

ZOE YUQING HAN

1. Lab-grown food start-ups turn to gourmet cuisine
Financial Times, November 29, 2021

For the Financial Times, I wrote about how lab-grown gourmet ingredients such as foie gras and fish maw could potentially seep into the general market. I interviewed tech entrepreneurs, institutions, chefs and restaurateurs from London to Hong Kong to scope what the new frontier looks like.

2. Mass. lobster wholesalers request tariff relief amid China trade tensions
Boston Business Journal, September 19, 2019

In this story, I covered a hearing on local exports and talked to lobster wholesalers in Massachusetts. The story examined how the escalating US-China trade tensions put a region's pride and symbol on the brink of living. Through this story, I found my passion for localizing the impacts of international conflicts and policymaking.

3. Telecommuting tax break may have limited impact
Daily Hampshire Gazette, November 11, 2019

I examined the feasibility of a telecommuting tax incentive bill that the Massachusetts governor put forward to address the imminent traffic problem in the state. In order to do this, I analyzed labor data and state documents and talked to businesses and government officials across the state.

4. Recycling industry copes with changing market
MetroWest Daily News, January 5, 2020

Two years after China quit its role as the biggest buyer of American recyclables, I revisited the topic and specifically looked into how the state legislature, local governments, advocacy groups and business owners in Massachusetts are making efforts to accommodate the new reality. I was able to tap into my ambition of exploring on-going conversations and solution journalism in this story.

5. Green New Deal success will depend on affordable green prices

By making 34 cold calls, I found and talked to a Massachusetts manufacturing company that was willing to share its struggle between cutting carbon emissions and costs. I dug into industry reports and compared charts and data to visualize the common obstacle a business faced when it wanted to go green in Massachusetts in 2019.

Special Report **Sustainable Food and Agriculture**

Technology sector

Lab-grown food start-ups turn to gourmet cuisine

Tech entrepreneurs are putting guilt-free foie gras and fish maw on the menu



Taste test: chef Alexis Gauthier says 'it's a good place to be' when lab-grown food replicates the conventional alternative © Tommy Ga Ken Wan

Zoe Han 2 HOURS AGO

It has been about eight years since a protest outside his restaurant in Soho, London, turned Alexis Gauthier against foie gras. Confronted with compelling arguments about the cruelty involved in its production — the “fat liver” comes from ducks and geese that are force-fed — the Michelin-starred chef decided he could no longer serve it.

In fact, the encounter led to a broader change of heart: Gauthier became vegan and moved his restaurant away from animal products. But, now, he is willing to consider putting foie gras on the menu again — provided it comes from a lab, such as the one where French start-up [Gourmey](#) is producing a cell-based version of the delicacy.

Though Gauthier has yet to taste it, he welcomes the arrival of a cruelty-free alternative. “I think it’s a good place to be when we have to wonder whether it’s lab-grown or not,” he says.

Gourmey is not the only company working on cell-based gourmet foods. Fish maw and shark fin, premium ingredients in Chinese and other Asian cuisines, have attracted the attention of other biotech start-ups. Their efforts are good news for chefs and consumers who do not want their food to be tainted by worries about cruelty or sustainability.

Fish maw, the swim bladder of a fish, can sell for tens of thousands of dollars per kilogramme. This has fuelled an [illicit trade](#) in maw obtained from the totoaba, an endangered species found off the coast of Mexico that is also the most prized source of the ingredient. Demand for shark fin has similarly led to overfishing, including the cruel practice of “shark finning” — cutting fins off live sharks and throwing them back into the sea to die.

High prices, together with the possibility of regulatory bans, make producing alternatives to such foods attractive to cell-based protein companies, which cultivate animal cells at volume in laboratories and try to give them the taste and texture of conventional meat or fish.

However, it is difficult to make products viable. While the carbon footprint is potentially [much lower](#), the costs are currently [much greater](#). In the case of gourmet ingredients, that price differential between laboratory and conventional versions can be smaller, but there are still regulatory barriers to overcome: so far, Singapore is the only country to have [granted approval](#) for lab-grown meat to be sold.



A food engineer assesses Gourmey's foie gras ... © Bloomberg



... which is designed to have the taste and texture of the traditional delicacy © Bloomberg

But, as the industry grows, the laboratory versions could become far more affordable, says Mirte Gosker, acting managing director of the Good Food Institute Asia Pacific, a non-profit that promotes alternative protein. Premium foods could thus reach a broader market without dire ecological consequences. “That’s an unbeatable combination,” Gosker says.

