



AMERICAN
RECYCLABLE PLASTIC BAG
ALLIANCE



New York Retail Bags Market Assessment

Final Report

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Introduction

Scope and Definitions

- **Geography:** New York
- **Products:**
 - Retail bags*
 - Plastic (including single-use, reusable polypropylene, reusable ≥ 2.25 mil or thicker plastic)
 - Paper
- **Time Series:**
 - Market Size Analysis:
 - 2019 – previous 12 months ending March 1, 2020
 - 2020 – 12 months starting March 1, 2020
 - Supply Analysis: Current
- **Units:** number of units

*Does not include bag-on-roll applications (such as deli and meat bags) or foodservice/takeout bags and some institutional applications (such as hospitals with gift shops or cafes)

Approach and Method

- Freedonia conducted primary and secondary research in order to gather data for analysis.
 - Secondary sources were utilized to establish a set of baseline assumptions and estimates. Sources included:
 - Current Freedonia industry studies such as *Retail Bags* and *Specialty Films*
 - Freedonia consensus economic forecasts
 - Industry and trade publications/associations
 - Local and national press
 - Marketing literature and press releases
 - Investment analyst presentations
 - Company financial filings
 - Discussion guides were developed and employed for interviews across industry constituent groups.
 - Primary research was aimed at gathering qualitative insights as well as challenging/validating quantitative assumptions and estimates developed during the course of the study.
- Annual growth throughout this report is expressed in compounded annual growth rates (CAGR) calculated between two selected years.
- All demand figures are reported in units unless otherwise noted.
- Segmented estimates may not add to totals shown due to rounding.
- Freedonia interviewed more than 10 companies across all industry constituent groups in order to gather broad perspectives and particular data points on the New York retail bag market in each product category within the scope of the assessment.
- The following industry constituent groups were interviewed during the course of the project:
 - Paper bag suppliers
 - Retailers
 - Distributors
 - Paper bag machinery manufacturers
- During the course of the project, Freedonia disclosed that this study was being conducted on behalf of the American Recyclable Plastic Bag Alliance.

Section I: Executive Summary

Despite uncertain adoption rates for reusable bags, New York’s plastic bag ban will generate a paper bag shortage of 1.1-3.4 billion units.

- New York State has implemented a ban on essentially all carryout plastic bags set to begin March 1, 2020, including anything less than 10 mils thick. Freedonia assessed the 2020 market supply and demand for carryout bags in New York State and provided discussion of potential issues caused by the ban, particularly in the retail segment. In addition to paper bag demand, Freedonia also provided an assessment of reusable polypropylene bags.
- While there is a high degree of uncertainty about how many consumers will switch to reusable bags (rather than single-use paper) after the ban is implemented, a shortage of paper bags will occur in New York even in the most optimistic scenarios.
- The magnitude of the anticipated shortage of paper bags in New York ranges between approximately 1.1 billion bags (in Freedonia’s low case scenario) to nearly 3.4 billion bags (in Freedonia’s base/high case scenario). While in the low case, it is presumed that approximately 80% of bag unit demand will switch to reusable options after the ban, the base/high case estimates the impact of only 15% of bag unit demand switching to reusables.
- Our analysis examines the impact of New York’s ban in isolation from evolving legislative efforts in other states. Oregon implemented a plastic bag ban in early January 2020, and four additional states (Vermont, Delaware, Connecticut and Maine) have approved plastic bans and will implement them during 2020 and 2021. These additional anticipated plastic bag bans, when implemented, will create additional pressure on the supply of paper bags beyond the estimates described in this report.

All plausible plastic bag replacement scenarios indicate significant paper bag shortages following implementation of the ban.

| Table I-1: New York - Retail Paper Bag Shortage Scenarios (million units) | | | | | | | |
|--|-------|--------------|----------------|----------------|----------------|----------------|----------------|
| Paper Bags/Totes % Share | 0/100 | 10/90 | 20/80 | 30/70 | 50/50 | 70/30 | 85/15 |
| After Ban Paper Bags Demand | 0 | 2,636 | 2,985 | 3,335 | 4,034 | 4,732 | 5,257 |
| After Ban Totes Demand | 280 | 257 | 235 | 212 | 167 | 122 | 89 |
| 2019 NY Paper Bag Demand | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 |
| Paper Bag Production Capacity (all NA) | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 |
| <i>paper bag production utilization (%)</i> | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Paper Bag Shortage from 2019 Demand | -- | (738) | (1,087) | (1,436) | (2,135) | (2,834) | (3,358) |

