

**Board of Directors Meeting Highlights  
Held on October 18, 2018 at 5:00 PM  
at the MRF Board Room**



## 2019 Budget

The world changed in 2018 for the recycling industry. China caught the world by surprise when they banned materials and increased quality requirements sending ripples across the industry. Many programs are reconsidering which materials to accept, some have stopped recycling altogether while others have faced steeped increases to maintain their programs.

After maintaining recycling fees for three years, there will be an increase of 3.0% in 2019. The per share cost will rise to \$56.60. Co-collection and automated rates are based on the CPI rate of 3.1% as of July 2018. They will be adjusted to the actual September rate when published later in October. Commodity revenue for 2019 is based on current tonnages and the current prices. Prices have crashed this year as a result of oversupply worldwide. Grants are based on this year's award.

Expenses in most categories are projected to be in line with the projected cost of living of 3.1%. Energy prices are on the rise again, repairs and maintenance in the fleet area are climbing as equipment ages and reached its out of warranty life span. Recruitment costs will also have an impact as we are faced with the difficulty of replacing our aging skilled workforce without any real prospects.

	2018 Budget	2018 Projection	2019 Budget	\$ Diff.	%
<b>Sales</b>					
Commodity Revenue	1,650,000	1,780,000	1,417,000	-363,000	-20.4%
Grants	2,019,000	2,218,000	2,218,000	-	0.0%
Municipal Levy	3,778,000	3,700,000	3,754,000	54,000	1.5%
Co-Collection Revenue	3,124,000	3,252,000	3,449,000	197,000	6.1%
Containerized Services	1,170,000	1,230,000	1,268,000	38,000	3.1%
Other	441,000	510,000	499,000	-11,000	-2.2%
<b>Total Sales</b>	<b>12,182,000</b>	<b>12,690,000</b>	<b>12,605,000</b>	<b>-85,000</b>	<b>-0.7%</b>
<b>Total Cost of Goods Sold</b>	<b>1,372,000</b>	<b>1,524,000</b>	<b>1,552,000</b>	<b>28,000</b>	<b>1.8%</b>
<b>Gross Profit</b>	<b>10,810,000</b>	<b>11,166,000</b>	<b>11,053,000</b>	<b>-113,000</b>	<b>-1.0%</b>
<b>Operating Expenses</b>					
<i>Total Administration Expenses</i>	765,250	775,000	791,000	16,000	2.1%
<i>Total Collection Expenses</i>	5,017,000	5,378,000	5,603,000	225,000	4.2%
<i>Total Processing Expenses</i>	2,186,500	2,323,100	2,313,700	-9,400	-0.4%
<b>Total Operating Expenses</b>	<b>7,968,750</b>	<b>8,476,100</b>	<b>8,707,700</b>	<b>231,600</b>	<b>2.7%</b>
<b>Operating Income</b>	<b>2,841,250</b>	<b>2,689,900</b>	<b>2,345,300</b>	<b>-344,600</b>	<b>-12.8%</b>
<b>Total Nonoperating Expense</b>	<b>2,632,000</b>	<b>2,523,000</b>	<b>2,490,000</b>	<b>-33,000</b>	<b>-1.3%</b>
<b>Net Change in Cash Position</b>	<b>209,250</b>	<b>166,900</b>	<b>-144,700</b>	<b>-311,600</b>	<b>-187%</b>
Share Charge	\$54.94	\$54.94	\$56.60	\$1.66	3.0%

## **Huron County Cannot Get Part-Time Snow Plow Drivers**

Problems in getting part time snow plow drivers have forced Huron County to buy another truck and do the work themselves.

County Engineer Steve Lund informed county council Wednesday that they put out tenders for the job and didn't get any response. Lund says neighbour municipalities are having the same problem.

He explains training requirements and the cost of that training have increased significantly, but the snow plow drivers are on call and if there isn't a lot of snowfall, they're not busy enough to make it worth their while.

Lund says they're looking at getting their own truck and temporary full time driver to maintain service levels.

"We'll continue to monitor the industry requirements and training that way, but at least this way it'll get us through to be able to deliver service in accordance to the minimum maintenance standards and hours of work legislation", explained Lund.

## **Driver Shortage Is (Economic) Drag**

When Canadian Trucking Alliance president Stephen Laskowski took his turn at the mic during the annual Surface Transportation Summit, he was quick to refer to trucks parked against fences along nearby Dixie Road.

They're not idled because of a lack of business opportunities, he stressed. It's because of a lack of truck drivers. And the situation is expected to intensify as the trucking industry comes to terms with "massive" retirement numbers over the next five to six years.

The challenge is not limited to Canada, either.

The average driver in the U.S. is somewhere between 52 and 57 years old, added David Ross, Stifel Financial's research managing director – global transportation and logistics. "That's older than it used to be, and next year it's going to be older than it is today." Historically, the number of drivers has been evenly split between those under 35, those 35-50, and those over 50. In the last decade the demographics have shifted. Today just 20% of drivers are under 35, with the two older groups evenly splitting the rest, he said.

Solutions in Canada will require a new approach to immigration policies that are still focused on so-called professional workers, or even rethinking how long-haul freight is moved, Laskowski said.

In the meantime, the driver shortage continues to be an economic drag.

## **OTA Welcomes WSIB Rate Reductions**

The Ontario Trucking Association (OTA) is welcoming rate reductions from the Workplace Safety and Insurance Bureau (WSIB).

The WSIB announced trucking rate reductions of 30%, from \$6.97 to \$4.88. The OTA says this move will return \$1.45 billion to trucking employers.

Other sectors that will see a rate decrease include warehousing (27%) and couriers (23%).

"As a labor-intensive business, having competitive WSIB premium rates is extremely important to the Ontario trucking industry. Today's announcement sends a strong message that Ontario is competitive and open for business," said OTA president Stephen Laskowski.

## Taking The Sustainable Approach

Ice River Springs, Shelburne, Ontario, closes the loop on PET bottle recycling, reducing its carbon footprint in the process.

Shelburne, Ontario-based Ice River Springs, which was founded in 1995, claims to be the only beverage company in North America that operates a closed-loop recycling facility and makes 100 percent recycled content bottles for its water.

But the company's husband-and-wife ownership team has experienced quite a learning curve along the way.

Beginning as a supplier of spring-fed water, Ice River Springs built its own recycling plant, named Blue Mountain Plastics, in 2010 in Shelburne so it could produce recycled content for its caps and bottles.