Avant Meats, a Hong-Kong-based start-up that also makes lab-grown fish fillets, has developed a cell-based fish maw. Although this is not on the market yet, chief executive Carrie Chan says several restaurant chains have expressed interest, prompted partly by sustainability concerns but also by the potential for managing costs.

Natural fish maws come in different grades with variations in shape and size — and therefore price. The cultivated product comes in a ready-to-use package that is easy to portion.



From concept to kitchen: Avant Meats' cell-based fish maw ...



... which Hong Kong restaurateur Eddy Leung has served at private tastings © South China Morning Post via Getty Images

Hong Kong chef and restaurateur Eddy Leung, who has worked with Avant Meats to serve its fish maw at private tastings, thinks its ease of use, with no need for hours of soaking before cooking, will appeal to home cooks. He also says it tastes no different if used in soup, though he is not sure that it is yet suitable for more sophisticated dishes such as poon Choi, which requires sustained braising.

Chan compares the fish maw market to that for diamonds, and acknowledges that the top “investment grade” segment, where rarity is a significant part of the appeal, may be immune to lab-grown efforts. Her aim is to target the lower, more commodified segment, just as the companies that manufacture lab-grown diamonds do. “Like accessories,” she explains. “Not super expensive accessories but nice and decent accessories.”



New Wave Foods’ plant-based shrimp. The US company has also considered developing a lab-grown version of shark fin. Efforts to replicate shark fin remain more speculative. New Wave Foods, a seafood alternative protein start-up based in the US, announced plans in 2015 to develop a biotech version, but it has since focused on plant-based shrimp. The Future Market, a US-based “futurist food lab”, offers [“Faux Fin” soup](#) — but only as a “concept product” intended to illustrate one possible outcome of food-tech trends.

Whether cell-based delicacies can ever become mainstream may depend on shifts in food culture. Unlike commodity proteins — the focus of many cell-based start-ups — gourmet foods are prized not just because of their culinary qualities but also because they signal status.

Fuchsia Dunlop, a food writer and cook who specialises in Chinese cuisine, says broad consumer acceptance will depend on first winning over customers who demand natural fish maw and shark fin for special occasions such as wedding banquets — to display their hospitality and wealth.

Regulation can play a part. The Chinese government is trying to [encourage more sustainable eating habits](#) and, from next year, New York will ban foie gras produced by force-feeding. Its production is already banned in countries including the UK, Germany, Turkey and Australia.

Although some connoisseurs [deplore its disappearance](#), others point out that culinary traditions are about far more than particular ingredients. Gauthier says the philosophy and techniques are what really matter in French cuisine. Foie gras used to be just one of the instruments he used; now, his instruments are vegetables — and in time, perhaps, cell-based products.

Dunlop makes a similar argument about Chinese food: even if a perfect cell-based replica of fish maw proves elusive, the cuisine is rich and complex enough for those who shun the natural version not to miss out. “There are already plenty of other possibilities within the culinary tradition itself,” she says.

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GOVERNMENT & REGULATIONS

Mass. lobster wholesalers request tariff relief amid China trade tensions 🔑



Lobsters at the Wegmans in Westwood, MA.
W. MARC BERNSAU

By Zoe Yuqing Han – Special to the Journal
Sep 19, 2019, 5:37am EDT

Tariff relief is needed to help local lobster wholesalers cope with declining revenue amid an escalated trade war with China, the Bay State's second-largest export market, industry advocates say.

Massachusetts lobster sales to China have plummeted 62 percent since 2018, according to the Massachusetts Office of International Trade and Investment. China currently imposes 25 percent tariffs on US lobsters.

The lobster industry's plight was the focus of a hearing Tuesday by the Legislature's Committee of Export Development.

Mortillaro's Lobster Co. in Gloucester, one of the largest lobster wholesalers in Massachusetts, ships lobsters to various global markets including Dubai, Taipei, Hong Kong, and Malaysia. The company entered the Chinese market after losing its largest export market, the European Union, due to the free trade agreement between the EU and Canada in the summer of 2017. The agreement guaranteed free access of Canadian lobsters to EU markets.

With Chinese tariffs making American lobster costlier and dragging down the Chinese demand, Mortillaro expects a 30 percent sales loss this year.

