectors Biodegradable has the same meaning as compostable and are used interchangeably.	environment and marine life ▪ May reduce toxic emissions due to manufacture	including external costs) ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect existing recycling programs. ▪ City Manager can create exemptions based on "undue hardship"		ervice%20Waste%20Reduction%20Ordinance.doc.pdf

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
Product Ban	Santa Monica, CA	Regulation	Food service containers made from expanded polystyrene or disposable food service containers made from non-recyclable plastic.	Ordinance prohibiting food providers from dispensing prepared food to customers in disposable food service containers made from expanded polystyrene or disposable food service containers made from non-recyclable plastic. Provides for penalties for violation.	▪ Reduces Litter ▪ Reduces harmful effects on marine environment and marine life ▪ May reduce toxic emissions due to manufacture	▪ California Restaurant Association claims it's more expensive, higher costs of biodegradable, compostable, or recyclable ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect existing recycling programs. ▪ Director of Environmental and Public Works Management can create one-year exemptions based on "undue hardship."		http://www.smgov.net/epd/business/images/pdf/SMMC_2216.pdf
Product Ban	Portland, OR	Regulation	Polystyrene foam (PSF) products	Ordinance prohibiting retail food vendors from serving prepared food in any polystyrene foam (PSF) products. Provides for penalties for violation. "Food vendor", means any restaurant or retail food vendor	▪ Reduces Litter ▪ Reduces harmful effects on marine environment and marine life ▪ May reduce toxic emissions due to manufacture	▪ Alternatives may cost more than banned products (not including external costs) ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect existing recycling programs. ▪ City Council or "Appointee" can create one-year exemptions based on "undue hardship."		http://www.portlandonline.com/auditor/index.cfm?c=28889#cid_19265

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
Product Ban	Rahway, New Jersey	Regulation	PVC and Polystyrene	An ordinance that prohibits any business in the City of Rahway to sell or convey food directly to the ultimate consumer unless such food is placed, wrapped or packaged in degradeable packaging at the conclusion of the sales transaction. "Conclusion of the sales transaction" is the point of time at which the possession of the food product passes from the retail food vendor to the ultimate consumer, and the conclusion of the sales transaction need to require the actual payment of consideration for such food product; provided, however, payment is expected from the ultimate consumer prior to the consumer exiting the premises of the retail food vendor. In addition, the ordinance prohibits food vendors located within the City to sell, give or provide eating utensils or food containers to any consumer if the utensils or food containers are composed of polystyrene or polyvinyl chloride	▪ Biodegradable containers are the only types allowed		Implemented in 1996. Very effective	MassPirg article

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
				Degradable Packaging is made of cellulose-based substances or other substances which are capable of being readily attached, decomposed, assimilated, and/or otherwise completely oxidized or broken down into its constituent parts by bacteria, natural biological organisms, carbonaceous soil material, water, carbon dioxide; or in the alternative capable of otherwise degrading when exposed to ultraviolet light or other natural processes beginning within a 12-month period from the date of manufacture or exposure to the environment				
Product Ban	Switzerland	Regulation	PVC containers					
Product Restrictions	Taipei City, Taiwan	Regulation	Plastic Disposable Dishes	Beginning on July 1, 2002, implemented the "Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy," imposing restrictions on the use of plastic shopping bags, disposable tableware, and styrofoam in phases.				
Rate Structure Review for Commercial	Seattle, WA Portland, OR	Contractual and Programmatic	All compostable food service ware	Portland offers reduced rate for smaller garbage can and minimal charges	▪ Lower costs for waste disposal			

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
and Residential Organics Collection				for organics collection. Accompanied by intensive education about cost advantages.				
Recycled Content Requirement		Regulation	Single-Use Food Service Containers	Mandate to require that Single-Use food service containers contain a certain percentage of recycled material.	▪ Creates market demand for recycling programs	▪ Percent requirements must reconcile with available feedstock supply ▪ May be costly to manufacturers to alter processes. ▪ Economics may result in hardship to manufacturers	California implemented a similar law related to garbage bags in the early 1990s. Requires plastic trash bag manufacturers to ensure that at least 30 percent of materials used in the bags is plastic postconsumer material.	
Tax	Kassel, Kiel and Frankfurt Germany	Regulation	Single-Use Food Service Packaging	Instituted taxes on single-use packaging in such places as fast-food restaurants, snack bars, hotels, nursing homes and hospitals.				http://www.fpi.org/jahia/Jahia/pid/57#1
tax break	Seattle?	incentive	All food service ware	Offer businesses a tax break for proving that all single-use food service ware they use is compostable.	Strong incentive to businesses			
Voluntary Product Ban	Santa Cruz County, CA	Regulation	Polystyrene foam disposable food service ware	Ordinance encouraging, on a voluntary basis, the elimination of all food and other packaging which utilizes poly-styrene foam; and encouraging, on a voluntary basis, the reduction of nonbiodegradable, non-recyclable, or non-returnable food and beverage packaging used	▪ May reduce litter ▪ May reduce harmful effects on marine environment and marine life ▪ May reduce toxic emissions due to manufacture	▪ Voluntary actions may result is lower participation. ▪ Alternatives may cost more than banned products (not including external costs) ▪ May direct consumers to alternatives that have a greater overall environmental impact ▪ May negatively affect		http://sccounty01.co.santa-cruz.ca.us/bds/govstream/BDSvData/non_legacy/agendas/20041207/PDF/033.pdf

Strategy	Jurisdiction	Method	Product	Description and Implementation Strategy	Pros	Cons	Effectiveness	Reference
Disposable Food Service Items								
				by retail food establishments within Santa Cruz County. Sets a target of no less than 50 percent, by volume, of each retail food establishment's food packaging, in which food or beverages are provided to customers, be either biodegradable, recyclable or returnable. If a finding by the County staff is that the goals have not been attained after 90 days, the product restrictions will become mandatory.		existing recycling programs.		
Voluntary Product Restrictions	Ontario, Canada St. Jerome's College - University of Waterloo		All food service ware	Switch to compostable food service items to save money on waste disposal	▪ Lower waste disposal costs ▪ Right thing to do".	▪ Requires education campaign at college or institution where adopted	Very effective (95%) since it is voluntary adopted change	http://www.adm.uwaterloo.ca/infowast/watgreen/projects/library/f03biodegradeablesatstjeromes.pdf
Voluntary Product Restrictions	Sweden	Voluntary	PVC containers	Voluntary ban due to concerns about endocrine disrupters				MassPirg article

APPENDIX C

List of Products Found During Initial Research

List of Products Found During Initial Research

Disposable Bags (Plastic and Paper)												
		Bag Type							**Certified By:**			
Brand Name	**Material**	**Recyclable Bag**	**Biodegradable bag**	**Compostable bag**	**Reusable bag**	**Manufacturer or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**website**
Biocorp	cellulose fiber/limestone (cutlery), starch/protein/ cellulose (plates), recycled polyethylene/polyolefins/ minerals (bags)		X			Biocorp USA (Novamont Matter-bi resin)	Becker, MN	866-348-8348	?	?		http://www.biocorpusa.com/
BioBag	Novamont Mater-bi corn resin			X		BiogroupUSA	Palm Harbor, FL	727-789-1646	Yes	Yes	Yes	http://www.biobagusa.com/
Cereplast	corn, soy, wheat, potato based			X		Cereplast	Hawthorne, CA	310-676-5000	Yes	?	Yes	http://www.cereplast.com/
Eco Film	proprietary			**X**		Cortec Corporation	St. Paul, MN	800-426-7832	Yes	Yes	Yes	http://www.ecofilm.com/contact.php
NA	paper bags	**X**		**X**	**X**	Duro Bag	Ludlow, KY	800-879-3876				http://www.durobag.com/index.html
Comp-lete	Novamont Mater-bi corn resin			**X**		Fortune Plastics, Inc.	Glendale, AZ	800-874-1670	Yes	Yes	Yes	http://www.fortuneplastics.com/
BioTuf	proprietary			**X**		Heritage	Rancho Cucomonga, CA	800-423-1555	?	Yes	Yes	http://www.heritage-bag.com/products/biotuf.asp
Great Green Earth Compostable Bags	proprietary			**X**		Marshall Plastic Film	Martin, MI	800-410-8597	Yes	?	Yes	http://www.marshallplastic.com/biodegradable.htm
Nat-Ur	corn starch based PLA			**X**		Nat-ur, Inc.	Hawthorne, CA	310-676 5000	Yes	Yes		http://w5inter2.hivelocity.net/biocorp/cart/showall.asp

Disposable Bags (Plastic and Paper)												
		Bag Type							**Certified By:**			
Brand Name	**Material**	**Recyclable Bag**	**Biodegradable bag**	**Compostable bag**	**Reusable bag**	**Manufacturer or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**website**
Nature Friendly Products	bagasse			**X**		Nature Friendly Products	Beachwood, OH	800.321.4804	Yes	Yes	Yes	http://www.nfpco.com/about.html
Ecosafe - 6400	proprietary			**X**		Plastic Solutions, Inc.	Delta, BC, Canada	800-371-3541	Yes	Yes	Yes	http://www.ecosafeplastics.com/qs/page/4887/0/-1
Natureflex, Eco Film, Eco Works	bagasse, corn starch, wood, Natureflex, PLA, Eco film, Eco works		**X**	**X**		Simply Biodegradable	Moses Lake, WA	866-782-2371	?	?		http://www.simplybiodegradable.com
Trellis Earth	corn starch based PLA		**X**			Trellis Earth Products, Inc.	Portland, OR	503-922-0485	Yes	Yes		http://www.trelliseearth.com/
BioSak	Novamont Mater-bi corn resin		**X**	**X**		W. Ralston (Canada), Inc.	Montreal, Quebec, Canada	800-334-1567	Yes	Yes	Yes	http://www.cttgroup.com/ralston/english/BioSakPkg.html
World Centric Bagasse	bagasse, corn and potato starch		**X**	**X**		World Centric	Palo Alto, CA	650-739-0699	?	?		http://www.worldcentric.org/bio/index.htm

Disposable Food Service Items																		
		Food Service Product Type													**Certified By:**			
Brand Name	**Material**	**Bowls**	**Plates or trays**	**Cutlery**	**Cold cups and lids**	**Hot cups and lids**	**Folded containers**	**Hinged containers**	**Lidded containers**	**Straws and/or Stirrers**	**Aluminum**	**Wraps**	**Manufac. or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**Website**
Stalk Market, Jaya	bagasse, rice, or bamboo	**X**	**X**	**X**				**X**					Asean Corporation	Portland, OR	503-295-4977	No	Yes		http://www.stalkmarket.net/
Bridgegate	bagasse, rice, or bamboo	**X**	**X**	**X**	**X**					**X**			Associated Services	San Leandro, CA	800-750-5282	?	?		http://www.associatedcoffee.com/
Biocorp	cellulose fiber/limestone (cutlery), starch/protein/ cellulose (plates), recycled polyethylene/ polyolefins/minerals (bags)	**X**	**X**	**X**	**X**	**X**		**X**	**X**	**X**			Biocorp USA (Novamont Matter-bi resin)	Becker, MN	866-348-8348	?	?		http://www.biocorpusa.com/
BioCane, Bio Wrap, Taterware, Compost-liner, Biograde 300	bagasse, rice, or bamboo	**X**	**X**	**X**		**X**		**X**	**X**				Biodegradable Food Service, LLC	Bend, OR	541-593-2191		Yes	Yes	http://bdfs.net/products/bio_cane.php
BioBag	Novamont Mater-bi corn resin												BiogroupUSA	Palm Harbor, FL	727-789-1646	Yes	Yes		http://www.biobagusa.com/
Biosphere	starches and grass fibers	**X**	**X**		**X**	**X**			**X**				Biosphere Industries	Carpinteria, CA	805-566-6563	Yes	?	Yes	http://www.biospherecorp.com/contact.htm
Cereplast	corn, soy, wheat, potato based		**X**	**X**	**X**	**X**				**X**			Cereplast	Hawthorne, CA	310-676-5000	Yes	?		http://www.cereplast.com/
Green Mission	bagasse and other fibers	**X**	**X**					**X**					Clear Creek Compostables	Los Angeles, CA	310-447-2350	?	?	Yes	http://clearcreekcomp.com/index.html
NA	corn based PLA								**X**				Clear-Lam Packaging, Inc.	Elk Grove, IL	847-439-8570	?	?		http://www.clearlam.com

Disposable Food Service Items																		
		Food Service Product Type													Certified By:			
Brand Name	Material	Bowls	Plates or trays	Cutlery	Cold cups and lids	Hot cups and lids	Folded containers	Hinged containers	Lidded containers	Straws and/or Stirrers	Aluminum	Wraps	Manufac. or Distributor	City	Phone	BPI	ASTM	CG	Website
Braille cups	paper					**X**							Clovernook Center for the Blind	Cincinnati, OH	800-728-5062	?	Yes		http://www.clovernook.org/b_braille.aspx
Eco Film	proprietary												Cortec Corporation	St. Paul, MN	800-426-7832	Yes	Yes		http://www.ecofilm.com/contact.php
NA	aluminum foil										**X**		Durable Packaging	Wheeling, IL	847-541-4400	No	No		http://www.durablepackaging.com/home.htm
NA	paper bags												Duro Bag	Ludlow, KY	800-879-3876				http://www.durobag.com/index.html
Earth Cycle	palm fiber, Natureflex film		**X**						**X**			**X**	Earth Cycle	Vancouver, BC, Canada	604-899-0928	Yes	?		http://www.earthcycle.com/
Earthshell	potato, corn, wheat, rice, tapioca starches and limestone												Earthshell Corporation	Lutherville, MD	410-847-9420	?	?		http://www.earthshell.com/foam.html
Earthsmart	bagasse	**X**	**X**	**X**				**X**					Earthsmart Products, LLC	Rancho Palos Verdes, CA	480-206-4513	?	Yes		http://www.earthsmartllc.com/
NA	corn starch			**X**									Earthware Biodegradables	Lagunitas, CA	800-211-6747	?	?	Yes	http://www.earthwarebiodegradables.com/
Eatware (Environmentally Appropriate Tableware)	bagasse, bamboo, starch		**X**						**X**				EATware	Bakersfield, CA	877-663- 2892	?	?		http://www.eatware.com/subscribe.htm
Eco-products	bagasse, rice, or bamboo	**X**											Eco-Products, Inc.	Boulder, CO	303-449-1876				http://www.ecoproducts.com/

Disposable Food Service Items																		
		Food Service Product Type													**Certified By:**			
Brand Name	**Material**	**Bowls**	**Plates or trays**	**Cutlery**	**Cold cups and lids**	**Hot cups and lids**	**Folded containers**	**Hinged containers**	**Lidded containers**	**Straws and/or Stirrers**	**Aluminum**	**Wraps**	**Manufac. or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**Website**
Ecoware	bagasse			**X**									Ecoware	Eden Prairie, MN	612-423-6267	?	?		http://www.fullcircleplanet.com/products.html
BagasseWare, Spudware	bagasse, corn or potato starch with soy oil	**X**	**X**	**X**				**X**	**X**				Excellent Packaging & Supply	Richmond, CA	800-317-2737	?	?		http://www.excellentpackaging.com/pages/1/EPSNature.htm
Greenware	corn, soy, wheat, potato based				**X**								Fabri-kal Corporation	Kalamazoo, MI	800-888-5054	Yes	?	Yes	http://www.f-k.com/component/option,com_content2/Itemid,74/task,view/id,185/cat,34/
Bio Pak, Boiplus	recycled paperboard						**X**						Fold-Pak (aka GSD Packaging)	Fresno, CA	559-441-1181				http://www.gsdpackaging.com/
Comp-lete	Novamont Mater-bi corn resin												Fortune Plastics, Inc.	Glendale, AZ	800-874-1670	Yes	Yes		http://www.fortuneplastics.com/
Harvest Collection	corn, soy, wheat, potato based	**X**	**X**		**X**			**X**					Genpak, LLC	Glens, Falls, NY	800-634-1316	Yes		Yes	http://www.genpak.com/
BioTuf	proprietary												Heritage	Rancho Cucomonga, CA	800-423-1555	?	Yes		http://www.heritage-bag.com/products/biotuf.asp
Chinet	100% recycled paper	**X**	**X**										Huhtamaki	Desoto, KA	913-583-8254	Yes	?	Yes	http://www.huhtamaki.com/
Natureflex	corn, soy, wheat, potato based											**X**	Innovia Films	Atlanta, GA	877 822 3456	?	?	Yes	http://www.innoviafilms.com/
Genesys								**X**					Intec Alliance	Cambridge, MN	763-689-5300	?	?		http://www.intec-alliance.com/

Disposable Food Service Items																		
		Food Service Product Type													**Certified By:**			
Brand Name	**Material**	**Bowls**	**Plates or trays**	**Cutlery**	**Cold cups and lids**	**Hot cups and lids**	**Folded containers**	**Hinged containers**	**Lidded containers**	**Straws and/or Stirrers**	**Aluminum**	**Wraps**	**Manufac. or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**Website**
Ecotainer	paper lined with PLA					**X**							International Paper-Food Service	Memphis, TN	800-537-4141	Yes	?		http://www.internationalpaper.com/Packaging/Packaging_Products/Food service/ecotainer/index.html#
Pinnacle Plastic Containers	corn starch based PLA							**X**					Leading Industry, Inc.	Oxnard, CA	805-981-1000	?	?		http://www.ppck.com/
Great Green Earth Compostable Bags	proprietary												Marshall Plastic Film	Martin, MI	800-410-8597	Yes	?		http://www.marshallplastic.com/biodegradable.htm
Nat-Ur	corn starch based PLA			**X**	**X**					**X**			Nat-ur, Inc.	Hawthorne, CA	310-676 5000	Yes	Yes	Yes	http://w5inter2.hivelocity.net/biocorp/cart/showall.asp
Nature Friendly Products	bagasse	**X**	**X**	**X**	**X**					**X**			Nature Friendly Products	Beachwood, OH	800.321.4804	Yes	Yes		http://www.nfpco.com/about.html
see Natureworks PLA	corn starch based PLA							**X**	**X**				Nature Green (marketed in Taiwan)	Minnetonka, MN	877-423-7659	Yes	Yes		http://www.natureworksllc.com/Contact-Us.aspx
Natureworks PLA	corn starch based PLA							**X**	**X**				Natureworks, LLC (Cargill International)	Minnetonka, MN	877-423-7659	?	?		http://www.natureworksllc.com/Contact-Us.aspx
New Ice Inc.	potato starch	**?**	**?**										New Ice, Inc.	Durango, CA	970-382-0002	No	Yes		http://www.newiceinc.com/News.asp

Disposable Food Service Items																		
		Food Service Product Type													Certified By:			
Brand Name	Material	Bowls	Plates or trays	Cutlery	Cold cups and lids	Hot cups and lids	Folded containers	Hinged containers	Lidded containers	Straws and/or Stirrers	Aluminum	Wraps	Manufac. or Distributor	City	Phone	BPI	ASTM	CG	Website
Natureworks PLA	corn starch based PLA	X			X			X	X				P & P International	Selma, CA	559-891-9888	?	?		http://www.usa-ppi.com/
Bio&PLA	corn starch based PLA							X					Packaging Direct, Inc. (CM Packaging)	Gladwin, MI	866-296-2020	?	?		http://www.cmpackaging.com/pdi_products.aspx
NA	recycled paper molded fiber	X	X					X	X				Pactiv	Lake Forest, IL	800-476-4300	?	?		http://www.pactiv.com/
Homefresh, Crystal Seal, PastaPak	recyclable clear HDPE, LDPE, PP resin plastic								X				Placon	Madison, WI	800-541-1535	No	No		http://www.placon.com/
Ecosafe - 6400	proprietary												Plastic Solutions, Inc.	Delta, BC, Canada	800-371-3541	Yes	Yes		http://www.ecosafeplastics.com/qs/page/4887/0/-1
PrimeWare	bagasse, rice, or bamboo							X	X				Primelink Solutions, LLC	Burlingame, CA	650.375.1398	No	Yes		http://www.primelinksolution.com/contact.htm
Earthshell Dinnerware	corn and potato starches with limestone	X	X					X					Renewable Products, Inc.	Lebanon, MO	417-533-7675	No	?		http://www.renewable-products.com/
FastPac	recyclable clear HDPE, LDPE, PP resin plastic								X				Sabert	Riverside, CA	800-722-3781	NA	NA		http://www.sabert.com/fastpac.shtml
Natureflex, Eco Film, Eco Works	bagasse, corn starch, wood, Natureflex, PLA, Eco film, Eco works	X	X	X	X								Simply Biodegradable	Moses Lake, WA	866-782-2371	?	?	Yes	http://www.simplybiodegradable.com
Green Wave	bagasse	X	X					X					Trans-world International, Inc.	Brooklyn, NY	718-499-3371	?	?		http://www.transwc.com/

Disposable Food Service Items																		
		Food Service Product Type													**Certified By:**			
Brand Name	**Material**	**Bowls**	**Plates or trays**	**Cutlery**	**Cold cups and lids**	**Hot cups and lids**	**Folded containers**	**Hinged containers**	**Lidded containers**	**Straws and/or Stirrers**	**Aluminum**	**Wraps**	**Manufac. or Distributor**	**City**	**Phone**	**BPI**	**ASTM**	**CG**	**Website**
Trellis Earth	corn starch based PLA	**X**	**X**	**X**	**X**	**X**							Trellis Earth Products, Inc.	Portland, OR	503-922-0485	Yes	Yes		http://www.trellisearth.com/
BioSak	Novamont Mater-bi corn resin												W. Ralston (Canada), Inc.	Montreal, Quebec, Canada	800-334-1567	Yes	Yes		http://www.cttgroup.com/ralston/english/BioSakPkg.html
NaturesPLAstic	corn starch based PLA	**X**	**X**	**X**	**X**				**X**				Wilkinson Industries, Inc (NatureWorks, LLC)	Fort Calhoun, NE	800-456-4519	?	?	Yes	http://naturesplastic.wilkinsonindustries.com/contactus/
World Centric Bagasse	bagasse, corn and potato starch	**X**	**X**	**X**	**X**					**X**			World Centric	Palo Alto, CA	650-739-0699	?	?	Yes	http://www.worldcentric.org/bio/index.htm
Various		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**			WEBstaurant store			NA	NA		http://www.webstaurantstore.com/product_listing/C.html

APPENDIX D

Products that Have Passed Cedar Grove, BPI, ASTM Compostability Criteria

Cedar Grove Composting has evaluated the items listed below. They have shown biological degradation in our compost facility. All poly items are USCC/BPI certified. (US Composting Council / Biodegradable Products Institute, using ASTM D 6400-99, or ASTM D 6868, US standard methods to test for biodegradability and compostability.) Cedar Grove composting does not sell the products. Please contact the companies direct for more information. Item #'s, if available, are located in parenthesis. **Please report any updates or issues of accuracy regarding this list to info@cgcompost.com or call 877-764-5748.**

As of 11/01/07 ***(Check for next results around 1/1/08).***

Drink Items (cups & straws)

Substrate	Manufacturer	Distribution	Contact	Item	Item #
			Nat-UR (Cereplast) www.Nat-UR.com	Nat-UR Compostable Cold Cups (16 oz., 12 oz., 9 oz.)	
			Nat-UR (Cereplast) www.Nat-UR.com	Straw	892167000623
Cereplast PLA-Corn	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Cold Cup	HCC12
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	PLA Cold cups-16 oz, 12 oz	GC16 (16oz) GC 12 (12oz)
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	PLA Cold cups-9 oz	GC09
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	PLA Cold cup lids-16 abd 24 oz	LGC16/24
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	PLA Cold cup lids-9, 12 and 20 oz	LGC12/20
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Flat lid	Not specified
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	12-20 oz dome lid	**DLGC 12/20- Approved 11/1/07**
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	16-24 oz dome lid	DLGC 16/24
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC90F
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC7
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC10
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC20
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC20
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC24
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC12S
Natureworks PLA-Corn	FabriKal	Willis Marketing	nbartruff@willismarketing.com	Cold Cup	GC16S
Nature Works PLA	Solo Cup Company		kelvin.okamoto@solocup.com	Cold Cup Dome lid	**DL662- Approved 11/1/07**
Nature Works PLA	Solo Cup Company		kelvin.okamoto@solocup.com	12oz Cold Cup	**PLA12- Approved 11/1/07**
Cereplast CP-TH-01	Solo Cup Company		kelvin.okamoto@solocup.com	18oz SoloGrip Cup	**S18-Approved 11/1/07**
Natureworks PLA-Corn	NatureWorks	World Centric	info@worldcentric.org	Straw	**ST-CS-8- Approved 11/1/07**
Natureworks PLA-Corn	NatureWorks C-96	World Centric	info@worldcentric.org	20oz dome lid	CPL-CS-12
Natureworks PLA-Corn	FabriKal	Fabri-Kal	jkittred@f-k.com	Greenware dome lid-DLGC12/2	2
PLA Corn	World Centric	World Centric	info@worldcentric.org	Cold Cup, 20 oz	CP-CS-20

Trays

Substrate	Manufacturer	Distribution	Contact	Item	Item #
		Simply Biodegradable	www.simplybiodegradable.com	Palm Leaf Tray	Not specified
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	7.5" lid	**973014- Approved 11/1/07**
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	7.5" Tray	**972013- Approved 11/1/07**
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	9" Tray	**974015- Approved 11/1/07**
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	9" Lid	**975014- Approved 11/1/07**
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	10.25" Tray	**976016- Approved 11/1/07**
Cereplast Resin	Innoware		Hanna.sjolund@innowareinc.com	10.25" Lid	**977016- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	7.5" Deli Lid	**#4 6624 Lid- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	Section Tray	**#5 10527- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	13" Tray	**#6 RPT 12-Approved 11/1/07**

Cedar Grove Composting has evaluated the items listed below. They have shown biological degradation in our compost facility. All poly items are USCC/BPI certified. (US Composting Council / Biodegradable Products Institute, using ASTM D 6400-99, or ASTM D 6868, US standard methods to test for biodegradability and compostability.) Cedar Grove composting does not sell the products. Please contact the companies direct for more information. Item #'s, if available, are located in parenthesis. **Please report any updates or issues of accuracy regarding this list to info@cgcompost.com or call 877-764-5748.**

As of 11/01/07 ***(Check for next results around 1/1/08).***

Bowls

Substrate	Manufacturer	Distribution	Contact	Item	Item #
Sugarcane	BioCane	Biodegradable Foods www.BDFS.com	Biodegradable Food Service- Kevin Duffy (541) 593-2191	Bowl	Not specified
Clear Creek Compostables-Sugarcane	G-Tech, China	Clear Creek Compostables	Be Green Packaging 888-344-6544	12 oz. Bowl , 15 oz. Bowl	3C-B012 (12 oz)/3C-B015 (15 oz)
	GenPak	GenPak	Joe Tappan GenPak www.genpak.com	24oz Bowl	HCB24
	GenPak	GenPak	Joe Tappan GenPak www.genpak.com	12 oz bowl	**HCB 12- Approved 11/107**
Cereplast-Starch PLA	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Bowl	GB3200
Cereplast-Starch PLA	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Bowl	HCB24
PLA-Starch/Grass Fiber	Biosphere	Simply Biodegradable www.simplybiodegradable.com	Simply Biodegradable www.simplybiodegradable.com	Primary Packaging Material 100, 12 oz	5P003

Plates

Substrate	Manufacturer	Distribution	Contact	Item	Item #
Clear Creek Compostables-Sugarcane	G-Tech, China	Clear Creek Compostables	Be Green Packaging 888-344-6544	9 in Plate, 10 in. plate	3C-P009 (9") 3C-P010 (10")
Molded Fiber	Huhtamaki Americas	Sysco, U.S. Foodservice, United Grocers, Foodservice of America, XPEDX Kent, West Coast Paper, Bunzl-Papercraft	Huhtamaki Foodservice	Chinet Plate	21227
Molded Fiber	Huhtamaki Americas		Huhtamaki Foodservice	Chinet Paperpro Plate	22802
Molded Fiber	Huhtamaki Americas		Huhtamaki Foodservice	School Lunch Tray	22025
Recycled Paper & Biodegradable Film	Nat-UR	www.nat-urstore.com	Nat-UR (Cereplast) www.Nat-UR.com	Nat-UR Plates (9 inch, 6 inch)	
Cereplast	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Plate	GP900
Cereplast	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Small Plate	HCD06
Cereplast	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak 3 Section Plate	HCED13
Cereplast	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	Gen Pak Small 3 section Plate	HCD39
Cereplast	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Plate	HCD10

Clamshells (Deli Containers)

Substrate	Manufacturer	Distribution	Contact	Item	Item #
PLA Corn	Earthware	info@earthwarebiodegradables.com	Earthware Biodegradables	Deli Container, small	EWPLAGB1
Cereplast-PLA Corn			Nat-UR (Cereplast) www.Nat-UR.com	Nat-UR Salad Bowl (Bowl w/ attached Lid)	
Cereplast-PLA Corn	GenPak	Service Paper Co., Bunzl Dist.	Joe Tappan GenPak www.genpak.com	GenPak Clamshell	HCH80
Natueworks	Wilkinson Industries (Mfr)	Several National & Local Suppliers	Nicole Bartruff, Wills Marketing nbartruff@willismarketing.com	Deli containers with lids- 24 oz & 16 oz	H61N (24oz) H60N (16oz)
Cereplast-PLA Corn	GenPak	GenPak	jtappan@genpak.com	Med. Hinged Container	**HCH83- Approved 11/1/07**
Natueworks	Wilkinson Industries (Mfr)	Several National & Local Suppliers	Nicole Bartruff, Wills Marketing nbartruff@willismarketing.com	12 oz & 8 oz	H59N(12oz) H58N (8oz)
PLA Corn	World Centric	World Centric	Nat-UR (Cereplast) www.Nat-UR.com	Deli container, 12 oz	DC-CS-12

Utensils (Fork, Knife, Spoon)

Substrate	Manufacturer	Distribution	Contact	Item	Item #
	Nat-UR (Cereplast)		Nat-UR (Cereplast) www.Nat-UR.com	Nat-UR Utensils Fork, Knife, Spoon	FM01, KM03, SM02
	Nat-UR (Cereplast)		Nat-UR (Cereplast) www.Nat-UR.com	Green fork, Spoon, Knife	CFRG01, CSRG02, SKRG03
	Nat-UR (Cereplast)		Nat-UR (Cereplast) www.Nat-UR.com	Small white tasting spoon	ICS061
Corn Starch	Natureworks PLA	Wold Centric	info@worldcentric.org	Tasting spoon	SP-CS-3

Cedar Grove Composting has evaluated the items listed below. They have shown biological degradation in our compost facility. All poly items are USCC/BPI certified. (US Composting Council / Biodegradable Products Institute, using ASTM D 6400-99, or ASTM D 6868, US standard methods to test for biodegradability and compostability.) Cedar Grove composting does not sell the products. Please contact the companies direct for more information. Item #'s, if available, are located in parenthesis. **Please report any updates or issues of accuracy regarding this list to info@cgcompost.com or call 877-764-5748.**

As of 11/01/07 ***(Check for next results around 1/1/08).***

Films					
Substrate	**Manufacturer**	**Distribution**	**Contact**	**Item**	**Item #**
Cellulose Film	BioCoffee Bag	Biodegradable Foods www.BDFS.com	Biodegradable Foods www.BDFS.com	Bag	Not specified
	BioWrap	Biodegradable Foods www.BDFS.com	Biodegradable Foods www.BDFS.com	Film	Not specified
	Innovia	Biodegradable Foods www.BDFS.com	Biodegradable Foods www.BDFS.com	Nature Flex	NE 38
	Innovia	Biodegradable Foods www.BDFS.com	Biodegradable Foods www.BDFS.com	Metallized film	Not specified
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	42 Mil Sheet	**#1QNAHS- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	28 Mil Sheet	**#2QNAHS-Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	10 Mil Sheet	**#3QNAHS- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	Gray Sheet	**#7QNAHS- Approved 11/1/07**
Cereplast Resin	Alcoa		jeff.pristera@alcoa.com	Tan Sheet	**#7QNAHS- Approved 11/1/07**

SF Approved

Compostable Food Containers and Service Items

Products that meet health & environmental criteria for the City and County of San Francisco

NOTE: City & County of San Francisco staff may only purchase listed products when the product category is designated as "mandatory." (SF Environment Code Chapt. 2) If you purchase an item not on this list when an equivalent is available from this list, Office of Contract Administration and Department of the Environment will be notified.

Vendors/manufacturers: Products are added to this list *only* after solicitation by the City & County of San Francisco. Public solicitations will be posted on the Dept. of the Environment web site.

Product Category		Exceptions/Notes	Product Name, Number	Manufacturer	Criteria Used for Review	*(SAN FRANCISCO STAFF ONLY)* On SF Contract?	Contract Number	Vendor
Food Wrapping and Misc.	MANDATORY		HB24, Butcher Wrap, 50lb. White Kraft	Bag Craft	Compostable	✓	88402	San Francisco Supply Master
			Coffee Stir Sticks, Wood	Poly King Wood	Compostable	✓	88402	San Francisco Supply Master
Paper Napkins and Towels			6500, Napkin, Table, Paper, Full Crepe	Scott Paper Limited	Compostable	✓	88402	San Francisco Supply Master
			1044, Napkin, Beverage, 2-ply, Color (Assorted)	Smithlee	Compostable	✓	88402	San Francisco Supply Master
			6200, Napkin, Beverage, White, 10” x 10”	Scott Paper Limited	Compostable	✓	88402	San Francisco Supply Master
			7600, Napkin, Catering, 2-ply 15” x 17”	Scott Paper Limited	Compostable	✓	88402	San Francisco Supply Master

Product Category		Exceptions/Notes	Product Name, Number	Manufacturer	Criteria Used for Review	(SAN FRANCISCO STAFF ONLY) On SF Contract?	Contract Number	Vendor
Hot Cups	MANDATORY		P508W, Cup, Hot Drink, Paper, 8oz. Size, White	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			PS512W, Cup, Hot Drink, Paper 12oz. Size, White	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			P516W, Cup, Hot Drink, Paper 16oz. Size, White	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			ECO RCKD-20, Cup Sleeve, Hot Drink, Unbleached Paper, fits 8, 12, 16 & 20oz cups	International Paper	Compostable	✓	88402	San Francisco Supply Master
			P520W, Cup, Hot Drink, Paper 20oz. Size, White	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
Cold Cups	MANDATORY		R7N 7.5 OZ, Cup, Cold Drink, Paper, 8oz. Size, no labeling	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			R12N, Cup, Cold Drink, Paper, 12oz. Size, no labeling	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			R16N, Cup, Cold Drink, Paper, 16oz. Size, no labeling	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			R22N, Cup, Cold Drink, Paper, 21oz. Size, no labeling	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			Cold Cup (PLA), 9 oz. size cup, Clear, “Cocktail”, cornstarch based resin, Unprinted	World Centric	Compostable	✓	88402	World Centric
			Cold Cup (PLA), 10 oz. size cup, Clear, “Cocktail”, cornstarch based resin, Unprinted	World Centric	Compostable	✓	88402	World Centric

Product Category		Exceptions/Notes	Product Name, Number	Manufacturer	Criteria Used for Review	*(SAN FRANCISCO STAFF ONLY)* On SF Contract?	Contract Number	Vendor
Paper Plates and Containers	MANDATORY		PL-06-01, Plate—6" Dia., Paper, molded fiber, heavy weight, rigid, unlined	Primelink Solutions	Compostable	✓	88402	San Francisco Supply Master
			PL-09, Plate—9" Dia., Paper, molded fiber, heavy weight, rigid, unlined	Primelink Solutions	Compostable	✓	88402	San Francisco Supply Master
			PL-93, Plate—9" Dia., 3 sections, Paper, molded fiber, heavy weight, rigid, unlined	Primelink Solutions	Compostable	✓	88402	San Francisco Supply Master
			PL-11, Plate—10-1/4" Dia., 3 sections, Paper, molded fiber, heavy weight, rigid, unlined	Primelink Solutions	Compostable	✓	88402	San Francisco Supply Master
			H408, Container, Hot Soup, 8oz., polylined paper	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			CH8A, Container Lid, Hot Soup, paper, White (fits 8 oz & 12 oz. soup bowl—Items 44 & 45)	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			FT06, Tray, Paper, 6 oz., "French Fry Boat"	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			FT08, Tray, Paper, 8 oz., "French Fry Boat"	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			FT1, Tray, Paper, 16 oz., "French Fry Boat"	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master
			H4125, Container, Hot Soup, 12oz., polylined paper	Solo Cup Company	Compostable	✓	88402	San Francisco Supply Master

Product Category		Exceptions/Notes	Product Name, Number	Manufacturer	Criteria Used for Review	(SAN FRANCISCO STAFF ONLY) On SF Contract?	Contract Number	Vendor
Eating Utensils	MANDATORY	EXCEPTIONS	Spoon, for hot foods; PLA (or other compostable material, clearly labeled	World Centric	Compostable	✓	88402	World Centric
			Fork, for hot foods; PLA (or other compostable material, clearly labeled	World Centric	Compostable	✓	88402	World Centric
			Knife, for hot foods; PLA (or other compostable material, clearly labeled	World Centric	Compostable	✓	88402	World Centric
Aluminum	MANDATORY		Tray, Catering, Round, Aluminum, 12" Dia	Durable Packaging	Recyclable	✓	88402	San Francsico Supply Master
			Tray, Catering, Round, Aluminum, 18" Dia	Durable Packaging	Recyclable	✓	88402	San Francsico Supply Master
			92410, Wrap, Aluminum, Full Roll, 24"	Durable Packaging	Recyclable	✓	88402	San Francsico Supply Master
			91050, Wrap, Aluminum, Sheets	Durable Packaging	Recyclable	✓	88402	San Francsico Supply Master
			7900, Pan, Aluminum (Disposable)—Full-size, 4” Deep	Durable Packaging	Recyclable	✓	88402	San Francisco Supply Master
			4200, Pan, Aluminum (Disposable)—1/2-Size, 4” Deep	Durable Packaging	Recyclable	✓	88402	San Francsico Supply Master
			5200, Pan, Aluminum (Disposable)—1/3-Size, 4” Deep	Durable Packaging	Recyclable	✓	88402	San Francisco Supply Master
			8900, Lid for Fulll Size Pan, Aluminum (Disposable)	Durable Packaging	Recyclable	✓	88402	San Francisco Supply Master
			8200, Lid for 1/2-size pan, Aluminum (Disposable);	Durable Packaging	Recyclable	✓	88402	San Francisco Supply Master
			8500, Lid for 1/3-size pan, Aluminum (Disposable)	Durable Packaging	Recyclable	✓	88402	San Francisco Supply Master

Product Category		Exceptions/Notes	Product Name, Number	Manufacturer	Criteria Used for Review	*(SAN FRANCISCO STAFF ONLY)* On SF Contract?	Contract Number	Vendor
Bags	MANDATORY		BAG, Brown Kraft—Gusseted, Size #10	Duro Bag	Compostable	✓	88402	San Francisco Supply Master
			BAG, Brown Kraft (HVY)—Gusseted, Size #86	Duro Bag	Compostable	✓	88402	San Francisco Supply Master
			BAG, Brown Kraft (LGT)—Gusseted, Size #66	Duro Bag	Compostable	✓	88402	San Francisco Supply Master
			Bag, Compostable Plastic, Gusseted	Bio Bag	Compostable	✓	88402	World Centric
Clamshells	MANDATORY		6x6x3, Clamshell Hinged Container, 1-compartment, bagasse, for hot and cold foods, tab closures	World Centric	Compostable	✓	88402	World Centric
			9x9x3, Clamshell Hinged Container, 1-compartment, bagasse, for hot and cold foods, tab closures	World Centric	Compostable	✓	88402	World Centric
			CLAMSHELL Hinged Container, bagasse, for cold foods, friction seal closure, 8” x 8” x 3”	Wilkinson	Compostable	✓	88402	World Centric

Definitions

Mandatory Within a "mandatory" product category, San Francisco City staff may purchase *only* listed products. To purchase other products, a waiver from the Office of Contract Administration is required.

Currently on SF Contract? Products marked in this column are currently offered on a San Francisco citywide term contract.

Criteria Used for Review All products on this list meet environmental and health criteria established by the San Francisco Dept. of the Environment. The disposable food containers and utensils on this list are recyclable or compostable in San Francisco's curbside recycling and composting collection programs. All paper products intended to hold food or liquid break down in San Francisco's composting program. All compostbale plastic products meet ASTM standards 6400 or 6868 for compostability. All other items are recyclable.

(SF STAFF ONLY)

Exceptions to Mandatory Purchasing Requirements The mandatory requirement does not apply for these specific product uses. No waiver from the Office of Contract Administration is required in these situations.

***Utensil* EXCEPTIONS:** No utensils that sufficiently break down into usable compost are currently available for use with hot foods over 190 degrees. For hot food these items are not mandatory.

Last Updated: July 30, 2007

APPENDIX E

Definitions for All Environmental Indicators Used

Definitions for All Environmental Indicators Used

The number of impact categories varies greatly and also in the amount of published background data and the degree of detail regarding explanations about the methodology and results.

Non-Renewable Energy

Measured in megajoules (MJ) per year. Energy reserves on Earth are finite - as long as people continue using them. This applies in particular for non-renewable energy resources such as fossil fuels. For that reason, it is important to consider non-renewable resources when evaluating environmental impact (IFEU 2006).

GHG Emissions

Measured in kilograms (kg) of CO_2 equivalents per kg of material. This environmental impact category characterizes the increase in the greenhouse effect due to emissions generated by humankind (Morris 2006). Greenhouse impacts are dominated by carbon dioxide from electricity generation and transportation consumption, methane emissions through degradation of materials in anaerobic conditions, and nitrous oxide (N_2O) emissions in fertilizer applications on crops. Methane has a 21 times higher greenhouse potential than CO_2 and N_2O is 310 times more potent a greenhouse gas than CO_2 (Nolan-ITU 2003).

The EPA's May 2002 report, *Solid Waste Management and Greenhouse Gases, A Life-Cycle Assessment of Emissions and Sinks* (EPA 2002), indicates that source reduction provides the greatest impact on greenhouse gas reduction, (in energy related CO_2 emissions from raw material acquisition and manufacturing process, and the absence of emissions from waste management, combining to reduce GHG emissions more than other options (EPA 2002)), followed by recycling. EPA also states that recycling reduces energy related CO_2 emissions in the manufacturing process and avoids emissions from waste management. Paper recycling increases the sequestration of forest carbon. Finally, the report indicates that the net greenhouse gas emissions from composting are lower than landfilling for food discards (composting avoids CH4 emissions), and higher than landfilling for yard trimmings (landfilling is credited with the carbon storage that results from incomplete decomposition of yard trimmings (EPA 2002).

Resource Depletion (Abiotic)

Measured in kilograms (kg) of Antimony (Sb) equivalent per kg of material. Resource depletion (abiotic) refers to the consumption of non-living resources (e.g., coal, oil, gas). Non-renewable resources are also consumed in the corn growing and starch extraction processes.

Ozone

Measured in grams of ethylene equivalents per kg of material. The Photochemical Ozone Creation Potential (POCP), which is expressed in ethylene equivalents, assesses changes to existing ozone concentrations based on the ozone creation potential of hydrocarbons. Gases included in this category are ethylene, methane, formaldehyde, benzene, volatile organic compounds, and nitrogen oxides (IFEU 2006).

Acidification

Measured in kilograms (kg) of SO_2 equivalents per kg of material. This impact category characterizes the release of acidifying compounds from human sources, principally fossil fuel and biomass combustion, which affect trees, soil, buildings, animals and humans. The main pollutants involved in acidification are sulfur and nitrogen compounds – e.g., sulfur oxides, sulfuric acid, nitrogen oxides, and ammonia (NH3) – along with hydrochloric acid (HCL) (Morris 2006)

Eutrophication

Measured in kilograms (kg) of PO4 equivalents per kg of material. This impact category characterizes the addition of mineral nutrients to the soil or water. In both media, the addition of large quantities of mineral nutrients, such as nitrogen and phosphorous, results in generally undesirable shifts in the number of species in ecosystems and a reduction in ecological diversity. In water, it tends to increase algae growth, which can lead to lack of oxygen and therefore death of species such as fish (Morris 2006).

Use of Nature (Land Use)

Measured in acres used per year. Land can be considered a finite resource when evaluating environmental impact. When the environmental status of an area of land is being considered, this takes into account all land-related environmental impact such as the reduction in biodiversity, soil erosion, adverse effects on the landscape, etc. (IFEU 2006).

Solid Waste Generation

Measured in tons generated per year.

Litter Marine Biodiversity

Measured in kilograms (kg) of material per year. The Nolan-ITU study provided two litter measurements that this study utilizes. The categories are "presented to provide some indication of the behavior of the different materials as litter aesthetics and litter marine biodiversity (which

refers to the potential for litter being ingested or entangled with marine fauna.). The marine biodiversity category is mostly affected by the propensity of the material to float or sink. Higher impacts are modeled in the marine biodiversity category if the material floats as it is assumed to float for 6 months (3 months for the oxo-biodegradable bag) and if it sinks the material is assumed to take around one day to sink. The values chosen here have been estimated in the absence of definitive data on the subject and are presented to show how the potential marine impact may vary under these assumptions (Nolan-ITU 2004)."

Litter Aesthetics

Measured in square meters (m^2) of material per year. The Nolan-ITU study provided two litter measurements that this study utilizes. The categories are "presented to provide some indication of the behavior of the different materials as litter aesthetics and litter marine biodiversity (which refers to the potential for litter being ingested or entangled with marine fauna.). The [disposable] bags have higher litter values due to the higher possibility of them being littered compared with reusable bags.

Human Toxicity

Measured in kilograms (kg) of PM_{10} equivalents per kg of material. Fine particulates (PM_{10}) are subsuming primary particulates and precursors of secondary particulates. Epidemiological studies have shown a correlation between the exposure to particulate matter and the mortality from respiratory diseases as well as a weakening of the immune system. Relevant are small particles with a diameter of less than 10 and especially less than 2.5 μm (in short referred to as PM_{10} and $PM_{2.5}$). These particles can not be absorbed by protection mechanisms and thus deeply penetrate into the lung and cause damage. Fine particulate matter can be formed from emissions by different mechanisms: On the one hand, carbon-particulate matter is emitted directly during the combustion process (primary particles); on the other hand, particles are formed by chemical processes from nitrogen oxide and sulphur-dioxide (secondary particles). This category is used to quantify the following compounds: SO_2, NOx, VOC, NH3 (IFEU 2006).

APPENDIX F

Individual Inventory Results (Bags)

Individual Inventory Results (Bags)

Disposable Shopping Bags

F-1 Environmental Assessment of Bio-Based Polymers and Natural Fibres. Dr. Martin Patel, Dr. Catia Bastioli, Dr. Luigi Marini Dipl.Geoökol. Eduard Würdinger

Dr. Martin Patel, a well-known LCA practitioner, published the 2003 report Environmental Assessment of Bio-Based Polymers and Natural Fibres, summarizing twenty life cycle assessments of bio-based or natural fibers. Seven of the studies reviewed deal with starch polymers, five with polyhydroxyalkanoates (PHA), two with polylactides (PLA), three with other bio-based polymers (lignin-epoxy resins, epoxidised linseed oil) and another three with composites based on flax, hemp and china reed (miscanthus). All of the materials studied are manufactured exclusively or – in most cases - partially from renewable resources (Patel 2001). Some of the studies only analyze the production and waste management of materials in the form of pellets without referring to a specific end-use application, while other studies refer to a certain type of end use.

F-2 Environmental Impact Assessment of Carrefour Bags

Environmental inventory data expressed as a factor of the HDPE single use bag:

Unit	Non-Renewable Primary Energy	Water	Greenhouse Gas Emission	Acidification	Ozone	Eutrophication	Solid Waste	Risk of Litter
HDPE	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Reusable LDPE (used 2X)	1.4	1.3	1.3	1.5	0.7	1.4	1.4	0.4
Reusable LDPE (used 4X)	0.7	0.6	0.6	0.7	0.3	0.7	0.7	0.4
Reusable LDPE (used 20X)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
Paper	1.1	4.0	3.3	1.9	1.3	14.0	2.7	0.2

Source: Ecobilan (2004).

F-3 Environment Australia – Plastic Shopping Bags-Analysis of Levies and Environmental Impacts

Unit	Material Consumption (kg)	Litter (g)	Litter (m^2)	Litter (m^2 per Year)	Greenhouse Gases (CO_2 Eq.)	Primary Energy (MJ)
Singlet HDPE	3.12	15.6	0.144	0.72	6.08	210
50% recycled singlet HDPE	3.12	15.6	0.144	0.72	4.79	117
Boutique LDPE (single use)	11.77	58.8	0.195	0.975	29.8	957
Reusable LDPE	0.96	4.8	0.0121	0.0603	2.43	78
Calico	1.14	5.7	0.0041	0.0819	2.52	160
Woven HDPE swag	0.22	1.1	0.00148	0.00743	0.628	18.6
PP fibre (Green Bag"	0.48	2.4	0.00187	0.00934	1.96	46.3
Kraft paper – handled	22.15	111	0.156	0.078	11.8	721
Solid PP "Smart Box"	0.42	NA	NA	NA	1.1	NA
Biodegradable – starch based (Mater-bi)	6.5	32.5	0.156	0.078	6.61	61.3

Source: Nolan-ITU (2002).

F-4 The Impacts of Degradable Plastic Bags in Australia – Final Report to Department of the Environment and Heritage

Unit	Material Consumption (kg)	Greenhouse (kg CO_2)	Abiotic Depletion (kg Sb eq)	Eutrophication kg PO4 eq	Litter Marine Biodiversity (kg.y)	Litter Aesthetics (m2.y)
Bionelle	3.12	6.29	0.019	0.256	0.043	1.56
Eco-Flex Bag	3.12	6.17	0.034	0.207	0.043	1.56
Mater-Bi	4.21	9.41	0.055	0.278	0.057	1.56
Earthstrength	3.12	6.49	0.072	0.124	7.8	1.56
Oxo-biodegradable	3.12	6.06	0.095	0.002	3.9	1.56
PLA	4.212	20.1	0.107	0.83	0.057	1.56
HDPE	3.12	6.08	0.099	0.002	7.8	6.24
Kraft Paper - reusable	22.152	30.5	0.273	0.026	0.30	1.56
PP Fiber - reusable	0.209	1.95	0.022	0.001	0.241	0.037
Woven HDPE reusable	0.216	0.628	0.009	0.00	0.107	0.029
Calico - reusable	1.141	2.56	0.059	0.01	0.003	0.03
LDPE reusable	1.04	2.72	0.041	0.001	2.571	0.149

Source: Nolan-ITU (2003).

F-5 Resource and Environmental Profile Analysis of Polyethylene and Unbleached Paper Grocery Sacks

Environmental inventory data expressed assuming a 50 percent recycling rate and a 1.5 PE to 1.0 paper bag ratio:

Unit	Energy (Kg)	Solid Waste ($M^{3)}$	Air Emissions (kg)	Waterborne Wastes (kg)
Polyethylene	8,862.47	0.14	7.17	0.73
Paper	13,399.21	0.7	21.86	17.06

Source: Franklin (1990).

APPENDIX G

Individual Inventory Results (Food service)

Individual Inventory Results (Food Service)

Disposable Food Service Items

G-1 Environmental Assessment of Bio-Based Polymers and Natural Fibres. Dr. Martin Patel, Dr. Catia Bastioli, Dr. Luigi Marini Dipl.Geoökol. Eduard Würdinger

G-2 Life Cycle Inventory of Polystyrene Foam, Bleached Paperboard, and Corrugated Paperboard Food Service Products

Unit	Energy (MM Btu)	Solid Waste (Weight) (lbs.)	Solid Waste (Volume) (cu. ft.)	Greenhouse Gases (lbs. CO_2 eq.)
16-Ounce Hot Cups				
EPS	6.13 – 6.97	129 – 146	9.75 – 11.08	500 – 569
PE-coated Paperboard	7.29 – 8.89	358 – 437	10.74 – 13.10	482 – 588
PE-coated Paperboard (with sleeve)	8.54 – 11.17	553 – 793	16.95 – 24.47	689 – 966
32-Ounce Hot Cups				
EPS	10.9 – 13.5	232 – 286	17.84 – 22.02	880 – 1087
PE-coated Paperboard	11.2 – 13.1	568 – 668	17.11 – 20.14	707 – 832
Wax-coated Paperboard	22.2	1,200	36.6	1,359
9-Inch High-Grade Plates				
GPPS	11.26 – 12.01	272 – 291	22.4 – 23.91	797 – 850
PE-coated Paperboard	9.98 – 10.15	514 – 522	15.56 – 15.81	605 – 615
Molded Pulp	11.57 – 12.42	552 – 593	14.74 – 15.84	997 – 1071
5-Inch Clamshells				
GPPS	4.79 – 5.44	116 – 131	9.48 – 10.78	341 – 387
Fluted Paperboard	5.31 – 5.38	285 – 289	8.59 – 8.72	483 – 490

Source: Franklin (2006).

G-3 Life Cycle Inventory of Five Products Produced From Polylactide (PLA) and Petroleum-Based Resins

Unit	Energy (GJ)	Solid Waste (Weight) (kg)	Greenhouse Gases (kg CO_2 eq.)
16-Ounce Cold Drink Cups			
PLA 2005	14.5	118	510
HIPS	13.3	98.4	576
PP	9.82	84	345
PET	16.1	126	719
16-Ounce 2-piece deli container			
Light-Weight			
PLA 2005	17.2	144	589
GPPS	15.7	119	684
Heavy-Weight			
PLA 2005	19.3	160	669
PET	26.2	205	1170
Envelope Window Film			
PLA 2005	76.12.03	18.8	62.6
GPPS	1.87	15.8	76.1
Foam Meat Tray			
PLA Foam 2005	5.59	43.8	192
GPPS Foam	5.77	41.8	231
12-Ounce Water Bottle			
PLA 2005	19.8	168	744
PET	21.4	162	961

Source: Franklin (2006b).

G-4 Life Cycle Assessment of Polylactide (PLA). A Comparison of Food Packaging Made From Natureworks® PLA and Alternative Materials. Final Report.

Net indicator results for base scenarios:

Unit	Fossil Resource Consumption (Kg crude oil eq.)	Global Warming (kg CO_2 eq.)	Summer Smog (g ethylene eq.)	Acidification (g SO2 eq)	Terrestrial Eutrophication (g PO4 eq)	Carcinogenic Risk (mg as eq.)	Human Toxicity (g PM_{10} eq)	Aquatic Eutrophication (g PO4 eq)	CED Non-Renewable (kJ)	CED Total (kJ)
PLA-5	4.08	48.2	12.87	250	23.8	0.40	257	4.03	579,030	892,679
[GP]PS	12.68	77.2	16.81	135	11.1	8.83	124	0.33	762,916	765,032
PP	14.0	62.8	20.82	101	10.0	0.91	99	4.6	852,471	857,870
PET	17.04	92.9	69.5	287	20.8	24.9	266	0.63	1,222,106	1,228,010

Source: IFEU (2006).

G-5 OVAM 2006 Comparative LCA of Four Types of Drinking Cups Used At Events

Small event basis:

Unit	Fossil Fuels (MJ Surplus)	Minerals (MJ Surplus)	Acidification / Eutrophication (PDF*m2yr)	Ecotoxicity (PAF*m2yr)	Ozone Layer (DALY)	Climate Change (DALY)	Respiratory Inorganics (DALY)	Respiratory Organics (DALY)	Carcinogens (DALY)
LC PC Cup Small Event	7.97	0.033	0.0971	0.736	4.05E-10	0.00000103	0.00000358	7.21E-09	0.00000033
LC PP Cup Small Event	19.8	0.0236	0.09	1.31	2.05E-10	0.00000238	0.00000311	1.16E-08	0.000000804
LC Cardboard Cup Small Event	12.4	0.0986	0.221	3.01	6.68E-10	0.00000139	0.00000896	1.17E-08	0.00000184
LC PLA Cup Small Event	15.5	0.0385	0.281	1.88	3.04E-10	0.00000212	0.0000067	1.38E-08	0.00000124

Source: OVAM (2006).

Large event basis:

Unit	Fossil Fuels (MJ Surplus)	Minerals (MJ Surplus)	Acidification / Eutrophication (PDF*m2yr)	Ecotoxicity (PAF*m2yr)	Ozone Layer (DALY)	Climate Change (DALY)	Respiratory Inorganics (DALY)	Respiratory Organics (DALY)	Carcinogens (DALY)
LC PC Cup Small Event	15.2	0.0341	0.166	1.09	7.15E-10	0.00000208	0.00000621	1.02E-08	0.000000662
LC PP Cup Small Event	17	0.0207	0.0685	0.933	4.45E-11	0.00000183	0.00000312	1.12E-08	0.000000572
LC Cardboard Cup Small Event	10.5	0.0938	0.217	2.81	5.52E-10	0.000000951	0.00000836	1.13E-08	0.00000174
LC PLA Cup Small Event	15.1	0.0343	0.277	1.82	2.77E-10	0.00000209	0.00000657	1.34E-08	0.00000127

Source: OVAM (2006).

APPENDIX H

Draft Report Detailing the Results of Public Opinion Survey

Seattle Public Utilities

Public Opinion on Disposable Plastics

December 2007

ELWAY RESEARCH, INC.

Seattle Public Utilities
Public Opinion On Disposable Plastics

December 2007

TABLE OF CONTENTS

ELWAY RESEARCH, INC.

SEATTLE PUBLIC UTILITIES

Public Opinion On Disposable Plastics

December 2007

INTRODUCTION

This report presents the findings of a survey of adult residents in the City of Seattle on behalf of Seattle Public Utilities.

Like many cities, Seattle is considering various policy options with regard to disposable plastic bags and food service ware, as well as plastic foam products. This survey sought to assess public thinking about the issue of disposable plastics and opinion about the various options under consideration.

Specifically, this survey was designed to assess:

- Current behavior with regard to plastic bags and foam products;
- Potential for changing behavior, particularly with regard to more recycling and composting;
- Levels of potential support an opposition to various policy options, including "encouragement" fees and bans on certain products.

Some 400 adult heads of household in the City of Seattle were interviewed by telephone from November 19-25, 2007. Calls were made by random digit dialing in residential prefixes, proportional to zip code. Callers asked for location-specific information to ensure that respondents lived within the city limits.

An overview of survey results is presented in the following pages, followed by annotated graphic illustrations of the findings. The data presented in this report were statistically weighted to bring the proportion of males and females into closer balance.

The questionnaire is included in the Appendix, as are the geographic distribution of the sample and the weighting formula.

METHODS

SAMPLE: 400 Seattle Adult heads of household in Seattle. Households were selected using random digit dialing. Interviewers asked for the male or female head of household at each number.

TECHNIQUE: Telephone Survey.

FIELD DATES: November 19-25, 2007.

MARGIN OF ERROR: ±5% at the 95% confidence interval. That is, in theory, had all residents of Seattle been interviewed, there is a 95% chance the results would be within ±5% of the results reported here.

DATA COLLECTION: Calls were made during weekday evenings by trained, professional interviewers under supervision. Up to four attempts were made to contact a resident at each number in the sample before a substitute number was called. Questionnaires were edited for completeness, and 10% of each interviewer's calls were re-called for verification.

DATA ANALYSIS: Responses were weighted by gender in this analysis to correct for the higher female response to this survey.

It must be kept in mind that survey research cannot predict the future. Although great care and the most rigorous methods available were employed in the design, execution and analysis of this survey, these results can be interpreted only as representing the answers given by these respondents to these questions at the time they completed the survey.

SAMPLE PROFILE

In interpreting these findings, it is important to keep in mind the characteristics of the people actually interviewed. This table presents a profile of the 400 respondents in the survey.

Note: Here and throughout this report, percentages may not add to 100%, due to rounding.

