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Targeting Film Plastic Recycling Opportunities in California

Cooperative Efforts

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Plastics - 4th Largest Component of Waste Stream

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	2004 Waste Characterization Study Results of California's Waste Stream by Category Type	Est. Pct.	Est. Tons
1	**Organic**	**30.20%**	**12,166,452**
2	**C and D**	**21.70%**	**8,732,074**
3	**Paper**	**21%**	**8,445,898**
4	Plastic	9.50%	3,809,699
5	**Metal**	**7.70%**	**3,115,357**
6	**Special Waste**	**5.10%**	**2,038,431**
7	**Glass**	**2.30%**	**934,926**
8	**Electronics**	**1.20%**	**481,357**
9	**Mixed Residue**	**1.10%**	**437,448**
10	**Household Hazardous Waste**	**0.20%**	**73,599**

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2004 Waste Characterization Study Results of California's Waste Stream by Film Plastic Types	Film as% of Total Plastics Disposed	Total Tons Disposed
All Plastic	100 %	3,809,699
Plastic-Other Than Film	**54.13%**	**2,062,040**
All Plastic FILM	45.87%	1,747,659
• Other Film: **Sandwich, newspaper, food bags & wrap, etc**	**21.70%**	**826,757**
• **Plastic Trash Bags**	**10.25%**	**390,460**
• **Commercial and Industrial Packaging: transport pkg, shrink wrap; bubble wrap; mattress bags, vehicle, etc**	**7.62%**	**290,331**
• **Plastic Grocery and other Merchandise Bags**	**3.86%**	**147,038**
• **Film Products: agriculture, construction wrap, drop cloths, etc**	**2.44%**	**93,073**

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Industry Category	Percent Film in Total Waste Disposed
Manufacturing, food/kindred	12.5 %
Transportation, other	8.5 %
Manufacturing, electronic equipment	8.5 %
Combined categories (includes agriculture; some manufacturing	8.4 %
Wholesale trade, nondurable goods	8.0 %
Retail trade, food store	7.1 %
Manufacturing, industrial/machinery	6.5 %
Services, business services	6.4 %

Problem: Lack of Collection/Diversion of Film Plastics

- CIWMB staff, industry and local government stake holders first met Oct 12, 2004 to participate in a 2 hour brainstorming activity to define the problem and focus cooperative efforts.
- 2 Diagrams were used and a list of ideas was formed:
  - Fish Bone 1: Cause and Effect
  - Fish Bone 2: Collection Issues
- Overlap of the Fish (Fish Net)
- Identifying 3-5 Overlap Issues

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Workgroup Topics and Work plan Development Process:

- **MATRIX: Develop a matrix based on information available such as types of film available, sources, costs, export market and other information so that a group process can be used to set targets.**
- **EDUCATION: Have two sub-committees to look at various issues.**
  - **General Public Education and Trainings**
  - **Technical Issues**
- **WASHING and SORTING TECHNOLOGY: Evaluate the difficulties of siting a facility and determine feasibility with focus on sources and issues related to ag film.**

Process Adaptability

- Individual workgroups focused topically, but shared information through staff coordination.

- Work plans evolved to:
  - investigate current status of film diversion activities in CA.
  - develop outreach plans and materials.
  - prioritize focused efforts to increase film diversion
  - formulate recommendations to share with others to encourage cooperative efforts.

- Measurement of success of this process can be done in several ways.

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Key Findings, Results and Work Plan Products

- **MATRIX: ➔ Key deliverables: Matrix of film types regionally; Matrix of Sources verses Recycling Opportunities/Collection Methods; Infrastructure Assessment and Costs Associated with Film disposal and Recycling Efforts.**

- **EDUCATION: ➔ Key deliverables: Short Term Goals for Increasing Diversion and Outreach to Residential and Commercial Collection Sector ➔ Key deliverables: Brochure for QA/QC Guidelines, Industry Case Studies as Presentation Materials (Electronic Files)**
  - **General Public Education and Trainings (Residential and Commercial Sources of Film)**
  - **Technical Issues**