At first, the company considered using aseptic packaging. "But we found that a lot of those carton-based packages were not entirely recyclable," she says.

Then Ice River Springs tried plant-based resin. But bottled water needs a two-year shelf life, Gott says, which polylactic acid (PLA) cannot provide.

Eventually, Ice River Springs officials decided to use recycled polyethylene terephthalate (rPET) for its bottles. "We realized quickly that there were a lot of carbon footprint savings," she says. "You ended up with a product that had great integrity in terms of top-load strength and basically the same quality that you get with virgin plastic. And you can recycle these bottles over and over again the way that we're doing it, and you end up with a great quality product."

Blue Mountain Plastics purchases and processes 85 percent of the PET that's collected in Ontario's curbside recycling program. The facility benefits from the good material supply in the area. In addition, it purchases infed material from other provinces and from nearby areas in the U.S.

The kinds of recyclable material Ice River Springs has received from all its sources have shaped the company's approach and decisions, Gott says.



Ice River's 15-liter cooler bottle made with 100 percent recycled postconsumer green beverage bottles.

In 2014, the company started bottling its Ice River Springs brand water in green bottles, recognizing that it was getting many more green bottles than it had expected. Ice River Springs Green water is distributed nationally in Canada and has some buyers in the U.S. as well. In addition to single-serving bottles, the water also comes in 4-gallon jugs.

Ice River Springs also encountered blue bottles in large quantities. "The clear flake and the blue flake go through together [in the Blue Mountain Plastics plant], and we end up with a slightly blue bottle," she explains. "We actually do add some color to the bottle, so we can get consistent color throughout the stream."

The blue bottles go to Ice River Springs' private-label customers—a segment that constitutes the bulk of the company's water business.

The bales Ice River Springs buys from its material sources contain plastics other than PET, so the company developed a way to put those materials to use. It forged a partnership with C.R. Plastic Products Inc., Stratford, Ontario, which buys high-density polyethylene (HDPE), including bottle caps, from Ice River Springs. C.R. uses this

postconsumer plastic to make outdoor chairs. HDPE accounts for 7 percent of the material Blue Mountain Plastics receives for processing.

Two years ago, Ice River Springs bought controlling ownership of C.R.

Blue Mountain Plastics takes the baled bottles and turns them into clean flakes. Then, using equipment from American Starlinger-Sahm Inc., Fountain Inn, South Carolina, the bottles are transformed into food-grade resin pellets.

When Ice River Springs started this process in 2010, using rPET in food-contact applications was relatively new. By closing the loop and producing the material that goes into the bottles, the company has achieved greater material consistency—and that's led to improvements in the injection molding of its preforms as well as in the blow molding of its bottles.

From 2002 to 2017, Ice River Springs reduced the weight of its bottles by more than half and cut energy consumption and greenhouse gas emissions by 78 percent. The company also eliminated corrugated trays used to package its bottles and developed a nested packing configuration for the bottles that saves room during transportation.



Today, Ice River Springs owns six bottling plants in Canada and seven in the United States and employs approximately 600 people. Blue Mountain Plastics covers 160,000 square feet in Shelburne.

Gott says the facility recycles more than 400,000 bottles per hour. Blue Mountain Plastics increased its capacity last year, upgrading parts of its line to increase speed.

She declined to specify Ice River Springs' customers but says they include most of the larger retailers and food service providers in Canada. In the U.S., Ice River Springs is a growing player, serving as one of the top five private-label bottled water companies.

Ice River Springs' bottling facilities send no waste to landfills—a feat that took two years to accomplish.

Blue Mountain Plastics continues to face challenges, such as with material yields. “Not all of our suppliers are sorting at the same level,” she says. “We get better yields from some recycling centers than we get from others.”

Ice River Springs also works with associations and governments to push for policies that fit with its philosophy. For example, Gott says the firm tries to discourage use of compostable and biodegradable plastics “because those can contaminate the recycling stream.”

She adds, “So we hope we can be an example to show that closed-loop recycling is very efficient and cost-effective.”

Gott says interest in recycled plastic is consumer driven. “Consumers are concerned about plastics—plastics in the landfills, plastics in our oceans. Recycling into the same container again is really the best solution. Creating value for that postconsumer packaging again and again in a closed-loop system is really the best solution.”

Other bottled water companies use recycled content in some of their products—at rates of 50 percent and some even at 100 percent, she says. “But they're buying that material from other manufacturers. We are the only ones who are doing it in a closed-loop system.”

Despite its growth, Gott maintains that Ice River Springs is still very much a family company. Four family members work in the business, including two of the Gotts' children. “We developed a great team of people, some of whom are very talented in plastics, which has been a real help, because a lot of what we've been doing is sort of pushing the envelope and learning as we go how best to do this.”



## Waste Reduction Week In Canada



Oct. 15 – 21, 2018

Waste Reduction Week in Canada is a year-round program, focused solely on the principles of circular economy, resource efficiency, and waste reduction. The program's primary purpose is to celebrate our environmental efforts and achievements while encouraging new innovative ideas and solutions. The celebratory nature of the campaign is how it motivates learning and behaviour change.

The program's educational resources and "take action" messaging empower all Canadians to adopt more environmentally conscious choices. Waste Reduction Week in Canada further provides information and ideas to reduce waste in all facets of daily living, creating the solutions to the many environmental challenges we face including climate change, water pollution and preservation of natural resources.

Each day during Waste Reduction Week will have its own theme. Participants have the option to support areas that are most important to them or learn about a new issue.



WASTE  
REDUCTION  
WEEK  
IN CANADA

**MONDAY, OCTOBER 15**

CIRCULAR ECONOMY & KICK-OFF



**TUESDAY, OCTOBER 16**

TEXTILES



**WEDNESDAY, OCTOBER 17**

CELEBRATING CHAMPIONS & INNOVATORS



**THURSDAY, OCTOBER 18**

PLASTICS



**FRIDAY, OCTOBER 19**

FOOD WASTE



**SATURDAY, OCTOBER 20**

SWAP, SHARE, REPAIR



**SUNDAY, OCTOBER 21**

E-WASTE



## Rethinking Recycling

How American cities can benefit from China's recycling regulations.