GENDER:	48%	Male
	52%	Female
AGE:	13%	18-34
	43%	35-54
	22%	55-64
	21%	65+
	1%	No answer
EMPLOYMENT:	15%	Public Sector
	46%	Private Sector
	8%	Not Working
	3%	Student
	25%	Retired
	3%	No Answer
HOUSEHOLD:	33%	Single, No Children at Home
	30%	Couple, No Children at Home
	7%	Single, Children at Home
	28%	Couple, Children at Home
	3%	No Answer
INCOME:	17%	$25,000 or less
	17%	$25-50,000
	18%	$50-75,000
	22%	$75,000-$140,000
	9%	Over $140,000
	18%	Would Not Disclose
AREA OF SEATTLE:	23%	Northwest
	19%	Northeast
	18%	West
	15%	East
	18%	Southwest
	6%	Southeast
SHOP FOR GROCERIES FREQUENCY:	47%	Several times a week
	43%	Once a week
	8%	Once a month
	1%	Less than once a month
	1%	Never / No Answer

KEY FINDINGS

- **Not surprisingly, many Seattleites already walking the walk**
  - 1 in 3 claimed to bring their own bags to carry their groceries
  - Well over half re-used or recycled most of their plastic bags

- **In order of priority, the general finding is support for**
  - Encouragement, Education and Persuasion of both merchants and consumers
  - Ban on plastic foam
  - Ban on reusable plastic bags
  - Fees on consumers

- **Seattle residents generally favor a ban on plastic foam, about half ready for City Government to act now**
  - 2 in 3 favored a ban
  - 52% said city should act now
  - 42% favored waiting until convenient replacements are available

- **"Encouragement" favored over bans or fees**
  - 9 in 10 supported encouraging restaurants to use recyclables voluntarily
  - 2 in 3 supported banning disposable plastic food service items
  - 5 in 10 supported consumer fee on disposable plastic food service items

- **Citizens willing to "pitch in" but less willing to pay**
  - 9 in 10 would "gladly separate my garbage" at a fast food restaurant, but
  - 5 in 10 opposed consumer fee on disposable plastic food service items

- **Opinion about plastic bags less insistent than opinion on foam**
  - 9 in 10 agreed that stores should be encouraged to reduce usage of disposable bags
  - 9 in 10 agreed that stores should be required to provide recycling bins for plastic bags
  - 7 in 10 agreed that public funds should be spent for promoting reusable bags
  - 6 in 10 opposed to prohibition on plastic shopping bags

- **Fees for paper bags even less popular**
  - 6 in 10 disagreed that the City should charge a fee to shoppers for every plastic bag
  - 6 in 10 disagreed that a fee should be charged for <u>any</u> type of disposable bag, including paper

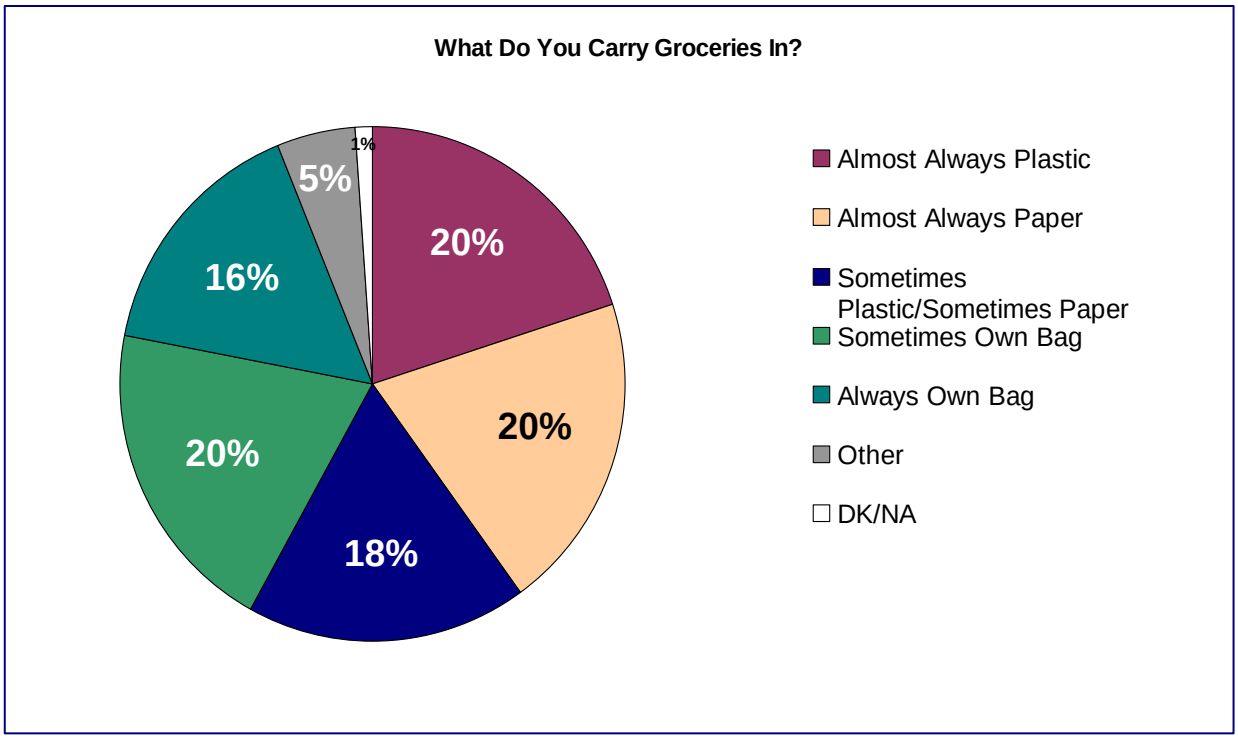
- **Any fees or bans assessed on merchants should be applied to all types and sizes of stores. "Mom and Pop" stores should not get a pass.**

- **Persuasion and education preferred means to desired end**
  - As noted, 7 in 10 agreed that public funds should be spent for <u>promoting</u> reusable bags
  - 9 in 10 agreed that stores should be <u>encouraged</u> to reduce usage of disposable bags
  - Half said revenue from any fees should be spent on public education and promotion rather than keeping garbage rates down or subsidizing stores for reusable bags

- **Opinions were relatively uniform across sectors of the sample. There were some differences among demographic categories of respondents, but they were not pronounced.**

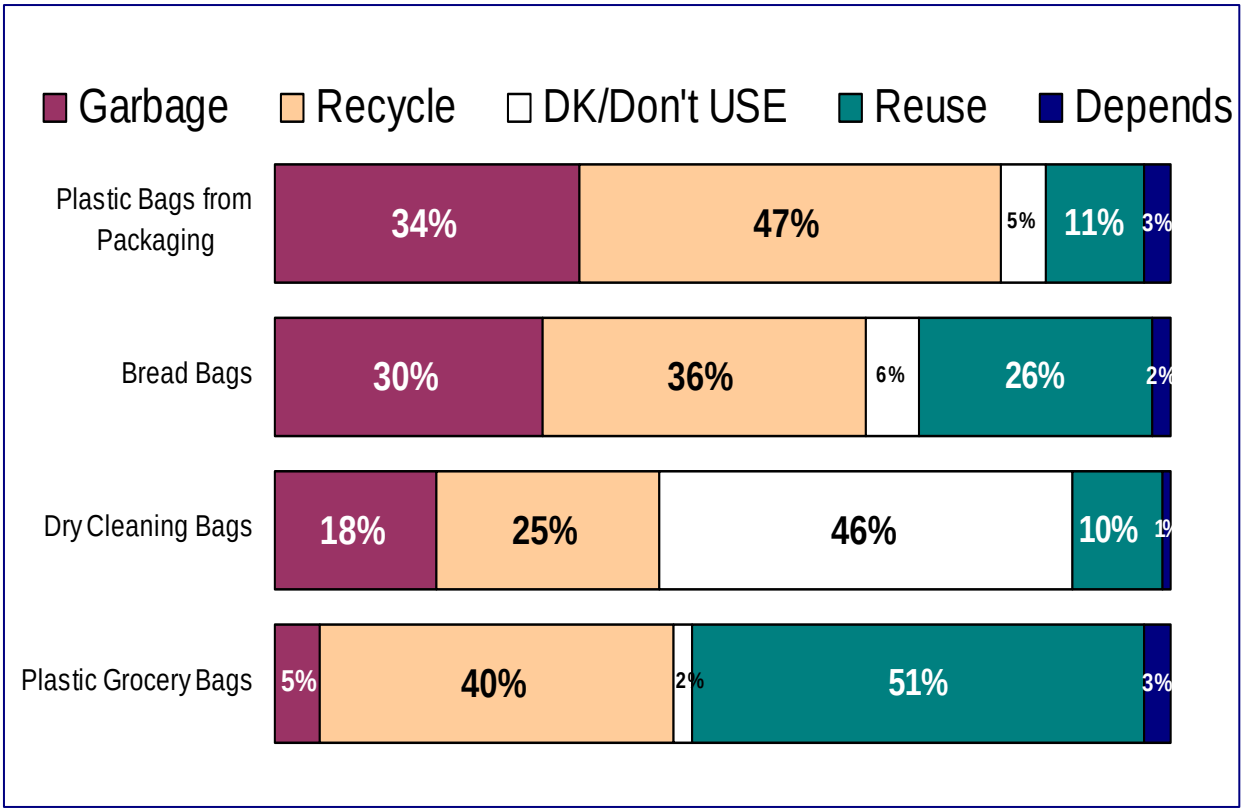
FINDINGS

Current Bag Use Evenly Distributed



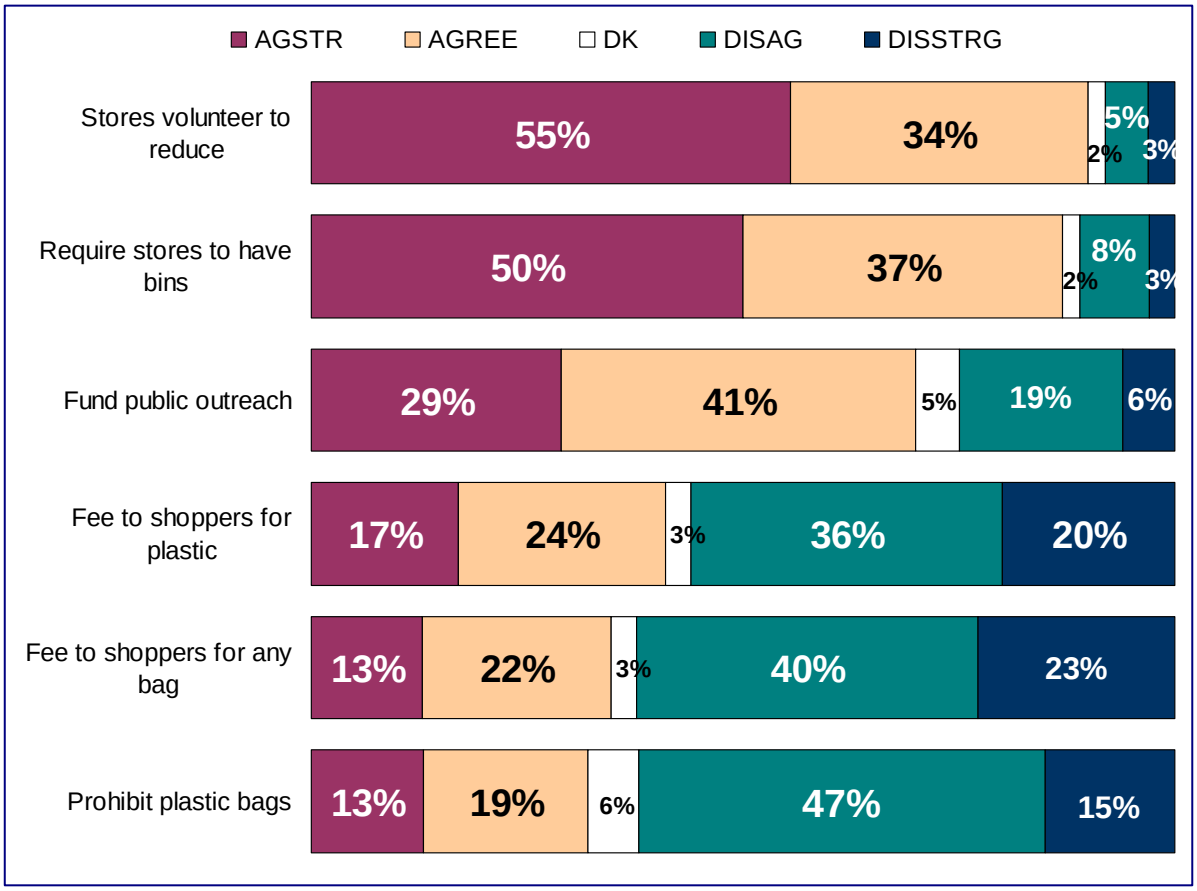
- 38% use plastic bags at least sometimes. Most likely were:
  - Single parents (44% Almost Always)
  - Renters (33% vs. 15% of homeowners)
  - Making under $50,000 a year (34% Almost Always vs. 14% of those earning over $50,000)
  - Not working (32% Almost Always)
  - Men 28% Almost Always (Women 14%)
- 38% use paper at least sometimes.
  - Paper bag use went up with age, from 12% of those under 35 to 26% of those over 65 “always” asking for paper
- 36% bring their own at least sometimes. Most likely were:
  - Public sector employees (47%)
  - Couples with children at home (44%)
  - Women (42%)

Bag Disposal Depends on Bag Type



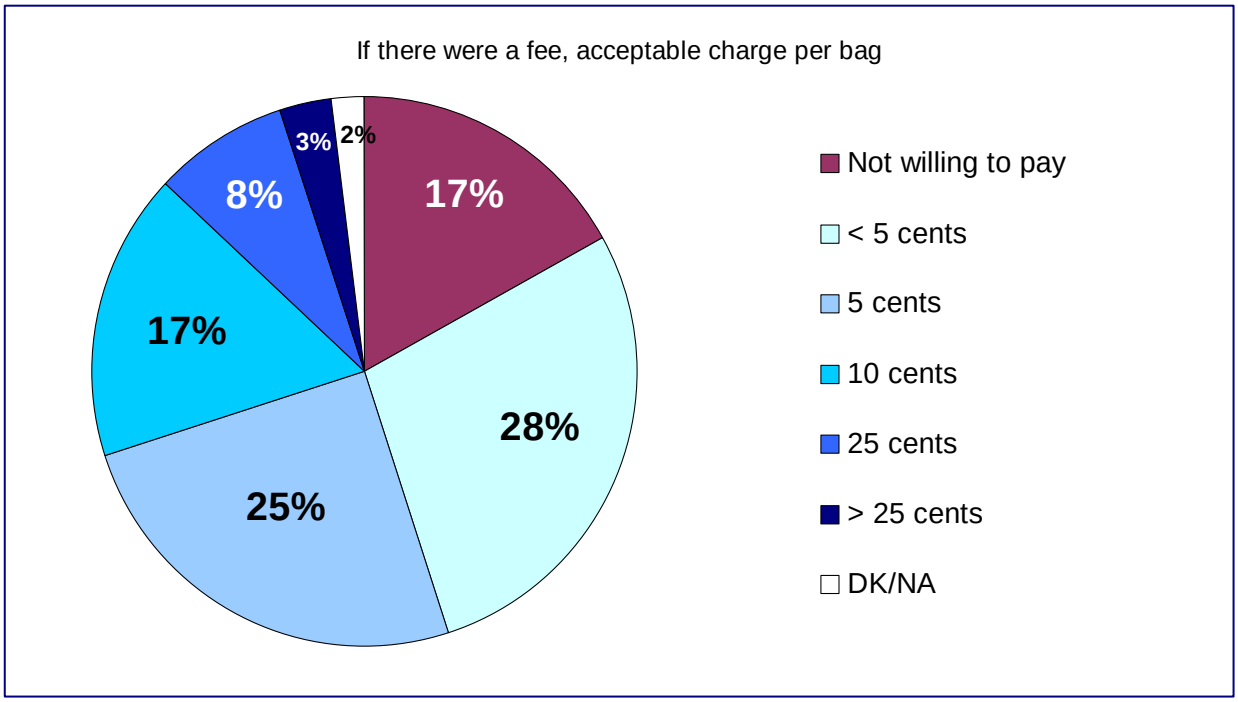
- 51% threw at least one of these items into the garbage. Most likely to do so were:
  - Daily shoppers (64% vs. 52% of less frequent shoppers)
  - Homeowners (55% vs. 44% of renters)
- 46% re-used or recycled at least 3 of these four items. Most likely to recycle 3 or more of these items were:
  - Under age 50 (50% vs. 39% of those over 50)
  - Renters (54% vs. 42% of home owners)
  - Earning under $25,000 a year (58% vs. 43% of those earning over $25,000)

Voluntary Reductions Favored Over Fees and Bans



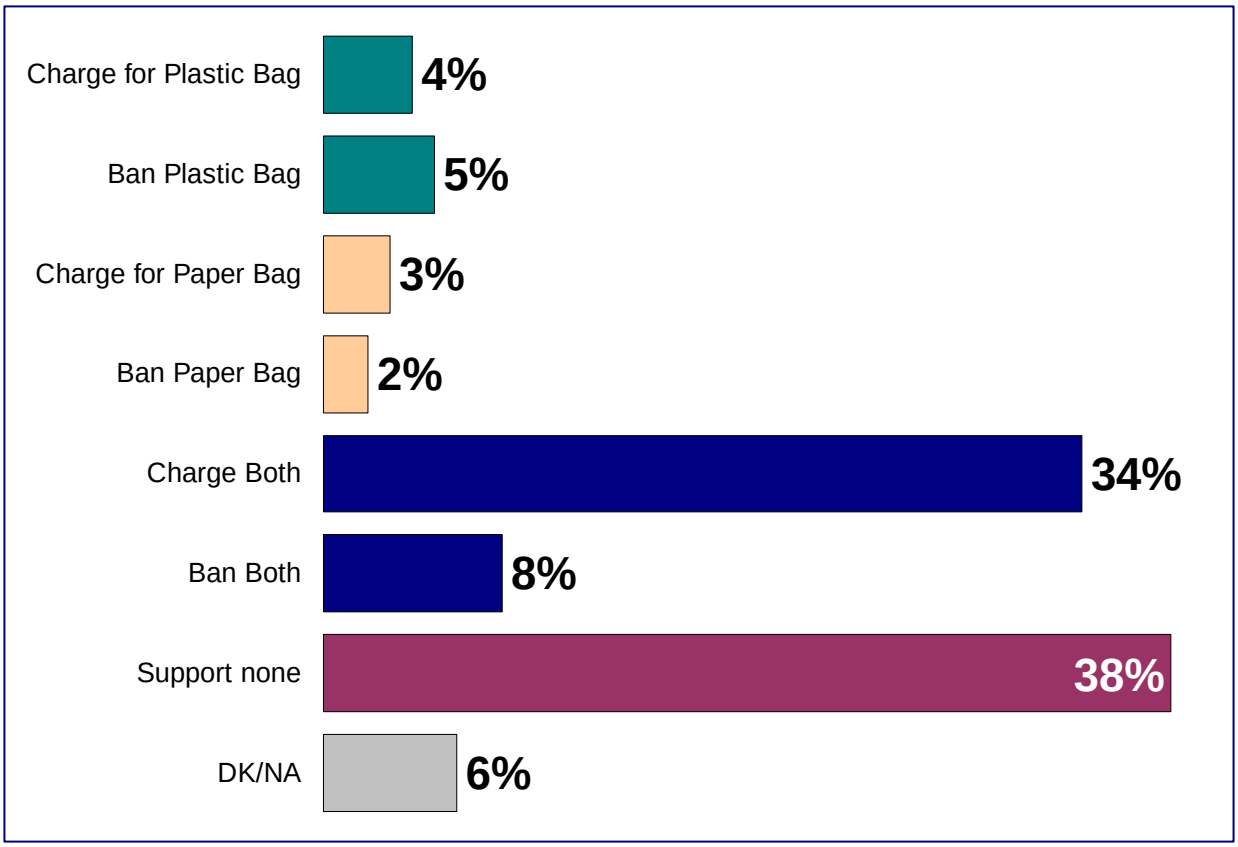
- Support was nearly universal for encouraging voluntary reduction use of disposable bags (89% overall, with no significant difference between demographic categories)
- 63% opposed prohibiting plastic bags, including:
  - 80% of those who preferred plastic bags
  - 62% who preferred paper and
  - 56% of those who brought their own grocery bags
- Fees more evenly divided respondents (41% in favor; 56% opposed)
  - 74% of those who always used plastic bags opposed a fee, as did
  - 64% of those who always used paper, but
  - 58% of those who brought their own bag favored a fee for plastic bags

8 in 10 Willing to Pay Bag Fee



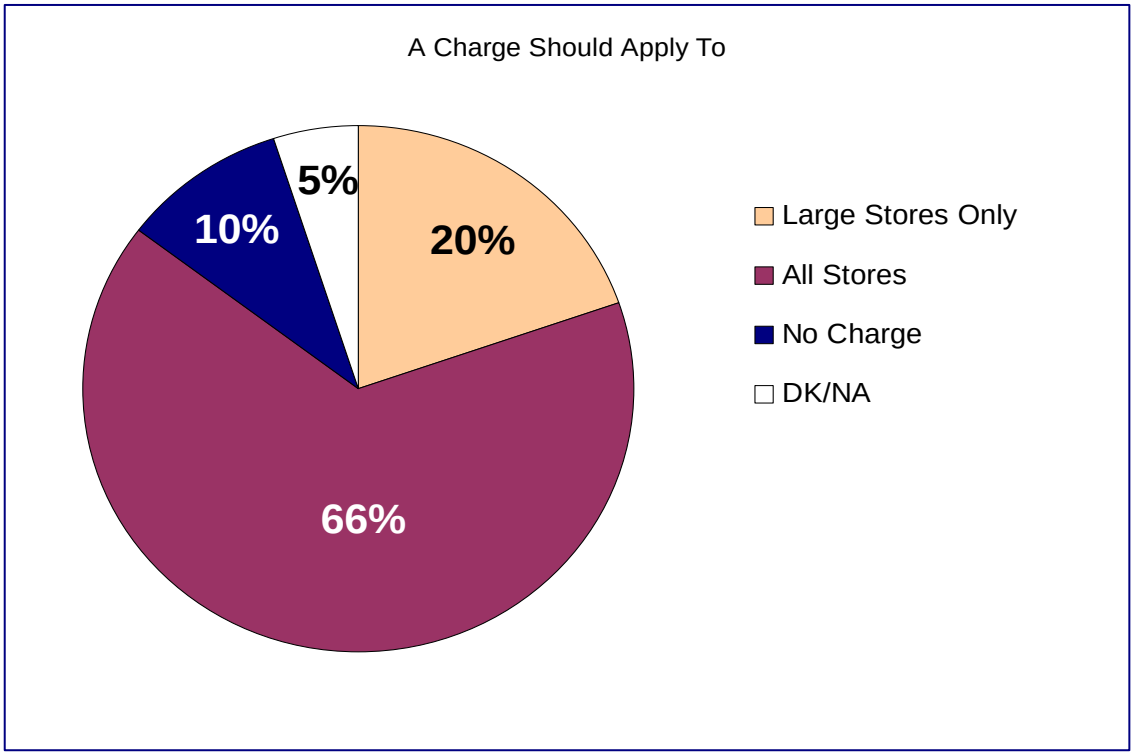
- Half willing to pay 5¢ or more per bag.
- Least willing to pay were:
  - Aged 55 to 64 (30% unwilling to pay any fee)
  - Women (20% vs. 14% of Men)
- Most willing to pay were:
  - Earn less than $25,000 a year (88% willing to pay; 49% willing to pay 5¢ or more)
  - Daily Shoppers (60%)
  - Under age 35 (49% willing to pay 10¢ or more)

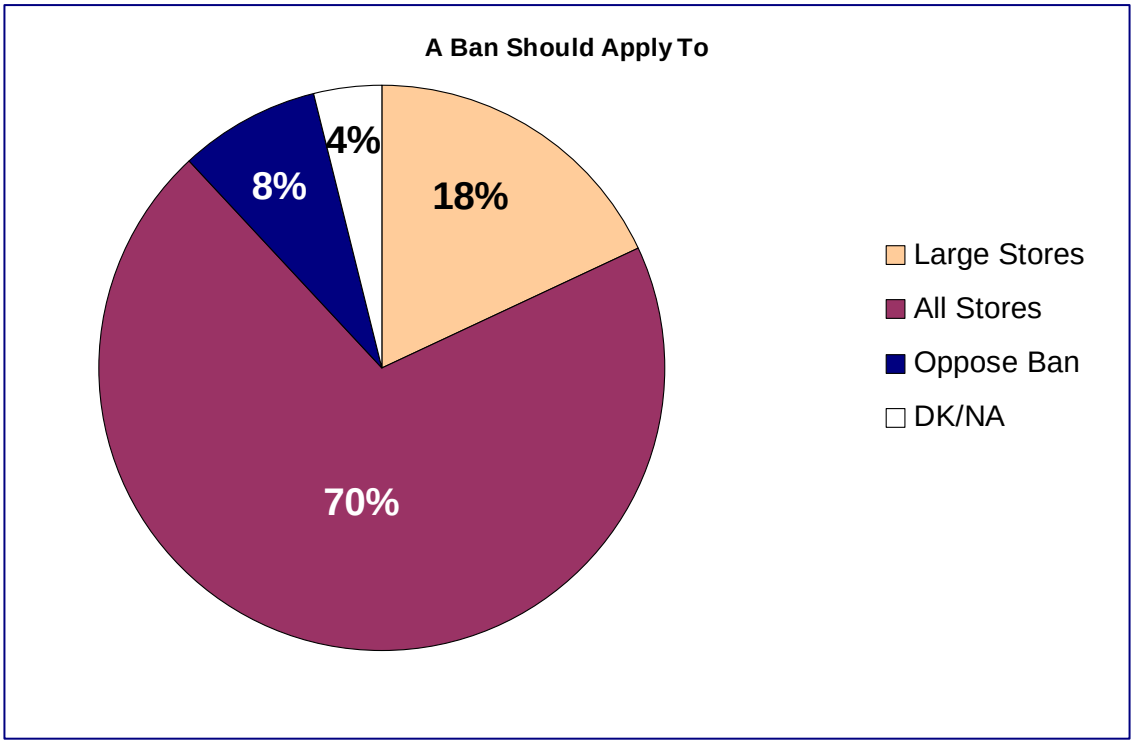
No Majority For or Against Fees or Bans



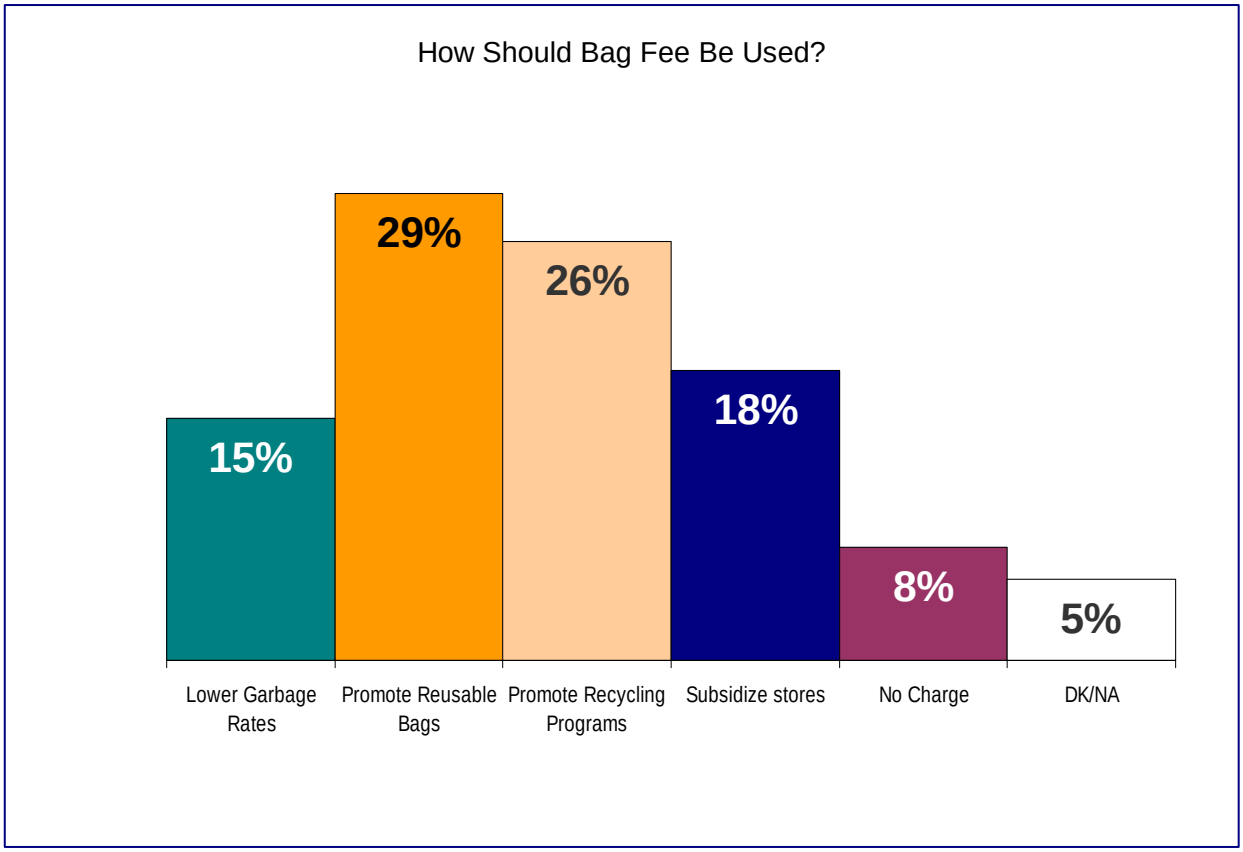
- Nearly 4 in 10 (38%) supported neither a ban nor a fee for any kind of bag.
- 34% supported a fee for both types of bag, while 8% supported a ban on both
- For plastic:
  15% supported a ban
  38% supported a fee
- For paper bags
  10% supported a ban
  39% supported a fee

Any Fees or Bans Should Apply to All Stores



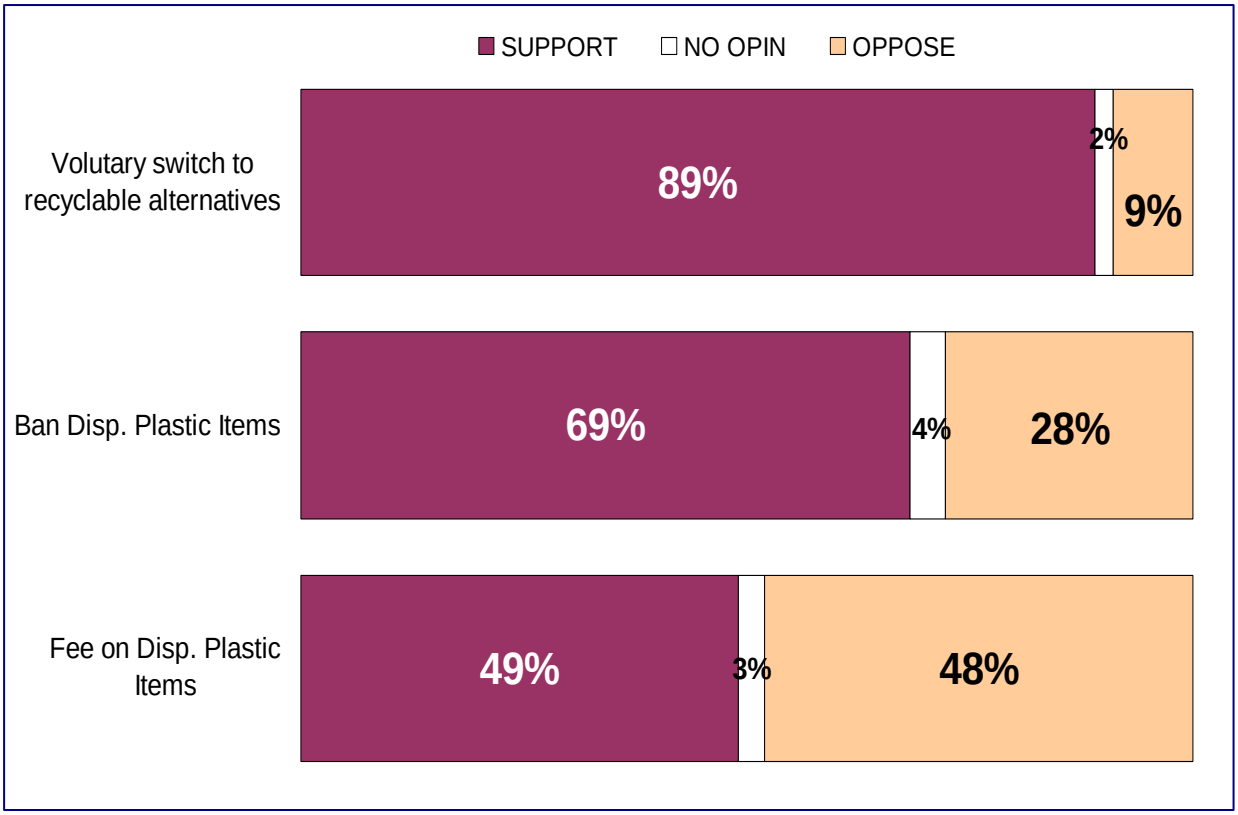


Fee Revenue: Recycling Promotion More Popular than Refunds



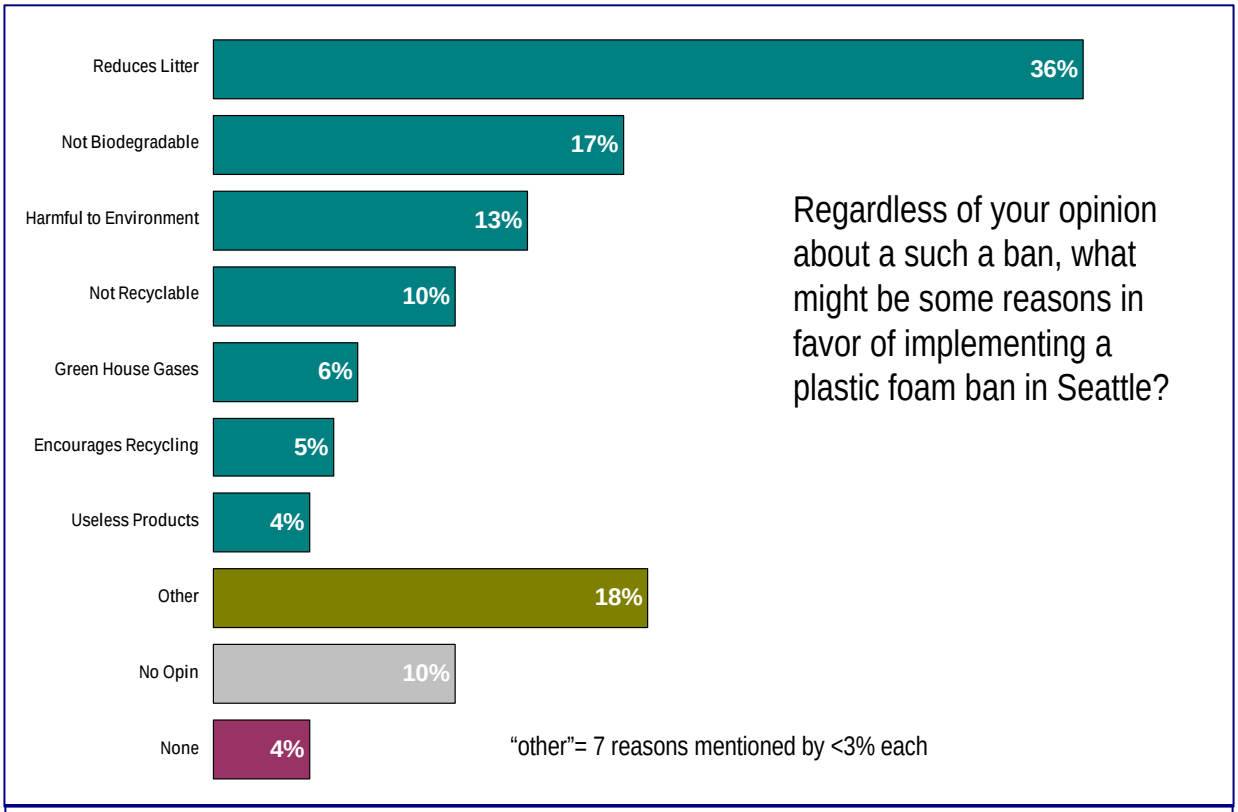
- There were no significant variations in response to this question between demographic categories

Plastic Foam in Restaurants: Voluntary Switch to Recyclables Preferred Option; Ban Favored over Fee



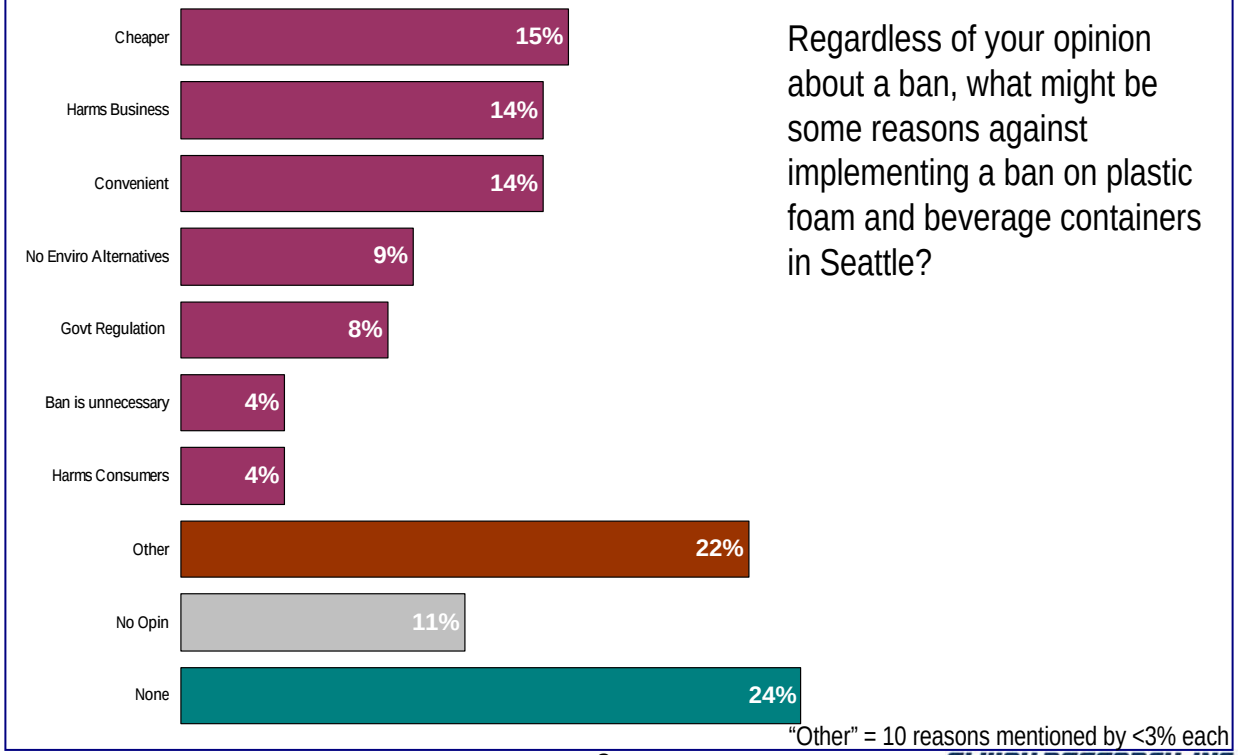
- At least 84% of respondents in every demographic category favored encouraging voluntary replacement of disposable plastics in restaurants, including
  - 85% of daily fast food restaurant patrons
- At least 58% in every demographic category favored banning disposable plastics in restaurants, including
  - 58% of daily fast food restaurant patrons
- Respondents were evenly divided about charging a fee to restaurant patrons. Most likely to support a fee were:
  - Those who rarely or never patronize fast food (59%)
  - Couples with no children at home (57%)
- Most likely to oppose a fee were:
  - Baby boomers (63% of those age 55-64)
  - Daily fast food patrons (61%)
- All other categories were evenly divided (within the margin of sampling error)

Litter Reduction Top Reason To Ban Foam; Cost, Harm to Business Top Reason Against



Regardless of your opinion about a such a ban, what might be some reasons in favor of implementing a plastic foam ban in Seattle?

"other"= 7 reasons mentioned by <3% each

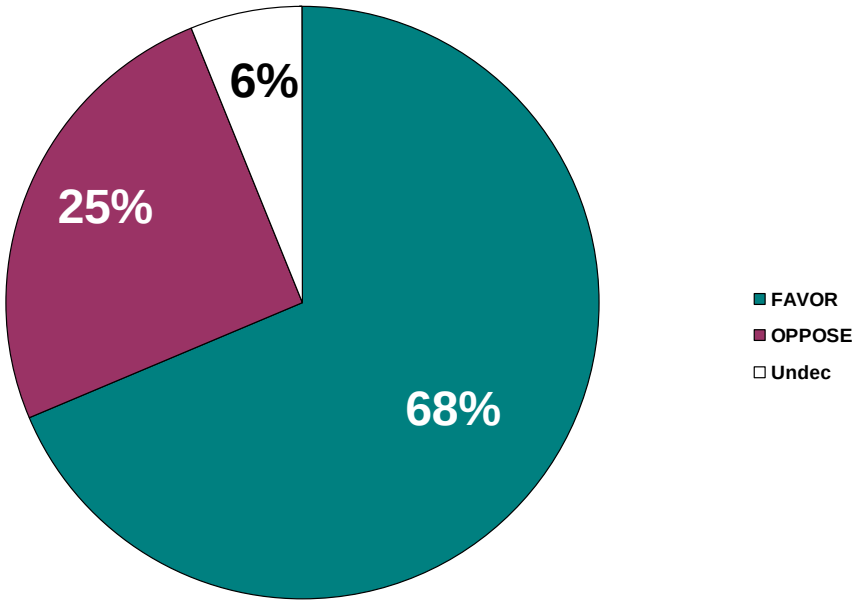


Regardless of your opinion about a ban, what might be some reasons against implementing a ban on plastic foam and beverage containers in Seattle?

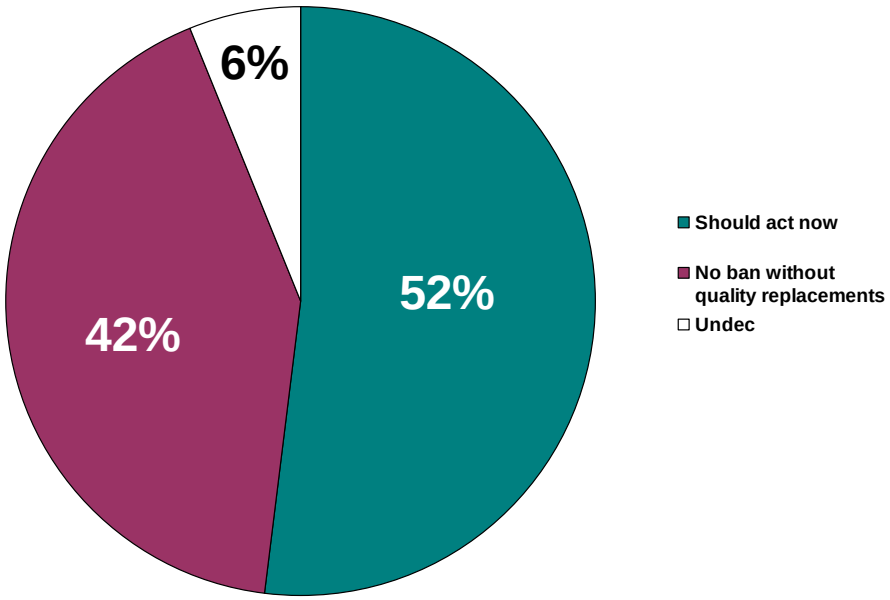
"Other" = 10 reasons mentioned by <3% each

Strong Support for Foam Ban; Division Over Timing, Circumstances

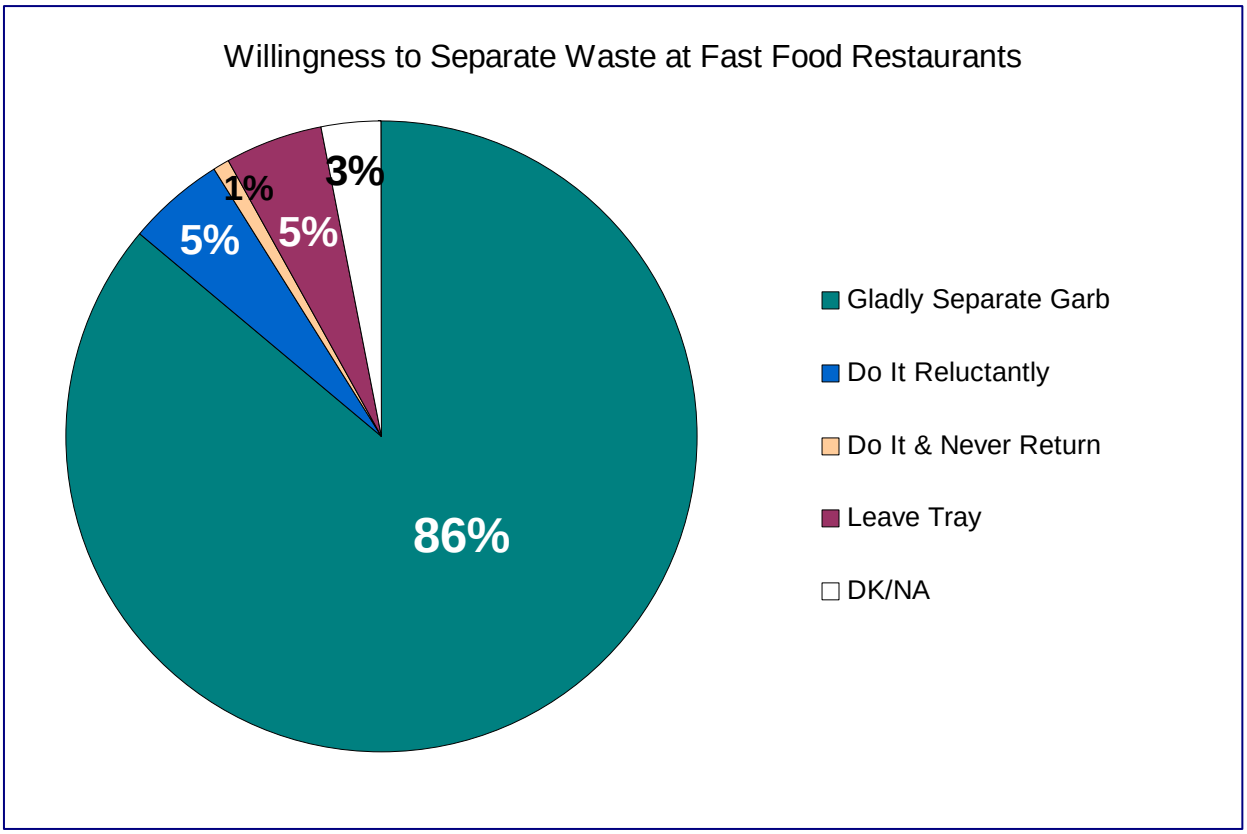
Ban Plastic Foam in Seattle



Should City Government Act to Ban Foam Now, Or Wait Until Replacements Are Available



Most Willing to Separate and Dispose Food Waste at Fast Food Restaurants



APPENDIX

DRAFT TOPLINE DATA

This summary presents response frequency distributions for the survey of Seattle residents on behalf of Seattle Public Utilities.

Telephone interviews were completed with 400 Seattle heads of household between Nov 19-25, 2007. The overall margin of sampling error is ±4.5%. That means, in theory, there is a 95% probability that the results of this survey are within ±4.5% of the results that would have been obtained by interviewing all Seattle heads of household .

The data are presented here in the same order the questions were asked in the interview.
The figures in bold type are percentages of respondents who gave each answer.
Percentages may not add to 100% due to rounding.

SEX: MALE...**46** FEMALE...**54**

1. How often, if at all, do you personally shop for groceries?

Several times a week **46**
Once a week…**43**
Once a month…**9**
Less than once a month…**1**
Never…**1**
[DK/NA…1]

2. When shopping for groceries, do you...

Almost always ask for plastic bags to carry them…**23**
Almost Always ask for paper bags to carry them…**18**
Sometimes ask for paper, sometimes for plastic…**18**
Almost Always bring your own bag to carry them…**15**
Sometimes bring your own bag to carry them…**18**
Other…**6**
[DK/NA…1]

3. People do different things with used plastic bags. For each of following types of plastic bags, do you typically throw them in the garbage, recycle them, or re-use them.? First, what do you typically do with…

[1=GARBAGE…2=RECYCLE…3=RE-USE…4="DEPENDS" OR "ALL"…5=DON'T USE…9=NO ANS]

ROTATE	GARB	RECYCLE	RE-USE	DEP	DONT USE	DK
1. Plastic Grocery bags.	**6**	**37**	**51**	**3**	**1**	**1**
2. Bread bags	**33**	**33**	**24**	**2**	**6**	**2**
3. Dry cleaning bags	**20**	**23**	**11**	**1**	**40**	**6**
4. Plastic bags that come with packaging such as electronic equipment.	**36**	**44**	**12**	**3**	**4**	**1**

4. Some cities are taking measures to discourage the use of disposable shopping bags. As I read some of these ideas, tell me whether you Agree, Agree Strongly, Disagree or Disagree Strongly that the City of Seattle should do this. The first one is …

	AGSTR	AGREE	DISAG	DISSTRG	DK
1. Encourage stores to voluntarily reduce their use of disposable plastic and paper shopping bags and promote reusable bags.	**51**	**36**	**7**	**4**	**3**
2. Use city utility money for advertising and public education to promote the use of reusable bags	**27**	**43**	**20**	**5**	**6**
3. Prohibit stores from giving out plastic bags.	**12**	**19**	**49**	**15**	**5**
4. Require stores that provide plastic bags to recycle those bags by having bins where customers can return them	**47**	**40**	**9**	**3**	**2**
5. Charge a fee to shoppers for each plastic bag they accept from a store	**15**	**24**	**37**	**21**	**3.**
6. Charge a fee to shoppers for any type of disposable bag - including paper - that they accept from a store.	**12**	**20**	**44**	**23**	**3**

5. If there were a fee for paper and plastic shopping and grocery bags, how much would you personally be willing to pay for the convenience of getting plastic or paper bags to carry your purchases from the store?

ROTATE TOP/BOTTOM

[**DO NOT READ** → WOULD NOT BE WILLING TO PAY ANYTHING…**20**]
less than 5 cents per bag…**29**
5 cents per bag…**24**
10 cents per bag…**16**
25 cents per bag…**6**
More than 25 cents per bag…**3**
[DK/NA…**2**]

6. The amount of greenhouse gases created in the production of paper shopping bags, even those with recycled paper, is significantly greater than that for plastic bags. Given that fact, which of the following actions – if any – would you support in the City of Seattle:

A charge for each plastic bag…**4**
A ban on plastic bags…**6**
A charge for each paper bag…**2**
A ban on paper shopping bags…**2**
A charge on BOTH paper and plastic bags…**33**
A ban on both paper and plastic bags…**8**
Would not support any of these proposals…**41**
[DK/NA…**5**]

7. If there were a charge per bag on disposable paper and plastic bags, should it apply to:

1. Large grocery, drug and other chain stores only?..... **19**

2. All stores of any kind that provide disposable shopping bags - including grocery and drug stores, retail and convenience stores plus small "mom and pop" grocery stores. . **66**

DO NOT READ [NONE – SHOULD NOT BE A CHARGE…**12**]

[DK/NA…**4**]

8. If there were a ban on the use of disposable plastic shopping bags, should it apply to:

1. Large grocery, drug and other chain stores only?..... **17**

2. All stores of any kind that provide disposable shopping bags - including grocery and drug stores, retail and convenience stores plus small "mom and pop" grocery stores. **68**

DO NOT READ [NONE – SHOULD NOT BE A CHARGE…**11**]

[DK/NA…**4**]

9. If the city charged a fee on each disposable shopping bag used by shoppers, how would you suggest the money be used?

ROTATE

1. To keep city garbage rates down, even though the effect might be small..... **15**

2. To pay for advertising & public education to promote the use of reusable bags..... **28**

3. To pay for city promotion of waste prevention and recycling programs **26**

4. To subsidize stores for the price of reusable bags. **19**

DO NOT READ [NONE – SHOULD NOT BE A CHARGE…**8**]

[DK/NA…**6**]

FOOD SERVICE WARE

10. Another area where material ends up in landfills is the food industry. A number of different plastics, such as plastic foam often called Styrofoam, are used to make cups, plates and packages for take-out food. Many other paper items – such as hot and cold drink cups and other containers – are lined with plastic. Restaurants also use plastic knives, forks and spoons.

The City of Seattle is considering policies aimed at discouraging the use of these hard-to-recycle food service items. I'm going to list several things the city might do. As I read each one, tell me whether you would be inclined to Support or Oppose that measure.

ROTATE

	SPRT	OPP	DK
1. Ban the use of all disposable plastic food service items - including cups and utensils - at restaurants and require the use of compostable or recyclable substitutes.	**67**	**31**	**3**
2. Encourage restaurants voluntarily to use compostable or recyclable food service items including cups and utensils instead of disposable products.	**88**	**10**	**2**
3. Charge a fee on all disposable plastic food service items including cups and utensils by "take out" and fast food restaurants.	**47**	**50**	**3**

11. Some cities have banned the sale of plastic foam food containers, cups, coolers or any other products made of plastic foam. There are reasons for and against such a ban. I want to ask you about both. First, regardless of your opinion about such a ban, what might be some reasons <u>in favor</u> of implementing a plastic foam ban in Seattle? [ANSWERS AT END]

12. Again, regardless of your opinion about such a ban, what might be some reasons <u>against</u> of implementing ban on plastic foam food and beverage containers in Seattle? [ANSWERS AT END]

13. Are you inclined to favor or oppose a ban of plastic foam in Seattle?

FAVOR…**65**
OPPOSE…**27**
DK/ UNDEC / NA…**8**

14. Which of these statements comes closest to your thinking about this?

1. City government should not ban any food service containers or utensils, including those made of plastic foam, unless there are convenient, compostable or recyclable replacements available to merchants. **45**

2. City government should act now. Compostable or recyclable replacements are available and merchants should start using them. **49**

[DK/UNDEC/ NA…**6**]

15. Imagine that a fast food restaurant or food court area asked you to separate compostable food waste and paper from other garbage or recycling, and place these items in separate bins before leaving. What would you most likely do?

Gladly separate my garbage…**86**
Do it, but reluctantly…**5**
Do it , but not patronize that restaurant again…**2**
Probably leave my tray on the table…**5**
[DK/NA…**3**]

---

16. I have just a few last questions for our statistical analysis. How old are you?

18-34...**13**
35-54... **42**
55-64... **22**
65+...**22**
[DK/NA…**1**]

17. How often do you personally dine at a fast food restaurant or get take-out? Would you say…

Several times a week **18**
once a week…**35**
once a month…**24**
less than once a month…**15**
never…**7**
[DK/NA…**1**]

18. Do you own or rent the place in which you live?

OWN…**70** RENT…**27**
[DK/NA…**3**]

19. Which of these best describes your home?

Duplex or Two Family House,… **4**
Triplex or 4-plex,… **2**
Apartment or Condominium in Building with Two to Four Units…**9**
Apartment or Condominium in Building with Five or More Units…**15**
Single Family House?... **66**
OTHER…**4**
[DK/NA…**1**]

20. Which of the following best describes your household:

Single with no children at home... **32**
Couple with no children at home... **30**
Single with children at home... **7**
Couple with children at home... **29**
[DK/NA…**3**]

21. Which of these the following best describes you at this time? Are you. . .

Employed In The Public Sector, Like A Governmental Agency or Educational Institution... **17**
Employed In Private Business... **45**
Not Working Right Now... **7**
Student **3**
Retired... **24**
No Answer....**3**

22. What is your race or ethnicity?

African American / Black…**5**
Asian / Pacific Islander…**3**
Caucasian / White…**81**
Hispanic / Latino…**1**
Native American / American Indian…**1**
Other…**5**
[DK/NA…**5**]

23. Finally, which of these categories best describes your approximate household income - before taxes - for last year:

$25,000 or less... **16**
$25 to 50,000... **18**
$50 to 75,000... **19**
$75-140,000…**21**
Over $140,000... **8**
[NA…**18**]

Thank you very much. You have been very helpful. **RECORD GENDER ON PAGE 1**

Q11: REASONS IN FAVOR OF FOAM BAN

To reduce litter/landfill/waste	36%
Not biodegradable/Slow decomposition	17%
Harmful to environment/harmful byproduct	14%
Not reusable/hard to recycle	11%
Green house gasses	6%
Encourage use of recyclable products	5%
For a better environment	4%
Reduce amount used/eliminate use	4%
Useless products/unnecessary	4%
Other options are available	3%
Costly/will be cheaper	3%
Harmful to animals/ecosystems	2%
Harmful to humans	2%
Necessary ban/support ban	2%
Wastes oil	2%
Dislike foam products	1%
Against the ban	3%
OTHER	3%
None/nothing	4%
No Opinion	10%

Q12: REASONS AGAINST FOAM BAN

Cost/increased prices	14%
Cost/negative affect on business/small b	13%
Convenience/convenience of packaging	9%
No available/environmentally friendly alt	8%
Should be voluntary and or mandatory	8%
Cost/negative affect on consumers	6%
Against/disagree with ban/is unnecessary	4%
Reduces pollution/benefits the environment	3%
Inconvenience/economic inconvenience	3%
Too much government interference	2%
Difficulty of implementing/enforcing ban	2%
Health/sanitary issues	2%
Difficult to recycle	2%
Re-educating the public	1%
Too many regulations	1%
Good/useful product	1%
Other priorities to use resources	1%
An incentive program should be offered	1%
Infringement on free enterprise	1%
For ban (general)	1%
Personal freedom/choice	1%
Easily mass produced	1%
Cost effective when mass produced	1%
Other products/options are available	1%
Would encourage recycling	0.3%
OTHER	11%
None/nothing	17%
No Opinion	12%

DATA TABLES

READING THE CROSSTABULATION TABLES

The crosstabulations found in this report are presented in a "banner table" format. Categories of respondents (e.g."35-54 years old," or "Female") are listed across the top of each page (the "banner"). The questions asked in the survey are listed down the left margin. The figures in each cell are percentages based on the number of respondents in the category at the head of each column.

ELWAY RESEARCH, INC.

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q2 BAG PREFERENCE				AGE				ETHNICITY	
	N=	MALE	FEMALE	PLASTIC	PAPER	BOTH	OWN	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL													
N=	400 100	192 100	208 100	82 100	79 100	71 100	146 100	51 100	173 100	86 100	84 100	328 100	55 100
Q1 GROCERY SHOP HOW OFTEN?													
Several times a week	187 47%	88 46%	99 48%	39 48%	40 50%	27 38%	71 49%	19 37%	83 48%	40 46%	41 49%	157 48%	20 37%
once a week	173 43%	81 42%	93 44%	30 36%	31 38%	39 55%	66 45%	29 57%	71 41%	40 46%	32 38%	143 44%	25 46%
once a month	31 8%	19 10%	12 6%	12 14%	5 6%	4 6%	8 5%	1 2%	17 10%	4 5%	9 10%	20 6%	8 15%
less than once a month	4 1%	3 2%	1 0%	1 1%	1 1%	1 2%	1 1%	1 2%	2 1%	1 1%	0 0%	3 1%	0 0%
never	3 1%	1 1%	2 1%	0 0%	1 1%	0 0%	0 0%	1 2%	0 0%	1 1%	1 1%	2 1%	1 2%
DK/NA	2 0%	0 0%	2 1%	0 0%	2 2%	0 0%	0 0%	0 0%	1 1%	0 0%	1 1%	2 1%	0 0%
Q2 TYPE OF BAGS USED													
Almost always plastic	82 20%	53 28%	28 14%	82 100	0 0%	0 0%	0 0%	14 28%	36 21%	15 17%	16 19%	66 20%	15 28%
Almost Always paper	79 20%	35 18%	44 21%	0 0%	79 100	0 0%	0 0%	6 12%	31 18%	19 22%	22 26%	64 20%	12 22%
Some days paper, some plastic	71 18%	32 17%	38 19%	0 0%	0 0%	71 100	0 0%	9 17%	32 18%	16 19%	13 15%	57 18%	9 17%
Almost Always own bag	64 16%	28 14%	37 18%	0 0%	0 0%	0 0%	64 44%	7 13%	32 19%	12 14%	12 15%	50 15%	9 16%
Sometimes own bag	82 20%	32 17%	49 24%	0 0%	0 0%	0 0%	82 56%	13 25%	37 21%	19 23%	13 15%	73 22%	7 13%
Other	19 5%	10 5%	9 4%	0 0%	0 0%	0 0%	0 0%	2 4%	5 3%	4 5%	8 9%	14 4%	2 4%
DK/NA	3 1%	1 1%	2 1%	0 0%	0 0%	0 0%	0 0%	0 0%	1 1%	1 1%	1 1%	3 1%	0 0%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q1 GROCERY SHOP HOW OFTEN?													
Several times a week	187 47%	19 31%	88 48%	21 47%	49 50%	36 50%	66 48%	45 45%	40 44%	31 47%	30 45%	35 49%	56 46%
once a week	173 43%	38 62%	80 43%	18 39%	37 38%	28 39%	59 43%	47 48%	39 43%	26 38%	33 48%	31 43%	57 47%
once a month	31 8%	3 5%	11 6%	6 14%	11 11%	7 10%	10 7%	5 5%	8 9%	10 15%	5 7%	4 6%	6 5%
less than once a month	4 1%	1 1%	3 2%	0 0%	0 0%	1 1%	2 2%	0 0%	1 1%	0 0%	0 0%	1 1%	1 1%
never	3 1%	0 0%	1 1%	0 0%	1 1%	0 0%	1 1%	0 0%	2 2%	0 0%	0 0%	0 0%	1 1%
DK/NA	2 0%	0 0%	1 0%	0 0%	1 1%	0 0%	0 0%	2 2%	0 0%	0 0%	0 0%	1 1%	1 1%
Q2 TYPE OF BAGS USED													
Almost always plastic	82 20%	10 17%	41 22%	14 32%	15 15%	21 29%	31 22%	18 18%	11 13%	24 36%	22 32%	7 10%	20 16%
Almost Always paper	79 20%	13 21%	32 17%	7 16%	26 26%	10 14%	27 19%	26 26%	17 19%	8 12%	12 18%	18 25%	24 20%
Some days paper, some plastic	71 18%	6 10%	35 19%	10 22%	18 18%	18 25%	23 17%	16 16%	14 16%	13 19%	12 17%	11 15%	24 20%
Almost Always own bag	64 16%	11 17%	29 16%	6 13%	17 17%	8 11%	21 15%	12 13%	23 25%	8 12%	10 14%	15 21%	17 14%
Sometimes own bag	82 20%	18 30%	39 21%	7 16%	17 17%	11 15%	31 22%	22 22%	17 20%	11 16%	13 19%	14 20%	31 25%
Other	19 5%	2 3%	8 5%	1 2%	5 5%	3 4%	4 3%	5 5%	7 8%	4 6%	0 0%	6 9%	3 2%
DK/NA	3 1%	1 2%	0 0%	0 0%	1 1%	1 1%	2 1%	0 0%	0 0%	0 0%	0 0%	0 0%	3 2%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q1 GROCERY SHOP HOW OFTEN?										
Several times a week	187 47%	133 48%	48 42%	28 52%	27 42%	124 48%	52 39%	49 42%	16 61%	63 57%
once a week	173 43%	122 44%	47 42%	21 39%	30 47%	115 44%	60 45%	61 51%	8 31%	39 35%
once a month	31 8%	14 5%	15 13%	4 7%	6 9%	17 6%	17 13%	6 5%	2 8%	6 5%
less than once a month	4 1%	3 1%	1 1%	0 0%	1 2%	3 1%	1 1%	1 1%	0 0%	2 2%
never	3 1%	1 0%	2 2%	1 2%	0 0%	1 0%	1 1%	1 1%	0 0%	0 0%
DK/NA	2 0%	2 1%	0 0%	0 0%	0 0%	1 0%	1 1%	0 0%	0 0%	1 1%
Q2 TYPE OF BAGS USED										
Almost always plastic	82 20%	41 15%	38 33%	18 34%	11 18%	48 18%	35 27%	11 10%	12 44%	22 20%
Almost Always paper	79 20%	59 22%	20 18%	10 18%	14 21%	51 19%	25 19%	28 24%	4 14%	21 19%
Some days paper, some plastic	71 18%	54 19%	15 13%	10 18%	13 21%	45 17%	27 20%	21 18%	1 3%	19 17%
Almost Always own bag	64 16%	44 16%	18 15%	8 14%	9 14%	45 17%	18 14%	22 19%	2 7%	20 18%
Sometimes own bag	82 20%	62 22%	19 16%	8 14%	13 20%	59 23%	22 17%	30 25%	5 17%	25 22%
Other	19 5%	14 5%	3 3%	0 0%	3 5%	13 5%	5 4%	4 3%	4 15%	2 2%
DK/NA	3 1%	2 1%	1 1%	1 2%	1 2%	1 0%	0 0%	2 2%	0 0%	1 1%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL		AREA OF SEATTLE											
	N=		NORTHWEST		NORTHEAST		WEST		EAST		SOUTHWEST		SOUTHEAST	
TOTAL														
N=	400	100%	94	100%	77	100%	72	100%	59	100%	73	100%	25	100%
Q1 GROCERY SHOP HOW OFTEN?														
Several times a week	187	47%	42	45%	45	59%	35	48%	24	42%	31	42%	9	35%
once a week	173	43%	43	46%	27	35%	31	43%	26	45%	35	48%	11	44%
once a month	31	8%	8	9%	2	3%	4	6%	6	10%	5	7%	5	20%
less than once a month	4	1%	0	0%	2	3%	1	2%	1	2%	0	0%	0	0%
never	3	1%	1	1%	0	0%	0	0%	1	2%	1	2%	0	0%
DK/NA	2	0%	0	0%	0	0%	1	1%	0	0%	1	1%	0	0%
Q2 TYPE OF BAGS USED														
Almost always plastic	82	20%	15	16%	16	21%	18	25%	10	16%	20	27%	3	13%
Almost Always paper	79	20%	13	14%	22	29%	18	25%	10	17%	12	17%	4	16%
Some days paper, some plastic	71	18%	18	19%	13	16%	16	22%	8	14%	13	17%	4	16%
Almost Always own bag	64	16%	20	21%	13	17%	9	12%	10	17%	8	11%	5	20%
Sometimes own bag	82	20%	25	26%	13	17%	10	13%	15	25%	13	18%	6	24%
Other	19	5%	1	1%	0	0%	2	3%	6	11%	7	10%	3	12%
DK/NA	3	1%	3	3%	0	0%	0	0%	0	0%	0	0%	0	0%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q2 BAG PREFERENCE				AGE				ETHNICITY	
	N=	MALE	FEMALE	PLASTIC	PAPER	BOTH	OWN	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL													
N=	400 100	192 100	208 100	82 100	79 100	71 100	146 100	51 100	173 100	86 100	84 100	328 100	55 100
Q3a PLASTIC BAG DISPOSAL													
Garbage	19 5%	12 6%	6 3%	5 7%	3 4%	3 5%	5 4%	0 0%	5 3%	6 7%	7 8%	17 5%	2 4%
Recycle	158 40%	71 37%	87 42%	32 39%	35 44%	30 42%	54 37%	12 23%	59 34%	39 45%	47 56%	134 41%	18 33%
Re-use	204 51%	98 51%	106 51%	42 52%	37 47%	35 50%	79 54%	36 71%	101 58%	36 42%	27 33%	160 49%	34 62%
Depends or All	13 3%	7 3%	6 3%	2 3%	2 2%	2 3%	4 3%	3 6%	5 3%	3 4%	2 2%	13 4%	0 0%
Don't use	4 1%	2 1%	2 1%	0 0%	1 1%	0 0%	3 2%	0 0%	2 1%	2 2%	0 0%	2 1%	1 2%
DK/NA	2 1%	2 1%	0 0%	0 0%	1 1%	0 0%	1 1%	0 0%	1 1%	0 0%	1 1%	2 1%	0 0%
Q3b BREAD BAG DISPOSAL													
Garbage	119 30%	55 29%	63 30%	36 44%	28 35%	20 29%	30 20%	15 30%	49 28%	23 27%	29 34%	96 29%	18 33%
Recycle	143 36%	77 40%	67 32%	24 29%	32 41%	27 39%	50 34%	16 32%	67 39%	27 32%	30 36%	116 35%	23 41%
Re-use	104 26%	43 23%	60 29%	15 19%	14 18%	16 22%	52 36%	16 31%	46 27%	28 32%	15 17%	88 27%	12 22%
Depends or All	7 2%	3 2%	4 2%	1 1%	0 0%	2 3%	3 2%	0 0%	4 2%	2 2%	1 1%	6 2%	0 0%
Don't use	22 5%	9 5%	13 6%	4 5%	4 5%	2 3%	12 8%	3 5%	7 4%	4 4%	7 9%	18 5%	1 2%
DK/NA	5 1%	4 2%	1 0%	1 1%	1 1%	3 5%	0 0%	1 2%	0 0%	2 2%	2 3%	4 1%	1 2%
Q3c DRY CLEANING BAG DISPOSAL													
Garbage	74 18%	33 17%	40 19%	13 16%	22 27%	12 17%	23 16%	12 23%	38 22%	13 15%	11 13%	59 18%	10 17%
Recycle	100 25%	45 24%	54 26%	22 26%	18 22%	15 21%	38 26%	7 14%	42 24%	31 36%	19 23%	82 25%	15 28%
Re-use	41 10%	22 12%	18 9%	8 10%	11 14%	6 9%	15 10%	4 8%	19 11%	9 10%	8 9%	32 10%	8 15%
Depends or All	3 1%	1 1%	2 1%	0 0%	2 3%	0 0%	1 1%	0 0%	1 1%	1 1%	1 1%	2 1%	1 2%
Don't use	161 40%	79 41%	82 40%	36 44%	24 30%	33 47%	59 41%	25 49%	68 39%	26 30%	38 45%	134 41%	19 34%
DK/NA	22 6%	11 6%	11 5%	3 4%	3 4%	4 6%	10 7%	3 6%	5 3%	6 7%	7 8%	19 6%	2 4%
Q3d CONSUMER GOOD PACKAGING BAG DISPOSAL													
Garbage	135 34%	64 34%	71 34%	34 41%	26 32%	23 33%	45 31%	20 39%	58 33%	37 43%	19 23%	115 35%	14 25%
Recycle	188 47%	95 50%	93 44%	34 42%	37 47%	37 52%	70 48%	22 43%	88 51%	40 46%	37 44%	152 46%	28 50%
Re-use	43 11%	18 9%	26 12%	9 11%	7 9%	7 9%	20 14%	7 14%	21 12%	4 4%	11 13%	32 10%	10 19%
Depends or All	11 3%	2 1%	9 4%	1 1%	4 5%	2 3%	3 2%	1 2%	2 1%	2 2%	6 7%	8 3%	1 2%
Don't use	17 4%	9 5%	8 4%	4 5%	3 4%	2 3%	6 4%	1 2%	4 2%	3 3%	9 11%	15 5%	2 4%
DK/NA	5 1%	3 2%	2 1%	0 0%	3 4%	0 0%	2 1%	0 0%	1 1%	1 1%	2 3%	5 2%	0 0%

ELWAY RESEARCH, INC. November 2007

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q3a PLASTIC BAG DISPOSAL													
Garbage	19 5%	1 1%	5 3%	4 10%	7 7%	3 4%	7 5%	5 5%	3 3%	3 5%	3 5%	1 2%	7 6%
Recycle	158 40%	24 39%	64 35%	12 28%	56 56%	27 36%	48 35%	42 42%	41 46%	30 45%	24 36%	29 40%	44 36%
Re-use	204 51%	34 56%	104 56%	27 60%	31 31%	42 58%	74 54%	49 49%	38 43%	34 51%	38 56%	36 50%	63 52%
Depends or All	13 3%	2 3%	8 4%	0 0%	3 3%	1 2%	6 4%	2 2%	4 5%	0 0%	1 2%	5 7%	6 5%
Don't use	4 1%	0 0%	3 2%	0 0%	1 1%	0 0%	2 1%	1 1%	1 1%	0 0%	1 2%	1 1%	0 0%
DK/NA	2 1%	0 0%	0 0%	1 2%	1 1%	0 0%	0 0%	0 0%	2 2%	0 0%	0 0%	0 0%	1 1%
Q3b BREAD BAG DISPOSAL													
Garbage	119 30%	22 36%	43 23%	20 45%	29 29%	27 37%	40 29%	31 31%	21 23%	19 28%	25 36%	21 29%	32 26%
Recycle	143 36%	17 28%	77 42%	16 35%	32 32%	25 34%	53 39%	30 30%	35 40%	25 37%	20 30%	26 36%	46 38%
Re-use	104 26%	19 31%	50 27%	7 15%	25 25%	17 23%	37 27%	27 27%	23 26%	19 28%	18 26%	20 28%	30 25%
Depends or All	7 2%	1 1%	4 2%	0 0%	2 2%	2 3%	1 1%	2 2%	2 2%	2 3%	0 0%	1 1%	3 2%
Don't use	22 5%	1 1%	10 5%	2 5%	8 8%	3 4%	6 4%	7 7%	6 7%	3 4%	3 4%	2 3%	8 7%
DK/NA	5 1%	1 1%	1 1%	0 0%	3 3%	0 0%	1 1%	2 2%	2 2%	0 0%	2 3%	1 2%	2 2%
Q3c DRY CLEANING BAG DISPOSAL													
Garbage	74 18%	12 19%	40 22%	10 23%	10 10%	20 28%	24 17%	19 19%	10 12%	5 7%	14 20%	10 14%	31 26%
Recycle	100 25%	13 22%	48 26%	11 24%	26 27%	12 17%	32 23%	26 26%	30 33%	11 16%	19 28%	18 25%	31 25%
Re-use	41 10%	8 14%	14 8%	4 9%	12 12%	10 14%	15 11%	10 10%	6 7%	7 11%	3 5%	9 13%	11 9%
Depends or All	3 1%	0 0%	1 0%	0 0%	2 2%	0 0%	0 0%	2 2%	1 1%	0 0%	1 2%	1 1%	0 0%
Don't use	161 40%	26 43%	69 38%	19 42%	41 41%	29 40%	64 47%	36 36%	32 36%	40 59%	25 37%	29 40%	45 37%
DK/NA	22 6%	2 3%	11 6%	1 2%	8 8%	1 2%	3 2%	7 7%	11 12%	4 6%	6 9%	5 7%	3 2%
Q3d CONSUMER GOOD PACKAGING BAG DISPOSAL													
Garbage	135 34%	25 41%	60 33%	18 41%	26 26%	29 40%	45 33%	40 40%	20 23%	12 18%	27 39%	25 35%	45 37%
Recycle	188 47%	29 47%	100 54%	16 35%	43 43%	30 42%	71 51%	39 39%	47 53%	34 51%	27 40%	37 51%	60 50%
Re-use	43 11%	5 8%	18 10%	7 16%	12 12%	10 14%	15 11%	9 9%	10 11%	11 16%	10 14%	8 10%	9 8%
Depends or All	11 3%	1 1%	3 1%	1 2%	5 5%	1 1%	2 1%	5 5%	4 4%	3 4%	3 4%	2 3%	1 1%
Don't use	17 4%	1 1%	1 1%	3 7%	11 11%	2 3%	3 2%	7 7%	5 6%	7 10%	1 1%	0 0%	4 3%
DK/NA	5 1%	1 1%	2 1%	0 0%	2 2%	0 0%	2 1%	0 0%	3 4%	0 0%	1 2%	0 0%	2 2%