Source: Freedonia Custom Research

- Overall, it is difficult to predict with certainty how the retail bag market in New York will evolve following the ban.
- The table above outlines different paper bag shortage scenarios under the transition from plastic bags banned in New York as of March 1, 2020, to paper and polypropylene tote alternatives. The bolded scenarios, 20/80, 50/50 and 85/15, correspond to the low, mid and base cases described earlier.
- With the exception of a highly unlikely shift to all totes, all other scenarios point to a severe paper bag shortage in the state of New York ranging from 738 million to 3.4 billion.
- In addition, currently the total US market for reusable PP bags is around 930 million. In some cases, new demand for reusable bags would be nearly one-third of the current total. Increases in reusable bag demand will require significant increases in imports of bags, and questions exist around immediate supply of reusable PP bags.

Section II: Market Size Assessment

In nearly all scenarios, by banning all plastic retail bags under 10 mils, there likely will be a shortfall of paper bags to meet New York demand.

- In the base/high case scenario, it is estimated that 80+% of users will prefer and therefore demand additional paper bags. A 2010 Chico State study indicated that in San Francisco, when a similar ban went into effect, users clearly preferred paper bags to reusable alternatives and increased demand for paper bags in the city significantly.
 - The high case creates a significant shortage of paper bags (nearly 3.5 billion units) based on current North American supply constraints. It is likely the current supply chain will not be able to adapt quickly enough, or be willing to source additional paper bags from overseas due to the increased expense and unknowns of international suppliers.
 - Even in the high case, there will also be a significant increase in reusable bags (34 million) as the total number of needed bags to carry all store trips will not all be switched to paper. In this case, the percent of overall bag trip demand from reusable bags is expected to nearly double from 10-15% to over 20%.
- In the mid-case scenario, it is estimated that bag trips are evenly split between paper and reusable polypropylene bags. The case shows an additional demand of over 2 billion paper bags and 112 million reusable PP bags.
 - As the majority of reusable PP bags are currently sourced from China and have a six to eight week lead time, delivery could be delayed further given the current shutdown in Chinese production due to the outbreak of the coronavirus.
- The low case scenario shows the least impact on paper bags, as it is assumed most retailers are pushing customers toward reusable bags. In the low case scenario, it is assumed 80% of customers convert to reusable bags, which would require an additional 180 million reusable PP bags to enter the NY market. In addition, even in the low case scenario, an additional 1 billion paper bags will be required; however, current production capacities cannot support such an increase. Also, it is unlikely that paper bag converters, distributors and retailers will be able to shift shipments of paper bags in other states that currently allow plastic to NY to cover the shortfall in the short term. A shift in shipments likely will take several months to a year; however, other states would then be relying more on plastic bags.
- Other assumptions included in the analysis include 17 uses of reusable bags prior to replacement, 6.7 reusable bags are used per trip, over 8 paper bags are used per trip, and nearly 10 single-use plastic bags are used per trip.

Retail bag demand in New York is forecast to decrease 7.8% in 2020 under the base case, with the new ban vastly reducing the use of plastic bags.

| Table II-1: New York – Retail Bags Base Case (million units) | | | |
|---|--------------|----------------|---------------|
| Item | 2019 | 2020 | CAGR 20/19 |
| Total | 6,276 | 5,785 | -7.8% |
| Plastic | 4,378 | 529 | -87.9% |
| Single-Use | 3,935 | 394 | -90.0% |
| Reusable | 442 | 135 | -69.4% |
| Polypropylene | 55 | 89 | 61.1% |
| Other Reusable | 387 | 46 | -88.0% |
| Paper | 1,898 | 5,257 | 176.9% |
| Paper Shortage | | (3,358) | |

*Base case assumes paper bags will replace 85% of the plastic demand, polypropylene totes will replace the remaining 15%

*All scenarios assume 17.3 reuses per tote

*2019 - previous 12 months ending March 1, 2020; 2020 – 12 months starting March 1, 2020

- Total demand for retail bags in New York is projected to decline in 2020, with the state attempting to curtail the use of disposable plastics through a ban on single-use plastic bags and reusable plastic bags under 10 mils coming into effect on March 1, 2020.
- Because the ban allows for certain items, including frozen foods; sliced or prepared foods; bulk items; newspapers; and prescription drugs, among others, to still be packed using single-use plastic bags, demand for the latter will not disappear altogether, but will still drop precipitously, with the 2020 total estimated at only 10% of the 2019 unit volume.
- Paper bags are expected to capture the bulk of the lost single-use plastic bag volume under the base case scenario. Surveys of consumers in California looking at the impact of similar bans indicate an 80+% replacement rate for single-use plastic in favor of paper bags.

