



**AGENDA**  
**ENVIRONMENTAL ADVISORY BOARD**  
**CITY OF PORT ORANGE**

**Meeting Date:** Monday, April 22, 2019

**Time:** 5:15 PM

**Type of Meeting:** Regular

**Location:** 2nd Floor Conference Room  
City Hall, 1000 City Center Circle

**A. CALL TO ORDER**

1. Roll Call

**B. DISCUSSION/ACTION**

2. Consideration of Minutes - March 20, 2019
3. Single Use Plastic Straw Use in Port Orange
4. Resolution relating to List of Trees
5. Environmental Summit
6. Planning for a booth at Family Days
7. Meeting Schedule/Board Member Attendance

**C. PUBLIC COMMENTS**

**D. BOARD COMMENTS**

**E. NEXT MEETING DATE**

8. Next Meeting Date: July 22, 2019
9. Items for Next Agenda

**F. ADJOURNMENT**

ANY PERSON WHO DECIDES TO APPEAL ANY DECISION MADE BY THE **ENVIRONMENTAL ADVISORY BOARD** WILL NEED A RECORD OF THE PROCEEDINGS, AND FOR SUCH PURPOSE HE OR SHE MAY NEED TO ENSURE AT HIS OR HER OWN EXPENSE FOR THE TAKING AND PREPARATION OF A VERBATIM RECORD OF ALL TESTIMONY AND EVIDENCE OF THE PROCEEDINGS UPON WHICH THE APPEAL IS TO BE BASED. NOTE: IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS PROCEEDING, YOU ARE ENTITLED, AT NO COST TO YOU, TO THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE CITY CLERK FOR THE CITY OF PORT ORANGE, 1000 CITY CENTER CIRCLE, PORT ORANGE, FLORIDA 32129,

TELEPHONE NUMBER 386-506-5563, [CITYCLERK@PORT-ORANGE.ORG](mailto:CITYCLERK@PORT-ORANGE.ORG), AS FAR IN ADVANCE AS POSSIBLE, BUT PREFERABLY WITHIN 2 WORKING DAYS OF YOUR RECEIPT OF THIS NOTICE OR 5 DAYS PRIOR TO THE MEETING DATE. IF YOU ARE HEARING OR VOICE IMPAIRED, CONTACT THE RELAY OPERATOR AT 7-1-1 or 1-800-955-8771.

ENVIRONMENTAL ADVISORY BOARD  
MEETING MINUTES  
CITY OF PORT ORANGE  
1000 CITY CENTER CIRCLE – CITY HALL  
2<sup>nd</sup> FLOOR CONFERENCE ROOM  
PORT ORANGE, FLORIDA  
MARCH 20, 2019 AT 4:00 P.M.

A Special Meeting of the Environmental Advisory Board was called to order by Chairman Macaluso at 4:00 p.m.

Present: John Macaluso, Chairman  
Kristine Cunningham  
Nancy Vaughn  
Philip Klema

Absent: Newton White (excused)  
Derek LaMontagne (excused)  
Joseph Fazzie (excused)

Also Present: Tim Burman, Community Development Director  
Shelby Field, Assistant City Clerk

**B. DISCUSSION/ACTION**

2. Consideration of Minutes January 28, 2019

*Motion to approve the January 28, 2019 minutes as presented was made by Member Vaughn and Seconded by Member Cunningham. Motion carried unanimously by voice vote.*

3. Raintree Subdivision Entrance Historic Tree Removal

Chairman Macaluso gave an overview of what he presented to City Council on March 5<sup>th</sup>, 2019 related to the topic. Ronny Buttrum, Deputy Director Public Works, read six options for the Raintree Subdivision Live Oak tree to the Board. The options are as follows; pruning the roots and remove and replace the damaged pavement, closing the existing entrance, relocate the entrance to the west (would require purchasing the existing property), removing the tree and putting in a left hand turn lane, removing the tree and replacing it with a tree that has a smaller root system, and root prune the tree and expand the island around the tree.

Lynn Stevens, Public Works & Utilities Director, answered questions from the Board relating to the options to expand the island with the tree and close off the entrance. Staff believes neither option is feasible as it creates issues for emergency vehicles.

Member Klema does not believe that the option to expand the island with the tree is not feasible. He stated that he has measured the area himself and believes it would not be an issue

for emergency vehicles as suggested by staff. Member Klema asked for the numbers from the canvassing of the neighborhood. Mr. Buttrum provided those numbers.

Jake Johannsson, City Manager, responded to Mr. Klema's concerns and suggested he come in and check the traffic code to make sure the Board and staff understand each other and are working in collaboration.

Member Vaughn suggested going through the options and narrowing them down to the ones that are the most feasible. She stated that option two to close the entrance is not possible and neither is option three to relocate the entrance to the subdivision as it is the most expensive at \$400,000. Member Vaughn asked for clarification on what option one was again. Mr. Buttrum responded it was the option to prune the roots and repave the road. Ms. Stevens explained to the Board that while the option to re prune the roots is still available there is no guarantee the tree would survive. Staff recommends option one to prune the roots and repave the road.

Steve Edgar, Contract City Forester, answered questions from the Board relating to the life span of the tree and what his opinion is moving forward. Mr. Edgar informed the Board that it's a very durable tree and it is probably 90-100 years old and will continue to grow. He stated that while Live Oaks are resistant to decay, pruning the roots will introduce decay and there are no guarantees.

Member Cunningham asked if there is a way to redirect the roots. Mr. Edgar responded that there are heavy, structural soils that will encourage the roots to grow in different directions, but it can be expensive and takes some special care to put in. Member Cunningham stated it would still probably be less expensive than relocating the entrance. Ms. Stevens stated that while it could be possible the tree will continue to grow outward 1 inch in diameter every year and will eventually outgrow the island.

Chairman Macaluso asked staff what their recommendation to Council will be. Ms. Stevens responded that there are currently 2 options they are considering; removing and replacing the tree or pruning the roots and repaving the road. She clarified that with the option to prune the roots the City will be back to discuss this topic in the future. She stated that the option to redirect the roots would create a speedbump at the entrance.

Member Vaughn does not want to see the tree removed and no tree replace it. Mr. Johannsson stated staff wants to work in the best interest of the tax payers and believes Council would gladly try to preserve the tree.

Chairman Macaluso read Member LaMontagne's comments and concerns into the record. Tim Burman, Community Development Director, responded to Member LaMontagne's question regarding the City not paying into the tree bank, stating that the City would pay into the tree mitigation bank and has in the past.

*Member Cunningham made a motion to support staff's recommendation to prune the tree roots and repave the pavement and Seconded by Member Vaughn. Motion passed unanimously by voice vote.*

**C. PUBLIC COMMENTS**

Sarah Jones, Citizen, asked for clarification as to what the motion made by the Board was. Shelby Field, Assistant City Clerk, read the motion.

Robert Reinhausen, citizen, asked if staff discussed raising the road slightly. Mr. Johansson responded yes although it would have to be a very gradual ramp but wouldn't be as gradual as it needs to be, so it was ruled out.

Savannah Weaver, citizen, is in support of saving the tree and believes there are ways of doing this such as private funding.

Margret Crandall, citizen, questioned the speed of the people coming in the subdivision and believes the road could be raised some. Chairman Macaluso responded that he does not have an answer to either issue.

**D. BOARD COMMENTS**

Chairman Macaluso stated he would like to raise the number of meetings to 6 meetings a year.

*Member Vaughn made a motion to change the number of meetings to 6 meetings a year, with the 2 new meetings being at 4:00pm to accommodate staff and Seconded by Member Klema. Motion carried unanimously by voice vote.*

\*\*As this topic was not on the agenda for this meeting, the official discussion and vote will be moved to the next agenda.

**E. NEXT MEETING DATE**

4. Next Meeting Date: April 22, 2019

5. Items for Next Agenda

Planning for a booth at Family Days  
Environmental Summit  
Single Use Plastic Straw Use in Port Orange  
Meeting schedule/Board Member Attendance

**F. ADJOURNMENT** – 5:06pm

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Chairman John Macaluso

**April 2019**

# **Single-Use Plastic Straws: Environmental Impact and Alternatives**

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## Executive Summary

The City of Port Orange initiated a Youth Leadership Program this year. In its inaugural year, three students made it successfully through the program: Emma Dominguez, Alyssa Christen and Amelia Bonjour. One of the most important aspects of this program is a capstone project in which the participants agree on a topic important to them, conduct research and analysis and present their findings and recommendations to City Council.

This year the students chose the topic of single-use plastic straws. They were worried about the effect plastics were having on their environment and wanted to see if they could effect change within their community. While this is not the most common plastic item that pollutes our environment, it is an item that has already been tackled by others, is easier to understand and represents a starting point on how to better care for our environment regarding single-use plastics.

As detailed in this report, single-use plastics, including straws are having a negative impact on our environment. There is significant scientific and practical evidence of their lethal effect on wildlife in Florida and around the globe including the fact that microplastics have now been found in human waste.

While plastic straws only represent a small fraction of the global plastic waste, there are still about 4.8 billion straws that end up in our oceans every year. These polypropylene products last about 200 years.

Approximately 31% of the world's governments have acted to reduce the use of single-use plastics and many more local governments have done the same including in the United States. Global corporations have also stepped up including Starbucks, Red Lobster, Disney and American Airlines to name a few. Even many small businesses in the area are working to reduce their single-use plastic straw footprint by various methods including: providing straws only upon request, providing straws made from different materials or eliminating straws all-together unless needed for medical reasons.

This report is a summary of our findings, which will be presented to the Environmental Advisory Board and to City Council.



## Methodology

To complete this project, the students were each assigned a topic related to plastic straws including:

- Environmental damage of plastic straws
- Alternatives to plastic straws
- Actions of state and local governments within the U.S. to curb the use of plastic straws

After the students completed the research, the Assistant City Manager edited the information for inclusion in this document. After initial review, we determined that a history of straws and a discussion on the recyclability of plastic straws should be included.