SPU Plastic Recycling Survey

	TOTAL		RENT OR OWN			TYPE OF HOME			CHILDREN			
	N=		OWN		RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL												
N=	400	100	275	100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q3a PLASTIC BAG DISPOSAL												
Garbage	19	5%	13	5%	5 5%	2 4%	3 5%	13 5%	8 6%	4 3%	1 3%	5 5%
Recycle	158	40%	114	42%	39 35%	20 37%	27 41%	105 40%	56 42%	52 44%	9 35%	36 32%
Re-use	204	51%	131	48%	66 58%	29 52%	33 51%	130 50%	64 49%	51 44%	12 47%	69 62%
Depends or All	13	3%	11	4%	2 2%	3 6%	2 3%	8 3%	2 2%	7 6%	3 11%	1 1%
Don't use	4	1%	3	1%	1 1%	1 2%	0 0%	3 1%	2 2%	1 1%	1 3%	0 0%
DK/NA	2	1%	2	1%	0 0%	0 0%	0 0%	2 1%	0 0%	2 2%	0 0%	0 0%
Q3b BREAD BAG DISPOSAL												
Garbage	119	30%	83	30%	32 28%	20 37%	21 32%	69 26%	47 36%	31 27%	6 24%	31 28%
Recycle	143	36%	94	34%	46 40%	19 35%	30 46%	90 34%	48 36%	45 38%	11 40%	35 31%
Re-use	104	26%	74	27%	26 23%	12 22%	11 17%	78 30%	27 20%	30 26%	8 28%	36 32%
Depends or All	7	2%	5	2%	2 2%	0 0%	2 3%	5 2%	1 1%	0 0%	2 7%	4 4%
Don't use	22	5%	16	6%	6 5%	4 7%	1 1%	15 6%	8 6%	9 7%	0 0%	4 4%
DK/NA	5	1%	3	1%	2 2%	0 0%	0 0%	4 2%	2 2%	2 2%	0 0%	1 1%
Q3c DRY CLEANING BAG DISPOSAL												
Garbage	74	18%	56	20%	17 15%	11 20%	11 17%	49 19%	23 17%	26 22%	4 14%	20 18%
Recycle	100	25%	71	26%	26 23%	17 31%	13 20%	67 26%	31 23%	28 24%	9 33%	29 26%
Re-use	41	10%	26	9%	15 13%	8 14%	2 3%	25 10%	16 12%	8 7%	1 3%	14 13%
Depends or All	3	1%	3	1%	0 0%	0 0%	0 0%	3 1%	1 1%	2 2%	0 0%	0 0%
Don't use	161	40%	106	38%	49 43%	18 33%	32 49%	104 40%	52 39%	46 39%	12 46%	46 42%
DK/NA	22	6%	14	5%	7 6%	1 2%	7 11%	12 5%	10 7%	8 7%	1 3%	2 2%
Q3d CONSUMER GOOD PACKAGING BAG DISPOSAL												
Garbage	135	34%	96	35%	34 30%	21 38%	17 27%	90 35%	47 36%	37 31%	7 25%	42 37%
Recycle	188	47%	129	47%	56 49%	25 46%	33 51%	120 46%	61 46%	58 49%	12 47%	52 46%
Re-use	43	11%	27	10%	15 13%	7 13%	9 14%	25 10%	14 10%	10 8%	5 21%	13 12%
Depends or All	11	3%	10	3%	2 2%	0 0%	0 0%	11 4%	2 1%	5 4%	1 3%	3 2%
Don't use	17	4%	9	3%	7 6%	2 4%	4 7%	10 4%	8 6%	5 4%	1 3%	1 1%
DK/NA	5	1%	5	2%	0 0%	0 0%	1 1%	4 2%	1 1%	3 3%	0 0%	1 1%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL		AREA OF SEATTLE											
	N=		NORTHWEST		NORTHEAST		WEST		EAST		SOUTHWEST		SOUTHEAST	
TOTAL														
N=	400	100%	94	100%	77	100%	72	100%	59	100%	73	100%	25	100%
Q3a PLASTIC BAG DISPOSAL														
Garbage	19	5%	2	2%	4	6%	3	5%	5	8%	3	4%	1	4%
Recycle	158	40%	36	39%	35	45%	25	34%	27	45%	28	38%	8	32%
Re-use	204	51%	49	52%	35	45%	42	59%	24	41%	39	53%	15	57%
Depends or All	13	3%	5	6%	3	4%	2	3%	1	2%	1	1%	1	4%
Don't use	4	1%	1	1%	0	0%	0	0%	1	2%	1	2%	1	4%
DK/NA	2	1%	0	0%	0	0%	0	0%	1	2%	1	2%	0	0%
Q3b BREAD BAG DISPOSAL														
Garbage	119	30%	25	26%	24	31%	21	29%	17	29%	23	31%	9	35%
Recycle	143	36%	32	34%	28	37%	24	34%	23	40%	29	40%	6	24%
Re-use	104	26%	26	28%	21	28%	21	29%	9	15%	19	26%	8	30%
Depends or All	7	2%	3	3%	0	0%	1	2%	1	2%	0	0%	2	7%
Don't use	22	5%	7	7%	1	1%	5	7%	7	12%	2	3%	0	0%
DK/NA	5	1%	1	1%	2	3%	0	0%	1	2%	0	0%	1	4%
Q3c DRY CLEANING BAG DISPOSAL														
Garbage	74	18%	12	13%	13	18%	15	21%	12	20%	14	19%	7	27%
Recycle	100	25%	24	26%	19	25%	19	26%	12	20%	22	30%	4	17%
Re-use	41	10%	7	8%	10	13%	8	11%	7	12%	4	5%	4	17%
Depends or All	3	1%	2	2%	1	1%	0	0%	0	0%	0	0%	0	0%
Don't use	161	40%	45	48%	30	40%	29	40%	22	38%	27	36%	8	32%
DK/NA	22	6%	3	3%	3	4%	2	3%	6	9%	7	9%	2	8%
Q3d CONSUMER GOOD PACKAGING BAG DISPOSAL														
Garbage	135	34%	32	34%	26	33%	25	35%	20	33%	23	31%	10	38%
Recycle	188	47%	44	47%	37	49%	33	46%	28	48%	35	48%	10	38%
Re-use	43	11%	11	12%	8	10%	10	14%	6	10%	7	9%	2	8%
Depends or All	11	3%	1	1%	3	4%	1	1%	1	2%	5	7%	1	4%
Don't use	17	4%	4	4%	1	1%	3	4%	2	3%	4	5%	3	12%
DK/NA	5	1%	1	1%	2	3%	0	0%	2	3%	0	0%	0	0%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q2 BAG PREFERENCE				AGE				ETHNICITY	
	N=	MALE	FEMALE	PLASTIC	PAPER	BOTH	OWN	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL													
N=	400 100	192 100	208 100	82 100	79 100	71 100	146 100	51 100	173 100	86 100	84 100	328 100	55 100
Q4a STORES REDUCE VOLUNTARILY													
ALL AGREE	357 89%	171 89%	186 89%	74 90%	68 85%	58 83%	141 97%	50 98%	160 92%	70 81%	72 86%	294 90%	48 87%
ALL DISAGREE	34 9%	18 9%	16 8%	8 10%	7 9%	11 16%	3 2%	1 2%	10 6%	13 16%	10 12%	26 8%	7 13%
DK	9 2%	3 2%	5 3%	0 0%	5 6%	1 1%	2 1%	0 0%	3 2%	3 3%	2 2%	8 2%	0 0%
[Q4a DATA BREAK DOWN]													
STRONGLY AGREE	221 55%	101 53%	120 58%	36 44%	35 45%	34 48%	108 74%	31 61%	113 65%	34 39%	43 51%	182 55%	27 50%
AGREE	136 34%	70 36%	66 32%	38 46%	32 41%	24 35%	33 23%	19 37%	47 27%	36 42%	29 35%	112 34%	20 37%
DISAGREE	22 5%	13 7%	8 4%	5 6%	5 6%	7 10%	1 1%	1 2%	6 3%	9 10%	6 7%	19 6%	1 2%
STRONGLY DISAGREE	13 3%	4 2%	8 4%	3 4%	2 2%	4 6%	2 1%	0 0%	4 2%	5 6%	4 5%	7 2%	6 11%
DK	9 2%	3 2%	5 3%	0 0%	5 6%	1 1%	2 1%	0 0%	3 2%	3 3%	2 2%	8 2%	0 0%
Q4b PUBLIC OUTREACH													
ALL AGREE	282 70%	134 70%	147 71%	52 63%	57 71%	46 65%	115 78%	42 82%	128 74%	52 60%	57 68%	228 70%	41 74%
ALL DISAGREE	98 24%	45 24%	52 25%	25 30%	20 25%	22 31%	24 16%	8 16%	34 20%	30 35%	23 27%	82 25%	13 24%
DK	20 5%	12 6%	8 4%	5 7%	3 4%	3 4%	8 5%	1 2%	12 7%	4 5%	4 5%	17 5%	1 2%
[Q4b DATA BREAK DOWN]													
STRONGLY AGREE	117 29%	57 29%	60 29%	19 23%	18 23%	20 29%	57 39%	9 17%	63 36%	19 22%	26 31%	94 29%	18 33%
AGREE	165 41%	78 40%	87 42%	32 40%	39 49%	26 36%	58 40%	34 66%	65 37%	33 38%	31 36%	134 41%	22 41%
DISAGREE	75 19%	34 18%	40 19%	18 22%	16 20%	16 22%	21 14%	8 16%	27 16%	20 24%	18 22%	63 19%	9 16%
STRONGLY DISAGREE	23 6%	11 6%	12 6%	6 8%	4 5%	6 8%	3 2%	0 0%	7 4%	10 12%	5 6%	19 6%	4 8%
DK	20 5%	12 6%	8 4%	5 7%	3 4%	3 4%	8 5%	1 2%	12 7%	4 5%	4 5%	17 5%	1 2%
Q4c PROHIBIT STORES													
ALL AGREE	130 32%	55 29%	74 36%	14 17%	34 43%	18 26%	58 39%	14 27%	59 34%	25 29%	31 37%	99 30%	21 38%
ALL DISAGREE	247 62%	125 65%	122 59%	65 80%	41 51%	45 63%	82 56%	37 72%	103 60%	60 70%	43 52%	208 64%	33 60%
DK	23 6%	11 6%	12 6%	2 2%	5 6%	8 11%	6 4%	1 2%	11 6%	1 1%	10 12%	20 6%	1 2%
[Q4c DATA BREAK DOWN]													
STRONGLY AGREE	52 13%	16 8%	37 18%	7 8%	14 17%	3 4%	27 18%	6 11%	23 13%	12 14%	11 14%	41 13%	9 16%
AGREE	77 19%	40 21%	38 18%	7 9%	20 25%	15 21%	31 21%	8 15%	36 21%	13 15%	20 23%	58 18%	12 21%
DISAGREE	189 47%	93 49%	96 46%	48 59%	32 41%	31 43%	70 48%	31 62%	82 47%	43 50%	29 35%	160 49%	25 45%
STRONGLY DISAGREE	58 14%	32 17%	26 12%	17 21%	8 11%	14 20%	12 8%	5 10%	22 12%	17 20%	14 17%	49 15%	8 15%
DK	23 6%	11 6%	12 6%	2 2%	5 6%	8 11%	6 4%	1 2%	11 6%	1 1%	10 12%	20 6%	1 2%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q4a STORES REDUCE VOLUNTARILY													
ALL AGREE	357 89%	55 90%	170 92%	40 89%	83 84%	66 91%	122 89%	93 93%	75 84%	54 80%	64 94%	64 89%	113 93%
ALL DISAGREE	34 9%	4 6%	13 7%	4 9%	12 12%	6 9%	14 10%	3 3%	11 12%	11 16%	4 6%	7 10%	7 6%
DK	9 2%	2 3%	1 0%	1 2%	4 4%	0 0%	2 1%	4 4%	3 4%	2 3%	0 0%	1 1%	2 2%
[Q4a DATA BREAK DOWN]													
STRONGLY AGREE	221 55%	38 63%	112 61%	24 52%	44 45%	47 64%	71 52%	58 58%	45 51%	32 47%	38 56%	38 53%	71 58%
AGREE	136 34%	17 28%	58 32%	16 36%	39 39%	20 27%	51 37%	35 35%	30 34%	22 33%	26 38%	26 36%	42 34%
DISAGREE	22 5%	4 6%	10 5%	1 2%	7 7%	4 6%	8 6%	2 2%	7 8%	6 9%	2 3%	5 7%	4 3%
STRONGLY DISAGREE	13 3%	0 0%	4 2%	3 7%	5 5%	2 3%	6 4%	1 1%	4 4%	5 7%	2 3%	2 3%	3 2%
DK	9 2%	2 3%	1 0%	1 2%	4 4%	0 0%	2 1%	4 4%	3 4%	2 3%	0 0%	1 1%	2 2%
Q4b PUBLIC OUTREACH													
ALL AGREE	282 70%	47 77%	130 71%	33 73%	65 66%	54 74%	95 69%	73 73%	60 67%	45 67%	47 69%	52 72%	93 76%
ALL DISAGREE	98 24%	11 17%	46 25%	7 16%	30 30%	18 24%	37 27%	21 21%	22 24%	16 23%	17 25%	19 26%	26 21%
DK	20 5%	3 5%	8 5%	5 11%	4 4%	1 2%	6 4%	6 6%	7 8%	6 9%	4 6%	1 1%	3 2%
[Q4b DATA BREAK DOWN]													
STRONGLY AGREE	117 29%	16 26%	56 30%	15 33%	29 30%	24 33%	35 26%	27 27%	30 34%	18 27%	20 30%	19 26%	43 35%
AGREE	165 41%	31 51%	74 40%	18 39%	35 36%	30 41%	59 43%	46 46%	30 34%	27 40%	26 39%	33 46%	50 41%
DISAGREE	75 19%	8 13%	38 21%	5 11%	22 22%	12 17%	26 19%	20 20%	17 19%	14 20%	10 15%	16 23%	19 16%
STRONGLY DISAGREE	23 6%	3 5%	8 4%	2 5%	8 8%	5 7%	11 8%	1 1%	5 6%	2 3%	7 11%	3 4%	7 6%
DK	20 5%	3 5%	8 5%	5 11%	4 4%	1 2%	6 4%	6 6%	7 8%	6 9%	4 6%	1 1%	3 2%
Q4c PROHIBIT STORES													
ALL AGREE	130 32%	19 31%	62 34%	12 27%	33 33%	24 34%	39 28%	32 32%	34 38%	17 25%	24 35%	22 30%	45 37%
ALL DISAGREE	247 62%	41 68%	111 60%	31 68%	57 58%	41 57%	94 68%	64 65%	47 52%	44 66%	42 61%	47 65%	71 59%
DK	23 6%	1 1%	10 6%	2 5%	9 9%	7 9%	4 3%	3 3%	9 10%	6 9%	3 4%	3 4%	5 4%
[Q4c DATA BREAK DOWN]													
STRONGLY AGREE	52 13%	10 17%	21 11%	8 17%	12 12%	9 13%	17 12%	9 9%	17 19%	8 12%	9 13%	7 9%	20 17%
AGREE	77 19%	8 14%	41 23%	5 11%	21 21%	15 21%	22 16%	23 23%	17 19%	9 13%	15 22%	15 21%	25 21%
DISAGREE	189 47%	38 63%	86 46%	21 48%	39 40%	25 34%	76 55%	51 51%	38 42%	32 48%	35 51%	35 48%	54 44%
STRONGLY DISAGREE	58 14%	3 5%	26 14%	9 21%	18 18%	17 23%	18 13%	13 13%	9 10%	13 19%	7 10%	12 17%	18 15%
DK	23 6%	1 1%	10 6%	2 5%	9 9%	7 9%	4 3%	3 3%	9 10%	6 9%	3 4%	3 4%	5 4%

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q4a STORES REDUCE VOLUNTARILY										
ALL AGREE	357 89%	245 89%	102 89%	48 87%	55 86%	237 91%	114 86%	104 88%	23 86%	106 95%
ALL DISAGREE	34 9%	23 8%	10 9%	5 10%	8 12%	19 7%	15 12%	10 8%	4 14%	3 3%
DK	9 2%	7 2%	2 2%	2 3%	1 2%	5 2%	3 2%	4 3%	0 0%	2 2%
[Q4a DATA BREAK DOWN]										
STRONGLY AGREE	221 55%	158 57%	60 52%	28 52%	41 64%	144 55%	67 50%	72 61%	12 47%	65 58%
AGREE	136 34%	87 32%	42 37%	19 35%	14 22%	93 36%	47 36%	32 27%	10 40%	41 37%
DISAGREE	22 5%	13 5%	7 6%	3 6%	7 11%	9 4%	11 8%	5 4%	1 3%	2 2%
STRONGLY DISAGREE	13 3%	10 3%	3 3%	2 4%	1 1%	10 4%	4 3%	5 4%	3 10%	1 1%
DK	9 2%	7 2%	2 2%	2 3%	1 2%	5 2%	3 2%	4 3%	0 0%	2 2%
Q4b PUBLIC OUTREACH										
ALL AGREE	282 70%	200 73%	79 69%	41 74%	45 70%	185 71%	84 63%	90 77%	15 56%	87 78%
ALL DISAGREE	98 24%	64 23%	26 23%	9 16%	15 23%	64 25%	40 30%	22 19%	10 36%	22 19%
DK	20 5%	11 4%	9 8%	5 9%	4 6%	11 4%	9 7%	5 4%	2 8%	3 3%
[Q4b DATA BREAK DOWN]										
STRONGLY AGREE	117 29%	84 31%	32 28%	16 29%	23 35%	75 29%	31 23%	44 37%	6 22%	35 31%
AGREE	165 41%	116 42%	47 41%	25 45%	23 35%	111 42%	52 40%	47 40%	9 35%	52 47%
DISAGREE	75 19%	47 17%	21 18%	6 11%	13 20%	47 18%	33 25%	17 14%	5 21%	16 15%
STRONGLY DISAGREE	23 6%	17 6%	5 5%	3 6%	2 3%	18 7%	7 5%	6 5%	4 15%	5 5%
DK	20 5%	11 4%	9 8%	5 9%	4 6%	11 4%	9 7%	5 4%	2 8%	3 3%
Q4c PROHIBIT STORES										
ALL AGREE	130 32%	92 33%	35 31%	17 31%	24 37%	83 32%	35 27%	47 40%	4 14%	40 36%
ALL DISAGREE	247 62%	163 59%	76 67%	35 63%	39 60%	162 62%	89 67%	66 56%	19 72%	67 60%
DK	23 6%	20 7%	3 3%	3 6%	2 3%	16 6%	9 7%	5 4%	4 15%	4 4%
[Q4c DATA BREAK DOWN]										
STRONGLY AGREE	52 13%	36 13%	16 14%	10 19%	8 12%	30 12%	13 10%	22 18%	1 3%	16 14%
AGREE	77 19%	56 20%	18 16%	6 12%	16 25%	53 20%	22 17%	25 21%	3 10%	24 22%
DISAGREE	189 47%	122 44%	63 55%	26 48%	29 45%	124 48%	71 54%	47 39%	14 53%	54 49%
STRONGLY DISAGREE	58 14%	41 15%	13 12%	8 15%	9 15%	38 15%	17 13%	20 17%	5 18%	13 11%
DK	23 6%	20 7%	3 3%	3 6%	2 3%	16 6%	9 7%	5 4%	4 15%	4 4%

ELWAY RESEARCH, INC. November 2007

	TOTAL		AREA OF SEATTLE											
	N=		NORTHWEST		NORTHEAST		WEST		EAST		SOUTHWEST		SOUTHEAST	
TOTAL														
N=	400	100%	94	100%	77	100%	72	100%	59	100%	73	100%	25	100%
Q4a STORES REDUCE VOLUNTARILY														
ALL AGREE	357	89%	80	85%	72	94%	62	86%	57	97%	65	89%	22	85%
ALL DISAGREE	34	9%	10	11%	2	3%	10	14%	1	2%	7	10%	4	15%
DK	9	2%	4	4%	3	4%	0	0%	1	2%	1	2%	0	0%
[Q4a DATA BREAK DOWN]														
STRONGLY AGREE	221	55%	55	59%	44	58%	35	49%	34	59%	37	50%	15	60%
AGREE	136	34%	25	27%	27	36%	27	37%	22	38%	28	39%	6	25%
DISAGREE	22	5%	4	4%	1	1%	8	11%	1	2%	5	7%	2	8%
STRONGLY DISAGREE	13	3%	6	6%	1	1%	2	3%	0	0%	2	3%	2	7%
DK	9	2%	4	4%	3	4%	0	0%	1	2%	1	2%	0	0%
Q4b PUBLIC OUTREACH														
ALL AGREE	282	70%	63	67%	54	70%	51	71%	50	86%	47	64%	17	66%
ALL DISAGREE	98	24%	25	26%	21	27%	18	25%	8	13%	18	25%	9	34%
DK	20	5%	6	6%	2	3%	3	4%	1	2%	8	11%	0	0%
[Q4b DATA BREAK DOWN]														
STRONGLY AGREE	117	29%	29	31%	20	27%	23	31%	23	39%	17	23%	5	21%
AGREE	165	41%	34	36%	33	43%	29	40%	27	47%	30	41%	11	45%
DISAGREE	75	19%	19	20%	17	22%	14	19%	8	13%	13	18%	5	18%
STRONGLY DISAGREE	23	6%	6	6%	4	5%	4	5%	0	0%	5	7%	4	16%
DK	20	5%	6	6%	2	3%	3	4%	1	2%	8	11%	0	0%
Q4c PROHIBIT STORES														
ALL AGREE	130	32%	25	27%	28	36%	26	35%	21	36%	20	27%	10	39%
ALL DISAGREE	247	62%	61	65%	45	59%	42	58%	37	63%	47	65%	15	61%
DK	23	6%	7	8%	4	5%	5	7%	1	2%	6	8%	0	0%
[Q4c DATA BREAK DOWN]														
STRONGLY AGREE	52	13%	10	11%	8	10%	13	18%	10	17%	8	11%	3	12%
AGREE	77	19%	15	16%	20	26%	12	17%	11	19%	12	17%	7	27%
DISAGREE	189	47%	45	49%	36	47%	27	37%	33	56%	37	50%	12	49%
STRONGLY DISAGREE	58	14%	15	17%	9	12%	15	21%	4	7%	11	15%	3	12%
DK	23	6%	7	8%	4	5%	5	7%	1	2%	6	8%	0	0%

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q2 BAG PREFERENCE				AGE				ETHNICITY	
	N=	MALE	FEMALE	PLASTIC	PAPER	BOTH	OWN	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL													
N=	400 100	192 100	208 100	82 100	79 100	71 100	146 100	51 100	173 100	86 100	84 100	328 100	55 100
Q4d REQUIRE RECYCLING BINS													
ALL AGREE	348 87%	166 87%	181 87%	67 82%	70 88%	64 90%	132 90%	48 94%	152 88%	74 86%	71 84%	286 87%	47 86%
ALL DISAGREE	44 11%	22 12%	22 11%	15 18%	6 7%	6 9%	12 8%	2 4%	18 10%	11 13%	12 14%	34 10%	8 14%
DK	8 2%	3 2%	5 2%	0 0%	4 5%	1 1%	2 1%	1 2%	4 2%	1 1%	2 2%	8 2%	0 0%
[Q4d DATA BREAK DOWN]													
STRONGLY AGREE	200 50%	89 46%	112 54%	34 41%	36 46%	34 48%	86 59%	30 59%	92 53%	40 46%	38 45%	166 51%	24 44%
AGREE	147 37%	78 40%	70 33%	33 40%	33 42%	30 42%	46 32%	18 35%	60 35%	34 40%	33 39%	119 36%	23 41%
DISAGREE	33 8%	17 9%	16 8%	12 15%	4 5%	4 5%	10 7%	1 2%	16 9%	7 8%	8 10%	26 8%	6 10%
STRONGLY DISAGREE	11 3%	6 3%	5 3%	3 4%	2 2%	2 3%	2 1%	1 2%	2 1%	4 4%	3 4%	8 2%	2 4%
DK	8 2%	3 2%	5 2%	0 0%	4 5%	1 1%	2 1%	1 2%	4 2%	1 1%	2 2%	8 2%	0 0%
Q4e CHARGE FEE PLASTIC BAGS													
ALL AGREE	164 41%	78 40%	86 41%	21 25%	28 36%	26 37%	83 57%	26 50%	83 48%	28 32%	26 31%	135 41%	19 35%
ALL DISAGREE	225 56%	110 57%	115 56%	59 72%	50 63%	43 60%	59 41%	25 48%	87 50%	57 67%	52 62%	182 56%	35 63%
DK	11 3%	4 2%	6 3%	2 2%	1 1%	2 3%	4 3%	1 2%	3 2%	1 1%	6 7%	10 3%	1 2%
[Q4e DATA BREAK DOWN]													
STRONGLY AGREE	67 17%	26 13%	41 20%	8 10%	12 15%	5 7%	39 27%	11 21%	32 18%	9 10%	15 18%	55 17%	9 16%
AGREE	97 24%	52 27%	45 22%	13 16%	16 21%	21 30%	43 30%	15 29%	52 30%	19 22%	11 13%	80 25%	10 19%
DISAGREE	144 36%	64 34%	80 38%	35 43%	29 37%	26 37%	44 30%	19 38%	57 33%	35 41%	31 37%	119 36%	23 42%
STRONGLY DISAGREE	81 20%	45 24%	36 17%	24 29%	21 26%	16 23%	15 10%	5 10%	30 17%	22 26%	21 25%	63 19%	12 21%
DK	11 3%	4 2%	6 3%	2 2%	1 1%	2 3%	4 3%	1 2%	3 2%	1 1%	6 7%	10 3%	1 2%
Q4f CHARGE FEE ALL BAGS													
ALL AGREE	138 35%	63 33%	75 36%	19 24%	21 27%	21 29%	73 50%	20 39%	71 41%	21 25%	25 30%	118 36%	13 24%
ALL DISAGREE	252 63%	124 65%	128 62%	62 76%	56 71%	47 66%	70 48%	31 61%	99 57%	64 74%	55 65%	201 61%	42 76%
DK	9 2%	4 2%	5 2%	0 0%	2 3%	3 4%	3 2%	0 0%	4 2%	1 1%	4 5%	9 3%	0 0%
[Q4f DATA BREAK DOWN]													
STRONGLY AGREE	50 13%	19 10%	31 15%	10 12%	8 10%	2 3%	28 19%	6 11%	25 14%	8 9%	11 14%	42 13%	6 11%
AGREE	88 22%	44 23%	44 21%	9 12%	13 17%	19 27%	45 31%	14 28%	46 27%	13 15%	14 16%	76 23%	7 13%
DISAGREE	161 40%	78 40%	83 40%	43 52%	35 44%	26 37%	48 33%	24 47%	63 36%	40 46%	34 40%	132 40%	26 47%
STRONGLY DISAGREE	91 23%	47 24%	45 22%	20 24%	21 27%	20 29%	22 15%	7 14%	36 21%	24 28%	21 25%	68 21%	16 29%
DK	9 2%	4 2%	5 2%	0 0%	2 3%	3 4%	3 2%	0 0%	4 2%	1 1%	4 5%	9 3%	0 0%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q4d REQUIRE RECYCLING BINS													
ALL AGREE	348 87%	59 97%	162 88%	35 78%	85 86%	62 86%	115 83%	89 89%	82 91%	61 92%	56 82%	62 86%	109 90%
ALL DISAGREE	44 11%	2 3%	18 10%	8 18%	12 12%	8 12%	20 15%	9 9%	7 8%	6 8%	10 15%	7 10%	10 8%
DK	8 2%	0 0%	4 2%	2 5%	2 2%	2 3%	3 2%	2 2%	1 1%	0 0%	2 3%	3 4%	2 2%
[Q4d DATA BREAK DOWN]													
STRONGLY AGREE	200 50%	38 63%	92 50%	23 51%	43 44%	47 64%	60 44%	43 44%	50 56%	37 56%	33 49%	35 49%	60 49%
AGREE	147 37%	21 34%	70 38%	12 27%	41 42%	16 22%	55 40%	45 45%	32 35%	24 36%	23 34%	27 37%	50 41%
DISAGREE	33 8%	2 3%	16 9%	5 11%	9 9%	6 9%	16 12%	6 6%	5 5%	5 7%	9 13%	7 10%	7 6%
STRONGLY DISAGREE	11 3%	0 0%	2 1%	3 7%	3 3%	2 3%	4 3%	3 3%	2 2%	1 1%	1 2%	0 0%	3 2%
DK	8 2%	0 0%	4 2%	2 5%	2 2%	2 3%	3 2%	2 2%	1 1%	0 0%	2 3%	3 4%	2 2%
Q4e CHARGE FEE PLASTIC BAGS													
ALL AGREE	164 41%	33 53%	81 44%	18 39%	29 29%	29 39%	59 43%	44 44%	33 36%	17 26%	28 41%	28 38%	60 49%
ALL DISAGREE	225 56%	29 47%	98 53%	27 61%	65 66%	42 58%	77 56%	52 52%	54 60%	48 71%	38 56%	42 59%	58 48%
DK	11 3%	0 0%	6 3%	0 0%	5 5%	2 3%	2 1%	4 4%	3 3%	2 3%	2 3%	2 3%	4 3%
[Q4e DATA BREAK DOWN]													
STRONGLY AGREE	67 17%	16 26%	30 16%	5 11%	14 15%	13 17%	17 12%	20 20%	17 19%	5 7%	10 14%	15 20%	21 18%
AGREE	97 24%	17 28%	51 28%	13 28%	15 15%	16 22%	42 31%	23 23%	15 17%	12 18%	18 27%	13 18%	38 31%
DISAGREE	144 36%	17 27%	64 35%	18 40%	42 43%	25 34%	50 37%	36 36%	33 37%	33 49%	27 39%	26 36%	38 32%
STRONGLY DISAGREE	81 20%	12 20%	33 18%	9 21%	23 23%	18 24%	27 19%	16 16%	21 23%	15 22%	11 17%	16 22%	19 16%
DK	11 3%	0 0%	6 3%	0 0%	5 5%	2 3%	2 1%	4 4%	3 3%	2 3%	2 3%	2 3%	4 3%
Q4f CHARGE FEE ALL BAGS													
ALL AGREE	138 35%	25 41%	69 38%	15 33%	26 26%	23 32%	45 33%	40 41%	30 33%	18 27%	24 35%	27 38%	45 37%
ALL DISAGREE	252 63%	36 59%	110 60%	30 67%	69 69%	48 67%	91 66%	55 55%	58 65%	49 73%	42 62%	42 59%	74 61%
DK	9 2%	0 0%	5 3%	0 0%	4 4%	1 1%	2 1%	4 4%	2 2%	0 0%	2 3%	2 3%	3 3%
[Q4f DATA BREAK DOWN]													
STRONGLY AGREE	50 13%	15 24%	17 9%	7 16%	10 11%	8 12%	14 10%	15 15%	12 14%	7 11%	8 12%	11 15%	15 12%
AGREE	88 22%	11 17%	52 28%	8 18%	16 16%	15 20%	31 22%	25 25%	17 19%	11 16%	16 24%	17 23%	30 25%
DISAGREE	161 40%	24 39%	76 41%	16 35%	42 43%	30 41%	60 43%	41 41%	30 34%	31 47%	29 42%	24 34%	51 42%
STRONGLY DISAGREE	91 23%	12 20%	34 18%	14 32%	26 27%	19 26%	31 23%	14 14%	27 31%	17 26%	13 19%	18 25%	23 19%
DK	9 2%	0 0%	5 3%	0 0%	4 4%	1 1%	2 1%	4 4%	2 2%	0 0%	2 3%	2 3%	3 3%

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q4d REQUIRE RECYCLING BINS										
ALL AGREE	348 87%	240 87%	102 90%	49 89%	59 92%	226 87%	116 88%	101 86%	23 86%	98 88%
ALL DISAGREE	44 11%	29 11%	10 9%	4 8%	5 8%	30 11%	14 11%	13 11%	3 10%	12 11%
DK	8 2%	6 2%	2 2%	2 4%	0 0%	5 2%	2 2%	4 3%	1 3%	1 1%
[Q4d DATA BREAK DOWN]										
STRONGLY AGREE	200 50%	137 50%	63 55%	30 54%	41 63%	125 48%	68 51%	65 55%	12 45%	54 48%
AGREE	147 37%	104 38%	39 35%	19 35%	19 29%	101 39%	49 37%	37 31%	11 42%	44 40%
DISAGREE	33 8%	21 8%	9 8%	4 8%	5 8%	20 8%	12 9%	10 8%	3 10%	7 7%
STRONGLY DISAGREE	11 3%	8 3%	1 1%	0 0%	0 0%	10 4%	2 2%	3 2%	0 0%	5 4%
DK	8 2%	6 2%	2 2%	2 4%	0 0%	5 2%	2 2%	4 3%	1 3%	1 1%
Q4e CHARGE FEE PLASTIC BAGS										
ALL AGREE	164 41%	118 43%	44 39%	24 43%	27 43%	109 42%	45 34%	55 47%	6 22%	53 48%
ALL DISAGREE	225 56%	149 54%	68 60%	29 53%	35 54%	146 56%	84 63%	59 50%	19 71%	57 51%
DK	11 3%	9 3%	2 2%	2 4%	2 3%	7 3%	4 3%	4 3%	2 7%	1 1%
[Q4e DATA BREAK DOWN]										
STRONGLY AGREE	67 17%	53 19%	14 12%	9 16%	12 18%	45 17%	13 10%	30 25%	3 10%	20 18%
AGREE	97 24%	65 23%	30 26%	15 27%	16 25%	63 24%	32 24%	25 21%	3 12%	34 30%
DISAGREE	144 36%	96 35%	44 38%	19 34%	23 35%	95 36%	57 43%	35 30%	12 45%	39 35%
STRONGLY DISAGREE	81 20%	53 19%	24 21%	11 20%	12 19%	51 19%	27 20%	24 20%	7 26%	18 16%
DK	11 3%	9 3%	2 2%	2 4%	2 3%	7 3%	4 3%	4 3%	2 7%	1 1%
Q4f CHARGE FEE ALL BAGS										
ALL AGREE	138 35%	97 35%	40 35%	19 34%	21 33%	91 35%	40 30%	43 36%	8 28%	44 40%
ALL DISAGREE	252 63%	170 62%	72 63%	34 61%	43 67%	164 63%	89 67%	73 62%	19 72%	65 58%
DK	9 2%	7 3%	2 2%	3 5%	0 0%	5 2%	4 3%	2 2%	0 0%	2 2%
[Q4f DATA BREAK DOWN]										
STRONGLY AGREE	50 13%	36 13%	14 12%	8 14%	8 12%	31 12%	11 8%	21 18%	2 7%	16 14%
AGREE	88 22%	61 22%	26 23%	11 20%	13 21%	61 23%	29 22%	22 19%	6 22%	28 25%
DISAGREE	161 40%	111 40%	42 37%	21 38%	26 40%	107 41%	58 44%	42 36%	10 39%	49 44%
STRONGLY DISAGREE	91 23%	59 22%	30 26%	13 23%	17 27%	57 22%	31 24%	31 26%	9 33%	16 15%
DK	9 2%	7 3%	2 2%	3 5%	0 0%	5 2%	4 3%	2 2%	0 0%	2 2%

SPU Plastic Recycling Survey

	TOTAL		GENDER			AREA OF SEATTLE					
	N=		MALE		FEMALE	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL											
N=	400	100%	192	48%	208 52%	94 100%	77 100%	72 100%	59 100%	73 100%	25 100%
Q4d REQUIRE RECYCLING BINS											
ALL AGREE	348	87%	166	42%	181 45%	81 87%	71 92%	57 79%	49 84%	66 90%	22 88%
ALL DISAGREE	44	11%	22	6%	22 5%	8 9%	5 6%	14 19%	7 12%	7 10%	3 12%
DK	8	2%	3	1%	5 1%	4 4%	1 1%	1 1%	2 4%	0 0%	0 0%
[Q4d DATA BREAK DOWN]											
STRONGLY AGREE	200	50%	89	22%	112 28%	44 47%	34 44%	39 54%	31 52%	40 55%	13 52%
AGREE	147	37%	78	19%	70 17%	38 40%	37 48%	19 26%	19 32%	26 36%	9 36%
DISAGREE	33	8%	17	4%	16 4%	5 6%	4 5%	11 15%	4 7%	7 10%	2 7%
STRONGLY DISAGREE	11	3%	6	1%	5 1%	3 3%	1 1%	3 4%	3 5%	0 0%	1 4%
DK	8	2%	3	1%	5 1%	4 4%	1 1%	1 1%	2 4%	0 0%	0 0%
Q4e CHARGE FEE PLASTIC BAGS											
ALL AGREE	164	41%	78	19%	86 22%	37 39%	32 42%	26 36%	24 41%	35 47%	9 36%
ALL DISAGREE	225	56%	110	27%	115 29%	54 57%	43 57%	43 60%	31 54%	38 53%	15 60%
DK	11	3%	4	1%	6 2%	3 3%	1 1%	3 4%	3 5%	0 0%	1 4%
[Q4e DATA BREAK DOWN]											
STRONGLY AGREE	67	17%	26	6%	41 10%	16 17%	9 12%	12 17%	11 19%	13 17%	5 20%
AGREE	97	24%	52	13%	45 11%	21 22%	23 30%	14 19%	13 22%	22 30%	4 16%
DISAGREE	144	36%	64	16%	80 20%	36 39%	23 30%	24 34%	22 38%	29 39%	9 36%
STRONGLY DISAGREE	81	20%	45	11%	36 9%	17 18%	20 26%	19 26%	9 16%	10 13%	6 24%
DK	11	3%	4	1%	6 2%	3 3%	1 1%	3 4%	3 5%	0 0%	1 4%
Q4f CHARGE FEE ALL BAGS											
ALL AGREE	138	35%	63	16%	75 19%	32 34%	30 40%	22 31%	21 36%	25 34%	8 33%
ALL DISAGREE	252	63%	124	31%	128 32%	59 63%	45 59%	49 68%	35 60%	47 64%	17 67%
DK	9	2%	4	1%	5 1%	3 3%	1 1%	1 2%	2 3%	2 3%	0 0%
[Q4f DATA BREAK DOWN]											
STRONGLY AGREE	50	13%	19	5%	31 8%	12 13%	8 11%	6 9%	10 17%	10 13%	3 13%
AGREE	88	22%	44	11%	44 11%	19 20%	22 29%	16 22%	11 19%	15 21%	5 20%
DISAGREE	161	40%	78	19%	83 21%	40 43%	27 35%	30 41%	26 45%	28 38%	10 41%
STRONGLY DISAGREE	91	23%	47	12%	45 11%	19 20%	18 24%	19 27%	9 15%	19 26%	7 27%
DK	9	2%	4	1%	5 1%	3 3%	1 1%	1 2%	2 3%	2 3%	0 0%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q1 SHOP FOR GROC			AGE				ETHNICITY	
	N=	MALE	FEMALE	DAILY	WEEKLY	SELDOM/ NEVER	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL												
N=	400 100	192 100	208 100	187 100	173 100	35 100	51 100	173 100	86 100	84 100	328 100	55 100
Q5 ACCEPTABLE BAG FEE												
Would not be willing to pay	69 17%	27 14%	42 20%	31 17%	27 15%	9 26%	4 8%	18 11%	26 30%	18 21%	56 17%	10 18%
less than 5 cents per bag	113 28%	51 27%	62 30%	60 32%	44 25%	8 24%	11 21%	44 26%	26 30%	32 38%	94 29%	16 30%
5 cents per bag	101 25%	51 27%	50 24%	51 28%	42 24%	7 19%	11 21%	51 29%	16 19%	23 28%	81 25%	15 28%
10 cents per bag	67 17%	38 20%	29 14%	21 11%	37 21%	8 24%	12 24%	36 21%	13 15%	6 7%	55 17%	9 16%
25 cents per bag	30 8%	16 8%	15 7%	14 7%	15 9%	1 3%	9 17%	15 9%	4 5%	2 2%	27 8%	3 5%
More than 25 cents per bag	13 3%	7 3%	6 3%	6 3%	6 4%	1 3%	4 8%	7 4%	1 1%	1 1%	11 3%	1 2%
DK/NA	6 2%	3 2%	3 1%	3 2%	2 1%	0 0%	0 0%	2 1%	0 0%	3 3%	4 1%	0 0%
Q6 Actions -ban or charge												
A charge for each plastic bag	17 4%	11 6%	5 3%	11 6%	4 2%	1 3%	3 6%	10 6%	1 1%	2 3%	13 4%	4 7%
A ban on plastic bags	21 5%	11 6%	10 5%	11 6%	6 4%	4 11%	1 2%	10 6%	5 6%	5 6%	19 6%	1 2%
A charge for each paper bag	10 2%	4 2%	5 3%	5 3%	4 2%	1 3%	1 2%	6 4%	1 1%	2 2%	8 2%	2 4%
A ban on paper shopping bags	8 2%	3 2%	5 2%	3 2%	5 3%	0 0%	0 0%	5 3%	2 3%	1 1%	6 2%	1 2%
A charge on BOTH paper and plastic bags	137 34%	61 32%	76 37%	60 32%	66 38%	11 32%	28 55%	67 39%	23 26%	19 23%	117 36%	12 22%
A ban on both paper and plastic bags	33 8%	12 6%	21 10%	17 9%	13 8%	2 6%	3 6%	18 10%	5 6%	7 8%	27 8%	5 9%
Would not support any of these proposals	150 38%	74 39%	76 37%	65 35%	69 40%	15 44%	15 30%	50 29%	43 50%	39 46%	118 36%	28 50%
DK/NA	24 6%	14 8%	9 4%	15 8%	6 4%	0 0%	0 0%	7 4%	6 7%	9 11%	20 6%	2 4%
Q7 WHICH STORES SHOULD CHARGE FOR BAGS												
There should be no charge	39 10%	13 7%	26 12%	20 11%	18 10%	0 0%	2 4%	7 4%	17 20%	12 14%	32 10%	6 11%
Large stores and chains	79 20%	43 23%	36 17%	37 20%	34 20%	8 22%	15 29%	40 23%	14 16%	10 12%	60 18%	17 31%
All stores, any kind	264 66%	126 66%	137 66%	121 65%	114 66%	27 76%	34 66%	120 69%	53 62%	56 66%	220 67%	31 57%
DK/NA	18 5%	9 5%	9 4%	8 4%	7 4%	1 3%	1 2%	7 4%	2 2%	7 8%	16 5%	1 2%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q5 ACCEPTABLE BAG FEE													
Would not be willing to pay	69 17%	8 13%	24 13%	7 16%	24 25%	9 12%	21 15%	12 12%	27 30%	8 12%	13 19%	10 14%	19 16%
less than 5 cents per bag	113 28%	18 29%	45 25%	13 29%	36 36%	20 27%	38 27%	30 30%	25 28%	26 38%	19 28%	23 32%	28 23%
5 cents per bag	101 25%	12 19%	47 26%	15 32%	25 26%	24 33%	33 24%	30 30%	15 17%	20 30%	23 34%	18 24%	27 22%
10 cents per bag	67 17%	10 16%	41 22%	6 14%	10 10%	12 17%	31 23%	13 13%	10 11%	9 13%	6 9%	14 19%	27 22%
25 cents per bag	30 8%	8 13%	18 10%	2 5%	2 2%	5 7%	11 8%	10 10%	4 4%	4 6%	5 7%	4 6%	13 11%
More than 25 cents per bag	13 3%	5 8%	6 4%	1 2%	0 0%	2 3%	3 2%	5 5%	3 4%	0 0%	2 3%	3 4%	6 5%
DK/NA	6 2%	1 1%	1 1%	1 2%	2 2%	0 0%	1 1%	0 0%	5 6%	0 0%	0 0%	1 1%	1 1%
Q6 Actions -ban or charge													
A charge for each plastic bag	17 4%	3 5%	7 4%	3 7%	2 2%	3 4%	6 4%	8 8%	0 0%	4 6%	4 7%	3 4%	4 3%
A ban on plastic bags	21 5%	6 10%	5 3%	4 9%	5 5%	6 9%	4 3%	6 6%	5 6%	5 7%	3 4%	3 5%	5 4%
A charge for each paper bag	10 2%	0 0%	5 3%	2 5%	2 2%	2 3%	5 4%	2 2%	1 1%	4 6%	0 0%	0 0%	4 3%
A ban on paper shopping bags	8 2%	3 5%	3 2%	1 2%	1 1%	2 3%	2 1%	3 3%	1 1%	0 0%	2 3%	1 2%	3 2%
A charge on BOTH paper and plastic bags	137 34%	24 38%	81 44%	9 20%	22 22%	25 34%	53 38%	33 33%	26 29%	17 26%	28 42%	26 37%	43 35%
A ban on both paper and plastic bags	33 8%	8 12%	13 7%	6 13%	6 6%	3 4%	13 10%	8 8%	9 10%	2 3%	5 7%	5 7%	18 15%
Would not support any of these proposals	150 38%	17 28%	62 33%	18 41%	50 50%	29 39%	52 38%	34 34%	35 39%	29 43%	23 34%	31 44%	39 32%
DK/NA	24 6%	1 2%	8 5%	2 4%	11 11%	3 4%	3 2%	6 6%	12 13%	5 8%	3 4%	2 3%	6 5%
Q7 WHICH STORES SHOULD CHARGE FOR BAGS													
There should be no charge	39 10%	5 7%	13 7%	4 9%	15 15%	7 10%	9 7%	8 8%	15 17%	7 10%	6 9%	6 8%	12 10%
Large stores and chains	79 20%	16 26%	33 18%	11 24%	17 17%	20 28%	33 24%	18 18%	8 9%	13 20%	10 15%	17 24%	27 22%
All stores, any kind	264 66%	38 61%	133 72%	29 65%	59 60%	43 59%	92 67%	68 68%	61 68%	46 68%	46 68%	48 66%	78 64%
DK/NA	18 5%	3 5%	5 3%	1 2%	8 8%	3 4%	3 2%	6 6%	6 7%	1 1%	6 9%	1 1%	4 3%

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q5 ACCEPTABLE BAG FEE										
Would not be willing to pay	69 17%	43 16%	20 18%	12 23%	7 10%	46 17%	24 18%	13 11%	6 22%	21 19%
less than 5 cents per bag	113 28%	80 29%	30 26%	16 30%	17 27%	73 28%	41 31%	37 31%	10 39%	23 21%
5 cents per bag	101 25%	69 25%	32 28%	11 20%	17 27%	70 27%	32 24%	31 26%	6 24%	30 27%
10 cents per bag	67 17%	45 17%	20 18%	10 18%	17 26%	40 15%	22 17%	20 17%	3 12%	22 20%
25 cents per bag	30 8%	23 8%	7 6%	4 7%	5 8%	20 8%	11 8%	10 8%	1 3%	8 7%
More than 25 cents per bag	13 3%	10 4%	3 3%	1 2%	1 1%	9 3%	2 2%	5 4%	0 0%	5 4%
DK/NA	6 2%	4 1%	1 1%	0 0%	1 1%	3 1%	0 0%	2 2%	0 0%	2 2%
Q6 Actions -ban or charge										
A charge for each plastic bag	17 4%	8 3%	8 7%	5 9%	2 3%	7 3%	8 6%	2 2%	0 0%	6 6%
A ban on plastic bags	21 5%	14 5%	7 6%	2 4%	2 3%	15 6%	8 6%	6 5%	1 3%	6 6%
A charge for each paper bag	10 2%	8 3%	2 2%	1 2%	3 5%	5 2%	6 4%	3 2%	0 0%	1 1%
A ban on paper shopping bags	8 2%	6 2%	2 2%	2 4%	0 0%	6 2%	2 2%	2 2%	0 0%	3 3%
A charge on BOTH paper and plastic bags	137 34%	93 34%	42 37%	15 26%	28 43%	93 36%	40 30%	42 35%	10 39%	43 38%
A ban on both paper and plastic bags	33 8%	23 8%	9 8%	8 15%	3 4%	20 8%	8 6%	13 11%	1 4%	10 9%
Would not support any of these proposals	150 38%	105 38%	40 35%	20 36%	26 40%	97 37%	53 40%	46 39%	14 53%	34 31%
DK/NA	24 6%	18 6%	4 4%	2 4%	1 1%	18 7%	7 5%	4 4%	0 0%	8 7%
Q7 WHICH STORES SHOULD CHARGE FOR BAGS										
There should be no charge	39 10%	27 10%	10 9%	4 7%	8 12%	26 10%	13 10%	10 9%	6 22%	9 8%
Large stores and chains	79 20%	51 19%	27 23%	12 22%	11 18%	53 20%	24 18%	25 21%	4 15%	25 22%
All stores, any kind	264 66%	188 68%	70 62%	37 67%	41 64%	173 66%	89 67%	78 66%	17 64%	75 67%
DK/NA	18 5%	9 3%	7 6%	2 4%	4 6%	8 3%	6 4%	5 4%	0 0%	3 3%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	AREA OF SEATTLE					
	N=	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL							
N=	400 100	94 100	77 100	72 100	59 100	73 100	25 100
Q5 ACCEPTABLE BAG FEE							
Would not be willing to pay	69 17%	15 16%	15 19%	11 15%	12 20%	11 15%	5 20%
less than 5 cents per bag	113 28%	22 24%	20 26%	22 30%	16 28%	24 33%	9 35%
5 cents per bag	101 25%	25 27%	20 26%	18 25%	12 20%	20 27%	6 25%
10 cents per bag	67 17%	17 18%	11 14%	13 18%	12 20%	12 16%	3 12%
25 cents per bag	30 8%	10 11%	7 9%	6 8%	4 7%	2 3%	1 4%
More than 25 cents per bag	13 3%	3 3%	3 4%	1 1%	2 3%	3 4%	1 4%
DK/NA	6 2%	1 1%	1 1%	2 3%	1 2%	1 2%	0 0%
Q6 Actions -ban or charge							
A charge for each plastic bag	17 4%	6 6%	3 4%	2 3%	3 6%	1 1%	1 4%
A ban on plastic bags	21 5%	3 3%	7 9%	4 6%	4 7%	2 3%	1 4%
A charge for each paper bag	10 2%	2 2%	2 3%	2 3%	2 3%	1 1%	1 4%
A ban on paper shopping bags	8 2%	0 0%	3 4%	3 4%	2 3%	0 0%	0 0%
A charge on BOTH paper and plastic bags	137 34%	31 33%	22 29%	21 29%	22 37%	31 42%	10 40%
A ban on both paper and plastic bags	33 8%	10 10%	7 9%	7 9%	4 7%	5 7%	1 4%
Would not support any of these proposals	150 38%	38 40%	23 30%	28 39%	20 33%	32 44%	10 39%
DK/NA	24 6%	4 5%	9 12%	5 7%	2 3%	2 3%	1 4%
Q7 WHICH STORES SHOULD CHARGE FOR BAGS							
There should be no charge	39 10%	6 6%	8 10%	9 12%	3 5%	10 13%	4 16%
Large stores and chains	79 20%	19 21%	16 21%	12 16%	10 17%	15 21%	6 25%
All stores, any kind	264 66%	64 69%	51 66%	44 61%	43 73%	47 65%	15 59%
DK/NA	18 5%	4 5%	2 2%	8 11%	3 5%	1 1%	0 0%

ELWAY RESEARCH, INC. November 2007

	TOTAL	GENDER		Q1 SHOP FOR GROC			AGE				ETHNICITY	
	N=	MALE	FEMALE	DAILY	WEEKLY	SELDOM/ NEVER	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL												
N=	400 100	192 100	208 100	187 100	173 100	35 100	51 100	173 100	86 100	84 100	328 100	55 100
Q8 IF BANNED, BAG BAN SHOULD APPLY TO												
Should not be banned	32 8%	12 6%	20 10%	13 7%	19 11%	0 0%	4 8%	8 4%	12 14%	7 9%	28 8%	4 7%
Large stores and chains	70 18%	34 18%	36 17%	31 17%	31 18%	8 24%	12 24%	31 18%	17 20%	9 11%	56 17%	13 25%
All stores, any kind	281 70%	140 73%	141 68%	134 72%	117 67%	27 76%	31 62%	132 76%	56 65%	58 69%	232 71%	36 65%
DK/NA	17 4%	6 3%	11 5%	9 5%	7 4%	0 0%	3 6%	3 2%	1 1%	9 11%	13 4%	2 4%
Q9 CITY BAG FEE SHOULD FUND												
Should not be a charge	27 7%	12 6%	15 7%	12 7%	12 7%	2 5%	0 0%	4 2%	13 15%	10 11%	23 7%	3 6%
Lower garbage rates	62 15%	28 14%	34 16%	28 15%	23 13%	8 24%	7 14%	25 15%	13 15%	15 17%	48 15%	10 19%
Public outreach- reusable bags	117 29%	54 28%	62 30%	55 30%	51 29%	11 30%	13 25%	57 33%	19 22%	26 31%	97 30%	16 30%
Public outreach- recycling	106 26%	49 25%	57 27%	45 24%	47 27%	11 32%	17 34%	51 29%	22 26%	15 18%	88 27%	11 20%
Subsidized reusable bags	70 18%	44 23%	26 12%	35 19%	32 18%	3 9%	14 27%	33 19%	14 16%	10 11%	56 17%	11 21%
DK/NA	19 5%	4 2%	15 7%	10 6%	9 5%	0 0%	0 0%	4 2%	5 6%	10 11%	14 4%	3 5%
Q10a RESTAURANT BAN ON DISPOSABLE PLASTICS												
Support	274 68%	125 65%	148 71%	131 70%	115 66%	25 72%	32 62%	121 70%	57 66%	59 71%	232 71%	31 57%
Oppose	111 28%	58 30%	53 26%	49 26%	51 29%	9 26%	16 32%	47 27%	26 30%	21 25%	82 25%	22 41%
DK/NA	15 4%	9 5%	6 3%	7 4%	7 4%	1 3%	3 6%	5 3%	3 4%	4 5%	13 4%	1 2%
Q10b ENCOURAGE VOLUNTARY RESTAURANT SHIFT TO RECYCLABLES												
Support	354 88%	170 88%	184 89%	168 90%	154 89%	29 82%	46 90%	160 92%	76 88%	68 81%	295 90%	45 82%
Oppose	37 9%	18 9%	19 9%	15 8%	17 10%	4 12%	5 10%	12 7%	8 9%	11 13%	26 8%	9 16%
DK	9 2%	4 2%	5 2%	4 2%	3 2%	2 6%	0 0%	1 1%	2 2%	5 6%	7 2%	1 2%
Q10c RESTAURANTS CHARGE FEE FOR PLASTICS												
Support	197 49%	98 51%	100 48%	93 50%	83 48%	18 53%	27 53%	98 56%	31 36%	40 47%	164 50%	28 50%
Oppose	191 48%	92 48%	99 48%	89 48%	84 49%	16 45%	23 45%	73 42%	54 63%	38 45%	156 48%	25 46%
DK	11 3%	2 1%	9 4%	5 3%	6 3%	1 3%	1 2%	3 2%	1 1%	7 8%	8 3%	2 4%

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q8 IF BANNED, BAG BAN SHOULD APPLY TO													
Should not be banned	32 8%	6 10%	12 6%	3 7%	11 11%	6 8%	11 8%	3 3%	12 14%	5 7%	6 9%	6 8%	10 8%
Large stores and chains	70 18%	15 25%	29 16%	7 15%	18 18%	18 24%	31 22%	14 14%	8 9%	8 12%	11 16%	15 21%	26 21%
All stores, any kind	281 70%	39 64%	138 75%	33 74%	63 64%	46 64%	92 67%	80 80%	62 70%	52 77%	47 69%	50 69%	82 68%
DK/NA	17 4%	1 1%	5 3%	2 4%	7 7%	3 4%	4 3%	3 3%	7 8%	2 3%	5 7%	1 2%	4 3%
Q9 CITY BAG FEE SHOULD FUND													
Should not be a charge	27 7%	1 1%	10 6%	2 5%	12 13%	6 9%	5 3%	6 6%	10 11%	2 3%	6 9%	3 4%	11 9%
Lower garbage rates	62 15%	13 21%	22 12%	7 16%	19 19%	11 15%	20 15%	12 12%	18 20%	11 16%	9 13%	16 22%	16 13%
Public outreach- reusable bags	117 29%	17 27%	57 31%	15 33%	26 26%	23 31%	44 32%	28 28%	22 25%	20 30%	21 31%	22 31%	35 29%
Public outreach- recycling	106 26%	17 27%	55 30%	11 24%	22 23%	19 27%	35 26%	29 29%	22 24%	17 26%	17 26%	17 24%	36 30%
Subsidized reusable bags	70 18%	11 18%	36 20%	9 21%	10 10%	11 14%	30 21%	20 20%	10 11%	11 16%	11 16%	13 18%	22 18%
DK/NA	19 5%	3 5%	4 2%	1 2%	9 9%	3 4%	4 3%	5 5%	7 8%	6 8%	4 5%	1 1%	2 2%
Q10a RESTAURANT BAN ON DISPOSABLE PLASTICS													
Support	274 68%	40 66%	127 69%	33 73%	65 66%	43 58%	91 66%	80 80%	61 68%	54 80%	42 62%	54 75%	74 61%
Oppose	111 28%	16 26%	50 27%	12 27%	31 31%	27 37%	42 31%	18 18%	24 27%	13 20%	22 32%	15 20%	44 36%
DK/NA	15 4%	5 8%	7 4%	0 0%	3 3%	3 4%	5 4%	2 2%	5 6%	0 0%	4 6%	3 5%	4 3%
Q10b ENCOURAGE VOLUNTARY RESTAURANT SHIFT TO RECYCLABLES													
Support	354 88%	56 91%	168 91%	39 87%	84 85%	62 85%	123 89%	89 89%	80 90%	61 91%	57 84%	68 95%	107 88%
Oppose	37 9%	6 9%	14 8%	5 11%	10 10%	9 13%	14 10%	10 10%	4 5%	5 8%	6 8%	4 5%	13 11%
DK	9 2%	0 0%	2 1%	1 2%	5 5%	2 3%	1 1%	1 1%	5 6%	1 1%	5 7%	0 0%	1 1%
Q10c RESTAURANTS CHARGE FEE FOR PLASTICS													
Support	197 49%	32 52%	97 53%	22 50%	42 42%	28 38%	69 50%	48 48%	53 59%	36 53%	28 41%	36 51%	64 53%
Oppose	191 48%	28 47%	85 46%	21 46%	51 52%	44 61%	64 47%	49 49%	34 38%	29 44%	37 54%	35 49%	55 45%
DK	11 3%	1 1%	2 1%	2 4%	6 6%	1 1%	5 3%	3 3%	3 3%	2 3%	4 6%	0 0%	3 2%

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q8 IF BANNED, BAG BAN SHOULD APPLY TO										
Should not be banned	32 8%	22 8%	9 8%	3 6%	6 9%	22 9%	10 8%	9 8%	5 18%	7 6%
Large stores and chains	70 18%	46 17%	23 21%	9 16%	11 17%	48 18%	18 14%	29 24%	3 11%	20 18%
All stores, any kind	281 70%	200 73%	74 65%	40 73%	47 72%	180 69%	100 75%	77 65%	19 71%	79 71%
DK/NA	17 4%	8 3%	7 6%	3 5%	1 1%	11 4%	4 3%	3 2%	0 0%	5 4%
Q9 CITY BAG FEE SHOULD FUND										
Should not be a charge	27 7%	20 7%	6 5%	3 6%	3 5%	19 7%	6 5%	12 10%	3 11%	6 5%
Lower garbage rates	62 15%	42 15%	18 16%	11 20%	9 14%	38 14%	18 14%	15 13%	7 28%	17 16%
Public outreach- reusable bags	117 29%	81 29%	31 28%	16 29%	22 34%	73 28%	39 29%	33 28%	9 33%	33 30%
Public outreach- recycling	106 26%	74 27%	31 27%	17 30%	14 22%	72 28%	39 29%	38 32%	2 7%	25 23%
Subsidized reusable bags	70 18%	44 16%	23 21%	6 11%	15 23%	46 18%	22 16%	16 13%	5 18%	27 24%
DK/NA	19 5%	14 5%	4 3%	2 4%	2 3%	13 5%	9 7%	4 3%	1 3%	3 3%
Q10a RESTAURANT BAN ON DISPOSABLE PLASTICS										
Support	274 68%	190 69%	77 68%	35 65%	47 73%	177 68%	98 74%	80 68%	15 57%	75 68%
Oppose	111 28%	76 27%	32 28%	15 28%	16 24%	75 29%	31 24%	31 26%	10 40%	34 30%
DK/NA	15 4%	9 3%	5 4%	4 7%	2 3%	9 4%	3 2%	7 6%	1 3%	2 2%
Q10b ENCOURAGE VOLUNTARY RESTAURANT SHIFT TO RECYCLABLES										
Support	354 88%	248 90%	99 87%	47 85%	59 92%	234 90%	115 87%	104 88%	23 89%	104 94%
Oppose	37 9%	22 8%	13 11%	8 15%	5 8%	20 8%	12 9%	13 11%	3 11%	7 6%
DK	9 2%	5 2%	2 2%	0 0%	0 0%	7 3%	6 4%	1 1%	0 0%	0 0%
Q10c RESTAURANTS CHARGE FEE FOR PLASTICS										
Support	197 49%	138 50%	56 49%	29 52%	35 54%	128 49%	57 43%	67 57%	10 40%	60 54%
Oppose	191 48%	129 47%	55 48%	24 44%	28 43%	125 48%	72 54%	48 40%	14 53%	51 46%
DK	11 3%	8 3%	3 2%	2 3%	2 3%	8 3%	4 3%	3 3%	2 7%	1 1%

ELWAY RESEARCH, INC. November 2007

	TOTAL	AREA OF SEATTLE					
	N=	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL							
N=	400 100	94 100	77 100	72 100	59 100	73 100	25 100
Q8 IF BANNED, BAG BAN SHOULD APPLY TO							
Should not be banned	32 8%	7 7%	4 5%	11 15%	1 2%	6 8%	4 15%
Large stores and chains	70 18%	14 15%	18 24%	7 10%	12 20%	16 22%	3 13%
All stores, any kind	281 70%	71 76%	50 65%	50 69%	45 77%	49 68%	15 59%
DK/NA	17 4%	2 2%	5 6%	4 6%	1 2%	2 3%	3 12%
Q9 CITY BAG FEE SHOULD FUND							
Should not be a charge	27 7%	5 5%	3 4%	6 8%	3 5%	7 10%	3 12%
Lower garbage rates	62 15%	12 13%	18 24%	13 18%	6 10%	10 13%	3 11%
Public outreach- reusable bags	117 29%	23 24%	25 32%	17 23%	24 41%	23 31%	5 20%
Public outreach- recycling	106 26%	32 34%	17 22%	21 29%	11 19%	17 23%	8 33%
Subsidized reusable bags	70 18%	18 20%	12 15%	11 15%	11 18%	14 19%	4 17%
DK/NA	19 5%	4 4%	2 3%	5 7%	4 6%	3 4%	2 8%
Q10a RESTAURANT BAN ON DISPOSABLE PLASTICS							
Support	274 68%	57 61%	51 66%	50 69%	43 73%	55 75%	18 72%
Oppose	111 28%	34 36%	22 28%	20 28%	15 25%	17 23%	4 15%
DK/NA	15 4%	3 3%	4 5%	2 3%	1 2%	2 3%	3 12%
Q10b ENCOURAGE VOLUNTARY RESTAURANT SHIFT TO RECYCLABLES							
Support	354 88%	86 91%	70 91%	61 85%	52 90%	63 86%	21 84%
Oppose	37 9%	6 6%	4 5%	11 15%	5 8%	9 12%	2 8%
DK	9 2%	2 2%	3 4%	0 0%	1 2%	1 2%	2 8%
Q10c RESTAURANTS CHARGE FEE FOR PLASTICS							
Support	197 49%	50 54%	30 39%	39 54%	26 44%	38 53%	13 53%
Oppose	191 48%	42 44%	43 56%	30 42%	32 54%	35 47%	10 39%
DK	11 3%	2 2%	4 5%	3 4%	1 2%	0 0%	2 8%

SPU Plastics Ban

SPU	TOTAL		GENDER				Q1 SHOP FOR GROC						AGE								ETHNICITY			
	N=		MALE		FEMALE		DAILY		WEEKLY		SELDOM/ NEVER		18-34		35-54		55-64		65+		WHITE		MINOR-ITY	
TOTAL																								
N=	400	100	192	100	208	100	187	100	173	100	35	100	51	100	173	100	86	100	84	100	328	100	55	100
11MR REASONS TO SUPPORT BAN																								
Useless products	15	4%	6	3%	9	4%	8	4%	7	4%			4	8%	4	2%	3	3%	4	5%	13	4%	2	3%
Not recyclable	41	10%	14	8%	27	13%	22	12%	17	10%	1	3%	6	11%	18	10%	9	10%	9	10%	34	10%	6	11%
Not Biodegradable	67	17%	27	14%	40	19%	26	14%	34	20%	7	20%	4	8%	25	14%	20	23%	17	21%	54	16%	8	15%
Harmful to environment	53	13%	23	12%	29	14%	24	13%	24	14%	5	14%	8	16%	31	18%	7	8%	5	6%	45	14%	6	11%
Reduces litter	142	36%	78	41%	64	31%	63	34%	63	37%	14	39%	20	39%	69	40%	29	34%	24	29%	118	36%	20	37%
Encourages Recycling	20	5%	7	4%	14	7%	12	7%	7	4%	1	3%	4	8%	6	3%	7	8%	4	5%	17	5%	3	5%
Improves environment	11	3%	3	2%	7	4%	9	5%	2	1%			1	2%	6	3%	1	1%	3	3%	8	2%	2	4%
Better options available	12	3%	3	2%	9	4%	8	4%	5	3%			1	2%	5	3%	5	6%	2	2%	10	3%	1	2%
Harmful for animals and ecosystem	6	1%	2	1%	4	2%	2	1%	2	1%	2	6%			2	1%	1	1%	3	4%	6	2%		
Green house gas	23	6%	11	6%	12	6%	13	7%	7	4%	3	9%	1	2%	14	8%	2	3%	6	7%	17	5%	5	9%
Will be cheaper	10	3%	4	2%	5	3%	3	2%	7	4%			2	4%	6	4%	1	1%	1	1%	9	3%	1	2%
Harmful to humans	7	2%			7	4%	5	2%	3	2%					4	2%	3	3%	1	1%	6	2%	1	2%
Wastes oil	12	3%	7	4%	5	3%	6	3%	4	2%	2	6%	2	4%	7	4%	1	1%	2	3%	10	3%	2	4%
Ban is necessary	8	2%	4	2%	4	2%	2	1%	5	3%	1	3%	1	2%	2	1%	2	2%	2	3%	7	2%	1	2%
Dislike foam	2	0%			2	1%	1	0%	1	1%							1	1%	1	1%	1	0%		
Eliminate use	14	3%	6	3%	8	4%	7	4%	6	3%	1	3%	1	2%	6	4%	1	1%	6	7%	13	4%	1	2%
Against ban	9	2%	4	2%	5	2%	3	2%	5	3%			2	4%	1	1%	3	4%	3	4%	4	1%	4	7%
Other	15	4%	9	5%	6	3%	7	4%	5	3%	2	6%			4	2%	4	5%	7	8%	11	3%	3	6%
None	16	4%	10	5%	6	3%	5	3%	7	4%	3	9%	2	4%	4	2%	2	2%	7	8%	13	4%	2	4%
Dont know	38	10%	19	10%	19	9%	17	9%	18	10%	4	11%	7	14%	17	10%	8	9%	6	8%	28	9%	8	14%

SPU Plastics Ban

SPU	TOTAL		EMPLOYMENT				FAST FOOD				INCOME			
	N=		PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL														
N=	400	100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
11MR REASONS TO SUPPORT BAN														
Useless products	15	4%	3 5%	7 4%	2 5%	3 3%	4 6%	6 4%	2 2%	3 3%	2 3%	4 5%	2 3%	7 6%
Not recyclable	41	10%	6 9%	17 9%	6 13%	12 12%	5 7%	19 14%	9 9%	8 10%	7 10%	5 8%	8 11%	14 11%
Not Biodegradable	67	17%	9 15%	30 17%	8 17%	19 19%	13 18%	18 13%	16 16%	20 23%	9 14%	14 21%	12 17%	18 15%
Harmful to environment	53	13%	14 23%	23 12%	7 15%	7 7%	15 20%	19 14%	10 10%	9 11%	13 19%	5 8%	5 7%	20 17%
Reduces litter	142	36%	26 42%	69 38%	15 33%	30 31%	29 40%	44 32%	39 39%	30 35%	16 24%	26 38%	32 45%	44 37%
Encourages Recycling	20	5%	5 8%	6 3%	5 11%	5 5%	5 7%	7 5%	5 5%	4 4%	4 6%	1 1%	6 8%	8 7%
Improves environment	11	3%	2 3%	5 3%	2 4%	2 2%	1 1%	7 5%	2 2%	1 1%	3 4%	1 2%	3 4%	3 2%
Better options available	12	3%		8 4%		4 4%	3 4%	4 3%	2 2%	4 4%	1 2%		3 4%	6 5%
Harmful for animals and ecosystem	6	1%	1 1%	3 2%	1 2%	1 1%	1 1%	1 1%	2 2%	2 2%		2 3%	1 1%	2 2%
Green house gas	23	6%	2 3%	13 7%	3 7%	4 4%	5 7%	6 4%	5 5%	7 8%	2 3%	6 9%	4 6%	7 6%
Will be cheaper	10	3%	3 5%	6 3%	1 2%		2 3%	6 4%	2 2%		1 1%	1 2%	2 3%	6 5%
Harmful to humans	7	2%	3 4%	1 1%	1 2%	3 3%	1 1%	2 1%	3 3%	2 2%	4 5%	1 1%	2 3%	
Wastes oil	12	3%	2 3%	6 3%	1 2%	2 2%	2 3%	5 4%	2 2%	3 3%	1 1%	1 2%	5 7%	4 3%
Ban is necessary	8	2%		4 2%		3 3%	1 1%	4 3%	1 1%	2 2%	1 1%		2 3%	4 3%
Dislike foam	2	0%		1 1%		1 1%				2 2%				1 1%
Eliminate use	14	3%	1 2%	8 4%	2 5%	3 3%	1 1%	7 5%	1 1%	5 5%	2 3%	2 3%	6 8%	2 2%
Against ban	9	2%	1 2%	2 1%	1 2%	4 4%		1 1%	4 4%	4 5%	1 2%	2 3%	1 1%	4 3%
Other	15	4%	1 2%	3 2%	2 5%	8 8%	4 6%	5 4%	2 2%	4 5%	6 9%	3 5%	4 6%	1 1%
None	16	4%	2 3%	1 1%	4 10%	8 8%	6 9%	3 2%	4 4%	3 3%	5 8%	1 2%	1 2%	4 3%
Dont know	38	10%	3 5%	22 12%	3 7%	10 10%	5 7%	19 14%	11 11%	3 4%	9 13%	9 13%	3 4%	8 7%

SPU	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
11MR REASONS TO SUPPORT BAN										
Useless products	15 4%	9 3%	5 5%	1 2%	7 10%	7 3%	4 3%	6 5%		5 5%
Not recyclable	41 10%	33 12%	8 7%	3 5%	4 6%	33 13%	12 9%	11 10%	2 7%	14 13%
Not Biodegradable	67 17%	50 18%	16 14%	6 11%	12 18%	45 17%	19 14%	30 26%	6 22%	11 10%
Harmful to environment	53 13%	32 12%	18 16%	10 18%	9 14%	32 12%	17 13%	15 13%	1 3%	17 16%
Reduces litter	142 36%	102 37%	38 33%	17 32%	21 32%	99 38%	43 33%	41 34%	9 33%	47 42%
Encourages Recycling	20 5%	17 6%	3 3%	1 2%	2 3%	15 6%	6 5%	6 5%	1 3%	8 7%
Improves environment	11 3%	8 3%	3 3%	2 4%	2 3%	7 3%	2 2%	3 2%	2 7%	4 4%
Better options available	12 3%	9 3%	4 3%	1 2%	3 5%	8 3%	2 2%	6 5%	2 7%	3 3%
Harmful for animals and ecosystem	6 1%	5 2%	1 1%	1 2%	1 1%	4 2%	2 1%	1 1%	1 3%	2 2%
Green house gas	23 6%	16 6%	6 5%	2 3%	5 7%	16 6%	7 5%	7 6%	3 11%	5 4%
Will be cheaper	10 3%	7 2%	3 3%	2 3%		7 3%	3 2%	5 4%		2 2%
Harmful to humans	7 2%	5 2%	2 2%	1 2%		5 2%	3 2%	1 1%	1 3%	3 2%
Wastes oil	12 3%	8 3%	3 3%		3 5%	9 3%	3 2%	6 5%		2 2%
Ban is necessary	8 2%	5 2%	3 3%	2 3%	1 2%	5 2%	1 1%	4 4%		3 3%
Dislike foam	2 0%	2 1%				2 1%		1 1%		1 1%
Eliminate use	14 3%	11 4%	2 2%	3 5%	2 3%	9 4%	5 4%	4 4%	1 3%	2 2%
Against ban	9 2%	6 2%	3 3%			7 3%	2 2%	3 2%	1 3%	2 2%
Other	15 4%	9 3%	5 4%	4 7%	3 5%	7 3%	8 6%	4 4%	2 8%	1 1%
None	16 4%	7 2%	8 7%	2 4%	4 7%	8 3%	10 7%	2 2%	1 3%	2 2%
Dont know	38 10%	22 8%	14 12%	8 15%	11 17%	18 7%	19 15%	6 5%	3 10%	10 9%

