

The Florida Senate
BILL ANALYSIS AND FISCAL IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: The Professional Staff of the Committee on Environmental Preservation and Conservation

BILL: CS/SB 1104

INTRODUCER: Environmental Preservation and Conservation Committee and Senator Perry

SUBJECT: Resource Recovery and Management

DATE: March 29, 2017

REVISED: _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Mitchell	Rogers	EP	Fav/CS
2.			AEN	
3.			AP	

Please see Section IX. for Additional Information:

COMMITTEE SUBSTITUTE - Substantial Changes

I. Summary:

CS/SB 1104 adds pyrolysis facilities to those materials and facilities that are exempt from solid waste regulations if a majority of the recovered materials at a facility are demonstrated to be sold, used, or reused within 1 year. The bill specifies that the phrase “used or reused” includes, but is not limited to, the conversion by gasification or pyrolysis of post-use polymers into crude oil, fuels, feedstocks, or other raw materials or intermediate or final products.

The bill adds new statutory definitions for the following terms related to the bill’s addition of pyrolysis facilities to those materials and facilities that are eligible for exemption from solid waste regulations:

- Gasification to fuels, chemicals, and feedstocks;
- Post-use polymers;
- Pyrolysis; and
- Pyrolysis facility.

The bill also amends existing statutory definitions of terms to add references based on the exemption from solid waste regulations for converting post-use polymers by gasification or pyrolysis to fuels, chemicals, and feedstocks.

Finally, the bill provides that a recovered materials dealer may process recovered materials at a pyrolysis facility to satisfy local government registration and reporting requirements for a recovered materials business.

II. Present Situation:

Gasification

Gasification is a manufacturing process that converts material containing carbon—such as coal, petroleum coke, biomass, or waste—into synthesis gas (syngas) by creating a chemical reaction with the material at high temperatures, without combustion, with a controlled amount of oxygen and/or steam. Gasification may be used to produce electricity, chemicals, fuels, fertilizers, plastics, and other products. The U.S. Department of Energy believes gasification is a method to reduce our nation's dependence on foreign oil and provide a clean, carbon capture-ready source of energy.¹

Recently, efforts have increased to utilize gasification to convert municipal solid waste (MSW) into energy rather than traditional incineration. Incineration uses MSW as a fuel to create heat and electricity by burning the MSW with high volumes of air to form carbon dioxide and heat. Waste-to-energy plants then use these hot gases to make steam used to generate electricity. During the process, toxins escape in the exhaust steam.²

The MSW is not a fuel in the gasification process, but rather is a feedstock³ for a high temperature chemical conversion process. In the gasifier, MSW reacts with little or no oxygen, breaking down the feedstock into simple molecules and converting them into syngas. Instead of making just heat and electricity as is done with incineration, the syngas produced by gasification can be turned into commercial products such as transportation fuels, chemicals, and fertilizers. Further, the gasification process controls the release of toxins by inhibiting the formation of dioxins or furans by limiting oxygen in the chemical reaction. Lastly, the ash from gasification may be used to make cement, roofing shingles, asphalt filler, and material for sandblasting.⁴

Pyrolysis

Pyrolysis is the heating of a material, such as plastics, at high temperatures in the absence of oxygen. Sometimes this process includes the introduction of pressure or water. Without oxygen, the material does not combust, but rather the chemical compounds that make up the material thermally decompose into gases and oil. Pyrolysis oil may be used directly as fuel or further refined into diesel or jet fuel.⁵

Due to the increased demand for plastics and fuels and limited space in solid waste facilities, solid waste managers have increased efforts to employ pyrolysis on non-recycled plastics.

¹ Gasification and Syngas Technologies Council, *The Gasification Process*, <http://www.gasification-syngas.org/technology/the-gasification-process/> (last visited March 23, 2017); U.S. Department of Energy, *National Energy Technology Laboratory, What is Gasification?* <https://www.netl.doe.gov/research/coal/energy-systems/gasification/publications/photo#whatis> (last visited March 23, 2017).

² Gasification and Syngas Technologies Council, *Gasification v. Incineration*, <http://www.gasification-syngas.org/applications/gasification-vs-incineration/> (last visited March 21, 2017).

³ Feedstock is raw material supplied to a machine or processing plant. Merriam-Webster, *Feedstock*, <https://www.merriam-webster.com/dictionary/feedstock> (last visited March 23, 2017).

⁴ Gasification and Syngas Technologies Council, *Gasification v. Incineration*, <http://www.gasification-syngas.org/applications/gasification-vs-incineration/> (last visited March 23, 2017).