The National League of Cities (NLC) released a new report "Rethinking Recycling: How Cities Can Adapt to Evolving Markets," which analyzes how city leaders can develop resilient local waste management systems in response to China's new regulations. The report marks the beginning of a larger effort to examine sustainability in solid waste management and is the first piece of literature to highlight how municipalities can benefit from China's upcoming ban.

Historically, Chinese demand for materials to feed its manufacturing led it to purchase recyclables from all over the world. The rest of the industry relied on these sales to fund their collection operations. China's new policy, National Sword, upends this approach, the NLC says.

Phase one institutes a ban specifically on mixed paper and plastics. By 2020, the second phase will ban all solid waste imports. This change could potentially diminish markets, cause market fluctuations and reversals and lower revenues, according to the report.

The U.S. exported 16 million tons of recycling commodities to China per year before the ban. In 2016, these shipments were worth \$5.2 billion.

Many Americans recognize the importance of recycling to fight climate change, reduce pollution and limit municipal landfill costs. The recycling industry also accounts for 757,000 stable jobs, \$36.6 billion in wages and \$6.7 billion in state, local and federal tax revenues, the report says.

In addition, oceanic plastic contamination has come to the fore as a major international crisis. Inefficient waste management practices have led to 8 million metric tons of plastic being dumped in the oceans annually.

Durango and Fort Collins, Colorado, and Washington are a few cities using partnerships and educational campaigns to increase recycling rates and maintain local control over waste management systems.

Long-term recommendations for city leaders from the report include:

- Conduct an economic analysis of your current management operations.
- Work with contractors.
- Ensure fees and rates reflect current costs.
- Evaluate local policies and economic incentives.
- Explore local and unconventional markets.
- Consider streams.
- Examine asset ownership and consider infrastructure investments.

## Chinese Company To Build Recycling Plant In South Carolina

Green Tech Solution Inc., a subsidiary of a China-based investment company called Tianjin Sheng Xin Non-Financing Guarantee Co. Ltd., is planning to build a \$75 million recycling plant in Blacksburg, South Carolina, according to a news release issued by the South Carolina Department of Commerce.

The facility is expected to collect and process a range of recyclable materials, including plastic, metal and electronic scrap. It is expected to begin operating in the second quarter of 2019.

The company has received economic assistance from the state of South Carolina, including the state's Coordinating Council for Economic Development, which has approved job development credits related to the project.

"We could not be more excited to locate our new recycling operations in Cherokee County, a location that has everything we need for our investment to succeed," says Richard Yang, CEO of Green Tech Solution.

## Nine Dragons Set To Invest In US

ND Paper, the Oakbrook Terrace, Illinois-based subsidiary of Hong Kong-based Nine Dragons Paper (Holdings) Limited, has announced it will invest \$300 million over the next two years into its mills in Wisconsin and Maine. Those mills, in Rumford, Maine and Biron, Wisconsin, were purchased from Canada-based Catalyst Paper in June 2018.

The company says its strategic review of the new mills led it to “a multi-faceted investment strategy that diversifies the United States mills’ product mix, increases their overall production capacity, and fundamentally improves their viability for generations to come.”

The Rumford location will see an anticipated \$111 million invested to finance two projects, including the construction of a greenfield recycled-content pulp facility. The pulp line will add approximately 1,200 air-dried metric tons per day of manufacturing capacity to the site, according to ND Paper.

Also installed in Maine will be a shoe press on a paper machine there, designed to increase the machine’s production capacity by approximately 20 percent.

“I want to thank ND Paper for its continued investment in Maine,” says Gov. Paul R. LePage. “This \$111 million investment will lead to the creation of 50 new jobs, and is a great example of ND Paper’s commitment to improving the overall competitiveness and stability of the Rumford mill. The investment also is likely to help retain jobs for the Rumford mill’s 650 current employees.

In Wisconsin, the Biron Division will commission several projects at a cost of \$189 million. Those projects include the conversion of a paper machine to containerboard products and the construction of a two-line greenfield recycled-content pulp facility. The pulp lines will add approximately 1,900 air-dried metric tons of capacity to the site.

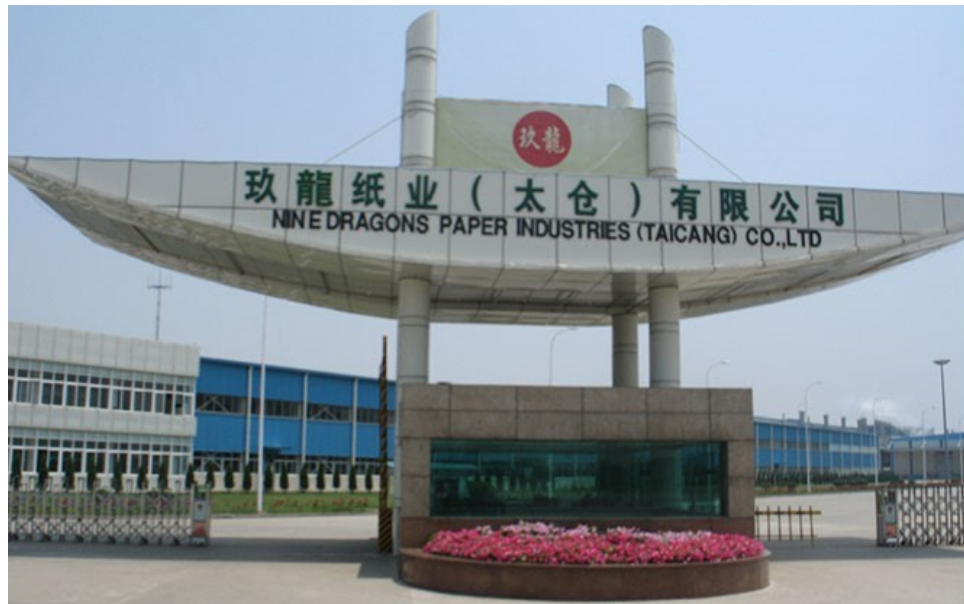
Also being funded is the construction of a water treatment and fiber recovery plant, a package boiler to provide energy, storage facilities for raw materials and a finished goods warehouse.

“I want to commend ND Paper for making the decision to expand their operations in Wisconsin,” says State Senator Patrick Testin of Stevens Point, Wisconsin. “These major projects will help retain 350 family supporting jobs and create another 27 new jobs right here in our area.”

ND Paper says it is working in collaboration with both the Wisconsin Economic Development Corporation and the Maine Department of Economic Development on the two projects.