SPU	TOTAL		AREA OF SEATTLE											
	N=		NORTHWEST		NORTHEAST		WEST		EAST		SOUTHWEST		SOUTHEAST	
TOTAL														
N=	400	100	94	100	77	100	72	100	59	100	73	100	25	100
11MR REASONS TO SUPPORT BAN														
Useless products	15	4%			2	3%	3	4%	3	5%	6	8%	1	4%
Not recyclable	41	10%	14	15%	6	8%	7	9%	4	7%	6	8%	4	17%
Not Biodegradable	67	17%	14	15%	12	16%	12	17%	8	14%	16	21%	5	20%
Harmful to environment	53	13%	16	17%	8	10%	9	13%	11	18%	7	10%	2	8%
Reduces litter	142	36%	45	48%	26	35%	18	26%	17	28%	29	39%	7	29%
Encourages Recycling	20	5%	3	3%	3	4%	3	4%	4	7%	6	9%	1	4%
Improves environment	11	3%	2	2%			3	4%	2	3%	2	3%	2	8%
Better options available	12	3%	3	3%	1	1%	2	3%	4	6%	3	4%		
Harmful for animals and ecosystem	6	1%	1	1%			3	4%	1	2%	1	1%		
Green house gas	23	6%	6	6%	6	8%	3	4%	3	5%	4	6%	1	4%
Will be cheaper	10	3%	4	4%	1	1%	4	5%	1	2%				
Harmful to humans	7	2%	2	2%	3	4%	1	1%	1	2%	1	1%		
Wastes oil	12	3%	5	6%	1	1%	2	3%	1	2%	2	3%	1	4%
Ban is necessary	8	2%	2	2%	2	3%	2	3%	1	2%	1	2%		
Dislike foam	2	0%	2	2%										
Eliminate use	14	3%	2	2%	5	6%	4	5%	1	2%	2	3%		
Against ban	9	2%	1	1%	4	5%	1	1%			2	3%	1	4%
Other	15	4%	1	1%	4	5%	4	5%	4	7%	2	3%		
None	16	4%	1	1%	1	1%	9	12%	3	5%	2	3%	1	4%
Dont know	38	10%	9	10%	7	9%	7	10%	4	7%	7	9%	4	15%

SPU	TOTAL		GENDER				Q1 SHOP FOR GROC						AGE								ETHNICITY			
	N=		MALE		FEMALE		DAILY		WEEKLY		SELDOM/ NEVER		18-34		35-54		55-64		65+		WHITE		MINOR-ITY	
TOTAL																								
N=	400	100	192	100	208	100	187	100	173	100	35	100	51	100	173	100	86	100	84	100	328	100	55	100
12MR REASONS TO AVOID BAN																								
Ban is unnecessary	15	4%	4	2%	11	5%	4	2%	10	6%	2	5%	3	6%	8	5%	2	2%	2	2%	11	3%	3	5%
It is convenient	44	11%	18	9%	27	13%	21	11%	20	11%	3	8%	9	17%	22	13%	7	8%	7	8%	38	12%	5	9%
It is cheaper	55	14%	31	16%	24	11%	17	9%	32	18%	6	16%	9	18%	27	16%	13	15%	6	7%	45	14%	10	18%
Will harm consumers	18	4%	11	6%	6	3%	5	3%	12	7%			2	4%	7	4%	3	4%	5	6%	14	4%	3	6%
Will harm businesses	56	14%	27	14%	29	14%	29	16%	25	15%	2	6%	10	19%	35	20%	8	10%	3	4%	50	15%	5	9%
No environmental alternatives	36	9%	17	9%	19	9%	18	10%	17	10%	1	3%	6	11%	13	8%	6	7%	11	13%	32	10%	3	5%
Too much government	9	2%	7	4%	3	1%	4	2%	5	3%			2	4%	1	1%	5	6%	1	1%	9	3%		
Difficult to implement	9	2%	3	2%	5	3%	3	2%	4	2%	2	6%			7	4%	1	1%	1	1%	7	2%	2	3%
Economic inconvenience	10	3%	7	4%	4	2%	6	3%	3	2%	1	3%	1	2%	5	3%	2	2%	2	2%	8	3%	2	4%
Difficult to recycle	6	1%	2	1%	4	2%	3	2%	2	1%	1	3%			3	2%	1	1%	1	1%	3	1%	3	5%
Should be voluntary	2	0%			2	1%	1	0%	1	1%									2	2%	2	1%		
Difficult to re-educate public	5	1%	3	2%	2	1%	4	2%	1	1%					3	2%	2	3%			4	1%	1	2%
Encourages recycling	1	0%			1	0%					1	3%			1	1%							1	2%
Reduces pollution	10	2%	4	2%	5	3%	5	3%	3	2%	2	5%			6	4%	4	4%			8	2%	1	2%
Too many regulations	3	1%	3	2%			1	1%	1	1%	1	3%	2	4%			1	1%			3	1%		
Useful product	6	2%	6	3%	1	0%	2	1%	4	3%					6	3%			1	1%	5	2%		
Other priorities	3	1%	1	1%	2	1%			2	1%	1	3%			3	2%					3	1%		
Incentives should be offered	2	0%			2	1%	1	0%			1	3%			2	1%					1	0%	1	2%
Bad for free enterprise	2	0%			2	1%			2	1%			1	2%					1	1%	2	1%		
Support ban	8	2%	6	3%	3	1%	6	3%	2	1%			1	2%	3	2%			4	5%	8	3%		
Personal freedom or choice	3	1%	1	1%	2	1%	2	1%	1	1%					1	1%	2	2%			3	1%		
Easy to produce	3	1%	3	2%			1	1%	1	1%			2	4%	1	1%					2	1%	1	2%
Cost effective	4	1%	4	2%			2	1%	1	1%			2	4%	2	1%					3	1%	1	2%
Health and sanitary issues	5	1%	3	2%	2	1%	2	1%	2	1%	1	3%			2	1%			3	4%	4	1%	1	2%
Other options available	2	0%			2	1%	2	1%							2	1%					2	1%		
Other	38	10%	19	10%	19	9%	16	9%	18	10%	3	10%	5	10%	15	9%	7	8%	11	14%	29	9%	7	13%
None	71	18%	32	17%	38	19%	41	22%	22	13%	7	21%	3	6%	27	16%	20	23%	18	21%	56	17%	8	15%
Dont know	43	11%	20	11%	23	11%	19	10%	18	10%	5	15%	8	15%	11	7%	9	10%	15	18%	32	10%	10	17%

SPU Plastics Ban

SPU	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
12MR REASONS TO AVOID BAN													
Ban is unnecessary	15 4%	4 6%	8 4%	1 2%	2 2%	3 4%	8 6%	4 4%	1 1%	3 4%	3 4%	3 4%	6 5%
It is convenient	44 11%	4 6%	24 13%	8 17%	9 9%	12 17%	14 10%	10 10%	8 9%	8 11%	13 19%	5 7%	11 9%
It is cheaper	55 14%	13 21%	32 18%	4 9%	5 5%	15 20%	19 14%	12 12%	9 10%	5 7%	11 16%	10 14%	21 17%
Will harm consumers	18 4%	5 8%	6 3%	3 7%	4 4%	3 5%	9 7%	2 2%	3 4%	2 3%	3 5%	5 7%	6 5%
Will harm businesses	56 14%	10 16%	32 17%	5 11%	9 10%	15 20%	18 13%	14 14%	9 10%	9 14%	5 8%	13 18%	22 18%
No environmental alternatives	36 9%	5 9%	16 9%	3 6%	10 10%	6 8%	12 9%	6 6%	12 14%	7 10%	4 6%	5 7%	17 14%
Too much government	9 2%	2 3%	5 3%		2 2%	1 2%	3 2%	2 2%	3 4%	1 2%	3 5%	3 4%	2 2%
Difficult to implement	9 2%	4 6%	5 3%				3 2%	2 2%	4 4%		1 1%		8 7%
Economic inconvenience	10 3%	2 3%	7 4%		1 1%	3 4%	3 2%	4 4%		1 1%		3 4%	3 3%
Difficult to recycle	6 1%	1 1%	1 1%		3 3%		3 2%	1 1%	2 2%	1 1%	1 1%	1 2%	2 2%
Should be voluntary	2 0%				2 2%			1 1%	1 1%			1 1%	1 1%
Difficult to re-educate public	5 1%	1 1%	2 1%	1 2%	1 1%	1 2%	1 1%	2 2%	1 1%	2 3%		1 2%	1 1%
Encourages recycling	1 0%			1 2%					1 1%	1 1%			
Reduces pollution	10 2%	1 1%	6 3%	1 2%	2 2%	1 2%	7 5%		2 2%	4 6%	1 1%	1 2%	3 3%
Too many regulations	3 1%	1 2%	1 1%	1 2%		1 2%	1 1%	1 1%					2 2%
Useful product	6 2%		6 3%		1 1%	1 2%	2 2%		3 4%		2 3%		3 3%
Other priorities	3 1%		2 1%		1 1%		1 1%	2 2%		1 1%		1 1%	
Incentives should be offered	2 0%		2 1%			1 1%	1 1%						2 2%
Bad for free enterprise	2 0%		2 1%				1 1%	1 1%			1 1%		1 1%
Support ban	8 2%	2 3%	2 1%		4 4%	2 3%	2 1%	2 2%	2 2%	2 3%		2 3%	3 3%
Personal freedom or choice	3 1%		1 1%	1 2%	1 1%	1 2%	2 1%					1 1%	1 1%
Easy to produce	3 1%		2 1%	1 2%			2 2%		1 1%			1 2%	1 1%
Cost effective	4 1%		3 2%	1 2%			2 2%		2 3%			1 2%	2 2%
Health and sanitary issues	5 1%		2 1%		3 3%	1 1%	1 1%	3 3%			1 2%	1 2%	2 2%
Other options available	2 0%		2 1%			1 1%	1 1%				1 1%	1 1%	
Other	38 10%	5 8%	17 9%	2 5%	13 13%	8 11%	12 9%	5 5%	13 14%	5 8%	6 9%	11 15%	9 7%
None	71 18%	11 18%	22 12%	13 30%	20 21%	14 19%	17 12%	17 17%	24 27%	16 24%	12 18%	10 14%	14 12%
Dont know	43 11%	5 8%	17 9%	6 13%	15 15%	6 8%	15 11%	16 16%	6 7%	9 14%	11 16%	6 8%	6 5%

SPU Plastics Ban

SPU	TOTAL		RENT OR OWN				TYPE OF HOME						CHILDREN							
	N=		OWN		RENT		MULTI-UNIT [SMALL]		MULTI-UNIT [LARGE]		SINGLE FAMILY		SINGLE NO KIDS		COUPLE NO KIDS		SINGLE w/ KID		COUPLE w/ KID	
TOTAL																				
N=	400	100	275	100	114	100	55	100	64	100	261	100	133	100	118	100	26	100	111	100
12MR REASONS TO AVOID BAN																				
Ban is unnecessary	15	4%	12	4%	4	3%	3	5%	1	2%	11	4%	5	4%	1	1%	2	7%	8	7%
It is convenient	44	11%	31	11%	13	11%	3	5%	11	18%	29	11%	18	13%	11	9%	4	14%	11	10%
It is cheaper	55	14%	38	14%	15	13%	7	13%	7	11%	39	15%	17	13%	14	12%	3	11%	21	19%
Will harm consumers	18	4%	13	5%	4	4%			3	5%	14	6%	3	3%	8	7%			6	6%
Will harm businesses	56	14%	43	16%	13	12%	9	16%	9	14%	38	15%	15	11%	24	21%	1	3%	15	14%
No environmental alternatives	36	9%	26	10%	9	8%	4	7%	6	9%	25	10%	10	7%	15	13%	2	7%	10	9%
Too much government	9	2%	5	2%	4	4%	2	4%			6	2%	1	1%	4	4%	1	3%	3	3%
Difficult to implement	9	2%	7	2%	2	2%	1	2%	1	1%	7	3%	1	1%	3	2%	1	4%	4	4%
Economic inconvenience	10	3%	8	3%	2	2%	1	2%	2	3%	7	3%	2	2%	1	1%	3	11%	4	4%
Difficult to recycle	6	1%	5	2%	1	1%	1	2%	1	1%	4	2%	1	1%	2	2%			3	3%
Should be voluntary	2	0%	1	0%	1	1%					1	0%			2	2%				
Difficult to re-educate public	5	1%	3	1%	2	2%	1	2%	2	3%	2	1%	2	2%	1	1%			2	2%
Encourages recycling	1	0%			1	1%							1	1%						
Reduces pollution	10	2%	4	2%	6	5%	4	7%	1	1%	4	2%	5	4%	2	2%	1	3%	2	2%
Too many regulations	3	1%	1	0%	1	1%			1	2%	2	1%			1	1%			2	2%
Useful product	6	2%	6	2%					1	2%	5	2%			1	1%			5	5%
Other priorities	3	1%	3	1%					2	3%	1	0%	2	2%	1	1%				
Incentives should be offered	2	0%	2	1%			1	2%			1	0%			2	2%				
Bad for free enterprise	2	0%	2	1%							2	1%	1	1%	1	1%				
Support ban	8	2%	4	1%	4	4%	2	4%	2	3%	4	2%	3	2%	4	4%			1	1%
Personal freedom or choice	3	1%	3	1%							3	1%					1	3%	2	2%
Easy to produce	3	1%	1	0%	2	2%	1	2%			1	0%	2	2%					1	1%
Cost effective	4	1%	2	1%	2	2%	2	4%			1	0%	3	3%					1	1%
Health and sanitary issues	5	1%	5	2%					1	1%	4	2%	1	1%	3	3%			1	1%
Other options available	2	0%	1	0%	1	1%	1	2%	1	1%			1	1%			1	3%		
Other	38	10%	28	10%	8	7%	4	7%	6	10%	27	10%	8	6%	15	13%	2	7%	12	11%
None	71	18%	46	17%	21	19%	8	15%	12	19%	44	17%	30	23%	12	10%	4	15%	18	16%
Dont know	43	11%	27	10%	15	13%	7	13%	6	9%	28	11%	18	14%	13	11%	5	17%	6	6%

SPU	TOTAL		AREA OF SEATTLE											
	N=		NORTHWEST		NORTHEAST		WEST		EAST		SOUTHWEST		SOUTHEAST	
TOTAL														
N=	400	100	94	100	77	100	72	100	59	100	73	100	25	100
12MR REASONS TO AVOID BAN														
Ban is unnecessary	15	4%	3	3%	2	2%	3	4%	1	2%	6	8%	1	4%
It is convenient	44	11%	12	13%	12	16%	8	11%	4	7%	8	11%	1	4%
It is cheaper	55	14%	11	12%	8	10%	13	18%	6	11%	12	17%	4	17%
Will harm consumers	18	4%	7	8%	3	4%	2	3%	1	2%	3	5%	1	4%
Will harm businesses	56	14%	18	19%	7	9%	10	14%	4	7%	12	17%	5	20%
No environmental alternatives	36	9%	4	4%	5	7%	7	9%	8	14%	10	13%	2	7%
Too much government	9	2%	4	4%	1	1%			1	2%	1	2%	2	9%
Difficult to implement	9	2%	3	3%	4	5%			1	2%	1	2%		
Economic inconvenience	10	3%	3	3%	1	1%	3	4%			2	3%	1	4%
Difficult to recycle	6	1%	1	1%	2	2%					1	2%	2	8%
Should be voluntary	2	0%			1	1%	1	1%						
Difficult to re-educate public	5	1%	3	3%			2	3%						
Encourages recycling	1	0%							1	2%				
Reduces pollution	10	2%	3	4%	1	1%			5	8%	1	1%		
Too many regulations	3	1%					2	3%	1	2%				
Useful product	6	2%			3	4%	1	2%	1	2%	1	2%		
Other priorities	3	1%	1	1%			1	1%	1	2%				
Incentives should be offered	2	0%					1	1%			1	1%		
Bad for free enterprise	2	0%	1	1%							1	1%		
Support ban	8	2%	1	1%	2	3%	1	2%	4	7%				
Personal freedom or choice	3	1%					2	3%			1	2%		
Easy to produce	3	1%			1	1%			1	2%	1	2%		
Cost effective	4	1%			2	3%			1	2%	1	2%		
Health and sanitary issues	5	1%	3	3%			1	2%	1	2%				
Other options available	2	0%					2	3%						
Other	38	10%	11	12%	8	11%	7	10%	3	5%	8	11%	1	4%
None	71	18%	13	14%	18	24%	14	19%	13	22%	8	11%	5	20%
Dont know	43	11%	11	12%	6	7%	7	10%	6	10%	11	15%	3	12%

SPU Plastic Recycling Survey

	TOTAL	GENDER		Q1 SHOP FOR GROC			AGE				ETHNICITY	
	N=	MALE	FEMALE	DAILY	WEEKLY	SELDOM/ NEVER	18-34	35-54	55-64	65+	WHITE	MINOR-ITY
TOTAL												
N=	400 100	192 100	208 100	187 100	173 100	35 100	51 100	173 100	86 100	84 100	328 100	55 100
Q13 PLASTIC FOAM BAN IN SEATTLE												
FAVOR	273 68%	115 60%	158 76%	137 74%	111 64%	20 58%	34 67%	127 73%	56 65%	53 64%	235 72%	27 50%
OPPOSE	101 25%	62 32%	39 19%	40 22%	48 28%	12 35%	14 27%	38 22%	28 32%	22 26%	75 23%	23 42%
DK/NA	25 6%	14 8%	11 5%	9 5%	14 8%	2 6%	3 6%	9 5%	3 3%	9 11%	18 6%	5 9%
Q14 WHAT ACTION SHOULD CITY GOVERNMENT TAKE ON PLASTICS												
No ban without assured quality replacements	167 42%	78 40%	90 43%	77 42%	71 41%	16 47%	30 59%	68 39%	36 42%	33 39%	135 41%	26 48%
Ban now- replacements are available	209 52%	98 51%	112 54%	99 53%	93 54%	16 47%	20 39%	96 56%	47 54%	43 51%	172 52%	27 50%
DK/NA	23 6%	17 9%	6 3%	11 6%	9 5%	2 6%	1 2%	9 5%	3 4%	8 10%	21 6%	1 2%
Q15 WILLING TO SEPARATE FOOD WASTE IN RESTAURANT												
Yes, gladly	345 86%	155 81%	190 91%	164 88%	148 85%	29 82%	47 92%	156 90%	73 85%	65 77%	291 89%	41 75%
Reluctantly	21 5%	16 8%	5 3%	9 5%	8 5%	3 9%	3 7%	9 5%	4 5%	5 6%	15 5%	4 8%
Avoid that restaurant	4 1%	3 2%	1 0%	2 1%	1 1%	1 3%	1 2%	2 1%	1 1%	0 0%	1 0%	2 4%
Leave tray on table	19 5%	11 6%	8 4%	8 4%	8 5%	2 6%	0 0%	4 2%	7 8%	8 9%	15 4%	4 7%
DK/NA	10 3%	7 3%	4 2%	3 1%	8 4%	0 0%	0 0%	2 1%	1 1%	6 7%	5 2%	3 6%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	EMPLOYMENT				FAST FOOD				INCOME			
	N=	PUBLIC SECTOR	PRIVATE SECTOR	NOT WORKING	RETIRED	DAILY	WEEKLY	MONTHLY	RARE/NEVER	under 25K	25-50K	50-75K	above 75K
TOTAL													
N=	400 100	61 100	184 100	45 100	99 100	73 100	138 100	100 100	89 100	67 100	68 100	72 100	122 100
Q13 PLASTIC FOAM BAN IN SEATTLE													
FAVOR	273 68%	43 71%	131 71%	33 75%	58 59%	45 61%	95 69%	70 70%	63 71%	44 66%	41 60%	51 71%	85 70%
OPPOSE	101 25%	14 23%	43 23%	11 25%	30 31%	25 34%	31 23%	26 26%	19 22%	19 28%	22 33%	14 20%	31 25%
DK/NA	25 6%	4 6%	11 6%	0 0%	10 10%	3 4%	11 8%	4 4%	7 8%	4 6%	5 7%	6 9%	6 5%
Q14 WHAT ACTION SHOULD CITY GOVERNMENT TAKE ON PLASTICS													
No ban without assured quality replacements	167 42%	27 44%	77 42%	18 40%	43 43%	36 49%	60 43%	40 40%	32 36%	25 37%	33 49%	26 36%	56 46%
Ban now- replacements are available	209 52%	33 54%	99 54%	24 53%	48 48%	35 48%	70 51%	53 53%	51 58%	39 58%	32 48%	41 57%	59 48%
DK/NA	23 6%	1 2%	8 5%	3 7%	8 8%	2 3%	8 6%	7 7%	6 6%	3 5%	2 3%	4 6%	7 6%
Q15 WILLING TO SEPARATE FOOD WASTE IN RESTAURANT													
Yes, gladly	345 86%	55 89%	164 89%	41 91%	77 78%	60 83%	125 90%	84 84%	76 85%	58 87%	57 83%	64 89%	107 88%
Reluctantly	21 5%	4 7%	11 6%	0 0%	6 6%	4 6%	5 4%	5 5%	6 7%	1 2%	5 8%	4 6%	4 3%
Avoid that restaurant	4 1%	1 2%	2 1%	1 2%	0 0%	1 2%	1 1%	2 2%	0 0%	0 0%	2 3%	0 0%	1 1%
Leave tray on table	19 5%	1 2%	6 4%	1 2%	10 10%	3 5%	7 5%	6 6%	3 3%	6 8%	3 5%	2 3%	6 5%
DK/NA	10 3%	0 0%	1 1%	2 5%	6 6%	4 5%	0 0%	2 2%	4 5%	2 3%	1 2%	1 2%	3 2%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	RENT OR OWN		TYPE OF HOME			CHILDREN			
	N=	OWN	RENT	MULTI-UNIT [SMALL]	MULTI-UNIT [LARGE]	SINGLE FAMILY	SINGLE NO KIDS	COUPLE NO KIDS	SINGLE w/ KID	COUPLE w/ KID
TOTAL										
N=	400 100	275 100	114 100	55 100	64 100	261 100	133 100	118 100	26 100	111 100
Q13 PLASTIC FOAM BAN IN SEATTLE										
FAVOR	273 68%	199 72%	70 61%	35 64%	40 62%	187 72%	81 61%	81 68%	20 74%	84 75%
OPPOSE	101 25%	62 22%	36 32%	15 28%	19 29%	60 23%	42 32%	27 23%	7 26%	23 21%
DK/NA	25 6%	15 5%	7 6%	4 8%	5 8%	14 5%	10 7%	10 9%	0 0%	4 4%
Q14 WHAT ACTION SHOULD CITY GOVERNMENT TAKE ON PLASTICS										
No ban without assured quality replacements	167 42%	112 41%	52 45%	27 49%	22 35%	111 42%	54 40%	54 45%	13 51%	44 40%
Ban now- replacements are available	209 52%	147 54%	58 51%	25 46%	40 62%	136 52%	73 55%	60 51%	12 46%	58 52%
DK/NA	23 6%	15 6%	4 4%	3 5%	2 3%	15 6%	6 5%	4 4%	1 3%	9 8%
Q15 WILLING TO SEPARATE FOOD WASTE IN RESTAURANT										
Yes, gladly	345 86%	238 86%	101 88%	47 85%	56 87%	227 87%	109 82%	100 85%	26 97%	102 92%
Reluctantly	21 5%	15 5%	5 5%	2 4%	3 5%	15 6%	9 7%	5 4%	0 0%	5 5%
Avoid that restaurant	4 1%	2 1%	2 2%	1 2%	0 0%	3 1%	1 1%	1 1%	1 3%	1 1%
Leave tray on table	19 5%	14 5%	4 4%	3 6%	4 6%	11 4%	12 9%	5 5%	0 0%	2 2%
DK/NA	10 3%	6 2%	2 2%	2 4%	1 1%	5 2%	1 1%	6 5%	0 0%	1 1%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	AREA OF SEATTLE					
	N=	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL							
N=	400 100	94 100	77 100	72 100	59 100	73 100	25 100
Q13 PLASTIC FOAM BAN IN SEATTLE							
FAVOR	273 68%	65 69%	53 70%	44 62%	39 66%	52 72%	19 76%
OPPOSE	101 25%	23 24%	17 23%	25 34%	15 26%	18 25%	3 12%
DK/NA	25 6%	6 7%	6 8%	3 4%	4 7%	3 4%	3 12%
Q14 WHAT ACTION SHOULD CITY GOVERNMENT TAKE ON PLASTICS							
No ban without assured quality replacements	167 42%	45 49%	33 43%	26 36%	20 34%	31 43%	11 45%
Ban now- replacements are available	209 52%	44 47%	39 51%	40 55%	34 58%	38 52%	14 55%
DK/NA	23 6%	4 5%	4 6%	6 9%	4 7%	4 6%	0 0%
Q15 WILLING TO SEPARATE FOOD WASTE IN RESTAURANT							
Yes, gladly	345 86%	85 90%	68 89%	58 81%	52 90%	65 88%	17 65%
Reluctantly	21 5%	4 4%	4 6%	2 3%	3 5%	5 7%	2 8%
Avoid that restaurant	4 1%	1 1%	1 1%	0 0%	1 2%	0 0%	1 4%
Leave tray on table	19 5%	2 2%	3 4%	8 10%	1 2%	1 1%	5 18%
DK/NA	10 3%	2 2%	0 0%	4 6%	1 2%	2 3%	1 4%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	AREA OF SEATTLE					
	N=	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL							
N=	400 100%	94 100%	77 100%	72 100%	59 100%	73 100%	25 100%
GENDER							
MALE	192 48%	43 46%	41 53%	31 43%	31 53%	31 42%	14 57%
FEMALE	208 52%	50 54%	36 47%	41 57%	27 47%	42 58%	11 43%
CHILDREN							
SINGLE NO KIDS	133 34%	21 23%	19 26%	36 51%	28 49%	19 26%	10 42%
COUPLE NO KIDS	118 30%	34 38%	19 26%	22 32%	15 26%	22 31%	5 21%
SINGLE w/ KID	26 7%	5 5%	4 5%	2 3%	3 5%	11 15%	3 11%
COUPLE w/ KID	111 29%	31 34%	31 43%	10 14%	12 21%	20 28%	6 26%
EMPLOYMENT							
PUBLIC SECTOR	61 16%	13 14%	22 30%	7 9%	7 12%	9 12%	4 17%
PRIVATE SECTOR	184 47%	45 50%	28 37%	33 46%	26 46%	41 58%	11 47%
NOT WORKING	45 12%	11 12%	6 8%	11 15%	8 14%	9 13%	0 0%
RETIRED	99 25%	22 25%	19 25%	21 29%	16 27%	12 18%	9 36%
ETHNICITY							
WHITE	328 86%	79 89%	64 86%	63 89%	47 86%	63 89%	12 51%
MINOR- ITY	55 14%	10 11%	10 14%	7 11%	8 14%	8 11%	11 49%
INCOME							
under 25K	67 20%	12 16%	10 16%	19 33%	9 19%	12 19%	5 24%
25-50K	68 21%	9 12%	17 26%	11 19%	9 19%	15 24%	8 38%
50-75K	72 22%	24 32%	11 17%	9 15%	13 27%	11 18%	4 19%
above 75K	122 37%	31 41%	27 41%	19 34%	16 35%	24 39%	4 19%

ELWAY RESEARCH, INC. November 2007

SPU Plastic Recycling Survey

	TOTAL	AREA OF SEATTLE					
	N=	NORTHWEST	NORTHEAST	WEST	EAST	SOUTHWEST	SOUTHEAST
TOTAL							
N=	400 100%	94 100%	77 100%	72 100%	59 100%	73 100%	25 100%
GENDER							
MALE	192 48%	43 46%	41 53%	31 43%	31 53%	31 42%	14 57%
FEMALE	208 52%	50 54%	36 47%	41 57%	27 47%	42 58%	11 43%
AGE							
18-34	51 13%	10 11%	7 10%	8 11%	8 14%	13 18%	4 17%
35-54	173 44%	49 53%	34 45%	29 40%	21 37%	34 46%	7 28%
55-64	86 22%	18 19%	17 23%	14 20%	14 24%	17 23%	6 24%
65+	84 21%	16 17%	16 21%	21 29%	14 25%	10 13%	8 30%
FAST FOOD							
DAILY	73 18%	13 14%	15 20%	18 24%	10 18%	11 15%	5 21%
WEEKLY	138 35%	42 45%	21 28%	23 31%	24 41%	20 28%	7 28%
MONTHLY	100 25%	23 24%	21 27%	19 27%	10 18%	22 29%	5 20%
RARE/NEVER	89 22%	16 17%	19 25%	13 18%	14 24%	20 27%	8 31%
RENT OR OWN							
OWN	275 71%	76 83%	54 74%	44 62%	32 56%	55 75%	14 59%
RENT	114 29%	15 17%	19 26%	26 38%	25 44%	18 25%	9 41%
TYPE OF HOME							
MULTI- UNIT [SMALL]	55 14%	17 18%	8 11%	15 22%	8 15%	7 9%	0 0%
MULTI- UNIT [LARGE]	64 17%	9 10%	6 9%	24 36%	15 29%	7 10%	3 11%
SINGLE FAMILY	261 69%	66 72%	57 80%	28 42%	29 56%	58 81%	22 89%

ELWAY RESEARCH, INC. November 2007

APPENDIX I

Focus Group and Meeting Attendees

Focus Group and Meeting Attendees

- Focus Group Attendees:

  - Female, Pharmacy Manager, Large chain grocery store
  - Male, Owner, Privately owned book store
  - Female, Manager, Large chain department store
  - Female, Assistant Manager, Privately owned clothing store
  - Male, Manager, Privately owned book store
  - Female, Manager, Community owned grocery store
  - Female, Pharmacy Manager, Large chain grocery store
  - Female, Manager, Privately owned general store
  - Male, Part owner, Privately owned convenience store
  - Male, Part owner, privately owned convenience store)

- People for Puget Sound
- Foam Free Seattle
- Bring Your Own Bag (BYOB)
- Cedar Grove Composting
- The Recycling Professionals, Inc.
- Timbron International, Inc.
- American Chemistry Council

In addition, the Seattle Solid Waste Advisory Committee was informed of the study parameters and input sought from its members.

APPENDIX J

Assumptions, Calculations, and Full Results of the Model for Disposable Shopping Bags

Assumptions, Calculations, and Full Results of the Model for Disposable Shopping Bags

Assumptions are detailed on the model output sheets for each strategy scenario:

- Bag source and switching assumptions are contained on page J-4.
- Current bag consumption and Number of Disposable Bags are contained on page J-5
  - Waste composition based on SPU 2006
  - Plastic Bag proportion of waste composition category based on personal communication with Sky Valley Associates.
  - Paper Bag proportion of waste composition category based on personal communication with Sky Valley Associates.
  - Bag weight based on published information from Nolan-ITU 2003, ACG 2006, and GHK 2006.
- Waste generation growth rate, switching periods, bag exchange ratios (number of disposable plastic bags displaced by use of one alternative bag), and affect of switching assumptions on plastic bag use tonnage and numbers (by alternative product) over 30 years is contained on page J-6
  - Waste generation growth based on SPU 2006, and revisions made during SPU 2007.
  - Bag exchange ratios based on published information from Nolan-ITU 2003, ACG 2006, and GHK 2006.
- Waste generation growth rate, switching periods, and affect of switching assumptions on paper bag use tonnage and numbers (by alternative product) over 30 years is contained on page J-7
- Bag cost, bag weight, paper/plastic use proportions, existing recycling and composting rates and projected maximums rates, and impact on waste recycled, composted, and landfilled (tons) over 30 years is contained on page J-8
- Environmental Life cycle inventory data is contained on page J-9

- Environmental Life cycle impacts of plastic bags for environmental categories evaluated, over 30 years, contained on page J-10
- Environmental Life cycle impacts of paper bags for environmental categories evaluated, over 30 years, contained on page J-11
- Environmental Life cycle impacts of compostable bags for environmental categories evaluated, over 30 years, contained on page J-12
- Environmental Life cycle impacts of reusable bags for environmental categories evaluated, over 30 years, contained on page J-13
- Environmental Life cycle impacts of all bags for environmental categories evaluated, over 30 years, contained on page J-14
- Garbage bin liner environmental life cycle impacts are assumed to be equal to those of disposable plastic shopping bags.

We made the following assumptions concerning economic costs and benefits:

- Economic costs and benefits are calculated on page J-15.
- Consumers are currently not charged for shopping bags, however, the cost to retailers (which includes the purchase, transport and storage costs of the bags) is passed on to the consumer, embedded within the price of goods.
- Bag costs for consumers estimated based on per unit bag costs (see Alternative Products) and bag use numbers (page J-8).
- Retailer costs for shopping bags is assumed to be 99 percent of the cost passed along to consumers embedded within the price of goods
- An ARF would be set at $0.15 on each bag. The amount to be paid was derived from that amount and the bag numbers and types calculated by the model for each of the 30 years. All retail outlets are considered covered by the ARF.
- ARF revenue to be split equally between City of Seattle and affected retailers to be used for waste reduction, recycling and reusable bag education.
- City of Seattle annual labor costs: Program manager, $86,000; enforcement/inspection, $56,000, based on City of Seattle labor category rates.

- City of Seattle annual program marketing costs: $60,000 per increment
- City of Seattle taxes and fees on solid waste hauling and disposal from SMC 5.48.055**.**
- Other costs due to bags and food service items based on analysis in Appendix O.
- Litter cleanup costs based on proposed 2008 SPU budget and proposed 2008 SDOT budget.
- Garbage bin liner costs are contained on page J-8 of model output sheets
- Household expenditures based on additional garbage bin liners purchased and reusable bags purchased.
- Alternative product sales based on additional garbage bin liners purchased and reusable bags purchased. Alternative product costs based on 97 percent of alternative product sales.
- Training and staffing attributable to strategy implementation based on $12.00 per hour for up to 45 employees for 1 to 10 hours per year, for an average of 40 large retail stores. Business count from Seattle business license database (Seattle 2007f).
- Hauling, recycling and disposal rates based on a contracted price, not a per ton price. As a result, per ton estimates are based on SPU data and contractor reported totals for contracted collection and processing.
- Regional benefits calculated as manufacturer costs for producing shopping bags, assumed to be 95 percent of the cost passed along to consumers embedded within the price of goods, multiplied by estimated percentage of bags used produced in Washington. Estimates of production percentage based on Washington Department of Revenue manufacturing statistics for 2006 and Census 2000.

Disposable Bag Policy Option 0
Status Quo Recycling
Use and Switching Assumptions

		Bag Source	Switching Assumptions					
		Plastic	*Continue Plastic Bag*	*Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets		60%	100%	0%	0%	0%	0%	0%
Other Food and Restaurant		15%	100%	0%	0%	0%	0%	0%
General Merchandise and Apparel		10%	100%	0%	0%	0%	0%	0%
Fast Food and Convenience		6%	100%	0%	0%	0%	0%	0%
Other Retail		9%	100%	0%	0%	0%	0%	0%
	Total	100%	100%	0%	0%	0%	0%	0%
		Paper	*Continue Paper Bag*	*Plastic Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets		60%	100%	0%	0%	0%	0%	0%
Other Food and Restaurant		15%	100%	0%	0%	0%	0%	0%
General Merchandise and Apparel		10%	100%	0%	0%	0%	0%	0%
Fast Food and Convenience		6%	100%	0%	0%	0%	0%	0%
Other Retail		9%	100%	0%	0%	0%	0%	0%
	Total	100%	100%	0%	0%	0%	0%	0%

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Number of Disposable Bags and Alternatives (millions)

	2004 Use		*Switching Assumptions*							
	Plastic	*Paper*	*Continue Plastic Bag*	*Continue with Paper Bag*	*Additional Plastic Bag*	*Additional Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Replacement Ratio			1	1	1	2.5	170	1	511	4.0
Supermarkets	175,515	40,823	175,515	40,823	-	-	-	-	-	-
Other Food and Restaurant	43,879	10,206	43,879	10,206	-	-	-	-	-	-
General Merchandise and Apparel	29,253	6,804	29,253	6,804	-	-	-	-	-	-
Fast Food and Convenience	17,552	4,082	17,552	4,082	-	-	-	-	-	-
Other Retail	26,327	6,123	26,327	6,123	-	-	-	-	-	-
Total	292,526	68,038	292,526	68,038	-	-	-	-	-	-

	2004 Comp.			
Est. 2008 SF/MF Waste Generated		291,578		
Grocery/Bread Bags	0.82%	2,377	80%	
Plastic Grocery Bags (Tons)		1,901		
Avg. Plastic Grocery Bag Weight		0.013		
Plastic Grocery Bags		292,525,673		
2004 Seattle Population		572,600		260,000
Annual Per Plastic Capita Bag Use		511	0.81	1,125
Est. 2008 SF/MF Waste Generated		291,578		
OCC/Kraft Paper	6.03%	17,592	15%	
Mixed Low Grade	9.59%	27,950	2%	
Paper Grocery Bags (Tons)		3,198		
Avg. Paper Grocery Bag Weight		0.094		
Paper Grocery Bags		68,038,177		
2004 Seattle Population		572,600		
Annual Per Capita Paper Bag Use		119	0.19	

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Incr. Growth					13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
	Cumm Growth					13	27	41	54	68	82	96	111	125	139	154	168	183	198	213	227	243	258	273	289	304	320	335	351	367	383	399	416	432
	Continue Plas	7	100%		0%	14%	29%	43%	57%	71%	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Switch to Pap	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

TONS																																		
	Keep Plastic				1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Paper				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS AVOIDED		Exchange	Weight																															
	Keep Plastic	1	0.013		292,526	294,599	296,687	298,790	300,908	303,041	305,189	307,353	309,531	311,725	313,935	316,160	318,401	320,658	322,931	325,220	327,525	329,847	332,185	334,539	336,911	339,299	341,704	344,126	346,565	349,022	351,496	353,987	356,496	359,023
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS USED		Exchange	Weight																															
	Plastic	1	0.013		292,526	294,599	296,687	298,790	300,908	303,041	305,189	307,353	309,531	311,725	313,935	316,160	318,401	320,658	322,931	325,220	327,525	329,847	332,185	334,539	336,911	339,299	341,704	344,126	346,565	349,022	351,496	353,987	356,496	359,023
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS USED		Exchange	Weight																															
	Plastic	1	0.013		1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Paper	2	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Incr. Growth					23	23	23	23	23	23	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	27	27	27	27	27	28
	Cumm Growth					23	45	68	92	115	138	162	186	210	234	258	283	308	332	357	383	408	434	459	485	511	538	564	591	618	645	672	699	727
	Continue Pap	7	100%		0%	14%	29%	43%	57%	71%	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Switch to Plas	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

TONS																																		
	Keep Paper				3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Plastic				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS AVOIDED		Exchange	Weight																															
	Keep Paper	1	0.094		68,038	68,520	69,006	69,495	69,988	70,484	70,984	71,487	71,993	72,504	73,018	73,535	74,056	74,581	75,110	75,642	76,179	76,719	77,262	77,810	78,362	78,917	79,476	80,040	80,607	81,179	81,754	82,333	82,917	83,505
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS USED		Exchange	Weight																															
	Keep Paper	1	0.094		68,038	68,520	69,006	69,495	69,988	70,484	70,984	71,487	71,993	72,504	73,018	73,535	74,056	74,581	75,110	75,642	76,179	76,719	77,262	77,810	78,362	78,917	79,476	80,040	80,607	81,179	81,754	82,333	82,917	83,505
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BAGS USED		Exchange	Weight																															
	Keep Paper	1	0.094		3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Plastic	2	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Amount of Waste Generated (tons)

Bag Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight (Lbs.)	Use	Life Exp.
Avg. Plastic Grocery Bag Weight	$ -	$ 0.03	0.013		Single Trip *
Avg. Paper Grocery Bag Weight	$ -	$ 0.15	0.094		Single Trip *
Avg. Woven HDPE Reusable Bag		$ 1.00	0.288	10%	520 Trips
Avg. Non-Woven PP Reusable Bag		$ 1.00	0.145	90%	520 Trips
Avg. Compostable "Plastic" Bag		$ 0.08	0.027		Single Trip
Avg. Garbage Bag		$ 0.09	0.033		Single Use

* Includes 1 time reuse as garbage bin liner

TONS		*Exchange*	*Weight*		*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
PLASTIC BAGS USED	Plastic				1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Recycle Rate	15	20%		15%	15%	16%	16%	16%	17%	17%	17%	18%	18%	18%	19%	19%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			11,876	285	294	302	311	319	328	337	346	355	365	374	384	393	403	413	423	426	429	432	435	438	441	444	447	451	454	457	460	463	467
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			51,436	1,616	1,621	1,626	1,631	1,636	1,641	1,646	1,652	1,657	1,661	1,666	1,671	1,676	1,681	1,686	1,691	1,703	1,715	1,727	1,740	1,752	1,764	1,777	1,789	1,802	1,815	1,828	1,841	1,854	1,867
PAPER BAGS USED	Paper				3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Recycle Rate	5	83%		81%	81%	82%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			88,184	2,590	2,621	2,653	2,685	2,717	2,750	2,769	2,789	2,808	2,828	2,848	2,869	2,889	2,909	2,930	2,951	2,972	2,993	3,014	3,035	3,057	3,079	3,100	3,122	3,144	3,167	3,189	3,212	3,235	3,258
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			18,295	608	599	590	581	572	563	567	571	575	579	583	588	592	596	600	604	609	613	617	622	626	631	635	640	644	649	653	658	663	667
REUSE BAGS USED	Reuse				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	20	10%		0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%	6%	6%	7%	7%	8%	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSTABLE BAGS USED	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		0%	1%	3%	4%	5%	7%	8%	9%	11%	12%	13%	15%	16%	17%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BAGS USED	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL BAGS USED																																		
	Generated			169,791	5,099	5,135	5,172	5,208	5,245	5,283	5,320	5,358	5,396	5,434	5,472	5,511	5,550	5,590	5,629	5,669	5,709	5,750	5,791	5,832	5,873	5,915	5,956	5,999	6,041	6,084	6,127	6,171	6,214	6,258
	Recycled			100,060	2,875	2,915	2,955	2,996	3,037	3,078	3,106	3,135	3,164	3,193	3,223	3,252	3,282	3,312	3,343	3,374	3,398	3,422	3,446	3,470	3,495	3,520	3,545	3,570	3,595	3,621	3,646	3,672	3,698	3,724
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			69,731	2,224	2,220	2,217	2,213	2,209	2,205	2,214	2,223	2,232	2,241	2,250	2,259	2,268	2,277	2,286	2,296	2,312	2,328	2,345	2,361	2,378	2,395	2,412	2,429	2,446	2,464	2,481	2,499	2,516	2,534

Disposable Bag Policy Option 4
ARF on All Bags
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"												
			Functional Unit	Application	Commercial Example	Non-Renewable Energy	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
						MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq			Kg/year	m2/year		ton		
Type of "Plastic"																					
.209	Reusable	PP	1	Fiber		96.5			9.330144	0.022000			4.784689			0.001153	0.008947			99.5% landfill; 0% recycled; 0% reuse/landfill; .5% litter	1,2
.216	Reusable	HDPE	1	Woven					2.921296	0.009000			0.000000			0.000495	0.006852				
3.12	Petro	HDPE	1	Film		67.3			1.948718	0.031731			0.641026			2.500000	2.000000			78.5% landfill; 2% recycled; 19% reuse/landfill; .5% litter	1,2
	Bio	TPS	1	Film		53.5			1.210000		5.300000	10.400000	1.100000							Composting	11
3.12	Bio	TPS/PBSorA	1	Film	Bionelle				2.016026	0.006090			0.875000			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PBAT	1	Film	Eco-Flex				1.977564	0.010897			1.301282			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	TPS/PCL	1	Film	Mater-Bi				2.235154	0.013064			1.583333			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PE	1	Film	Earthstrength				2.080128	0.023077			0.826923			0.002500	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	PLA	1	Film	Natureworks				4.772080	0.025404			2.919872			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
22.1	Paper	Kraft	1	Film		32.6			1.376851	0.012866			1.200795			0.000014	0.025000			39.5% landfill; 60% recycled; 0% reuse/landfill; .5% litter	1,2
A	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)		29.1			0.007000			7.060000	0.671000							Incineration	4
B	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)					0.074000											Composting	4
A	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)		33.6			0.794000			5.480000	0.280000							Incineration	4
B	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)					0.002000											Landfilling (no gas recovery)	4
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000											Incineration	5
	Petro	HDPE	1	Pellet		73.8															6
	Petro	LLDPE	1	Pellet		72.3			4.540000											Incineration	7
	Petro	LDPE	1	Pellet		80.6			5.040000											Incineration	7
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000											Incineration	7
	Bio	TPS	1	Pellet		25.4			1.140000											Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000											Incineration	10
	Bio	PHA *		Pellet			90.0	0.0													6

References

1 Nolan-ITU 2003. The Impacts of Degradable Plastic Bags in Australia
2 Nolan-ITU 2002. Plastic Shopping Bags - Analysis of Levies and Environmental Impacts
4 LCA of biodegradable multilayer film from biopolymers. Daniel Garraín1, Rosario Vidal1, Pilar Martínez2, Vicente Franco1, David Cebrián-Tarrasón1, 1GID, Engineering Design Group, Dpt. MEC, Universitat Jaume I Castellón, Av. Sos Baynat s/n, 12071 Castellón (Spain)
5 Cradle-Gate Data for petrochemical polymers from APME (1999).
6 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
7 Cradle-Gate Data for petrochemical polymers from APME (1999).
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001
11 Composto 1998

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Environmental Categories - PLASTIC

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Plastic with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	61.1	GJ	3,865,888	116,101	116,924	117,753	118,588	119,428	120,275	121,127	121,986	122,851	123,722	124,598	125,482	126,371	127,267	128,169	129,077	129,992	130,914	131,842	132,776	133,717	134,665	135,620	136,581	137,549	138,524	139,506	140,495	141,491	142,494
NolanITU	GHG Emissions	1,767.8	Kg CO2e	111,926,666	3,361,412	3,385,238	3,409,234	3,433,399	3,457,736	3,482,246	3,506,929	3,531,787	3,556,821	3,582,033	3,607,423	3,632,994	3,658,745	3,684,679	3,710,797	3,737,101	3,763,590	3,790,267	3,817,134	3,844,191	3,871,439	3,898,881	3,926,518	3,954,350	3,982,379	4,010,608	4,039,036	4,067,666	4,096,498	4,125,535
NolanITU	Resource Depletion (Abiotic)	28.8	Kg Sb eq	1,822,490	54,734	55,121	55,512	55,906	56,302	56,701	57,103	57,508	57,915	58,326	58,739	59,156	59,575	59,997	60,423	60,851	61,282	61,717	62,154	62,595	63,038	63,485	63,935	64,388	64,845	65,304	65,767	66,233	66,703	67,176
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	581.5	g PO4 eq	36,817,982	1,105,728	1,113,565	1,121,458	1,129,408	1,137,413	1,145,476	1,153,595	1,161,772	1,170,007	1,178,300	1,186,652	1,195,064	1,203,535	1,212,066	1,220,657	1,229,309	1,238,023	1,246,799	1,255,636	1,264,536	1,273,500	1,282,527	1,291,618	1,300,773	1,309,993	1,319,279	1,328,630	1,338,048	1,347,532	1,357,084
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	2,268.0	Kg/year	143,590,131	4,312,337	4,342,904	4,373,688	4,404,690	4,435,912	4,467,355	4,499,020	4,530,911	4,563,027	4,595,371	4,627,944	4,660,748	4,693,785	4,727,056	4,760,562	4,794,307	4,828,290	4,862,514	4,896,981	4,931,692	4,966,649	5,001,854	5,037,309	5,073,015	5,108,974	5,145,187	5,181,658	5,218,387	5,255,376	5,292,628
NolanITU	Litter Aesthetics	1,814.4	m2/year	114,872,105	3,449,870	3,474,324	3,498,950	3,523,752	3,548,729	3,573,884	3,599,216	3,624,729	3,650,422	3,676,297	3,702,355	3,728,599	3,755,028	3,781,645	3,808,450	3,835,445	3,862,632	3,890,011	3,917,585	3,945,354	3,973,319	4,001,483	4,029,847	4,058,412	4,087,179	4,116,150	4,145,326	4,174,709	4,204,301	4,234,102
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bin Liners				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Environmental Categories - PAPER

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	106,479	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Paper with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	29.6	GJ	3,151,380	94,643	95,314	95,990	96,670	97,355	98,045	98,740	99,440	100,145	100,855	101,570	102,290	103,015	103,745	104,480	105,221	105,967	106,718	107,474	108,236	109,003	109,776	110,554	111,338	112,127	112,922	113,722	114,528	115,340	116,158
NolaniTU	GHG Emissions	1249.05706	Kg CO2e	132,997,863	3,994,228	4,022,540	4,051,053	4,079,768	4,108,686	4,137,810	4,167,139	4,196,677	4,226,424	4,256,382	4,286,553	4,316,937	4,347,537	4,378,353	4,409,388	4,440,643	4,472,120	4,503,819	4,535,744	4,567,894	4,600,273	4,632,881	4,665,720	4,698,792	4,732,098	4,765,640	4,799,420	4,833,440	4,867,701	4,902,204
NolaniTU	Resource Depletion (Abiotic)	11.6715168	Kg Sb eq	1,242,767	37,323	37,588	37,854	38,122	38,393	38,665	38,939	39,215	39,493	39,773	40,055	40,339	40,625	40,912	41,202	41,495	41,789	42,085	42,383	42,684	42,986	43,291	43,598	43,907	44,218	44,531	44,847	45,165	45,485	45,807
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	1089.34157	g PO4 eq	115,991,579	3,483,490	3,508,182	3,533,049	3,558,092	3,583,313	3,608,713	3,634,292	3,660,053	3,685,996	3,712,124	3,738,436	3,764,935	3,791,622	3,818,498	3,845,565	3,872,823	3,900,275	3,927,921	3,955,763	3,983,803	4,012,041	4,040,479	4,069,119	4,097,962	4,127,010	4,156,263	4,185,724	4,215,394	4,245,273	4,275,365
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	0.01236771	Kg/year	1,317	40	40	40	40	41	41	41	42	42	42	42	43	43	43	44	44	44	45	45	45	46	46	46	47	47	47	48	48	48	49
NolaniTU	Litter Aesthetics	22.6796	m2/year	2,414,892	72,525	73,039	73,556	74,078	74,603	75,132	75,664	76,201	76,741	77,285	77,833	78,384	78,940	79,499	80,063	80,630	81,202	81,778	82,357	82,941	83,529	84,121	84,717	85,318	85,922	86,532	87,145	87,763	88,385	89,011
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Environmental Categories - REUSEABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	87.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	GHG Emissions	8464.15694	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Resource Depletion (Abiotic)	19.958048	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	4340.5933	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	1.04608299	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Aesthetics	8.11690947	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Environmental Categories - COMPOSTABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	48.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	GHG Emissions	1794.01451	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Resource Depletion (Abiotic)	9.88597949	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1180.50226	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01238655	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Aesthetics	22.6796	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Impact on Environmental Categories - TOTAL

Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Waste Generated			169,791	5,099	5,135	5,172	5,208	5,245	5,283	5,320	5,358	5,396	5,434	5,472	5,511	5,550	5,590	5,629	5,669	5,709	5,750	5,791	5,832	5,873	5,915	5,956	5,999	6,041	6,084	6,127	6,171	6,214	6,258
Total	***Factor***	***Unit***																															
Non-Renewable Energy		GJ	7,017,268	210,744	212,238	213,743	215,258	216,784	218,320	219,868	221,426	222,996	224,576	226,168	227,771	229,386	231,012	232,649	234,298	235,959	237,632	239,316	241,012	242,721	244,441	246,174	247,919	249,676	251,446	253,228	255,023	256,831	258,651
GHG Emissions		Kg CO2e	244,924,529	7,355,639	7,407,778	7,460,286	7,513,167	7,566,422	7,620,055	7,674,068	7,728,464	7,783,246	7,838,415	7,893,976	7,949,931	8,006,282	8,063,033	8,120,186	8,177,744	8,235,710	8,294,087	8,352,877	8,412,085	8,471,712	8,531,762	8,592,237	8,653,141	8,714,477	8,776,248	8,838,456	8,901,106	8,964,199	9,027,740
Resource Depletion (Abiotic)		Kg Sb eq	3,065,257	92,057	92,709	93,366	94,028	94,695	95,366	96,042	96,723	97,408	98,099	98,794	99,494	100,199	100,910	101,625	102,345	103,071	103,801	104,537	105,278	106,024	106,776	107,533	108,295	109,063	109,836	110,614	111,398	112,188	112,983
Ozone		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidification		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eutrophication		g PO4 eq	152,809,561	4,589,218	4,621,747	4,654,508	4,687,500	4,720,726	4,754,188	4,787,887	4,821,825	4,856,003	4,890,424	4,925,089	4,959,999	4,995,157	5,030,564	5,066,222	5,102,133	5,138,298	5,174,720	5,211,399	5,248,339	5,285,541	5,323,006	5,360,737	5,398,735	5,437,003	5,475,542	5,514,354	5,553,441	5,592,806	5,632,449
Use of Nature (Land Use)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	143,591,448	4,312,377	4,342,944	4,373,728	4,404,730	4,435,952	4,467,396	4,499,062	4,530,952	4,563,069	4,595,413	4,627,987	4,660,791	4,693,828	4,727,099	4,760,606	4,794,351	4,828,334	4,862,559	4,897,026	4,931,737	4,966,695	5,001,900	5,037,355	5,073,061	5,109,020	5,145,234	5,181,705	5,218,435	5,255,424	5,292,676
Litter Aesthetics		m2/year	117,286,997	3,522,395	3,547,362	3,572,507	3,597,830	3,623,332	3,649,015	3,674,881	3,700,929	3,727,162	3,753,582	3,780,188	3,806,983	3,833,968	3,861,144	3,888,513	3,916,076	3,943,834	3,971,789	3,999,942	4,028,295	4,056,848	4,085,604	4,114,564	4,143,729	4,173,101	4,202,681	4,232,471	4,262,472	4,292,686	4,323,113
Human Toxicity		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 0
Status Quo Recycling
Cost Benefit Calculations

Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***	
Recycle Rate			56%	57%	57%	58%	58%	58%	58%	59%	59%	59%	59%	59%	59%	59%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	
Compost Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Waste Generated		169,791	5,099	5,135	5,172	5,208	5,245	5,283	5,320	5,358	5,396	5,434	5,472	5,511	5,550	5,590	5,629	5,669	5,709	5,750	5,791	5,832	5,873	5,915	5,956	5,999	6,041	6,084	6,127	6,171	6,214	6,258	
Recycled		100,060	2,875	2,915	2,955	2,996	3,037	3,078	3,106	3,135	3,164	3,193	3,223	3,252	3,282	3,312	3,343	3,374	3,398	3,422	3,446	3,470	3,495	3,520	3,545	3,570	3,595	3,621	3,646	3,672	3,698	3,724	
Composted		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Landfilled		69,731	2,224	2,220	2,217	2,213	2,209	2,205	2,214	2,223	2,232	2,241	2,250	2,259	2,268	2,277	2,286	2,296	2,312	2,328	2,345	2,361	2,378	2,395	2,412	2,429	2,446	2,464	2,481	2,499	2,516	2,534	
	Escalation Rate	0%																															
	Discount Rate	3%																															
SPU/City of Seattle																																	
Economic Benefits/(Costs)																																	
Administration		($7,938)	($405.00)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	($405)	
Inspection and Enforcement		($1,686)	($86.00)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	
Program Marketing, Monitoring, Education, and Research		($1,960)	($100.00)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	($100)	
Recycling		$0																															
11.5% $ 21.15	Hauling, Transfer and Disposal	$958	$47	$47	$47	$47	$47	$47	$47	$47	$47	$48	$48	$48	$48	$48	$49	$49	$49	$50	$50	$50	$51	$51	$51	$52	$52	$52	$53	$53	$54	$54	
$ (460)	Other Costs Due to Bag/Foodservice ware	($18,735)	($875)	($881)	($887)	($893)	($900)	($906)	($913)	($919)	($925)	($932)	($939)	($945)	($952)	($959)	($966)	($972)	($979)	($986)	($993)	($1,000)	($1,007)	($1,015)	($1,022)	($1,029)	($1,036)	($1,044)	($1,051)	($1,058)	($1,066)	($1,073)		
Terrestrial Litter Control		($9,800)	($500.00)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	
Marine Litter Abatement		($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	
50%	Consumer ADF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Consumer		($39,553)																															
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Costs		($406,589)	($18,981)	($19,116)	($19,252)	($19,388)	($19,525)	($19,664)	($19,803)	($19,944)	($20,085)	($20,227)	($20,371)	($20,515)	($20,661)	($20,807)	($20,954)	($21,103)	($21,253)	($21,403)	($21,555)	($21,708)	($21,862)	($22,017)	($22,173)	($22,330)	($22,488)	($22,647)	($22,808)	($22,970)	($23,132)	($23,296)		
Consumer ADF		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Household Expenditure		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
$ (70)	Hauling	($7,646)	($357)	($359)	($362)	($365)	($367)	($370)	($372)	($375)	($378)	($380)	($383)	($386)	($389)	($391)	($394)	($397)	($400)	($402)	($405)	($408)	($411)	($414)	($417)	($420)	($423)	($426)	($429)	($432)	($435)	($438)		
$ (41) $ (5)	Recycling & Compositing	($321)	($14)	($15)	($15)	($15)	($15)	($15)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($19)		
$ (51)	Transfer and Disposal	($2,299)	($113)	($113)	($113)	($113)	($113)	($112)	($113)	($113)	($114)	($114)	($115)	($115)	($116)	($116)	($117)	($117)	($118)	($119)	($120)	($120)	($121)	($122)	($123)	($124)	($125)	($126)	($127)	($127)	($128)	($129)		
Retailer			($484.73)																														
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Rev		$406,589	$18,981	$19,116	$19,252	$19,388	$19,525	$19,664	$19,803	$19,944	$20,085	$20,227	$20,371	$20,515	$20,661	$20,807	$20,954	$21,103	$21,253	$21,403	$21,555	$21,708	$21,862	$22,017	$22,173	$22,330	$22,488	$22,647	$22,808	$22,970	$23,132	$23,296	
Bag/Foodservice ware Costs		($402,523)	($18,792)	($18,925)	($19,059)	($19,194)	($19,330)	($19,467)	($19,605)	($19,744)	($19,884)	($20,025)	($20,167)	($20,310)	($20,454)	($20,599)	($20,745)	($20,892)	($21,040)	($21,189)	($21,339)	($21,491)	($21,643)	($21,796)	($21,951)	($22,106)	($22,263)	($22,421)	($22,580)	($22,740)	($22,901)	($23,063)		
50%	Consumer ABF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Alt Product Sales		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Alt Product Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Administration		$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Training and Staff		$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Ammortized Capital		$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Regional																																	
Economic Benefits/(Costs)																																	
5%	Plastic Production	$8,929	$417	$420	$423	$426	$429	$432	$435	$438	$441	$444	$447	$451	$454	$457	$460	$463	$467	$470	$473	$477	$480	$484	$487	$490	$494	$497	$501	$504	$508	$512		
40%	Paper Production	$83,072	$3,878	$3,906	$3,933	$3,961	$3,989	$4,018	$4,046	$4,075	$4,104	$4,133	$4,162	$4,192	$4,221	$4,251	$4,281	$4,312	$4,342	$4,373	$4,404	$4,435	$4,467	$4,498	$4,530	$4,562	$4,595	$4,627	$4,660	$4,693	$4,726	$4,760	
0%	Reusable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
0%	Compostable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Total		($360,812)	($17,405)	($17,032)	($17,144)	($17,257)	($17,371)	($17,486)	($17,601)	($17,718)	($17,836)	($17,954)	($18,073)	($18,193)	($18,314)	($18,436)	($18,559)	($18,682)	($18,807)	($18,932)	($19,059)	($19,186)	($19,314)	($19,443)	($19,573)	($19,704)	($19,836)	($19,968)	($20,102)	($20,237)	($20,372)	($20,509)		
SPU/City of Seattle		($39,553)	($1,939)	($1,945)	($1,951)	($1,957)	($1,964)	($1,970)	($1,976)	($1,983)	($1,989)	($1,995)	($2,002)	($2,008)	($2,015)	($2,021)	($2,028)	($2,035)	($2,041)	($2,048)	($2,054)	($2,061)	($2,068)	($2,075)	($2,081)	($2,088)	($2,095)	($2,102)	($2,109)	($2,116)	($2,123)	($2,131)		
Consumer		($416,854)	($19,466)	($19,603)	($19,741)	($19,880)	($20,020)	($20,161)	($20,304)	($20,448)	($20,592)	($20,738)	($20,885)	($21,032)	($21,181)	($21,331)	($21,482)	($21,634)	($21,787)	($21,942)	($22,097)	($22,254)	($22,411)	($22,570)	($22,730)	($22,891)	($23,054)	($23,217)	($23,382)	($23,547)	($23,714)	($23,882)		
Retailer		$4,066	$190	$191	$193	$194	$195	$197	$198	$199	$201	$202	$204	$205	$207	$208	$210	$211	$213	$214	$216	$217	$219	$220	$222	$223	$225	$226	$228	$230	$231	$233		
Regional		$92,001	$4,295	$4,325	$4,356	$4,387	$4,418	$4,449	$4,481	$4,513	$4,545	$4,577	$4,609	$4,642	$4,675	$4,708	$4,741	$4,775	$4,809	$4,843	$4,877	$4,912	$4,947	$4,982	$5,017	$5,053	$5,088	$5,125	$5,161	$5,197	$5,234	$5,271		

Disposable Bag Policy Option 1
Enhanced Education
Use and Switching Assumptions

	Bag Source	Switching Assumptions					
	Plastic	*Continue Plastic Bag*	*Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	95%	0%	5%	0%	0%	0%
Other Food and Restaurant	15%	95%	0%	5%	0%	0%	0%
General Merchandise and Apparel	10%	95%	0%	5%	0%	0%	0%
Fast Food and Convenience	6%	95%	0%	5%	0%	0%	0%
Other Retail	9%	95%	0%	5%	0%	0%	0%
Total	100%	95%	0%	5%	0%	0%	0%
	Paper	*Continue Paper Bag*	*Plastic Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	95%	0%	5%	0%	0%	0%
Other Food and Restaurant	15%	95%	0%	5%	0%	0%	0%
General Merchandise and Apparel	10%	95%	0%	5%	0%	0%	0%
Fast Food and Convenience	6%	95%	0%	5%	0%	0%	0%
Other Retail	9%	95%	0%	5%	0%	0%	0%
Total	100%	95%	0%	5%	0%	0%	0%

Disposable Bag Policy Option 1
Enhanced Education
Impact on Number of Disposable Bags and Alternatives (millions)

	2004 Use		*Switching Assumptions*							
	Plastic	*Paper*	*Continue Plastic Bag*	*Continue with Paper Bag*	*Additional Plastic Bag*	*Additional Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Replacement Ratio			1	1	1	2.5	170	1	511	4.0
Supermarkets	175,515	40,823	166,740	38,782	-	-	1,752	-	-	-
Other Food and Restaurant	43,879	10,206	41,685	9,695	-	-	438	-	-	-
General Merchandise and Apparel	29,253	6,804	27,790	6,464	-	-	292	-	-	-
Fast Food and Convenience	17,552	4,082	16,674	3,878	-	-	175	-	-	-
Other Retail	26,327	6,123	25,011	5,817	-	-	263	-	-	-
Total	292,526	68,038	277,899	64,636	-	-	2,921	-	-	-

	2004 Comp.		
Est. 2008 SF/MF Waste Generated		291,578	
Grocery/Bread Bags	0.82%	2,377	80%
Plastic Grocery Bags (Tons)		1,901	
Avg. Plastic Grocery Bag Weight		0.013	
Plastic Grocery Bags		292,525,673	
2004 Seattle Population		572,600	
Annual Per Plastic Capita Bag Use		511	0.81
Est. 2008 SF/MF Waste Generated		291,578	
OCC/Kraft Paper	6.03%	17,592	15%
Mixed Low Grade	9.59%	27,950	2%
Paper Grocery Bags (Tons)		3,198	
Avg. Paper Grocery Bag Weight		0.094	
Paper Grocery Bags		68,038,177	
2004 Seattle Population		572,600	
Annual Per Capita Paper Bag Use		119	0.19

Disposable Bag Policy Option 1
Enhanced Education
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Incr. Growth					13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
	Cumm Growth					13	27	41	54	68	82	96	111	125	139	154	168	183	198	213	227	243	258	273	289	304	320	335	351	367	383	399	416	432
	Continue Plas	7	95%		0%	14%	27%	41%	54%	68%	81%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	Switch to Pap	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TONS																																		
	Keep Plastic				1,901	1,901	1,900	1,899	1,899	1,898	1,898	1,898	1,911	1,925	1,939	1,952	1,966	1,980	1,994	2,008	2,022	2,037	2,051	2,066	2,080	2,095	2,110	2,125	2,140	2,155	2,170	2,186	2,201	2,217
	Paper				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	14	29	43	57	71	86	100	101	101	102	103	103	104	105	106	106	107	108	109	109	110	111	112	113	113	114	115	116	117
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Plastic	1	0.013		292,526	292,406	292,300	292,209	292,131	292,068	292,019	291,985	294,055	296,139	298,238	300,352	302,481	304,625	306,784	308,959	311,149	313,354	315,576	317,812	320,065	322,334	324,619	326,920	329,237	331,571	333,921	336,288	338,672	341,072
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	2,193	4,387	6,582	8,777	10,973	13,170	15,368	15,477	15,586	15,697	15,808	15,920	16,033	16,147	16,261	16,376	16,492	16,609	16,727	16,846	16,965	17,085	17,206	17,328	17,451	17,575	17,699	17,825	17,951
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		292,526	292,406	292,300	292,209	292,131	292,068	292,019	291,985	294,055	296,139	298,238	300,352	302,481	304,625	306,784	308,959	311,149	313,354	315,576	317,812	320,065	322,334	324,619	326,920	329,237	331,571	333,921	336,288	338,672	341,072
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	3	5	8	10	13	15	18	18	18	18	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20	21	21	21	21
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		1,901	1,901	1,900	1,899	1,899	1,898	1,898	1,898	1,911	1,925	1,939	1,952	1,966	1,980	1,994	2,008	2,022	2,037	2,051	2,066	2,080	2,095	2,110	2,125	2,140	2,155	2,170	2,186	2,201	2,217
	Paper	2	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Incr. Growth					23	23	23	23	23	23	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	27	27	27	27	27	28
	Cumm Growth					23	45	68	92	115	138	162	186	210	234	258	283	308	332	357	383	408	434	459	485	511	538	564	591	618	645	672	699	727
	Continue Pap	7	95%		0%	14%	27%	41%	54%	68%	81%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	Switch to Plas	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TONS																																		
	Keep Paper				3,198	3,196	3,195	3,194	3,193	3,193	3,192	3,192	3,215	3,237	3,260	3,283	3,307	3,330	3,354	3,377	3,401	3,425	3,450	3,474	3,499	3,524	3,549	3,574	3,599	3,625	3,650	3,676	3,702	3,728
	Plastic				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	24	48	72	96	120	144	168	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	68,010	67,986	67,964	67,946	67,932	67,920	67,912	68,394	68,879	69,367	69,858	70,354	70,852	71,355	71,860	72,370	72,883	73,399	73,920	74,444	74,971	75,503	76,038	76,577	77,120	77,666	78,217	78,771	79,330
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	510	1,020	1,531	2,041	2,552	3,063	3,574	3,600	3,625	3,651	3,677	3,703	3,729	3,756	3,782	3,809	3,836	3,863	3,891	3,918	3,946	3,974	4,002	4,030	4,059	4,088	4,117	4,146	4,175
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	68,010	67,986	67,964	67,946	67,932	67,920	67,912	68,394	68,879	69,367	69,858	70,354	70,852	71,355	71,860	72,370	72,883	73,399	73,920	74,444	74,971	75,503	76,038	76,577	77,120	77,666	78,217	78,771	79,330
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	1	1	2	2	3	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		3,198	3,196	3,195	3,194	3,193	3,193	3,192	3,192	3,215	3,237	3,260	3,283	3,307	3,330	3,354	3,377	3,401	3,425	3,450	3,474	3,499	3,524	3,549	3,574	3,599	3,625	3,650	3,676	3,702	3,728
	Plastic	2	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Amount of Waste Generated (tons)

Bag Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight (Lbs.)	Use	Life Exp.
Avg. Plastic Grocery Bag Weight	$ -	$ 0.03	0.013		Single Trip *
Avg. Paper Grocery Bag Weight	$ -	$ 0.15	0.094		Single Trip *
Avg. Woven HDPE Reusable Bag		$ 1.00	0.288	10%	520 Trips
Avg. Non-Woven PP Reusable Bag		$ 1.00	0.145	90%	520 Trips
Avg. Compostable "Plastic" Bag		$ 0.08	0.027		Single Trip
Avg. Garbage Bag		$ 0.09	0.033		Single Use