The Assistant City Manager and students also spoke with local restaurants to gain a better understanding of the issue from the business perspective. In doing so, they met or spoke with representatives from:

- Monterey Grill
- Houligan's Port Orange
- Smoothie King, Port Orange
- Off the Hook Raw Bar and Grill, Ponce Inlet
- Third Wave Café & Wine Bar, New Smyrna Beach
- The Funky Pelican, Flagler Beach
- Frappe's Italian Grille, Ormond Beach

For additional feedback, the students presented their preliminary findings to the Environmental Advisory Board and then provided the final report to the City Council.

## History of Straws

Drinking implements such as straws have been in use for at least 6,000 years. Drawings found at excavations from Tepe Gawra in northern Iraq show two people drinking from a large jar through bent tubes (circa 4,000 B.C.).

In an article from Expedition Magazine from 1986, the authors explored the early use of cereals in human diets, but they also cover early use of straws. The article states, "Straws," were, "necessary for the drinking of unfiltered beer, providing a means of penetrating through the layer of solids which float on top."

*Figure 1. A Sealing Depicting the Use of Straws in Beer Drinking from Tepe Gwara*



*Source: Katz, Solomon H & Voigt, Mary M.; Bread and Beer: The Early Use of Cereals in the Human Diet; Expedition, Vol. 28, No. 2; p. 23-34*

Early straws were made from flexible reeds, straw and in the case of important members of society, precious metals including gold. The modern straw got its start in 1888 when Marvin Stone filed a patent for a drinking straw made from paper. By 1890, his company was mass producing them.

Inventor Joseph Friedman patented the first bendable straw in the 1937. This became the preferred straw for hospitals so that people could drink while lying down.

While plastics were not invented until the late 1800's, they did not find their way into the straw industry until after World War II. After the war, plastic manufactures needed peacetime products that could be produced with their materials and one of those products was straws. Plastic straws held several advantages over paper:

- They were cheaper to produce,
- They did not leave a paper taste in the mouth,
- They could puncture through cup lids without being damaged, and
- They did not start to disintegrate while in use.

Companies began mass-producing plastic straws by the 1960's. In the 1980's companies began producing variants of the plastic straws like jumbo straws and "crazy" straws.

The National Geographic article: *A brief history of how plastic straws took over the world* states:

A number of large manufacturers met the demands of a society increasingly looking for convenient items that could be taken on-the-go. Plastics Europe, one of the world's largest plastic producers, reports that 1.5 million tons of plastic were produced in 1950, but by 2015, the world was producing 322 million tons of plastic.

A 2017 study published in Science Advances Magazine titled *Production, Use and Fate of All Plastics Ever Made* indicates that in 2010 alone, "an estimated 4 to 12 million metric tons of plastic waste generated on land," entered the marine environment. Only about 2,000 metric tons of this plastic is comprised of plastic straws, which doesn't sound significant. However, because straws average about 0.42 grams each, this equates to almost 4.8 billion straws entering the marine environment every year.

The proceeding sections will illustrate how single-use plastic straws end up outside of landfills and their impact on the environment and health. The report will also discuss actions to curb plastic straw use and production.

## How Single-Use Plastic Straws Evade Recycling and Landfills

As mentioned in the previous section, billions of plastic straws end up in our oceans every year and even more end up on land. Even though the United States has a robust waste management infrastructure, straws and other rubbish still finds its way out of landfills or recycling centers and into our environment.

### ***Aren't Single-Use Plastic Straws Recyclable?***

Single use plastic straws are recyclable. They are made from polypropylene identified by the number "5" with a recycling icon around it sometimes including the letters "PP" as shown in figure 2.

*Figure 2. Polypropylene Recycling Symbol*



Even though plastic straws are recyclable, there are two main reasons they do not get recycled. First, they are small and flexible. This characteristic allows them to fall between the cracks or get stuck in the machinery. Second, and most importantly, there is very little market for recycled polypropylene. It is worth very little, and it is extremely cheap to produce.

### ***How straws evade landfills?***

Many people just don't care about littering and continue to do so despite possible hefty fines. It is still common to see people throw trash out of their car window. Some people can't find a trash can within a reasonable distance and drop their trash on the street or beach.

Even well intentioned and environmentally conscious people's plastics end up outside landfills. Placing your recycling in the bin or in a trash can does not guarantee it will end up being recycled or in the landfill.

Before being collected, lightweight trash can get blown out of its containers. While being loaded, not all trash will make it into the truck and workers may not have time to chase that straw down the street.

At the recycling facility, lightweight plastics can fall through the sorting machines or are pulled out to be thrown into the landfill because they are not profitable and will “contaminate” the “valuable” plastics.

Once in the landfill, birds pick lightweight plastics out of the heap and spread it over long distances (or ingest it). Wind and erosion also carry these plastics to other destinations.

If plastics don’t make it into the trash, it often finds its way into storm drains. Eventually, all storm drains lead to the ocean. If not caught before leaving land, the plastics will follow the water. Figure 3 is a graphic depicting how plastics commonly find their way from storm drains to the ocean. It is rather simplistic, but accurate.

*Figure 3. Graphic Showing How Plastics go from Storm Drain, to Pipe to Ocean*



*Source: Peter Sucheski; Scienceworld, Scholastic*

Most of the buoyant plastic that ends up in the ocean is moved around by currents to one of five gyres (or vortexes) around the world. Figure 4 includes a map of where the largest gyres are located.

Figure 4. The Five Large Gyre Locations in The World's Oceans



Source: [TheOceanCleaner.org](http://TheOceanCleaner.org)

While most people envision an island of floating trash, this is not the norm. Most vessels sail through these gyres without seeing much at all. That is because most of the plastic is made of microplastics 5mm in size and smaller. In addition, they are not all floating on the top of the ocean. They span the entire water column from the sea floor to the surface and the National Oceanic and Atmospheric Administration (NOAA) indicates, "It's more like pepper flakes swirling in a soup than something you can skim off the surface."

Closer to home, plastic straws are one of the most numerous items found during beach clean-ups. The Daytona Beach News-Journal published an article titled *Volusia, Flagler customers and businesses pick up on plastic pollution movement* in October 2018 that discussed this issue from a local perspective. It highlighted restaurants in Volusia and Flagler Counties that were already using alternatives to plastic like the Third Wave Café & Wine Bar in New Smyrna Beach; the Funky Pelican in Flagler Beach; and Frappe's Italian Grille on Ormond Beach. The article also published the results of the Volusia County's 2018 International Coastal Cleanup.

*Table 1. Items Found During Volusia County's 2018 International Coastal Cleanup*

| Item                         | Amount        |
|------------------------------|---------------|
| Cigarette butts              | 27,389        |
| Bottle caps (plastic)        | 9,875         |
| Food wrappers                | 4,815         |
| Plastic bottles              | 2,266         |
| Straws, stirrers             | 2,225         |
| Other plastic/foam packaging | 1,830         |
| Other plastic bags           | 1,458         |
| Beverage cans                | 1,382         |
| Cigar tips                   | 1,136         |
| Glass bottles                | 1,055         |
| Plastic lids                 | 1,003         |
| Plastic grocery bags         | 889           |
| <b>Total</b>                 | <b>55,323</b> |

*Source: Daytona Beach News Journal*

During the clean-up, straws were the 5<sup>th</sup> most found item. Also of note, as a whole, plastic items were the most common item behind cigarette butts.

## Effect of Plastic Straws on the Environment and Health

Regardless of where these items end up, they are bad for the environment, animals and sometimes human health.

### ***Environmental Concerns***

#### **Plastics in the Marine Environment**

While in the ocean, plastics pose several risks to marine life. One of the dangers is when the plastic breaks down into smaller and smaller pieces resulting in tiny fragments called microplastics. Microplastics are a major threat to marine and sea life.

The UGA New Materials Institute in cooperation with the Loggerhead Marinelife Center (in Juno Beach, FL) conducted a study published in Environmental Science and Technology in 2018, which revealed microplastics particles inside baby sea turtles. During their research they,

...collected 96 post-hatchling sea turtles that had washed back onto the beaches along a stretch of Florida's coastline between Vero Beach and Lake Worth. The area... is part of the largest rookery in the United States for loggerhead and green turtles. More than 90 percent of the U.S. loggerhead population nests in Florida...

Fort-five (45) of the turtles were rehabilitated and released but Fifty-two (52) died. 100% of the turtles passed plastics through their digestive tract during their rehabilitation. 93% of the turtles that died had some amount of plastic still in their digestive system. "The authors suggest that ingestion of micronizing plastic by post-hatchling sea turtles is likely a substantial risk to survival of these endangered and threatened species."



*Figure 5. Loggerhead Post-Hatchling with a Vial Containing Plastics it Excreted*



Source (Credit): Loggerhead Marinelife Center

When animals ingest plastic, it can block the digestive tract, get lodged in windpipes cutting airflow causing suffocation, or can fill the stomach, resulting in malnutrition, starvation and potentially death. It has been found that plastic debris accumulates in the animals' gut and gives a false sense of satiation, causing the animal to stop eating and slowly starve to death.

*Figure 6. Picture of a Bird Corpse from Midway Atoll Including Previously Undigested Plastic*



Source: Photo by Chris Jordan ©

The UGA New Materials study indicates that if this leads to an increase in mortality rates, “We may be in the early phases of the first micronized plastic waste-associated species population decline or extinction event.”

As plastic particles break down even further, the problem gets exponentially larger than just effecting large marine life. “... Smaller and smaller particles are being consumed by the smallest creatures in our oceans, which compromises the entire food chain... If the level of mortality we have observed in post-hatchling sea turtles also occurs for zoo plankton, baby fish and crustaceans, then we will witness a complete disruption in our ocean life cycle.”