“We invest for the long-term,” states Ken Liu, ND Paper’s CEO. “While strongly supporting our global fiber strategy, this suite of projects also dramatically improves the sustainability of these historic mills. Not only are we developing a U.S.-based containerboard business, we’re also reinforcing our commitment to existing printing and writing and specialty customers with world-class, cost-competitive assets.”

Nine Dragons Paper (Holdings) Limited describes itself as the world’s largest recovered paper-based paper manufacturing company in the world. In addition to its U.S. mills, Nine Dragons has 39 packaging paperboard and printing and writing paper machines operating in China and Vietnam.



## Trump Should Wage A War On Waste Instead Of Battling The World Over Trade

President Donald Trump is fighting the wrong fight in his ongoing trade war with the rest of the world.

That's because it's premised on the old-school notion of the linear economy in which someone in another country, such as China, digs up raw materials and sends them to a factory, where they get turned into the finished product and shipped to the U.S. In exchange, money leaves the U.S. economy and flows to the countries where the product was made – creating the trade deficit Trump despises.

And here's the important bit. Americans use the product for a while, throw it away, and it ends up in a dump. And then we buy another import.

The long-term effect? Our money goes to a foreign economy, and Americans end up with piles of garbage. Then we pay a foreign economy one more time to take the garbage off our hands. China is one country that used to take a lot of our garbage, but India, Pakistan and Nigeria are also big in this business.

A circular economy, by contrast, starts with the finished product, which can then be recycled domestically and reused, often at a fraction of the cost of manufacturing them new elsewhere. This keeps the money at home, which produces more domestic jobs and wealth.

As a researcher of corporate social responsibility, I've been exploring whether consumers are willing to buy more goods that have been remanufactured. My research suggests the answer is yes – if companies can figure how to produce more of them. And that's where Trump and the federal government could play a big role.

For now, companies and others in the American private sector are trying to lead the way, such as construction and mining equipment maker Caterpillar and automaker General Motors.

Caterpillar, for example, currently remanufactures 85 million tons of material a year, while GM has 142 manufacturing and other facilities that don't produce any garbage by recycling, reusing or converting all waste to energy. GM also participates in a new online exchange that has about 1,000 partner companies buying and selling their recycled waste as raw material.

The nonprofit sector has also been playing a role, both in terms of research and practical efforts. Since 1991, the Center for Remanufacturing and Resource Recovery at my own Rochester Institute of Technology in upstate New York, for example, has been working with organizations such as the U.S. Marines Corps and Staples to take advantage of circular economy principles.

The center helped the Marines remanufacture defective drive shafts for light armored vehicles, which has saved the military force 78 percent versus the cost of buying them new. It also partnered with Staples to cut the use of non-recycled materials in office furniture by almost 90 percent while reducing the cost to the customer by over 40 percent.

The benefits can add up quickly.

General Motors, for example boasts revenue and savings of US\$1 billion a year from its circular economy initiatives.

That's just one company. Scaling up could yield over \$1 trillion a year in savings globally – and that's just in terms of mining and processing fewer raw materials. More broadly, were the European Union, for example, to replace all its imports with locally reused or recycled alternatives, it alone could generate \$300 billion to \$600 billion a year in savings, according to a 2012 report by the Ellen MacArthur Foundation, a U.K. charity focused on promoting the transition to a circular economy.

Remanufacturing in the U.S. is already responsible for 180,000 jobs across sectors as diverse as aerospace, consumer products, office furniture and retreaded tires. Given how much the U.S. currently imports from abroad – and that remanufacturing is still less than 2 percent of total manufacturing in the U.S. – there's room to create hundreds of thousands more jobs.

While there are many ways the U.S. government could marshal its tremendous resources behind this effort, there are two in particular I think would pay dividends.



Both revolve around a core problem in remanufacturing: Most things we currently make can't be remanufactured. That's partly because of social barriers — customers may confuse remanufactured with used, which is a very different thing — and partly because they're not made to be remanufactured.

Plastics in particular pose a significant problem to moving toward a circular economy. Globally, we only recycle or reuse about 9 percent of the plastic produced each year, with 79 percent going to landfills and 12 percent being burned.

Trump could support two ways to help solve this problem. Basically, with a carrot and a stick. The carrot involves setting a standard of design to ensure all products are made with future use in mind, as well as using his influence to encourage Americans to buy goods remanufactured in the U.S.

The stick is tax policy. Specifically, the government could tax products that can't be converted into raw materials after they are used, as well as those that are made with less than a certain percentage of reused components — a minimum that would be set to gradually increase. Money raised through this tax could be used to support research into remanufacturing, community efforts to reach higher recycling and reuse targets, or other purposes.

Some countries are already reducing their imports by going circular, putting the United States at risk of falling behind.

China, for one, has been systematically expanding its efforts in this area for over 20 years, while the EU is beginning to invest in a circular economy as well with a formal action plan, most recently revised in 2015.

In an entirely circular economy, the U.S. would most likely still import stuff from abroad, such as steel from China. But that steel would wind up being reused in American factories, employing tax-paying American workers to manufacture new goods.

In other words, the more circular Americans make their economy, the fewer products they'll wind up importing and the more things that could bear the "Made in the USA" label.

### **Volvo's Electric Trucks Coming To North America In 2020**

Volvo Trucks has announced it will introduce all-electric trucks to the North American market in 2020.

The launch will come through a partnership between Volvo Group, California's South Coast Air Quality Management District (SCAQMD), and other industry leaders, the company announced. The California Air Resources Board (CARB) contributed US\$44.8 million to the Volvo LIGHTS (Low Impact Green Heavy Transport Solutions) project, which will involve 16 partners, including two fleets.

"This is yet another important step towards our vision zero emissions. We are convinced that electrified truck transport will be a key driver of sustainable transports, and we're proud to contribute the Volvo Group's expertise to this innovative public-private partnership," said Claes Nilsson, president of Volvo Trucks.

The technology will be based on the Volvo FE Electric which will be commercialized in Europe next year.

"This is an excellent opportunity to show the end-to-end potential of electrification," said Peter Voorhoeve, president of Volvo Trucks North America. "From solar energy harvesting at our customer locations, to electric vehicle uptime services, to potential second uses for batteries, this project will provide invaluable experience and data for the whole value chain."