* Includes 1 time reuse as garbage bin liner

TONS		*Exchange*	*Weight*		*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
PLASTIC BAGS USED	Plastic				1,901	1,901	1,900	1,899	1,899	1,898	1,898	1,898	1,911	1,925	1,939	1,952	1,966	1,980	1,994	2,008	2,022	2,037	2,051	2,066	2,080	2,095	2,110	2,125	2,140	2,155	2,170	2,186	2,201	2,217
	Recycle Rate	15	20%		15%	15%	16%	16%	16%	17%	17%	17%	18%	18%	18%	19%	19%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			11,342	285	291	298	304	310	316	323	329	338	346	355	364	374	383	392	402	404	407	410	413	416	419	422	425	428	431	434	437	440	443
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			49,185	1,616	1,609	1,602	1,595	1,589	1,582	1,575	1,569	1,574	1,578	1,583	1,588	1,593	1,597	1,602	1,607	1,618	1,629	1,641	1,653	1,664	1,676	1,688	1,700	1,712	1,724	1,736	1,749	1,761	1,774
PAPER BAGS USED	Paper				3,198	3,196	3,195	3,194	3,193	3,193	3,192	3,192	3,215	3,237	3,260	3,283	3,307	3,330	3,354	3,377	3,401	3,425	3,450	3,474	3,499	3,524	3,549	3,574	3,599	3,625	3,650	3,676	3,702	3,728
	Recycle Rate	5	83%		81%	81%	82%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			84,297	2,590	2,602	2,614	2,626	2,638	2,650	2,650	2,649	2,668	2,687	2,706	2,725	2,744	2,764	2,784	2,803	2,823	2,843	2,863	2,884	2,904	2,925	2,945	2,966	2,987	3,008	3,030	3,051	3,073	3,095
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			17,497	608	595	582	569	556	543	543	543	546	550	554	558	562	566	570	574	578	582	586	591	595	599	603	608	612	616	621	625	629	634
REUSE BAGS USED	Reuse				-	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Recycle Rate	20	10%		0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%	6%	6%	7%	7%	8%	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			3	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			42	-	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
COMPOSTABLE BAGS USED	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		0%	1%	3%	4%	5%	7%	8%	9%	11%	12%	13%	15%	16%	17%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BAGS USED	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL BAGS USED																																		
	Generated			162,366	5,099	5,097	5,096	5,094	5,093	5,092	5,092	5,091	5,127	5,164	5,200	5,237	5,274	5,312	5,349	5,387	5,426	5,464	5,503	5,542	5,581	5,621	5,660	5,701	5,741	5,782	5,823	5,864	5,905	5,947
	Recycled			95,643	2,875	2,893	2,911	2,930	2,948	2,966	2,972	2,978	3,006	3,034	3,061	3,090	3,118	3,147	3,176	3,205	3,228	3,251	3,274	3,297	3,320	3,344	3,368	3,391	3,415	3,440	3,464	3,489	3,513	3,538
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			66,724	2,224	2,204	2,184	2,165	2,145	2,126	2,119	2,113	2,122	2,130	2,139	2,148	2,156	2,165	2,174	2,182	2,198	2,213	2,229	2,245	2,261	2,277	2,293	2,309	2,326	2,342	2,359	2,375	2,392	2,409

Disposable Bag Policy Option 1
Enhanced Education
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"											
			Functional Unit	Application	Commercial Example	Non-Renewable Energy	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
						MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq			Kg/year	m2/year		ton		
Type of "Plastic"																					
.209	Reusable	PP	1	Fiber		96.5			9.330144	0.022000			4.784689			0.001153	0.008947			99.5% landfill; 0% recycled; 0% reuse/landfill; .5% litter	1,2
.216	Reusable	HDPE	1	Woven					2.921296	0.009000			0.000000			0.000495	0.006852				
3.12	Petro	HDPE	1	Film		67.3			1.948718	0.031731			0.641026			2.500000	2.000000			78.5% landfill; 2% recycled; 19% reuse/landfill; .5% litter	1,2
	Bio	TPS	1	Film		53.5			1.210000		5.300000	10.400000	1.100000							Composting	11
3.12	Bio	TPS/PBSorA	1	Film	Bionelle				2.016026	0.006090			0.875000			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PBAT	1	Film	Eco-Flex				1.977564	0.010897			1.301282			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	TPS/PCL	1	Film	Mater-Bi				2.235154	0.013064			1.583333			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PE	1	Film	Earthstrength				2.080128	0.023077			0.826923			0.002500	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	PLA	1	Film	Natureworks				4.772080	0.025404			2.919872			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
22.1	Paper	Kraft	1	Film		32.6			1.376851	0.012866			1.200795			0.000014	0.025000			39.5% landfill; 60% recycled; 0% reuse/landfill; .5% litter	1,2
A	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)		29.1			0.007000			7.060000	0.671000							Incineration	4
B	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)					0.074000											Composting	4
A	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)		33.6			0.794000			5.480000	0.280000							Incineration	4
B	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)					0.002000											Landfilling (no gas recovery)	4
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000											Incineration	5
	Petro	HDPE	1	Pellet		73.8															6
	Petro	LLDPE	1	Pellet		72.3			4.540000											Incineration	7
	Petro	LDPE	1	Pellet		80.6			5.040000											Incineration	7
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000											Incineration	7
	Bio	TPS	1	Pellet		25.4			1.140000											Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000											Incineration	10
	Bio	PHA *		Pellet			90.0	0.0													6

References

1 Nolan-ITU 2003. The Impacts of Degradable Plastic Bags in Australia
2 Nolan-ITU 2002. Plastic Shopping Bags - Analysis of Levies and Environmental Impacts
4 LCA of biodegradable multilayer film from biopolymers. Daniel Garraín1, Rosario Vidal1, Pilar Martínez2, Vicente Franco1, David Cebrián-Tarrasón1, 1GID, Engineering Design Group, Dpt. MEC, Universitat Jaume I Castellón, Av. Sos Baynat s/n, 12071 Castellón (Spain)
5 Cradle-Gate Data for petrochemical polymers from APME (1999).
6 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
7 Cradle-Gate Data for petrochemical polymers from APME (1999).
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001
11 Composto 1998

Disposable Bag Policy Option 1
Enhanced Education
Impact on Environmental Categories - PLASTIC

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	60,527	1,901	1,901	1,900	1,899	1,899	1,898	1,898	1,898	1,911	1,925	1,939	1,952	1,966	1,980	1,994	2,008	2,022	2,037	2,051	2,066	2,080	2,095	2,110	2,125	2,140	2,155	2,170	2,186	2,201	2,217
	Plastic with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	61.1	GJ	3,695,814	116,101	116,054	116,012	115,976	115,945	115,920	115,900	115,887	116,708	117,535	118,369	119,208	120,053	120,904	121,761	122,624	123,493	124,368	125,250	126,138	127,032	127,932	128,839	129,752	130,672	131,598	132,531	133,470	134,416	135,369
NolaniTU	GHG Emissions	1,767.8	Kg CO2e	107,002,616	3,361,412	3,360,037	3,358,823	3,357,770	3,356,880	3,356,154	3,355,592	3,355,197	3,378,980	3,402,931	3,427,052	3,451,344	3,475,808	3,500,445	3,525,258	3,550,246	3,575,411	3,600,754	3,626,277	3,651,981	3,677,868	3,703,937	3,730,192	3,756,632	3,783,260	3,810,077	3,837,084	3,864,282	3,891,673	3,919,259
NolaniTU	Resource Depletion (Abiotic)	28.8	Kg Sb eq	1,742,312	54,734	54,711	54,691	54,674	54,660	54,648	54,639	54,632	55,020	55,410	55,802	56,198	56,596	56,997	57,401	57,808	58,218	58,631	59,046	59,465	59,886	60,311	60,738	61,169	61,602	62,039	62,479	62,922	63,368	63,817
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	581.5	g PO4 eq	35,198,229	1,105,728	1,105,275	1,104,876	1,104,530	1,104,237	1,103,998	1,103,813	1,103,683	1,111,507	1,119,385	1,127,320	1,135,310	1,143,358	1,151,462	1,159,624	1,167,844	1,176,122	1,184,459	1,192,854	1,201,310	1,209,825	1,218,400	1,227,037	1,235,734	1,244,494	1,253,315	1,262,199	1,271,145	1,280,156	1,289,230
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	2,268.0	Kg/year	137,273,092	4,312,337	4,310,574	4,309,016	4,307,665	4,306,523	4,305,592	4,304,872	4,304,365	4,334,876	4,365,602	4,396,547	4,427,711	4,459,096	4,490,703	4,522,534	4,554,591	4,586,875	4,619,388	4,652,132	4,685,108	4,718,317	4,751,762	4,785,443	4,819,364	4,853,525	4,887,928	4,922,575	4,957,467	4,992,607	5,027,996
NolaniTU	Litter Aesthetics	1,814.4	m2/year	109,818,474	3,449,870	3,448,459	3,447,213	3,446,132	3,445,219	3,444,473	3,443,897	3,443,492	3,467,901	3,492,482	3,517,238	3,542,169	3,567,277	3,592,562	3,618,027	3,643,673	3,669,500	3,695,511	3,721,706	3,748,086	3,774,653	3,801,409	3,828,355	3,855,491	3,882,820	3,910,342	3,938,060	3,965,974	3,994,086	4,022,397
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bin Liners				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Environmental Categories - PAPER

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	101,794	3,198	3,196	3,195	3,194	3,193	3,193	3,192	3,192	3,215	3,237	3,260	3,283	3,307	3,330	3,354	3,377	3,401	3,425	3,450	3,474	3,499	3,524	3,549	3,574	3,599	3,625	3,650	3,676	3,702	3,728
	Paper with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	29.6	GJ	3,012,739	94,643	94,604	94,570	94,541	94,515	94,495	94,479	94,468	95,138	95,812	96,491	97,175	97,864	98,558	99,256	99,960	100,668	101,382	102,101	102,824	103,553	104,287	105,026	105,771	106,521	107,276	108,036	108,802	109,573	110,350
NolanITU	GHG Emissions	1249.05706	Kg CO2e	127,146,815	3,994,228	3,992,594	3,991,151	3,989,900	3,988,842	3,987,979	3,987,313	3,986,843	4,015,103	4,043,563	4,072,225	4,101,090	4,130,160	4,159,436	4,188,919	4,218,611	4,248,514	4,278,628	4,308,956	4,339,499	4,370,259	4,401,237	4,432,434	4,463,852	4,495,493	4,527,358	4,559,449	4,591,768	4,624,316	4,657,094
NolanITU	Resource Depletion (Abiotic)	11.6715168	Kg Sb eq	1,188,093	37,323	37,308	37,294	37,283	37,273	37,265	37,258	37,254	37,518	37,784	38,052	38,322	38,593	38,867	39,142	39,420	39,699	39,981	40,264	40,549	40,837	41,126	41,418	41,711	42,007	42,305	42,605	42,907	43,211	43,517
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1089.34157	g PO4 eq	110,888,698	3,483,490	3,482,066	3,480,807	3,479,716	3,478,794	3,478,041	3,477,460	3,477,050	3,501,697	3,526,518	3,551,514	3,576,689	3,602,041	3,627,573	3,653,287	3,679,182	3,705,261	3,731,525	3,757,975	3,784,613	3,811,439	3,838,455	3,865,664	3,893,064	3,920,659	3,948,450	3,976,438	4,004,624	4,033,010	4,061,597
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01236771	Kg/year	1,259	40	40	40	40	39	39	39	39	40	40	40	41	41	41	41	42	42	42	43	43	43	44	44	44	45	45	45	45	46	46
NolanITU	Litter Aesthetics	22.6796	m2/year	2,308,653	72,525	72,495	72,469	72,446	72,427	72,411	72,399	72,391	72,904	73,421	73,941	74,465	74,993	75,524	76,060	76,599	77,142	77,689	78,239	78,794	79,352	79,915	80,481	81,052	81,626	82,205	82,788	83,374	83,965	84,561
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Environmental Categories - REUSEABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	45	-	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Reuseable with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	87.5	GJ	3,935	-	20	40	60	81	101	121	141	142	143	144	145	146	147	148	149	150	151	153	154	155	156	157	158	159	160	161	163	164	165
NolaniTU	GHG Emissions	8464.15694	Kg CO2e	380,665	-	1,948	3,897	5,847	7,797	9,748	11,699	13,652	13,748	13,846	13,944	14,043	14,142	14,243	14,344	14,445	14,548	14,651	14,755	14,859	14,965	15,071	15,177	15,285	15,393	15,502	15,612	15,723	15,834	15,947
NolaniTU	Resource Depletion (Abiotic)	19.958048	Kg Sb eq	898	-	5	9	14	18	23	28	32	32	33	33	33	33	34	34	34	34	35	35	35	35	36	36	36	36	37	37	37	37	38
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	4340.5933	g PO4 eq	195,213	-	999	1,999	2,998	3,998	4,999	6,000	7,001	7,050	7,100	7,151	7,201	7,253	7,304	7,356	7,408	7,460	7,513	7,566	7,620	7,674	7,729	7,783	7,838	7,894	7,950	8,006	8,063	8,120	8,178
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	1.04608299	Kg/year	47	-	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NolaniTU	Litter Aesthetics	8.11690947	m2/year	365	-	2	4	6	7	9	11	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Environmental Categories - COMPOSTABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	48.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	GHG Emissions	1794.01451	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Resource Depletion (Abiotic)	9.88597949	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1180.50226	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01238655	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Aesthetics	22.6796	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Impact on Environmental Categories - TOTAL

Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Waste Generated			162,366	5,099	5,097	5,096	5,094	5,093	5,092	5,092	5,091	5,127	5,164	5,200	5,237	5,274	5,312	5,349	5,387	5,426	5,464	5,503	5,542	5,581	5,621	5,660	5,701	5,741	5,782	5,823	5,864	5,905	5,947
Total	***Factor***	***Unit***																															
Non-Renewable Energy		GJ	6,712,489	210,744	210,678	210,622	210,577	210,541	210,516	210,501	210,496	211,988	213,491	215,004	216,528	218,063	219,608	221,165	222,733	224,312	225,902	227,503	229,115	230,739	232,375	234,022	235,681	237,352	239,034	240,728	242,435	244,153	245,884
GHG Emissions		Kg CO2e	234,530,096	7,355,639	7,354,579	7,353,871	7,353,516	7,353,519	7,353,881	7,354,604	7,355,693	7,407,832	7,460,340	7,513,221	7,566,477	7,620,110	7,674,124	7,728,520	7,783,302	7,838,472	7,894,033	7,949,988	8,006,340	8,063,091	8,120,244	8,177,803	8,235,769	8,294,147	8,352,938	8,412,146	8,471,773	8,531,824	8,592,299
Resource Depletion (Abiotic)		Kg Sb eq	2,931,303	92,057	92,024	91,995	91,971	91,951	91,936	91,925	91,919	92,570	93,226	93,887	94,553	95,223	95,898	96,578	97,262	97,952	98,646	99,345	100,049	100,758	101,473	102,192	102,916	103,646	104,380	105,120	105,865	106,616	107,372
Ozone		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidification		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eutrophication		g PO4 eq	146,282,140	4,589,218	4,588,340	4,587,681	4,587,244	4,587,029	4,587,038	4,587,273	4,587,735	4,620,254	4,653,003	4,685,985	4,719,201	4,752,652	4,786,340	4,820,266	4,854,434	4,888,843	4,923,497	4,958,396	4,993,542	5,028,938	5,064,584	5,100,484	5,136,637	5,173,047	5,209,715	5,246,643	5,283,833	5,321,286	5,359,004
Use of Nature (Land Use)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	137,274,398	4,312,377	4,310,613	4,309,056	4,307,705	4,306,564	4,305,632	4,304,913	4,304,406	4,334,917	4,365,644	4,396,589	4,427,753	4,459,138	4,490,746	4,522,578	4,554,635	4,586,919	4,619,433	4,652,176	4,685,152	4,718,362	4,751,807	4,785,489	4,819,410	4,853,571	4,887,975	4,922,622	4,957,515	4,992,655	5,028,044
Litter Aesthetics		m2/year	112,127,492	3,522,395	3,520,956	3,519,685	3,518,584	3,517,653	3,516,894	3,516,308	3,515,896	3,540,817	3,565,916	3,591,192	3,616,647	3,642,283	3,668,101	3,694,101	3,720,286	3,746,656	3,773,214	3,799,959	3,826,894	3,854,020	3,881,339	3,908,851	3,936,558	3,964,461	3,992,562	4,020,863	4,049,363	4,078,066	4,106,973
Human Toxicity		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 1
Enhanced Education
Cost Benefit Calculations

Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate				56%	57%	57%	58%	58%	58%	58%	58%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%
Compost Rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Waste Generated			162,366	5,099	5,097	5,096	5,094	5,093	5,092	5,092	5,091	5,127	5,164	5,200	5,237	5,274	5,312	5,349	5,387	5,426	5,464	5,503	5,542	5,581	5,621	5,660	5,701	5,741	5,782	5,823	5,864	5,905	5,947
Recycled			95,643	2,875	2,893	2,911	2,930	2,948	2,966	2,972	2,978	3,006	3,034	3,061	3,090	3,118	3,147	3,176	3,205	3,228	3,251	3,274	3,297	3,320	3,344	3,368	3,391	3,415	3,440	3,464	3,489	3,513	3,538
Composted				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landfilled			66,724	2,224	2,204	2,184	2,165	2,145	2,126	2,119	2,113	2,122	2,130	2,139	2,148	2,156	2,165	2,174	2,182	2,198	2,213	2,229	2,245	2,261	2,277	2,293	2,309	2,326	2,342	2,359	2,375	2,392	2,409
		Escalation Rate	0%																														
SPU/City of Seattle		Discount Rate	3%																														
	Economic Benefits/(Costs)																																
		Administration	($9,624)	($491.00)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)
		Inspection and Enforcement	($1,686)	($86.00)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)
		Program Marketing, Monitoring, Education, and Research	($3,136)	($160.00)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)
		Recycling	$0																														
11.5%	$ 21.15	Hauling, Transfer and Disposal	$919	$47	$47	$46	$46	$46	$45	$45	$45	$45	$45	$45	$46	$46	$46	$46	$46	$47	$47	$47	$48	$48	$48	$49	$49	$49	$50	$50	$51	$51	$51
	$ (460)	Other Costs Due to Bag/Foodservice ware	($17,959)	($875)	($874)	($874)	($874)	($873)	($873)	($873)	($873)	($879)	($885)	($892)	($898)	($904)	($911)	($917)	($924)	($930)	($937)	($944)	($950)	($957)	($964)	($971)	($977)	($984)	($991)	($998)	($1,006)	($1,013)	($1,020)
		Terrestrial Litter Control	($9,800)	($500.00)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)
		Marine Litter Abatement	($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)
50%		Consumer ADF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Consumer			($41,677)																														
	Economic Benefits/(Costs)																																
		Bag/Foodservice ware Costs	($389,738)	($18,981)	($18,974)	($18,967)	($18,961)	($18,956)	($18,952)	($18,949)	($18,946)	($19,081)	($19,216)	($19,352)	($19,489)	($19,627)	($19,767)	($19,907)	($20,048)	($20,190)	($20,333)	($20,477)	($20,622)	($20,768)	($20,916)	($21,064)	($21,213)	($21,364)	($21,515)	($21,668)	($21,821)	($21,976)	($22,132)
		Consumer ADF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Household Expenditure	($376)	$0	($3)	($6)	($10)	($13)	($16)	($19)	($22)	($22)	($23)	($23)	($23)	($23)	($23)	($23)	($23)	($24)	($24)	($24)	($24)	($24)	($24)	($25)	($25)	($25)	($25)	($25)	($25)	($25)	($26)	($26)	($26)
	$ (70)	Hauling	($7,331)	($357)	($357)	($357)	($357)	($357)	($356)	($356)	($356)	($359)	($361)	($364)	($367)	($369)	($372)	($374)	($377)	($380)	($382)	($385)	($388)	($391)	($393)	($396)	($399)	($402)	($405)	($408)	($410)	($413)	($416)
$ (41)	$ (5)	Recycling & Composting	($307)	($14)	($14)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($18)	($18)
	$ (51)	Transfer and Disposal	($2,206)	($113)	($112)	($111)	($110)	($109)	($108)	($108)	($108)	($108)	($109)	($109)	($110)	($110)	($110)	($111)	($111)	($112)	($113)	($114)	($114)	($115)	($116)	($117)	($118)	($119)	($119)	($120)	($121)	($122)	($123)
Retailer																																	
	Economic Benefits/(Costs)																																
		Bag/Foodservice ware Rev	$389,738	$18,981	$18,974	$18,967	$18,961	$18,956	$18,952	$18,949	$18,946	$19,081	$19,216	$19,352	$19,489	$19,627	$19,767	$19,907	$20,048	$20,190	$20,333	$20,477	$20,622	$20,768	$20,916	$21,064	$21,213	$21,364	$21,515	$21,668	$21,821	$21,976	$22,132
		Bag/Foodservice ware Costs	($385,841)	($18,792)	($18,784)	($18,777)	($18,771)	($18,766)	($18,762)	($18,759)	($18,757)	($18,890)	($19,024)	($19,159)	($19,294)	($19,431)	($19,569)	($19,708)	($19,847)	($19,988)	($20,130)	($20,272)	($20,416)	($20,561)	($20,707)	($20,853)	($21,001)	($21,150)	($21,300)	($21,451)	($21,603)	($21,756)	($21,910)
50%		Consumer ABF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Alt Product Sales	$376	$0	$3	$6	$10	$13	$16	$19	$22	$22	$23	$23	$23	$23	$23	$23	$24	$24	$24	$24	$24	$24	$25	$25	$25	$25	$25	$25	$26	$26	$26
		Alt Product Costs	($365)	$0	($3)	($6)	($9)	($12)	($15)	($18)	($22)	($22)	($22)	($22)	($22)	($22)	($23)	($23)	($23)	($23)	($23)	($23)	($23)	($24)	($24)	($24)	($24)	($24)	($25)	($25)	($25)	($25)	($25)	($25)	($25)
		Administration	($41)	($2.11)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)
		Training and Staff	($413)	($21.06)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)
		Ammortized Capital	$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regional																																	
	Economic Benefits/(Costs)																																
	5%	Plastic Production	$8,559	$417	$417	$417	$416	$416	$416	$416	$416	$419	$422	$425	$428	$431	$434	$437	$440	$443	$447	$450	$453	$456	$459	$463	$466	$469	$472	$476	$479	$483	$486
	40%	Paper Production	$79,629	$3,878	$3,877	$3,875	$3,874	$3,873	$3,872	$3,871	$3,871	$3,898	$3,926	$3,954	$3,982	$4,010	$4,039	$4,067	$4,096	$4,125	$4,154	$4,184	$4,213	$4,243	$4,273	$4,304	$4,334	$4,365	$4,396	$4,427	$4,458	$4,490	$4,522
	0%	Reusable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	0%	Compostable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Total	($349,993)	($17,089)	($17,085)	($17,082)	($17,080)	($17,078)	($17,077)	($17,078)	($17,079)	($17,191)	($17,303)	($17,417)	($17,531)	($17,646)	($17,762)	($17,878)	($17,996)	($18,114)	($18,234)	($18,354)	($18,475)	($18,597)	($18,719)	($18,843)	($18,968)	($19,093)	($19,219)	($19,346)	($19,474)	($19,603)	($19,733)
		SPU/City of Seattle	($41,677)	($2,085)	($2,085)	($2,085)	($2,085)	($2,085)	($2,085)	($2,085)	($2,085)	($2,091)	($2,097)	($2,103)	($2,109)	($2,116)	($2,122)	($2,128)	($2,134)	($2,141)	($2,147)	($2,153)	($2,160)	($2,166)	($2,172)	($2,179)	($2,185)	($2,192)	($2,199)	($2,205)	($2,212)	($2,219)	($2,226)
		Consumer	($399,958)	($19,466)	($19,461)	($19,456)	($19,452)	($19,449)	($19,447)	($19,447)	($19,448)	($19,585)	($19,734)	($19,863)	($20,004)	($20,145)	($20,288)	($20,431)	($20,576)	($20,722)	($20,869)	($21,016)	($21,165)	($21,315)	($21,467)	($21,619)	($21,772)	($21,926)	($22,082)	($22,238)	($22,396)	($22,555)	($22,714)
		Retailer	$3,455	$167	$167	$167	$167	$167	$167	$167	$167	$168	$170	$171	$172	$174	$175	$177	$178	$179	$181	$182	$184	$185	$187	$188	$190	$191	$193	$194	$196	$197	$199
		Regional	$88,188	$4,295	$4,293	$4,292	$4,290	$4,289	$4,288	$4,288	$4,287	$4,317	$4,348	$4,379	$4,410	$4,441	$4,473	$4,504	$4,536	$4,568	$4,601	$4,633	$4,666	$4,699	$4,733	$4,766	$4,800	$4,834	$4,868	$4,903	$4,938	$4,973	$5,008

Disposable Bag Policy Option 2
Ban Plastic Bags
Use and Switching Assumptions

	Bag Source	Switching Assumptions					
	Plastic	*Continue Plastic Bag*	*Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	10%	40%	40%	0%	10%	10%
Other Food and Restaurant	15%	10%	40%	40%	0%	10%	10%
General Merchandise and Apparel	10%	10%	40%	40%	0%	10%	10%
Fast Food and Convenience	6%	10%	40%	40%	0%	10%	10%
Other Retail	9%	10%	40%	40%	0%	10%	10%
Total	100%	10%	40%	40%	0%	10%	10%
	Paper	*Continue Paper Bag*	*Plastic Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	90%	0%	10%	0%	0%	0%
Other Food and Restaurant	15%	90%	0%	10%	0%	0%	0%
General Merchandise and Apparel	10%	90%	0%	10%	0%	0%	0%
Fast Food and Convenience	6%	90%	0%	10%	0%	0%	0%
Other Retail	9%	90%	0%	10%	0%	0%	0%
Total	100%	90%	0%	10%	0%	0%	0%

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Number of Disposable Bags and Alternatives (millions)

	2004 Use		*Switching Assumptions*							
	Plastic	*Paper*	*Continue Plastic Bag*	*Continue with Paper Bag*	*Additional Plastic Bag*	*Additional Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Replacement Ratio			1	1	1	2.5	170	1	511	4.0
Supermarkets	175,515	40,823	17,552	36,741	-	28,082	3,814	-	34	4,388
Other Food and Restaurant	43,879	10,206	4,388	9,185	-	7,021	954	-	9	1,097
General Merchandise and Apparel	29,253	6,804	2,925	6,123	-	4,680	636	-	6	731
Fast Food and Convenience	17,552	4,082	1,755	3,674	-	2,808	381	-	3	439
Other Retail	26,327	6,123	2,633	5,511	-	4,212	572	-	5	658
Total	292,526	68,038	29,253	61,234	-	46,804	6,357	-	57	7,313

	2004 Comp.		
Est. 2008 SF/MF Waste Generated		291,578	
Grocery/Bread Bags	0.82%	2,377	80%
Plastic Grocery Bags (Tons)		1,901	
Avg. Plastic Grocery Bag Weight		0.013	
Plastic Grocery Bags		292,525,673	
2004 Seattle Population		572,600	
Annual Per Plastic Capita Bag Use		511	0.81
Est. 2008 SF/MF Waste Generated		291,578	
OCC/Kraft Paper	6.03%	17,592	15%
Mixed Low Grade	9.59%	27,950	2%
Paper Grocery Bags (Tons)		3,198	
Avg. Paper Grocery Bag Weight		0.094	
Paper Grocery Bags		68,038,177	
2004 Seattle Population		572,600	
Annual Per Capita Paper Bag Use		119	0.19

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Incr. Growth					13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
	Cumm Growth					13	27	41	54	68	82	96	111	125	139	154	168	183	198	213	227	243	258	273	289	304	320	335	351	367	383	399	416	432
	Continue Plas	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Switch to Pap	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to Reus	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
TONS																																		
	Keep Plastic				1,901	1,658	1,415	1,172	929	686	443	200	201	203	204	206	207	208	210	211	213	214	216	217	219	221	222	224	225	227	228	230	232	233
	Paper				-	114	228	342	456	571	685	799	805	810	816	822	828	834	840	846	852	858	864	870	876	882	888	895	901	907	914	920	927	933
	Reuse				-	114	228	342	456	571	685	799	805	810	816	822	828	834	840	846	852	858	864	870	876	882	888	895	901	907	914	920	927	933
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	29	57	86	114	143	171	200	201	203	204	206	207	208	210	211	213	214	216	217	219	221	222	224	225	227	228	230	232	233
BAGS AVOIDED		**Exchange**	**Weight**																															
	Keep Plastic	1	0.013		292,526	255,123	217,721	180,321	142,922	105,525	68,129	30,735	30,953	31,173	31,393	31,616	31,840	32,066	32,293	32,522	32,753	32,985	33,218	33,454	33,691	33,930	34,170	34,413	34,657	34,902	35,150	35,399	35,650	35,902
	Paper	1.5	0.094		-	17,545	35,096	52,653	70,216	87,785	105,360	122,941	123,812	124,690	125,574	126,464	127,360	128,263	129,172	130,088	131,010	131,939	132,874	133,816	134,764	135,720	136,682	137,650	138,626	139,609	140,598	141,595	142,599	143,609
	Reuse	170	0.145		-	17,545	35,096	52,653	70,216	87,785	105,360	122,941	123,812	124,690	125,574	126,464	127,360	128,263	129,172	130,088	131,010	131,939	132,874	133,816	134,764	135,720	136,682	137,650	138,626	139,609	140,598	141,595	142,599	143,609
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	4,386	8,774	13,163	17,554	21,946	26,340	30,735	30,953	31,173	31,393	31,616	31,840	32,066	32,293	32,522	32,753	32,985	33,218	33,454	33,691	33,930	34,170	34,413	34,657	34,902	35,150	35,399	35,650	35,902
BAGS USED		**Exchange**	**Weight**																															
	Plastic	1	0.013		292,526	255,123	217,721	180,321	142,922	105,525	68,129	30,735	30,953	31,173	31,393	31,616	31,840	32,066	32,293	32,522	32,753	32,985	33,218	33,454	33,691	33,930	34,170	34,413	34,657	34,902	35,150	35,399	35,650	35,902
	Paper	1.5	0.094		-	11,697	23,397	35,102	46,811	58,523	70,240	81,961	82,542	83,127	83,716	84,309	84,907	85,509	86,115	86,725	87,340	87,959	88,583	89,210	89,843	90,480	91,121	91,767	92,417	93,072	93,732	94,397	95,066	95,740
	Reuse	170	0.145		-	21	41	62	82	103	124	144	145	146	147	149	150	151	152	153	154	155	156	157	158	159	161	162	163	164	165	166	167	169
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		**Exchange**	**Weight**																															
	Plastic	1	0.013		1,901	1,658	1,415	1,172	929	686	443	200	201	203	204	206	207	208	210	211	213	214	216	217	219	221	222	224	225	227	228	230	232	233
	Paper	2	0.094		-	550	1,100	1,650	2,200	2,751	3,301	3,852	3,879	3,907	3,935	3,963	3,991	4,019	4,047	4,076	4,105	4,134	4,163	4,193	4,223	4,253	4,283	4,313	4,344	4,374	4,405	4,437	4,468	4,500
	Reuse	170	0.145		-	1	3	4	6	7	9	10	11	11	11	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	12
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Incr. Growth					23	23	23	23	23	23	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	27	27	27	27	27	28
	Cumm Growth					23	45	68	92	115	138	162	186	210	234	258	283	308	332	357	383	408	434	459	485	511	538	564	591	618	645	672	699	727
	Continue Pap	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Switch to Plas	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to Reus	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
TONS																																		
	Keep Paper				3,198	2,789	2,380	1,971	1,562	1,154	745	336	338	341	343	346	348	351	353	356	358	361	363	366	368	371	374	376	379	382	384	387	390	392
	Plastic				-	192	384	576	768	960	1,152	1,344	1,353	1,363	1,373	1,382	1,392	1,402	1,412	1,422	1,432	1,442	1,453	1,463	1,473	1,484	1,494	1,505	1,515	1,526	1,537	1,548	1,559	1,570
	Reuse				-	192	384	576	768	960	1,152	1,344	1,353	1,363	1,373	1,382	1,392	1,402	1,412	1,422	1,432	1,442	1,453	1,463	1,473	1,484	1,494	1,505	1,515	1,526	1,537	1,548	1,559	1,570
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	48	96	144	192	240	288	336	338	341	343	346	348	351	353	356	358	361	363	366	368	371	374	376	379	382	384	387	390	392
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	59,339	50,639	41,941	33,242	24,544	15,846	7,149	7,199	7,250	7,302	7,354	7,406	7,458	7,511	7,564	7,618	7,672	7,726	7,781	7,836	7,892	7,948	8,004	8,061	8,118	8,175	8,233	8,292	8,350
	Plastic	1.5	0.013		-	4,081	8,163	12,247	16,331	20,418	24,506	28,595	28,797	29,002	29,207	29,414	29,623	29,833	30,044	30,257	30,471	30,687	30,905	31,124	31,345	31,567	31,791	32,016	32,243	32,471	32,702	32,933	33,167	33,402
	Reuse	170	0.145		-	4,081	8,163	12,247	16,331	20,418	24,506	28,595	28,797	29,002	29,207	29,414	29,623	29,833	30,044	30,257	30,471	30,687	30,905	31,124	31,345	31,567	31,791	32,016	32,243	32,471	32,702	32,933	33,167	33,402
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	1,020	2,041	3,062	4,083	5,104	6,126	7,149	7,199	7,250	7,302	7,354	7,406	7,458	7,511	7,564	7,618	7,672	7,726	7,781	7,836	7,892	7,948	8,004	8,061	8,118	8,175	8,233	8,292	8,350
BAGS USED																																		
		Exchange	***Weight***																															
	Keep Paper	1	0.094		68,038	59,339	50,639	41,941	33,242	24,544	15,846	7,149	7,199	7,250	7,302	7,354	7,406	7,458	7,511	7,564	7,618	7,672	7,726	7,781	7,836	7,892	7,948	8,004	8,061	8,118	8,175	8,233	8,292	8,350
	Plastic	1.5	0.013		-	2,721	5,442	8,164	10,888	13,612	16,337	19,063	19,198	19,334	19,471	19,609	19,748	19,888	20,029	20,171	20,314	20,458	20,603	20,749	20,896	21,045	21,194	21,344	21,495	21,648	21,801	21,956	22,111	22,268
	Reuse	170	0.145		-	5	10	14	19	24	29	34	34	34	34	35	35	35	35	36	36	36	36	37	37	37	38	38	38	38	38	39	39	39
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED																																		
		Exchange	***Weight***																															
	Keep Paper	1	0.094		3,198	2,789	2,380	1,971	1,562	1,154	745	336	338	341	343	346	348	351	353	356	358	361	363	366	368	371	374	376	379	382	384	387	390	392
	Plastic	2	0.013		-	18	35	53	71	88	106	124	125	126	127	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145
	Reuse	170	0.145		-	0	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Amount of Waste Generated (tons)

Bag Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight (Lbs.)	Use	Life Exp.
Avg. Plastic Grocery Bag Weight	$ -	$ 0.03	0.013		Single Trip *
Avg. Paper Grocery Bag Weight	$ -	$ 0.15	0.094		Single Trip *
Avg. Woven HDPE Reusable Bag		$ 1.00	0.288	10%	520 Trips
Avg. Non-Woven PP Reusable Bag		$ 1.00	0.145	90%	520 Trips
Avg. Compostable "Plastic" Bag		$ 0.08	0.027		Single Trip
Avg. Garbage Bag		$ 0.09	0.033		Single Use

TONS		Exchange	Weight		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PLASTIC BAGS USED	Plastic				1,901	1,676	1,451	1,225	1,000	774	549	324	326	328	331	333	335	338	340	343	345	347	350	352	355	357	360	362	365	368	370	373	375	378
	Recycle Rate	15	20%		15%	15%	16%	16%	16%	17%	17%	17%	18%	18%	18%	19%	19%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			2,923	285	257	227	196	163	129	93	56	58	59	61	62	64	65	67	69	69	69	70	70	71	71	72	72	73	74	74	75	75	76
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			13,709	1,616	1,419	1,223	1,029	836	645	456	268	268	269	270	271	272	272	273	274	276	278	280	282	284	286	288	290	292	294	296	298	300	302
PAPER BAGS USED	Paper				3,198	3,339	3,480	3,621	3,762	3,904	4,046	4,188	4,218	4,248	4,278	4,308	4,339	4,369	4,400	4,432	4,463	4,495	4,527	4,559	4,591	4,623	4,656	4,689	4,722	4,756	4,790	4,824	4,858	4,892
	Recycle Rate	5	83%		81%	81%	82%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			107,343	2,590	2,718	2,846	2,976	3,108	3,240	3,358	3,476	3,501	3,526	3,551	3,576	3,601	3,627	3,652	3,678	3,704	3,731	3,757	3,784	3,810	3,837	3,865	3,892	3,920	3,947	3,975	4,004	4,032	4,061
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			22,231	608	621	633	645	655	664	688	712	717	722	727	732	738	743	748	753	759	764	770	775	780	786	792	797	803	809	814	820	826	832
REUSE BAGS USED	Reuse				-	2	4	6	7	9	11	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15
	Recycle Rate	20	10%		0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%	6%	6%	7%	7%	8%	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			27	-	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			333	-	2	4	5	7	9	11	12	12	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14
COMPOSTABLE BAGS USED	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		0%	1%	3%	4%	5%	7%	8%	9%	11%	12%	13%	15%	16%	17%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BAGS USED	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL BAGS USED																																		
	Generated			150,583	5,220	5,138	5,056	4,975	4,894	4,813	4,732	4,652	4,684	4,718	4,751	4,785	4,819	4,853	4,887	4,922	4,957	4,992	5,027	5,063	5,099	5,135	5,171	5,208	5,245	5,282	5,320	5,357	5,395	5,434
	Recycled			110,293	2,875	2,975	3,074	3,173	3,271	3,370	3,452	3,533	3,559	3,585	3,612	3,639	3,666	3,693	3,720	3,748	3,774	3,801	3,828	3,855	3,883	3,910	3,938	3,966	3,994	4,022	4,051	4,080	4,109	4,138
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			40,290	2,344	2,163	1,983	1,802	1,622	1,443	1,280	1,119	1,126	1,132	1,139	1,146	1,153	1,160	1,167	1,174	1,182	1,191	1,199	1,208	1,216	1,225	1,233	1,242	1,251	1,260	1,269	1,278	1,287	1,296

Disposable Bag Policy Option 2
Ban Plastic Bags
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"												
			Functional Unit	Application	Commercial Example	Non-Renewable Energy	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiversity	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
						MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq			Kg/year	m2/year		ton		
Type of "Plastic"																					
.209	Reusable	PP	1	Fiber		96.5			9.330144	0.022000			4.784689			0.001153	0.008947			99.5% landfill; 0% recycled; 0% reuse/landfill; .5% litter	1,2
.216	Reusable	HDPE	1	Woven					2.921296	0.009000			0.000000			0.000495	0.006852				
3.12	Petro	HDPE	1	Film		67.3			1.948718	0.031731			0.641026			2.500000	2.000000			78.5% landfill; 2% recycled; 19% reuse/landfill; .5% litter	1,2
	Bio	TPS	1	Film		53.5			1.210000		5.300000	10.400000	1.100000							Composting	11
3.12	Bio	TPS/PBSorA	1	Film	Bionelle				2.016026	0.006090			0.875000			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfill; .5% litter	1, 2
3.12	Bio	TPS/PBAT	1	Film	Eco-Flex				1.977564	0.010897			1.301282			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfill; .5% litter	1, 2
4.21	Bio	TPS/PCL	1	Film	Mater-Bi				2.235154	0.013064			1.583333			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfill; .5% litter	1, 2
3.12	Bio	TPS/PE	1	Film	Earthstrength				2.080128	0.023077			0.826923			0.002500	0.025000			70% landfill; 10% compost; 20% reuse/landfill; .5% litter	1, 2
4.21	Bio	PLA	1	Film	Natureworks				4.772080	0.025404			2.919872			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfill; .5% litter	1, 2
22.1	Paper	Kraft	1	Film		32.6			1.376851	0.012866			1.200795			0.000014	0.025000			39.5% landfill; 60% recycled; 0% reuse/landfill; .5% litter	1,2
A	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)		29.1			0.007000			7.060000	0.671000							Incineration	4
B	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)					0.074000											Composting	4
A	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)		33.6			0.794000			5.480000	0.280000							Incineration	4
B	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)					0.002000											Landfilling (no gas recovery)	4
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000											Incineration	5
	Petro	HDPE	1	Pellet		73.8															6
	Petro	LLDPE	1	Pellet		72.3			4.540000											Incineration	7
	Petro	LDPE	1	Pellet		80.6			5.040000											Incineration	7
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000											Incineration	7
	Bio	TPS	1	Pellet		25.4			1.140000											Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000											Incineration	10
	Bio	PHA *		Pellet			90.0	0.0													6

References

1 Nolan-ITU 2003. The Impacts of Degradable Plastic Bags in Australia
2 Nolan-ITU 2002. Plastic Shopping Bags - Analysis of Levies and Environmental Impacts
4 LCA of biodegradable multilayer film from biopolymers. Daniel Garraín1, Rosario Vidal1, Pilar Martínez2, Vicente Franco1, David Cebrián-Tarrasón1, 1GID, Engineering Design Group, Dpt. MEC, Universitat Jaume I Castellón, Av. Sos Baynat s/n, 12071 Castellón (Spain)
5 Cradle-Gate Data for petrochemical polymers from APME (1999).
6 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
7 Cradle-Gate Data for petrochemical polymers from APME (1999).
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001
11 Composto 1998

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Environmental Categories - PLASTIC

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	16,631	1,901	1,676	1,451	1,225	1,000	774	549	324	326	328	331	333	335	338	340	343	345	347	350	352	355	357	360	362	365	368	370	373	375	378
	Plastic with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	61.1	GJ	1,260,861	123,469	109,756	96,045	82,334	68,625	54,917	41,211	27,506	27,701	27,897	28,095	28,294	28,495	28,697	28,900	29,105	29,311	29,519	29,728	29,939	30,151	30,365	30,580	30,797	31,015	31,235	31,457	31,680	31,904	32,130
NolaniTU	GHG Emissions	1,767.8	Kg CO2e	36,504,941	3,574,732	3,177,707	2,780,720	2,383,771	1,986,861	1,589,990	1,193,158	796,366	802,011	807,695	813,421	819,186	824,993	830,841	836,730	842,661	848,634	854,649	860,707	866,808	872,952	879,140	885,372	891,647	897,968	904,333	910,743	917,198	923,700	930,247
NolaniTU	Resource Depletion (Abiotic)	28.8	Kg Sb eq	594,406	58,207	51,742	45,278	38,815	32,352	25,890	19,428	12,967	13,059	13,152	13,245	13,339	13,433	13,528	13,624	13,721	13,818	13,916	14,015	14,114	14,214	14,315	14,416	14,519	14,622	14,725	14,830	14,935	15,041	15,147
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	581.5	g PO4 eq	12,008,204	1,175,899	1,045,298	914,711	784,135	653,573	523,023	392,486	261,962	263,819	265,689	267,573	269,469	271,379	273,303	275,240	277,191	279,156	281,135	283,127	285,134	287,155	289,191	291,241	293,305	295,384	297,478	299,586	301,710	303,849	306,002
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	2,268.0	Kg/year	46,831,997	4,586,005	4,076,664	3,567,371	3,058,128	2,548,934	2,039,790	1,530,696	1,021,653	1,028,895	1,036,188	1,043,533	1,050,930	1,058,379	1,065,881	1,073,436	1,081,045	1,088,708	1,096,425	1,104,197	1,112,024	1,119,906	1,127,844	1,135,839	1,143,890	1,151,998	1,160,164	1,168,387	1,176,669	1,185,010	1,193,409
NolaniTU	Litter Aesthetics	1,814.4	m2/year	37,465,597	3,668,804	3,261,331	2,853,897	2,446,502	2,039,147	1,631,832	1,224,557	817,323	823,116	828,951	834,826	840,744	846,703	852,705	858,749	864,836	870,966	877,140	883,357	889,619	895,925	902,275	908,671	915,112	921,598	928,131	934,710	941,335	948,008	954,727
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bin Liners				121	122	122	123	124	125	126	127	128	129	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Environmental Categories - PAPER

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	129,574	3,198	3,339	3,480	3,621	3,762	3,904	4,046	4,188	4,218	4,248	4,278	4,308	4,339	4,369	4,400	4,432	4,463	4,495	4,527	4,559	4,591	4,623	4,656	4,689	4,722	4,756	4,790	4,824	4,858	4,892
	Paper with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	29.6	GJ	3,834,921	94,643	98,812	102,987	107,169	111,356	115,549	119,748	123,954	124,832	125,717	126,608	127,506	128,409	129,320	130,236	131,160	132,089	133,025	133,968	134,918	135,874	136,837	137,807	138,784	139,768	140,759	141,756	142,761	143,773	144,792
NolaniTU	GHG Emissions	1249.05706	Kg CO2e	161,845,379	3,994,228	4,170,182	4,346,387	4,522,843	4,699,553	4,876,519	5,053,742	5,231,225	5,268,305	5,305,648	5,343,256	5,381,130	5,419,273	5,457,687	5,496,372	5,535,332	5,574,568	5,614,082	5,653,876	5,693,952	5,734,313	5,774,959	5,815,893	5,857,118	5,898,635	5,940,446	5,982,554	6,024,959	6,067,666	6,110,675
NolaniTU	Resource Depletion (Abiotic)	11.6715168	Kg Sb eq	1,512,326	37,323	38,967	40,614	42,263	43,914	45,567	47,223	48,882	49,228	49,577	49,929	50,283	50,639	50,998	51,360	51,724	52,090	52,459	52,831	53,206	53,583	53,963	54,345	54,730	55,118	55,509	55,903	56,299	56,698	57,100
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	1089.34157	g PO4 eq	141,150,396	3,483,490	3,636,946	3,790,619	3,944,512	4,098,627	4,252,964	4,407,526	4,562,314	4,594,653	4,627,221	4,660,020	4,693,051	4,726,317	4,759,818	4,793,557	4,827,535	4,861,754	4,896,216	4,930,921	4,965,873	5,001,073	5,036,522	5,072,222	5,108,175	5,144,383	5,180,848	5,217,571	5,254,555	5,291,801	5,329,310
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	0.01236771	Kg/year	1,603	40	41	43	45	47	48	50	52	52	53	53	53	54	54	54	55	55	56	56	56	57	57	58	58	58	59	59	60	60	61
NolaniTU	Litter Aesthetics	22.6796	m2/year	2,938,688	72,525	75,720	78,919	82,123	85,332	88,545	91,763	94,985	95,659	96,337	97,020	97,707	98,400	99,097	99,800	100,507	101,220	101,937	102,660	103,387	104,120	104,858	105,601	106,350	107,104	107,863	108,627	109,397	110,173	110,954
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Environmental Categories - REUSEABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	360	-	2	4	6	7	9	11	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15
	Reuseable with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	87.5	GJ	31,484	-	161	322	484	645	806	968	1,129	1,137	1,145	1,153	1,161	1,170	1,178	1,186	1,195	1,203	1,212	1,220	1,229	1,238	1,246	1,255	1,264	1,273	1,282	1,291	1,300	1,310	1,319
NolaniTU	GHG Emissions	8464.15694	Kg CO2e	3,045,323	-	15,586	31,177	46,774	62,376	77,983	93,595	109,213	109,987	110,767	111,552	112,343	113,139	113,941	114,749	115,562	116,381	117,206	118,037	118,874	119,716	120,565	121,419	122,280	123,147	124,020	124,899	125,784	126,676	127,574
NolaniTU	Resource Depletion (Abiotic)	19.958048	Kg Sb eq	7,181	-	37	74	110	147	184	221	258	259	261	263	265	267	269	271	272	274	276	278	280	282	284	286	288	290	292	295	297	299	301
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	4340.5933	g PO4 eq	1,561,704	-	7,993	15,988	23,987	31,988	39,991	47,998	56,007	56,404	56,804	57,206	57,612	58,020	58,431	58,846	59,263	59,683	60,106	60,532	60,961	61,393	61,828	62,266	62,708	63,152	63,600	64,051	64,505	64,962	65,422
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	1.04608299	Kg/year	376	-	2	4	6	8	10	12	13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16
NolaniTU	Litter Aesthetics	8.11690947	m2/year	2,920	-	15	30	45	60	75	90	105	105	106	107	108	108	109	110	111	112	112	113	114	115	116	116	117	118	119	120	121	121	122
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Environmental Categories - COMPOSTABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	48.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	GHG Emissions	1794.01451	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Resource Depletion (Abiotic)	9.88597949	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1180.50226	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01238655	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Aesthetics	22.6796	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Impact on Environmental Categories - TOTAL

Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Waste Generated			150,583	5,220	5,138	5,056	4,975	4,894	4,813	4,732	4,652	4,684	4,718	4,751	4,785	4,819	4,853	4,887	4,922	4,957	4,992	5,027	5,063	5,099	5,135	5,171	5,208	5,245	5,282	5,320	5,357	5,395	5,434
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	***Factor***	***Unit***																															
Non-Renewable Energy		GJ	5,127,266	218,112	208,730	199,354	189,986	180,626	171,273	161,927	153,589	153,670	154,760	155,857	156,961	158,074	159,194	160,323	161,459	162,604	163,756	164,917	166,086	167,263	168,449	169,643	170,845	172,056	173,276	174,504	175,741	176,987	178,241
GHG Emissions		Kg CO2e	201,395,643	7,568,960	7,363,475	7,158,284	6,953,388	6,748,790	6,544,492	6,340,496	6,136,803	6,180,303	6,224,110	6,268,229	6,312,660	6,357,405	6,402,468	6,447,851	6,493,555	6,539,583	6,585,937	6,632,620	6,679,634	6,726,981	6,774,664	6,822,685	6,871,046	6,919,749	6,968,798	7,018,195	7,067,942	7,118,042	7,168,496
Resource Depletion (Abiotic)		Kg Sb eq	2,113,912	95,530	90,746	85,965	81,188	76,413	71,641	66,872	62,107	62,547	62,990	63,437	63,886	64,339	64,795	65,255	65,717	66,183	66,652	67,124	67,600	68,079	68,562	69,048	69,537	70,030	70,527	71,027	71,530	72,037	72,548
Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eutrophication		g PO4 eq	154,720,304	4,659,389	4,690,237	4,721,318	4,752,634	4,784,187	4,815,979	4,848,010	4,880,283	4,914,876	4,949,714	4,984,799	5,020,132	5,055,716	5,091,553	5,127,643	5,163,989	5,200,593	5,237,456	5,274,581	5,311,968	5,349,621	5,387,541	5,425,729	5,464,188	5,502,920	5,541,926	5,581,208	5,620,770	5,660,611	5,700,735
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	46,833,975	4,586,045	4,076,707	3,567,418	3,058,178	2,548,988	2,039,848	1,530,758	1,021,719	1,028,961	1,036,254	1,043,600	1,050,997	1,058,447	1,065,949	1,073,505	1,081,114	1,088,778	1,096,495	1,104,267	1,112,095	1,119,978	1,127,916	1,135,911	1,143,963	1,152,072	1,160,238	1,168,462	1,176,744	1,185,085	1,193,485
Litter Aesthetics		m2/year	40,407,205	3,741,329	3,337,065	2,932,846	2,528,670	2,124,538	1,720,452	1,316,410	912,413	918,880	925,393	931,953	938,559	945,212	951,911	958,659	965,454	972,297	979,189	986,130	993,120	1,000,160	1,007,249	1,014,389	1,021,579	1,028,820	1,036,113	1,043,457	1,050,853	1,058,302	1,065,804
Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 2
Ban Plastic Bags
Cost Benefit Calculations

	Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate			55%	58%	61%	64%	67%	70%	73%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%	76%
	Compost Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated		150,583	5,220	5,138	5,056	4,975	4,894	4,813	4,732	4,652	4,684	4,718	4,751	4,785	4,819	4,853	4,887	4,922	4,957	4,992	5,027	5,063	5,099	5,135	5,171	5,208	5,245	5,282	5,320	5,357	5,395	5,434
	Recycled		110,293	2,875	2,975	3,074	3,173	3,271	3,370	3,452	3,533	3,559	3,585	3,612	3,639	3,666	3,693	3,720	3,748	3,774	3,801	3,828	3,855	3,883	3,910	3,938	3,966	3,994	4,022	4,051	4,080	4,109	4,138
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled		40,290	2,344	2,163	1,983	1,802	1,622	1,443	1,280	1,119	1,126	1,132	1,139	1,146	1,153	1,160	1,167	1,174	1,182	1,191	1,199	1,208	1,216	1,225	1,233	1,242	1,251	1,260	1,269	1,278	1,287	1,296
		Escalation Rate	0%																															
SPU/City of Seattle		Discount Rate	3%																															
	Economic Benefits/(Costs)																																	
		Administration	($9,624)	($491.00)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)	($491)
		Inspection and Enforcement	($2,783)	($142.00)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)	($142)
		Program Marketing, Monitoring, Education, and Research	($3,136)	($160.00)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)	($160)
		Recycling	$0																															
11.5%	$ 21.15	Hauling, Transfer and Disposal	$580	$50	$46	$42	$38	$35	$31	$27	$24	$24	$24	$24	$24	$25	$25	$25	$25	$25	$25	$25	$26	$26	$26	$26	$26	$27	$27	$27	$27	$27	$27	$28
	$ (460)	Other Costs Due to Bag/Foodservice ware	($5,722)	($875)	($771)	($667)	($564)	($460)	($356)	($253)	($149)	($150)	($151)	($152)	($153)	($154)	($155)	($156)	($158)	($159)	($160)	($161)	($162)	($163)	($164)	($166)	($167)	($168)	($169)	($170)	($171)	($173)	($174)
		Terrestrial Litter Control	($9,800)	($500.00)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)
		Marine Litter Abatement	($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)
50%		Consumer ADF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Consumer			($30,877)																															
	Economic Benefits/(Costs)																																	
		Bag/Foodservice ware Costs	($320,690)	($18,981)	($18,391)	($17,800)	($17,211)	($16,622)	($16,034)	($15,447)	($14,860)	($14,966)	($15,072)	($15,179)	($15,286)	($15,395)	($15,504)	($15,614)	($15,724)	($15,836)	($15,948)	($16,061)	($16,175)	($16,289)	($16,405)	($16,521)	($16,638)	($16,756)	($16,875)	($16,995)	($17,115)	($17,236)	($17,359)
		Consumer ADF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Household Expenditure	($17,106)	($658)	($688)	($718)	($749)	($779)	($809)	($839)	($870)	($876)	($882)	($888)	($894)	($901)	($907)	($914)	($920)	($927)	($933)	($940)	($946)	($953)	($960)	($967)	($974)	($980)	($987)	($994)	($1,001)	($1,009)	($1,016)
	$ (70)	Hauling	($6,842)	($365)	($360)	($354)	($348)	($343)	($337)	($331)	($326)	($328)	($330)	($333)	($335)	($337)	($340)	($342)	($345)	($347)	($349)	($352)	($354)	($357)	($359)	($362)	($365)	($367)	($370)	($372)	($375)	($378)	($380)
$ (41)	$ (5)	Recycling & Compositing	($352)	($14)	($15)	($15)	($16)	($16)	($17)	($17)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($19)	($19)	($19)	($19)	($19)	($19)	($19)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($21)	($21)	($21)
	$ (51)	Transfer and Disposal	($1,393)	($120)	($110)	($101)	($92)	($83)	($74)	($65)	($57)	($57)	($58)	($58)	($58)	($59)	($59)	($60)	($60)	($60)	($61)	($61)	($62)	($62)	($62)	($62)	($63)	($63)	($64)	($64)	($65)	($65)	($66)	($66)	($66)
Retailer																																		
	Economic Benefits/(Costs)																																	
		Bag/Foodservice ware Rev	$320,690	$18,981	$18,391	$17,800	$17,211	$16,622	$16,034	$15,447	$14,860	$14,966	$15,072	$15,179	$15,286	$15,395	$15,504	$15,614	$15,724	$15,836	$15,948	$16,061	$16,175	$16,289	$16,405	$16,521	$16,638	$16,756	$16,875	$16,995	$17,115	$17,236	$17,359
		Bag/Foodservice ware Costs	($317,483)	($18,792)	($18,207)	($17,622)	($17,039)	($16,456)	($15,874)	($15,292)	($14,712)	($14,816)	($14,921)	($15,027)	($15,133)	($15,241)	($15,349)	($15,457)	($15,567)	($15,677)	($15,788)	($15,900)	($16,013)	($16,127)	($16,241)	($16,356)	($16,472)	($16,589)	($16,706)	($16,825)	($16,944)	($17,064)	($17,185)
50%		Consumer ABF	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Alt Product Sales	$17,106	$658	$688	$718	$749	$779	$809	$839	$870	$876	$882	$888	$894	$901	$907	$914	$920	$927	$933	$940	$946	$953	$960	$967	$974	$980	$987	$994	$1,001	$1,009	$1,016
		Alt Product Costs	($16,593)	($638)	($668)	($697)	($726)	($755)	($785)	($814)	($843)	($849)	($855)	($861)	($868)	($874)	($880)	($886)	($892)	($899)	($905)	($912)	($918)	($925)	($931)	($938)	($944)	($951)	($958)	($965)	($971)	($978)	($985)
		Administration	($41)	($2.11)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)	($2)
		Training and Staff	($413)	($21.06)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)
		Ammortized Capital	$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regional																																		
	Economic Benefits/(Costs)																																	
	5%	Plastic Production	$2,727	$417	$367	$318	$269	$219	$170	$120	$71	$71	$72	$72	$73	$74	$74	$75	$75	$76	$76	$77	$77	$78	$78	$79	$79	$80	$81	$81	$82	$82	$83
	40%	Paper Production	$100,046	$3,878	$4,049	$4,220	$4,391	$4,563	$4,735	$4,907	$5,079	$5,115	$5,151	$5,188	$5,225	$5,262	$5,299	$5,337	$5,375	$5,413	$5,451	$5,490	$5,529	$5,568	$5,607	$5,647	$5,687	$5,727	$5,768	$5,809	$5,850	$5,891	$5,933
	0%	Reusable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	0%	Compostable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Total	($271,221)	($17,796)	($17,004)	($16,213)	($15,422)	($14,632)	($13,843)	($13,054)	($12,267)	($12,344)	($12,422)	($12,501)	($12,580)	($12,659)	($12,740)	($12,820)	($12,902)	($12,984)	($13,066)	($13,149)	($13,233)	($13,318)	($13,402)	($13,488)	($13,574)	($13,661)	($13,748)	($13,836)	($13,925)	($14,014)	($14,104)
		SPU/City of Seattle	($30,877)	($2,138)	($2,038)	($1,938)	($1,838)	($1,738)	($1,639)	($1,538)	($1,438)	($1,439)	($1,440)	($1,441)	($1,442)	($1,443)	($1,444)	($1,445)	($1,446)	($1,447)	($1,447)	($1,448)	($1,449)	($1,450)	($1,451)	($1,452)	($1,453)	($1,454)	($1,455)	($1,456)	($1,457)	($1,458)	($1,459)
		Consumer	($346,383)	($20,139)	($19,564)	($18,989)	($18,415)	($17,843)	($17,270)	($16,700)	($16,130)	($16,344)	($16,360)	($16,475)	($16,592)	($16,710)	($16,828)	($16,947)	($17,067)	($17,188)	($17,310)	($17,433)	($17,557)	($17,681)	($17,806)	($17,933)	($18,060)	($18,188)	($18,317)	($18,446)	($18,577)	($18,709)	($18,841)
		Retailer	$3,266	$186	$181	$176	$171	$166	$161	$156	$152	$153	$154	$155	$157	$158	$159	$160	$162	$163	$164	$166	$167	$168	$170	$171	$172	$174	$175	$177	$178	$179	$181
		Regional	$102,773	$4,295	$4,416	$4,538	$4,660	$4,782	$4,905	$5,027	$5,150	$5,187	$5,223	$5,260	$5,298	$5,335	$5,373	$5,411	$5,450	$5,488	$5,527	$5,566	$5,606	$5,645	$5,686	$5,726	$5,766	$5,807	$5,848	$5,890	$5,932	$5,974	$6,016

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Use and Switching Assumptions

	Bag Source	Switching Assumptions					
	Plastic	*Continue Plastic Bag*	*Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	35%	21%	37%	0%	7%	5%
Other Food and Restaurant	15%	35%	21%	37%	0%	7%	5%
General Merchandise and Apparel	10%	35%	21%	37%	0%	7%	5%
Fast Food and Convenience	6%	35%	21%	37%	0%	7%	5%
Other Retail	9%	35%	21%	37%	0%	7%	5%
Total	100%	35%	21%	37%	0%	7%	5%
	Paper	*Continue Paper Bag*	*Plastic Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	90%	0%	10%	0%	0%	0%
Other Food and Restaurant	15%	90%	0%	10%	0%	0%	0%
General Merchandise and Apparel	10%	90%	0%	10%	0%	0%	0%
Fast Food and Convenience	6%	90%	0%	10%	0%	0%	0%
Other Retail	9%	90%	0%	10%	0%	0%	0%
Total	100%	90%	0%	10%	0%	0%	0%

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Number of Disposable Bags and Alternatives (millions)

	2004 Use		*Switching Assumptions*							
	Plastic	*Paper*	*Continue Plastic Bag*	*Continue with Paper Bag*	*Additional Plastic Bag*	*Additional Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Replacement Ratio			1	1	1	2.5	170	1	511	4.0
Supermarkets	175,515	40,823	61,430	36,741	-	14,743	3,783	-	24	2,194
Other Food and Restaurant	43,879	10,206	15,358	9,185	-	3,686	946	-	6	548
General Merchandise and Apparel	29,253	6,804	10,238	6,123	-	2,457	631	-	4	366
Fast Food and Convenience	17,552	4,082	6,143	3,674	-	1,474	378	-	2	219
Other Retail	26,327	6,123	9,215	5,511	-	2,211	567	-	4	329
Total	292,526	68,038	102,384	61,234	-	24,572	6,305	-	40	3,657

	2004 Comp.		
Est. 2008 SF/MF Waste Generated		291,578	
Grocery/Bread Bags	0.82%	2,377	80%
Plastic Grocery Bags (Tons)		1,901	
Avg. Plastic Grocery Bag Weight		0.013	
Plastic Grocery Bags		292,525,673	
2004 Seattle Population		572,600	
Annual Per Plastic Capita Bag Use		511	0.81
Est. 2008 SF/MF Waste Generated		291,578	
OCC/Kraft Paper	6.03%	17,592	15%
Mixed Low Grade	9.59%	27,950	2%
Paper Grocery Bags (Tons)		3,198	
Avg. Paper Grocery Bag Weight		0.094	
Paper Grocery Bags		68,038,177	
2004 Seattle Population		572,600	
Annual Per Capita Paper Bag Use		119	0.19

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	*Material*	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Plastic Generated (SQ)	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Incr. Growth					13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
	Cumm Growth					13	27	41	54	68	82	96	111	125	139	154	168	183	198	213	227	243	258	273	289	304	320	335	351	367	383	399	416	432
	Continue Plas	7	35%		0%	5%	10%	15%	20%	25%	30%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
	Switch to Pap	7	21%		0%	3%	6%	9%	12%	15%	18%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
	Switch to Reus	7	37%		0%	5%	11%	16%	21%	26%	32%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	7%		0%	1%	2%	3%	4%	5%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
TONS																																		
	Keep Plastic				1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Paper				-	60	120	180	240	300	360	420	423	426	429	432	435	438	441	444	447	450	453	457	460	463	466	470	473	476	480	483	487	490
	Reuse				-	105	211	317	422	528	633	739	744	750	755	760	766	771	777	782	788	793	799	805	810	816	822	828	833	839	845	851	857	863
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	20	40	60	80	100	120	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	157	158	159	160	161	162	163
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Plastic	1	0.013		292,526	266,088	239,656	213,229	186,807	160,391	133,979	107,573	108,336	109,104	109,877	110,656	111,440	112,230	113,026	113,827	114,634	115,446	116,265	117,089	117,919	118,755	119,596	120,444	121,298	122,158	123,023	123,896	124,774	125,658
	Paper	1.5	0.094		-	9,211	18,425	27,643	36,863	46,087	55,314	64,544	65,002	65,462	65,926	66,394	66,864	67,338	67,815	68,296	68,780	69,268	69,759	70,253	70,751	71,253	71,758	72,266	72,779	73,295	73,814	74,337	74,864	75,395
	Reuse	170	0.145		-	16,229	32,464	48,704	64,950	81,201	97,458	113,720	114,527	115,338	116,156	116,979	117,808	118,643	119,484	120,331	121,184	122,043	122,908	123,780	124,657	125,541	126,430	127,327	128,229	129,138	130,053	130,975	131,904	132,839
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	3,070	6,142	9,214	12,288	15,362	18,438	21,515	21,667	21,821	21,975	22,131	22,288	22,446	22,605	22,765	22,927	23,089	23,253	23,418	23,584	23,751	23,919	24,089	24,260	24,432	24,605	24,779	24,955	25,132
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		292,526	266,088	239,656	213,229	186,807	160,391	133,979	107,573	108,336	109,104	109,877	110,656	111,440	112,230	113,026	113,827	114,634	115,446	116,265	117,089	117,919	118,755	119,596	120,444	121,298	122,158	123,023	123,896	124,774	125,658
	Paper	1.5	0.094		-	6,141	12,284	18,429	24,576	30,725	36,876	43,029	43,334	43,642	43,951	44,262	44,576	44,892	45,210	45,531	45,854	46,179	46,506	46,836	47,167	47,502	47,839	48,178	48,519	48,863	49,209	49,558	49,909	50,263
	Reuse	170	0.145		-	19	38	57	76	95	114	134	135	135	136	137	138	139	140	141	142	143	144	145	146	147	148	150	151	152	153	154	155	156
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Paper	2	0.094		-	289	577	866	1,155	1,444	1,733	2,022	2,037	2,051	2,066	2,080	2,095	2,110	2,125	2,140	2,155	2,170	2,186	2,201	2,217	2,233	2,248	2,264	2,280	2,297	2,313	2,329	2,346	2,362
	Reuse	170	0.145		-	1	3	4	6	7	8	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Incr. Growth					23	23	23	23	23	23	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	27	27	27	27	27	28
	Cumm Growth					23	45	68	92	115	138	162	186	210	234	258	283	308	332	357	383	408	434	459	485	511	538	564	591	618	645	672	699	727
	Continue Pap	7	35%		0%	5%	10%	15%	20%	25%	30%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
	Switch to Plas	7	21%		0%	3%	6%	9%	12%	15%	18%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
	Switch to Reus	7	37%		0%	5%	11%	16%	21%	26%	32%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	7%		0%	1%	2%	3%	4%	5%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
TONS																																		
	Keep Paper				3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Plastic				-	101	201	302	403	504	605	706	711	716	721	726	731	736	741	747	752	757	763	768	773	779	784	790	796	801	807	813	818	824
	Reuse				-	177	355	532	710	888	1,065	1,243	1,252	1,261	1,270	1,279	1,288	1,297	1,306	1,315	1,325	1,334	1,344	1,353	1,363	1,372	1,382	1,392	1,402	1,412	1,422	1,432	1,442	1,452
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	34	67	101	134	168	202	235	237	239	240	242	244	245	247	249	251	252	254	256	258	260	261	263	265	267	269	271	273	275
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	61,889	55,741	49,595	43,449	37,305	31,162	25,020	25,198	25,376	25,556	25,737	25,920	26,103	26,289	26,475	26,663	26,852	27,042	27,234	27,427	27,621	27,817	28,014	28,213	28,412	28,614	28,817	29,021	29,227
	Plastic	1.5	0.013		-	2,142	4,286	6,429	8,574	10,719	12,865	15,012	15,119	15,226	15,334	15,442	15,552	15,662	15,773	15,885	15,998	16,111	16,225	16,340	16,456	16,573	16,690	16,808	16,928	17,047	17,168	17,290	17,413	17,536
	Reuse	170	0.145		-	3,775	7,551	11,328	15,107	18,886	22,668	26,450	26,638	26,826	27,017	27,208	27,401	27,595	27,791	27,988	28,186	28,386	28,587	28,790	28,994	29,199	29,406	29,615	29,825	30,036	30,249	30,463	30,679	30,897
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	714	1,429	2,143	2,858	3,573	4,288	5,004	5,040	5,075	5,111	5,147	5,184	5,221	5,258	5,295	5,333	5,370	5,408	5,447	5,485	5,524	5,563	5,603	5,643	5,682	5,723	5,763	5,804	5,845
BAGS USED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	61,889	55,741	49,595	43,449	37,305	31,162	25,020	25,198	25,376	25,556	25,737	25,920	26,103	26,289	26,475	26,663	26,852	27,042	27,234	27,427	27,621	27,817	28,014	28,213	28,412	28,614	28,817	29,021	29,227
	Plastic	1.5	0.013		-	1,428	2,857	4,286	5,716	7,146	8,577	10,008	10,079	10,151	10,222	10,295	10,368	10,441	10,515	10,590	10,665	10,741	10,817	10,893	10,971	11,048	11,127	11,206	11,285	11,365	11,446	11,527	11,608	11,691
	Reuse	170	0.145		-	4	9	13	18	22	27	31	31	32	32	32	32	32	33	33	33	33	34	34	34	34	35	35	35	35	36	36	36	36
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Plastic	2	0.013		-	9	19	28	37	46	56	65	66	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75	75	76
	Reuse	170	0.145		-	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Amount of Waste Generated (tons)

Bag Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight (Lbs.)	Use	Life Exp.
Avg. Plastic Grocery Bag Weight	$ 0.15	$ 0.03	0.013		Single Trip *
Avg. Paper Grocery Bag Weight	$ -	$ 0.15	0.094		Single Trip *
Avg. Woven HDPE Reusable Bag		$ 1.00	0.288	10%	520 Trips
Avg. Non-Woven PP Reusable Bag		$ 1.00	0.145	90%	520 Trips
Avg. Compostable "Plastic" Bag		$ 0.08	0.027		Single Trip
Avg. Garbage Bag		$ 0.09	0.033		Single Use