In addition to microplastics, small and larger plastic items are also a major concern. The authors of the UGA study indicate that, “Sea turtles are known to mistake ocean plastics for prey, like crab or fish eggs, or in the case of larger sea turtles, floating plastic bags for jellyfish.” In other research at least 690 marine species, “have reportedly become ill,” have been injured, “or died following entanglement in or ingestion of marine plastics.”

In one video, Christine Figgner, a marine biologist from Texas A&M University filmed her teams’ painful extraction of a plastic straw that had been entirely embedded in the nostril in a turtle they found in the wild. We included a link to the video here, which has already been viewed 34 million times as of this writing. A warning however as there is graphic language included in the video and the extraction may be hard to watch for some viewers who are sensitive to blood and the obvious pain of the animal during the procedure.

<https://www.youtube.com/watch?v=4wH878t78bw>

We’ve included some quotes from additional recent articles related to plastics and its effect on the marine environment:

- “The carcass of a pregnant sperm whale that washed up in Sardinia, Italy, last week had 22 kilograms (49 pounds) of plastic in its stomach and was carrying a dead fetus.” - [CNN](#)
- “A young whale whose carcass washed up in the Philippines died of ‘dehydration and starvation’ after consuming 40 kilograms (88 pounds) of plastic bags, scientists have found. - [CNN](#)

## **Health Concerns**

Plastic straws are bad for the environment, but they can be bad for human health as well. The Washington Post published an article in 2018 describing the health implications of using straws in general.

### **Gas and Bloating**

Using straws increases the amount of air into the digestive tract. This can cause increased gas and bloating. The author, who is a dietician, advised that some of her clients stopped using straws and, in some cases, their incidents of bloating and gas decreased.

### **Cavities**

Consuming sugary or acidic drinks through straws can increase the risk of cavities or tooth decay. If the straw is positioned in the mouth in the normal way, it directs a stream of chemicals harmful to enamel directly at the teeth. If the straw is placed in the back of the mouth however, it could have the opposite effect, but for most people this is not a comfortable drinking position.

### **Chemicals**

There are a couple of ways that chemicals in plastic straws and other plastics can enter your body and effect your biochemistry. The first is direct ingestion from use of plastics in food consumption and preparation.

An article in the Journal Science from 2008 found that most plasticware used in items like straws includes chemicals like polypropylene. The authors showed that these chemicals can leach into liquids and, “may release compounds that could affect estrogen levels.” This was especially true when these plastic items were subjected to heat, acidic beverages and UV light (think coffee stirrers, sodas, and drinking on a patio on a beautiful sunny day).

Another way to ingest these plastics or chemicals is after they have been ingested by animals lower on the food chain. For example, the seafood you eat, could have microplastics and residual chemicals from eating plastics, that now becomes a part of you.

In a 2009 article from The Royal Society Publishing Journal, Philosophical Transactions B, the authors highlighted science’s ability to detect plastics in human waste. Specifically, phthalates and bisphenol A (BPA), products that have since been banned or reduced in bottles and drinking cups.

In a small 2018 study, Philipp Schwabl, a physician-scientist in Austria, conducted a small study that found microplastics in 100% of the stool samples of his human subjects from Europe and Japan. The study still needs to be peer reviewed, replicated and the sample size increased. However, it does show the logical next progression in where we expect to find the plastic we produce.

### **Wrinkles**

While not medically concerning, straw use can lead to earlier wrinkles. These would be similar to the “pucker lines” smokers may obtain from years of using cigarettes.

### ***Straws as a Health Aid***

For some, straws are a health benefit. Some disabilities require a straw to help in consumption of beverages. In hospitals, straws help patients sip water from a reclining position. Straws also help young children enjoy drinks without too much effort.

These straws do not have to be made of plastic. However, some paper straws aren't firm enough for some disabled individuals. In addition, some straws that are made from very rigid materials increase the chance of injury and should not be used by small children. Alternatives to plastic straws are provided in the next section.

## Plastic Straw Alternatives

There are currently several alternatives to plastic straws on the market and more are being developed, marketed and sold all the time. This section will cover some alternatives and cost differences.

*Table 2. Comparison of Positive Attributes of Drinking Straw Materials*

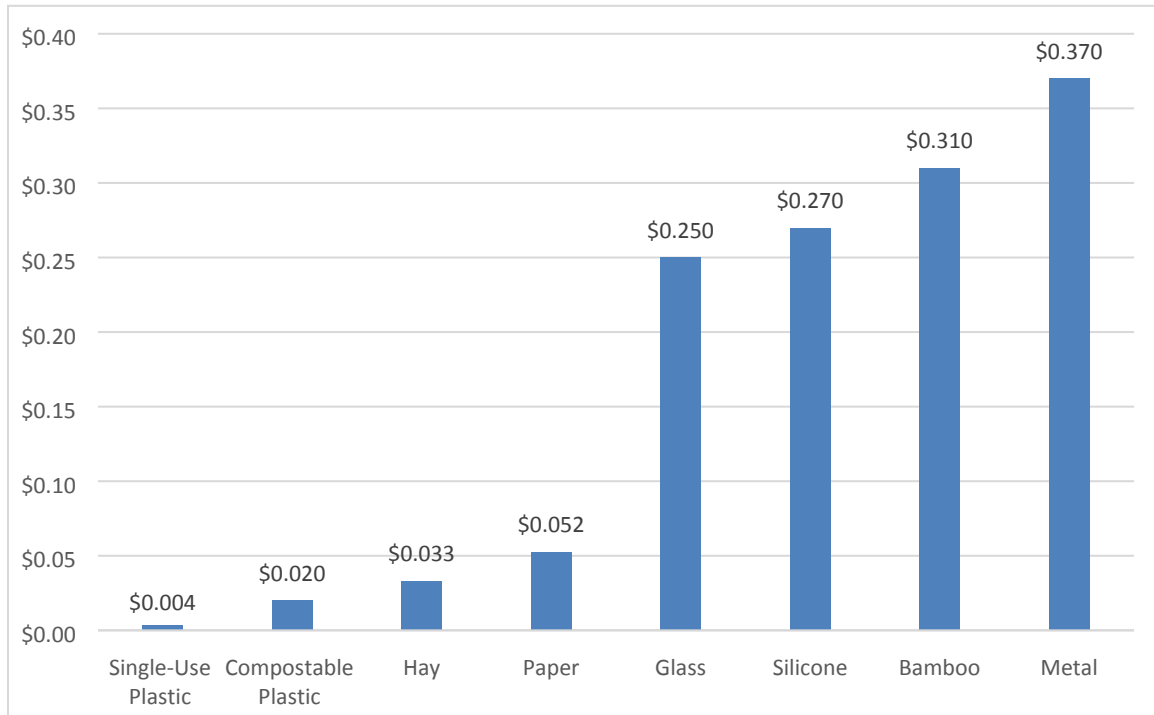
|                                  | Single-Use Plastic | Compostable Plastic (PLA) | Hay | Paper | Glass | Silicone | Bamboo | Metal |
|----------------------------------|--------------------|---------------------------|-----|-------|-------|----------|--------|-------|
| <b>Reusable</b>                  |                    |                           |     |       | ✓     | ✓        | ✓      | ✓     |
| <b>All-Natural Product</b>       |                    |                           | ✓   |       |       |          | ✓      |       |
| <b>Washable</b>                  |                    |                           | ✓   |       | ✓     | ✓        | ✓      | ✓     |
| <b>Holds up well in liquid</b>   | ✓                  | ✓                         | ✓   | ✓     | ✓     | ✓        | ✓      | ✓     |
| <b>Neutral Taste</b>             | ✓                  | ✓                         | ✓   | ✓     | ✓     | ✓        |        | ✓     |
| <b>Compostable/Biodegradable</b> |                    | ✓                         | ✓   | ✓     |       |          | ✓      |       |

Table 2 compares several straw material types to single-use plastic. It is important to note, in our research, we used Aardvark straws for the paper straw comparison. Aardvark straws have been shown to hold up better in liquids than other paper straws. While paper straws do not possess the most positive attributes in our study, they will break down much more quickly than plastic straws and are less dangerous to sea life.

Hay and bamboo straws are the most beneficial of the group, being both biodegradable, all-natural and sturdy in a variety of drinks. While hay is generally for single use, bamboo, silicone, glass and metal can be reused, reducing landfill waste.

Although some of these alternatives seem promising, they are not all realistic options for restaurants. The bottom line is that restaurants are businesses and they must watch their bottom line. Figure 7 compares wholesale pricing for the alternatives listed in Table 2.

Figure 7. Comparison of Wholesale Pricing for Drinking Straw Alternatives



Sources: Plastic (Webrestaurantstore.com); Hay (Hay Straws); Paper (Aardvark); Glass and Silicone (DHgate.com); Metal (Bulkstainlesssteelstraws.com); Bamboo (Bali-Boo)

Figure 7 makes it clear why restaurants carry single-use plastic straws overwhelmingly over any readily available alternative. Plastic straws are more than five times cheaper than the next cheapest alternative, compostable plastic or polylactic acid (PLA) straws.

### **Compostable Plastic (PLA) Straws**

Polylactic acid straws are made from renewable plant material like corn starch, tapioca roots or sugarcane instead of petroleum. This allows them to be compostable, but not bio-degradable.

For these products to break down, they must be processed at a commercial composting facility because regular back-yard composting does not possess the required humidity or high temperature to break down these materials. Therefore, if left in the ocean or in a landfill, these items will last as long as plastic straws made from polypropylene.

This development is promising, however, in Florida, compostable straws suffer the same fate as regular plastic straws. Many do not end up in the recycling or landfill stream as described with regular straws.

Also, there is little market for composted food waste in Florida. As of 2017, Florida had the third highest number of commercial composting facilities in the U.S., (according to the Florida Department of Environmental Protection [FDEP]). However, as of this writing there is not one permitted commercial composting facility for post-consumer vegetative waste in the state of Florida.