The company is seeking federal compensation similar to the package given to soybean farmers. [President Trump](#) has authorized the U.S. Department of Agriculture to reimburse up to \$16 billion to assist farmers impacted by the trade war.

“They paid the farmers. We are the same as them,” said [Vincent Mortillaro](#), the owner of Mortillaro's.

Aside from the loss of sales, local lobster companies are also encountering a loss of key skills in the product chain because of the declining revenue.

Mortillaro testified that his company has lost six key employees because of the tariff's impact, adding the problem is not about an insufficient supply of labor, but the loss of the key experience and skills.

“We lost people that have been with us for 10, 15 years,” Mortillaro said in an interview. He struggled to replace that experience, he added. “The workers that we replace them with will never be as good as the one we had.”

[Patti Page](#), Mortillaro's industry representative, said the lobster industry does not have enough representation in the U.S. trade policy, given that the struggle is only for the coastal area from Maine to Cape Cod. Page added that it would be helpful to create a bigger voting block uniting all export sectors affected by the trade policies.

At the hearing, House Chair [Lori Ehrlich](#) (D-Marblehead) said the committee is partnering with U.S. [Sen. Elizabeth Warren](#) (D-Mass.) to try to come to the best approach.

“The congressional delegation is very engaged on this topic,” said Ehrlich, adding that while international trade policy is not in the committee's purview, they will advocate for the economic sector affected by the policy.

Earlier this week, Warren and fellow Massachusetts Sen. [Edward Markey](#), as well as other representatives from coastal communities, wrote to U.S. Trade Representative [Robert Lighthizer](#) urging a federal subsidy and new markets' exploration for Massachusetts lobster industry.

“While Massachusetts state legislators are exploring solutions for economic relief at the state level, it is imperative that there be federal resolve to assist the Massachusetts lobstermen whose livelihoods heavily relied on exports to China,” Warren wrote.

T H E L I S T

Largest Employers in Massachusetts

Ranked by Total Massachusetts employees

Rank	Company	Total Massachusetts Employees
1	Partners HealthCare	62,364
2	Beth Israel Lahey Health	28,545
3	University of Massachusetts	23,880

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Daily Hampshire Gazette

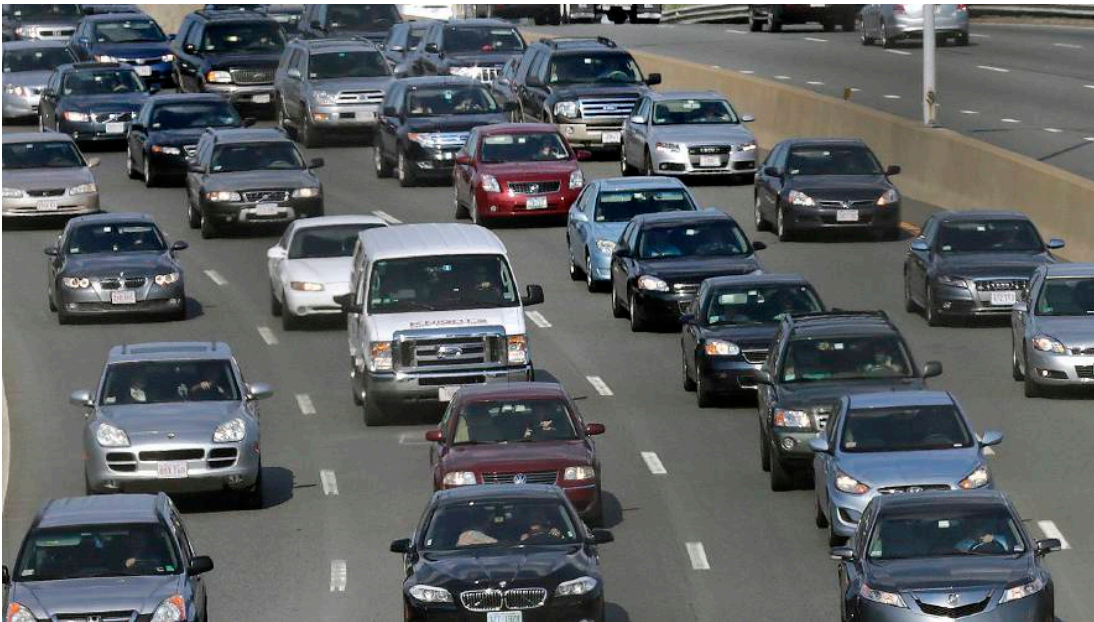


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News > Local (/News/Local/)

Telecommuting tax break may have limited impact



Commuters head out of town on the Massachusetts Turnpike in Boston. AP PHOTO/CHARLES KRUPA

By [ZOE YUQING HAN \(/byline?byline=By ZOE YUQING HAN\)](#)

For the Gazette

Published: 11/11/2019 1:38:02 PM

With around half of the state workforce concentrated in industries like education, health care and hospitality that require onsite work, Gov. Charlie Baker's proposal to create a telecommuting tax incentive for companies to ease commuting congestion faces potential friction and technical challenges as his transportation bond bill works its way through the Legislature.