* Includes 1 time reuse as garbage bin liner

TONS		*Exchange*	*Weight*		*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
PLASTIC BAGS USED	Plastic				1,901	1,739	1,576	1,414	1,251	1,089	927	764	770	775	781	786	792	797	803	809	814	820	826	832	838	844	850	856	862	868	874	880	886	893
	Recycle Rate	15	20%		15%	15%	16%	16%	16%	17%	17%	17%	18%	18%	18%	19%	19%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			5,279	285	267	247	226	204	181	158	132	136	140	143	147	150	154	158	162	163	164	165	166	168	169	170	171	172	174	175	176	177	179
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			23,638	1,616	1,472	1,329	1,188	1,047	907	769	632	634	636	638	639	641	643	645	647	652	656	661	666	670	675	680	685	689	694	699	704	709	714
PAPER BAGS USED	Paper				3,198	3,197	3,197	3,197	3,197	3,197	3,198	3,198	3,221	3,244	3,267	3,290	3,313	3,337	3,360	3,384	3,408	3,432	3,457	3,481	3,506	3,531	3,556	3,581	3,606	3,632	3,658	3,684	3,710	3,736
	Recycle Rate	5	83%		83%	83%	82%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			84,447	2,590	2,603	2,615	2,628	2,641	2,654	2,654	2,655	2,673	2,692	2,711	2,731	2,750	2,770	2,789	2,809	2,829	2,849	2,869	2,889	2,910	2,931	2,951	2,972	2,993	3,015	3,036	3,057	3,079	3,101
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			17,527	608	595	582	569	556	544	544	544	548	551	555	559	563	567	571	575	579	584	588	592	596	600	604	609	613	617	622	626	631	635
REUSE BAGS USED	Reuse				-	2	3	5	7	9	10	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14
	Recycle Rate	20	10%		0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%	6%	6%	7%	7%	8%	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			25	-	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			308	-	2	3	5	7	8	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13
COMPOSTABLE BAGS USED	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		0%	1%	3%	4%	5%	7%	8%	9%	11%	12%	13%	15%	16%	17%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BAGS USED	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL BAGS USED																																		
	Generated			133,233	5,160	4,999	4,838	4,678	4,517	4,357	4,198	4,038	4,067	4,095	4,124	4,154	4,183	4,213	4,243	4,273	4,303	4,333	4,364	4,395	4,426	4,458	4,489	4,521	4,553	4,585	4,618	4,651	4,684	4,717
	Recycled			89,751	2,875	2,869	2,862	2,854	2,845	2,836	2,812	2,788	2,810	2,832	2,855	2,878	2,901	2,925	2,948	2,972	2,993	3,014	3,035	3,057	3,079	3,101	3,123	3,145	3,167	3,189	3,212	3,235	3,258	3,281
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			43,482	2,284	2,129	1,976	1,823	1,672	1,522	1,386	1,250	1,257	1,263	1,269	1,276	1,282	1,288	1,295	1,301	1,310	1,319	1,329	1,338	1,347	1,357	1,367	1,376	1,386	1,396	1,406	1,416	1,426	1,436

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"											
			Functional Unit	Application	Commercial Example	Non-Renewable Energy	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
Type of "Plastic"						MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq			Kg/year	m2/year		ton		
.209	Reusable	PP	1	Fiber		96.5			9.330144	0.022000			4.784689			0.001153	0.008947			99.5% landfill; 0% recycled; 0% reuse/landfill; .5% litter	
.216	Reusable	HDPE	1	Woven					2.921296	0.009000			0.000000			0.000495	0.006852				Reference
3.12	Petro	HDPE	1	Film		67.3			1.948718	0.031731			0.641026			2.500000	2.000000			78.5% landfill; 2% recycled; 19% reuse/landfill; .5% litter	
	Bio	TPS	1	Film		53.5			1.210000		5.300000	10.400000	1.100000							Composting	
3.12	Bio	TPS/PBSorA	1	Film	Bionelle				2.016026	0.006090			0.875000			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1,2
3.12	Bio	TPS/PBAT	1	Film	Eco-Flex				1.977564	0.010897			1.301282			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	
4.21	Bio	TPS/PCL	1	Film	Mater-Bi				2.235154	0.013064			1.583333			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1,2
3.12	Bio	TPS/PE	1	Film	Earthstrength				2.080128	0.023077			0.826923			0.002500	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	11
4.21	Bio	PLA	1	Film	Natureworks				4.772080	0.025404			2.919872			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
22.1	Paper	Kraft	1	Film		32.6			1.376851	0.012866			1.200795			0.000014	0.025000			39.5% landfill; 60% recycled; 0% reuse/landfill; .5% litter	1, 2
A	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)		29.1			0.007000			7.060000	0.671000							Incineration	1, 2
B	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)					0.074000											Composting	1, 2
A	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)		33.6			0.794000			5.480000	0.280000							Incineration	1, 2
B	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)					0.002000											Landfilling (no gas recovery)	1,2
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000											Incineration	4
	Petro	HDPE	1	Pellet		73.8															4
	Petro	LLDPE	1	Pellet		72.3			4.540000											Incineration	4
	Petro	LDPE	1	Pellet		80.6			5.040000											Incineration	4
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	5
	Petro	Nylon 6	1	Pellet		120.0			7.640000											Incineration	6
	Bio	TPS	1	Pellet		25.4			1.140000											Incineration	7
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	7
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000											Incineration	7
	Bio	PHA *		Pellet			90.0	0.0													9
																					8
																					8
																					10
																					6

References

1 Nolan-ITU 2003. The Impacts of Degradable Plastic Bags in Australia
2 Nolan-ITU 2002. Plastic Shopping Bags - Analysis of Levies and Environmental Impacts
4 LCA of biodegradable multilayer film from biopolymers. Daniel Garraín1, Rosario Vidal1, Pilar Martínez2, Vicente Franco1, David Cebrián-Tarrasón1, 1GID, Engineering Design Group, Dpt. MEC, Universitat Jaume I Castellón, Av. Sos Baynat s/n, 12071 Castellón (Spain)
5 Cradle-Gate Data for petrochemical polymers from APME (1999).
6 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
7 Cradle-Gate Data for petrochemical polymers from APME (1999).
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001
11 Composto 1998

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Environmental Categories - PLASTIC

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	28,917	1,901	1,739	1,576	1,414	1,251	1,089	927	764	770	775	781	786	792	797	803	809	814	820	826	832	838	844	850	856	862	868	874	880	886	893
	Plastic with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	61.1	GJ	1,888,353	119,785	109,886	99,988	90,093	80,201	70,311	60,423	50,538	50,896	51,257	51,620	51,986	52,355	52,726	53,100	53,476	53,855	54,237	54,621	55,008	55,398	55,791	56,186	56,585	56,986	57,390	57,796	58,206	58,619	59,034
NolaniTU	GHG Emissions	1,767.8	Kg CO2e	54,672,304	3,468,072	3,181,449	2,894,895	2,608,412	2,322,000	2,035,660	1,749,391	1,463,195	1,473,567	1,484,012	1,494,531	1,505,125	1,515,793	1,526,538	1,537,358	1,548,255	1,559,230	1,570,282	1,581,413	1,592,622	1,603,911	1,615,280	1,626,730	1,638,260	1,649,873	1,661,567	1,673,345	1,685,206	1,697,151	1,709,181
NolaniTU	Resource Depletion (Abiotic)	28.8	Kg Sb eq	890,223	56,470	51,803	47,137	42,473	37,809	33,146	28,485	23,825	23,994	24,164	24,335	24,508	24,682	24,856	25,033	25,210	25,389	25,569	25,750	25,932	26,116	26,301	26,488	26,676	26,865	27,055	27,247	27,440	27,635	27,830
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	581.5	g PO4 eq	17,984,310	1,140,813	1,046,529	952,268	858,030	763,816	669,625	575,458	481,314	484,726	488,162	491,622	495,107	498,616	502,151	505,710	509,295	512,905	516,540	520,202	523,889	527,602	531,342	535,108	538,901	542,721	546,568	550,442	554,344	558,273	562,231
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	2,268.0	Kg/year	70,138,811	4,449,171	4,081,464	3,713,846	3,346,318	2,978,882	2,611,537	2,244,285	1,877,125	1,890,431	1,903,831	1,917,326	1,930,916	1,944,603	1,958,387	1,972,269	1,986,249	2,000,328	2,014,507	2,028,786	2,043,166	2,057,649	2,072,234	2,086,923	2,101,715	2,116,613	2,131,616	2,146,726	2,161,942	2,177,267	2,192,700
NolaniTU	Litter Aesthetics	1,814.4	m2/year	56,111,048	3,559,337	3,265,171	2,971,077	2,677,055	2,383,106	2,089,230	1,795,428	1,501,700	1,512,345	1,523,065	1,533,861	1,544,733	1,555,683	1,566,710	1,577,815	1,588,999	1,600,262	1,611,605	1,623,029	1,634,533	1,646,119	1,657,787	1,669,538	1,681,372	1,693,290	1,705,293	1,717,380	1,729,554	1,741,813	1,754,160
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bin Liners				60	61	61	62	62	63	63	63	64	64	65	65	66	66	67	67	68	68	69	69	69	70	70	71	71	72	72	73	74	74

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Environmental Categories - PAPER

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	101,974	3,198	3,197	3,197	3,197	3,197	3,197	3,198	3,198	3,221	3,244	3,267	3,290	3,313	3,337	3,360	3,384	3,408	3,432	3,457	3,481	3,506	3,531	3,556	3,581	3,606	3,632	3,658	3,684	3,710	3,736
	Paper with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	29.6	GJ	3,018,066	94,643	94,632	94,625	94,622	94,625	94,631	94,643	94,659	95,330	96,006	96,686	97,372	98,062	98,757	99,457	100,162	100,872	101,587	102,307	103,032	103,763	104,498	105,239	105,985	106,736	107,493	108,254	109,022	109,795	110,573
NolaniTU	GHG Emissions	1249.05706	Kg CO2e	127,371,590	3,994,228	3,993,744	3,993,452	3,993,352	3,993,446	3,993,735	3,994,221	3,994,904	4,023,221	4,051,739	4,080,459	4,109,382	4,138,511	4,167,846	4,197,388	4,227,141	4,257,104	4,287,279	4,317,669	4,348,273	4,379,095	4,410,135	4,441,396	4,472,877	4,504,582	4,536,512	4,568,668	4,601,052	4,633,666	4,666,510
NolaniTU	Resource Depletion (Abiotic)	11.6715168	Kg Sb eq	1,190,194	37,323	37,319	37,316	37,315	37,316	37,319	37,323	37,329	37,594	37,861	38,129	38,399	38,671	38,945	39,221	39,500	39,779	40,061	40,345	40,631	40,919	41,209	41,502	41,796	42,092	42,390	42,691	42,993	43,298	43,605
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	1089.34157	g PO4 eq	111,084,731	3,483,490	3,483,069	3,482,814	3,482,727	3,482,809	3,483,061	3,483,484	3,484,081	3,508,777	3,533,648	3,558,695	3,583,920	3,609,324	3,634,908	3,660,673	3,686,621	3,712,753	3,739,070	3,765,573	3,792,265	3,819,145	3,846,216	3,873,479	3,900,936	3,928,587	3,956,434	3,984,478	4,012,721	4,041,164	4,069,809
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	0.01236771	Kg/year	1,261	40	40	40	40	40	40	40	40	40	40	40	41	41	41	42	42	42	42	43	43	43	44	44	44	45	45	45	46	46	46
NolaniTU	Litter Aesthetics	22.6796	m2/year	2,312,734	72,525	72,516	72,511	72,509	72,511	72,516	72,525	72,537	73,051	73,569	74,090	74,616	75,144	75,677	76,214	76,754	77,298	77,846	78,398	78,953	79,513	80,076	80,644	81,216	81,791	82,371	82,955	83,543	84,135	84,732
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Environmental Categories - REUSEABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	333	-	2	3	5	7	9	10	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14
	Reuseable with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	87.5	GJ	29,122	-	149	298	447	596	746	895	1,044	1,052	1,059	1,067	1,074	1,082	1,090	1,097	1,105	1,113	1,121	1,129	1,137	1,145	1,153	1,161	1,169	1,178	1,186	1,194	1,203	1,211	1,220
NolaniTU	GHG Emissions	8464.15694	Kg CO2e	2,816,923	-	14,417	28,839	43,266	57,697	72,134	86,576	101,022	101,738	102,459	103,186	103,917	104,654	105,396	106,143	106,895	107,653	108,416	109,184	109,958	110,738	111,523	112,313	113,109	113,911	114,718	115,531	116,350	117,175	118,006
NolaniTU	Resource Depletion (Abiotic)	19.958048	Kg Sb eq	6,642	-	34	68	102	136	170	204	238	240	242	243	245	247	249	250	252	254	256	257	259	261	263	265	267	269	270	272	274	276	278
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	4340.5933	g PO4 eq	1,444,576	-	7,393	14,789	22,188	29,588	36,992	44,398	51,806	52,173	52,543	52,916	53,291	53,669	54,049	54,432	54,818	55,207	55,598	55,992	56,389	56,788	57,191	57,596	58,005	58,416	58,830	59,247	59,667	60,090	60,516
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	1.04608299	Kg/year	348	-	2	4	5	7	9	11	12	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15
NolaniTU	Litter Aesthetics	8.11690947	m2/year	2,701	-	14	28	41	55	69	83	97	98	98	99	100	100	101	102	103	103	104	105	105	106	107	108	108	109	110	111	112	112	113
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Environmental Categories - COMPOSTABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	***Factor***	***Unit***																															
NolanITU	Non-Renewable Energy	48.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	GHG Emissions	1794.01451	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Resource Depletion (Abiotic)	9.88597949	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1180.50226	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01238655	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Aesthetics	22.6796	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Impact on Environmental Categories - TOTAL

Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Waste Generated			131,224	5,099	4,938	4,777	4,616	4,455	4,295	4,135	3,975	4,003	4,031	4,060	4,088	4,117	4,147	4,176	4,206	4,235	4,265	4,296	4,326	4,357	4,388	4,419	4,450	4,482	4,513	4,545	4,578	4,610	4,643
Total	***Factor***	***Unit***																															
Non-Renewable Energy		GJ	4,935,540	214,428	204,666	194,911	185,163	175,422	165,688	155,961	146,242	147,278	148,322	149,373	150,432	151,499	152,572	153,654	154,743	155,840	156,944	158,057	159,177	160,306	161,442	162,586	163,739	164,899	166,068	167,245	168,431	169,625	170,827
GHG Emissions		Kg CO2e	184,860,817	7,462,299	7,189,610	6,917,186	6,645,030	6,373,144	6,101,529	5,830,188	5,559,122	5,598,526	5,638,210	5,678,175	5,718,424	5,758,958	5,799,779	5,840,889	5,882,291	5,923,986	5,965,977	6,008,265	6,050,854	6,093,744	6,136,938	6,180,438	6,224,247	6,268,366	6,312,798	6,357,545	6,402,609	6,447,992	6,493,697
Resource Depletion (Abiotic)		Kg Sb eq	2,087,059	93,793	89,156	84,521	79,889	75,261	70,635	66,012	61,393	61,828	62,266	62,707	63,152	63,600	64,050	64,504	64,962	65,422	65,886	66,353	66,823	67,297	67,774	68,254	68,738	69,225	69,716	70,210	70,708	71,209	71,714
Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eutrophication		g PO4 eq	130,513,617	4,624,303	4,536,991	4,449,871	4,362,945	4,276,213	4,189,678	4,103,340	4,017,201	4,045,676	4,074,353	4,103,233	4,132,318	4,161,609	4,191,107	4,220,815	4,250,733	4,280,864	4,311,208	4,341,767	4,372,542	4,403,536	4,434,750	4,466,184	4,497,842	4,529,724	4,561,832	4,594,167	4,626,732	4,659,527	4,692,555
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	70,140,420	4,449,211	4,081,505	3,713,889	3,346,363	2,978,929	2,611,586	2,244,335	1,877,177	1,890,483	1,903,884	1,917,379	1,930,970	1,944,657	1,958,441	1,972,323	1,986,304	2,000,383	2,014,562	2,028,842	2,043,223	2,057,706	2,072,292	2,086,981	2,101,774	2,116,672	2,131,675	2,146,785	2,162,002	2,177,327	2,192,760
Litter Aesthetics		m2/year	58,426,484	3,631,862	3,337,701	3,043,615	2,749,605	2,455,671	2,161,815	1,868,035	1,574,334	1,585,494	1,596,732	1,608,050	1,619,448	1,630,927	1,642,488	1,654,130	1,665,855	1,677,663	1,689,555	1,701,531	1,713,592	1,725,738	1,737,971	1,750,290	1,762,697	1,775,191	1,787,774	1,800,446	1,813,208	1,826,061	1,839,004
Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 3
ARF on Plastic Bags Only
Cost Benefit Calculations

	Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate			56%	57%	59%	61%	63%	65%	67%	69%	69%	69%	69%	69%	69%	69%	69%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
	Compost Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated		133,233	5,160	4,999	4,838	4,678	4,517	4,357	4,198	4,038	4,067	4,095	4,124	4,154	4,183	4,213	4,243	4,273	4,303	4,333	4,364	4,395	4,426	4,458	4,489	4,521	4,553	4,585	4,618	4,651	4,684	4,717
	Recycled		89,751	2,875	2,869	2,862	2,854	2,845	2,836	2,812	2,788	2,810	2,832	2,855	2,878	2,901	2,925	2,948	2,972	2,993	3,014	3,035	3,057	3,079	3,101	3,123	3,145	3,167	3,189	3,212	3,235	3,258	3,281
	Composted		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled		43,482	2,284	2,129	1,976	1,823	1,672	1,522	1,386	1,250	1,257	1,263	1,269	1,276	1,282	1,288	1,295	1,301	1,310	1,319	1,329	1,338	1,347	1,357	1,367	1,376	1,386	1,396	1,406	1,416	1,426	1,436
		Escalation Rate	0%																														
	SPU/City of Seattle	Discount Rate	3%																														
	Economic Benefits/(Costs)																																
		Administration	($11,309)	($577.00)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)
		Inspection and Enforcement	($4,979)	($254.00)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)
		Program Marketing, Monitoring, Education, and Research	($4,312)	($220.00)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)
		Recycling	$0																														
11.5%	$ 21.15	Hauling, Transfer and Disposal	$620	$48	$45	$42	$39	$36	$32	$29	$27	$27	$27	$27	$27	$27	$27	$28	$28	$28	$28	$28	$28	$29	$29	$29	$29	$29	$30	$30	$30	$30	$31
	$ (460)	Other Costs Due to Bag/Foodservice ware	($9,147)	($875)	($800)	($725)	($650)	($576)	($501)	($426)	($352)	($354)	($357)	($359)	($362)	($364)	($367)	($369)	($372)	($375)	($377)	($380)	($383)	($385)	($388)	($391)	($394)	($396)	($399)	($402)	($405)	($408)	($411)
		Terrestrial Litter Control	($9,800)	($500.00)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)
		Marine Litter Abatement	($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)
50%		Consumer ARF	$229,436	$21,939	$20,064	$18,188	$16,314	$14,439	$12,565	$10,692	$8,819	$8,881	$8,944	$9,007	$9,071	$9,136	$9,200	$9,266	$9,331	$9,397	$9,464	$9,531	$9,599	$9,667	$9,735	$9,804	$9,874	$9,944	$10,014	$10,085	$10,157	$10,229	$10,301
Consumer			$190,117																														
	Economic Benefits/(Costs)																																
		Bag/Foodservice ware Costs	($301,672)	($18,981)	($18,230)	($17,479)	($16,729)	($15,979)	($15,231)	($14,482)	($13,735)	($13,832)	($13,930)	($14,029)	($14,128)	($14,229)	($14,329)	($14,431)	($14,533)	($14,636)	($14,740)	($14,845)	($14,950)	($15,056)	($15,163)	($15,270)	($15,378)	($15,487)	($15,597)	($15,708)	($15,819)	($15,931)	($16,044)
		Consumer ADF	($458,872)	($43,879)	($40,127)	($36,377)	($32,627)	($28,878)	($25,131)	($21,383)	($17,637)	($17,762)	($17,888)	($18,015)	($18,143)	($18,271)	($18,401)	($18,531)	($18,663)	($18,795)	($18,928)	($19,062)	($19,197)	($19,333)	($19,470)	($19,608)	($19,747)	($19,887)	($20,028)	($20,170)	($20,313)	($20,457)	($20,602)
		Household Expenditure	($9,831)	($329)	($355)	($381)	($407)	($433)	($458)	($484)	($510)	($514)	($518)	($521)	($525)	($529)	($532)	($536)	($540)	($544)	($548)	($552)	($556)	($559)	($563)	($567)	($571)	($576)	($580)	($584)	($588)	($592)	($596)
	$ (70)	Hauling	($6,100)	($361)	($350)	($339)	($327)	($316)	($305)	($294)	($283)	($285)	($287)	($289)	($291)	($293)	($295)	($297)	($299)	($301)	($303)	($305)	($308)	($310)	($312)	($314)	($316)	($319)	($321)	($323)	($326)	($328)	($330)
$ (41)	$ (5)	Recycling & Composting	($290)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($14)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($15)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($16)	($16)
	$ (51)	Transfer and Disposal	($1,489)	($116)	($109)	($101)	($93)	($85)	($78)	($71)	($64)	($64)	($64)	($64)	($65)	($65)	($65)	($66)	($66)	($66)	($66)	($67)	($67)	($68)	($68)	($69)	($69)	($70)	($70)	($71)	($71)	($72)	($72)	($73)	($73)
Retailer																																		
	Economic Benefits/(Costs)																																
		Bag/Foodservice ware Rev	$301,672	$18,981	$18,230	$17,479	$16,729	$15,979	$15,231	$14,482	$13,735	$13,832	$13,930	$14,029	$14,128	$14,229	$14,329	$14,431	$14,533	$14,636	$14,740	$14,845	$14,950	$15,056	$15,163	$15,270	$15,378	$15,487	$15,597	$15,708	$15,819	$15,931	$16,044
		Bag/Foodservice ware Costs	($298,655)	($18,792)	($18,048)	($17,304)	($16,562)	($15,820)	($15,078)	($14,338)	($13,598)	($13,694)	($13,791)	($13,889)	($13,987)	($14,086)	($14,186)	($14,287)	($14,388)	($14,490)	($14,593)	($14,696)	($14,800)	($14,905)	($15,011)	($15,117)	($15,224)	($15,332)	($15,441)	($15,550)	($15,661)	($15,772)	($15,884)
50%		Consumer ARF	$229,436	$21,939	$20,064	$18,188	$16,314	$14,439	$12,565	$10,692	$8,819	$8,881	$8,944	$9,007	$9,071	$9,136	$9,200	$9,266	$9,331	$9,397	$9,464	$9,531	$9,599	$9,667	$9,735	$9,804	$9,874	$9,944	$10,014	$10,085	$10,157	$10,229	$10,301
		Alt Product Sales	$9,831	$329	$355	$381	$407	$433	$458	$484	$510	$514	$518	$521	$525	$529	$532	$536	$540	$544	$548	$552	$556	$559	$563	$567	$571	$576	$580	$584	$588	$592	$596
		Alt Product Costs	($9,536)	($319)	($344)	($369)	($394)	($420)	($445)	($470)	($495)	($499)	($502)	($506)	($509)	($513)	($517)	($520)	($524)	($528)	($531)	($535)	($539)	($543)	($547)	($550)	($554)	($558)	($562)	($566)	($570)	($574)	($578)
		Administration	($413)	($21.06)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)
		Training and Staff	($949)	($210.60)	($211)	($211)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)
		Ammortized Capital	$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regional																																	
	Economic Benefits/(Costs)																																
	5%	Plastic Production	$4,359	$417	$381	$346	$310	$274	$239	$203	$168	$169	$170	$171	$172	$174	$175	$176	$177	$179	$180	$181	$182	$184	$185	$186	$188	$189	$190	$192	$193	$194	$196
	40%	Paper Production	$79,761	$3,878	$3,878	$3,877	$3,877	$3,877	$3,878	$3,878	$3,878	$3,906	$3,934	$3,962	$3,990	$4,018	$4,047	$4,075	$4,104	$4,133	$4,163	$4,192	$4,222	$4,252	$4,282	$4,312	$4,343	$4,374	$4,405	$4,436	$4,467	$4,499	$4,531
	0%	Reusable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	0%	Compostable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Total	($272,630)	($17,937)	($17,163)	($16,390)	($15,428)	($14,656)	($13,885)	($13,115)	($12,345)	($12,421)	($12,497)	($12,574)	($12,652)	($12,730)	($12,809)	($12,888)	($12,968)	($13,049)	($13,130)	($13,211)	($13,293)	($13,376)	($13,460)	($13,544)	($13,628)	($13,713)	($13,799)	($13,885)	($13,972)	($14,060)	($14,148)
		SPU/City of Seattle	$190,117	$19,542	$17,738	$15,934	$14,131	$12,328	$10,526	$8,724	$6,923	$6,983	$7,043	$7,104	$7,166	$7,228	$7,290	$7,353	$7,416	$7,480	$7,544	$7,608	$7,673	$7,739	$7,805	$7,871	$7,938	$8,006	$8,074	$8,142	$8,211	$8,280	$8,350
		Consumer	($778,253)	($63,681)	($59,185)	($54,691)	($50,198)	($45,706)	($41,216)	($36,729)	($32,243)	($32,471)	($32,701)	($32,933)	($33,166)	($33,401)	($33,638)	($33,876)	($34,116)	($34,358)	($34,602)	($34,847)	($35,094)	($35,343)	($35,593)	($35,845)	($36,100)	($36,355)	($36,613)	($36,873)	($37,134)	($37,397)	($37,662)
		Retailer	$231,386	$21,907	$20,025	$18,143	$16,451	$14,570	$12,689	$10,809	$8,929	$8,993	$9,057	$9,121	$9,186	$9,252	$9,318	$9,384	$9,451	$9,518	$9,586	$9,654	$9,723	$9,792	$9,862	$9,932	$10,003	$10,074	$10,145	$10,218	$10,290	$10,364	$10,437
		Regional	$84,120	$4,295	$4,259	$4,223	$4,187	$4,152	$4,116	$4,081	$4,046	$4,075	$4,104	$4,133	$4,162	$4,192	$4,222	$4,251	$4,282	$4,312	$4,343	$4,373	$4,404	$4,436	$4,467	$4,499	$4,531	$4,563	$4,595	$4,628	$4,660	$4,693	$4,727

Disposable Bag Policy Option 4
ARF on All Bags
Use and Switching Assumptions

	Bag Source	Switching Assumptions					
	Plastic	*Continue Plastic Bag*	*Paper Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	35%	0%	52%	0%	13%	7%
Other Food and Restaurant	15%	35%	0%	52%	0%	13%	7%
General Merchandise and Apparel	10%	35%	0%	52%	0%	13%	7%
Fast Food and Convenience	6%	35%	0%	52%	0%	13%	7%
Other Retail	9%	35%	0%	52%	0%	13%	7%
Total	100%	35%	0%	52%	0%	13%	7%
	Paper	*Continue Paper Bag*	*Plastic Bag*	*Long Term Reusable Bag*	*Compostable "Plastic" Bag*	*No Bag*	*Increase in Garbage Bags*
Supermarkets	60%	35%	0%	52%	0%	13%	3%
Other Food and Restaurant	15%	35%	0%	52%	0%	13%	3%
General Merchandise and Apparel	10%	35%	0%	52%	0%	13%	3%
Fast Food and Convenience	6%	35%	0%	52%	0%	13%	3%
Other Retail	9%	35%	0%	52%	0%	13%	3%
Total	100%	35%	0%	52%	0%	13%	3%

Disposable Bag Policy Option 4
ARF on All Bags
Current Consumption and Bag Numbers (millions)

	2004 Comp.		
Est. 2008 SF/MF Waste Generated		291,578	
Grocery/Bread Bags	0.82%	2,377	80%
Plastic Grocery Bags (Tons)		1,901	
Avg. Plastic Grocery Bag Weight		0.013	
Plastic Grocery Bags		292,525,673	
2004 Seattle Population		572,600	
Annual Per Plastic Capita Bag Use		511	0.81
Est. 2008 SF/MF Waste Generated		291,578	
OCC/Kraft Paper	6.03%	17,592	15%
Mixed Low Grade	9.59%	27,950	2%
Paper Grocery Bags (Tons)		3,198	
Avg. Paper Grocery Bag Weight		0.094	
Paper Grocery Bags		68,038,177	
2004 Seattle Population		572,600	
Annual Per Capita Paper Bag Use		119	0.19

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	*Material*	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Plastic Generated (SQ)	0.71%	Growth	63,312	1,901	1,915	1,928	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041	2,055	2,070	2,084	2,099	2,114	2,129	2,144	2,159	2,175	2,190	2,205	2,221	2,237	2,253	2,269	2,285	2,301	2,317	2,334
	Incr. Growth					13	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
	Cumm Growth					13	27	41	54	68	82	96	111	125	139	154	168	183	198	213	227	243	258	273	289	304	320	335	351	367	383	399	416	432
	Continue Plas	7	35%		0%	5%	10%	15%	20%	25%	30%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
	Switch to Pap	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	52%		0%	7%	15%	22%	30%	37%	45%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	13%		0%	2%	4%	6%	7%	9%	11%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
TONS																																		
	Keep Plastic				1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Paper				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	148	297	445	593	742	890	1,039	1,046	1,054	1,061	1,069	1,076	1,084	1,092	1,099	1,107	1,115	1,123	1,131	1,139	1,147	1,155	1,163	1,171	1,180	1,188	1,196	1,205	1,213
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	37	74	111	148	185	223	260	262	263	265	267	269	271	273	275	277	279	281	283	285	287	289	291	293	295	297	299	301	303
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Plastic	1	0.013		292,526	266,088	239,656	213,229	186,807	160,391	133,979	107,573	108,336	109,104	109,877	110,656	111,440	112,230	113,026	113,827	114,634	115,446	116,265	117,089	117,919	118,755	119,596	120,444	121,298	122,158	123,023	123,896	124,774	125,658
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	22,809	45,625	68,449	91,281	114,120	136,968	159,823	160,956	162,097	163,246	164,403	165,569	166,742	167,924	169,114	170,313	171,520	172,736	173,960	175,194	176,435	177,686	178,945	180,214	181,491	182,778	184,073	185,378	186,692
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	5,702	11,406	17,112	22,820	28,530	34,242	39,956	40,239	40,524	40,812	41,101	41,392	41,686	41,981	42,279	42,578	42,880	43,184	43,490	43,798	44,109	44,421	44,736	45,053	45,373	45,694	46,018	46,345	46,673
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		292,526	266,088	239,656	213,229	186,807	160,391	133,979	107,573	108,336	109,104	109,877	110,656	111,440	112,230	113,026	113,827	114,634	115,446	116,265	117,089	117,919	118,755	119,596	120,444	121,298	122,158	123,023	123,896	124,774	125,658
	Paper	1.5	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	27	54	80	107	134	161	188	189	190	192	193	194	196	197	199	200	201	203	204	206	207	209	210	212	213	215	216	218	219
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED		***Exchange***	***Weight***																															
	Plastic	1	0.013		1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Paper	2	0.094		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	2	4	6	8	10	12	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	16	16	16	16
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Number of Disposable Bags and Alternatives (millions)

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Paper Generated (SQ)	0.71%	Growth	63,312	3,198	3,220	3,243	3,266	3,289	3,313	3,336	3,360	3,384	3,408	3,432	3,456	3,481	3,505	3,530	3,555	3,580	3,606	3,631	3,657	3,683	3,709	3,735	3,762	3,789	3,815	3,842	3,870	3,897	3,925
	Incr. Growth					23	23	23	23	23	23	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	27	27	27	27	27	28
	Cumm Growth					23	45	68	92	115	138	162	186	210	234	258	283	308	332	357	383	408	434	459	485	511	538	564	591	618	645	672	699	727
	Continue Pap	7	35%		0%	5%	10%	15%	20%	25%	30%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
	Switch to Plas	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Reus	7	52%		0%	7%	15%	22%	30%	37%	45%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
	Switch to Com	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to None	7	13%		0%	2%	4%	6%	7%	9%	11%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
TONS																																		
	Keep Paper				3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Plastic				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse				-	249	499	748	998	1,248	1,497	1,747	1,760	1,772	1,785	1,797	1,810	1,823	1,836	1,849	1,862	1,875	1,888	1,902	1,915	1,929	1,942	1,956	1,970	1,984	1,998	2,012	2,026	2,041
	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None				-	62	125	187	249	312	374	437	440	443	446	449	452	456	459	462	465	469	472	475	479	482	486	489	493	496	500	503	507	510
BAGS AVOIDED		***Exchange***	***Weight***																															
	Keep Paper	1	0.094		68,038	61,889	55,741	49,595	43,449	37,305	31,162	25,020	25,198	25,376	25,556	25,737	25,920	26,103	26,289	26,475	26,663	26,852	27,042	27,234	27,427	27,621	27,817	28,014	28,213	28,412	28,614	28,817	29,021	29,227
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	5,305	10,612	15,920	21,231	26,543	31,857	37,173	37,437	37,702	37,969	38,238	38,509	38,782	39,057	39,334	39,613	39,894	40,176	40,461	40,748	41,037	41,328	41,621	41,916	42,213	42,512	42,813	43,117	43,422
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	1,326	2,653	3,980	5,308	6,636	7,964	9,293	9,359	9,425	9,492	9,560	9,627	9,696	9,764	9,834	9,903	9,973	10,044	10,115	10,187	10,259	10,332	10,405	10,479	10,553	10,628	10,703	10,779	10,856
BAGS USED																																		
		Exchange	***Weight***																															
	Keep Paper	1	0.094		68,038	61,889	55,741	49,595	43,449	37,305	31,162	25,020	25,198	25,376	25,556	25,737	25,920	26,103	26,289	26,475	26,663	26,852	27,042	27,234	27,427	27,621	27,817	28,014	28,213	28,412	28,614	28,817	29,021	29,227
	Plastic	1.5	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	6	12	19	25	31	37	44	44	44	45	45	45	46	46	46	47	47	47	48	48	48	49	49	49	50	50	50	51	51
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BAGS USED																																		
		Exchange	***Weight***																															
	Keep Paper	1	0.094		3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Plastic	2	0.013		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuse	170	0.145		-	0	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4
	Compostables	1	0.027		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	None	511	0.000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Amount of Waste Generated (tons)

Bag Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight (Lbs.)	Use	Life Exp.
Avg. Plastic Grocery Bag Weight	$ 0.15	$ 0.03	0.013		Single Trip *
Avg. Paper Grocery Bag Weight	$ 0.15	$ 0.15	0.094		Single Trip *
Avg. Woven HDPE Reusable Bag		$ 1.00	0.288	10%	520 Trips
Avg. Non-Woven PP Reusable Bag		$ 1.00	0.145	90%	520 Trips
Avg. Compostable "Plastic" Bag		$ 0.08	0.027		Single Trip
Avg. Garbage Bag		$ 0.09	0.033		Single Use

$0.54
$165,141,415

* Includes 1 time reuse as garbage bin liner $360,563,850

		Ramp Period	Max Recycle Rate		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
TONS					$292,525,673						$133,979,332																							
PLASTIC BAGS USED	Plastic				1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Recycle Rate	15	20%		15%	15%	16%	16%	16%	17%	17%	17%	18%	18%	18%	19%	19%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			4,931	285	265	244	222	198	174	148	121	124	128	131	134	138	141	144	148	149	150	151	152	153	154	155	157	158	159	160	161	162	163
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			22,172	1,616	1,464	1,314	1,164	1,016	869	723	578	580	582	583	585	587	588	590	592	596	600	605	609	613	618	622	626	631	635	640	644	649	653
					68,038,176.85						31,162,084																							
PAPER BAGS USED	Paper				3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Recycle Rate	5	83%		81%	81%	82%	82%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			37,664	2,590	2,368	2,143	1,916	1,687	1,455	1,216	976	983	990	997	1,004	1,011	1,018	1,026	1,033	1,040	1,047	1,055	1,062	1,070	1,077	1,085	1,093	1,101	1,108	1,116	1,124	1,132	1,140
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			7,918	608	541	477	415	355	298	249	200	201	203	204	206	207	209	210	212	213	215	216	218	219	221	222	224	225	227	229	230	232	234
REUSE BAGS USED	Reuse				-	2	5	7	10	12	14	17	17	17	17	17	17	18	18	18	18	18	18	18	18	19	19	19	19	19	19	19	19	20
	Recycle Rate	20	10%		0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	5%	6%	6%	7%	7%	8%	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			35	-	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			433	-	2	5	7	9	12	14	16	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17	17	17	17	18	18
COMPOSTABLE BAGS USED	Compostables				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		0%	1%	3%	4%	5%	7%	8%	9%	11%	12%	13%	15%	16%	17%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BAGS USED	None				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL BAGS USED																																		
	Generated			77,082	5,217	4,760	4,302	3,845	3,387	2,930	2,473	2,016	2,030	2,045	2,059	2,074	2,088	2,103	2,118	2,133	2,148	2,163	2,179	2,194	2,210	2,225	2,241	2,257	2,273	2,289	2,305	2,322	2,338	2,355
	Recycled			42,630	2,875	2,633	2,387	2,138	1,885	1,629	1,364	1,098	1,108	1,118	1,129	1,139	1,150	1,160	1,171	1,182	1,191	1,199	1,208	1,216	1,225	1,234	1,242	1,251	1,260	1,269	1,278	1,287	1,296	1,305
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			34,451	2,342	2,127	1,915	1,707	1,502	1,301	1,109	918	922	926	930	934	939	943	947	951	958	964	971	978	985	992	999	1,006	1,013	1,020	1,027	1,035	1,042	1,049

Disposable Bag Policy Option 4
ARF on All Bags
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"											
			Functional Unit	Application	Commercial Example	Non-Renewable Energy	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
						MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq			Kg/year	m2/year		ton		
Type of "Plastic"																					
.209	Reusable	PP	1	Fiber		96.5			9.330144	0.022000			4.784689			0.001153	0.008947			99.5% landfill; 0% recycled; 0% reuse/landfill; .5% litter	1,2
.216	Reusable	HDPE	1	Woven					2.921296	0.009000			0.000000			0.000495	0.006852				
3.12	Petro	HDPE	1	Film		67.3			1.948718	0.031731			0.641026			2.500000	2.000000			78.5% landfill; 2% recycled; 19% reuse/landfill; .5% litter	1,2
	Bio	TPS	1	Film		53.5			1.210000		5.300000	10.400000	1.100000							Composting	11
3.12	Bio	TPS/PBSorA	1	Film	Bionelle				2.016026	0.006090			0.875000			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PBAT	1	Film	Eco-Flex				1.977564	0.010897			1.301282			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	TPS/PCL	1	Film	Mater-Bi				2.235154	0.013064			1.583333			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
3.12	Bio	TPS/PE	1	Film	Earthstrength				2.080128	0.023077			0.826923			0.002500	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
4.21	Bio	PLA	1	Film	Natureworks				4.772080	0.025404			2.919872			0.000014	0.025000			70% landfill; 10% compost; 20% reuse/landfil; .5% litter	1, 2
22.1	Paper	Kraft	1	Film		32.6			1.376851	0.012866			1.200795			0.000014	0.025000			39.5% landfill; 60% recycled; 0% reuse/landfill; .5% litter	1,2
A	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)		29.1			0.007000			7.060000	0.671000							Incineration	4
B	Bio	PLA	1 m^2	Multilayer Film (PLA-Starch-PLA)					0.074000											Composting	4
A	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)		33.6			0.794000			5.480000	0.280000							Incineration	4
B	Petro	PP	1 m^2	Multilayer Film (PP-PA6-PP)					0.002000											Landfilling (no gas recovery)	4
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000											Incineration	5
	Petro	HDPE	1	Pellet		73.8															6
	Petro	LLDPE	1	Pellet		72.3			4.540000											Incineration	7
	Petro	LDPE	1	Pellet		80.6			5.040000											Incineration	7
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000											Incineration	7
	Bio	TPS	1	Pellet		25.4			1.140000											Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000											Incineration	10
	Bio	PHA *		Pellet			90.0	0.0													6

References

1 Nolan-ITU 2003. The Impacts of Degradable Plastic Bags in Australia
2 Nolan-ITU 2002. Plastic Shopping Bags - Analysis of Levies and Environmental Impacts
4 LCA of biodegradable multilayer film from biopolymers. Daniel Garraín1, Rosario Vidal1, Pilar Martínez2, Vicente Franco1, David Cebrián-Tarrasón1, 1GID, Engineering Design Group, Dpt. MEC, Universitat Jaume I Castellón, Av. Sos Baynat s/n, 12071 Castellón (Spain)
5 Cradle-Gate Data for petrochemical polymers from APME (1999).
6 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
7 Cradle-Gate Data for petrochemical polymers from APME (1999).
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001
11 Composto 1998

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Environmental Categories - PLASTIC

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	27,103	1,901	1,730	1,558	1,386	1,214	1,043	871	699	704	709	714	719	724	729	735	740	745	750	756	761	766	772	777	783	788	794	800	805	811	817
	Plastic with Recycling	*Factor*	*Unit*																															
NolanITU	Non-Renewable Energy	61.1	GJ	1,894,838	123,307	112,865	102,425	91,989	81,554	71,122	60,693	50,265	50,622	50,981	51,342	51,706	52,072	52,441	52,813	53,188	53,565	53,944	54,327	54,712	55,099	55,490	55,883	56,279	56,678	57,080	57,485	57,892	58,303	58,716
NolanITU	GHG Emissions	1,767.8	Kg CO2e	54,860,059	3,570,018	3,267,704	2,965,461	2,663,287	2,361,185	2,059,153	1,757,193	1,455,304	1,465,620	1,476,009	1,486,471	1,497,008	1,507,619	1,518,305	1,529,067	1,539,906	1,550,821	1,561,814	1,572,884	1,584,033	1,595,261	1,606,569	1,617,957	1,629,425	1,640,975	1,652,607	1,664,321	1,676,118	1,687,999	1,699,964
NolanITU	Resource Depletion (Abiotic)	28.8	Kg Sb eq	893,281	58,130	53,208	48,286	43,366	38,447	33,529	28,612	23,697	23,865	24,034	24,204	24,376	24,548	24,722	24,898	25,074	25,252	25,431	25,611	25,793	25,975	26,160	26,345	26,532	26,720	26,909	27,100	27,292	27,486	27,680
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	581.5	g PO4 eq	18,046,072	1,174,348	1,074,903	975,481	876,081	776,705	677,353	578,024	478,719	482,112	485,529	488,971	492,437	495,927	499,443	502,983	506,548	510,139	513,755	517,396	521,064	524,757	528,477	532,223	535,995	539,794	543,621	547,474	551,355	555,263	559,199
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	2,268.0	Kg/year	70,379,681	4,579,957	4,192,121	3,804,374	3,416,717	3,029,151	2,641,676	2,254,293	1,867,002	1,880,236	1,893,564	1,906,986	1,920,503	1,934,116	1,947,826	1,961,633	1,975,537	1,989,540	2,003,643	2,017,845	2,032,148	2,046,552	2,061,059	2,075,668	2,090,381	2,105,198	2,120,121	2,135,149	2,150,283	2,165,525	2,180,875
NolanITU	Litter Aesthetics	1,814.4	m2/year	56,303,745	3,663,965	3,353,697	3,043,499	2,733,374	2,423,321	2,113,341	1,803,434	1,493,602	1,504,189	1,514,851	1,525,589	1,536,403	1,547,293	1,558,261	1,569,306	1,580,430	1,591,632	1,602,914	1,614,276	1,625,718	1,637,242	1,648,847	1,660,535	1,672,305	1,684,159	1,696,097	1,708,119	1,720,227	1,732,420	1,744,700
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bin Liners				118	119	120	121	121	122	123	124	125	126	127	128	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Environmental Categories - PAPER

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	45,582	3,198	2,909	2,620	2,331	2,042	1,753	1,465	1,176	1,184	1,193	1,201	1,210	1,218	1,227	1,236	1,244	1,253	1,262	1,271	1,280	1,289	1,298	1,307	1,317	1,326	1,335	1,345	1,354	1,364	1,374
	Paper with Recycling	***Factor***	***Unit***																															
NolaniTU	Non-Renewable Energy	29.6	GJ	1,349,055	94,643	86,090	77,538	68,988	60,439	51,892	43,347	34,804	35,051	35,299	35,549	35,801	36,055	36,311	36,568	36,827	37,088	37,351	37,616	37,883	38,151	38,422	38,694	38,968	39,244	39,523	39,803	40,085	40,369	40,655
NolaniTU	GHG Emissions	1249.05706	Kg CO2e	56,934,244	3,994,228	3,633,244	3,272,331	2,911,489	2,550,718	2,190,018	1,829,391	1,468,837	1,479,249	1,489,734	1,500,294	1,510,928	1,521,638	1,532,424	1,543,286	1,554,225	1,565,242	1,576,337	1,587,510	1,598,763	1,610,095	1,621,508	1,633,002	1,644,577	1,656,234	1,667,974	1,679,797	1,691,704	1,703,695	1,715,772
NolaniTU	Resource Depletion (Abiotic)	11.6715168	Kg Sb eq	532,009	37,323	33,950	30,578	27,206	23,835	20,464	17,094	13,725	13,822	13,920	14,019	14,119	14,219	14,319	14,421	14,523	14,626	14,730	14,834	14,939	15,045	15,152	15,259	15,367	15,476	15,586	15,696	15,808	15,920	16,033
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Eutrophication	1089.34157	g PO4 eq	49,654,127	3,483,490	3,168,665	2,853,902	2,539,200	2,224,560	1,909,983	1,595,469	1,281,019	1,290,099	1,299,243	1,308,453	1,317,727	1,327,068	1,336,474	1,345,948	1,355,488	1,365,096	1,374,772	1,384,517	1,394,331	1,404,214	1,414,168	1,424,192	1,434,287	1,444,453	1,454,692	1,465,003	1,475,388	1,485,846	1,496,378
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniTU	Litter Marine Biodiversity	0.01236771	Kg/year	564	40	36	32	29	25	22	18	15	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	17	17	17	17	17
NolaniTU	Litter Aesthetics	22.6796	m2/year	1,033,777	72,525	65,970	59,417	52,865	46,314	39,765	33,217	26,670	26,859	27,050	27,241	27,434	27,629	27,825	28,022	28,221	28,421	28,622	28,825	29,029	29,235	29,442	29,651	29,861	30,073	30,286	30,501	30,717	30,935	31,154
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Environmental Categories - REUSEABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	468	-	2	5	7	10	12	14	17	17	17	17	17	17	18	18	18	18	18	18	18	19	19	19	19	19	19	19	19	19	20
	Reuseable with Recycling	***Factor***	***Unit***																															
NolaniITU	Non-Renewable Energy	87.5	GJ	40,929	-	209	419	629	838	1,048	1,258	1,468	1,478	1,489	1,499	1,510	1,521	1,531	1,542	1,553	1,564	1,575	1,586	1,598	1,609	1,620	1,632	1,643	1,655	1,667	1,679	1,691	1,703	1,715
NolaniITU	GHG Emissions	8464.15694	Kg CO2e	3,958,920	-	20,262	40,530	60,806	81,088	101,378	121,674	141,977	142,984	143,997	145,018	146,046	147,081	148,123	149,173	150,231	151,296	152,368	153,448	154,536	155,631	156,734	157,845	158,964	160,091	161,226	162,369	163,519	164,679	165,846
NolaniITU	Resource Depletion (Abiotic)	19.958048	Kg Sb eq	9,335	-	48	96	143	191	239	287	335	337	340	342	344	347	349	352	354	357	359	362	364	367	370	372	375	377	380	383	386	388	391
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniITU	Eutrophication	4340.5933	g PO4 eq	2,030,215	-	10,391	20,785	31,183	41,584	51,989	62,397	72,809	73,325	73,845	74,368	74,895	75,426	75,961	76,499	77,041	77,588	78,137	78,691	79,249	79,811	80,377	80,946	81,520	82,098	82,680	83,266	83,856	84,451	85,049
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolaniITU	Litter Marine Biodiversity	1.04608299	Kg/year	489	-	3	5	8	10	13	15	18	18	18	18	18	18	18	18	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20
NolaniITU	Litter Aesthetics	8.11690947	m2/year	3,797	-	19	39	58	78	97	117	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	154	155	156	157	158	159
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Environmental Categories - COMPOSTABLE

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reuseable with Recycling	*Factor*	*Unit*																															
NolanITU	Non-Renewable Energy	48.5	GJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	GHG Emissions	1794.01451	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Resource Depletion (Abiotic)	9.88597949	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Eutrophication	1180.50226	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Marine Biodiversity	0.01238655	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NolanITU	Litter Aesthetics	22.6796	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Impact on Environmental Categories - TOTAL

Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
Waste Generated			79,153	5,099	4,641	4,182	3,724	3,266	2,808	2,350	1,892	1,905	1,919	1,932	1,946	1,960	1,974	1,988	2,002	2,016	2,030	2,045	2,059	2,074	2,089	2,103	2,118	2,133	2,148	2,164	2,179	2,194	2,210
Total	***Factor***	***Unit***																															
Non-Renewable Energy		GJ	3,284,821	217,950	199,164	180,382	161,605	142,832	124,063	105,298	86,537	87,151	87,768	88,391	89,017	89,648	90,284	90,923	91,568	92,217	92,871	93,529	94,192	94,860	95,532	96,209	96,891	97,578	98,270	98,966	99,668	100,374	101,086
GHG Emissions		Kg CO2e	115,753,222	7,564,245	6,921,211	6,278,323	5,635,582	4,992,991	4,350,549	3,708,258	3,066,119	3,087,852	3,109,740	3,131,782	3,153,981	3,176,338	3,198,852	3,221,527	3,244,362	3,267,359	3,290,519	3,313,843	3,337,332	3,360,988	3,384,812	3,408,804	3,432,967	3,457,300	3,481,807	3,506,487	3,531,342	3,556,373	3,581,581
Resource Depletion (Abiotic)		Kg Sb eq	1,434,624	95,453	87,205	78,959	70,715	62,473	54,232	45,993	37,757	38,024	38,294	38,565	38,838	39,114	39,391	39,670	39,951	40,235	40,520	40,807	41,096	41,388	41,681	41,976	42,274	42,574	42,875	43,179	43,485	43,794	44,104
Ozone			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidification			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eutrophication		g PO4 eq	69,730,414	4,657,838	4,253,959	3,850,167	3,446,464	3,042,850	2,639,325	2,235,890	1,832,546	1,845,536	1,858,617	1,871,792	1,885,059	1,898,421	1,911,878	1,925,430	1,939,078	1,952,822	1,966,664	1,980,605	1,994,644	2,008,782	2,023,021	2,037,361	2,051,802	2,066,346	2,080,993	2,095,743	2,110,599	2,125,559	2,140,626
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	70,380,734	4,579,996	4,192,159	3,804,412	3,416,754	3,029,187	2,641,710	2,254,326	1,867,035	1,880,269	1,893,596	1,907,019	1,920,536	1,934,150	1,947,859	1,961,666	1,975,571	1,989,574	2,003,677	2,017,880	2,032,183	2,046,588	2,061,094	2,075,704	2,090,417	2,105,235	2,120,157	2,135,185	2,150,320	2,165,562	2,180,912
Litter Aesthetics		m2/year	57,341,318	3,736,490	3,419,686	3,102,955	2,786,297	2,469,713	2,153,203	1,836,768	1,520,408	1,531,185	1,542,039	1,552,969	1,563,977	1,575,063	1,586,227	1,597,471	1,608,794	1,620,198	1,631,682	1,643,248	1,654,896	1,666,626	1,678,440	1,690,337	1,702,319	1,714,385	1,726,537	1,738,775	1,751,100	1,763,513	1,776,013
Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Bag Policy Option 4
ARF on All Bags
Cost Benefit Calculations

	Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate			55%	55%	55%	56%	56%	56%	56%	54%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
	Compost Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated		77,082	5,217	4,760	4,302	3,845	3,387	2,930	2,473	2,016	2,030	2,045	2,059	2,074	2,088	2,103	2,118	2,133	2,148	2,163	2,179	2,194	2,210	2,225	2,241	2,257	2,273	2,289	2,305	2,322	2,338	2,355
	Recycled		42,630	2,875	2,633	2,387	2,138	1,885	1,629	1,364	1,098	1,108	1,118	1,129	1,139	1,150	1,160	1,171	1,182	1,191	1,199	1,208	1,216	1,225	1,234	1,242	1,251	1,260	1,269	1,278	1,287	1,296	1,305
	Composted		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled		34,451	2,342	2,127	1,915	1,707	1,502	1,301	1,109	918	922	926	930	934	939	943	947	951	958	964	971	978	985	992	999	1,006	1,013	1,020	1,027	1,035	1,042	1,049
		Escalation Rate	0%																															
SPU/City of Seattle		Discount Rate	3%																															
	Economic Benefits/(Costs)																																	
	Administration		($11,309)	($577.00)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)	($577)
	Inspection and Enforcement		($4,979)	($254.00)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)	($254)
	Program Marketing, Monitoring, Education, and Research		($4,312)	($220.00)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)	($220)
	Recycling		$0																															
11.5%	$ 21.15	Hauling, Transfer and Disposal	$505	$49	$45	$41	$36	$32	$28	$24	$20	$20	$20	$20	$20	$20	$20	$20	$20	$20	$21	$21	$21	$21	$21	$21	$21	$22	$22	$22	$22	$22	$22	$22	$22
	$ (460)	Other Costs Due to Bag/Foodservice ware	($8,641)	($875)	($796)	($717)	($638)	($559)	($480)	($401)	($322)	($324)	($326)	($329)	($331)	($333)	($336)	($338)	($340)	($343)	($345)	($348)	($350)	($353)	($355)	($358)	($360)	($363)	($365)	($368)	($370)	($373)	($376)	
		Terrestrial Litter Control	($9,800)	($500.00)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)	($500)
		Marine Litter Abatement	($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)
50%		Consumer ARF	$267,166	$27,042	$24,598	$22,155	$19,712	$17,269	$14,827	$12,386	$9,945	$10,015	$10,086	$10,158	$10,230	$10,302	$10,375	$10,449	$10,523	$10,597	$10,672	$10,748	$10,824	$10,901	$10,978	$11,056	$11,134	$11,213	$11,293	$11,373	$11,453	$11,535	$11,616	
Consumer			$228,237																															
	Economic Benefits/(Costs)																																	
	Bag/Foodservice ware Costs		($187,529)	($18,981)	($17,266)	($15,551)	($13,836)	($12,122)	($10,407)	($8,694)	($6,980)	($7,030)	($7,080)	($7,130)	($7,180)	($7,231)	($7,282)	($7,334)	($7,386)	($7,438)	($7,491)	($7,544)	($7,598)	($7,652)	($7,706)	($7,760)	($7,815)	($7,871)	($7,927)	($7,983)	($8,039)	($8,096)	($8,154)	
	Consumer ARF		($534,331)	($54,085)	($49,197)	($44,310)	($39,424)	($34,538)	($29,654)	($24,771)	($19,888)	($20,030)	($20,172)	($20,315)	($20,459)	($20,604)	($20,750)	($20,897)	($21,045)	($21,194)	($21,345)	($21,496)	($21,648)	($21,802)	($21,956)	($22,112)	($22,269)	($22,427)	($22,586)	($22,746)	($22,907)	($23,069)	($23,233)	
	Household Expenditure		($17,697)	($644)	($681)	($719)	($757)	($794)	($832)	($870)	($908)	($914)	($921)	($927)	($934)	($940)	($947)	($954)	($960)	($967)	($974)	($981)	($988)	($995)	($1,002)	($1,009)	($1,016)	($1,023)	($1,031)	($1,038)	($1,045)	($1,053)	($1,060)	
	$ (70)	Hauling	($3,723)	($365)	($333)	($301)	($269)	($237)	($205)	($173)	($141)	($142)	($143)	($144)	($145)	($146)	($147)	($148)	($149)	($150)	($151)	($153)	($154)	($155)	($156)	($157)	($158)	($159)	($160)	($161)	($163)	($164)	($165)	
$ (41)	$ (5)	Recycling & Composting	($147)	($14)	($13)	($12)	($11)	($9)	($8)	($7)	($5)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($6)	($7)
	$ (51)	Transfer and Disposal	($1,213)	($119)	($108)	($98)	($87)	($77)	($66)	($57)	($47)	($47)	($47)	($47)	($48)	($48)	($48)	($48)	($49)	($49)	($49)	($50)	($50)	($50)	($51)	($51)	($51)	($52)	($52)	($52)	($53)	($53)	($54)		
Retailer																																		
	Economic Benefits/(Costs)																																	
	Bag/Foodservice ware Rev		$187,529	$18,981	$17,266	$15,551	$13,836	$12,122	$10,407	$8,694	$6,980	$7,030	$7,080	$7,130	$7,180	$7,231	$7,282	$7,334	$7,386	$7,438	$7,491	$7,544	$7,598	$7,652	$7,706	$7,760	$7,815	$7,871	$7,927	$7,983	$8,039	$8,096	$8,154	
	Bag/Foodservice ware Costs		($185,653)	($18,792)	($17,093)	($15,395)	($13,698)	($12,000)	($10,303)	($8,607)	($6,910)	($6,959)	($7,009)	($7,058)	($7,108)	($7,159)	($7,210)	($7,261)	($7,312)	($7,364)	($7,416)	($7,469)	($7,522)	($7,575)	($7,629)	($7,683)	($7,737)	($7,792)	($7,847)	($7,903)	($7,959)	($8,015)	($8,072)	
50%		Consumer ARF	$267,166	$27,042	$24,598	$22,155	$19,712	$17,269	$14,827	$12,386	$9,945	$10,015	$10,086	$10,158	$10,230	$10,302	$10,375	$10,449	$10,523	$10,597	$10,672	$10,748	$10,824	$10,901	$10,978	$11,056	$11,134	$11,213	$11,293	$11,373	$11,453	$11,535	$11,616	
		Alt Product Sales	$17,697	$644	$681	$719	$757	$794	$832	$870	$908	$914	$921	$927	$934	$940	$947	$954	$960	$967	$974	$981	$988	$995	$1,002	$1,009	$1,016	$1,023	$1,031	$1,038	$1,045	$1,053	$1,060	
		Alt Product Costs	($17,166)	($624)	($661)	($697)	($734)	($770)	($807)	($844)	($880)	($887)	($893)	($899)	($906)	($912)	($919)	($925)	($932)	($938)	($945)	($952)	($958)	($965)	($972)	($979)	($986)	($993)	($1,000)	($1,007)	($1,014)	($1,021)	($1,028)	
		Administration	($413)	($21.06)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	
		Training and Staff	($949)	($210.60)	($211)	($211)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	($21)	
		Ammortized Capital	$0	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regional																																		
	Economic Benefits/(Costs)																																	
	5%	Plastic Production	$4,118	$417	$379	$342	$304	$266	$229	$191	$153	$154	$155	$157	$158	$159	$160	$161	$162	$163	$165	$166	$167	$168	$169	$170	$172	$173	$174	$175	$177	$178	$179	
	40%	Paper Production	$38,315	$3,878	$3,528	$3,177	$2,827	$2,477	$2,126	$1,776	$1,426	$1,436	$1,446	$1,457	$1,467	$1,477	$1,488	$1,498	$1,509	$1,520	$1,531	$1,541	$1,552	$1,563	$1,574	$1,586	$1,597	$1,608	$1,620	$1,631	$1,643	$1,654	$1,666	
	0%	Reusable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
	0%	Compostable Production	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
		Total	($205,759)	($18,248)	($16,855)	($15,463)	($13,882)	($12,491)	($11,100)	($9,710)	($8,320)	($8,368)	($8,415)	($8,464)	($8,512)	($8,561)	($8,610)	($8,660)	($8,709)	($8,760)	($8,810)	($8,861)	($8,913)	($8,965)	($9,017)	($9,069)	($9,122)	($9,175)	($9,229)	($9,283)	($9,337)	($9,392)	($9,447)	
		SPU/City of Seattle	$228,237	$24,646	$22,277	$19,908	$17,540	$15,172	$12,804	$10,438	$8,071	$8,140	$8,208	$8,278	$8,348	$8,418	$8,489	$8,560	$8,632	$8,704	$8,777	$8,850	$8,924	$8,998	$9,073	$9,149	$9,225	$9,301	$9,378	$9,456	$9,534	$9,613	$9,692	
		Consumer	($744,640)	($74,209)	($67,599)	($60,990)	($54,383)	($47,777)	($41,173)	($34,571)	($27,970)	($28,169)	($28,368)	($28,569)	($28,771)	($28,975)	($29,181)	($29,387)	($29,595)	($29,805)	($30,016)	($30,229)	($30,444)	($30,659)	($30,877)	($31,095)	($31,316)	($31,538)	($31,761)	($31,987)	($32,213)	($32,442)	($32,672)	
		Retailer	$268,210	$27,020	$24,560	$22,100	$19,831	$17,372	$14,914	$12,457	$9,999	$10,071	$10,142	$10,214	$10,287	$10,360	$10,434	$10,508	$10,583	$10,659	$10,734	$10,811	$10,888	$10,965	$11,043	$11,122	$11,201	$11,281	$11,361	$11,442	$11,523	$11,605	$11,688	
		Regional	$42,433	$4,295	$3,907	$3,519	$3,131	$2,743	$2,355	$1,967	$1,579	$1,591	$1,602	$1,613	$1,625	$1,636	$1,648	$1,660	$1,671	$1,683	$1,695	$1,707	$1,719	$1,731	$1,744	$1,756	$1,768	$1,781	$1,794	$1,806	$1,819	$1,832	$1,845	

APPENDIX K

Assumptions, Calculations, and Full Results of the Model for Disposable Food service Items

Assumptions, Calculations, and Full Results of the Model for Disposable Food service Items

Assumptions are detailed on the model output sheets for each strategy scenario:

- Clamshell container switching assumptions are contained on page J-4.
- Current clamshell container consumption and number of estimated clamshell container are contained on page J-5
  - Waste composition based on SPU 2006
  - Clamshell container proportion of waste composition category based on personal communication with Sky Valley Associates.
  - Clamshell container weight based on published information from IFEU 2006.
- Waste generation growth rate, switching periods, clamshell container exchange ratios (number of EPS clamshell containers displaced by use of one alternative clamshell container), and affect of switching assumptions on clamshell container use tonnage and numbers (by alternative product) over 30 years is contained on page J-6
  - Waste generation growth based on SPU 2006, and revisions made during SPU 2007.
  - Clamshell container exchange ratios based similar products sizes tested.
- Clamshell container cost, weight, existing recycling and composting rates and projected maximums rates, and impact on waste recycled, composted, and landfilled (tons) over 30 years is contained on page J-7
- Environmental Life cycle inventory data is contained on page J-8
- Environmental Life cycle impacts of EPS clamshell containers for environmental categories evaluated, over 30 years, contained on page J-9
- Environmental Life cycle impacts of PET clamshell containers for environmental categories evaluated, over 30 years, contained on page J-10
- Environmental Life cycle impacts of PP clamshell containers for environmental categories evaluated, over 30 years, contained on page J-11

- Environmental Life cycle impacts of PLA clamshell containers for environmental categories evaluated, over 30 years, contained on page J-12
- Environmental Life cycle impacts of paper clamshell containers for environmental categories evaluated, over 30 years, contained on page J-13
- Environmental Life cycle impacts of all bags for environmental categories evaluated, over 30 years, contained on page J-14

We made the following assumptions concerning economic costs and benefits:

- Economic costs and benefits are calculated on page J-15.
- Consumers are currently not charged for Clamshell containers, however, the cost to food vendors (which includes the purchase, transport and storage costs of the items) is passed on to the consumer, embedded within the price of food.
- Clamshell container costs for consumers estimated based on per unit costs (see Alternative Products) and item use numbers (page J-8).
- Food vendor costs for Clamshell containers is assumed to be 99 percent of the cost passed along to consumers embedded within the price of food
- An ARF would be set at $0.20 on each food service item. The amount to be paid was derived from that amount and the clamshell container numbers calculated by the model for each of the 30 years. All food vendors are considered covered by the ARF.
- ARF revenue to be split equally between City of Seattle and affected food vendors to be used for waste reduction, recycling, and recyclable, compostable, and reusable product education.
- City of Seattle annual labor costs: Program manager, $86,000; enforcement/inspection, $56,000, based on City of Seattle labor category rates.
- City of Seattle annual program marketing costs: $60,000 per increment
- City of Seattle taxes and fees on solid waste hauling and disposal from SMC 5.48.055**.**
- Other costs due to food service items assumed to be $0.00 per ton

- Litter cleanup costs based on estimated Seattle proportion of litter collected statewide, applied to Washington state litter cleanup expenditures for 2004 (Ecology 2005), and matched with equal funding from King County and City of Seattle.

- Household expenditures based on additional garbage bin liners purchased and reusable bags purchased.

- Alternative product sales based on estimated amount per household to switch to compostable items for home use. # of events, per household cost and marginal increase based on existing consumption patterns.

- Training and staffing attributable to strategy implementation based on $12.00 per hour for up to 5 employees for 1 to 10 hours per year, for an average of 3600 food vendors. Business count from Seattle business license database (Seattle 2007f).

- Hauling, recycling and disposal rates based on a contracted price, not a per ton price. As a result, per ton estimates are based on SPU data and contractor reported totals for contracted collection and processing.

- Regional benefits calculated as manufacturer costs for producing shopping bags, assumed to be 95 percent of the cost passed along to consumers embedded within the price of goods, multiplied by estimated percentage of bags used produced in Washington. Estimates of production percentage based on Washington Department of Revenue manufacturing statistics for 2006 and Census 2000.