### ***Florida's Recycling Target***

It is interesting to note that the State of Florida has set a goal for all local governments to divert 75% of their solid waste through recycling, composting or other methods by 2020. However, there is no “teeth” in the legislation and therefore governments are spending more time worrying about other pressing issues. In the most recent *Final Disposition of Municipal Solid Waste Report (2017)* by the FDEP, Volusia County was shown to have diverted only 40% of its solid waste.

The Environmental Protection Agency (EPA) estimated in 2015 that 15.1% of all municipal solid waste came from food waste. If the County and its cities implemented a food composting program, we could increase our diverted solid waste to about 55% and be able to compost single-use compostable plastic.

### ***Alternatives in Local Restaurants***

Some restaurants in the region have already switched to alternatives such as paper, PLA, Tiwzzlers and even pasta straws. We mentioned a few earlier in this report. In conjunction with alternatives, some restaurants are also only providing them upon request.

After interviewing several local establishments in Port Orange, we did not find any restaurants using plastic alternatives. Some of the restaurants indicated they had already instructed their staff to only hand out straws upon request, but we could not find evidence this was the actual practice.

Some restaurants indicated that they had heard negative things about alternative straw materials and therefore had not tried any and were not willing to do so at this time. In fact, while most owners and managers seemed to be sympathetic to the cause, they indicated the only way to significantly change their behavior would be to pass legislation forcing them to change.

Of the restaurants in the area that have changed their behavior and are providing plastic alternatives, each of them has indicated a positive

response from their clientele. These restaurants indicate they are paying more for alternative straws like paper, and that paper does not last as long in drinks, but that this can be overcome. Firstly, the proprietors indicate that Americans don't spend a lot of time at their table and that the paper products aren't as bad as is rumored. Secondly, while paper (or other alternatives can be 250% to 500% more expensive than plastic, that only comes out to between 2.5 cents and 5 cents per customer. The restaurants indicate this is not hurting their bottom line significantly and even if they increased the price of every meal by 2.5 to 5 cents, it would not reduce the number of overall customers.

While the information in the paragraphs above represents the thoughts from some Port Orange establishments, it is not comprehensive as we did not hear back from a majority of establishments and we also did not contact all local restaurants in Port Orange.

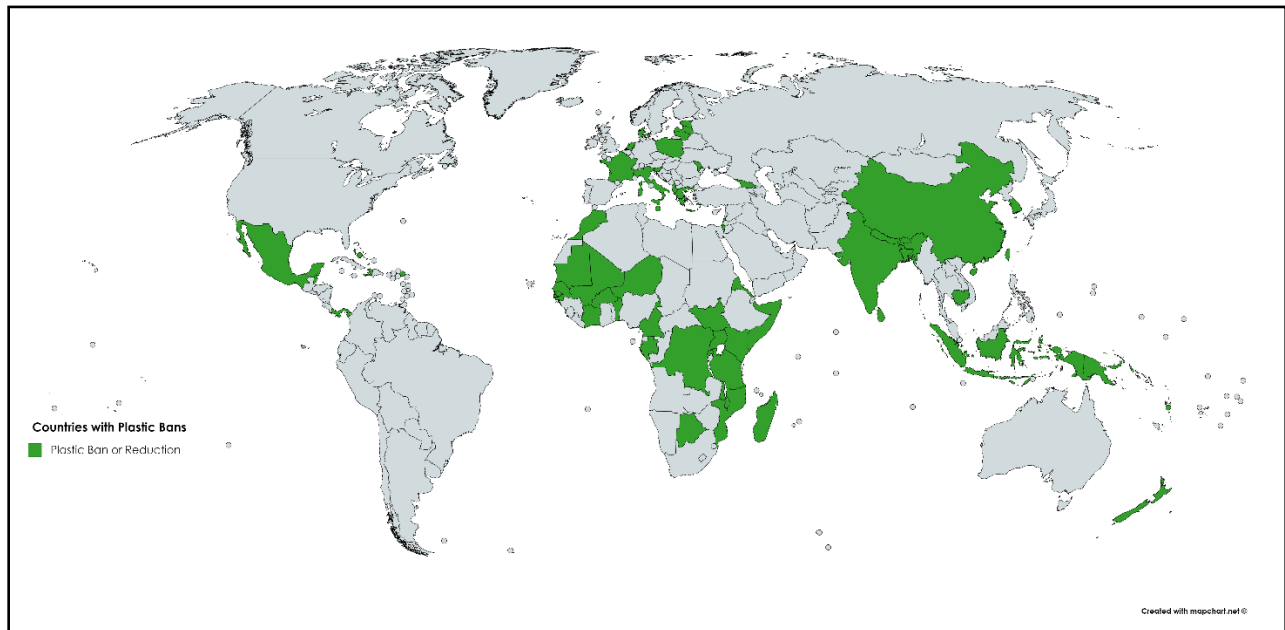


## Government Action on Single-Use Plastics

### Global Legislation

In a 2018 report by the United Nations (U.N.), titled, *The State of Plastics: World Environment Day Outlook 2018*, that agency reported that more than 60 countries around the world had already passed legislation at the national level to eliminate or reduce the production and consumption of single-use plastics. That equates to about 31% of the world's nations. Figure 8 shows countries that have national-level regulations as of 2018.

Figure 8. Countries with National-Level Plastics and/or Styrofoam Regulations



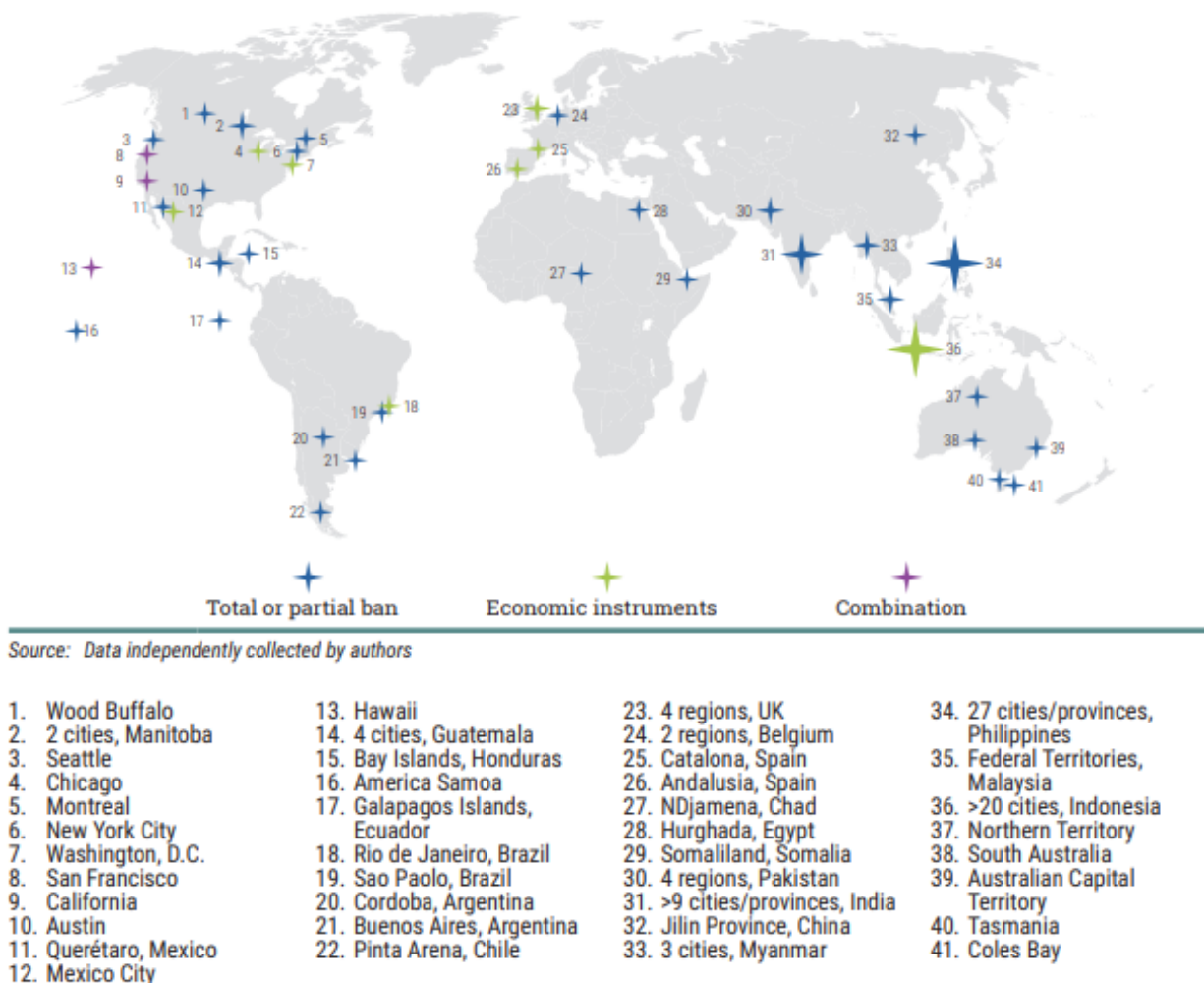
Asian, African and European nations are leading the charge across the globe in single-use plastics reduction. Israel saw an 80% drop in plastic bag consumption after a 2017 law implemented a bag fee of approximately 3 cents per bag at supermarkets. This action has reduced plastic waste by 7,091 tons per year. More recently CNN reported that, “the European Parliament approved a law banning a wide-range of single-use plastic items, such as straws, cotton buds and cutlery, by 2021.”

A 2017 New York Times article indicates, “Rwanda is probably Africa’s cleanest nation and among the most pristine in the world.” The article indicates this is due in part to a ban on single-use plastics that can include hefty fines, forced published or broadcast apologies from transgressors

and even jail time. It is also due to strict enforcement and mandatory monthly neighborhood cleaning efforts (including the president). Some other countries in Africa like, “Congo bans plastic bags, in theory, but there is little to suggest the ban is enforced.”