U.S. Department of Labor data from 2019 shows that a quarter of Massachusetts employees work for health care and education systems, 9.62 percent in accommodation and food services, then followed by 7.56 percent in manufacturing. Around 5 percent work in mining, lodging and construction, and 3.32 percent in transportation, warehousing, and utilities.

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The breakdown reflects the difficulty in trying to ease traffic congestion by allowing more workers to work from home. That congestion has become an increasing concern for workers in choosing an employer, as highlighted in a MassBio survey this summer that found one in every four employees in the biotech industry has considered leaving the state for a better commute.

The Massachusetts Department of Transportation reports in August that more than half of the greater Boston area (inside I-95/128) is congested from 7 a.m. to 8 a.m. and up to 65 percent from 3 p.m. to 5 p.m.



[\(link\)](#)

To address this congestion, the Baker administration put forward a tax credit incentive program up to \$50 million each year to encourage employers to develop working policies to promote offsite work. It is one of the most publicized components of the \$18 million bill to fund major transportation improvements.

With almost one-fifth of the whole workforce in health care and social assistance, industry officials do not see telecommuting as an answer to their commuting headache.

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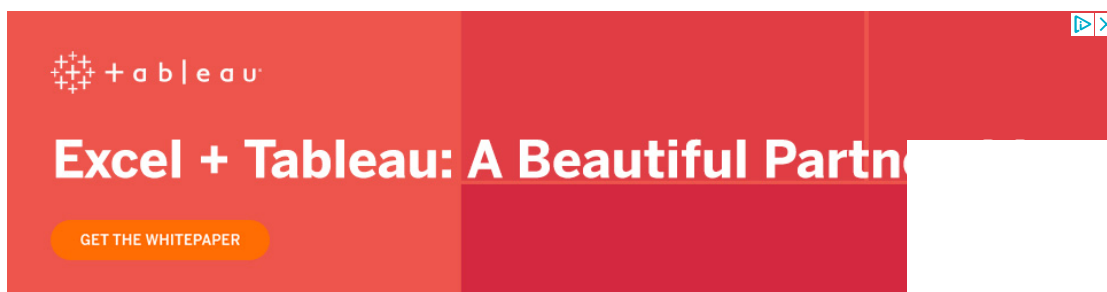
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“If someone works in a lab, they may be able to work from home one day a week, as the day that they’re doing their analysis or kind of preparing for other pieces,” MassBio Vice President of Programs and Global Affairs Elizabeth Steele said in an interview. “In a lot of cases, working from home full-time would not be possible in this industry.”

In a hearing a few weeks ago, Baker and Transportation Secretary Stephanie Pollack suggested that Massachusetts, and Boston specifically, can look to other areas with similar size and industries, such as the San Francisco Bay area, to adopt telecommuting as a possibility. They said the state has a lower telecommuting rate of employees compared to others.

In Massachusetts, 4.7 percent of the workforce telecommutes full time, lower than 19 other states, according to [a report from FlexJobs \(https://www.flexjobs.com/blog/post/infographic-which-states-have-most-full-time-telecommuters/\)](https://www.flexjobs.com/blog/post/infographic-which-states-have-most-full-time-telecommuters/). In contrast, California is 5.4 percent.

Steele said the poll found only 28 percent of respondents were able to work remotely at least one day per week based on their companies’ current policies. Because of the special nature of the industry, said Steele, it is not possible for most biotech employees to telecommute full-time.



