

The future of recycling in the United States

Waste Management & Research
2016, Vol. 34(3) 181–183
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sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0734242X16629599
wmr.sagepub.com



In recent months, both the solid waste industry press and mainstream media in the United States (including *Fortune*, the *New York Times*, *Wall Street Journal*, and the *Washington Post*) have called attention to the growing ‘ills’ of recycling (Davis, 2015; Groden, 2015; Whelan, 2015). In short, the common theme of these articles is that recycling in the USA has stalled and the situation is dire. How dire is it? Industry executives have opined that prices for recycling commodities have largely fallen to the point over the past several years that it is no longer economical for them to process many (or even most) recyclables for sale and shipment to their largely Asian markets, which set standards for toleration of contaminants (also known as the ‘Green Fence’). For example, some of the USA’s largest materials recovery facility (MRF) operators, such as Recycle America and Republic Services, and ReCommunity have ‘mothballed’ recently operating facilities or delayed capital investment owing to declining revenues that now preclude profitable operations. Those who provide solid waste management advisory services to public agencies and private firms traditionally have advocated for increased recycling as a foundation for achieving regional sustainability (also called a ‘circular economy’). But now many practitioners and city leaders in both the USA and elsewhere in the world are asking, ‘Is this situation a momentary blip in recycling revenues or a harbinger of a longer term trend?’

Markets are squeezed: Recycling crisis

Based on the often fluctuating markets for recyclable materials over the past 35 years, we can safely predict that today’s troubles are but a blip on the screen. Or, as Yogi Berra, the former great Yankee baseball player (and master of coining colloquial expressions that appear to lack logic) once said, ‘It is déjà vu all over again’.

Price volatility in recycling markets is almost a universal truth across the globe (Yard, 2015). Being able to manage recycling operations in the face of ever-changing market prices can either produce success or break a community’s waste diversion programme. Most recycling industry observers have noted that prices for most, if not all, virgin and recycled materials tend to follow expansions and contractions in the overall world or national economy, such as major economic recessions and market crashes (like the Great Recession), the Iraq war, Y2K fears, and oftentimes irrational market exuberance. There are, however, specific trends in particular industries that move prices for different recycled materials in entirely opposite directions. One can argue that the long-term (30-year) average of the curbside

recyclables market has moved up substantially from average levels through the 1991–1993 recession, the 2001–2003 economic downturn, and the latest downturn, the ‘Great Recession’ in 2007–2009.

Experience over the past three decades show that communities that collect many different materials probably experience less revenue volatility over the course of an economic cycle. Nevertheless, even curbside recycling programmes that collect a wide variety of materials, such as residential mixed paper, newspapers, cardboard, glass, metals, and plastic bottles, may experience significant and pronounced revenue swings, creating budget shortfalls and consequent calls for cut-backs if not outright cessation of community recycling programmes.

What has changed? Is single stream the culprit?

This past year, national leaders of the USA’s large integrated solid waste management firms presented their perspectives on recycling at Waste Expo, WASTECON, and the Waste 360 Recycling Summit. A common theme by the presenters is that single-stream has greatly increased the volume of recyclables collected, but also increased the contamination rate, a rate that has doubled over the past decade, steadily increasing the costs to process recyclables that meet market specifications. There are some who argue that the move to single stream from the blue bin model, where the customer (waste generator) himself sorts the materials at the curb, results in more contamination, spoiling what might otherwise be recyclable.

However, a review of data from both single and dual stream recycling programmes suggests otherwise. Under both models, contamination has increased uniformly at most USA MRFs to a current average of 16% of inbound tonnes (McCormack, 2015). We would argue that increased variety of container and packaging plastics, and laminations thereof, over the past few decades is perhaps more responsible for the increase in contamination. There are literally thousands of different plastics and combinations now in the waste stream, making it almost impossible for the consumer to distinguish what is and is not recyclable. Is the inner bag in the box of cereal recyclable? Is the cap of a soda bottle recyclable, or only the bottle itself? Clearly, the extra automatic and/or manual sorting required to remove contaminants at a MRF takes much effort, resulting in reduced profitability even before considering revenues from sale of recyclables. Processing costs continue to increase as markets demand ever-increasing product quality. (Note that this problem

likely will worsen going forward as more stringent regulations take hold in Asian countries to reduce the import of what is considered overly contaminated recyclables.)

Changing times necessitates changing solutions

Ban materials

One way to improve the quality of the bales of recyclables being prepared for market is to eliminate materials that are difficult to recycle. To this end, an increasing number of cities have banned plastic bags and polystyrene from their recycling programmes, making the incoming recyclable waste stream easier and cheaper to process.