⁵ Whole System Foundation, *Recycling and Pyrolysis of Plastic*, http://www.whole-systems.org/recycling_and_pyrolysis_of_plastic.html (last visited March 22, 2017).

Pyrolysis may be used to decrease the need to dispose plastics in landfills and create a renewable source of energy and fuels.⁶ The fuel produced from the pyrolysis of plastics does not contain sulphur because the plastic feedstock does not contain sulphur.⁷ Because pyrolysis does not incinerate the plastic waste, the emission of harmful compounds is reduced.⁸

Solid Waste Regulation

“Solid waste” is sludge unregulated under the federal Clean Water Act or Clean Air Act, sludge from a waste treatment works, water supply treatment plant, or air pollution control facility, or garbage, rubbish, refuse, special waste, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from domestic, industrial, commercial, mining, agricultural, or governmental operations.⁹

The Department of Environmental Protection (DEP) implements and enforces the state’s solid waste management program.¹⁰ The solid waste management program includes a waste tire management program,¹¹ administration of solid waste grant programs,¹² and the classification, construction, operation, maintenance, and closure of solid waste management facilities.¹³

Section 403.7045(1), F.S., exempts certain wastes and activities from regulation under the Resource Recovery and Management Act.¹⁴ This includes exemption of recovered materials and recovered materials processing facilities from solid waste regulations if they meet certain criteria.¹⁵

“Recovered materials” are metal, paper, glass, plastic, textile, or rubber materials that have known recycling potential, can be feasibly recycled, and have been diverted and source separated or have been removed from the solid waste stream for sale, use, or reuse as raw materials, whether or not the materials require subsequent processing or separation from each other. The term does not include materials destined for any use that constitutes disposal. Recovered materials are not solid waste.¹⁶ A “recovered materials processing facility” is a facility engaged solely in the storage, processing, resale, or reuse of recovered materials.¹⁷ “Recycling” is any

⁶ Feng Gao, *Pyrolysis of Waste Plastics into Fuels*, 6, available at https://ir.canterbury.ac.nz/bitstream/handle/10092/4303/Thesis_fulltext.pdf;jsessionid=75F7FC1942BA6D076AE426687A9FD20F?sequence=1 (last visited March 22, 2017).

⁷ *Id.* at 7.

⁸ Debora Almeida and Maria de Fatima Marques, *Thermal and catalytic pyrolysis of plastic waste*, http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-14282016000100007 (last visited March 21, 2017).

⁹ Section 403.703(32), F.S.

¹⁰ Section 403.705, F.S.

¹¹ Section 403.717, F.S.; Fla. Admin. Code Ch. 62-701.

¹² Section 403.7095, F.S.; Fla. Admin. Code Ch. 62-716.

¹³ Section 403.703(35), F.S., defines a “solid waste management facility” as any solid waste disposal area, volume reduction plant, transfer station, materials recovery facility, or other facility, the purpose of which is resource recovery or the disposal, recycling, processing, or storage of solid waste. The term does not include recovered materials processing facilities that meet the requirements of s. 403.7046, F.S., except the portion of such facilities, if any, which is used for the management of solid waste.

¹⁴ Chapter 88-130, Laws of Fla.; Ch. 403, F.S.; *See* 99-60 Fla. Op. Att’y Gen. 3 (1999).

¹⁵ Section 403.7045(1)(e), F.S.; *see also* Fla. Admin. Code R. 62-701.220(2)(c).

¹⁶ Section 403.703(24), F.S.

¹⁷ Section 403.703(25), F.S.

process that collects separates, or processes and reuses or returns solid waste, or materials that would otherwise become solid waste, to use in the form of raw materials or products.¹⁸

Recovered materials or recovered materials processing facilities do not have to meet the solid waste regulations if:

- A majority of the recovered materials at the facility are demonstrated to be sold, used, or reused within 1 year;
- The recovered materials handled by the facility or the byproducts of operations that process recovered materials are not discharged or deposited upon any land or water by the owner or operator of such facility so that such recovered materials enter the environment such that a threat of contamination in excess of the applicable DEP standards and criteria is caused;
- The recovered materials handled by the facility are not hazardous wastes;¹⁹ and
- The facility is registered with DEP.²⁰

Solid waste regulations that apply to non-exempt recovered materials and recovered materials processing facilities include requirements:

- That a solid waste management facility obtain a permit to store, process, or dispose of solid waste;
- That a permit be obtained to construct, operate, maintain, modify, or close a solid waste management facility;
- For siting, that prohibit the storage or disposal of solid waste in certain areas;
- For burning, that place stringent controls on open burning of solid waste and prohibit controlled burning except in a permitted incinerator or at a facility authorized by a site certification order;
- That a solid waste management facility obtain a specific permit to dispose of hazardous waste;
- That prohibit the disposal of certain items in waste-to-energy facilities;²¹
- For leachate control systems; and
- For closure of a facility and providing financial assurance of closure cost coverage.²²

Solid waste management facility construction and operation permit fees range from \$500 to \$10,000. Operation permits are valid for 5 years, but may be obtained for longer periods of time by paying a pro-rated fee amount for the number of years in the permit length beyond the 5-year term.²³

¹⁸ Section 403.703(27), F.S.

¹⁹ “Hazardous waste” is solid waste, or a combination of solid wastes, that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or may pose a substantial present or potential hazard to human health or the environment when improperly transported, disposed of, stored, treated, or otherwise managed. s. 403.703(13), F.S.

²⁰ Section 403.7045(1)(e), F.S.; Fla. Admin. Code R. 62-701.220(2)(c). Any person in Florida who handles, purchases, receives, recovers, sells or is an end user of 600 tons or more of recovered materials must annually report to DEP, and to all counties from which it received materials, certain information for the preceding calendar year, unless such person is exempt. Section 403.7046, F.S., and Fla. Admin. Code R. 62-722.400(2).

²¹ Fla. Admin. Code R. 62-701.300 and Fla. Admin. Code R. 62-701.320.

²² Fla. Admin. Code R. 62-701.710.

²³ Fla. Admin. Code R. 62-701.315.

DEP does not require solid waste combustors to obtain a solid waste permit if the facility operates under a current valid permit for a stationary source of air pollution, open burning, or electrical power plant and transmission line siting.²⁴ A “solid waste combustor” is an enclosed device that uses controlled combustion whose primary purpose is to thermally break down solid, liquid, or gaseous combustible solid wastes to an ash residue that contains little or no combustible material. A solid waste combustor includes any facility that uses incineration, gasification, or pyrolysis to break down solid waste.²⁵ “Combustion” is the treatment of solid waste in a device that uses heat as the primary means to change the chemical, physical, or biological character or composition of the waste. Combustion processes include incineration, gasification, and pyrolysis.²⁶

III. Effect of Proposed Changes:

CS/SB 1104 adds pyrolysis facilities to those materials and facilities that are exempt from solid waste regulations if a majority of the recovered materials at a facility are demonstrated to be sold, used, or reused within 1 year.²⁷ The bill specifies that the phrase “used or reused” includes, but is not limited to, the conversion by gasification or pyrolysis of post-use polymers into crude oil, fuels, feedstocks, or other raw materials or intermediate or final products.

The bill adds new statutory definitions for terms related to the bill’s addition of pyrolysis facilities to those materials and facilities that are eligible for exemption from solid waste regulations, as follows:

- “Gasification” is defined as a process through which post-use polymers are heated and converted to synthesis gas in an oxygen-deficient atmosphere, and then converted to crude oil, fuels, or chemical feedstocks.
- "Post-use polymer" is defined as a plastic polymer that:²⁸
 - Is derived from any domestic, commercial, or municipal activity;
 - Not recycled in commercial markets; and
 - May otherwise become waste if not converted to manufacture crude oil, fuels, or other raw materials or intermediate or final products using gasification or pyrolysis.A post-use polymer may contain incidental contaminants or impurities such as paper labels or metal rings.
- "Pyrolysis" is defined as a process through which post-use polymers are heated in the absence of oxygen until melted and thermally decomposed, and then cooled, condensed, and converted to:
 - Crude oil, diesel, gasoline, home heating oil, or another fuel;
 - Feedstocks;
 - Diesel and gasoline blendstocks;
 - Chemicals, waxes, or lubricants; or
 - Other raw materials or intermediate or final products.

²⁴ Fla. Admin. Code R. 62-701.320(14)(a) and (b) and Fla. Admin. Code R. 62-701.710(1)(a).

²⁵ Fla. Admin. Code R. 62-701.200(108).

²⁶ Fla. Admin. Code R. 62-701.200(21).

²⁷ Section 403.7045(1)(e)1., F.S.