Paper bags are projected to capture the majority of the single-use plastic volume in the near term, with a shift to totes anticipated further out.

- Paper bags are expected to be the dominant alternative to single-use plastic in retail settings immediately following the ban, with demand almost tripling versus 2019, but, as supply constraints persist and retailers and consumers adjust to the new reality, totes are seen as likely capturing the majority of the bag volume.
- However, the magnitude of the behavioral change associated with a full-scale transition from single-use to reusable bags cannot be underestimated.
- Demand for reusable polypropylene bags or totes, which meet the thickness requirements stipulated in the ban, is projected to grow 61.1% year-over-year, with many retailers selling and promoting totes at fairly affordable price levels. Only a limited number of localities in New York are opting to introduce a \$.05/unit fee for paper bags to encourage use of reusable alternatives. Some retailers operating in the state, such as Hannaford, Price Chopper and Wegmans among others, are electing to levy the charge themselves to mitigate expenses associated with costlier paper bags (relative to single-use plastic), which is likely to push more consumers to use totes.
- In some cases, retail shoppers already rely on reusable bags to a significant extent, according to several retailers operating in the state.
- Faced with new packaging expenses, some shoppers are likely to forego bags altogether when buying only a few items, further reducing the total retail bag demand in the state.

Retail bag demand in New York is forecast to decrease 41.7% in 2020 if totes capture most of the lost plastic demand.

| Table II-2: New York – Retail Bags Low Case (million units) | | | |
|--|--------------|----------------|---------------|
| Item | 2019 | 2020 | CAGR 20/19 |
| Total | 6,276 | 3,660 | -41.7% |
| Plastic | 4,378 | 675 | -84.6% |
| Single-Use | 3,935 | 394 | -90.0% |
| Reusable | 442 | 281 | -36.4% |
| Polypropylene | 55 | 235 | 325.7% |
| Other Reusable | 387 | 46 | -88.0% |
| Paper | 1,898 | 2,985 | 57.3% |
| Paper Shortage | | (1,087) | |

*Low case assumes totes will replace 80% of the plastic demand, paper bags will replace the remaining 20%

Source: Freedonia Custom Research

*2019 - previous 12 months ending March 1, 2020; 2020 – 12 months starting March 1, 2020

- There are some indications that retailers' efforts to transition shoppers to reusable tote bags may be more successful than expected. While some retailers have noted that shoppers may be enticed by the environmentally friendly reputation of plastic reusable bags, it should be noted that plastic totes are not able to be recycled when no longer viable and will still contribute to plastic waste.
- Respondents at several chains have already started the shift to totes in anticipation of the ban and are encouraged by early results. Those market participants estimated the replacement rate after March 1 at 80% totes, 20% paper bags on average.
- The paper bag market in the state of New York would still grow in excess of 50% following the ban, even if totes capture most of the lost plastic demand.
- Even in the low case scenario, paper shortages stemming from the New York ban would be magnified by anti-plastic legislation about to be enacted by other states.

Retail bag demand in New York is forecast to decrease 26.1% in 2020 if the 2019 market for plastic bags is split equally between paper and totes.

| Table II-3: New York – Retail Bags Mid-Case (million units) | | | |
|--|--------------|----------------|---------------|
| Item | 2019 | 2020 | CAGR 20/19 |
| Total | 6,276 | 4,641 | -26.1% |
| Plastic | 4,378 | 607 | -86.1% |
| Single-Use | 3,935 | 394 | -90.0% |
| Reusable | 442 | 214 | -51.6% |
| Polypropylene | 55 | 167 | 203.5% |
| Other Reusable | 387 | 46 | -88.0% |
| Paper | 1,898 | 4,034 | 112.5% |
| Paper Shortage | | (2,135) | |

*Mid case assumes totes and paper bags will replace equal shares of plastic demand prior to the ban

Source: Freedonia Custom Research

*2019 - previous 12 months ending March 1, 2020; 2020 – 12 months starting March 1, 2020

- Under the mid-case scenario, demand for paper bags in the state would more than double. Considering the current supply landscape and the absence of spare paper bag production capacity in North America, New York retailers are likely to face significant bag shortages as the result of the ban.
- Similar to the base and low case scenarios outlined earlier, other states’ efforts to reduce plastic bag usage and substitute it with paper will worsen the already difficult supply situation faced by retailers in New York.