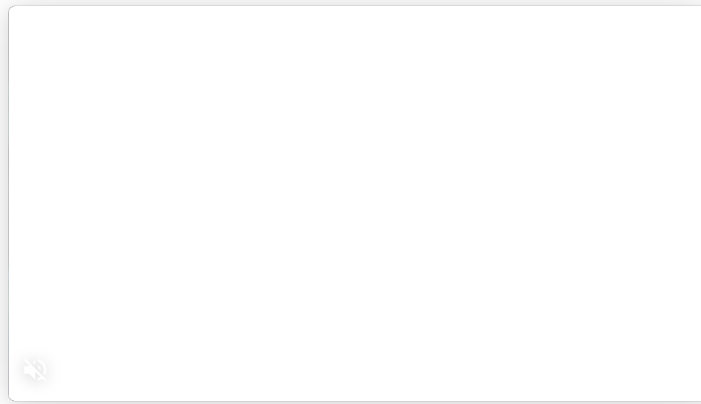
However, as a result of the poll, Steele said MassBio did adopt a formal policy requiring all of its own workers to work remotely one day per week based on their schedules. MassBio CEO Bob Coughlin also sent out a message on the day results were released, encouraging all member business CEOs to take a similar approach.

“We understand that not all of our member companies would be able to, especially not full-time,” Steele said, “but we do encourage any other solutions that companies can make on their own in order to effect some change in the short run.”

Chris Geehern, Executive Vice President of Associated Industries of Massachusetts (AIM), said a telecommuting tax credit would be a step in the right direction.

“It’s a whole lot easier to keep people off the roads than to build new roads and tunnels,” Geehern said.

He said employers are already looking at telecommuting for higher efficiency and a broader range of potential employees. The only factor affecting employers from incorporating telecommuting policies would be the nature of work, but even for industries like manufacturing, Geehern said, employees in accounting, communication, finance functions could potentially telecommute.



An HR practices survey sent to AIM members in the beginning of the year shows that 62 out of 224 companies who filled out the form have some sort of telecommuting policies for a portion of their workers. Geehern said the result might undervalue the trend for all of the employers in Massachusetts, as manufacturing companies are a huge portion of their members.

Similarly, health services have a potential new group of people who are capable of telecommuting. Telemedicine and telehealth, providing virtual access to their patients using video-conferencing, are a new trend in health services, said Sarah Hamilton, vice president of area planning and development of the Medical Academic and Scientific Community Organization that serves the hospitals and educational institutions in Boston's Longwood Medical Area.

Hamilton and Geehern both point to the importance of organizational IT support to keep records and information secure.

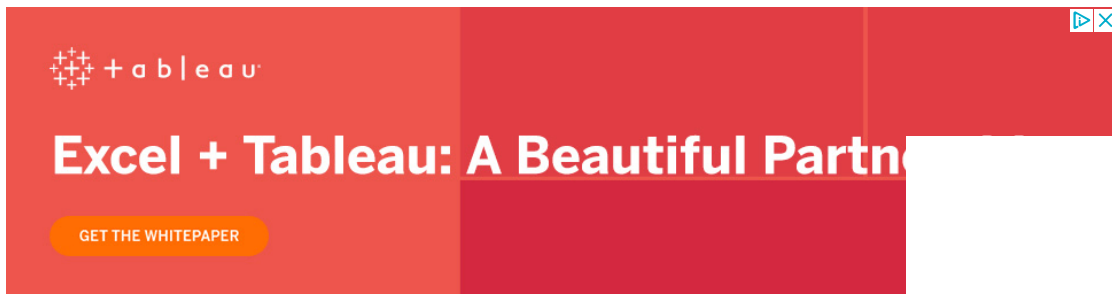
"Cyber security becomes more challenging obviously, as you have people outside the walls of the building," Geehern said. He said companies deal with accessing the internal systems differently. The approach AIM adopted is a single sign-in and the system would keep out the out-of-state IP addresses, unless their employees reported their out-of-state status beforehand.

As working offsite requires more engaging ways of management, telecommuting not only sets a requirement for the nature of work, but also requires efficient communications between employees and employers.

AIM employees are responsible for having high-speed internet access at a home office and have their Skype location current throughout the day. But with more than 30 towns in western and central Massachusetts waiting to complete the broadband installation, holding video conferences at home might be an issue for workers who live in those areas.

In 2008, Massachusetts Broadband Institute set up the Last Mile initiative to help connect residences and communities in 45 entirely unserved towns and nine partially served towns recognized by the state. By July 2019, according to a project breakdown by MBI, only 13 out of 47 grant-authorized towns already completed the construction and six towns are still waiting for grants.