- **WASHING and SORTING TECHNOLOGY:➔ Key deliverable: Information on Market Development and Availability of Ag Film; List of models, tools and information currently available; Solutions to Break Barriers to Siting Washline; and Presentations, Meetings and Conference**

Regional Data for Targeting Efforts

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Coastal	Comm'l	Sgl Fam	Mult Fam	Overall Residential	Comm'l Self Haul	Residential Self Haul	Overall Self Haul	Total Tons
Grocery/Retail	1,171	3,744	1,048	4,792	79	404	483	6,446
Non-Bag Commm'l	**5,585**	1,010	12	1,022	284	-	284	6,891
Film Products	**6,405**	300	0	300	75	93	168	6,873

Central	Comm'l	Sgl Fam	Mult Fam	Overall Residential	Comm'l Self Haul	Residential Self Haul	Overall Self Haul	Total Tons
Grocery/Retail	**9,832**	**16,829**	2,701	19,529	311	176	487	29,848
Non-Bag Commm'l	**64,688**	124	32	156	**96,881**	-	96,881	161,724
Film Products	**6,115**	**7,073**	1	7,074	-	1,542	1,542	14,730

SF Bay	Comm'l	Sgl Fam	Mult Fam	Overall Residential	Comm'l Self Haul	Residential Self Haul	Overall Self Haul	Total Tons
Grocery/Retail	**6,391**	**21,664**	5,794	27,458	481	21	502	34,351
Non-Bag Commm'l	**32,284**	970	68	1,037	1,310	206	1,516	34,837
Film Products	**17,725**	1,305	1	1,307	1,194	184	1,378	20,409

Southern	Comm'l	Sgl Fam	Mult Fam	Overall Residential	Comm'l Self Haul	Residential Self Haul	Overall Self Haul	Total Tons
Grocery/Retail	**21,372**	**38,838**	**14,009**	52,847	1,228	463	1,691	75,910
Non-Bag Commm'l	**86,028**	201	164	365	-	111	111	86,504
Film Products	**41,753**	**7,647**	3	7,650	1,158	6	1,164	50,566

Recovery Options Summary

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Regions	Consolidation Points plasticbagrecycling.org	Commercial On-Site Pickup	Residential Curbside	Residential Drop-Off	Commercial Self-Haul	TOTAL Regional Programs	Number Large MRFs	Tons /Day	Total Number Landfills
Coastal Region	72	46	43	44	37	242	13	5,657	16
SF Bay Region	311	77	78	73	43	582	22	26,228	18
Southern Region	515	206	202	177	86	1186	59	82,234	55
Mountain Region	19	21	13	24	15	92	7	2,702	20
Central Region	231	67	61	65	39	463	39	37,117	43
TOTAL ALL REGIONS	1148	417	397	383	220	2565	140	154,338	152

Film Baled by City Fibers in LA

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Orange County Land-Fill Costs Associated with Film Plastics

- Orange County operates three landfills.
- Annual costs directly associated with floating plastic litter abatement are $237,856.70 not including one time costs for moveable wind cages.

Strawberries and Fumigation Film

- In CA there is 32,636 acres of strawberries under cultivation with estimated 4,895 tons of fumigation film applied.

- Oxnard 11,333 Acres
- Orange Co/San Diego 2,457 Acres

- Watsonville Area (Estimate)
  - 12,250 acres/1,837.5 tons film applied
  - 2,722-7,209 bales to recycling or disposal
  - During peak of disposal (Oct-Nov) Crazy Horse Landfill in Monterrey County receives 250 tons of fumigation film and drip tape per day for 30-45 days. Tipping fee is $92/ton.
    - 7,500-11,250 tons

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Efforts to Site Washline

- **ENO Plastics (Ventura area)**
- **Universal Plastics Recycling (Salinas area)**
- **Trex is completing feasibility study for facility in CA initially to handle 100 millions pounds throughput. (Undecided-Possibly Central Valley area)**
  - **This represents 50,000 tons or about 3% of the 1.7 million tons of disposed film based on 2003 Waste Characterization Study.**