Section III: Supply Landscape

All plausible plastic bag replacement scenarios indicate significant paper bag shortages following implementation of the ban.

| Table III-1: New York - Retail Paper Bag Shortage Scenarios (million units) | | | | | | | |
|--|-------|--------------|----------------|----------------|----------------|----------------|----------------|
| Paper Bags/Totes % Share | 0/100 | 10/90 | 20/80 | 30/70 | 50/50 | 70/30 | 85/15 |
| New Paper Bags Demand | 0 | 2,636 | 2,985 | 3,335 | 4,034 | 4,732 | 5,257 |
| New Totes Demand | 280 | 257 | 235 | 212 | 167 | 122 | 89 |
| 2019 NY Paper Bag Demand | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 | 1,898 |
| Paper Bag Production Capacity (all NA) | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 | 7,700 |
| <i>paper bag production utilization (%)</i> | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Paper Bag Shortage from 2019 Demand | -- | (738) | (1,087) | (1,436) | (2,135) | (2,834) | (3,358) |

Source: Freedonia Custom Research

- Overall, it is difficult to predict with certainty how the retail bag market in New York will evolve following the ban.
- The table above outlines different paper bag shortage scenarios under the transition from plastic bags banned in New York as of March 1 to paper and polypropylene tote alternatives. The bolded scenarios, 20/80, 50/50 and 85/15, correspond to the low, mid and base cases described earlier.
- With the exception of a highly unlikely shift to all totes, all other scenarios point to a severe paper bag shortage in the state of New York ranging from 738 million to 3.36 billion.
- In addition, currently the total US market for reusable PP bags is around 930 million. In some cases, new demand for reusable bags would be nearly one-third of the current total. Increases in reusable bag demand will require significant increases in imports of bags, and questions exist around immediate supply of reusable PP bags.

Spare paper bag production capacity in North America is not sufficient to address anticipated demand growth in the near term.

- As it stands currently, there is not enough reserve capacity in North America to meet the expected shortfall in retail paper bag supply. Spare manufacturing capacity, at best, may approach 0.5 billion bags, but is likely less as many machines are old and not able to produce at or above stated nameplate capacity, compared to the expected 3.36 billion in new paper bag demand in New York following the imposition of the ban under the base case scenario. Some market participants believe there is no reserve capacity at all in North America currently.
- State and local legislatures around the country are attempting to address sustainability and reduce the usage of disposable plastic packaging, which will only exacerbate paper bag shortages faced by New York retailers. Five other states (Connecticut, Delaware, Maine, Oregon and Vermont) have already passed legislation that places restrictions on the use of plastic bags.
- New paper bag production facilities take an estimated three to five years to reach full capacity, exacerbating the supply issues faced by New York retailers. New product lines typically take up to 16 months to get up and running.
- Paper bag imports, which currently trail far behind plastic bag shipments in unit terms, can potentially fill some of the gap between the expected demand and the reserve capacity, but are not likely to sufficiently alleviate the shortfall, at least immediately. Switching to imports will also require significant adjustments in the supply chain and the procurement process that cannot be made overnight.
- The low case scenario equates to 1.09 billion additional paper bags needed to meet demand, a volume that is unlikely to be filled in the near term, but potentially addressable toward the end of the year. The mid-case projects 2.14 billion additional paper bags, further increasing the likelihood of severe shortages versus the low case.

Retailers' perspectives on the ban's impact differ greatly and could be distorted by store locations. Polypropylene supply disruption further complicates bag sourcing.

- Retailers in New York differ in their assessment of the magnitude of looming paper bag shortages, with some fairly sanguine about the issue, particularly chains that have been successful in transitioning their customers to reusable formats, while others are encouraged by sufficient supply at the present time, some are uncertain of supply after the ban.
- For shoppers based in suburbs, it could be more feasible to shift to reusable bags since they can be easily transported in the car trunk. Consumers living in urban areas and commuting using public transport may find it difficult to carry reusable bags around. Consequently, perspectives from retailers on the impact of the ban may be skewed by where most of their stores are located.
- It is also important to note that the coronavirus spread has impacted the supply of polypropylene bags from China, with the current delay in shipments possibly lasting for months, which would further increase the already elevated demand for paper bags. US demand for polypropylene totes is estimated at 930 million units, while the low case paper bag scenario estimates that an additional 180 million totes (total of 235 million) would be needed in New York alone, highlighting the difficulty of a speedy transition to totes in the state following the ban.