Before broadband access utilizing fiber, and other specific delivery technologies, most Last Mile towns used DSL or satellite services. A source familiar with broadband installation said such facilities lack in consistency and bandwidths, which would slow down the speed and results in lags and gaps when multiple devices, including some smart home technologies, use the internet.



Although federal and state grants fully fund the Last Mile project to ensure broadband infrastructure in towns, communities are not guaranteed service availability to every resident. Most of them would still need to buy from private companies for the service.

For longer-term solutions, MassBio's Steele said government still needs to incorporate better infrastructure to solve the issue. Commuting benefits for employees are short-term solutions that can ease the employee burden quickly, but will not eliminate the problem.

"So as an industry, we are trying to come up with solutions in the short-term and then we are hoping that the government can focus on much broader large-scale improvements across the whole system," Steele said.

Boston's Longwood Medical Area, one of the most populated areas for biotech and health services, tries to address the heavy congestion through a comprehensive commuting program starting in the last century. The program includes numerous shuttle buses, pooling incentives for Uber and Lyft, and subsidies for using public transportation of up to 50 to 75 percent.

Hamilton said MASCO did a lot of advocacy work and evaluations to improve commuter rail and MBTA transit, especially the Green Line, in pushing up the population commuting to work by public transit from 39 percent to 48 percent from 2010 to 2016.

"The Green Line is the life's blood to this area and it's going to be the last of the rapid transit lines to receive the full amount of improvements," Hamilton said.


Zoe Yuqing Han writes for the Gazette from the Boston University Statehouse Program.

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Recycling industry copes with changing market

By Zoe Yuqing Han / Boston University Statehouse Program

Posted Jan 5, 2020 at 4:17 PM

Updated Jan 5, 2020 at 4:17 PM

The Massachusetts Department of Environmental Protection is pushing forward with a variety of programs to assist cities and towns facing the difficult market and rising costs.

After losing China as the biggest buyer of recyclables almost two years ago, institutions across Massachusetts are making efforts to keep up with the loss and battle back.

Although a market still exists, the plummet in demand has created a steep slide in prices. A recycling professional currently working in a materials recycling facility says the market is at the lowest point in his more than 30 years, adding the loss of such a huge market like China leaves an incomparable hole that no other markets could possibly fill.

“You tell me what to do,” he said.

In response, the Massachusetts Department of Environmental Protection is pushing forward with a variety of programs to assist cities and towns facing the difficult market and rising costs.

John Fischer, the deputy division director of solid waste materials management, said the priority is to improve the quality of recyclable stream.

“We feel like accomplishing that is the single best thing we can do collectively to address recycling market challenges,” he said.

Since 2010 China has tightened the contamination rate it accepts from 10% to the current level of 0.5%, while a 2018 report by Casella, a materials recycling facility with operations in the state, found the contamination rate of the recyclables it receives wander around 25%.

To reduce contamination, DEP rolled out the Recycling IQ Kit in 2018, providing funds and tools for cities and towns’ efforts in education and outreach. It also funds staff to inspect the bins for recycling quality and give residents feedback by leaving “oops” tags on recycling carts. Fischer said the program has made some progress – some communities saw a reduction in contamination up to 70% to 80%.

Although it is private businesses’ job to decide where recyclables go, Fischer said the key is to make the stream cleaner, no matter whether the ultimate destination is south Asia, Canada, or domestic markets.

Non-recyclables such as plastic bags, food waste and other items mixed in the stream make it harder and more expensive for facilities to process. Not only does that affect the amount of commodity available for sale, it also adds a trash disposal fee for processors who must deal with the unwanted items.

“All of those outlets demand higher quality recyclables,” Fischer said. “Our goal is to get the materials going to our recycling facilities, to be as clean as possible.”

In the last two months, the Recycling Dividend Program started in 2014 under DEP’s Sustainable Materials Recovery Program has distributed two more rounds of grants to eligible municipalities and regional solid waste districts, assisting in covering costs and developing local educational campaigns.

October saw \$2.4 million in grants awarded to 262 recipients, while another \$3.6 million went to 36 recipients in November.

In order to evaluate the program’s efficiency, Fischer said, DEP keeps track of the number of municipalities meeting the criteria, to see if it has encouraged municipalities to implement them. They also stay in close touch with cities and towns on how the money is spent over time.

According to a press release, over the last year, the program saw an 11% increase in the number of municipalities that qualified and more than 14% in the amount awarded.