And, then there are the post-consumer glass containers. Glass has been included in virtually all USA recycling programmes since the advent of private and public collection programmes. This material is relatively heavy and easy to separate at the source, and contributes significantly to community landfill diversion goals. However, more than a third of the glass (by weight) oftentimes breaks during collection, jams up conveyors, and contaminates bales of other materials (particularly all grades of paper). Lastly, glass is made from a common and cheap material – sand. So the price for recovered glass is usually marginal. Indeed, markets for post-consumer glass sometimes dry up completely for extended periods, necessitating the disposal of segregated glass at a landfill, giving a black-eye to a city's recycling programme. Some of have argued for omitting glass from recycling programmes for these reasons alone.

Public education

It all starts with what is dumped in the bin. With the advent of larger 64 and 96-gallon (0.28 and 0.42 m³) rolling carts, customers have been depositing more recyclable materials, but often including garbage and other non-recyclables, too. For example, this means that with extra room in their bins, customers have stopped breaking down cardboard boxes, oftentimes leaving foam and plastic wrap materials inside, which are not recyclable. To further exacerbate the problem with contamination, customers have tossed things like garden hoses, clothes hangers, shopping bags, Christmas lights, and used clothing. Removal of these materials, generally without value in the secondary materials markets, drives up the cost for processing at the MRF.

The problem can be at least partially resolved with improved public education efforts that go hand-in-hand with the implementation of single stream recycling programmes. While some minimal education outreach usually is provided at the beginning of these programmes, the education campaign often stops too soon. A vigorous and continuing public information programme is necessary to reduce contaminants in the stream of recyclables.

Recycling rate stabilisation funds

This past spring, Casella Waste Systems, a Vermont-based regional hauler, added a 'sustainability/recycling adjustment fee' (SRA) onto the bills for its residential, commercial, and municipal customers. The intent of the SRA is to balance out the volatility of the recycling markets and the ability of Casella to price and sell recyclables given the cost of maintaining its extensive and sophisticated recycling infrastructure. The SRA is designed to float so that customers receive a credit when the average commodity prices are relatively high and pay more when prices drop. Thus far, Casella reports that it has received relatively few customer complaints on its new pricing model.

Is recycling in crisis?

Lighter packaging, dwindling demand for newsprint (owing to the steady move toward consumption of electronic instead of print news), and lower commodity prices have allowed some to argue that it is no longer profitable for industry to continue to provide recycling services without local governments making up their losses via subsidies (Rogoff, 2014). So should we sound the death knell for recycling in the USA? We would argue that that this is not necessarily the case, and there is a way to cobble together a solution by confronting some of the myths being painted on the state of recycling.

1. Recycling is not going away – it is now mainstream in most areas of the USA, and has become what is considered an essential public service, like police, fire, and street lighting; thus, recycling programmes cannot be turned off and on with the cycles and swings of the recycling market.
2. Recycling often is not profitable in many years. Financial systems need to be developed to handle these economic realities through establishing 'rainy day funds' or rate stabilisation funds to continue to fund community programmes when recycling markets are temporarily down, particularly for extended periods.
3. Recycling should not be considered a free service. It takes money to provide separate bins, send out the recycling truck, and build and operate a MRF. Perhaps more of the costs of recycling should be shifted to producers and/or sellers of consumer products and the associated packaging. To this end, extended producer responsibility programmes have been in place in Europe (for over 20 years) and in some USA states (e.g. for electronics and auto tyres), and are being considered elsewhere that would include at least some of the costs of recycling in the initial selling prices of the products themselves (SWANA, 2015).
4. Change the 'when in doubt, recycle it' philosophy. Consider bans of materials from recycling programmes such as glass, plastic bags, and polystyrene. These contribute to contamination problems and lower commodity prices or even acceptability at the market.

5. Recycling continues to be a challenge, no different than when the first USA drop-off facilities and curbside programmes were developed in the 1960s. The Chinese 'Green Fence' and lower commodity purchase prices, light weighting, and contamination put stresses on the success of these programmes.
6. It starts in the bin or cart. Communities need to continuously invest in recycling education. It is not a one-time thing. We all need to do a better job in communicating what materials can be recycled and what materials should be deposited in the trash cart or disposed of through a separate waste collection system.
7. Additional markets for recyclables need to be developed within the USA. We have probably become too dependent on markets in Asia. We need to consider national legislation requiring a certain amount of recycled contents to be used in a range of new products.
8. Make processing contracts equitable for all parties. Follow guidance issued by the Solid Waste Association of North America (SWANA) and the National Waste and Recycling Association (NWRA) to develop mutually beneficial relationships that are cost-effective and produce a high-quality service.



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