In addition to the country-wide regulations across the globe, there are many local and provincial governments that have taken matters into their own hands. Figure 9 illustrates local governments around the world that have worked to reduce single-use plastics.

Figure 9. Sub-national level plastic bag bans and Styrofoam regulations



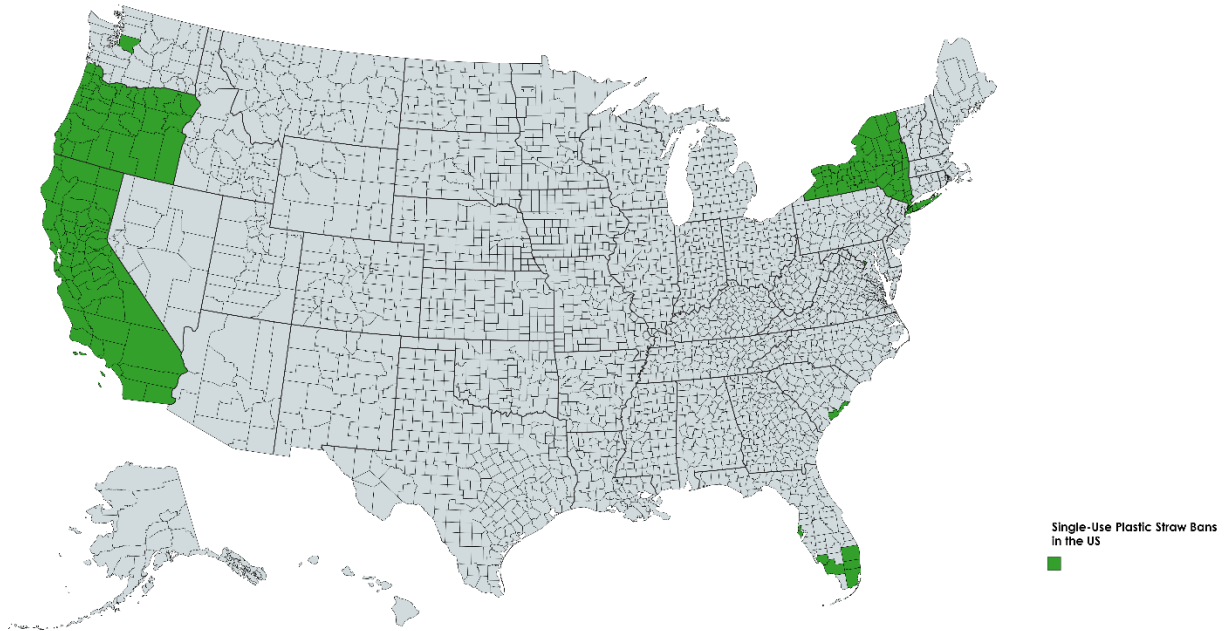
Source: UN Environment: Single-Use Plastics: A Roadmap for Sustainability (2018).

## United States Legislation

Closer to home, many local governments including cities, counties and states have enacted some sort of single-use plastic and/or straw reduction

legislation. Figure 10 is a map of locations throughout the United States that highlights areas of the country that have enacted or are considering enacting some sort of plastic-straw reduction laws.

*Figure 10. Map of U.S. Governments That Passed or are Considering Limiting Plastic Straws*



We have also included the list of governments illustrated in Figure 10, in Table 3, below.

*Table 3. List of U.S. Governments That Passed or are Considering Limiting Plastic Straws*

| Government                  | Government Type | Complete Ban of Single-Use Plastic Straws | Non-Plastic Alternatives Upon Request Only | Plastic Straws Upon Request Only |
|-----------------------------|-----------------|-------------------------------------------|--------------------------------------------|----------------------------------|
| <b>Alameda, CA</b>          | City            | √                                         | √                                          |                                  |
| <b>Carmel, CA</b>           | City            |                                           |                                            | √                                |
| <b>Charleston, SC</b>       | City            | √                                         |                                            |                                  |
| <b>Davis, CA</b>            | City            |                                           |                                            | √                                |
| <b>Deerfield Beach, FL</b>  | City            | √                                         |                                            |                                  |
| <b>Delray Beach, FL</b>     | City            |                                           |                                            | √                                |
| <b>Fort Lauderdale, FL</b>  | City            | √                                         |                                            |                                  |
| <b>Fort Myers Beach, FL</b> | City            | √                                         |                                            |                                  |
| <b>Hallandale Beach, FL</b> | City            | √                                         |                                            |                                  |
| <b>Hollywood Beach, FL</b>  | City            | √                                         |                                            |                                  |

| Government          | Government Type | Complete Ban of Single-Use Plastic Straws | Non-Plastic Alternatives Upon Request Only | Plastic Straws Upon Request Only |
|---------------------|-----------------|-------------------------------------------|--------------------------------------------|----------------------------------|
| Largo, FL           | City            | √                                         |                                            |                                  |
| Los Angeles, CA     | City            |                                           |                                            | √                                |
| Los Angeles, CA     | County          |                                           |                                            | √                                |
| Malibu, CA          | City            | √                                         | √                                          |                                  |
| Manhattan Beach, CA | City            | √                                         | √                                          |                                  |
| Marco Island, FL    | City            | √                                         |                                            |                                  |
| Miami Beach, FL     | City            | √                                         |                                            |                                  |
| Monterey, CA        | City            | √                                         |                                            |                                  |
| Oakland, CA         | City            |                                           |                                            | √                                |
| Portland, OR        | City            |                                           |                                            | √                                |
| Richmond, CA        | City            | √                                         |                                            |                                  |
| San Francisco, CA   | City/County     | √                                         |                                            |                                  |
| San Luis Obispo, CA | City            |                                           |                                            | √                                |
| Sanibel Island, FL  | City            | √                                         |                                            |                                  |
| Santa Barbara, CA   | City            |                                           |                                            | √                                |
| Santa Cruz, CA      | City            | √                                         | √                                          |                                  |
| Santa Monica, CA    | City            | √                                         | √                                          |                                  |
| Seattle, WA         | City            | √                                         |                                            |                                  |
| St. Petersburg, FL  | City            | √                                         |                                            |                                  |
| State of California | State           |                                           |                                            | √                                |
| State of New York   | State           |                                           |                                            | √                                |
| State of Oregon     | State           |                                           |                                            | √                                |
| Surfside, FL        | City            | √                                         |                                            |                                  |
| Washington, D.C.    | District        | √                                         |                                            |                                  |

The lists of bans included in this report are as of 2018 and are by no means exhaustive. Governments around the world (including in the United States) change their laws constantly, which makes any list provided hard to keep accurate. However, the trend around the world is moving in the direction of reducing the impact of single-use plastics, including plastic straws.

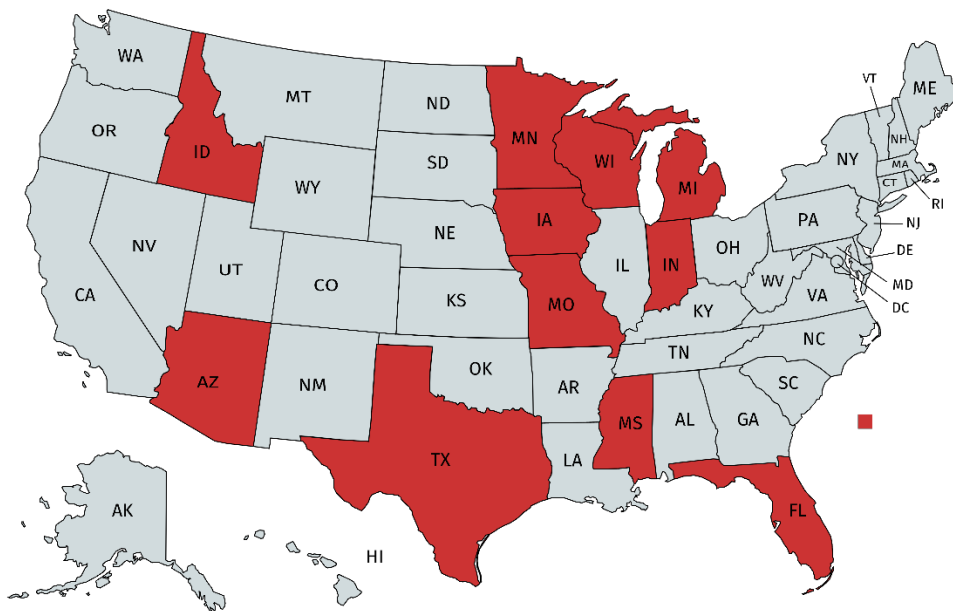
Seattle, Washington was the first City in the United States to ban single-use plastics in 2018. This was part of an effort that began in the city in 2008. In Florida, St. Petersburg was the first city to act. It is using a long-term approach. Currently, the city bans foam containers on city property

and at city events. Through 2019, customers will only receive plastic straws upon request. In 2020, plastic straws will be banned. Finally, the city is looking forward at implementing a bag fee ordinance at grocery stores.

## ***Ban on Bans***

On the other end of the spectrum, 11 states are either considering legislation or have passed legislation preempting local governments from considering single-use plastic bans. Figure 11 highlights these states

*Figure 11. States That Have Preempted or Are Considering Preempting Local Single-Use Plastic Bans*



Created with mapchart.net ©

*Source: National Conference of State Legislatures*

States that are considering or have passed a “Ban-on-Bans” include: Arizona, Idaho, Texas, Minnesota, Iowa, Missouri, Mississippi, Wisconsin, Michigan, Indiana and Florida. It’s interesting to note that some of the largest plastics manufacturers and petroleum (from which plastics are made) companies are in the Upper Mid-West and Texas, where most bans-on-bans have been implemented.

## ***Florida Legislation***

While the Florida Legislature has not yet enacted a ban-on-bans, there are currently several bills in the legislature related to single-use plastics. While one bill imposes a ban on some plastics, there are three bills that impose a ban on bans.