Sharing the risks

Chaz Miller, chair of the NERC-NEWMOA Regional Recycling Markets Committee, said low prices are not news in the history of recycling. The market has gone through six collapses, and the current one is similar to the one in 1990, where eventually entrepreneurs waded in and reconstructed the system.

The good lesson from all the collapses, however, Miller said, is sharing the risk and having a mechanism built into the contract among municipalities and haulers and the recycling facilities which will balance off market turbulence.

He also residents should have a stake in the process by paying a fee.

"Recycling is not free, but no surprise, garbage is not free either," Miller said. "Recycling is simply a subject of public service just as garbage is."

While garbage collection and disposal utilizes the same cash flow, it is more complicated for recycling, as it involves the revenue coming from selling the recyclables and average market price fluctuations. The solution for that, Miller said, is to charge separately for collection and processing of recyclables.

"It's a separate truck, it's a separate crew," Miller said.

Although they have different responsibilities, haulers, the facilities, and municipalities are in the same boat. In order to tackle the challenge, they depend on each other.

By educating and instructing residents, cities and towns reduce contamination, allowing haulers to send better commodity to the facilities. Based on the quality of the mixed paper, plastic, and cardboard, the facilities charge haulers accordingly. For example, cardboard left outside too long or contaminated by spilled liquid, is worth less.

The more desirable the recyclables, the easier it is for the facilities to find an end buyer, and the lower the processing fee would be for haulers. Revenue paid by end market to the facilities would also go back to municipalities to cover the original collecting cost.

However, a town's risk aversion as well as the quality of the recyclables could also determine the processing fee, said Greg Cooper, the Division Director in Business Compliance and Recycling of DEP.

"You can decide as a municipality that I don't want to deal with risk at all, so just tell me what the processing fee is. But of course that means you're giving all the risks to the processor, so he's going to charge you a very high processing fee," Cooper said, "Or you can do the other, you can tell him, 'I'll take all the risk and then your processing fee will be less.'"

Cooper explained the near-zero processing fee in the past was a result of good market conditions, where revenue is high enough to pay off processing fees for haulers, and redistribute the rest between the facilities and municipalities.

If the market is down, Miller from NERC noted that the risk-bearing element should also require municipalities bear the loss, something that might be passed on to residents.

"It becomes a real conflict at the town meeting level where the people of the town may say, 'we really want to recycle and we think this is important', but at the same time, the town is saying, 'well, how much are you willing to pay in taxes for this?'" said Gretchen Carey, president of MassRecycle. "That's a tough conversation."

Carey mentioned specific concerns for western Massachusetts towns and cities. Because their contracts do not expire until June, 2020, they have avoided the conflicts in other communities with haulers and recycling facilities. Now, they might encounter a sudden surge in processing cost from zero to over \$140 a ton.

In the new recyclable processing contract for western regions on DEP's website, local communities pay contractor Waste Management a processing fee, and would get some part of the revenue from selling recyclables. If the average market price is over the processing fee, local communities get all the fee back plus 70% of the difference between the revenue and the fee; if it's below, then they get all of the revenue.

Cooper from DEP said in the past 25 years, it has always been part of the contract model for Massachusetts to separate processing, which generates a relatively stable fee, and revenue, which is not.

Sometimes the redistribution percentage might change, but it's up to negotiations between municipalities and the facilities.

The contract stated the current average market price for dual stream is down to \$28.30 per ton, compared to the 10-year average from 2009 to 2019 of \$75.45 per ton. For the single stream average market value, it is \$6.37 versus \$53.68.

However, Carey sees hope amid the gloomy markets. She mentioned a summary put together by Northeastern Recycling Council announcing an increase in domestic processing capacity for recycled paper and cardboard. That is aided in part by a new mill that opened in Ohio in October that is expecting to process 180,000 tons of container board in its first year up to a goal of 396,000 tons a year in the next 10 years.

Miller said cardboard and paper have always been the majority of curb-side pickup items. According to the 2018 Casella report, around 64% of items in the recycling bins are paper and cardboard.

Miller also noted the continuing demand from Chinese buyers for raw materials. Although the government put a ban on recyclables, the huge scale of production in China continues to push the need for pulp. Since 2018, one of the biggest paper companies in China, Nine Dragons, has bought four paper mills inside of the U.S. Its aim is to process recycled paper into pulp and ship it back.

To have the demand reflected in a price increase of paper, Miller said it will take at least one or two years.

