Single Use Plastics Legislation
Research to Inform Lawmakers
Prior to Plastic Bag Bans

Northeast Recycling Council
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New England Bag Legislation

- NH: No restrictions
- RI: No restrictions. Several local bylaws.
Massachusetts Bag Legislation

• 122 municipal single use plastic bag ban bylaws
  – 5 cities require 5-10¢ fee on paper bags. (Towns can’t, some cities don’t)
  – Various definitions of single use plastic (2.25-4 mil)
  – Various definitions of reusable (stitched handles, thickness)
  – Various paper bag PCR content (0-100%, most 20-40%)

• State bill H3945: Ban on plastic bags <4mil.
  – In HW&M
  – Prohibits plastic bags not defined by DEP (TBD) as “reusable”
  – 40% PCR content in paper bags, DEP may increase
  – Fee on paper bags stripped (original 10¢)
  – Local bylaws preempted
What problem(s) are we trying to solve?

How effective will the solution be?
The King, the Mice and the Cheese

Eric Gurney, illustrator
What other problems might the solution create?

• Measure the problem
• Measure impacts of solutions
• Adjust policies, proposals
US plastic ocean pollution


Global mismanaged plastic by region, 2010

This is measured as the total mismanaged waste by populations within 50km of the coastline, and therefore defined as high risk of entering the oceans. Mismanaged plastic waste is defined as “plastic that is either littered or inadequately disposed. Inadequately disposed waste is not formally managed and includes disposal in dumps or open, uncontrolled landfills, where it is not fully contained. Mismanaged waste could eventually enter the ocean via inland waterways, wastewater outflows, and transport by wind or tides.”

Source: OWID based on Jambeck et al. (2015)
US Greenhouse gas emissions

Largest producers of territorial fossil fuel CO2 emissions worldwide in 2017, based on their share of global CO2 emissions

Source: Statistica
2019 Energy and Environmental Emissions
How do consumers respond to bag restrictions?

• It depends:
  – Fee only/ ban only/ ban plus fee
  – Visibility, amount of fees
  – Quality of alternatives
  – Local culture, demographics
  – Outreach and education
  – Was it measured?
UCal Berkeley Study

- Concord: no ban (control)
- Berkeley: longstanding ban, 10¢ paper fee (control)
- Richmond: new ban, 5¢ paper fee (Nat’l chain), 10¢ fee (discount) 1/1/14

“Leakage”

Another unintended consequence (CA)

- 20K tpy fewer carry out bags
- 6K tpy more trash bags

- Volume 93, January 2019, Pages 254-271
How do retailers respond?

• Roche Brothers: Do what customers want, what is required. No mandate >> no fee.

• Wegmans: No paper bags unless requested or required. Use 40% PCR plastic from in-store collection. “Reusables only better if reused.”

• Shaws: No in-store plastic bag recycling in Mass. bag ban towns.
How can this impact solid waste?
2016 Mass. MWC Waste Characterization Study

Source: MassDEP Summary of Waste Combustor Class II Recycling Program Waste Characterization Studies
NERC MRF outbound tons Apr-Jun 2019

- Mixed Paper #54: 28.0%
- Glass: 25.1%
- OCC #11: 24.4%
- Residue: 12.2%
- Plastic #1,2,5: 5.6%
- Plastic #3-7, bulky: 3.1%
- Steel cans: 2.3%
- UBC: 0.7%
Source: PPI Pulp and Paper Week Recovered Paper Pricing New England
Impact on solid waste costs

• Assumptions:
  – With little or no fee, half of households switch from plastic bags to paper bags
  – The average US household consumes the equivalent of 750 paper grocery bags/year, or 1500 HDPE plastic bags. (conservatively)

• Don’t assume increased plastic use (although “leakage” happens, thicker bags often treated as disposable)

• At current disposal and recycling costs (average $85/ton), cost increase of $1,530/1000 households/year

Doing the math

- 750 paper grocery bags weigh ~90 lbs.
- 1500 plastic shopping bags weigh ~20 lbs. (≥ capacity of 750 paper bags)
- \((1000 \text{ households} \times 0.5) \times (91 \text{ lbs paper/HH} - 20 \text{ lbs plastic/HH}) = 36,000 \text{ lbs additional waste/1000 households}\)
  - 2 million households in Mass >> potential increase in waste volume by about **36,000 tons/year**.
  - If 60% recycled, **21,600** additional TPY paper recycled, **14,400** TPY disposed
  - At $85/ton (average T&D), cost for disposal/recycling over **$3 million/year**
Systems-based view of US GHG Emissions

Seek wiser solutions

Eric Gurney, illustrator
Recommendations

• Ban all disposable shopping bags (😊)
• Put a visible fee on all shopping bags ("do you want to buy a bag?")
• If plastic bags are banned, incent BYOB:
  – Put a persuasive (≥10¢), visible fee on paper bags
  – Require 100% recycled content paper bags
  – Prohibit handles on paper bags
  – Require stitched handles on “reusable” plastic bags
  – Require BYOB reminder signage near front door of retailers
Thank you!

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