Senate Bill 502 is a prohibition of plastic carryout bags and straws, which would prohibit a store or food service business from providing a carryout bag made of plastic film to a customer and prohibit a food service business from selling or providing a single-use plastic straw to a customer. This bill is still under consideration as of March 5, 2019.

Senate Bill 588 prohibits local governments from adopting or enforcing local regulations related to single-use plastic straw before 2024, requires a study of plastic straws and creates a fine of \$25,000 for any local government that imposes any legislation regarding single-use plastic straws before 2024. This bill is still under consideration as of April 9, 2019. House Bill 603 and 1299 are similar to Senate Bill 588 and are also still under consideration.

## ***Common Enforcement Methods***

We have included some common enforcement methods found throughout the world to help reduce the production and consumption of single-use plastic straws.

### **Complete Ban**

Some governments have enacted a complete ban on the sale and distribution of single-use straws in their jurisdiction. Many of those local governments are here in Florida and can be found above in Table 3. Enforcement of this method includes fines for establishments found in violation.

### **Non-Plastic Alternatives Only Upon Request**

This provision restricts the use of plastic straws and requires that all straws, regardless of composition only be provided to customers upon request. By only providing straws upon request, instead of automatically, less straws will be purchased, used, recycled or thrown away.

## Plastic Straws Upon Request Only

This method does not restrict the use of plastic straws. However, it does force establishments to only provide straws upon request. This is a cheaper alternative for restaurants as they do not have to purchase higher-priced hay or paper straws. However, if people are not educated or encouraged to decline plastic straws, this tactic may not prove very effective.

## Lead by Example

Some governments like Ft. Lauderdale and St. Petersburg are considering or have passed measures that ban some single-use plastics and Styrofoam on city property and at special events. In fact, New Smyrna Beach is considering a similar ordinance in June of this year.

## Self-Governance

Some global corporations are taking matters into their own hands and changing their plastic-use before being required to do so by the government.

- **“Ikea** is to phase out all single-use plastic products from its stores and restaurants by 2020 amid growing concern about the effects of plastic on the environment.” – The Guardian
- **“Starbucks** will stop using disposable plastic straws by 2020, eliminating more than one billion straws a year.” – The New York Times
- **“Disney** announced it would eliminate single-use plastic straws and stirrers at all their locations by mid-2019.” -Money
- **“Hyatt** announced that plastic straws and drink picks will only be available by request after September 1 of this year (2018).” – Money
- **“American Airlines** announced Tuesday it would eliminate plastic straws from its lounges and replace them with biodegradable, eco-friendly straws and wood stir sticks starting in July. In a statement, the airline said it will also transition to eco-friendly flatware within lounges and that starting in November, it will transition from a plastic straw and stir stick that is usually offered during onboard beverage to a stir stick made of sustainable and environmentally friendly bamboo.” – Money
- **“In June (2018), SeaWorld** announced that plastic straws and shopping bags would be eliminated from its 12 theme parks, including Busch Gardens, as “part of its mission to protect animals and habitats worldwide.” – Money

- **Royal Caribbean**, “said in June that it would stop providing plastic straws on its 50 cruise ships by the end of 2018.” – Money
- **Red Lobster’s** Director of Communications Nicole Bott (in a call with our researchers) indicated that they are only providing straws for non-alcoholic drinks upon request but are working to phase out plastic straws entirely by 2020. They currently use 150 million straws per year.

The reason most companies are looking to incorporate alternatives by 2020 is due to supply. Companies that produce plastic alternatives are still working to ramp up production to meet demand. Most smaller establishments can already obtain what they need, but larger corporations are testing out alternatives and should be able to obtain the appropriate supply by 2020.



## Conclusion

As the report indicates, single-use plastics are harming our environment and if nothing is done to reduce the production, use and waste of these materials, we could be looking at a mass decline or extinction event in many of the world's animals in the future. Unfortunately, if history has taught us anything it is that sometimes humans do not respond until there is a crisis.

The reduction of the ozone layer was one such event. Once the data was available, the world's nations took swift action to ban chlorofluorocarbons. Once outlawed, nature took back over and began repairing the most important layer of protection we have from the sun's harmful rays.

Based on the years of research available to us, the world is beginning to react to this dangerous threat. If we (in the US) begin to take this threat more seriously, we can help to divert catastrophic damage to our environment that has already begun to effect humans. Change in our country has been shown to start at the local level (i.e., civil rights, sea level rise, renewable energy, single-use plastic reduction, etc.). While others around us have seen the warning signs and have begun to change their behavior (i.e., other countries, local restaurants, global corporations, New Smyrna Beach, St. Petersburg, Fort Lauderdale, Miami Beach, etc.) will we as a community lead by example or be one of the last to move toward behaviors that will sustain us in the future. These choices will impact the way younger generations see Port Orange and help them chose whether they want to be a part of this community or another one that better reflects their values.

## Attachment A – List of Recommendations

TBD

## Resolution 19-xx

### Landscape Materials

(1) *Shade trees.* Shade tree species shall be a minimum of two and one-half-inch caliper and ten feet in height at the time of planting. For purposes of this paragraph, the caliper shall be measured at six inches above the ground for trees up to four inches in diameter at planting and 12 inches above the ground for trees over four inches in diameter at planting. Palms may be used for up to 25 percent of required shade trees when planted in the quantities specified in the chart below. Understory trees may be substituted for up to 25 percent of required shade trees when planted in groups of two or more per required tree. All shade trees shall be staked and guyed at the time of planting in accordance with the details of this section LDC, Ch. 13, Sec. 6 (c). Below is a list of approved native shade trees and palm tree equivalents.

| Common Name     |                                                                                                          | Botanical Name                  |
|-----------------|----------------------------------------------------------------------------------------------------------|---------------------------------|
| (X)             | Ash, Green (D)                                                                                           | Fraxinus pennsylvanica          |
|                 | Ash, Water (D)                                                                                           | Fraxinus caroliniana            |
| (XX) (N)        | Red Bay (E)                                                                                              | Persea borbonia                 |
| (N)             | Bay, Loblolly (E)                                                                                        | Gordonia lasianthus             |
| <del>(XX)</del> | <del>Camphor Tree (E)</del>                                                                              | <del>Cinnamomum camphora</del>  |
| (XX) (N)        | Cedar, Red (E)                                                                                           | Juniperus silicicola            |
| (XX) (N)        | Cypress, Bald (D)                                                                                        | Taxodium distichum              |
|                 | Cypress, Leyland (E)                                                                                     | Cyressocyparis leylandii        |
| (XX) (N)        | Cypress, Pond (D)                                                                                        | Taxodium ascendens              |
| (X)             | Elm, American (D)                                                                                        | Ulmus americana                 |
| (XX)            | Elm, Chinese (D)                                                                                         | Ulmus parvifolia                |
| <del>(XX)</del> | <del>Golden Rain Tree (D)</del>                                                                          | <del>Koelreuteria elegans</del> |
| (XX)            | Hickory, Pignut (D)                                                                                      | Carya glabra                    |
|                 | Hickory, Water (D)                                                                                       | Carya aquatica                  |
| (XX)            | Loquat, Japanese Plum (E)                                                                                | Eriobotrya japonica             |
| (XX) (N)        | Magnolia, Southern (E)<br>Blanchard, Bracken Brown Beauty,<br>Little Gem, Miss Chloe and other cultivars | Magnolia grandiflora            |
| (N)             | Maple, Red (D)                                                                                           | Acer rubrum                     |
|                 | Maple, Silver (D)                                                                                        | Acer saccharinum                |
| (XX) (N)        | Oak, Laurel (E)                                                                                          | Quercus laurifolia              |
| (XX) (N)        | Oak, Live (E)                                                                                            | Quercus virginiana              |
| (XX)            | Oak, Pin (E)                                                                                             | Quercus palustris               |
|                 | Oak, Nuttall                                                                                             |                                 |
| (XX)            | Oak, Shumard Red (D)                                                                                     | Quercus shumardii               |
| (XX)            | Oak, Turkey (D)                                                                                          | Quercus laevis                  |
| (XX)            | Oak, Water (E)                                                                                           | Quercus nigra                   |
| (XX)            | Oak, Willow (E)                                                                                          | Quercus phellos                 |
|                 | Palm, Bismark (1)                                                                                        |                                 |
| (XX) (N)        | Palm, Cabbage (2)                                                                                        | Sabal palmetto                  |

|          |                              |                               |
|----------|------------------------------|-------------------------------|
| (XX)     | Palm, Canary Island Date (1) | Phoenix canariensis           |
| (XX)     | Palm, Chinese Fan (1)        | Livistona chinensis           |
|          | Palm, Cliff Date (1)         | Phoenix rupicola              |
| (XX)     | Palm, European Fan (1)       | Chamerops humilis             |
| (XX)     | Palm, Medjool Date (1)       | Phoenix dactylifera "Medjool" |
| (X) (N)  | Palm, Paurotis (2)           | Acoelorrhaphe wrightii        |
| (XX)     | Palm, Pindo (1)              | Butia capitata                |
| (XX)     | Palm, Queen (2)              | Syagrus romanzoffiana         |
|          | Palm, Ribbon (1)             | Livistona decipiens           |
| (X)      | Palm, Royal (2)              | Roystonea regia               |
|          | Palm, Senegal Date           | Phoenix reclinata             |
| (XX)     | Palm, Washington (2)         | Washingtonia robusta          |
| (XX)     | Palm, Wild Date (1)          | Phoenix sylvestris            |
| (XX)     | Palm, Windmill (2)           | Trachycarpus fortunei         |
| (XX)     | Pine, Loblolly (E)           | Pinus taeda                   |
| (XX) (N) | Pine, Long-leaf (E)          | Pinus palustris               |
| (XX) (N) | Pine, Slash (E)              | Pinus elliottii               |
| (XX) (N) | Pine, Sand (E)               | Pinus clausa                  |
|          | Riverbirch, Duraheat         | Betula nigra 'BNMTF'          |
| (XX)     | Sugarberry (D)               | Celtis laevigata              |
| (N)      | Sweetbay (D)                 | Magnolia virginiana           |
| (XX)     | Sweetgum (D)                 | Liquidambar styraciflua       |
| (N)      | Sycamore (D)                 | Platanus occidentalis         |
|          | Willow, Weeping (D)          | Salix babylonica              |