## Electricity Reform in Ontario: Getting Power Prices Down

Ontario's implementation of the Green Energy Act (GEA) has resulted in high electricity costs across the province. The centerpiece of the act includes a schedule of subsidized electricity purchase contracts called Feed-in-Tariffs (FITs), that provide long-term guarantees of above-market rates to generators of renewable sources (wind, solar, bio-energy, and some hydro).

In order to fund FIT contracts and other system costs that are not recovered from wholesale electricity market earnings (including the costs of conservation programs, gas-capacity expansion, and nuclear-power refurbishment programs), Ontario levied a surcharge on electricity prices called the Global Adjustment (GA). Between 2008 and 2017, the GA grew from under one cent per kWh to about 10 cents, causing a drastic increase in electricity prices. Therefore, the key to lowering electricity prices in Ontario is to reduce the GA.

In this study, we break the GA down into its components to better understand the cause of the drastic increase and thereby provide some specific recommendations on how to lower electricity costs.

We looked at the evolution of the GA components over time and found that the share allocated to renewables has risen substantially. The renewable component represented about 20 percent of the GA cost in 2011/2012 but is now nearly 40 percent, making it the largest single component. This growth becomes more problematic when considering the fact that renewables (wind, solar and biomass) accounted for just under 7 percent of Ontario's electricity output.

Notably, almost all revenue earned by renewable power producers is from the GA subsidy rather than actual power sales. From May 2017 to April 2018, market revenues for renewable generators based on wholesale market sales totaled about \$0.5 billion, which was supplemented by \$4.2 billion from GA revenues to satisfy FIT contract requirements. In other words, almost 90 percent of the revenue to renewable generators came through the GA subsidy, rather than through sales of actual power.

The Ontario government recently introduced legislation to scrap the Green Energy Act, acknowledging that the act has resulted in skyrocketing electricity prices in the province. This will help prevent further price increases but will not bring the GA down. The logical next step for the government would be to use its legislative powers to cancel funding commitments under the FIT contracts. This would reduce the GA by almost 40 percent, resulting in an approximately 24 percent reduction in residential electricity prices.

In addition to cancelling the existing FIT contracts, the Ontario government could take further action to reform various other components of the GA, including reducing payments to the relatively new small-scale hydroelectric plants of Ontario Power Generation (OPG) and cutting funding for unneeded conservations programs. In order to quantify the potential consumer price reductions from such measures it would be necessary to examine detailed GA allocation accounts, which have not been released publicly.

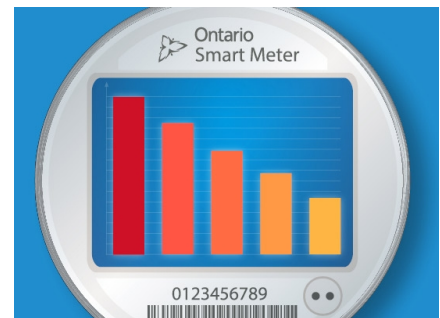
## The Price Of Electricity: The Gap Widens Between Québec And The Rest Of The Continent

Electricity prices are lower in Québec than anywhere else in Canada or North America.

In Montréal, residential customers pay 7.13¢ per kilowatthour (kWh), compared to 11.42¢ in Vancouver and 13.24¢ in Toronto. The same quantity of power costs C 31.52¢ in Boston.

Winnipeg currently ranks second-lowest in terms of residential rates, at 9¢ per kWh, but Manitoba Hydro anticipates having to raise its rates by nearly 8% over the coming years. Hydro-Québec, on the other hand, has filed an application with the Régie de l'énergie requesting an increase of only 0.8% for 2019–2020.

According to a recent comparative study on electricity prices, Montréal placed second among large Canadian cities for the lowest rate increases implemented in the past four years. Toronto came in first, with a 0.5¢ decrease, but power costs nearly twice as much there as it does in Montréal.



## GFL Environmental And Waste Industries Announce Merger

Amalgamated firms to create largest privately owned environmental services company in North America

GFL Environmental Inc. ("GFL") based out of Toronto, and Raleigh, North Carolina-based Waste Industries have announced that they have entered into a



definitive merger agreement in a transaction that values Waste Industries at a total enterprise value of US\$2.825 billion (approximately C\$3.65 billion). The transaction, which is expected to close in the fourth quarter of 2018, is subject to customary regulatory approvals.

Following its recapitalization completed in May, 2018 with a consortium led by affiliates of BC Partners ("BC Partners") and including affiliates of Ontario Teachers' Pension Plan ("Ontario Teachers") and others, GFL is one of the largest environmental services companies in North America.

Since its founding by the Poole family in 1970, Waste Industries has grown to become the premier independent, vertically integrated solid waste management company in the Southeastern United States.

When combined with GFL's existing solid waste operations, GFL and Waste Industries will become the largest privately owned environmental services company in North America with operations in all Canadian provinces except Prince Edward Island and in 10 states in the United States. The combined company will operate 98 collection operations, 59 transfer stations, 29 material recovery facilities, 10 organics facilities and 47 landfills, and will have more than 8,850 employees. Patrick Dovigi will continue to be the President and CEO of the combined company.

Certain shareholders, including the founding Poole family, and members of management are contributing committed capital and are expected to become shareholders of GFL in connection with the transaction. Waste Industries' current Chairman and CEO, Ven Poole, will also join GFL's Board of Directors upon closing of the transaction.

Scot French, Partner at HPS Investment Partners, which led the current Waste Industries shareholder group, said "I would like to thank the entire Waste Industries team for being great partners. We have a long history with GFL and we have full confidence in the opportunity for both companies together that lies ahead. We are excited to remain invested in supporting this remarkable growth story."

GFL has also announced that Luke Pelosi has been appointed Chief Financial Officer to replace David Bacon. On the closing of the merger, Greg Yorston will take on the role of Chief Operating Officer for all of GFL's solid waste operations in Canada and the United States. Additionally, Waste industries' current Chairman and CEO Ven Poole will serve as a Senior Vice-President of the combined company following the transaction.



## RPRA Business Plan for 2019-2021

The Resource Productivity and Recovery Authority (the Authority) is required to publish annually a Business Plan for the following three fiscal years. The Plan outlines a series of coordinated initiatives, including details of specific activities and resource requirements, to achieve its strategic objectives under its legislative framework.

The Authority's Business Plan is a key document for transparency and public accountability. It provides the Authority's regulated community and the broader public information on the Authority's short and medium-term strategic priorities and planned activities to fulfill its mandate.