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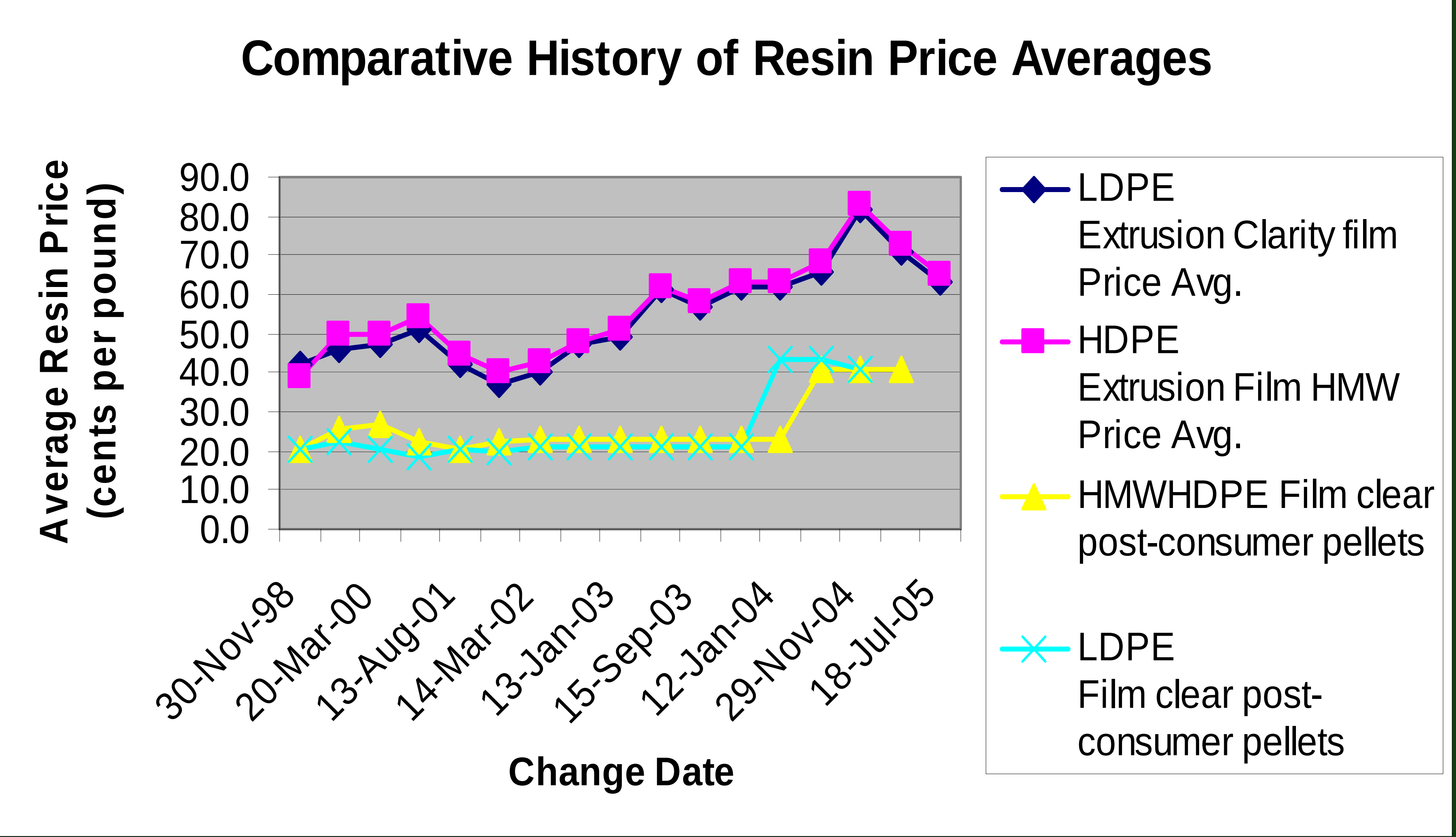