KEY:

(X) Xeriscape moderate drought tolerance

(XX) Xeriscape high drought tolerance

(N) Native

(D) Deciduous

(E) Evergreen

(2) Number of palm trees equivalent to one shade tree

(2) *Understory trees.* Understory tree species shall be a minimum of one and one-half-inch caliper and eight feet in height at the time of planting. For purposes of this paragraph, the caliper shall be measured at six inches above the ground for trees up to four inches in diameter at planting and 12 inches above the ground for trees over four inches in diameter at planting. Multi-trunk species shall be full and upright. All understory trees shall be staked and guyed at the time of planting in accordance with this section LDC, Ch. 13, Sec. 6 (c). Below is a list of approved understory trees.

| Common Name |                                | Botanical Name                  |
|-------------|--------------------------------|---------------------------------|
| (X)         | Blueberry, Japanese            | Elaeocarpus decipiens           |
| (XX)        | Cedar, Red (E)                 | Juniperus virginiana silicicola |
| (X)         | Cherry Laurel (E)              | Prunus caroliniana              |
| (XX)        | Crape Myrtle (D)               | Lagerstroemia indica            |
| (XX)        | Cypress, Italian (E)           | Cupressus sempervirens          |
| (XX)        | Dogwood, Flowering (D)         | Cornus florida                  |
| (XX)        | Elm, Winged (D)                | Ulmus alata                     |
| (XX)        | Holly, American (E)            | Ilex opaca                      |
| (X) (N)     | Holly Dahoon (E)               | Ilex cassine                    |
| (X)         | Holly, Eagleston (E)           | Ilex x attenuata 'Eagleston'    |
| (XX)        | Holly, East Palatka (E)        | Ilex attenuata                  |
|             | Holly, Nellie R. Stevens (E)   |                                 |
|             | Holly, Oakleaf (E)             |                                 |
| (XX) (N)    | Holly, Yaupon (E)              | Ilex vomitoria                  |
| (XX)        | Jerusalem Thorn (D)            | Parkinsonia aculeata            |
|             | Juniper, Hollywood (E)         |                                 |
|             | Juniper, Spartan (E)           |                                 |
| (XX)        | Oak, Myrtle (E)                | Quercus myrtifolia              |
| (XX)        | Oak, Sand Live (E)             | Quercus geminata                |
| (XX)        | Oleander (E)                   | Nerium oleander                 |
| (XX)        | Olive, European (E)            | Olea europaea                   |
| (XX)        | Palm, Chinese Fan              | Livistona chinensis             |
|             | Palm, Copernicia Alba Caranday |                                 |
|             | Palm, Mule                     |                                 |
| (XX)        | Palm, Pindo                    | Butia capitata                  |
| (XX)        | Palm, Pygmy Date               | Phoenix roebelinii              |
| (XX)        | Palm, Windmill                 | Trachycarpus fortunei           |
| (X)         | Podocarpus, Nagi (E)           | Podocarpus nagi                 |
| (X)         | Podocarpus, Yew (E)            | Podocarpus macrophyllus         |
|             | Privet, Glossy (E)             | Ligustrum lucidum               |
| (X)         | Privet, Japanese (E)           | Ligustrum japonicum             |
| (XX)        | Redbud (D)                     | Cercis canadensis               |
| (XX) (N)    | Stopper, Simpson's (E)         | Myrcianthes fragrans            |
| (XX) (N)    | Wax Myrtle (E)                 | Myrica cerifera                 |
| (N)         | Willow, Coastal-Plain (E)      | Salix caroliniana               |

KEY:

(X) Xeriscape moderate drought tolerance

(XX) Xeriscape high drought tolerance

(N) Native

(D) Deciduous

(E) Evergreen

(3) *Shrubs*. Shrubs shall be a minimum of three-gallon container 18 to 24 inches in height immediately after planting. Shrubs shall be planted no more than 30 inches apart on centers, and in groups of no less than three each. Alternate spacing and grouping, when appropriate to ensure proper growth and screening, may be approved through the administrative variance procedure specified in ~~section 9 of this chapter~~ LDC, Ch. 13, Sec. 9. Below is a list of approved shrubs. Variegated and other similar variations of species shall also be permitted provided identical dimensional and functional results are achieved.

| Common Name |                                | Botanical Name            |
|-------------|--------------------------------|---------------------------|
|             | Abelia, Pink                   | Abelia 'Edward Goucher'   |
| (N)         | Anise, Florida (E)             | Illicium floridanum       |
| (X)         | Arborvitae, Oriental (E)       | Platycladus orientalis    |
|             | Azalea (E)                     | Rhododendron hybrids      |
| (X)         | Boxwood, Japanese (E)          | Buxus microphylla         |
| (XX) (N)    | Coontie                        |                           |
| (X)         | Crape Myrtle (D)               | Lagerstroemia indica      |
| (X)         | Cypress, Leylandii (E)         | Cypressocyparis leylandii |
|             | Fakahatchee Grass (E)          |                           |
| (X)         | Feijoa (E)                     | Feijoa sellowiana         |
| (X)         | Holly, Ambigua (D)             | Ilex ambigua              |
| (X)         | Holly, American (E)            | Ilex opaca                |
| (X)         | Holly, Burford (E)             | Ilex cornuta              |
| (XX)        | Holly, Yaupon (E)              | Ilex vomitoria            |
| (XX)        | Juniper (E)                    | Juniperus spp.            |
|             | Ligustrum, Japanese Privet (E) | Ligustrum japonicum       |
|             | Lorapetalum                    | Lorapetalum chinense      |
| (N)         | Mangrove, Black                | Avicennia germinans       |
| (N)         | Mangrove, Red                  | Languncularia racemosa    |
| (N)         | Mangrove, White                | Rhizophora mangle         |
| (XX)        | Olive, European (E)            | Olea europaea             |
| (XX)        | Palmetto, Saw                  | Serenoa repens            |
| (XX)        | Palmetto, Scrub                | Sabal etonia              |
| (X)         | Photinia, Red-leaf (E)         | Photinia glabra           |
| (X)         | Photinia, Red-tip Fraserii (E) | Photinia fraserii         |
| (X)         | Pittosporum, Japanese (E)      | Pittosporum tobira        |
| (X)         | Podocarpus, Nagi (E)           | Podocarpus nagi           |
| (XX)        | Podocarpus, Yew (E)            | Podocarpus macrophyllus   |
| (X)         | Privet, Chinese (E)            | Ligustrum sinense         |
| (X)         | Privet, Florida (D)            | Forestiera segregata      |
| (XX)        | Privet, Japanese (E)           | Ligustrum japonicum       |
| (XX)        | Sage, Texas (E)                | Leucophyllum frutescens   |
| (XX)        | Silverthorn (E)                | Elaeagnus pungens         |

|         |                         |                        |
|---------|-------------------------|------------------------|
|         | Viburnum, Sandankwa (E) | Viburnum suspensum     |
| (X)     | Viburnum, Sweet (E)     | Viburnum odoratissimum |
| (X) (N) | Viburnum, Walter's (E)  | Viburnum obovatum      |
| (XX)    | Wax Myrtle (E)          | Myrica cerifera        |

KEY:

(X) Xeriscape moderate drought tolerance

(XX) Xeriscape high drought tolerance

(N) Native

(D) Deciduous

(E) Evergreen

(4) *Ornamentals*. Ornamental plantings as defined below, shall be minimum one-gallon container grown species, unless otherwise noted below, and spaced on centers necessary to provide 100 percent aerial coverage within a maximum of two years, applicable to each plant type. Where this code permits shrub equivalency, the quantity listed in the chart below shall be required to equal one shrub. The following is a list of approved ornamentals. Variegated varieties and other similar variations shall also be permitted provided identical dimensional and functional results are maintained.

|      | Common Name                         | Botanical Name              |
|------|-------------------------------------|-----------------------------|
| (XX) | Asparagus Fern (3)*                 | Asparagus densiflorus       |
| (X)  | Cast Iron Plant (2)                 | Aspidistra elatior          |
| (XX) | Coontie (1)**                       | Zamia floridana             |
| (X)  | Crinum Lily (1)**                   | Crinum asiaticum            |
| (XX) | Crown of Thorns (3)**               | Euphorbia milli             |
| (XX) | Day Lily (3)                        | Hemerocallis spp.           |
|      | Dwarf Fakahatchee Grass (2)         |                             |
|      | Dwarf Schilling Holly (2)           |                             |
|      | Flax Lily (1)                       |                             |
| (X)  | Garlic, Society (3)                 | Tulbaghia violacea          |
| (XX) | Hawthorn, Indian (1)**              | Rapheolepis indica          |
|      | Iris, African                       |                             |
| (X)  | Jasmine, Confederate (4)**          | Trachelospermum jasminoides |
| (X)  | Jasmine, Small-leaf Confederate (4) | Trachelospermum asiaticum   |
| (XX) | Juniper (2)**                       | Juniperus spp.              |
| (XX) | Lily Turf, Creeping (4)             | Liriope spicata             |
| (XX) | Liriope (3)                         | Liriope muscari             |
| (X)  | Mondo Grass (4)                     | Ophiopogon japonicus        |
| (XX) | Morning Glories (4)                 | Ipomoea spp.                |
|      | Muhly Grass (2)                     |                             |

|      |                          |                               |
|------|--------------------------|-------------------------------|
| (XX) | Palm, Sago (1)**         | Cycas spp.                    |
| (X)  | Pampas Grass (1)**       | Cortaderia selloana           |
| (X)  | Pittosporum, Dwarf (1)** | Pittosporum tobira "Wheeleri" |
|      | Sand Cordgrass (2)       |                               |
| (XX) | Sunflower, Beach (2)     | Helianthus debilis            |