Green New Deal success will depend on affordable green prices

By Zoe Yuqing Han
Boston University Statehouse Program

BOSTON – Achieving the Green New Deal’s goal of businesses using 100 percent renewable energy within 10 years will require affordable green energy pricing in the view of one business owner trying to make the change for his contract precision machining service.

[Michael Tamasi installed solar systems on the roof of his Avon-based AccuRounds](#) two years ago as part of a corporate responsibility program and it now generates about 20 percent of the electricity used on site.

But when Tamasi goes to his energy broker to review electricity deals, cost remains the biggest factor after supplier reputation and plans with a renewable energy component.

“Costs are extremely important to us because we need to be competitive,” Tamasi said. Electricity, Tamasi explained, is one of their biggest costs, in manufacturing parts and assemblies his company sells to original equipment manufacturers, who makes devices from component parts bought from companies like AccuRounds. Higher electric bills will result in a higher product prices and a disadvantage compared to other manufacturers.

Environmental awareness was back in the headlines as a result of the Climate Strike called by Swedish environmental activist Greta Thunberg and the Green New Deal, sponsored by Rep. Alexandria Ocasio-Cortez, D-NY, and Massachusetts Sen. Edward Markey, urging the federal government to substitute all energy sources to renewable powers [within 10 years](#).

Tamasi said AccuRounds currently contracts with National Grid for electricity. According to the [ISO New England](#)’s real time chart of fuel mix, 66 percent of the electricity generated by New England power plants comes from natural gas, following with 27 percent from nuclear power, 5 percent from renewables such as solar and wind and 2 percent hydro.

While not yet 100 percent green, it is slowly increasing. That’s in keeping with the Massachusetts [Renewable Energy Portfolio Standard](#) in 2003, requiring retail electricity suppliers to obtain a certain percentage of the electricity they provide to customers from certified renewable energy sources.

Starting at 1 percent in 2003, the standard has grown annually to [the current level of 20 percent for 2020](#). Yet, in contrast to the Green New Deal call for 100 percent renewable sources in 10 years, Massachusetts set [the goal of 2030](#) as 25 percent of electricity to be renewable and 40 percent to be clean.

In order to regulate and track compliance, retailers need to buy Renewable Energy Certificates per megawatt hour of electricity, also known as Renewable Energy Credits, from the New England Power Pool Generation Information System.

Shaun Pandit, the president of [EarlyBird Power](#), provides energy consulting services and connects Tamasi with different suppliers.

If any retailers wants to go above the current level of REPS to be more green, Pandit explained, they will either need to buy more credits, or carbon offsets, which they pay for through a program elsewhere [devoted to cutting or avoiding carbon emissions](#).

The offsets are usually a lot cheaper than purchasing the credits and going 100 percent green, the costs can add up to 20 percent more, Pandit said. However, with carbon offsets, if with a regular price of 9 cents, the price will only amount to 9.1 cents. "You wouldn't really notice it," Pandit said.

The problem, he said, is that it does not have local impacts.

"Trying to be 100 percent green in the next 10 years locally is going to be expensive," Pandit said. "Nationally, it's not."

The goal, however, Pandit said, is also about reducing local carbon footprints. Sourcing nationally will not help.

"You're not really having a local impact, if you're still proceeding as you normally are here, but someone else in a different part of the country is being more green," Pandit said.

The renewable energy standards set up now, he said, puts burdens on suppliers, and it passes those on to businesses as shown in a high rate. While environment factors also contribute, Massachusetts is among one of the most expensive states to buy electricity, with [an average retail residential electric rate](#) of 18.92 cents/kWh in 2017 compared to the national rate of around 12 cents/kWh.

Tamasi's company gets paid back by participating in the Massachusetts Solar Renewable Energy Certificate Program, selling some of the energy captured on their site back to the grid and making the grid greener.

Pandit said Tamasi is not alone in the businesses' battle of "going green," struggling between costs and emission cutting. People have the choice of buying green energy directly from the suppliers, but in order to do that, they need to buy a green certificate.

"He is a great example of someone that is trying to do the right thing but wouldn't have the mandate," Pandit said.

Looking at the potential of going 100 percent green, Tamasi said the concern is how they could ultimately be connected to a renewable power supplier, for example, an offshore wind farm. Although he doesn't think the infrastructure is ready, he looks forward to it.

"It would be ideal for us if we can get renewable energy at a lesser cost we are paying now, that's a win-win, right?" Tamasi said.

"We're good for the environment and will be more competitive."