²⁸ A polymer is a chemical compound or mixture of compounds formed by polymerization and consisting essentially of repeating structural units. See Merriam-Webster, *Polymer*, <https://www.merriam-webster.com/dictionary/polymer>, (last visited March 23, 2017).

- "Pyrolysis facility" is defined as a facility that receives, separates, stores, and converts post-use polymers, using gasification or pyrolysis.
A pyrolysis facility meeting the conditions of s. 403.7045(1)(e) (exemption from solid waste regulations) is not a solid waste management facility under the definition.

The bill also amends existing statutory definitions of terms to add references based on the bill's addition of pyrolysis facilities to those materials and facilities that are eligible for exemption from solid waste regulations, as follows:

- "Recycling" is amended to also include any process by which solid waste, or materials that would otherwise become solid waste, are reused or returned to use in the form of intermediate or final products, and further defines raw materials or intermediate or final products as including, but not limited to:
 - Crude oil;
 - Fuels; and
 - Fuel substitutes; and
- "Solid waste management facility" is amended to exclude pyrolysis facilities that meet the requirements of s. 403.7046, except the portion of such facilities, if any, which is used for the management of solid waste, from the definition.

The bill includes a pyrolysis facility with a recovered materials processing facility as facilities where a recovered materials dealer may process recovered materials to satisfy local government registration and reporting requirements for a recovered materials business.

Owners or operators of facilities converting recovered materials by pyrolysis or gasification to fuels, chemicals, and feedstocks that are exempted from solid waste regulations under this bill may still be required to meet other regulatory requirements, such as:

- Registering recovered materials processing facilities with DEP;
- Obtaining a stationary source of air pollution permit;
- Obtaining an open burning permit; or
- Obtaining an electrical power plant and transmission line siting permit.

Lastly, the bill amends ss. 171.205(2), 316.003(28), 377.709(2)(f), and 487.048(1), F.S., to conform cross-references.

The bill takes effect July 1, 2017.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

Not applicable. This bill does not appear to require counties or municipalities to spend funds or take action requiring the expenditure of funds; reduce the authority that counties or municipalities have to raise revenues in the aggregate; or reduce the percentage of state tax shared with counties or municipalities.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Fiscal Impact Statement:**A. Tax/Fee Issues:**

None.

B. Private Sector Impact:

The bill may have a positive fiscal impact on businesses operating recovered materials processing facilities that convert recovered materials by pyrolysis or gasification to fuels, chemicals, and feedstocks by exempting them from solid waste regulations.

C. Government Sector Impact:

The bill may have a positive fiscal impact on governmental entities operating recovered materials processing facilities that convert recovered materials by pyrolysis or gasification to fuels, chemicals, and feedstocks by exempting them from solid waste regulations.

DEP will likely need to revise its solid waste rules as a result of the statutory changes in the bill, but such revisions are anticipated to have an insignificant fiscal impact. DEP has sufficient rulemaking authority to amend its solid waste regulations to conform to changes made in the bill.

VI. Technical Deficiencies:

Lines 102 and 105 of the bill should be amended to add “or post-use polymers” on each line to effectuate the bill’s intent.

VII. Related Issues:

None.

VIII. Statutes Affected:

This bill substantially amends sections 403.703, 403.7045, and 403.7046 of the Florida Statutes.

This bill amends sections 171.205, 316.003, 377.709, and 487.048 of the Florida Statutes.

IX. Additional Information:

- A. **Committee Substitute – Statement of Substantial Changes:**
(Summarizing differences between the Committee Substitute and the prior version of the bill.)

CS by Environmental Preservation and Conservation on March 28, 2017:

- Rewords the definitions of “gasification,” “post-use polymer,” and “pyrolysis facility” for clarification purposes and makes minor technical changes to reflect the rewording of the definitions.
- Changes the definition of “post-use polymer” from a plastic polymer that is recycled in commercial markets to a plastic polymer that is not recycled in commercial markets.
- Removes post-use polymers that are converted to manufacture fuels, chemicals, feedstocks, or other raw materials or intermediate or final products using gasification or pyrolysis from the definition of “recovered materials” and makes minor technical changes to reflect this change in the definition.
- Removes pyrolysis facilities from the definition of “recovered materials processing facility” and makes minor technical changes to reflect this change in the definition.
- Includes a pyrolysis facility with a recovered materials processing facility as facilities where a recovered materials dealer may process recovered materials to satisfy local government registration and reporting requirements for a recovered materials business; and
- Changes the effective date from “on becoming a law” to July 1, 2017.

- B. **Amendments:**

None.