The 2019-2021 Business Plan is the Authority's third Business Plan since it was established in late 2016. It is based on the Authority's 2018 performance to date, Ministerial directions received in 2017 and 2018 and key assumptions related to program wind ups and the estimated number of registrants on the Authority's Registry under the Resource Recovery and Circular Economy Act, 2016 following wind up of a program.

Most of the Authority's planned activities outlined in this Plan flow from government decisions. The projected activities and resource requirements reflect the best available information and are subject to change as the Authority receives direction.

The Authority also publishes an annual report by June 1 of each year that assesses how successful the Authority has been at meeting the objectives and performance targets set out in the business plan for the previous fiscal year. The annual report also contains the Authority's audited financial statements for the previous fiscal year.

The Authority's five strategic priorities for the period 2019 to 2021, which will enable it to effectively deliver on its mandate, are:

1. Transition of Waste Diversion Programs
2. Responsible Management of Data
3. Trusted Authority
4. Accountability
5. Organizational Sustainability

The Authority's 2019 Business Plan covers a three-year period from 2019 to 2021.

This Plan is based on direction received from the Minister of the Environment and Climate Change (the Minister) in 2017 and 2018 and, arising from these directions, a number of assumptions about possible future regulatory initiatives from the Minister of the Environment, Conservation and Parks that would impact the Authority's activities. These assumptions are estimates and for the Authority's planning purposes only and are not intended to presume any decisions not yet made or communicated by the Government of Ontario.

Throughout the implementation of this Plan, the Authority will consult with the Minister of the Environment, Conservation and Parks in order to update assumptions and adjust activities as required.

The primary assumptions relate to:

- Timing of waste diversion program wind up;
- Timing of initiatives described in the Strategy for a Waste-Free Ontario published in February 2017;
- Timing of designation of additional materials under the RRCEA; and
- The number of obligated parties associated with the initiatives and designations.

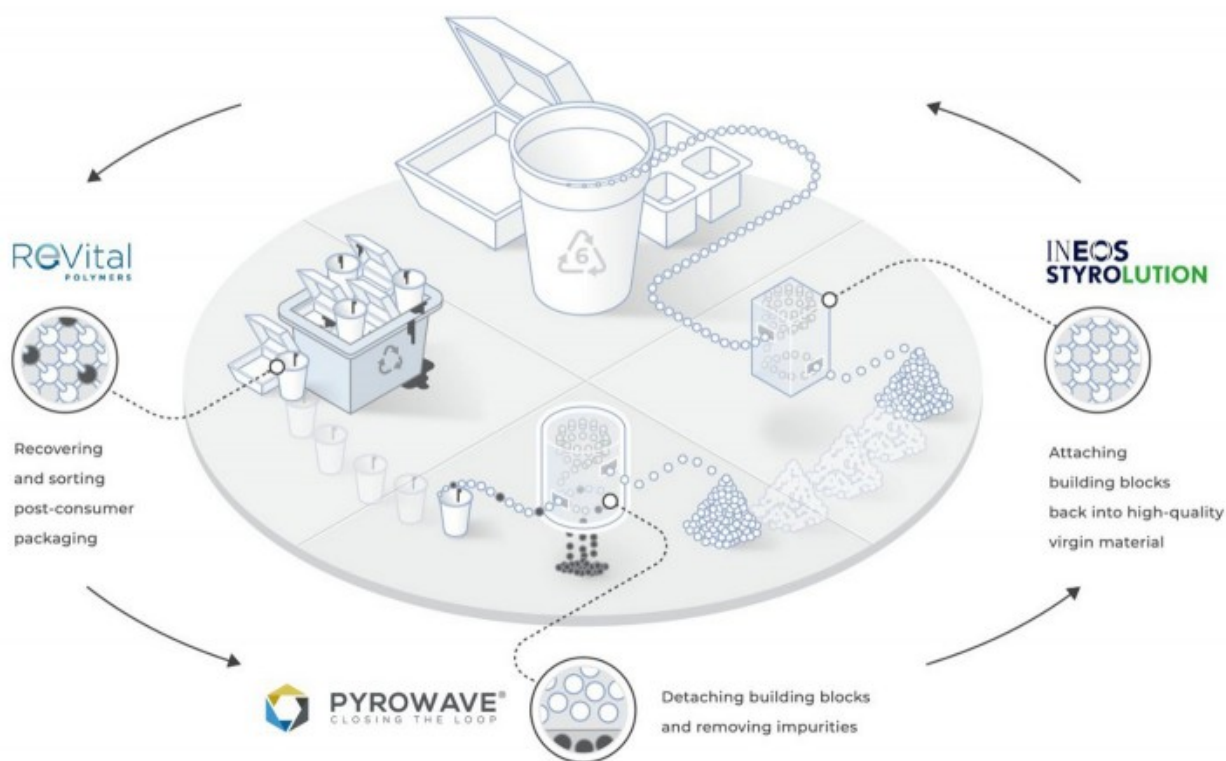


## Revital Polymers, Pyrowave And INEOS Styrolution Partner To Launch Closed-Loop North American Polystyrene Recycling Consortium

At the G7 Ministerial Meeting on Working Together on Climate Change, Oceans and Clean Energy, three industry leaders involved with post-consumer packaging recovery – ReVital Polymers, Pyrowave and INEOS Styrolution – announced a strategic partnership to recycle polystyrene packaging collected in consumer curbside and depot recycling systems as well as other sources such as restaurants, offices, schools and universities.

The collaboration will use advanced recycling technology pioneered by Pyrowave that will close the loop by recycling single-serve polystyrene packaging and utilizing recycled polystyrene in the manufacturing of new products and packaging. This Canadian solution will not only reduce the amount of polystyrene packaging going to landfill, but will also address the global problem of plastic pollution in marine environments.

### Closed-loop polystyrene packaging



## Market Forces Put America's Recycling Industry In The Dumps

A crash in the global market for recyclables is forcing communities to make hard choices about whether they can afford to keep recycling or should simply send all those bottles, cans and plastic containers to the landfill.

Mountains of paper have piled up at sorting centres, worthless. Cities and towns that once made money on recyclables are instead paying high fees to processing plants to take them. Some financially strapped recycling processors have shut down entirely, leaving municipalities with no choice but to dump or incinerate their recyclables.