Driving Factors	Restraining Factors
Cost Factors	
Virgin resin costs due to ↑ crude oil prices	↑ Transportation costs due to ↑ fuel costs
Disposal Costs; surcharges for film	Lack of Education about the value of unprocessed film.
Potential profit for center for large distribution centers & warehouses	Lightweight of film doesn't contribute to weight based diversion measurement- leads to focus on collection of heavier materials.
Avoided disposal costs	Lack of funding to purchase recycling equipment for film.
Avoid taxes on plastic film products	"Star" screens are clogged by film; MRFs don't want it on sort link.
Haulers & collectors missing opportunity to divert material that has value.	MRFs don't want to pull film due to labor costs & low value of material pulled.
New or revised franchise agreements could include film collection.	
Funds from RMDZ loans & CPCFA to fund film recycling facilities.	
LORS/Policies	
AB939 diversion mandates	
Enforcement of TMDLs (Zero Tolerance)	
State and local increases in diversion requirements	
EPP procurement at state and local level	
Green Building recycling requirements	

Driving Factors	Restraining Factors
Collection	
City of Capistrano curbside, collection demo project.	Insufficient collection Infrastructure
→ Increase # of curbside programs statewide	Lack of public awareness & education regarding plastic bag recycling.
"Star" Screens are also incentive to collective bags prior to getting into single stream collection & MRFs.	Lack of Ed. w/generators re: value of material & avoided costs → small to med. Generators.
	Exclusive contracts are a disincentive to collect cardboard w/film by recyclers
	Businesses don't have space to recycle film. – need balers.
	Lack of washing plants
Markets	
Demand for film from export & domestic plastic markets	Inconsistent quality of PCR as a manufacturing feed stack of baled material
Untapped resources – lots of film in waste stream. (approx 60% is readily recyclable with only 5% recycling rate)	Uncertainty in demand for export
Emerging Biodegradable markets	
Potential for increased demand from automotive parts.	
↑ Increased film to film recycling	
Environmental	
Prevent illegal dumping or burning of Ag films.	
CIWMB zero waste goals	

Table 1. Sources (Generators) vs Collection Methods

SOURCES

	COLLECTION METHODS							
Recycling Opportunities	Grocery Stores Drop Off	Residential Curbside Collection	Commercial Curbside Hauler	Self Haul	Commercial Co-Collection (Hauler)	Recycleing Service Providers - Milk Runs	Baled onsite – Sell to End Market	Consolidation Points for Ag Film
Commercial								
Distribution Cntr/Warehouse			X		X		X	
Retail/Malls and Grocery	X		X		X			
Office Campuses			X		X		X	
Dry Cleaning	X	X						
Restaurants								
General Public								
Single Family HSLD,	X	X						
Multi-Family HSLD	X							
Agricultural								
Field crops and Orchards						X		X
Green houses and Nurseries						X		X
Dairy/other livestock operations						X		X
Insitutional								
Prisons					X	X	X	
Educational Campuses					X	X	X	
State Agencies					X	X	X	
Hospitals					X	X	X	
Military Bases					X	X	X	
Industrial/Lg Commercial								
Auto Industry			X		X	X	X	
Marinas (Boat wrap)			X		X	X	X	
Manufacturing Facilities								
Industrial Complexes								
Construction								
Residential New Construction								
Commercial New Construction								
Property management								
Remodeling								

Plastic Film Cooperative Recycling Initiative

- **PROPOSED PROJECT PLAN AND INVITATION**
  - **BACKGROUND PROPOSED PROBLEM STATEMENT**
    - **Current Infrastructure and Key Barriers to Expanding Plastic Film Recycling**
  - **PROPOSED PROJECT and Workgroup Focus Areas:**
    - **WORK GROUP 1: RESIDENTIAL AND COMMERCIAL FILM RECYCLING**
    - **WORK GROUP 2: AGRICULTURAL RECYCLNG**

- **Could this be an opportunity for you?**