Disposable Food Service Items Policy Option 0
Status Quo No Action
Use and Switching Assumptions

	Source	Switching Assumptions				
	Plastic	*Continue PS*	*PET*	*PP*	*PLA*	*Paper*
Clamshells	100%	100%	0%	0%	0%	0%
Total	100%	100%	0%	0%	0%	0%

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Number of GPPS Clamshells and Alternatives (millions)

	2004 Comp.		
Est. 2008 SF/MF/Comm Waste Generated		686,658	
Expanded Polystyrene	0.32%	2,210	5%
PS Clamshells (Tons)		120	
Avg. PS Clamshell Weight		0.011	
PS Clamshells		21,863,000	
2004 Seattle Population		572,600	260,000
Annual Per Plastic Capita PS Clamshell Use		38	84

Disposable Food Service Items Policy Option 0
Status Quo No Action
Use and Switching Assumptions

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Incr. Growth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Cumm Growth					1	2	3	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Continue PS	7	100%		0%	14%	29%	43%	57%	71%	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Switch to PET	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to PP	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to PLA	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to Pap	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

TONS																																		
	Continue PS				120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Switch to PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to Pap				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Clamshells Avoided		***Exchange***	***Weight***																															
	Continue PS	1	0.026		9,250	9,315	9,381	9,448	9,515	9,582	9,650	9,719	9,787	9,857	9,927	9,997	10,068	10,139	10,211	10,284	10,356	10,430	10,504	10,578	10,653	10,729	10,805	10,881	10,958	11,036	11,114	11,193	11,272	11,352
	Switch to PET	1.5	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	170	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to Pap	511	0.022		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Clamshells Used (#)		***Exchange***	***Weight***																															
	Continue PS	1	0.026		9,250	9,315	9,381	9,448	9,515	9,582	9,650	9,719	9,787	9,857	9,927	9,997	10,068	10,139	10,211	10,284	10,356	10,430	10,504	10,578	10,653	10,729	10,805	10,881	10,958	11,036	11,114	11,193	11,272	11,352
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to Pap	1	0.022		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Clamshells Used (Tons)		***Exchange***	***Weight***																															
	Continue PS	1	0.026		120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to Pap	1	0.022		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Amount of Waste Generated (tons)

Clear Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight	Use	Life Exp.
Avg. PS Clamshell Weight	$ -	$ 0.04	0.026		Single Trip *
Avg. PET Clamshell Weight	$ -	$ 0.18	0.044		Single Trip *
Avg. PP Clamshell Weight	$ -	$ 0.38	0.041		Single Trip *
Avg. PLA Clamshell Weight	$ -	$ 0.21	0.026		Single Trip *
Avg. Paper Clamshell Weight	$ -	$ 0.31	0.022		Single Trip

TONS

		Exchange	Weight																																
PS CLAMSHELLS USED	PS				120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PET CLAMSHELLS USED	PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PP CLAMSHELLS USED	PP				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PLA CLAMSHELLS USED	PLA				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAPER CLAMSHELLS USED	PAPER				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL CLAMSHELLS USED																																			
	Generated			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148

Disposable Food Service Items Policy Option 0
Status Quo No Action
Life Cycle Inventory Data

					"Cradle to Factory Gate"				"Cradle to Crade"										
		Functional Unit	Application	Commercial Example	Non-Renewable Energy (and Total)	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
		Kg			MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq	g PO4 eq	g PM10 eq.	Kg/year	m2/year		ton		
Type of "Plastic"																				
48.0000	Petro	EPS		Foam Clamshell	112.40			3.440000											Landfilling	1
48.0000	Bio	Paper		Clr Clamshell	117.49			4.597292											Landfilling	1
20	Petro	PET	1	Clr Clamshell	71.9			4.515000		3.769500	15.600000	0.033000	1.085000	14.300000						2
11.6	Petro	OPS	1	Clr Clamshell	90.7			6.517241		1.716379	13.965517	0.031034	1.051724	12.586207						2
18.6	Petro	PP	1	Clr Clamshell	59.2			3.220430		1.261828	6.236559	0.270430	0.553763	5.967742						2
11.6	Bio	PLA	1	Clr Clamshell	83.2			4.870690		1.137931	21.724138	0.346552	2.043103	22.327586						2
	Petro	PS	1	Clamshell	87.0	39.0	48.0	5.980000											Incineration	3
	Petro	PS	1	Clamshell	91.7															4
	Petro	PS	1	Foam	90.3			4.650000		13.750000	26.750000	2.475000							30% Incin; 70% landfilling v	5
	Petro	PS	1	Foam	88.0			2.800000		43.000000	170.000000	5.800000							None (Crade to Gate)	6
	Bio	TPS	1	Foam	32.4			0.890000		5.500000	20.800000	2.800000							Composting	6
	Bio	TPS	1	Foam	36.5			1.430000		5.800000	20.700000	3.100000							WWTP	6
		HIPS	1	Cup (16 oz.)																
47	Petro	EPS	1	Cup (16 oz.)	147.0			5.1638												
158	Petro	PET	1	Cup (16 oz.)	101.9			4.5506												
105	Petro	PP	1	Cup (16 oz.)	93.5			3.2857												
148	Bio	PLA	1	Cup (16 oz.)	98.0			3.4459												
191	Bio	Paper w/ Sleeve	1	Cup (16 oz.)	54.6			1.9706												
	Petro	PS	1	Cutlery	126.5			5.450000												7
	Petro	PC	1	Cutlery	152.0			8.060000											Composting	7
	Bio	Cellulose/Starch	1	Cutlery	Mater-Bi	8.15			1.410000										Composting	7
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000										Incineration	3
	Petro	HDPE	1	Pellet		73.8														4
	Petro	LLDPE	1	Pellet		72.3			4.540000										Incineration	3
	Petro	LDPE	1	Pellet		80.6			5.040000										Incineration	3
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000						80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000										Incineration	3
	Bio	TPS	1	Pellet		25.4			1.140000										Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000						80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000						100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000										Incineration	10
	Bio	PHA *		Pellet			90.0	0.0												4

Reference

1 Franklin 2006
2 IFEU Heidelberg 2006. Life Cycle Assessment of POLYLACTIDE (PLA) A comparison of food packaging made from NatureWorks® PLA and alternative materials Final Report.
3 Cradle-Gate Data for petrochemical polymers from APME (1999).
4 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
5 BIFA/IFEU/FloPak 2001
6 Composto 2000
7 Life Cycle Management in bioplastics production Francesco Degli Innocentia*, Francesco Razzab, Maurizio Fieschic, Catia Bastiolia
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - PS

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	PS with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	81,873.4	MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
Franklin 20	GHG Emissions	4,218.4	Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	12,473.8		49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
	Acidification	24,267.2		97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
	Eutrophication	2,245.3	g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - PET

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PET with Recycling	***Factor***	***Unit***																														
NatureWorks	Non-Renewable Energy	65,262.0	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	GHG Emissions	4,095.9	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Ozone	3,419.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Acidification	14,152.1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Eutrophication	29.9	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWorks	Human Toxicity	12,972.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - PP

	Material			NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PP with Recycling	***Factor***	***Unit***																															
NatureWor	Non-Renewable Energy	53,730.5	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	GHG Emissions	2,921.5	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Ozone	1,144.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Acidification	5,657.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Eutrophication	245.3	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Human Toxicity	5,413.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - PLA

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PLA with Recycling	***Factor***	***Unit***																															
NatureWor	Non-Renewable Energy	75,521.8	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	GHG Emissions	4,418.6	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Ozone	1,032.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Acidification	19,707.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Eutrophication	314.4	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NatureWor	Human Toxicity	20,255.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - PAPER

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Paper with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	106,585.0	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Franklin 20	GHG Emissions	4,170.6	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eutrophication	-	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Impact on Environmental Categories - TOTAL

Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Waste Generated			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
Total	***Factor***	***Unit***																															
Non-Renewable Energy		MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
GHG Emissions		Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
Resource Depletion (Abiotic)		Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ozone			49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
Acidification			97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
Eutrophication		g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Aesthetics		m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Human Toxicity			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 0
Status Quo No Action
Cost Benefit Calculations

Material			***NPV***	***1***		***2***		***3***		***4***		***5***		***6***		***7***		***8***		***9***		***10***		***11***		***12***		***13***		***14***		***15***		***16***	
Recycle Rate				0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate				0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Waste Generated			4,004	120		121		122		123		124		125		125		126		127		128		129		130		131		132		133		134	
Recycled			-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted			-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Landfilled			4,004	120		121		122		123		124		125		125		126		127		128		129		130		131		132		133		134	
		Escalation Rate	0%																														
SPU/City of Seattle		Discount Rate	3%																														
	Economic Benefits/(Costs)																																
		Administration	$0	$0.0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Inspection and Enforcement	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Program Marketing, Monitoring, Education, and Research	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Recycling	$0																														
11.5%	$ 21.15	Hauling, Transfer and Disposal	$55	$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3	
	$ -	Other Costs Due to Bag/Foodservice ware	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Terrestrial Litter Control	($11,760)	($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)	
		Marine Litter Abatement	($392)	($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
50%		Consumer ADF	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Consumer																																			
	Economic Benefits/(Costs)																																		
		Bag/Foodservice ware Costs	($7,925)	($370)		($373)		($375)		($378)		($381)		($383)		($386)		($389)		($391)		($394)		($397)		($400)		($403)		($406)		($408)		($411)		($414)	
		Consumer ARF	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Household Expenditure	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
	$ (70)	Hauling	($180)	($8)		($8)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)	
$ (41)	$ (5)	Recycling & Composting	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
	$ (51)	Transfer and Disposal	($131)	($6)		($6)		($6)		($6)		($6)		($6)		($6)		($6)		($6)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)	
Food Vendor																																			
	Economic Benefits/(Costs)																																		
		Bag/Foodservice ware Rev	$7,925	$370		$373		$375		$378		$381		$383		$386		$389		$391		$394		$397		$400		$403		$406		$408		$411		$414	
		Bag/Foodservice ware Costs	($7,846)	($366)		($369)		($372)		($374)		($377)		($379)		($382)		($385)		($388)		($390)		($393)		($396)		($399)		($402)		($404)		($407)		($410)	
50%		Consumer ARF	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Administration	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Training and Staff	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Ammortized Capital	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Regional																																			
	Economic Benefits/(Costs)		$0																																
0%		Plastic (All) Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
10%		Paper Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
0%		PLA Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Alt Product Sales	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		Alt Product Costs	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
			($20,235)	($98)		($1,001)		($1,004)		($1,006)		($1,009)		($1,012)		($1,015)		($1,017)		($1,020)		($1,023)		($1,026)		($1,029)		($1,032)		($1,035)		($1,038)		($1,041)		($1,044)	
		SPU/City of Seattle	($12,098)	($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)	
		Consumer	($8,237)	($385)		($387)		($390)		($393)		($396)		($398)		($401)		($404)		($407)		($410)		($413)		($416)		($419)		($422)		($425)		($428)		($431)		($434)	
		Retailer	$79	$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4	
		Regional	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	

Material			***17***		***18***		***19***		***20***		***21***		***22***		***23***		***24***		***25***		***26***		***27***		***28***		***29***		***30***					
Recycle Rate			0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%					
Compost Rate			0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%					
Waste Generated			135		136		137		138		138		139		140		141		142		143		144		146		147		148					
Recycled			-		-		-		-		-		-		-		-		-		-		-		-		-		-					
Composted			-		-		-		-		-		-		-		-		-		-		-		-		-		-					
Landfilled			135		136		137		138		138		139		140		141		142		143		144		146		147		148					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)					
			($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			($414)		($417)		($420)		($423)		($426)		($429)		($432)		($435)		($438)		($441)		($445)		($448)		($451)		($454)					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$7		$7		$7		$7		$7		$7		$7		$7		$7		$7		$7		$7		$7		$7					
			$414		$417		$420		$423		$426		$429		$432		$435		$438		$441		$445		$448		$451		$454					
			($413)		($416)		($419)		($422)		($425)		($428)		($431)		($434)		($437)		($440)		($443)		($446)		($450)					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0					
			($1,047)		($1,050)		($1,053)		($1,056)		($1,059)		($1,062)		($1,065)		($1,068)		($1,071)		($1,075)		($1,078)		($1,081)		($1,084)					
			($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)		($617)							
			($443)		($443)		($446)		($449)		($452)		($456)		($459)		($462)		($465)		($469)		($472)											
			$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$5		$5									
			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0									

Disposable Food Service Items Policy Option 1
Enhanced Education
Use and Switching Assumptions

		Source	Switching Assumptions				
		Plastic	*Continue PS*	*PET*	*PP*	*PLA*	*Paper*
Clear Clamshells		100%	90%	0%	0%	5%	5%
	Total	100%	90%	0%	0%	5%	5%

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Number of PS Clamshells and Alternatives (millions)

	2004 Comp.		
Est. 2008 SF/MF/Comm Waste Generated		686,658	
Expanded Polystyrene	0.32%	2,210	5%
PS Clamshells (Tons)		120	
Avg. PS Clamshell Weight		0.011	
PS Clamshells		21,863,000	
2004 Seattle Population		572,600	260,000
Annual Per Plastic Capita PS Clamshell Use		38	84

Disposable Food Service Items Policy Option 1
Enhanced Education
Use and Switching Assumptions

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Incr. Growth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Cumm Growth					1	2	3	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Continue PS	7	90%		0%	13%	26%	39%	51%	64%	77%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
	Switch to PET	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to PP	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to PLA	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to Pap	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
TONS																																		
	Continue PS				120	119	118	117	116	116	115	114	115	115	116	117	118	119	119	120	121	122	123	124	125	126	126	127	128	129	130	131	132	133
	Switch to PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Switch to Pap				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Clamshells Avoided		***Exchange***	***Weight***																															
	Continue PS	1	0.023		10,456	10,374	10,291	10,210	10,128	10,048	9,967	9,888	9,958	10,028	10,099	10,171	10,243	10,316	10,389	10,462	10,537	10,611	10,686	10,762	10,838	10,915	10,993	11,071	11,149	11,228	11,308	11,388	11,469	11,550
	Switch to PET	1.5	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	170	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to Pap	511	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (#)																																		
		Exchange	***Weight***																															
	Continue PS	1	0.023		10,456	10,374	10,291	10,210	10,128	10,048	9,967	9,888	9,958	10,028	10,099	10,171	10,243	10,316	10,389	10,462	10,537	10,611	10,686	10,762	10,838	10,915	10,993	11,071	11,149	11,228	11,308	11,388	11,469	11,550
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to Pap	1	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (Tons)																																		
		Exchange	***Weight***																															
	Continue PS	1	0.023		120	119	118	117	116	116	115	114	115	115	116	117	118	119	119	120	121	122	123	124	125	126	126	127	128	129	130	131	132	133
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PLA	1	0.026		-	1	2	3	4	5	6	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Switch to Pap	1	0.022		-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Amount of Waste Generated (tons)

Clear Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight	Use	Life Exp.
Avg. PS Clamshell Weight	$ -	$ 0.04	0.023		Single Trip *
Avg. PET Clamshell Weight	$ -	$ 0.18	0.044		Single Trip *
Avg. PP Clamshell Weight	$ -	$ 0.38	0.041		Single Trip *
Avg. PLA Clamshell Weight	$ -	$ 0.21	0.026		Single Trip *
Avg. Paper Clamshell Weight	$ -	$ 0.31	0.022		Single Trip

TONS

		Exchange	Weight																														
PS CLAMSHELLS USED	PS				120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PET CLAMSHELLS USED	PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PP CLAMSHELLS USED	PP				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PLA CLAMSHELLS USED	PLA				-	1	2	3	4	5	6	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			35	-	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***
	Landfilled			164	-	1	2	3	4	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7
PAPER CLAMSHELLS USED	PAPER				-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6
ALL CLAMSHELLS USED																																		
	Generated			4,372	120	123	126	128	131	134	137	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	160	161	162	163
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			64	-	0	0	0	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Landfilled			4,307	120	123	125	128	131	133	136	138	139	140	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	157	158	159	160

Disposable Food Service Items Policy Option 1
Enhanced Education
Life Cycle Inventory Data

						"Cradle to Factory Gate"		"Cradle to Crade"											
		Functional Unit	Application	Commercial Example	Non-Renewable Energy (and Total)	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
					MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq	g PO4 eq	g PM10 eq.	Kg/year	m2/year		ton		
Type of "Plastic"																				
48.0000	Petro	EPS		Foam Clamshell		112.40			3.440000										Landfilling	1
48.0000	Bio	Paper		Foam Clamshell		117.49			4.597292										Landfilling	1
20	Petro	PET	1	Clr Clamshell		71.9			4.515000		3.769500	15.600000	0.033000	1.085000	14.300000					2
11.6	Petro	OPS	1	Clr Clamshell		90.7			6.517241		1.716379	13.965517	0.031034	1.051724	12.586207					2
18.6	Petro	PP	1 Kg	Clr Clamshell		59.2			3.220430		1.261828	6.236559	0.270430	0.553763	5.967742					2
11.6	Bio	PLA	1	Clr Clamshell		83.2			4.870690		1.137931	21.724138	0.346552	2.043103	22.327586					2
	Petro	PS	1	Clamshell		87.0	39.0	48.0	5.980000										Incineration	3
	Petro	PS	1	Clamshell		91.7														4
	Petro	PS	1	Foam		90.3			4.650000		13.750000	26.750000	2.475000						30% Incin; 70% landfilling v	5
	Petro	PS	1	Foam		88.0			2.800000		43.000000	170.000000	5.800000						None (Crade to Gate)	6
	Bio	TPS	1	Foam		32.4			0.890000		5.500000	20.800000	2.800000						Composting	6
	Bio	TPS	1	Foam		36.5			1.430000		5.800000	20.700000	3.100000						WWTP	6
		HIPS	1	Cup (16 oz.)																
47	Petro	EPS	1	Cup (16 oz.)		147.0			5.1638											
158	Petro	PET	1	Cup (16 oz.)		101.9			4.5506											
105	Petro	PP	1	Cup (16 oz.)		93.5			3.2857											
148	Bio	PLA	1	Cup (16 oz.)		98.0			3.4459											
191	Bio	Paper w/ Sleeve	1	Cup (16 oz.)		54.6			1.9706											
	Petro	PS	1	Cutlery		126.5			5.450000											7
	Petro	PC	1	Cutlery		152.0			8.060000										Composting	7
	Bio	Cellulose/Starch	1	Cutlery	Mater-Bi	8.15			1.410000										Composting	7
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000										Incineration	3
	Petro	HDPE	1	Pellet		73.8														4
	Petro	LLDPE	1	Pellet		72.3			4.540000										Incineration	3
	Petro	LDPE	1	Pellet		80.6			5.040000										Incineration	3
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000						80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000										Incineration	3
	Bio	TPS	1	Pellet		25.4			1.140000										Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000						80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000						100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000										Incineration	10
	Bio	PHA *		Pellet			90.0	0.0												4

Reference

1 Franklin 2006
2 IFEU Heidelberg 2006. Life Cycle Assessment of POLYLACTIDE (PLA) A comparison of food packaging made from NatureWorks® PLA and alternative materials Final Report.
3 Cradle-Gate Data for petrochemical polymers from APME (1999).
4 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
5 BIFA/IFEU/FloPak 2001
6 Composto 2000
7 Life Cycle Management in bioplastics production Francesco Degli Innocentia*, Francesco Razzab, Maurizio Fieschic, Catia Bastiolia
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - PS

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	PS with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	81,873.4	MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
Franklin 20	GHG Emissions	4,218.4	Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	12,473.8		49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
	Acidification	24,267.2		97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
	Eutrophication	2,245.3	g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - PET

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PET with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	65,262.0	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	GHG Emissions	4,095.9	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	3,419.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Acidification	14,152.1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Eutrophication	29.9	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	12,972.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - PP

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PP with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	53,730.5	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	GHG Emissions	2,921.5	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,144.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Acidification	5,657.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Eutrophication	245.3	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	5,413.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - PLA

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	199	-	1	2	3	4	5	6	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			35	-	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***	***2***
	Landfilled			164	-	1	2	3	4	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7
	PLA with Recycling	***Factor***	***Unit***																																
Naturewor	Non-Renewable Energy	75,521.8	MJ	15,038,039	-	76,965	153,956	230,973	308,016	385,085	462,181	539,303	543,126	546,976	550,853	554,758	558,690	562,650	566,638	570,655	574,700	578,773	582,876	587,007	591,168	595,359	599,579	603,829	608,109	612,419	616,760	621,132	625,535	629,969
Naturewor	GHG Emissions	4,418.6	Kg CO2e	879,842	-	4,503	9,008	13,514	18,021	22,530	27,041	31,553	31,777	32,002	32,229	32,458	32,688	32,919	33,153	33,388	33,624	33,863	34,103	34,344	34,588	34,833	35,080	35,329	35,579	35,831	36,085	36,341	36,599	36,858
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,032.3		205,556	-	1,052	2,104	3,157	4,210	5,264	6,318	7,372	7,424	7,477	7,530	7,583	7,637	7,691	7,745	7,800	7,856	7,911	7,967	8,024	8,081	8,138	8,196	8,254	8,312	8,371	8,431	8,490	8,550	8,611
Naturewor	Acidification	19,707.8		3,924,251	-	20,084	40,176	60,273	80,378	100,490	120,608	140,734	141,731	142,736	143,748	144,767	145,793	146,826	147,867	148,915	149,971	151,034	152,104	153,182	154,268	155,362	156,463	157,572	158,689	159,814	160,947	162,087	163,236	164,393
Naturewor	Eutrophication	314.4	g PO4 eq	62,601	-	320	641	962	1,282	1,603	1,924	2,245	2,261	2,277	2,293	2,309	2,326	2,342	2,359	2,376	2,392	2,409	2,426	2,444	2,461	2,478	2,496	2,514	2,531	2,549	2,567	2,586	2,604	2,622
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	20,255.2		4,033,257	-	20,642.3107	41,291.5382	61,947.7315	82,610.9400	103,281.2135	123,958.6020	144,643.1559	145,668.4259	146,700.9632	147,740.8194	148,788.0465	149,842.6965	150,904.8222	151,974.4766	153,051.7129	154,136.5850	155,229.1469	156,329.4532	157,437.5588	158,553.5190	159,677.3894	160,809.2260	161,949.0855	163,097.0245	164,253.1005	165,417.3711	166,589.8943	167,770.7287	168,959.9331

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - PAPER

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	168	-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6
	Paper with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	106,585.0	MJ	17,958,266	-	91,911	183,852	275,825	367,829	459,864	551,931	644,030	648,595	653,193	657,823	662,486	667,182	671,911	676,673	681,470	686,300	691,165	696,064	700,998	705,967	710,971	716,011	721,086	726,197	731,345	736,529	741,749	747,007	752,302
Franklin 20	GHG Emissions	4,170.6	Kg CO2e	702,693	-	3,596	7,194	10,793	14,393	17,994	21,597	25,200	25,379	25,559	25,740	25,923	26,106	26,291	26,478	26,665	26,854	27,045	27,236	27,430	27,624	27,820	28,017	28,216	28,416	28,617	28,820	29,024	29,230	29,437
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eutrophication	-	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 1
Enhanced Education
Impact on Environmental Categories - TOTAL

Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate			0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Waste Generated		4,372	120	123	126	128	131	134	137	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	160	161	162	163
Recycled		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted		64	-	0	0	0	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Landfilled		4,307	120	123	125	128	131	133	136	138	139	140	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	157	158	159	160
Total	***Factor***	***Unit***																														
Non-Renewable Energy		MJ	360,809,855	9,844,985	10,083,644	10,322,855	10,562,622	10,802,947	11,043,835	11,285,291	11,527,317	11,609,026	11,691,314	11,774,185	11,857,644	11,941,694	12,026,340	12,111,586	12,197,436	12,283,895	12,370,966	12,458,655	12,546,965	12,635,902	12,725,468	12,815,670	12,906,511	12,997,996	13,090,129	13,182,915	13,276,359	13,370,466	13,465,239
GHG Emissions		Kg CO2e	18,472,651	507,249	518,943	530,667	542,418	554,198	566,007	577,845	589,713	593,893	598,102	602,342	606,611	610,911	615,241	619,602	623,994	628,417	632,872	637,358	641,876	646,425	651,007	655,622	660,269	664,949	669,663	674,409	679,190	684,004	688,852
Resource Depletion (Abiotic)		Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ozone			50,149,448	1,499,928	1,511,612	1,523,372	1,535,208	1,547,121	1,559,111	1,571,179	1,583,325	1,594,548	1,605,851	1,617,233	1,628,697	1,640,241	1,651,868	1,663,577	1,675,369	1,687,244	1,699,204	1,711,248	1,723,378	1,735,594	1,747,896	1,760,286	1,772,763	1,785,329	1,797,984	1,810,728	1,823,563	1,836,489	1,849,507
Acidification			101,087,823	2,918,043	2,958,811	2,999,732	3,040,809	3,082,040	3,123,428	3,164,974	3,206,679	3,229,409	3,252,300	3,275,353	3,298,570	3,321,951	3,345,498	3,369,211	3,393,093	3,417,144	3,441,366	3,465,759	3,490,326	3,515,066	3,539,982	3,565,074	3,590,344	3,615,794	3,641,423	3,667,235	3,693,229	3,719,408	3,745,772
Eutrophication		g PO4 eq	9,052,502	269,987	272,221	274,469	276,731	279,006	281,295	283,599	285,917	287,943	289,984	292,040	294,110	296,195	298,294	300,408	302,538	304,682	306,842	309,017	311,207	313,413	315,635	317,872	320,125	322,394	324,680	326,981	329,299	331,633	333,984
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Aesthetics		m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Human Toxicity			4,033,257	-	20,642	41,292	61,948	82,611	103,281	123,959	144,643	145,668	146,701	147,741	148,788	149,843	150,905	151,974	153,052	154,137	155,229	156,329	157,438	158,554	159,677	160,809	161,949	163,097	164,253	165,417	166,590	167,771	168,960

Disposable Food Service Items Policy Option 1
Enhanced Education
Cost Benefit Calculations

Material		***NPV***	***1***		***2***		***3***		***4***		***5***		***6***		***7***		***8***		***9***		***10***		***11***		***12***		***13***		***14***		***15***		***16***		***17***
Recycle Rate			0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate			0%		0%		0%		0%		0%		0%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%	
Waste Generated		4,203	120		122		124		126		128		130		132		133		134		135		136		137		138		139		140		141	
Recycled			-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted		35	-		0		0		0		0		1		1		1		1		1		1		1		1		1		2		2	
Landfilled		4,168	120		122		124		126		127		129		131		133		133		134		135		136		137		138		139		140	
	Escalation Rate	0%																															
SPU/City of Seattle	Discount Rate	3%																															
Economic Benefits/(Costs)																																	
Administration		($1,680)	($86.00)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)
Inspection and Enforcement		$0	$0.00		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0
Program Marketing, Monitoring, Education, and Research		($1,176)	($60.00)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)
Recycling		$0	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-
11.5% $ 21.15	Hauling, Transfer and Disposal	$57	$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3	
$ -	Other Costs Due to Bag/Foodservice ware	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Terrestrial Litter Control		($11,760)	($600.00)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)
Marine Litter Abatement		($392)	($20.00)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)
50%	Consumer ADF	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Consumer																																	
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Costs		($12,360)	($418)		($450)		($482)		($513)		($545)		($577)		($609)		($641)		($645)		($650)		($654)		($659)		($664)		($668)		($673)		($678)		($683)	
Consumer ARF		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Household Expenditure		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
$ (70)	Hauling	($189)	($8)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($9)		($10)		($10)		($10)		($10)		($10)		($10)		($10)	
$ (41) $ (3)	Recycling & Compositng	($1)	$0		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)	
$ (51)	Transfer and Disposal	($136)	($6)		($6)		($6)		($6)		($6)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)		($7)	
Food Vendor																																	
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Rev		$12,360	$418		$450		$482		$513		$545		$577		$609		$641		$645		$650		$654		$659		$664		$668		$673		$678		$683	
Bag/Foodservice ware Costs		($12,236)	($414)		($445)		($477)		($508)		($540)		($571)		($603)		($634)		($639)		($643)		($648)		($652)		($657)		($662)		($666)		($671)		($676)	
50%	Consumer ARF	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Administration		($423)	($21.60)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)	
Training and Staff		($4,234)	($216.00)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Ammortized Capital		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Regional																																	
Economic Benefits/(Costs)		$0																															
0%	Plastic (All) Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
10%	Paper Production	$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17	
0%	PLA Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Sales		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Costs		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		($31,903)	($1,430)		($1,459)		($1,488)		($1,517)		($1,547)		($1,576)		($1,606)		($1,635)		($1,640)		($1,644)		($1,649)		($1,653)		($1,658)		($1,662)		($1,667)		($1,672)		($1,676)	
SPU/City of Seattle		($14,957)	($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)	
Consumer		($12,686)	($433)		($465)		($497)		($529)		($561)		($593)		($625)		($657)		($661)		($666)		($671)		($676)		($680)		($685)		($690)		($695)		($700)		($705)	
Retailer		($4,533)	($233)		($233)		($233)		($232)		($232)		($232)		($232)		($231)		($231)		($231)		($231)		($231)		($231)		($231)		($231)		($231)		($231)		($231)	
Regional		$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17		$17	

Material		***18***		***19***		***20***		***21***		***22***		***23***		***24***		***25***		***26***		***27***		***28***		***29***		***30***	
Recycle Rate		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%	
Waste Generated		142		143		144		145		146		147		148		149		151		152		153		154		155		156	
Recycled		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted		2		2		2		2		2		2		2		2		2		2		2		2		2		2	
Landfilled		141		142		143		144		145		146		147		148		149		150		151		152		153		154	
Economic Benefits/(Costs)																																	
Administration		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)		($86)	
Inspection and Enforcement		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Program Marketing, Monitoring, Education, and Research		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)		($60)	
Recycling		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Hauling, Transfer and Disposal		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3		$3	
Other Costs Due to Bag/Foodservice ware		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Terrestrial Litter Control		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)	
Marine Litter Abatement		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
Consumer ADF		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Costs		($687)		($692)		($697)		($702)		($707)		($712)		($717)		($722)		($728)		($733)		($738)		($743)		($748)	
Consumer ARF		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Household Expenditure		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Hauling		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($11)		($11)		($11)		($11)		($11)		($11)	
Recycling & Compositng		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)	
Transfer and Disposal		($7)		($7)		($7)		($7)		($7)		($7)		($8)		($8)		($8)		($8)		($8)		($8)		($8)		($8)	
Food Vendor																																	
Economic Benefits/(Costs)																																	
Bag/Foodservice ware Rev		$688		$692		$697		$702		$707		$712		$717		$722		$728		$733		$738		$743		$748	
Bag/Foodservice ware Costs		($681)		($686)		($690)		($695)		($700)		($705)		($710)		($715)		($720)		($725)		($731)		($736)		($741)	
Consumer ARF		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Administration		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)		($22)	
Training and Staff		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Ammortized Capital		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Regional																																	
Economic Benefits/(Costs)																																	
Plastic (All) Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Paper Production		$18		$18		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19		$19		$19	
PLA Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Sales		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Costs		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		($1,681)		($1,686)		($1,691)		($1,696)		($1,701)		($1,706)		($1,711)		($1,716)		($1,721)		($1,726)		($1,731)		($1,736)		($1,741)	
SPU/City of Seattle		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)		($763)	
Consumer		($710)		($715)		($720)		($725)		($730)		($735)		($741)		($746)		($751)		($756)		($762)		($767)					
Retailer		($231)		($231)		($231)		($231)		($230)		($230)		($230)		($230)		($230)		($230)		($230)		($230)					
Regional		$17		$18		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19					

Disposable Food Service Items Policy Option 2
Ban EPS
Use and Switching Assumptions

		Source	Switching Assumptions				
		Plastic	*Continue PS*	*PET*	*PP*	*PLA*	*Paper*
Clear Clamshells		100%	10%	70%	5%	10%	5%
	Total	100%	10%	70%	5%	10%	5%

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Number of PS Clamshells and Alternatives (millions)

	2004 Comp.		
Est. 2008 SF/MF/Comm Waste Generated		686,658	
Expanded Polystyrene	0.32%	2,210	5%
PS Clamshells (Tons)		120	
Avg. PS Clamshell Weight		0.011	
PS Clamshells		21,863,000	
2004 Seattle Population		572,600	260,000
Annual Per Plastic Capita PS Clamshell Use		38	84

Disposable Food Service Items Policy Option 2
Ban EPS
Use and Switching Assumptions

TONS	***Material***	***Ramp***	***Max Rate***	***SUM***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Plastic Generated (SQ)	0.71%	Growth	63,312	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Incr. Growth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Cumm Growth					1	2	3	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Continue PS	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Switch to PET	7	70%		0%	10%	20%	30%	40%	50%	60%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
	Switch to PP	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to PLA	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Switch to Pap	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
TONS																																		
	Continue PS				120	105	89	74	59	43	28	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15
	Switch to PET				-	13	25	38	51	63	76	88	89	90	90	91	92	92	93	94	94	95	96	96	97	98	98	99	100	100	101	102	103	103
	Switch to PP				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Switch to PLA				-	2	4	5	7	9	11	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15
	Switch to Pap				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Clamshells Avoided		***Exchange***	***Weight***																															
	Continue PS	1	0.023		10,456	9,119	7,782	6,445	5,109	3,772	2,435	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to PET	1.5	0.044		-	1,098	2,195	3,294	4,392	5,491	6,591	7,690	7,745	7,800	7,855	7,911	7,967	8,023	8,080	8,137	8,195	8,253	8,312	8,371	8,430	8,490	8,550	8,610	8,671	8,733	8,795	8,857	8,920	8,983
	Switch to PP	170	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	157	314	471	627	784	942	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to Pap	511	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (#)		***Exchange***	***Weight***																															
	Continue PS	1	0.023		10,456	9,119	7,782	6,445	5,109	3,772	2,435	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to PET	1	0.044		-	1,098	2,195	3,294	4,392	5,491	6,591	7,690	7,745	7,800	7,855	7,911	7,967	8,023	8,080	8,137	8,195	8,253	8,312	8,371	8,430	8,490	8,550	8,610	8,671	8,733	8,795	8,857	8,920	8,983
	Switch to PP	1	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	157	314	471	627	784	942	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to Pap	1	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (Tons)		***Exchange***	***Weight***																															
	Continue PS	1	0.023		120	105	89	74	59	43	28	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	15	15	15
	Switch to PET	1	0.044		-	24	48	72	97	121	145	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196	198
	Switch to PP	1	0.041		-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13
	Switch to PLA	1	0.026		-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17	17
	Switch to Pap	1	0.022		-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Amount of Waste Generated (tons)

Clear Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight	Use	Life Exp.
Avg. PS Clamshell Weight	$ -	$ 0.04	0.023		Single Trip *
Avg. PET Clamshell Weight	$ -	$ 0.18	0.044		Single Trip *
Avg. PP Clamshell Weight	$ -	$ 0.38	0.041		Single Trip *
Avg. PLA Clamshell Weight	$ -	$ 0.21	0.026		Single Trip *
Avg. Paper Clamshell Weight	$ -	$ 0.31	0.022		Single Trip

TONS		*Exchange*	*Weight*			120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PS CLAMSHELLS USED	PS					-																													
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004		120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PET CLAMSHELLS USED	PET					-	24	48	72	97	121	145	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196	198
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,718		-	24	48	72	97	121	145	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196	198
PP CLAMSHELLS USED	PP					-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			314		-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
PLA CLAMSHELLS USED	PLA					-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17	17
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%			5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			70		-	***0***	***0***	***0***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***2***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***
	Landfilled			328		-	2	4	6	7	9	11	13	13	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
PAPER CLAMSHELLS USED	PAPER					-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%			5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30		-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139		-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	
ALL CLAMSHELLS USED																																			
	Generated			9,602		120	150	179	209	238	268	298	327	329	332	334	336	339	341	344	346	349	351	354	356	359	361	364	366	369	371	374	377	379	382
	Recycled			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			99		-	0	0	1	1	1	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
	Landfilled			9,503		120	150	179	208	237	266	296	325	327	329	331	333	335	337	340	342	344	347	349	352	354	357	359	362	364	367	369	372	375	377

Disposable Food Service Items Policy Option 2
Ban EPS
Life Cycle Inventory Data

						"Cradle to Factory Gate"										"Cradle to Crade"		
		Functional Unit	Application	Commercial Example	Non-Renewable Energy (and Total)	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	Reference
		kg			MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq	g PO4 eq	g PM10 eq.	Kg/year	m2/year		ton		
Type of "Plastic"																				
48.0000	Petro	EPS		Foam Clamshell		112.40			3.440000										Landfilling	1
48.0000	Bio	Paper		Foam Clamshell		117.49			4.597292										Landfilling	1
20	Petro	PET	1	Clr Clamshell		71.9			4.515000		3.769500	15.600000	0.033000	1.085000	14.300000					2
11.6	Petro	OPS	1	Clr Clamshell		90.7			6.517241		1.716379	13.965517	0.031034	1.051724	12.586207					2
18.6	Petro	PP	1	Clr Clamshell		59.2			3.220430		1.261828	6.236559	0.270430	0.553763	5.967742					2
11.6	Bio	PLA	1	Clr Clamshell		83.2			4.870690		1.137931	21.724138	0.346552	2.043103	22.327586					2
	Petro	PS	1	Clamshell		87.0	39.0	48.0	5.980000										Incineration	3
	Petro	PS	1	Clamshell		91.7														4
	Petro	PS	1	Foam		90.3			4.650000		13.750000	26.750000	2.475000						30% Incin; 70% landfilling v	5
	Petro	PS	1	Foam		88.0			2.800000		43.000000	170.000000	5.800000						None (Crade to Gate)	6
	Bio	TPS	1	Foam		32.4			0.890000		5.500000	20.800000	2.800000						Composting	6
	Bio	TPS	1	Foam		36.5			1.430000		5.800000	20.700000	3.100000						WWTP	6
		HIPS	1	Cup (16 oz.)																
47	Petro	EPS	1	Cup (16 oz.)		147.0			5.1638											
158	Petro	PET	1	Cup (16 oz.)		101.9			4.5506											
105	Petro	PP	1	Cup (16 oz.)		93.5			3.2857											
148	Bio	PLA	1	Cup (16 oz.)		98.0			3.4459											
191	Bio	Paper w/ Sleeve	1	Cup (16 oz.)		54.6			1.9706											
	Petro	PS	1	Cutlery		126.5			5.450000											7
	Petro	PC	1	Cutlery		152.0			8.060000										Composting	7
	Bio	Cellulose/Starch	1	Cutlery	Mater-Bi	8.15			1.410000										Composting	7
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000										Incineration	3
	Petro	HDPE	1	Pellet		73.8														4
	Petro	LLDPE	1	Pellet		72.3			4.540000										Incineration	3
	Petro	LDPE	1	Pellet		80.6			5.040000										Incineration	3
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000						80% Incin. / 20% landfill	8
	Petro	Nylon 6	1	Pellet		120.0			7.640000										Incineration	3
	Bio	TPS	1	Pellet		25.4			1.140000										Incineration	9
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000						80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000						100% Composting	8
	Bio	PLA	1	Pellet		57.0			3.840000										Incineration	10
	Bio	PHA *		Pellet			90.0	0.0												4

Reference

1 Franklin 2006
2 IFEU Heidelberg 2006. Life Cycle Assessment of POLYLACTIDE (PLA) A comparison of food packaging made from NatureWorks® PLA and alternative materials Final Report.
3 Cradle-Gate Data for petrochemical polymers from APME (1999).
4 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
5 BIFA/IFEU/FloPak 2001
6 Composto 2000
7 Life Cycle Management in bioplastics production Francesco Degli Innocentia*, Francesco Razzab, Maurizio Fieschic, Catia Bastiolia
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - PS

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	PS with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	81,873.4	MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
Franklin 20	GHG Emissions	4,218.4	Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	12,473.8		49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
	Acidification	24,267.2		97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
	Eutrophication	2,245.3	g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - PET

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,718	-	24	48	72	97	121	145	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196	198
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,718	-	24	48	72	97	121	145	169	170	172	173	174	175	177	178	179	180	182	183	184	185	187	188	189	191	192	193	195	196	198
	PET with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	65,262.0	MJ	307,883,586	-	1,575,756	3,152,039	4,728,855	6,306,206	7,884,096	9,462,530	11,041,510	11,119,775	11,198,595	11,277,974	11,357,915	11,438,423	11,519,502	11,601,155	11,683,388	11,766,203	11,849,605	11,933,598	12,018,186	12,103,375	12,189,167	12,275,567	12,362,579	12,450,209	12,538,459	12,627,335	12,716,841	12,806,981	12,897,761
Naturewor	GHG Emissions	4,095.9	Kg CO2e	19,323,211	-	98,897	197,826	296,790	395,786	494,817	593,882	692,981	697,893	702,840	707,822	712,839	717,892	722,980	728,105	733,266	738,464	743,698	748,970	754,278	759,625	765,009	770,432	775,893	781,393	786,931	792,509	798,127	803,784	809,482
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	3,419.6		16,132,634	-	82,567	165,162	247,785	330,436	413,115	495,822	578,558	582,659	586,789	590,949	595,138	599,356	603,604	607,883	612,192	616,531	620,901	625,302	629,735	634,199	638,694	643,221	647,780	652,372	656,996	661,653	666,343	671,066	675,823
Naturewor	Acidification	14,152.1		66,764,582	-	341,703	683,520	1,025,453	1,367,501	1,709,667	2,051,950	2,394,352	2,411,324	2,428,416	2,445,630	2,462,965	2,480,423	2,498,005	2,515,712	2,533,544	2,551,502	2,569,588	2,587,802	2,606,145	2,624,618	2,643,222	2,661,958	2,680,826	2,699,829	2,718,966	2,738,239	2,757,648	2,777,195	2,796,881
Naturewor	Eutrophication	29.9	g PO4 eq	141,233	-	723	1,446	2,169	2,893	3,617	4,341	5,065	5,101	5,137	5,173	5,210	5,247	5,284	5,322	5,359	5,397	5,436	5,474	5,513	5,552	5,591	5,631	5,671	5,711	5,752	5,792	5,833	5,875	5,916
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	12,972.7		61,200,867	-	313,228	626,560	939,998	1,253,543	1,567,195	1,880,955	2,194,823	2,210,381	2,226,048	2,241,827	2,257,718	2,273,721	2,289,838	2,306,069	2,322,415	2,338,877	2,355,455	2,372,152	2,388,966	2,405,900	2,422,953	2,440,128	2,457,424	2,474,843	2,492,385	2,510,052	2,527,844	2,545,762	2,563,807

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - PP

					NPV		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30	
	PP with Recycling	**Factor**	**Unit**																																																												
Naturewor	Non-Renewable Energy	53,730.5	MJ		16,871,351	-	86,348		172,725		259,131		345,566		432,031		518,526		605,051		609,340		613,659		618,008		622,389		626,801		631,244		635,718		640,224		644,762		649,333		653,935		658,570		663,239		667,940		672,674		677,442		682,244		687,080		691,950		696,855		701,795		706,769	
Naturewor	GHG Emissions	2,921.5	Kg CO2e		917,357	-	4,695		9,392		14,090		18,790		23,491		28,194		32,899		33,132		33,367		33,603		33,842		34,081		34,323		34,566		34,811		35,058		35,307		35,557		35,809		36,063		36,318		36,576		36,835		37,096		37,359		37,624		37,891		38,159		38,430	
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq		-	-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Naturewor	Ozone	1,144.7			359,439	-	1,840		3,680		5,521		7,362		9,204		11,047		12,890		12,982		13,074		13,166		13,260		13,354		13,448		13,544		13,640		13,736		13,834		13,932		14,031		14,130		14,230		14,331		14,433		14,535		14,638		14,742		14,846		14,952		15,057	
Naturewor	Acidification	5,657.7			1,776,518	-	9,092		18,188		27,286		36,387		45,492		54,600		63,711		64,162		64,617		65,075		65,536		66,001		66,469		66,940		67,414		67,892		68,373		68,858		69,346		69,838		70,333		70,831		71,333		71,839		72,348		72,861		73,377		73,898		74,421	
Naturewor	Eutrophication	245.3	g PO4 eq		77,034	-	394		789		1,183		1,578		1,973		2,368		2,763		2,782		2,802		2,822		2,842		2,862		2,882		2,903		2,923		2,944		2,965		2,986		3,007		3,028		3,050		3,071		3,093		3,115		3,137		3,159		3,182		3,204		3,227	
Naturewor	Use of Nature (Land Use)	-			-	-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Naturewor	Litter Marine Biodiversity	-	Kg/year		-	-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Naturewor	Litter Aesthetics	-	m2/year		-	-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Naturewor	Human Toxicity	5,413.8			1,699,944	-	8,700		17,404		26,110		34,819		43,531		52,246		60,964		61,397		61,832		62,270		62,711		63,156		63,604		64,054		64,509		64,966		65,426		65,890		66,357		66,827		67,301		67,778		68,259		68,742		69,230		69,720		70,215		70,712		71,214	

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - PLA

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	398	-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	17	17
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			70	-	***0***	***0***	***0***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***
	Landfilled			328	-	2	4	6	7	9	11	13	13	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
	PLA with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	75,521.8	MJ	30,076,079	-	153,930	307,912	461,945	616,031	770,170	924,362	1,078,607	1,086,252	1,093,952	1,101,706	1,109,515	1,117,380	1,125,300	1,133,277	1,141,310	1,149,399	1,157,547	1,165,752	1,174,015	1,182,337	1,190,717	1,199,158	1,207,657	1,216,218	1,224,839	1,233,521	1,242,264	1,251,070	1,259,937
Naturewor	GHG Emissions	4,418.6	Kg CO2e	1,759,684	-	9,006	18,015	27,027	36,043	45,061	54,082	63,107	63,554	64,005	64,458	64,915	65,375	65,839	66,305	66,775	67,249	67,725	68,206	68,689	69,176	69,666	70,160	70,657	71,158	71,663	72,171	72,682	73,197	73,716
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,032.3		411,112	-	2,104	4,209	6,314	8,421	10,528	12,635	14,744	14,848	14,953	15,059	15,166	15,274	15,382	15,491	15,601	15,711	15,823	15,935	16,048	16,161	16,276	16,391	16,508	16,625	16,742	16,861	16,981	17,101	17,222
Naturewor	Acidification	19,707.8		7,848,501	-	40,169	80,351	120,547	160,796	200,980	241,217	281,468	283,463	285,472	287,496	289,533	291,586	293,653	295,734	297,830	299,941	302,068	304,209	306,365	308,537	310,724	312,926	315,144	317,378	319,628	321,893	324,175	326,473	328,787
Naturewor	Eutrophication	314.4	g PO4 eq	125,202	-	641	1,282	1,923	2,564	3,206	3,848	4,490	4,522	4,554	4,586	4,619	4,651	4,684	4,718	4,751	4,785	4,819	4,853	4,887	4,922	4,957	4,992	5,027	5,063	5,099	5,135	5,171	5,208	5,245
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	20,255.2		8,066,515	-	41,284.6213	82,583.0763	123,895.4630	165,221.8800	206,562.4270	247,917.2039	289,286.3118	291,336.8517	293,401.9264	295,481.6389	297,576.0929	299,685.3930	301,809.6444	303,948.9531	306,103.4258	308,273.1699	310,458.2938	312,658.9065	314,875.1177	317,107.0380	319,354.7787	321,618.4521	323,898.1709	326,194.0491	328,506.2010	330,834.7421	333,179.7886	335,541.4574	337,919.8663

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - PAPER

					NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%			5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth		168	-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7
	Recycled				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted				30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled				139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6
	Paper with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	106,585.0	MJ		17,958,266	-	91,911	183,852	275,825	367,829	459,864	551,931	644,030	648,595	653,193	657,823	662,486	667,182	671,911	676,673	681,470	686,300	691,165	696,064	700,998	705,967	710,971	716,011	721,086	726,197	731,345	736,529	741,749	747,007	752,302
Franklin 20	GHG Emissions	4,170.6	Kg CO2e		702,693	-	3,596	7,194	10,793	14,393	17,994	21,597	25,200	25,379	25,559	25,740	25,923	26,106	26,291	26,478	26,665	26,854	27,045	27,236	27,430	27,624	27,820	28,017	28,216	28,416	28,617	28,820	29,024	29,230	29,437
	Resource Depletion (Abiotic)	-	Kg Sb eq		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eutrophication	-	g PO4 eq		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 2
Ban EPS
Impact on Environmental Categories - TOTAL

Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate				0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Waste Generated			9,602	120	150	179	209	238	268	298	327	329	332	334	336	339	341	344	346	349	351	354	356	359	361	364	366	369	371	374	377	379	382
Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted			99	-	0	0	1	1	1	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Landfilled			9,503	120	150	179	208	237	266	296	325	327	329	331	333	335	337	340	342	344	347	349	352	354	357	359	362	364	367	369	372	375	377
Total	***Factor***	***Unit***																															
Non-Renewable Energy		MJ	700,602,831	9,844,985	11,822,713	13,801,576	15,781,580	17,762,735	19,745,048	21,728,527	23,713,181	23,881,267	24,050,544	24,221,021	24,392,706	24,565,608	24,739,736	24,915,097	25,091,702	25,269,559	25,448,677	25,629,064	25,810,730	25,993,683	26,177,933	26,363,490	26,550,361	26,738,557	26,928,088	27,118,961	27,311,188	27,504,777	27,699,738
GHG Emissions		Kg CO2e	39,593,061	507,249	627,038	746,892	866,811	986,796	1,106,846	1,226,962	1,347,146	1,356,695	1,366,311	1,375,996	1,385,749	1,395,572	1,405,464	1,415,426	1,425,459	1,435,563	1,445,739	1,455,987	1,466,307	1,476,701	1,487,168	1,497,710	1,508,326	1,519,017	1,529,784	1,540,628	1,551,548	1,562,546	1,573,622
Resource Depletion (Abiotic)		Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ozone			66,847,077	1,499,928	1,597,071	1,694,318	1,791,671	1,889,129	1,986,693	2,084,365	2,182,146	2,197,613	2,213,190	2,228,878	2,244,677	2,260,588	2,276,612	2,292,749	2,309,000	2,325,367	2,341,850	2,358,450	2,375,167	2,392,003	2,408,958	2,426,033	2,443,230	2,460,548	2,477,989	2,495,554	2,513,243	2,531,057	2,548,998
Acidification			173,553,174	2,918,043	3,329,690	3,741,616	4,153,821	4,566,307	4,979,077	5,392,133	5,805,476	5,846,627	5,888,069	5,929,805	5,971,838	6,014,168	6,056,798	6,099,730	6,142,966	6,186,509	6,230,361	6,274,524	6,318,999	6,363,790	6,408,898	6,454,326	6,500,076	6,546,150	6,592,551	6,639,281	6,686,342	6,733,737	6,781,467
Eutrophication		g PO4 eq	9,333,369	269,987	273,659	277,345	281,045	284,759	288,488	292,231	295,989	298,087	300,200	302,328	304,471	306,629	308,803	310,992	313,196	315,416	317,652	319,903	322,171	324,455	326,754	329,071	331,403	333,752	336,118	338,500	340,900	343,316	345,750
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Aesthetics		m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Human Toxicity			70,967,326	-	363,213	726,547	1,090,004	1,453,584	1,817,288	2,181,118	2,545,074	2,563,114	2,581,282	2,599,579	2,618,005	2,636,563	2,655,251	2,674,072	2,693,027	2,712,116	2,731,340	2,750,700	2,770,198	2,789,834	2,809,609	2,829,524	2,849,581	2,869,780	2,890,121	2,910,607	2,931,238	2,952,016	2,972,941

Disposable Food Service Items Policy Option 2
Ban EPS
Cost Benefit Calculations

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Material																																		
Recycle Rate					0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate					0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Waste Generated				9,434	120	149	178	206	235	264	292	321	323	326	328	330	333	335	337	340	342	345	347	349	352	354	357	359	362	365	367	370	372	375
Recycled				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted				70	-	0	0	0	1	1	1	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Landfilled				9,364	120	149	177	206	234	263	291	319	321	324	326	328	330	332	334	337	339	342	344	346	349	351	354	356	359	361	364	366	369	372
		Escalation Rate	0%																															
SPU/City of Seattle		Discount Rate	3%																															
	Economic Benefits/(Costs)																																	
	Administration			($1,686)	($86.00)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)	($86)
	Inspection and Enforcement			($1,098)	($56.00)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)	($56)
	Program Marketing, Monitoring, Education, and Research			($1,176)	($60.00)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)	($60)
	Recycling			$0																														
11.5%	$ 21.15	Hauling, Transfer and Disposal		$124	$3	$3	$4	$4	$5	$6	$6	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$7	$8	$8	$8	$8	$8	$8	$8	$8
	$ -	Other Costs Due to Bag/Foodservice ware		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Terrestrial Litter Control		($11,760)	($600.00)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)	($600)
		Marine Litter Abatement		($392)	($20.00)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)	($20)
50%		Consumer ADF		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Consumer																																		
	Economic Benefits/(Costs)																																	
	Bag/Foodservice ware Costs			($42,226)	($418)	($702)	($986)	($1,270)	($1,555)	($1,839)	($2,123)	($2,408)	($2,425)	($2,442)	($2,460)	($2,477)	($2,495)	($2,512)	($2,530)	($2,548)	($2,566)	($2,584)	($2,603)	($2,621)	($2,640)	($2,658)	($2,677)	($2,696)	($2,715)	($2,735)	($2,754)	($2,773)	($2,793)	($2,813)
	Consumer ARF			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Household Expenditure			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$ (70)	Hauling		($411)	($8)	($10)	($12)	($14)	($16)	($18)	($20)	($22)	($23)	($23)	($23)	($23)	($23)	($23)	($23)	($24)	($24)	($24)	($24)	($24)	($24)	($25)	($25)	($25)	($25)	($25)	($26)	($26)	($26)	($26)	($26)
$ (41)	$ (5)	Recycling & Composting		($2)	$0	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)	($0)
	$ (51)	Transfer and Disposal		($297)	($6)	($8)	($9)	($10)	($12)	($13)	($15)	($16)	($16)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($17)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($18)	($19)	($19)	($19)	($19)
Food Vendor																																		
	Economic Benefits/(Costs)																																	
	Bag/Foodservice ware Rev			$42,226	$418	$702	$986	$1,270	$1,555	$1,839	$2,123	$2,408	$2,425	$2,442	$2,460	$2,477	$2,495	$2,512	$2,530	$2,548	$2,566	$2,584	$2,603	$2,621	$2,640	$2,658	$2,677	$2,696	$2,715	$2,735	$2,754	$2,773	$2,793	$2,813
	Bag/Foodservice ware Costs			($41,804)	($414)	($695)	($976)	($1,258)	($1,539)	($1,821)	($2,102)	($2,384)	($2,401)	($2,418)	($2,435)	($2,452)	($2,470)	($2,487)	($2,505)	($2,523)	($2,540)	($2,559)	($2,577)	($2,595)	($2,613)	($2,632)	($2,650)	($2,669)	($2,688)	($2,707)	($2,726)	($2,746)	($2,765)	($2,785)
50%		Consumer ARF		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Administration		($423)	($21.60)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)	($22)
		Training and Staff		($4,234)	($216.00)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)	($216)
		Ammortized Capital		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regional																																		
	Economic Benefits/(Costs)			$0																														
0%		Plastic (All) Production		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
10%		Paper Production		$273	$0	$2	$5	$7	$9	$12	$14	$16	$16	$16	$17	$17	$17	$17	$17	$17	$17	$17	$17	$18	$18	$18	$18	$18	$18	$18	$19	$19	$19	$19	$19	$19
0%		PLA Production		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Alt Product Sales		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Alt Product Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
				($62,885)	($1,486)	($1,767)	($2,049)	($2,331)	($2,613)	($2,895)	($3,177)	($3,459)	($3,477)	($3,494)	($3,511)	($3,528)	($3,546)	($3,563)	($3,581)	($3,599)	($3,617)	($3,635)	($3,653)	($3,672)	($3,690)	($3,709)	($3,728)	($3,747)	($3,766)	($3,785)	($3,804)	($3,824)	($3,843)	($3,863)
			SPU/City of Seattle	($15,988)	($819)	($819)	($818)	($818)	($817)	($816)	($816)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($815)	($814)	($814)	($814)	($814)	($814)	($814)	($814)	($814)	($814)
			Consumer	($42,936)	($433)	($720)	($1,008)	($1,295)	($1,583)	($1,871)	($2,159)	($2,447)	($2,464)	($2,482)	($2,499)	($2,517)	($2,535)	($2,553)	($2,571)	($2,589)	($2,608)	($2,626)	($2,645)	($2,663)	($2,682)	($2,701)	($2,720)	($2,740)	($2,759)	($2,779)	($2,798)	($2,818)	($2,838)	($2,858)
			Retailer	($4,235)	($233)	($231)	($228)	($225)	($222)	($219)	($216)	($214)	($213)	($213)	($213)	($213)	($213)	($212)	($212)	($212)	($212)	($212)	($212)	($212)	($211)	($211)	($211)	($211)	($211)	($210)	($210)	($210)	($210)	($210)	($209)
			Regional	$273	$0	$2	$5	$7	$9	$12	$14	$16	$16	$16	$17	$17	$17	$17	$17	$17	$17	$17	$17	$18	$18	$18	$18	$18	$18	$18	$19	$19	$19	$19	$19	$19

Disposable Food Service Items Policy Option 3
ARF on EPS
Use and Switching Assumptions

		Source	Switching Assumptions				
		Plastic	*Continue PS*	*PET*	*PP*	*PLA*	*Paper*
Clear Clamshells		100%	40%	40%	5%	10%	5%
	Total	100%	40%	40%	5%	10%	5%

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Number of PS Clamshells and Alternatives (millions)

	2004 Comp.		
Est. 2008 SF/MF/Comm Waste Generated		686,658	
Expanded Polystyrene	0.32%	2,210	5%
PS Clamshells (Tons)		120	
Avg. PS Clamshell Weight		0.011	
PS Clamshells		21,863,000	
2004 Seattle Population		572,600	260,000
Annual Per Plastic Capita PS Clamshell Use		38	84

Disposable Food Service Items Policy Option 3
ARF on EPS
Use and Switching Assumptions

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Incr. Growth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Cumm Growth					1	2	3	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Continue PS	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to PET	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to PP	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to PLA	7	10%		0%	1%	3%	4%	6%	7%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
	Switch to Pap	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

TONS																																		
	Continue PS				120	110	100	90	80	70	60	51	51	51	52	52	52	53	53	53	54	54	55	55	55	56	56	57	57	57	58	58	59	59
	Switch to PET				-	7	14	22	29	36	43	51	51	51	52	52	52	53	53	53	54	54	55	55	55	56	56	57	57	57	58	58	59	59
	Switch to PP				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Switch to PLA				-	2	4	5	7	9	11	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	14	15	15	15
	Switch to Pap				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Clamshells Avoided		Exchange	Weight																															
	Continue PS	1	0.023		10,456	9,590	8,723	7,857	6,991	6,125	5,260	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PET	1.5	0.044		-	627	1,254	1,882	2,510	3,138	3,766	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PP	170	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	157	314	471	627	784	942	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to Pap	511	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642

Clamshells Used (#)		Exchange	Weight																															
	Continue PS	1	0.023		10,456	9,590	8,723	7,857	6,991	6,125	5,260	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PET	1	0.044		-	627	1,254	1,882	2,510	3,138	3,766	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PP	1	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	157	314	471	627	784	942	1,099	1,106	1,114	1,122	1,130	1,138	1,146	1,154	1,162	1,171	1,179	1,187	1,196	1,204	1,213	1,221	1,230	1,239	1,248	1,256	1,265	1,274	1,283
	Switch to Pap	1	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642

Clamshells Used (Tons)		Exchange	Weight																															
	Continue PS	1	0.023		120	110	100	90	80	70	60	51	51	51	52	52	52	53	53	53	54	54	55	55	55	56	56	57	57	57	58	58	59	59
	Switch to PET	1	0.044		-	14	28	41	55	69	83	97	97	98	99	99	100	101	102	102	103	104	104	105	106	107	107	108	109	110	111	111	112	113
	Switch to PP	1	0.041		-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	Switch to PLA	1	0.026		-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17	17
	Switch to Pap	1	0.022		-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Amount of Waste Generated (tons)

Clear Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight	Use	Life Exp.
Avg. PS Clamshell Weight	$ 0.20	$ 0.04	0.023		Single Trip *
Avg. PET Clamshell Weight	$ -	$ 0.18	0.044		Single Trip *
Avg. PP Clamshell Weight	$ -	$ 0.38	0.041		Single Trip *
Avg. PLA Clamshell Weight	$ -	$ 0.21	0.026		Single Trip *
Avg. Paper Clamshell Weight	$ -	$ 0.31	0.022		Single Trip

TONS		*Exchange*	*Weight*																																		
PS CLAMSHELLS USED	PS				120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PET CLAMSHELLS USED	PET				-	14	28	41	55	69	83	97	97	98	99	99	100	101	102	102	103	104	104	105	106	107	107	108	109	110	111	111	112	113
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			2,696	-	14	28	41	55	69	83	97	97	98	99	99	100	101	102	102	103	104	104	105	106	107	107	108	109	110	111	111	112	113
PP CLAMSHELLS USED	PP				-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
PLA CLAMSHELLS USED	PLA				-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17	17
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			70	-	***0***	***0***	***0***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***
	Landfilled			328	-	2	4	6	7	9	11	13	13	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13	13
PAPER CLAMSHELLS USED	PAPER				-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6
ALL CLAMSHELLS USED																																					
	Generated			7,580	120	139	159	178	197	216	235	255	256	258	260	262	264	266	268	269	271	273	275	277	279	281	283	285	287	289	291	293	295	297
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			99	-	0	0	1	1	1	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
	Landfilled			7,481	120	139	158	177	196	215	233	252	254	255	257	259	260	262	263	265	267	269	271	273	275	277	279	281	283	285	287	289	291	293

Disposable Food Service Items Policy Option 3
ARF on EPS
Life Cycle Inventory Data

					"Cradle to Factory Gate"			"Cradle to Crade"										Reference
		Functional Unit	Application	Commercial Example	Non-Renewable Energy (and Total)	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	
					MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq	g PO4 eq	g PM10 eq.	Kg/year	m2/year		ton		
Type of "Plastic"																				1
48.0000	Petro	EPS		Foam Clamshell		112.40			3.440000										Landfilling	1
48.0000	Bio	Paper		Foam Clamshell		117.49			4.597292										Landfilling	2
20	Petro	PET	1	Clr Clamshell		71.9			4.515000		3.769500	15.600000	0.033000	1.085000	14.300000					2
11.6	Petro	OPS	1	Clr Clamshell		90.7			6.517241		1.716379	13.965517	0.031034	1.051724	12.586207					2
18.6	Petro	PP	1 Kg	Clr Clamshell		59.2			3.220430		1.261828	6.236559	0.270430	0.553763	5.967742					2
11.6	Bio	PLA	1	Clr Clamshell		83.2			4.870690		1.137931	21.724138	0.346552	2.043103	22.327586					3
	Petro	PS	1	Clamshell		87.0	39.0	48.0	5.980000										Incineration	4
	Petro	PS	1	Clamshell		91.7														5
	Petro	PS	1	Foam		90.3			4.650000		13.750000	26.750000	2.475000							6
	Petro	PS	1	Foam		88.0			2.800000		43.000000	170.000000	5.800000						None (Crade to Gate)	6
	Bio	TPS	1	Foam		32.4			0.890000		5.500000	20.800000	2.800000						Composting	6
	Bio	TPS	1	Foam		36.5			1.430000		5.800000	20.700000	3.100000						WWTP	
		HIPS	1	Cup (16 oz.)																
47	Petro	EPS	1	Cup (16 oz.)		147.0			5.1638											
158	Petro	PET	1	Cup (16 oz.)		101.9			4.5506											
105	Petro	PP	1	Cup (16 oz.)		93.5			3.2857											
148	Bio	PLA	1	Cup (16 oz.)		98.0			3.4459											
191	Bio	Paper w/ Sleeve	1	Cup (16 oz.)		54.6			1.9706											7
	Petro	PS	1	Cutlery		126.5			5.450000											7
	Petro	PC	1	Cutlery		152.0			8.060000										Composting	7
	Bio	Cellulose/Starch	1	Cutlery	Mater-Bi	8.15			1.410000										Composting	3
	Petro	HDPE	1	Pellet			31.0	49.0	4.840000										Incineration	4
	Petro	HDPE	1	Pellet		73.8														3
	Petro	LLDPE	1	Pellet		72.3			4.540000										Incineration	3
	Petro	LDPE	1	Pellet		80.6			5.040000										Incineration	8
	Petro	LDPE	1	Pellet		91.7			5.200000		13.000000	17.400000	1.100000						80% Incin. / 20% landfill	3
	Petro	Nylon 6	1	Pellet		120.0			7.640000										Incineration	9
	Bio	TPS	1	Pellet		25.4			1.140000										Incineration	8
	Bio	TPS	1	Pellet		25.5			1.200000		4.700000	10.900000	4.700000						80% Incin. / 20% Compost	8
	Bio	TPS	1	Pellet		25.4			1.140000		5.000000	10.600000	4.700000						100% Composting	10
	Bio	PLA	1	Pellet		57.0			3.840000										Incineration	4
	Bio	PHA *		Pellet			90.0	0.0												

Reference

1 Franklin 2006
2 IFEU Heidelberg 2006. Life Cycle Assessment of POLYLACTIDE (PLA) A comparison of food packaging made from NatureWorks® PLA and alternative materials Final Report.
3 Cradle-Gate Data for petrochemical polymers from APME (1999).
4 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
5 BIFA/IFEU/FloPak 2001
6 Composto 2000
7 Life Cycle Management in bioplastics production Francesco Degli Innocentia*, Francesco Razzab, Maurizio Fieschic, Catia Bastiolia
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - PS

	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	PS with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	81,873.4	MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
Franklin 20	GHG Emissions	4,218.4	Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	12,473.8		49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
	Acidification	24,267.2		97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
	Eutrophication	2,245.3	g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - PET

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	2,696	-	14	28	41	55	69	83	97	97	98	99	99	100	101	102	102	103	104	104	105	106	107	107	108	109	110	111	111	112	113
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			2,696	-	14	28	41	55	69	83	97	97	98	99	99	100	101	102	102	103	104	104	105	106	107	107	108	109	110	111	111	112	113
	PET with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	65,262.0	MJ	175,933,478	-	900,432	1,801,165	2,702,203	3,603,546	4,505,198	5,407,160	6,309,434	6,354,157	6,399,197	6,444,557	6,490,237	6,536,242	6,582,573	6,629,232	6,676,221	6,723,544	6,771,203	6,819,199	6,867,535	6,916,214	6,965,238	7,014,610	7,064,331	7,114,405	7,164,834	7,215,620	7,266,766	7,318,275	7,370,149
Naturewor	GHG Emissions	4,095.9	Kg CO2e	11,041,835	-	56,512	113,044	169,594	226,164	282,753	339,361	395,989	398,796	401,623	404,470	407,337	410,224	413,132	416,060	419,009	421,979	424,970	427,983	431,016	434,071	437,148	440,247	443,367	446,510	449,675	452,863	456,073	459,305	462,561
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	3,419.6		9,218,648	-	47,181	94,378	141,591	188,820	236,066	283,327	330,605	332,948	335,308	337,685	340,079	342,489	344,917	347,362	349,824	352,304	354,801	357,316	359,848	362,399	364,968	367,555	370,160	372,784	375,426	378,088	380,768	383,467	386,185
Naturewor	Acidification	14,152.1		38,151,190	-	195,259	390,583	585,973	781,429	976,953	1,172,543	1,368,201	1,377,900	1,387,667	1,397,503	1,407,409	1,417,385	1,427,431	1,437,549	1,447,739	1,458,001	1,468,336	1,478,744	1,489,226	1,499,782	1,510,412	1,521,119	1,531,901	1,542,759	1,553,695	1,564,708	1,575,799	1,586,969	1,598,217
Naturewor	Eutrophication	29.9	g PO4 eq	80,704	-	413	826	1,240	1,653	2,067	2,480	2,894	2,915	2,935	2,956	2,977	2,998	3,020	3,041	3,063	3,084	3,106	3,128	3,150	3,173	3,195	3,218	3,241	3,264	3,287	3,310	3,333	3,357	3,381
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	12,972.7		34,971,924	-	178,987	358,034	537,142	716,310	895,540	1,074,831	1,254,185	1,263,075	1,272,028	1,281,044	1,290,124	1,299,269	1,308,479	1,317,754	1,327,094	1,336,501	1,345,975	1,355,515	1,365,123	1,374,800	1,384,545	1,394,359	1,404,242	1,414,196	1,424,220	1,434,316	1,444,482	1,454,721	1,465,033

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - PP

	Material			*NPV*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13
	PP with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	53,730.5	MJ	16,871,351	-	86,348	172,725	259,131	345,566	432,031	518,526	605,051	609,340	613,659	618,008	622,389	626,801	631,244	635,718	640,224	644,762	649,333	653,935	658,570	663,239	667,940	672,674	677,442	682,244	687,080	691,950	696,855	701,795	706,769
Naturewor	GHG Emissions	2,921.5	Kg CO2e	917,357	-	4,695	9,392	14,090	18,790	23,491	28,194	32,899	33,132	33,367	33,603	33,842	34,081	34,323	34,566	34,811	35,058	35,307	35,557	35,809	36,063	36,318	36,576	36,835	37,096	37,359	37,624	37,891	38,159	38,430
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,144.7		359,439	-	1,840	3,680	5,521	7,362	9,204	11,047	12,890	12,982	13,074	13,166	13,260	13,354	13,448	13,544	13,640	13,736	13,834	13,932	14,031	14,130	14,230	14,331	14,433	14,535	14,638	14,742	14,846	14,952	15,057
Naturewor	Acidification	5,657.7		1,776,518	-	9,092	18,188	27,286	36,387	45,492	54,600	63,711	64,162	64,617	65,075	65,536	66,001	66,469	66,940	67,414	67,892	68,373	68,858	69,346	69,838	70,333	70,831	71,333	71,839	72,348	72,861	73,377	73,898	74,421
Naturewor	Eutrophication	245.3	g PO4 eq	77,034	-	394	789	1,183	1,578	1,973	2,368	2,763	2,782	2,802	2,822	2,842	2,862	2,882	2,903	2,923	2,944	2,965	2,986	3,007	3,028	3,050	3,071	3,093	3,115	3,137	3,159	3,182	3,204	3,227
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	5,413.8		1,699,944	-	8,700	17,404	26,110	34,819	43,531	52,246	60,964	61,397	61,832	62,270	62,711	63,156	63,604	64,054	64,509	64,966	65,426	65,890	66,357	66,827	67,301	67,778	68,259	68,742	69,230	69,720	70,215	70,712	71,214

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - PLA

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	398	-	2	4	6	8	10	12	14	14	14	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	17	17
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			70	-	***0***	***0***	***0***	***1***	***1***	***1***	***2***	***2***	***2***	***2***	***2***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***	***3***
	Landfilled			328	-	2	4	6	7	9	11	13	13	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
	PLA with Recycling	***Factor***	***Unit***																															
Naturewor	Non-Renewable Energy	75,521.8	MJ	30,076,079	-	153,930	307,912	461,945	616,031	770,170	924,362	1,078,607	1,086,252	1,093,952	1,101,706	1,109,515	1,117,380	1,125,300	1,133,277	1,141,310	1,149,399	1,157,547	1,165,752	1,174,015	1,182,337	1,190,717	1,199,158	1,207,657	1,216,218	1,224,839	1,233,521	1,242,264	1,251,070	1,259,937
Naturewor	GHG Emissions	4,418.6	Kg CO2e	1,759,684	-	9,006	18,015	27,027	36,043	45,061	54,082	63,107	63,554	64,005	64,458	64,915	65,375	65,839	66,305	66,775	67,249	67,725	68,206	68,689	69,176	69,666	70,160	70,657	71,158	71,663	72,171	72,682	73,197	73,716
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,032.3		411,112	-	2,104	4,209	6,314	8,421	10,528	12,635	14,744	14,848	14,953	15,059	15,166	15,274	15,382	15,491	15,601	15,711	15,823	15,935	16,048	16,161	16,276	16,391	16,508	16,625	16,742	16,861	16,981	17,101	17,222
Naturewor	Acidification	19,707.8		7,848,501	-	40,169	80,351	120,547	160,756	200,980	241,217	281,468	283,463	285,472	287,496	289,533	291,586	293,653	295,734	297,830	299,941	302,068	304,209	306,365	308,537	310,724	312,926	315,144	317,378	319,628	321,893	324,175	326,473	328,787
Naturewor	Eutrophication	314.4	g PO4 eq	125,202	-	641	1,282	1,923	2,564	3,206	3,848	4,490	4,522	4,554	4,586	4,619	4,651	4,684	4,718	4,751	4,785	4,819	4,853	4,887	4,922	4,957	4,992	5,027	5,063	5,099	5,135	5,171	5,208	5,245
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	20,255.2		8,066,515	-	41,284.6213	82,583.0763	123,895.4630	165,221.8800	206,562.4270	247,917.2039	289,286.3118	291,336.8517	293,401.9264	295,481.6389	297,576.0929	299,685.3930	301,809.6444	303,948.9531	306,103.4258	308,273.1699	310,458.2938	312,658.9065	314,875.1177	317,107.0380	319,354.7787	321,618.4521	323,898.1709	326,194.0491	328,506.2010	330,834.7421	333,179.7886	335,541.4574	337,919.8663

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - PAPER

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	168	-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6
	Paper with Recycling	***Factor***	***Unit***																																
Franklin 20	Non-Renewable Energy	106,585.0	MJ	17,958,266	-	91,911	183,852	275,825	367,829	459,864	551,931	644,030	648,595	653,193	657,823	662,486	667,182	671,911	676,673	681,470	686,300	691,165	696,064	700,998	705,967	710,971	716,011	721,086	726,197	731,345	736,529	741,749	747,007	752,302
Franklin 20	GHG Emissions	4,170.6	Kg CO2e	702,693	-	3,596	7,194	10,793	14,393	17,994	21,597	25,200	25,379	25,559	25,740	25,923	26,106	26,291	26,478	26,665	26,854	27,045	27,236	27,430	27,624	27,820	28,017	28,216	28,416	28,617	28,820	29,024	29,230	29,437
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eutrophication	-	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 3
ARF on EPS
Impact on Environmental Categories - TOTAL