It all stems from a policy shift by China, long the world's leading recyclables buyer. At the beginning of the year it enacted an anti-pollution program that closed its doors to loads of waste paper, metals or plastic unless they're 99.5 per cent pure. That's an unattainable standard at U.S. single-stream recycling processing plants designed to churn out bales of paper or plastic that are, at best, 97 per cent free of contaminants such as foam cups and food waste.

The resulting glut of recyclables has caused prices to plummet from levels already depressed by other economic forces, including lower prices for oil, a key ingredient in plastics.

The three largest publicly traded residential waste-hauling and recycling companies in North America - Waste Management, Republic Services and Waste Connections -- reported steep drops in recycling revenues in their second-quarter financial results. Houston-based Waste Management reported its average price for recyclables was down 43 per cent from the previous year.

A year ago, a bale of mixed paper was worth about \$100 per ton; today we have to pay about \$15 to get rid of it.

Kirkwood, Missouri, announced plans this summer to end curbside recycling after a St. Louis-area processing facility shut down. Officials in Rock Hill, South Carolina, were surprised to learn that recyclables collected at curbside were being dumped because of a lack of markets. Lack of markets led officials to suspend recycling programs in Gouldsboro, Maine; DeBary, Florida; Franklin, New Hampshire; and Adrian Township, Michigan. Programs have been scaled back in Flagstaff, Arizona; La Crosse, Wisconsin; and Kankakee, Illinois.

Other communities are maintaining recycling programs but taking a financial hit as regional processors have raised rates to offset losses. Richland, Washington, is now paying \$122 a ton for Waste Management to take its recycling; last year, the city was paid \$16 a ton for the materials. Stamford, Connecticut, received \$95,000 for recyclables last year; the city's new contract requires it to pay \$700,000.

A big part of the problem, besides lower commodity prices overall, is sloppy recycling. In the early days of recycling, people had to wash bottles and cans, and sort paper, plastic, glass and metal into separate bins. Now there's single-stream recycling, which allows all recyclables to be tossed into one bin. While single-stream has benefited efficiency, and customers like it, it's been a challenge on the contamination side.

A tour of Republic's facility in Beacon, about an hour's drive north of New York City, makes the challenges clear. A third of the material dumped by collection trucks is non-recyclable "contaminants" such as garden hoses, picnic coolers and broken lawnmowers. Workers have to pull that out and truck it to a landfill, adding to overall costs. Plastic bags contaminate bales of other materials and tangle machinery. Spilled ketchup and greasy pizza boxes turn otherwise marketable material into garbage.

While some recyclables have been diverted to other Asian markets since China's closure, there are also signs of market improvement in the U.S. to offset the lost business. Chinese paper manufacturers that had relied on recyclables imported into their country have recently purchased shuttered mills in Kentucky, Maine and Wisconsin.

Meanwhile, recyclable materials processors are re-negotiating contracts with municipalities to reflect the fact that prices paid for recyclables no longer offset the cost of sorting them. This is the new normal. The model no longer funds itself.

## North America Collected 8 Million Pounds Of Batteries In 2017

A total of 8 million pounds of batteries were collected for recycling last year, reports North America's leading battery recycling programme Call2Recycle. Vermont ranked first in the top ten of battery recycling states, the organisation adds.

Besides Vermont, Delaware, Tennessee, Minnesota, New Hampshire, California, Pennsylvania, Washington, Maryland and Texas rounded out the top 10 of the nation's best battery recycling states in 2017.



Call2Recycle was able to determine each individual state's performance by comparing collection performance with state population. For example; Vermont residents recycled 134 500 pounds of batteries although the state's residents (623 657) make up only 0.2% of the entire US population.

'Vermont collected almost 880% more batteries than expected,' comments Call2Recycle's ceo and president Carl Smith. He says the intense engagement was thanks to the state setting up the country's first-ever producer-funded stewardship plan for discarded batteries. He hopes Vermont won't be the last.

'We congratulate these top performing states and look to leverage their experiences and best practices to further engagement of battery recycling across the country,' Smith notes. And he adds: 'These results reflect the true dedication of programme stewards, collection partners and consumers to support communities and make a positive impact on the environment.'

At the moment, 95% of Americans own a mobile phone and almost 50% own handheld devices such as e-readers or portable tablets. What's more, a recent survey by the Pew Research Center found that a third of Americans live in a household with three or more smartphones.

Clearly, battery use is on the rise nation-wide. As a result, Smith realises simply raising battery recycling rates again and again isn't a good strategy. 'As the volume and types of batteries in the marketplace expand, so do the risks for an incident,' the ceo observes.

At the highest risk are the lithium ion rechargeable batteries found in many of today's portable devices such as cellphones, laptops, tablets and power tools. 'Our number one objective as an organisation is the safe collection and recycling of batteries,' Smith stresses.

He will speak on the topic of end-of-life battery safety at next week's International Conference for Battery Recycling in Berlin. At the event, which is organised by Swiss group ICM, he will give an update on the last year's 'Charge Up Safety Campaign'.

Call2Recycle collects and recycles single-use and rechargeable batteries under 11 lbs. (5 kgs) and has diverted approximately 130 million lbs. (59 million kg) from landfills during the past 21 years.



## Ready For Liftoff? Virgin Poised For Commercial Flight Using Waste-Based Biofuel

Passengers on Virgin Atlantic's VS16 flight from Orlando to London Gatwick may not have realized anything particularly special about their flight.

But the touchdown of the Boeing 747 running the VS16 flight marked a "historic" moment in the history of green aviation, according to the airline.



The flight was poised to become the first commercial air journey in the world to run on a new form of jet fuel made from recycling waste carbon gases, which its creators claim dramatically could cut the carbon emissions associated with aviation.

The new fuel, developed by U.S. firm LanzaTech with financial support from the U.S. and U.K. governments, is produced by recycling waste industrial gases from steel making and other heavy industrial processes. LanzaTech takes the waste, carbon-rich gases to first make ethanol, which then can be used for a range of low carbon products, including jet fuel.

LanzaTech said the fuel delivers 70 percent lifecycle carbon savings compared to traditional jet fuel and has none of the water and land use concerns associated with crop-based biofuels.

Virgin said today it could fuel 100 percent of all its flights departing from Britain with a 50 percent mix of the new fuel — a move that could deliver almost a million tons of CO<sub>2</sub> savings a year. However, concerns remain over the cost and scalability of jet biofuels and Virgin argued more support was required from the U.K. government to help LanzaTech and other biofuel providers build a commercial business case for the adoption of emerging low carbon fuels.