KEY:

(X) Xeriscape moderate drought tolerance

(XX) Xeriscape high drought tolerance

\* Number in parentheses denotes shrub equivalency

\*\* Minimum three-gallon container growth specification

(5) *Lawn grass.* All grassed areas, except large open turf areas such as retention area bottoms and play fields, shall be sodded with any species of grass common to Central Florida. The use of St. Augustine sod is recommended for areas subject to regular manicuring and heavy pedestrian traffic. Generally, this type of grass should be used in areas which are viewed at a close distance. Bahia sod is recommended for retention areas, slopes, repair of rights-of-way, overflow grassed parking, play fields and other large turf areas which are not generally manicured. Below is a list of approved lawn grasses.

|     | Common Name   | Botanical Name          |
|-----|---------------|-------------------------|
| (X) | Bahia         | Paspalum notatum        |
| (X) | Bermuda       | Cynodon dactylon        |
|     | Centipede     | Eremochloa ophiuroides  |
|     | St. Augustine | Stenotaphrum secundatum |
| (X) | Zoysia        | Zoysia spp.             |

The city may approve other lawn grasses in addition to those listed above, providing that documentation defining the characteristics of the proposed grass, including appearance, growing requirements, and growth rate, substantiate its suitability for its intended purpose.

(6) *Alternative landscaping materials.* The city may approve alternative landscape materials to satisfy xeriscape requirements when such materials are determined to be drought resistant. Determination shall be based on certified documentation provided by a registered landscape architect or printed in a recognized professional or informational publication.

(7) *Prohibited vegetative species:* The following species shall not be included in any landscaping design due to their aggressive, invasive nature:

| Common Name     | Botanical Name          |
|-----------------|-------------------------|
| Australian Pine | Casuarina equisetifolia |



|                  |                          |
|------------------|--------------------------|
| Australian Pine  | Casuarina leucophloia    |
| Brazilian Pepper | Schinus terebinthifolius |
| Camphor Tree     | Cinnamomum camphora      |
| Pink Tree        | Maleuca leucadendron     |

In addition, no plant species prohibited by the Florida Department of Environmental Protection (DEP) or listed as Category I, List of Invasive Plant Species by the Florida Exotic Pest Plant Council (Internet: [www.fleppc.org](http://www.fleppc.org)) shall be included in any landscape design.

## **Chapter 2, Article III, DIVISION 4. - ENVIRONMENTAL ADVISORY BOARD**

### **Sec. 2-116. - Establishment.**

There is hereby created and established an environmental advisory board of the city.

(Code 1981, § 2-82; Ord. No. 1992-18, § 2, 7-7-92)

### **Sec. 2-117. - Purpose, duties and functions.**

- (a) The environmental advisory board shall serve in an advisory capacity to the city council on environmental matters. The environmental advisory board shall represent the community's interest and serve as an information resource in matters relating to the planting and preservation of trees and the full and proper protection of the environment in the city.
- (b) The environmental advisory board shall make recommendations to the city council as to tree planting, tree preservation and environmental policies and procedures in the city. In this regard the environmental advisory board shall exercise specific responsibilities as enumerated herein and, in addition, the city council may refer other environmental related matters to the environmental advisory board for study and recommendation. To accomplish these goals, the specific responsibilities of the environmental advisory board shall include, but not be limited to, the following:
  - (1) Assist in determining the tree needs of the community.
  - (2) Provide opportunity for combined public opinion and professional skill in the determination of community tree needs.
  - (3) Consider suggestions and criticisms and make recommendations to the city council.
  - (4) Assist the city forester in developing and updating a comprehensive urban forestry plan, including a community tree inventory.
  - (5) Assist in encouraging citizens, businesses and organizations to undertake individual tree planting projects.
  - (6) Maintain a reference library of materials relevant to city trees at the city planner's office.
  - (7) Assist in formulating environmental policies to be recommended to the city council.
  - (8) Review and comment on proposed policies, regulations and ordinances related to environmental matters in the city.
  - (9) Review and comment on state and federal action and activities which impact on the city.
  - (10) Review and comment on special environmental matters referred by the city council with the authority to conduct workshops, as necessary, in the performance of its duties.
  - (11) Suggest the necessity and/or desirability of special environmental assessment studies in the city to the city council.
  - (12) Provide environmental input and evaluation into major updates of or amendments to the city comprehensive land use plan.
  - (13) Make reports to the city council as necessary relating to environmental matters.
  - (14) Serve as a conduit and liaison between the city council and concerned citizens and environmental groups.

However, nothing within this division shall prohibit the city council from acting upon any matter not previously referred to or reviewed by the environmental advisory board.

- (c) The environmental advisory board shall serve in an advisory capacity to the city council on brownfield agreements for redevelopment and rehabilitation. The purpose, duties and functions of the environmental advisory board shall include acting as the brownfield advisory committee for the City of Port Orange, addressing agreements relating to redevelopment and rehabilitation of those areas or sites determined by city council resolution to be a brownfield area or a brownfield site, by:
- (1) Receiving notification from the person responsible for the brownfield site rehabilitation (PRBSR) of that person's intent to rehabilitate and redevelop the site before actually executing the brownfield site rehabilitation agreement;
  - (2) Receiving and reviewing a copy of the draft plan for site rehabilitation from the PRBSR which should address those elements contained in F.S. § 376.80(5);
  - (3) Holding public meetings providing for public participation and receiving public comment on the proposed rehabilitation and redevelopment of the brownfield site, including future land use, local employment opportunities, community safety, and environmental justice;
  - (4) Providing comment and recommendations to the city council regarding the draft plan for site rehabilitation, with the ultimate purpose of achieving an agreement between the PRBSR and the city on redevelopment of the brownfield site pursuant to F.S. § 376.80(5)(i); and
  - (5) Receiving a copy of the final, executed brownfield site rehabilitation agreement from the PRBSR, and reviewing the findings in the site assessment report or the technical document containing the proposed course of action following site assessment.

(Code 1981, § 2-83; Ord. No. 1992-18, § 3, 7-7-1992; Ord. No. 2008-14, § 1, 5-20-2008)

Sec. 2-118. - Composition; qualifications of members.

- (a) The city council shall appoint a seven-member environmental advisory board. Each member of the board shall be a qualified elector residing in the city. Members shall not hold any elective public office. Members may serve on other advisory boards of the city.
- (b) Members of the board shall be generally sympathetic to and knowledgeable of the principles and objectives of environmental protection. They should be guided by a sincere interest in preserving and protecting the environment and quality of life in the city and in accomplishing the purposes and goals set forth in this division.

(Code 1981, § 2-84; Ord. No. 1992-18, § 4, 7-7-1992)

Sec. 2-119. - Appointments, terms.

The initial appointments to the board shall be as follows:

- (1) Two members shall be appointed for terms expiring May 7, 1993.
- (2) Two members shall be appointed for terms expiring May 7, 1994.
- (3) Three members shall be appointed for terms expiring May 7, 1995.

Thereafter all appointments shall be made for a term of three years. All terms shall expire on May 7 in the year of their given expiration. A board member may be reappointed for any number of consecutive terms.

(Code 1981, § 2-85; Ord. No. 1992-18, § 5, 7-7-1992)

Sec. 2-120. - Vacancies, removal of members.

Any member of the environmental advisory board who is no longer a qualified elector residing in the city or who fails to attend two of three successive meetings without good cause shall forfeit his appointment and the city council may determine a vacancy to exist, which shall be promptly filled by the city council. A member of the board may be removed from the board by the city council for cause upon written charges and after a public hearing before the city council. Appointments to fill any vacancy shall be for the remainder of the unexpired term of the former member.

(Code 1981, § 2-86)

Sec. 2-121. - Organization, rules of procedure.

- (a) *Officers.* The members of the environmental advisory board shall elect a chairman, and a vice-chairman to preside in the absence of the chairman. Such election shall take place at the first meeting of the board of each calendar year.
- (b) *Responsibilities of chairman.* The chairman shall be responsible for the orderly running of all meetings, shall direct the preparation of all reports and shall make all necessary reports to the city council.
- (c) *Responsibilities of secretary; minutes.* The city recording secretary shall be responsible for keeping and recording minutes. A copy of the minutes of each meeting shall be kept on file in the city clerk's office.
- (d) *Quorum; rules of order.* The presence of four or more members shall constitute a quorum of the board necessary to take action or conduct business. The board shall adopt Robert's Rules of Order, latest edition, or such other written rules and procedures as may be desirable and necessary to promote and effectuate the purposes, objectives and business of the board in an orderly, timely and productive manner.
- (e) *Compensation.* Members of the board shall serve without compensation but may be reimbursed for such travel, mileage, per diem or other expenses as may be authorized by the city council.

(Code 1981, § 2-87; Ord. No. 1992-18, § 6, 7-7-1992)

## Environmental Advisory Board 2018-2019 Attendance

| Member Name:        | 23-Jan | 26-Feb | 24-Apr | 23-Jul | 22-Oct | 28-Jan | 20-Feb | 20-Mar |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| John Macaluso       |        |        |        |        |        |        |        |        |
| Kristine Cunningham |        |        |        |        |        |        |        |        |
| Nancy Vaughn        |        | E      | E      |        |        |        |        |        |
| Philip Klema        |        |        |        |        | U      |        | E      |        |
| Joe Fazzie          |        |        |        |        | E      |        | E      | E      |
| Derek LaMontagne    |        |        |        | E      |        |        | E      | E      |
| Newton White        |        |        | E      |        |        | E      | E      | E      |