Material		***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate			0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Waste Generated		7,580	120	139	159	178	197	216	235	255	256	258	260	262	264	266	268	269	271	273	275	277	279	281	283	285	287	289	291	293	295	297
Recycled		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted		99	-	0	0	1	1	1	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Landfilled		7,481	120	139	158	177	196	215	233	252	254	255	257	259	260	262	263	265	267	269	271	273	275	277	279	281	283	285	287	289	291	293
Total	***Factor***	***Unit***																														
Non-Renewable Energy		MJ	568,652,723	9,844,985	11,147,389	12,450,702	13,754,928	15,060,075	16,366,150	17,673,157	18,981,106	19,115,649	19,251,146	19,387,603	19,525,028	19,663,426	19,802,806	19,943,174	20,084,536	20,226,901	20,370,275	20,514,665	20,660,078	20,806,523	20,954,005	21,102,532	21,252,113	21,402,754	21,554,462	21,707,246	21,861,113	22,016,070	22,172,126
GHG Emissions		Kg CO2e	31,311,685	507,249	584,654	662,110	739,616	817,173	894,782	972,442	1,050,154	1,057,598	1,065,094	1,072,644	1,080,247	1,087,904	1,095,615	1,103,381	1,111,203	1,119,079	1,127,011	1,135,000	1,143,045	1,151,147	1,159,307	1,167,524	1,175,800	1,184,135	1,192,528	1,200,981	1,209,494	1,218,067	1,226,701
Resource Depletion (Abiotic)		Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ozone			59,933,091	1,499,928	1,561,685	1,623,535	1,685,477	1,747,513	1,809,644	1,871,870	1,934,192	1,947,902	1,961,709	1,975,614	1,989,618	2,003,721	2,017,924	2,032,228	2,046,633	2,061,140	2,075,750	2,090,463	2,105,281	2,120,204	2,135,232	2,150,367	2,165,610	2,180,960	2,196,419	2,211,988	2,227,667	2,243,458	2,259,360
Acidification			144,939,782	2,918,043	3,183,246	3,448,678	3,714,341	3,980,235	4,246,363	4,512,725	4,779,325	4,813,202	4,847,319	4,881,678	4,916,281	4,951,129	4,986,224	5,021,568	5,057,162	5,093,008	5,129,109	5,165,466	5,202,080	5,238,954	5,276,089	5,313,487	5,351,151	5,389,081	5,427,280	5,465,750	5,504,493	5,543,510	5,582,804
Eutrophication		g PO4 eq	9,272,841	269,987	273,349	276,725	280,115	283,519	286,938	290,371	293,819	295,901	297,999	300,111	302,238	304,381	306,538	308,711	310,899	313,103	315,322	317,557	319,808	322,075	324,358	326,657	328,973	331,305	333,653	336,018	338,400	340,798	343,214
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Aesthetics		m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Human Toxicity			44,738,383	-	228,972	458,021	687,147	916,351	1,145,633	1,374,995	1,604,435	1,615,808	1,627,261	1,638,796	1,650,412	1,662,111	1,673,892	1,685,757	1,697,706	1,709,740	1,721,859	1,734,064	1,746,356	1,758,734	1,771,201	1,783,755	1,796,399	1,809,133	1,821,956	1,834,871	1,847,877	1,860,975	1,874,166

Disposable Food Service Items Policy Option 3
ARF on EPS
Cost Benefit Calculations

Material		***NPV***	***1***		***2***		***3***		***4***		***5***		***6***		***7***		***8***		***9***		***10***		***11***		***12***		***13***		***14***		***15***		***16***		***17***	
Recycle Rate			0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate			0%		0%		0%		0%		0%		0%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%	
Waste Generated		7,412	120		139		157		175		193		212		230		249		250		252		254		256		257		259		261		263		265	
Recycled			-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted		70	-		0		0		0		1		1		1		2		2		2		2		2		3		3		3		3		3	
Landfilled		7,342	120		138		157		175		193		211		229		247		248		250		252		253		255		257		258		260		262	
	Escalation Rate	0%																																	
SPU/City of Seattle	Discount Rate	3%																																	
Economic Benefits/(Costs)																																			
Administration		($3,371)	($172.00)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)	
Inspection and Enforcement		($3,293)	($168.00)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)	
Program Marketing, Monitoring, Education, and Research		($2,352)	($120.00)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)	
Recycling		$0	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
11.5% $ 21.15	Hauling, Transfer and Disposal	$98	$3		$3		$3		$4		$4		$4		$5		$5		$5		$5		$5		$5		$5		$6		$6		$6		$6		$6	
$ -	Other Costs Due to Bag/Foodservice ware	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Terrestrial Litter Control		($11,760)	($600.00)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)	
Marine Litter Abatement		($392)	($20.00)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
50%	Consumer ADF	$22,397	$1,046		$1,053		$1,060		$1,068		$1,076		$1,083		$1,091		$1,099		$1,106		$1,114		$1,122		$1,130		$1,138		$1,146		$1,154		$1,162		$1,171	
Consumer																																			
Economic Benefits/(Costs)																																			
Bag/Foodservice ware Costs		($32,201)	($418)		($618)		($817)		($1,016)		($1,216)		($1,415)		($1,615)		($1,815)		($1,828)		($1,841)		($1,854)		($1,867)		($1,880)		($1,893)		($1,907)		($1,920)		($1,934)		($1,948)	
Consumer ARF		($44,795)	($2,091)		($2,106)		($2,121)		($2,136)		($2,151)		($2,166)		($2,182)		($2,197)		($2,213)		($2,228)		($2,244)		($2,260)		($2,276)		($2,292)		($2,309)		($2,325)		($2,341)		($2,358)	
Household Expenditure		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
$ (70)	Hauling	($325)	($8)		($10)		($11)		($12)		($14)		($15)		($16)		($17)		($18)		($18)		($18)		($18)		($18)		($18)		($18)		($18)		($19)		($19)	
$ (41) $ (3)	Recycling & Compositng	($2)	$0		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)	
$ (51)	Transfer and Disposal	($235)	($6)		($7)		($8)		($9)		($10)		($11)		($12)		($13)		($13)		($13)		($13)		($13)		($13)		($13)		($13)		($13)		($13)		($13)	
Food Vendor																																			
Economic Benefits/(Costs)																																			
Bag/Foodservice ware Rev		$32,201	$418		$618		$817		$1,016		$1,216		$1,415		$1,615		$1,815		$1,828		$1,841		$1,854		$1,867		$1,880		$1,893		$1,907		$1,920		$1,934		$1,948	
Bag/Foodservice ware Costs		($31,879)	($414)		($611)		($809)		($1,006)		($1,204)		($1,401)		($1,599)		($1,797)		($1,809)		($1,822)		($1,835)		($1,848)		($1,861)		($1,874)		($1,888)		($1,901)		($1,915)		($1,928)	
50%	Consumer ARF	$22,397	$1,046		$1,053		$1,060		$1,068		$1,076		$1,083		$1,091		$1,099		$1,106		$1,114		$1,122		$1,130		$1,138		$1,146		$1,154		$1,162		$1,171		$1,179	
	Administration	($4,234)	($216.00)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
	Training and Staff	($9,733)	($2,160.00)		($2,160)		($2,160)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
	Ammortized Capital	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Regional																																			
Economic Benefits/(Costs)		$0																																	
0%	Plastic (All) Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
10%	Paper Production	$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17		$17		$18	
0%	PLA Production	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
	Alt Product Sales	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
	Alt Product Costs	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		($67,204)	($3,882)		($4,079)		($4,276)		($2,529)		($2,726)		($2,923)		($3,120)		($3,317)		($3,330)		($3,343)		($3,356)		($3,369)		($3,382)		($3,396)		($3,409)		($3,422)		($3,436)		($3,449)	
SPU/City of Seattle		$1,327	($32)		($24)		($16)		($8)		($0)		$8		$16		$24		$32		$40		$47		$55		$64		$72		$80		$88		$96		$105	
Consumer		($77,557)	($2,524)		($2,740)		($2,957)		($3,173)		($3,390)		($3,607)		($3,825)		($4,042)		($4,071)		($4,100)		($4,129)		($4,158)		($4,187)		($4,217)		($4,247)		($4,277)		($4,307)		($4,338)	
Retailer		$8,753	($1,326)		($1,317)		($1,307)		$646		$656		$665		$675		$685		$693		$701		$709		$717		$725		$733		$741		$750		$758		$767	
Regional		$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17		$17	

Material		***18***		***19***		***20***		***21***		***22***		***23***		***24***		***25***		***26***		***27***		***28***		***29***		***30***	
Recycle Rate		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%		1%	
Waste Generated		267		269		271		272		274		276		278		280		282		284		286		288		290	
Recycled		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted		3		3		3		3		3		3		3		3		3		3		3		3		3	
Landfilled		264		266		267		269		271		273		275		277		279		281		283		285		287	
Administration		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)	
Inspection and Enforcement		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)	
Program Marketing, Monitoring, Education, and Research		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)	
Recycling		-		-		-		-		-		-		-		-		-		-		-		-		-	
Hauling, Transfer and Disposal		$6		$6		$6		$6		$6		$6		$6		$6		$6		$6		$6		$6		$6	
Other Costs Due to Bag/Foodservice ware		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Terrestrial Litter Control		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)	
Marine Litter Abatement		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
Consumer ADF		$1,187		$1,196		$1,204		$1,213		$1,221		$1,230		$1,239		$1,248		$1,256		$1,265		$1,274		$1,283	
Bag/Foodservice ware Costs		($1,961)		($1,975)		($1,989)		($2,003)		($2,018)		($2,032)		($2,046)		($2,061)		($2,076)		($2,090)		($2,105)		($2,120)	
Consumer ARF		($2,375)		($2,392)		($2,409)		($2,426)		($2,443)		($2,460)		($2,478)		($2,495)		($2,513)		($2,531)		($2,549)		($2,567)	
Household Expenditure		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Hauling		($19)		($19)		($19)		($19)		($19)		($19)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
Recycling & Compositng		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)	
Transfer and Disposal		($13)		($14)		($14)		($14)		($14)		($14)		($14)		($14)		($14)		($14)		($14)		($15)		($15)	
Bag/Foodservice ware Rev		$1,961		$1,975		$1,989		$2,003		$2,018		$2,032		$2,046		$2,061		$2,076		$2,090		$2,105		$2,120	
Bag/Foodservice ware Costs		($1,942)		($1,956)		($1,969)		($1,983)		($1,998)		($2,012)		($2,026)		($2,040)		($2,055)		($2,069)		($2,084)		($2,099)	
Consumer ARF		$1,179		$1,187		$1,196		$1,204		$1,213		$1,221		$1,230		$1,239		$1,248		$1,256		$1,265		$1,274		$1,283	
Administration		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Training and Staff		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Ammortized Capital		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Plastic (All) Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Paper Production		$18		$18		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19		$19	
PLA Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Sales		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Costs		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		($3,422)		($3,436)		($3,449)		($3,463)		($3,477)		($3,491)		($3,505)		($3,519)		($3,533)		($3,548)		($3,562)		($3,577)		($3,591)		($3,606)		($3,621)	
SPU/City of Seattle		$121		$130		$139		$147		$156		$165		$173		$182		$191		$200		$209							
Consumer		($4,400)		($4,431)		($4,462)		($4,494)		($4,526)		($4,558)		($4,590)		($4,623)		($4,655)		($4,688)		($4,722)							
Retailer		$784		$792		$801		$810		$818		$827		$836		$845		$854		$863		$873							
Regional		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19		$19							

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Use and Switching Assumptions

		Source	***Switching Assumptions***				
		Plastic	*Continue PS*	*PET*	*PP*	*PLA*	*Paper*
Clear Clamshells		100%	40%	0%	5%	50%	5%
	Total	100%	40%	0%	5%	50%	5%

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Number of PS Clamshells and Alternatives (millions)

	2004 Comp.		
Est. 2008 SF/MF/Comm Waste Generated		686,658	
Expanded Polystyrene	0.32%	2,210	5%
PS Clamshells (Tons)		120	
Avg. PS Clamshell Weight		0.011	
PS Clamshells		21,863,000	
2004 Seattle Population		572,600	260,000
Annual Per Plastic Capita PS Clamshell Use		38	84

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Use and Switching Assumptions

TONS	Material	Ramp	Max Rate	SUM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Plastic Generated (SQ)	0.71%	Growth	63,312	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Incr. Growth					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Cumm Growth					1	2	3	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Continue PS	7	40%		0%	6%	11%	17%	23%	29%	34%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	Switch to PET	7	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Switch to PP	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Switch to PLA	7	50%		0%	7%	14%	21%	29%	36%	43%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
	Switch to Pap	7	5%		0%	1%	1%	2%	3%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
TONS																																		
	Continue PS				120	110	100	90	80	70	60	51	51	51	52	52	52	53	53	53	54	54	55	55	55	56	56	57	57	57	58	58	59	59
	Switch to PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Switch to PLA				-	9	18	27	36	45	54	63	64	64	65	65	65	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74
	Switch to Pap				-	1	2	3	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Clamshells Avoided		***Exchange***	***Weight***																															
	Continue PS	1	0.023		10,456	9,590	8,723	7,857	6,991	6,125	5,260	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PET	1.5	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	170	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	784	1,568	2,353	3,137	3,922	4,708	5,493	5,532	5,571	5,611	5,651	5,691	5,731	5,772	5,812	5,854	5,895	5,937	5,979	6,021	6,064	6,107	6,150	6,194	6,238	6,282	6,327	6,371	6,417
	Switch to Pap	511	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (#)		***Exchange***	***Weight***																															
	Continue PS	1	0.023		10,456	9,590	8,723	7,857	6,991	6,125	5,260	4,394	4,426	4,457	4,489	4,520	4,552	4,585	4,617	4,650	4,683	4,716	4,750	4,783	4,817	4,851	4,886	4,920	4,955	4,990	5,026	5,061	5,097	5,133
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
	Switch to PLA	1	0.026		-	784	1,568	2,353	3,137	3,922	4,708	5,493	5,532	5,571	5,611	5,651	5,691	5,731	5,772	5,812	5,854	5,895	5,937	5,979	6,021	6,064	6,107	6,150	6,194	6,238	6,282	6,327	6,371	6,417
	Switch to Pap	1	0.022		-	78	157	235	314	392	471	549	553	557	561	565	569	573	577	581	585	590	594	598	602	606	611	615	619	624	628	633	637	642
Clamshells Used (Tons)		***Exchange***	***Weight***																															
	Continue PS	1	0.023		120	110	100	90	80	70	60	51	51	51	52	52	52	53	53	53	54	54	55	55	55	56	56	57	57	57	58	58	59	59
	Switch to PET	1	0.044		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Switch to PP	1	0.041		-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	Switch to PLA	1	0.026		-	10	20	31	41	51	61	71	72	72	73	73	74	75	75	76	76	77	77	78	78	79	79	80	81	81	82	82	83	83
	Switch to Pap	1	0.022		-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Amount of Waste Generated (tons)

Clear Weight Assumptions (lbs.)	ADF (per bag)	Cost	Weight	Use	Life Exp.
Avg. PS Clamshell Weight	$ 0.20	$ 0.04	0.023		Single Trip *
Avg. PET Clamshell Weight	$ 0.20	$ 0.18	0.044		Single Trip *
Avg. PP Clamshell Weight	$ 0.20	$ 0.38	0.041		Single Trip *
Avg. PLA Clamshell Weight	$ -	$ 0.21	0.026		Single Trip *
Avg. Paper Clamshell Weight	$ 0.20	$ 0.31	0.022		Single Trip

TONS		*Exchange*	*Weight*																																
PS CLAMSHELLS USED	PS				120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
PET CLAMSHELLS USED	PET				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PP CLAMSHELLS USED	PP				-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	13
PLA CLAMSHELLS USED	PLA				-	10	20	31	41	51	61	71	72	72	73	73	74	75	75	76	76	77	77	78	78	79	79	80	81	81	82	82	83	83	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Composted			349	-	***1***	***1***	***2***	***4***	***5***	***7***	***9***	***9***	***10***	***11***	***12***	***13***	***13***	***14***	***15***	***15***	***15***	***15***	***16***	***16***	***16***	***16***	***16***	***16***	***16***	***16***	***16***	***17***	***17***	
	Landfilled			1,642	-	10	19	28	37	46	54	63	63	62	62	62	61	61	61	60	61	61	62	62	63	63	64	64	64	65	65	66	66	67	
PAPER CLAMSHELLS USED	PAPER				-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7		
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%		
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***		
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6		
ALL CLAMSHELLS USED																																			
	Generated			6,478	120	134	147	161	174	188	201	215	217	218	220	221	223	224	226	228	229	231	232	234	236	237	239	241	242	244	246	248	249	251	
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Composted			379	-	1	2	3	4	6	7	9	10	11	12	13	14	15	15	16	17	17	17	17	17	17	17	17	17	18	18	18	18	18	
	Landfilled			6,099	120	133	146	158	170	182	194	206	206	207	208	208	209	210	210	211	213	214	216	217	219	220	222	223	225	227	228	230	231	233	

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Life Cycle Inventory Data

						"Cradle to Factory Gate"											"Cradle to Crade"		
		Functional Unit	Application	Commercial Example	Non-Renewable Energy (and Total)	Process Energy	Feedstock Energy	GHG Emissions	Abiotic Depletion	Ozone Precursors	Acidification	Aquatic Eutrophication	Terrestrial Eutrophication	Human Toxicity	Litter Marine Biodiveristy	Litter Aesthetics	Use of Nature (Land Use)	Solid Waste Generation and Litter	Type of Waste Treatment	
		kg			MJ/KG	MJ/KG	GJ/Tonne	Kg CO2e	Kg Sb eq	g ethylene eq	g SO2 eq	g PO4 eq	g PO4 eq	g PM10 eq.	Kg/year	m2/year		ton		1
Type of "Plastic"																				1
48.0000	Petro	EPS		Foam Clamshell	112.40			3.440000											Landfilling	2
48.0000	Bio	Paper		Foam Clamshell	117.49			4.597292											Landfilling	2
20	Petro	PET	1	Clr Clamshell	71.9			4.515000		3.769500	15.600000	0.033000	1.085000	14.300000						2
11.6	Petro	OPS	1	Clr Clamshell	90.7			6.517241		1.716379	13.965517	0.031034	1.051724	12.586207						2
18.6	Petro	PP	1	Clr Clamshell	59.2			3.220430		1.261828	6.236559	0.270430	0.553763	5.967742						3
11.6	Bio	PLA	1	Clr Clamshell	83.2			4.870690		1.137931	21.724138	0.346552	2.043103	22.327586						4
	Petro	PS	1	Clamshell	87.0	39.0	48.0	5.980000											Incineration	5
	Petro	PS	1	Clamshell	91.7															6
	Petro	PS	1	Foam	90.3			4.650000		13.750000	26.750000	2.475000							30% Incin; 70% landfilling v	6
	Petro	PS	1	Foam	88.0			2.800000		43.000000	170.000000	5.800000							None (Crade to Gate)	6
	Bio	TPS	1	Foam	32.4			0.890000		5.500000	20.800000	2.800000							Composting	
	Bio	TPS	1	Foam	36.5			1.430000		5.800000	20.700000	3.100000							WWTP	
		HIPS	1	Cup (16 oz.)																
47	Petro	EPS	1	Cup (16 oz.)	147.0			5.1638												
158	Petro	PET	1	Cup (16 oz.)	101.9			4.5506												
105	Petro	PP	1	Cup (16 oz.)	93.5			3.2857												
148	Bio	PLA	1	Cup (16 oz.)	98.0			3.4459												7
191	Bio	Paper w/ Sleeve	1	Cup (16 oz.)	54.6			1.9706												7
	Petro	PS	1	Cutlery	126.5			5.450000												7
	Petro	PC	1	Cutlery	152.0			8.060000											Composting	3
	Bio	Cellulose/Starch	1	Cutlery	Mater-Bi 8.15			1.410000											Composting	4
	Petro	HDPE	1	Pellet		31.0	49.0	4.840000											Incineration	3
	Petro	HDPE	1	Pellet	73.8															3
	Petro	LLDPE	1	Pellet	72.3			4.540000											Incineration	8
	Petro	LDPE	1	Pellet	80.6			5.040000											Incineration	3
	Petro	LDPE	1	Pellet	91.7			5.200000		13.000000	17.400000	1.100000							80% Incin. / 20% landfill	9
	Petro	Nylon 6	1	Pellet	120.0			7.640000											Incineration	8
	Bio	TPS	1	Pellet	25.4			1.140000											Incineration	8
	Bio	TPS	1	Pellet	25.5			1.200000		4.700000	10.900000	4.700000							80% Incin. / 20% Compost	10
	Bio	TPS	1	Pellet	25.4			1.140000		5.000000	10.600000	4.700000							100% Composting	4
	Bio	PLA	1	Pellet	57.0			3.840000											Incineration	
	Bio	PHA *		Pellet		90.0	0.0													

Reference

1 Franklin 2006
2 IFEU Heidelberg 2006. Life Cycle Assessment of POLYLACTIDE (PLA) A comparison of food packaging made from NatureWorks® PLA and alternative materials Final Report.
3 Cradle-Gate Data for petrochemical polymers from APME (1999).
4 Energy requirements for plastics production (Gerngross and Slater, 2000; APME, 1999)
5 BIFA/IFEU/FloPak 2001
6 Composto 2000
7 Life Cycle Management in bioplastics production Francesco Degli Innocentia*, Francesco Razzab, Maurizio Fieschic, Catia Bastiolia
8 Carbotech 1996
9 Fraunholder ISI, 1999
10 Cargill Dow 2001

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - PS

	Material	*Ramp*	*Max Rate*	*SUM*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			4,004	120	121	122	123	124	125	125	126	127	128	129	130	131	132	133	134	135	136	137	138	138	139	140	141	142	143	144	146	147	148
	PS with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	81,873.4	MJ	327,813,549	9,844,985	9,914,769	9,985,047	10,055,824	10,127,102	10,198,886	10,271,178	10,343,983	10,417,304	10,491,145	10,565,509	10,640,400	10,715,822	10,791,779	10,868,274	10,945,311	11,022,895	11,101,028	11,179,715	11,258,960	11,338,766	11,419,139	11,500,081	11,581,596	11,663,690	11,746,365	11,829,627	11,913,478	11,997,924	12,082,969
Franklin 20	GHG Emissions	4,218.4	Kg CO2e	16,890,116	507,249	510,844	514,465	518,112	521,784	525,483	529,208	532,959	536,736	540,541	544,372	548,231	552,117	556,031	559,972	563,941	567,939	571,964	576,019	580,102	584,213	588,355	592,525	596,725	600,955	605,214	609,504	613,825	618,176	622,557
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	12,473.8		49,943,892	1,499,928	1,510,560	1,521,268	1,532,051	1,542,910	1,553,847	1,564,861	1,575,953	1,587,124	1,598,374	1,609,704	1,621,114	1,632,604	1,644,177	1,655,831	1,667,568	1,679,388	1,691,292	1,703,281	1,715,354	1,727,513	1,739,758	1,752,090	1,764,509	1,777,016	1,789,612	1,802,298	1,815,073	1,827,939	1,840,895
	Acidification	24,267.2		97,163,573	2,918,043	2,938,726	2,959,557	2,980,535	3,001,662	3,022,938	3,044,366	3,065,945	3,087,677	3,109,564	3,131,605	3,153,803	3,176,158	3,198,671	3,221,344	3,244,178	3,267,174	3,290,332	3,313,655	3,337,143	3,360,798	3,384,620	3,408,611	3,432,772	3,457,105	3,481,610	3,506,288	3,531,142	3,556,171	3,581,379
	Eutrophication	2,245.3	g PO4 eq	8,989,901	269,987	271,901	273,828	275,769	277,724	279,692	281,675	283,672	285,682	287,707	289,747	291,800	293,869	295,952	298,050	300,162	302,290	304,433	306,591	308,764	310,952	313,156	315,376	317,612	319,863	322,130	324,414	326,713	329,029	331,361
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - PET

	Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PET with Recycling	***Factor***	***Unit***																														
Naturewor	Non-Renewable Energy	65,262.0	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	GHG Emissions	4,095.9	Kg CO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	3,419.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Acidification	14,152.1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Eutrophication	29.9	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	12,972.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - PP

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Waste Generated	0.71%	Growth	314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Landfilled			314	-	2	3	5	6	8	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13
	PP with Recycling	***Factor***	***Unit***																															
Natureworks	Non-Renewable Energy	53,730.5	MJ	16,871,351	-	86,348	172,725	259,131	345,566	432,031	518,526	605,051	609,340	613,659	618,008	622,389	626,801	631,244	635,718	640,224	644,762	649,333	653,935	658,570	663,239	667,940	672,674	677,442	682,244	687,080	691,950	696,855	701,795	706,769
Natureworks	GHG Emissions	2,921.5	Kg CO2e	917,357	-	4,695	9,392	14,090	18,790	23,491	28,194	32,899	33,132	33,367	33,603	33,842	34,081	34,323	34,566	34,811	35,058	35,307	35,557	35,809	36,063	36,318	36,576	36,835	37,096	37,359	37,624	37,891	38,159	38,430
Natureworks	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natureworks	Ozone	1,144.7		359,439	-	1,840	3,680	5,521	7,362	9,204	11,047	12,890	12,982	13,074	13,166	13,260	13,354	13,448	13,544	13,640	13,736	13,834	13,932	14,031	14,130	14,230	14,331	14,433	14,535	14,638	14,742	14,846	14,952	15,057
Natureworks	Acidification	5,657.7		1,776,518	-	9,092	18,188	27,286	36,387	45,492	54,600	63,711	64,162	64,617	65,075	65,536	66,001	66,469	66,940	67,414	67,892	68,373	68,858	69,346	69,838	70,333	70,831	71,333	71,839	72,348	72,861	73,377	73,898	74,421
Natureworks	Eutrophication	245.3	g PO4 eq	77,034	-	394	789	1,183	1,578	1,973	2,368	2,763	2,782	2,802	2,822	2,842	2,862	2,882	2,903	2,923	2,944	2,965	2,986	3,007	3,028	3,050	3,071	3,093	3,115	3,137	3,159	3,182	3,204	3,227
Natureworks	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natureworks	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natureworks	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Natureworks	Human Toxicity	5,413.8		1,699,944	-	8,700	17,404	26,110	34,819	43,531	52,246	60,964	61,397	61,832	62,270	62,711	63,156	63,604	64,054	64,509	64,966	65,426	65,890	66,357	66,827	67,301	67,778	68,259	68,742	69,230	69,720	70,215	70,712	71,214

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - PLA

	Material			NPV	1	2	3	4	5	6	7	8	9	10
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
	Waste Generated	0.71%	Growth	1,991	-	10	20	31	41	51	61	71	72	72
	Recycled			-	-	-	-	-	-	-	-	-	-	-
	Composted			349	-	*1*	*1*	*2*	*4*	*5*	*7*	*9*	*9*	*10*
	Landfilled			1,642	-	10	19	28	37	46	54	63	63	62
	PLA with Recycling	***Factor***	***Unit***											
Naturewor	Non-Renewable Energy	75,521.8	MJ	150,380,394	-	769,651	1,539,559	2,309,727	3,080,157	3,850,850	4,621,808	5,393,034	5,431,261	5,469,760
Naturewor	GHG Emissions	4,418.6	Kg CO2e	8,798,419	-	45,031	90,076	135,137	180,213	225,305	270,412	315,534	317,771	320,023
Naturewor	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	1,032.3		2,055,560	-	10,520	21,044	31,572	42,103	52,638	63,176	73,718	74,240	74,767
Naturewor	Acidification	19,707.8		39,242,505	-	200,844	401,756	602,735	803,782	1,004,898	1,206,084	1,407,339	1,417,314	1,427,361
Naturewor	Eutrophication	314.4	g PO4 eq	626,011	-	3,204	6,409	9,615	12,822	16,031	19,240	22,450	22,610	22,770
Naturewor	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	20,255.2		40,332,575	-	206,423.1067	412,915.3816	619,477.3148	826,109.4001	1,032,812.1348	1,239,586.0197	1,446,431.5591	1,456,684.2585	1,467,009.6319

	Material	11	12	13	14	15	16	17	18	19	20
	Recycle Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%
	Waste Generated	73	73	74	75	75	76	76	77	77	78
	Recycled	-	-	-	-	-	-	-	-	-	-
	Composted	*11*	*12*	*13*	*13*	*14*	*15*	*15*	*15*	*15*	*16*
	Landfilled	62	62	61	61	61	60	61	61	62	62
	PLA with Recycling										
Naturewor	Non-Renewable Energy	5,508,531	5,547,577	5,586,899	5,626,501	5,666,383	5,706,548	5,746,997	5,787,734	5,828,759	5,870,075
Naturewor	GHG Emissions	322,292	324,576	326,877	329,194	331,527	333,877	336,244	338,627	341,028	343,445
Naturewor	Resource Depletion (Abiotic)	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	75,296	75,830	76,368	76,909	77,454	78,003	78,556	79,113	79,674	80,238
Naturewor	Acidification	1,437,478	1,447,667	1,457,929	1,468,263	1,478,671	1,489,152	1,499,707	1,510,338	1,521,043	1,531,825
Naturewor	Eutrophication	22,931	23,094	23,257	23,422	23,588	23,756	23,924	24,093	24,264	24,436
Naturewor	Use of Nature (Land Use)	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	1,477,408.1943	1,487,880.4646	1,498,426.9652	1,509,048.2222	1,519,744.7655	1,530,517.1289	1,541,365.8497	1,552,291.4692	1,563,294.5324	1,574,375.5883

	Material	21	22	23	24	25	26	27	28	29	30
	Recycle Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	78	79	79	80	81	81	82	82	83	83
	Recycled	-	-	-	-	-	-	-	-	-	-
	Composted	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*17*	*17*
	Landfilled	63	63	64	64	64	65	65	66	66	67
	PLA with Recycling										
Naturewor	Non-Renewable Energy	5,911,683	5,953,587	5,995,788	6,038,287	6,081,088	6,124,193	6,167,603	6,211,320	6,255,348	6,299,687
Naturewor	GHG Emissions	345,879	348,331	350,800	353,287	355,791	358,313	360,853	363,410	365,986	368,581
Naturewor	Resource Depletion (Abiotic)	-	-	-	-	-	-	-	-	-	-
Naturewor	Ozone	80,807	81,380	81,957	82,538	83,123	83,712	84,305	84,903	85,505	86,111
Naturewor	Acidification	1,542,683	1,553,618	1,564,630	1,575,721	1,586,890	1,598,138	1,609,466	1,620,875	1,632,364	1,643,934
Naturewor	Eutrophication	24,609	24,784	24,960	25,136	25,315	25,494	25,675	25,857	26,040	26,225
Naturewor	Use of Nature (Land Use)	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Marine Biodiversity	-	-	-	-	-	-	-	-	-	-
Naturewor	Litter Aesthetics	-	-	-	-	-	-	-	-	-	-
Naturewor	Human Toxicity	1,585,535.1898	1,596,773.8936	1,608,092.2603	1,619,490.8547	1,630,970.2454	1,642,531.0052	1,654,173.7107	1,665,898.9429	1,677,707.2868	1,689,599.3314

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - PAPER

				NPV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Material																																	
	Recycle Rate	0	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Compost Rate	15	20%		5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Waste Generated	0.71%	Growth	168	-	1	2	3	3	4	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7
	Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Composted			30	-	***0***	***0***	***0***	***0***	***0***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
	Landfilled			139	-	1	2	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6
	Paper with Recycling	***Factor***	***Unit***																															
Franklin 20	Non-Renewable Energy	106,585.0	MJ	17,958,266	-	91,911	183,852	275,825	367,829	459,864	551,931	644,030	648,595	653,193	657,823	662,486	667,182	671,911	676,673	681,470	686,300	691,165	696,064	700,998	705,967	710,971	716,011	721,086	726,197	731,345	736,529	741,749	747,007	752,302
Franklin 20	GHG Emissions	4,170.6	Kg CO2e	702,693	-	3,596	7,194	10,793	14,393	17,994	21,597	25,200	25,379	25,559	25,740	25,923	26,106	26,291	26,478	26,665	26,854	27,045	27,236	27,430	27,624	27,820	28,017	28,216	28,416	28,617	28,820	29,024	29,230	29,437
	Resource Depletion (Abiotic)	-	Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ozone	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Acidification	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eutrophication	-	g PO4 eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Use of Nature (Land Use)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Mariva Biodiversity	-	Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Litter Aesthetics	-	m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Human Toxicity	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Impact on Environmental Categories - TOTAL

Material			***NPV***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***
Recycle Rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compost Rate				0%	0%	1%	2%	2%	3%	4%	4%	5%	5%	5%	6%	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Waste Generated			6,478	120	134	147	161	174	188	201	215	217	218	220	221	223	224	226	228	229	231	232	234	236	237	239	241	242	244	246	248	249	251
Recycled			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composted			379	-	1	2	3	4	6	7	9	10	11	12	13	14	15	15	16	17	17	17	17	17	17	17	17	17	18	18	18	18	18
Landfilled			6,099	120	133	146	158	170	182	194	206	206	207	208	208	209	210	210	211	213	214	216	217	219	220	222	223	225	227	228	230	231	233
Total	***Factor***	***Unit***																														
Non-Renewable Energy		MJ	513,023,560	9,844,985	10,862,678	11,881,183	12,900,507	13,920,655	14,941,632	15,963,444	16,986,098	17,106,500	17,227,756	17,349,871	17,472,852	17,596,704	17,721,434	17,847,048	17,973,553	18,100,955	18,229,259	18,358,473	18,488,603	18,619,655	18,751,636	18,884,553	19,018,412	19,153,219	19,288,983	19,425,708	19,563,403	19,702,074	19,841,727
GHG Emissions		Kg CO2e	27,308,585	507,249	564,166	621,127	678,131	735,180	792,273	849,410	906,592	913,018	919,490	926,008	932,572	939,182	945,839	952,543	959,295	966,095	972,943	979,839	986,785	993,779	1,000,824	1,007,918	1,015,062	1,022,257	1,029,503	1,036,801	1,044,150	1,051,551	1,059,005
Resource Depletion (Abiotic)		Kg Sb eq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ozone			52,358,891	1,499,928	1,522,920	1,545,992	1,569,143	1,592,375	1,615,689	1,639,084	1,662,561	1,674,346	1,686,214	1,698,167	1,710,204	1,722,326	1,734,534	1,746,829	1,759,211	1,771,681	1,784,239	1,796,886	1,809,623	1,822,450	1,835,368	1,848,378	1,861,480	1,874,674	1,887,962	1,901,345	1,914,822	1,928,395	1,942,064
Acidification			138,182,596	2,918,043	3,148,663	3,379,500	3,610,556	3,841,831	4,073,329	4,305,049	4,536,995	4,569,154	4,601,541	4,634,158	4,667,007	4,700,088	4,733,403	4,766,955	4,800,744	4,834,773	4,869,043	4,903,556	4,938,314	4,973,318	5,008,571	5,044,073	5,079,826	5,115,834	5,152,096	5,188,615	5,225,394	5,262,433	5,299,734
Eutrophication		g PO4 eq	9,692,946	269,987	275,499	281,026	286,567	292,124	297,696	303,282	308,885	311,074	313,279	315,500	317,736	319,988	322,256	324,541	326,841	329,158	331,491	333,841	336,207	338,590	340,990	343,407	345,841	348,293	350,762	353,248	355,752	358,273	360,813
Use of Nature (Land Use)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Marine Biodiversity		Kg/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Litter Aesthetics		m2/year	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Human Toxicity			42,032,519	-	215,123	430,319	645,587	860,928	1,076,343	1,291,832	1,507,396	1,518,081	1,528,841	1,539,678	1,550,592	1,561,583	1,572,652	1,583,799	1,595,026	1,606,332	1,617,718	1,629,185	1,640,733	1,652,363	1,664,075	1,675,870	1,687,749	1,699,713	1,711,761	1,723,894	1,736,114	1,748,420	1,760,813

Disposable Food Service Items Policy Option 4
ARF on all Non-Compostable and Non-Recyclable Food Service Items
Cost Benefit Calculations

Material		***NPV***	***1***		***2***		***3***		***4***		***5***		***6***		***7***		***8***		***9***		***10***		***11***		***12***		***13***		***14***		***15***		***16***		***17***	
Recycle Rate			0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%	
Compost Rate			0%		0%		1%		2%		2%		3%		3%		4%		4%		5%		5%		6%		6%		6%		7%		7%		7%	
Waste Generated		6,309	120		133		146		158		171		184		196		209		210		212		213		215		217		218		220		221		223	
Recycled		-	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Composted		349	-		1		1		2		4		5		7		9		9		10		11		12		13		13		14		15		15	
Landfilled		5,960	120		132		144		156		167		179		190		200		201		202		203		203		204		205		205		206		208	
	Escalation Rate	0%																																	
SPU/City of Seattle	Discount Rate	3%																																	
Economic Benefits/(Costs)																																			
Administration		($3,371)	($172.00)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)	
Inspection and Enforcement		($3,293)	($168.00)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)	
Program Marketing, Monitoring, Education, and Research		($2,352)	($120.00)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)	
Recycling		$0																																	
11.5% $ 21.15	Hauling, Transfer and Disposal	$80	$3		$3		$3		$3		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$4		$5	
$ -	Other Costs Due to Bag/Foodservice ware	$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Terrestrial Litter Control		($11,760)	($600.00)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)	
Marine Litter Abatement		($392)	($20.00)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)	
50%	Consumer ADF	$24,254	$1,046		$1,069		$1,092		$1,115		$1,138		$1,162		$1,185		$1,208		$1,217		$1,226		$1,234		$1,243		$1,252		$1,261		$1,270		$1,279		$1,288	
Consumer																																			
Economic Benefits/(Costs)																																			
Bag/Foodservice ware Costs		($46,041)	($418)		($734)		($1,051)		($1,367)		($1,684)		($2,000)		($2,317)		($2,634)		($2,652)		($2,671)		($2,690)		($2,709)		($2,729)		($2,748)		($2,767)		($2,787)		($2,807)		($2,827)	
Consumer ARF		($48,508)	($2,091)		($2,137)		($2,184)		($2,230)		($2,277)		($2,323)		($2,370)		($2,417)		($2,434)		($2,451)		($2,469)		($2,486)		($2,504)		($2,522)		($2,539)		($2,557)		($2,576)		($2,594)	
Household Expenditure		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
$ (70)	Hauling	($278)	($8)		($9)		($10)		($11)		($12)		($13)		($14)		($15)		($15)		($15)		($15)		($15)		($15)		($15)		($15)		($15)		($16)		($16)	
$ (41) $ (5)	Recycling & Composting	($8)	$0		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($0)		($1)		($1)		($1)		($1)		($1)		($1)	
$ (51)	Transfer and Disposal	($192)	($6)		($7)		($7)		($8)		($9)		($9)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($10)		($11)		($11)		($11)		($11)	
Food Vendor																																			
Economic Benefits/(Costs)																																			
Bag/Foodservice ware Rev		$46,041	$418		$734		$1,051		$1,367		$1,684		$2,000		$2,317		$2,634		$2,652		$2,671		$2,690		$2,709		$2,729		$2,748		$2,767		$2,787		$2,807		$2,827	
Bag/Foodservice ware Costs		($45,580)	($414)		($727)		($1,040)		($1,353)		($1,667)		($1,980)		($2,294)		($2,607)		($2,626)		($2,645)		($2,663)		($2,682)		($2,701)		($2,720)		($2,740)		($2,759)		($2,779)		($2,798)	
50%	Consumer ARF	$24,254	$1,046		$1,069		$1,092		$1,115		$1,138		$1,162		$1,185		$1,208		$1,217		$1,226		$1,234		$1,243		$1,252		$1,261		$1,270		$1,279		$1,288		$1,297	
Administration		($4,234)	($216.00)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Training and Staff		($9,733)	($2,160.00)		($2,160)		($2,160)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)	
Ammortized Capital		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Regional																																			
Economic Benefits/(Costs)		$0																																	
0% Plastic (All) Production		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
10% Paper Production		$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17		$17	
0% PLA Production		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Sales		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
Alt Product Costs		$0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	
		($80,840)	($3,882)		($4,194)		($4,506)		($2,874)		($3,187)		($3,499)		($3,812)		($4,124)		($4,143)		($4,161)		($4,180)		($4,199)		($4,218)		($4,237)		($4,257)		($4,276)		($4,296)		($4,316)	
SPU/City of Seattle		$3,166	($32)		($58)		$15		$38		$62		$85		$109		$133		$141		$150		$159		$167		$176		$185		$194		$203		$212		$221	
Consumer		($95,027)	($2,524)		($2,888)		($3,252)		($3,616)		($3,981)		($4,346)		($4,711)		($5,076)		($5,112)		($5,148)		($5,185)		($5,221)		($5,258)		($5,296)		($5,333)		($5,371)		($5,409)		($5,447)	
Retailer		$10,748	($1,326)		($1,300)		($1,274)		$697		$723		$750		$776		$803		$812		$820		$829		$838		$847		$856		$865		$875		$884		$893	
Regional		$273	$0		$2		$5		$7		$9		$12		$14		$16		$16		$16		$17		$17		$17		$17		$17		$17		$17		$17	

Material		***18***		***19***		***20***		***21***		***22***		***23***		***24***		***25***		***26***		***27***		***28***		***29***		***30***										
Recycle Rate		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%		0%										
Compost Rate		7%		7%		7%		7%		7%		7%		7%		7%		7%		7%		7%		7%		7%										
Waste Generated		224		226		228		229		231		232		234		236		237		239		241		242		244										
Recycled		-		-		-		-		-		-		-		-		-		-		-		-		-										
Composted		15		15		16		16		16		16		16		16		16		16		16		17		17										
Landfilled		209		210		212		213		215		216		218		220		221		223		224		226		227										
Economic Benefits/(Costs)																																		
Administration		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)		($172)										
Inspection and Enforcement		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)		($168)										
Program Marketing, Monitoring, Education, and Research		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)		($120)										
Recycling																																		
Hauling, Transfer and Disposal		$4		$4		$5		$5		$5		$5		$5		$5		$5		$5		$5		$5		$5										
Other Costs Due to Bag/Foodservice ware		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Terrestrial Litter Control		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)		($600)										
Marine Litter Abatement		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)		($20)										
Consumer ADF		$1,307		$1,306		$1,315		$1,325		$1,334		$1,344		$1,353		$1,363		$1,372		$1,382		$1,392		$1,402		$1,412										
Consumer																																		
Economic Benefits/(Costs)																																		
Bag/Foodservice ware Costs		($2,847)		($2,867)		($2,887)		($2,908)		($2,928)		($2,949)		($2,970)		($2,991)		($3,012)		($3,033)		($3,055)		($3,077)												
Consumer ARF		($2,594)		($2,612)		($2,631)		($2,649)		($2,668)		($2,687)		($2,706)		($2,725)		($2,745)		($2,764)		($2,784)		($2,803)		($2,823)										
Household Expenditure		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Hauling		($16)		($16)		($16)		($16)		($16)		($16)		($16)		($16)		($17)		($17)		($17)		($17)		($17)										
Recycling & Composting		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)		($1)										
Transfer and Disposal		($11)		($11)		($11)		($11)		($11)		($11)		($11)		($11)		($11)		($11)		($11)		($12)		($12)										
Food Vendor																																		
Economic Benefits/(Costs)																																		
Bag/Foodservice ware Rev		$2,827		$2,847		$2,867		$2,887		$2,908		$2,928		$2,949		$2,970		$2,991		$3,012		$3,033		$3,055		$3,077										
Bag/Foodservice ware Costs		($2,798)		($2,818)		($2,838)		($2,858)		($2,879)		($2,899)		($2,919)		($2,940)		($2,961)		($2,982)		($3,003)		($3,024)		($3,046)										
Consumer ARF		$1,297		$1,306		$1,315		$1,325		$1,334		$1,344		$1,353		$1,363		$1,372		$1,382		$1,392		$1,402		$1,412										
Administration		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)										
Training and Staff		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)		($216)										
Ammortized Capital		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Regional																																		
Economic Benefits/(Costs)																																		
Plastic (All) Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Paper Production		$17		$17		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19		$19										
PLA Production		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Alt Product Sales		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
Alt Product Costs		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0										
		($4,335)		($4,355)		($4,376)		($4,396)		($4,416)		($4,437)		($4,458)		($4,478)		($4,500)		($4,521)		($4,542)		($4,563)										
SPU/City of Seattle		$231		$240		$249		$259		$268		$278		$287		$297		$307		$317		$327		$336										
Consumer		($5,486)		($5,525)		($5,564)		($5,604)		($5,643)		($5,683)		($5,724)		($5,764)		($5,805)		($5,846)		($5,888)		($5,929)										
Retailer		$903		$912		$922		$931		$941		$951		$960		$970		$980		$990		$1,000		$1,010										
Regional		$17		$18		$18		$18		$18		$18		$18		$18		$19		$19		$19		$19										

APPENDIX L

Acronyms

Acronyms

ACC	American Chemistry Council
ARF	Advanced Recovery Fee
ASTM	American Society of Testing and Materials
BPI	Biodegradable Products Institute
CFCs	Chlorofluorocarbons
EPA	United States. Environmental Protection Agency
EPR	Extended producer responsibility
EPS	expanded polystyrene (also known by the trade name styrofoam)
EVOH	ethylene vinyl alcohol
GHG	greenhouse gas
GPPS	general purpose polystyrene
HDPE	high density polyethylene (#2 plastic)
ISO	International Standards Organization
LCA	life cycle assessment
LCI	life cycle inventory
LDPE	low density polyethylene (#4 plastic)
LLDPE	linear low density polyethylene (#4 plastic)
NPV	net present value
NRDS	North Recycling and Disposal Station
OCC	old corrugated cardboard
PBAT	polybutyrate adipate terephthalate

PBS	polybutylene succinate
PBSA	poly (butylene succinate-co-adipate)
PCL	polycaprolactone
PE	polyethylene
PET	polyethylene terephthalate (#1 plastic)
PHB	polyhydroxybutyrate
PHB/V	polyhydroxy-butyrate-valerate
PLA	polylactic acid
PP	polypropylene (#5 plastic)
PS	polystyrene (#6 plastic)
PVC	polyvinyl chloride (#3 plastic)
PVOH	polyvinyl alcohol
SPU	Seattle Public Utilities
SRDS	South Recycling and Disposal Station
UV	ultraviolet light

APPENDIX M

Glossary

Glossary

Source: *Degradable Plastics in the Environment* prepard by Nolan-ITU

Abiotic disintegration: Disintegration of plastic materials by means other than by biological process such as dissolution (dissolving), oxidative embrittlement (heat aging) or photolytic embrittlement (UV aging).

Aerobic degradation: Aerobic degradation is degradation in the presence of air (oxygen). Essentially aerobic degradation is composting. Aerobic degradation of plastics under controlled composting conditions is described in ASTM 5338-92.

Aliphatic-aromatic Copolyesters: These copolymers combine the excellent material properties of aromatic polyesters (e.g. PET) and the biodegradability of aliphatic polyesters. They are soft, pliable and have good tactile properties. Melting points are high for a degradable plastic (around 200°C).

Aliphatic polyesters: Aliphatic polyesters are biodegradable but often lack in good thermal and mechanical properties. While, vice versa, aromatic polyesters (like PET) have excellent material properties, but are resistant to microbial attack. Typical aliphatic polyesters include polyhydroxy butyrate, polycaprolactone (PCL), polylactic acid (PLA) and polybutylene succinate (PBS). Aliphatic polyesters degrade like starch or cellulose to produce non-humic substances such as CO2 and methane. They can be processed on conventional processing equipment at 140-260 °C, in blown and extruded films, foams, and injection molded products.

Amylose: A component of starch consisting of a chain polymer of 1-4 linked a -D-glucopyranosyl structures. Thermoplastic starch polymers consist largely of amylose.

Anaerobic degradation: Degradation in the absence of air (oxygen) as in the case of landfills. Anaerobic degradation is also called biomethanization. Anaerobic degradation of plastics can be determined by measuring the amount of biogas released as described in ASTM 5210-91.

Bagasse: Bagasse is the biomass remaining after sugarcane stalks are crushed to extract their juice.

Bioassimilation: Chemical assimilation of a substance into the natural environment (see also mineralization).

Biodegradable: The ASTM defines biodegradable as .capable of undergoing decomposition into carbon dioxide, methane, water, inorganic compounds, or biomass in which the predominant mechanism is the enzymatic action of microorganisms, that can be measured by standardized tests, in a specified period of time, reflecting available disposal condition. It is important to note that the definition of biodegredation should specify a time limit. If the biodegradation process is

sufficient to mineralize organic matter into carbon dioxide or methane respectively, water and biomass, the material can be termed "biodegradable."

Oxo-biodegradable: Polymers that exhibit controlled degradation through the incorporation of prodegradant additive masterbatches or concentrates. Such polymers oxidize and embrittle in the environment and erode under the influence of weathering. The remaining fragments are of a low enough molecular weight so that microbes can then assimilate them.

Compostable Plastics: A polymer is "compostable" when it is biodegradable under composting conditions. The polymer must meet the following criteria:

a) Break down under the action of micro-organisms (bacteria, fungi, algae).

b) Total mineralization is obtained (conversion into CO_2, H_2O, inorganic compounds and biomass under aerobic conditions).

c) The mineralization rate is high and is compatible with the composting process.

The degree of degradability of the material shall be measured under controlled composting conditions as per ASTM D 5338-92. Those materials having a degree of biodegradation equivalent to that of cellulose (maximum permissible tolerance of 5%) will be considered to meet the compostability criteria.

Composting: Breaking down of plant and animal material using micro-organisms under aerobic conditions. For successful composting there must be sufficient water and air to allow the micro-organisms to break down the material. The U.S. EPA defines composting as "the controlled decomposition of organic matter by microorganisms into a stable humus material."

Copolyesters: Copolyesters combine aromatic esters with aliphatic esters or other polymer units (e.g., ethers and amides) and thereby provide the opportunity to adjust and control the degradation rates.

Decomposer organism: An organism, usually a bacterium or a fungus, that breaks down organic material into simple chemical components, thereby returning nutrients to the physical environment.

Degradability: Ability of materials to break down, by bacterial (biodegradable), thermal (oxidative) or ultraviolet (photodegradable) action. When degradation is caused by biological activity, especially by enzymatic action, it is called "biodegradation."

Degradable PET: Up to three aliphatic monomers can be incorporated into the PET structure to create weak spots in the polymeric chains that make them susceptible to degradation through hydrolysis.

Dry landfill: A dry landfill is designed to minimize the risk of contaminating groundwater by collecting and removing leachate. This is the most common approach to landfill management.

Ecotoxicity: Ecotoxicity refers to the potential environmental toxicity of residues, leachate, or volatile gases produced by the plastics during biodegradation or composting

Foamed starch: Starch can be blown by environmentally friendly means into a foamed material using water steam. Foamed starch is antistatic, insulating and shock absorbing, therefore constituting a good replacement for polystyrene foam.

Functional Group: A particular grouping of elements in a molecule or compound which gives it particular properties, such as physical properties or the ability to undergo certain chemical reactions.

Hydrolysis: Hydrolysis refers to the cleavage or breakage of bonds by reaction with water or moisture. All polyesters degrade eventually, with hydrolysis being the dominant mechanism.

Hydrophilic: Polar polymers that have an affinity for moisture/water (e.g., polyesters).

Hydrophobic: Non-polar polymers that have a low affinity for moisture/water (e.g., polyethylene).

Mineralization: Conversion of a biodegradable plastic to CO_2, H_2O, inorganic compounds and biomass. For instance, the carbon atoms in a biodegradable plastic are transformed to CO_2, which can then re-enter the global carbon cycle.

Monomer: A molecule that can join with other molecules to form a large molecule called a polymer. A monomer is the smallest repeating unit in a polymer chain.

Organic Recycling: Organic recycling is defined as aerobic (i.e., composting) or anaerobic (bio-methanization) treatment of the biodegradable parts of plastic packaging under controlled conditions using micro-organisms to produce stabilised organic residues, methane and carbon dioxide.

Oxobiodegradable: The term used to describe polymers that first degrade by oxidation and then the smaller fragments of substantially reduced molecular weight are bioassimilatable (e.g., EPI type PE films). In the first instance oxidative bonds of backbone chain bonds occurs then subsequently the smaller low molecular weight fragments (i.e. waxes) are biodegradable.

Oxidation Degradation: The process whereby polymers undergo degradation due to exposure to heat and/or light and oxygen.

PE-Coated Paperboard: Paperboard coated with a thin polyethylene layer on surfaces that come in contact with food. For example, standard paper coffee cups are typically PE-coated paperboard, with the PE layer on the inside.

Photo-biodegradation: Degradation of the polymer is triggered by UV light and assisted by the presence of UV sensitizers. In this process the polymer is converted to low molecular weight material (waxes) and in a second step converted to carbon dioxide and water by bacterial action.

Photodegradable: A process where ultraviolet radiation degrades the chemical bond or link in the polymer or chemical structure of a plastic.

Phytotoxicity: Phytotoxicity refers to toxic effects on plants. Plant phytotoxicity testing on the finished compost that contains degraded polymers can determine if the buildup of inorganic materials from the plastics are harmful to plants and crops and if they slow down soil productivity.

Polycaprolactone (PCL): Polycaprolactone is a biodegradable thermoplastic polymer derived from the chemical synthesis of crude oil. Although not produced from renewable raw materials, it is fully biodegradable.

Polyolefins: The term used to describe polymers made from alpha-olefins (hydrocarbons with terminal double bonds). Polyethylene and polypropylene are the main polyolefins.

Polyesters: Polymers with ester groups in their backbone chains. All polyesters degrade eventually, with hydrolysis being the dominant mechanism. Degradation rates range from weeks for aliphatic polyesters (e.g., polyhydroxyalkanoates) to decades for aromatic polyesters (e.g., PET).

Polyhydroxyalkanoates (PHA): PHAs are linear polyesters produced in nature by bacterial fermentation of sugar or lipids. More than 100 different monomers can be combined within this family to give materials with extremely different properties. They can be either thermoplastic or elastomeric materials, with melting-points ranging from 40 to 180°C. The most common type of PHA is PHB (poly-beta-hydroxybutyrate).

Polyhydroxybutyrate (PHB): PHB has properties similar to those of polypropylene; however, it is stiffer and more brittle.

Polylactic Acid (PLA): A biodegradable polymer derived from lactic acid. PLA resembles clear polystyrene, it provides good aesthetics (gloss and clarity), but it is stiff and brittle and needs modification for most practical applications (e.g., plasticizers increase its flexibility).

Polylactic acid aliphatic copolymer (CPLA): Biodegradable CPLA is a mixture of polylactic acid and other aliphatic polyesters. It can be either a hard plastic (similar to PS) or a soft flexible one (similar to PP) depending on the amount of aliphatic polyester present in the mixture.

Polymer: A long molecule that is made up of a chain of many small repeated units (monomers).

Polyvinyl Alcohol (PVOH): Polyvinyl alcohol is a synthetic, water-soluble and readily biodegradable polymer.

Prodegradant: An additive that can trigger and accelerate the degradation of a polymer. Typically prodegradants (or degradation promoters) are catalytic metal compounds based on iron, cobalt and manganese.

Starch Composites (10 % Starch): Starch can be used as a biodegradable additive or replacement material in traditional oil-based commodity plastics. If starch is added to petroleum derived polymers (e.g., PE), it facilitates disintegration of the blend, but not necessarily biodegradation of the polyethylene component. Starch accelerates the disintegration or fragmentation of the synthetic polymer structure. Microbial action consumes the starch, thereby creating pores in the material which weaken it and enable it to break apart.

Starch Composites (50 % Starch): Also called plasticized starch materials. Such materials exhibit mechanical properties similar to conventional plastics such as PP, and are generally resistant to oils and alcohols, however, they degrade when exposed to hot water. Their basic content (40-80%) is corn starch, a renewable natural material. The balance is performance-enhancing additives and other biodegradable materials.

Starch Composites (90 % Starch): Usually referred to as thermoplastic starch. They are stable in oils and fats; however, depending on the type, they can vary from stable to unstable in hot/cold water. They can be processed by traditional techniques for plastics.

Thermoplastic Polymers: Becomes soft and "plastic" upon heating and firm when cool and able to repeat this process without becoming brittle.

Thermoplastic Starch: See Starch Composites (90% Starch).

Wet landfill: A wet landfill is designed to promote bacterial growth and degradation. Leachate is collected, sometimes treated, and pumped back to the top of the landfill, and is therefore continuously recirculating.

APPENDIX N

Disposable Shopping Bag Advanced Recovery Fee (ARF) Sensitivity Analysis

Disposable Shopping Bag Advanced Recovery Fee (ARF) Sensitivity Analysis

OPTION A: ARF = $0.10 per bag

ARF Revenue split 50/50 between retailers and City of Seattle:

Table 7A-1. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	$125,500	$154,449
Consumer	($416,854)	($399,958)	($346,383)	($662,007)	($615,662)
Retailer	$4,066	$3,455	$3,266	$167,599	$195,323
Regional	$92,001	$88,188	$102,773	$85,948	$46,246
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($282,961)**	**($219,643)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.10 per bag; revenue split 50/50 between retailers and City of Seattle.
An ARF at this rate yields overall estimated reduction of 60% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

ARF Revenue retained by retailers:

Table 7A-2. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	($40,039)	($39,666)
Consumer	($416,854)	($399,958)	($346,383)	($662,007)	($615,662)
Retailer	$4,066	$3,455	$3,266	$333,138	$389,438
Regional	$92,001	$88,188	$102,773	$85,948	$46,246
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($282,961)**	**($219,643)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.10 per bag; revenue retained by retailers.
An ARF at this rate yields overall estimated reduction of 60% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

Table 8A. Percentage Switching to Alternative Bag Use and Garbage Bag Purchases (ARF at $0.10)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Switch from Plastic To:					
Continue Plastic Bag	100%	95%	10%	40%	40%
Paper Bag	0%	0%	40%	20%	0%
Long Term Reusable Bag	0%	5%	40%	35%	50%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	10%	5%	10%
Increase in Garbage Bags	0%	0%	10%	5%	7%
Switch from Paper To:					
Continue Paper Bag	100%	95%	90%	90%	40%
Plastic Bag	0%	0%	0%	0%	0%
Long Term Reusable Bag	0%	5%	10%	10%	50%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	0%	0%	10%
Increase in Garbage Bags	0%	0%	10%	0%	3%

Table 14A. Environmental Impacts Normalized to Status Quo (ARF at $0.10)

	Units	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Non-Renewable Energy	Megajoules (MJ)	100%	96%	73%	74%	51%
GHG Emissions	kg CO2 eq.	100%	96%	82%	78%	52%
Resource Depletion (Abiotic)	kg Sb eq.	100%	96%	69%	71%	51%
Eutrophication	kg PO4 eq.	100%	96%	101%	88%	50%
Litter Marine Diversity	kg	100%	96%	33%	53%	53%
Litter Aesthetics	Square meters	100%	96%	34%	54%	53%
Shopping Bag Waste Generated	Tons	100%	96%	89%	81%	50%

Units produced in each environmental category are summed over a 30-year time frame.

OPTION B: ARF = $0.15 per bag

ARF Revenue split 50/50 between retailers and City of Seattle:

Table 7B-1. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	$190,117	$228,237
Consumer	($416,854)	($399,958)	($346,383)	($778,253)	($744,640)
Retailer	$4,066	$3,455	$3,266	$231,386	$268,210
Regional	$92,001	$88,188	$102,773	$84,120	$42,433
Total	**($360,812)**	**($349,993)**	**($271,221)**	**($272,630)**	**($205,759)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.15 per bag; revenue split 50/50 between retailers and City of Seattle.
An ARF at this rate yields overall estimated reduction of 65% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

ARF Revenue retained by retailers:

Table 7B-2. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	($39,319)	($38,928)
Consumer	($416,854)	($399,958)	($346,383)	($778,253)	($744,640)
Retailer	$4,066	$3,455	$3,266	$460,822	$535,376
Regional	$92,001	$88,188	$102,773	$84,120	$42,433
Total	**($360,812)**	**($349,993)**	**($271,221)**	**($272,630)**	**($205,759)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.15 per bag; revenue retained by retailers.
An ARF at this rate yields overall estimated reduction of 65% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

Table 8B. Percentage Switching to Alternative Bag Use and Garbage Bag Purchases (ARF at $0.15)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Switch from Plastic To:					
Continue Plastic Bag	100%	95%	10%	35%	35%
Paper Bag	0%	0%	40%	21%	0%
Long Term Reusable Bag	0%	5%	40%	37%	52%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	10%	7%	13%
Increase in Garbage Bags	0%	0%	10%	5%	7%
Switch from Paper To:					
Continue Paper Bag	100%	95%	90%	90%	35%
Plastic Bag	0%	0%	0%	0%	0%
Long Term Reusable Bag	0%	5%	10%	10%	52%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	0%	0%	13%
Increase in Garbage Bags	0%	0%	10%	0%	3%

Table 14B. Environmental Impacts Normalized to Status Quo (ARF at $0.15)

	Units	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Non-Renewable Energy	Megajoules (MJ)	100%	96%	73%	70%	47%
GHG Emissions	kg CO2 eq.	100%	96%	82%	75%	47%
Resource Depletion (Abiotic)	kg Sb eq.	100%	96%	69%	68%	47%
Eutrophication	kg PO4 eq.	100%	96%	101%	85%	46%
Litter Marine Diversity	kg	100%	96%	33%	49%	49%
Litter Aesthetics	Square meters	100%	96%	34%	50%	49%
Shopping Bag Waste Generated	Tons	100%	96%	89%	78%	45%

Units produced in each environmental category are summed over a 30-year time frame.

OPTION C: ARF = $0.20 per bag

ARF Revenue split 50/50 between retailers and City of Seattle:

Table 7C-1. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	$242,152	$286,021
Consumer	($416,854)	($399,958)	($346,383)	($869,336)	($841,608)
Retailer	$4,066	$3,455	$3,266	$282,591	$325,092
Regional	$92,001	$88,188	$102,773	$82,292	$38,620
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($262,300)**	**($191,875)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.20 per bag; revenue split 50/50 between retailers and City of Seattle.
An ARF at this rate yields overall estimated reduction of 70% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

ARF Revenue retained by retailers:

Table 7C-2. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	($38,599)	($38,191)
Consumer	($416,854)	($399,958)	($346,383)	($869,336)	($841,608)
Retailer	$4,066	$3,455	$3,266	$563,342	$649,304
Regional	$92,001	$88,188	$102,773	$82,292	$38,620
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($262,300)**	**($191,875)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.20 per bag; revenue retained by retailers.
An ARF at this rate yields overall estimated reduction of 70% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

Table 8C. Percentage Switching to Alternative Bag Use and Garbage Bag Purchases (ARF at $0.20)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Switch from Plastic To:					
Continue Plastic Bag	100%	95%	10%	30%	30%
Paper Bag	0%	0%	40%	22%	0%
Long Term Reusable Bag	0%	5%	40%	39%	54%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	10%	9%	16%
Increase in Garbage Bags	0%	0%	10%	5%	7%
Switch from Paper To:					
Continue Paper Bag	100%	95%	90%	90%	30%
Plastic Bag	0%	0%	0%	0%	0%
Long Term Reusable Bag	0%	5%	10%	10%	54%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	0%	0%	16%
Increase in Garbage Bags	0%	0%	10%	0%	3%

Table 14C. Environmental Impacts Normalized to Status Quo (ARF at $0.20)

	Units	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Non-Renewable Energy	Megajoules (MJ)	100%	96%	73%	67%	42%
GHG Emissions	kg CO2 eq.	100%	96%	82%	73%	43%
Resource Depletion (Abiotic)	kg Sb eq.	100%	96%	69%	65%	42%
Eutrophication	kg PO4 eq.	100%	96%	101%	83%	41%
Litter Marine Diversity	kg	100%	96%	33%	45%	45%
Litter Aesthetics	Square meters	100%	96%	34%	46%	44%
Shopping Bag Waste Generated	Tons	100%	96%	89%	76%	41%

Units produced in each environmental category are summed over a 30-year time frame.

OPTION D: ARF = $0.25 per bag

ARF Revenue split 50/50 between retailers and City of Seattle:

Table 7D-1. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	$250,871	$288,526
Consumer	($416,854)	($399,958)	($346,383)	($860,798)	($809,194)
Retailer	$4,066	$3,455	$3,266	$289,651	$325,788
Regional	$92,001	$88,188	$102,773	$78,637	$30,994
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($241,639)**	**($163,886)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.25 per bag; revenue split 50/50 between retailers and City of Seattle.
An ARF at this rate yields overall estimated reduction of 80% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

ARF Revenue retained by retailers:

Table 7D-2. NPV of Economic (Costs) and Benefits ($000)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
SPU/City of Seattle	($39,553)	($41,677)	($30,877)	($37,159)	($36,717)
Consumer	($416,854)	($399,958)	($346,383)	($860,798)	($809,194)
Retailer	$4,066	$3,455	$3,266	$577,681	$651,031
Regional	$92,001	$88,188	$102,773	$78,637	$30,994
Total	**($360,341)**	**($349,993)**	**($271,221)**	**($241,639)**	**($163,886)**

NPV economic costs and benefits are calculated over a 30-year time frame.
ARF equal to $0.25 per bag; revenue retained by retailers
An ARF at this rate yields overall estimated reduction of 80% in disposable plastic and/or paper bag use.
Figures are based on a discount rate of 3 percent.

Table 8D. Percentage Switching to Alternative Bag Use and Garbage Bag Purchases (ARF at $0.25)

	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Switch from Plastic To:					
Continue Plastic Bag	100%	95%	10%	20%	20%
Paper Bag	0%	0%	40%	24%	0%
Long Term Reusable Bag	0%	5%	40%	43%	55%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	10%	13%	25%
Increase in Garbage Bags	0%	0%	10%	5%	7%
Switch from Paper To:					
Continue Paper Bag	100%	95%	90%	90%	20%
Plastic Bag	0%	0%	0%	0%	0%
Long Term Reusable Bag	0%	5%	10%	10%	55%
Compostable Bag	0%	0%	0%	0%	0%
No Bag	0%	0%	0%	0%	25%
Increase in Garbage Bags	0%	0%	10%	0%	3%

Table 14D. Environmental Impacts Normalized to Status Quo

	Units	Status Quo	Education	Ban plastic	ARF on plastic	ARF on both paper and plastic
Non-Renewable Energy	Megajoules (MJ)	100%	96%	73%	61%	34%
GHG Emissions	kg CO2 eq.	100%	96%	82%	67%	34%
Resource Depletion (Abiotic)	kg Sb eq.	100%	96%	69%	58%	34%
Eutrophication	kg PO4 eq.	100%	96%	101%	78%	33%
Litter Marine Diversity	kg	100%	96%	33%	36%	36%
Litter Aesthetics	Square meters	100%	96%	34%	37%	36%
Shopping Bag Waste Generated	Tons	100%	96%	89%	70%	32%

Units produced in each environmental category are summed over a 30-year time frame.

APPENDIX O

Seattle Solid Waste System Costs Associated with Paper and Plastic Bags

Seattle Solid Waste System Costs Associated with Paper and Plastic Bags

Table O-1. Comparison of Solid Waste System Costs Associated with Paper and Plastic Bags – Seattle vs. San Francisco.

	San Francisco [a]	Seattle [b]	Seattle (Adjusted) [c]
Processing Contamination Costs	$694,000	$561,837	$561,837
Composting Contamination Costs	$400,000	$312,000	$312,000
Collection and Disposal Costs	$3,600,000	$2,477,264	$1,075,384
City Street Cleaning Costs	$2,600,000	$503,567	$503,567
Future Landfill Liability Costs	$1,200,000	$173,491	$0
Total	$8,494,000	$4,028,160	$2,452,788
Total per bag	$0.17	$0.011	$0.008
Residential Waste Stream	231,828	291,578	291,578
Paper and Plastic Bag % of Waste Stream	2.00%	1.70%	0.82%
# of Bags Distributed	50,000,000	360,000,000	290,000,000
Collection and Disposal Budget	$180,000,000	$145,721,441 [d,e]	$145,721,441 [d,e]
Street Cleaning Budget	$26,000,000	$3,767,892 [e,f]	$3,767,892 [e,f]
Litter Control Budget		$4,371,643 [e,g]	$4,371,643 [e,g]
Landfill Closure / Post-Closure Budget	$60,000,000	$10,205,362 [h]	$0 [h]

Notes:

[a] The San Francisco column provides the costs to the City of San Francisco from both paper and plastic shopping bags generated at approximately 50 large grocery stores in the City of San Francisco. However, this methodology would appear to overstate the cost per bag by applying all of San Francisco's bag cleanup and disposal costs to this sample of 50 million bags rather than the much larger number of bags likely distributed in that City. (Source: SF Environment 2004; Haley 2008).

[b] The Seattle column provides the costs to the City of Seattle from both paper and plastic disposable shopping bags, using the same methodology used by the City of San Francisco when it evaluated the potential for a fee on plastic bags.

[c] The Seattle (Adjusted) column provides the costs to the City of Seattle from disposable plastic bags only, which is represented by the lower % of waste stream and lower number of bags.

[d] Collection and Disposal budget is the total 2008 proposed Solid Waste Utility budget.

[e] Collection and Disposal Costs, City Street Cleaning Costs, and Future Landfill Liability costs are estimated based on the prorata portion of the total budget represented by the paper and plastic bag percentage of the residential waste stream (1.7 percent in Seattle Column), or the plastic bag only portion of the residential waste stream (0.82 percent in Seattle (Adjusted)).

[f] Street Cleaning budget is from the 2008 proposed budget for Seattle Department of Transportation

[g] Litter Control Budget is estimated at 3 percent of the total 2008 proposed Solid Waste Utility budget.

[h] The future landfill closure costs represented in the proposed 2008 budget are for maintenance and legal responsibility of landfills closed in the 1980s. Currently, Seattle's waste is sent to a private landfill under contract, and Seattle is provided legal protection from liability for future cleanup costs, if necessary. Despite the uncertainty of future actions regarding liability for the waste deposited in the private landfill, this figure is an overestimation of actual costs attributable to plastic bags, and so is omitted in the total calculation under Seattle (Adjusted).