The U.K. government already has signaled its desire to encourage waste-based biofuels in commercial a major international event to showcase the nation's progressive approach to developing a circular economy and the best of its burgeoning circular businesses to a global audience.



## Study Claims US Plastic Recycling Rate Is Plunging

The Plastic Pollution Coalition says rate will drop to 4.4 percent in 2018.

The Plastic Pollution Coalition, Berkeley, California, has published a report contending the recycling rate for plastic in the United States is plummeting. Author Jan Dell, who the coalition describes as a chemical engineer, used United States Environmental Protection Agency (EPA) and other industry data to estimate the U.S. plastic recycling rate will sink from 9.1 percent in 2015 to 4.4 percent in 2018, says the organization. Dell estimates the recycling rate could drop to as low as 2.9 percent in 2019 if plastic scrap import bans are adopted by more countries in Asia.

The report says four major factors are contributing to its estimated drop in recycling rates:

- Plastic scrap generation is increasing in the U.S.
- Exports counted as recycled have cratered because of China's ban.
- Costs of recycling are increasing because more trucks are needed to collect discarded materials.

Plastic production expansion is keeping the prices of new plastics comparatively low. These factors work against the premise that plastic scrap will someday have sufficient value to drive reclaiming it rather than disposing of it.

"Einstein famously said that a definition of insanity is doing the same thing over and over again and expecting a different outcome," Dell says. "We've seen promises, goals, ambitions and aims from companies for nearly 30 years to increase recycled content and reduce the number of plastic bags they hand out. During that time, plastic use and pollution has increased as [has been] well documented by Jenna Jambeck, Roland Geyer and other researchers. The projected less than 5 percent U.S. plastic recycling rate in 2018 should be a wake-up call to the false promise that the existing voluntary, economic-driven U.S. recycling system is a credible solution to plastic pollution."

The U.S. ranks 20th on the list of countries contributing to plastic pollution in the ocean with an estimated 88 to 242 million pounds per year of plastic marine debris, according to the coalition. In an annual International Coastal Cleanup event on U.S. coasts in 2017, more than 200,000 volunteers collected more than 3.7 million pounds of trash in one day, the majority of it plastic, according to the Plastic Pollution Coalition.

"Recycling as the solution to plastic pollution is a myth," Dianna Cohen, co-founder and CEO of Plastic Pollution Coalition, says. "Recycling is the end point of the production chain, and it does not work without infrastructure and operational systems, which many places in the U.S. and world, simply do not have. In the U.S., industry looks to recycling as a catch-all, when really, we must stop using plastic as a material for single use. Corporations must step up to change their packaging because they are responsible for 100 percent of the damage it does. It's time for all of us to work together and demand a systems shift away from 'disposable' toward nontoxic reusables."

The Plastic Pollution Coalition describes itself as a "global alliance of individuals, organizations, businesses, and policymakers working toward a world free of plastic pollution and its toxic impacts on humans, animals, waterways and oceans and the environment."

## Sunlight Can Change Plastic Waste Into Hydrogen Fuel

Have you ever heard of the term “photoreforming”? UK scientists are relying on this ‘simple’ yet innovative process to transform post-consumer plastics into hydrogen fuel and other valuable chemicals.

Scientists of Swansea University and the University of Cambridge are pioneering a plastic recycling technique called photoreforming. This method uses cadmium sulfide quantum dots as photocatalysts to degrade plastics.

First, the photocatalyst is dropped onto the plastic, after which the material is immersed in an alkaline solution. Irradiation with sunlight reduces water from the solution to hydrogen while the plastic polymers simultaneously oxidise to small organic molecules.

The UK scientists tested the system by photoreforming three common polymers; polylactic acid, polyethylene terephthalate and polyurethane. The results matched those of state-of-the-art hydrogen evolution photocatalysis systems that require expensive sacrificial reagents.

‘Plastic waste contains a lot of energy and when you throw it away, you throw away energy. Even when using biodegradable plastics, and waste is not generated, the energy in that plastic is still lost,’ comments Moritz Kuehnelt of Swansea University. He adds: ‘One of the beauties of our photoreforming approach is that it is not very picky. It basically eats up anything that is in there.’

He reports that his crew has proven the applicability of the process to real-world waste by photoreforming a plastic bottle to hydrogen with an efficiency comparable to pure polymers. ‘It was a great relief that it worked,’ admits Kuehnelt.

‘When you do proof-of-concept chemistry you tend to work with purified materials but if you take real-world waste it is never like this, you don’t have a pure plastic and even in a plastic bottle there are plasticisers, stabilisers, coatings and all sorts of chemicals,’ he explains.

‘So we were quite surprised that we could use real waste just as well as the plastics from chemical suppliers. We were worried that the stabilisers would stop us from using real waste or give a huge drop in performance,’ the scientist remarks.

The next step is to scale up the process and apply it to other types of waste. ‘Our vision is that this will be an additional way of treating non-recyclable waste,’ Kuehnelt points out. He imagines customising the technique so it can treat the leftover waste at a recycling plant.

‘Ultimately, maybe people could treat their own plastic waste in their gardens, similarly to compost, with a solar waste-reforming device,’ the scientist theorises. ‘In this scenario, you put your plastic waste inside and get hydrogen to heat your house or fuel your car.’

## Sweden Discovers How Trash Can Heat Homes

Opposed to using coal or gas, Sweden is burning garbage in its 34 “waste-to-energy” power plants to heat homes in the colder months. According to Tekniska Verken, a municipal government company that runs the plants, four tons of garbage contains energy equivalent to one ton of oil, 1.6 tons of coal, or five tons of wood waste. Although the trash only accounts for a small percentage of the country’s overall power supply, 10 million residents will have hot water for bathrooms and kitchens and central radiator heating thanks to burned trash.

This centralized system of “district heating” warms many buildings in Sweden. The system was built over decades of planning starting in the late 1950s. “This is not something you do overnight,” said Ronny Arnberg, project manager at IVL Swedish Environmental Research Institute in Stockholm.

Trash-burning plants do have their drawbacks, such as emissions like conventional power plants fueled by natural gas and coal.

However, methane generated from organic waste in landfills is reduced. This is important. In the short term, methane is about 72 times more potent as a greenhouse gas than carbon dioxide.

