HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: CS/HB 335 Resource Recovery and Management
SPONSOR(S): Natural Resources & Public Lands Subcommittee; Clemons, Sr. and others
TIED BILLS: **IDEN./SIM. BILLS:** SB 1104

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR or BUDGET/POLICY CHIEF
1) Natural Resources & Public Lands Subcommittee	12 Y, 0 N, As CS	Gregory	Shugar
2) Government Accountability Committee	21 Y, 0 N	Gregory	Williamson

SUMMARY ANALYSIS

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.

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.

Due to the increased demand for fuels and limited space in solid waste facilities, solid waste managers have increased efforts to employ gasification and pyrolysis on municipal solid waste (MSW) to decrease the amount of area needed for disposal in solid waste facilities and create fuels.

The Department of Environmental Protection (DEP) implements and enforces the state's solid waste management program. DEP may adopt rules to implement and enforce the state's solid waste management program, which includes a waste tire management program; administration of solid waste grant programs; and the classification, construction, operation, maintenance, and closure of solid waste management facilities.

Current law exempts certain wastes and activities from solid waste regulations. This includes recovered materials and recovered materials processing facilities that meet certain criteria. Further, DEP does not require solid waste combustors to obtain a solid waste permit if the facility operates under a currently valid permit for a stationary source of air pollution, open burning, or electrical power plant and transmission line siting.

The bill expands the exemption from solid waste regulations to facilities that convert recovered materials by gasification, pyrolysis, or other thermal conversion process. The bill also defines terms used in the exemption and makes conforming changes to other statutes.

The bill may have an insignificant fiscal impact on DEP. It does not appear to have a fiscal impact on local governments.

FULL ANALYSIS

I. SUBSTANTIVE ANALYSIS

A. EFFECT OF PROPOSED CHANGES:

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 United States 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]

During the gasification process, the MSW is not a fuel, but rather a feedstock[3] 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. 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

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[1] Gasification and Syngas Technologies Council, *The Gasification Process*, http://www.gasification-syngas.org/technology/the-gasification-process/ (last visited Feb. 8, 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 Feb. 8, 2017).

[2] Gasification and Syngas Technologies Council, *Gasification v. Incineration*, http://www.gasification-syngas.org/applications/gasification-vs-incineration/ (last visited Feb. 8, 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 Feb. 8, 2017).

[4] Gasification and Syngas Technologies Council, *Gasification v. Incineration*, http://www.gasification-syngas.org/applications/gasification-vs-incineration/ (last visited Feb. 8, 2017).

[5] Whole System Foundation, *Recycling and Pyrolysis of Plastic*, http://www.whole-systems.org/recycling_and_pyrolysis_of_plastic.html (last visited Feb. 9, 2017).

[6] Feng Gao, *Pyrolysis of Waste Plastics into Fuels*, p. 6, available at: https://ir.canterbury.ac.nz/bitstream/handle/10092/4303/Thesis_fulltext.pdf;jsessionid=75F7FC1942BA6D076AE426687A9FD20F?sequence=1 (last visited Feb. 9, 2017).

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] DEP may adopt rules to implement and enforce the program, which 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.[13,14]

Section 403.7045(1), F.S., exempts certain wastes and activities from solid waste regulations.[15] This includes recovered materials and recovered materials processing facilities from solid waste regulations if they meet certain criteria.[16]

"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.[17] A "recovered materials processing facility" is a facility engaged solely in the storage, processing, resale, or reuse of recovered materials.[18] "Recycling" is any 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.[19]

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 one year;
- The recovered materials handled by the facility or the products or byproducts of operations that process recovered materials are not discharged, deposited, injected, dumped, spilled, leaked, or placed into or upon any land or water by the owner or operator of such facility so that such recovered materials, products or byproducts, or any constituent thereof may enter other lands or

[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 Feb. 9, 2017).
[9] s. 403.703(32), F.S.
[10] s. 403.705, F.S.
[11] s. 403.717, F.S.; ch. 62-701, F.A.C.
[12] s. 403.7095, F.S; ch. 62-716, F.A.C.
[13] s. 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] s. 403.704(9), F.S.; chs. 62-701 through 62-722, F.A.C.
[15] Ch. 88-130, Laws of Fla.; Ch. 403, F.S.; *See* 99-60 Fla. Op. Att'y Gen. 3 (1999).
[16] s. 403.7045(1)(e), F.S.; *see also* r. 62-701.220(2)(c), F.A.C.
[17] s. 403.703(24), F.S.
[18] s. 403.703(25), F.S.
[19] s. 403.703(27), F.S.

be emitted into the air or discharged into any waters, including groundwater, or otherwise enter the environment such that a threat of contamination in excess of applicable DEP standards and criteria is caused;
- The recovered materials handled by the facility are not hazardous wastes;[20] and
- The facility is registered with DEP.[21]

Further, 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.[22] 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.[23] "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.[24]

EFFECT OF PROPOSED CHANGES

The bill amends s. 403.7045(1)(e)1., F.S., to expand the exemption from solid waste regulations for recovered materials and recovered materials processing facilities. Currently, recovered materials and recovered materials processing facilities do not have to meet solid waste regulations if a majority of the recovered materials at the facility are demonstrated to be sold, used, or reused within one year.[25] The bill defines "used or reused," as used in the exemption, to include the conversion of recovered materials into crude, fuel, feedstock, or other raw material or intermediate or final product by gasification, pyrolysis, or another thermal conversion process.

The bill amends s. 403.703, F.S., to create definitions for the following terms used in the expanded exemption:
- "Gasification" is a process through which recovered materials are heated and converted to synthesis gas in an oxygen-deficient atmosphere, and then converted to crude, fuel, or chemical feedstock;
- A "post-use polymer" is a polymer[26] derived from any domestic, commercial, or municipal activity and recycled in commercial markets that might otherwise become waste if not converted to manufacture fuels or other raw materials or intermediate or final products using gasification, pyrolysis, or another thermal conversion process. A post-use polymer may contain incidental contaminants or impurities such as paper labels or metal rings;
- "Pyrolysis" is a process through which recovered materials are heated in the absence of oxygen until melted and thermally decomposed, and then cooled, condensed, and converted tocrude 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; and

[20] "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.
[21] s. 403.7045(1)(e), F.S.; r. 62-701.220(2)(c), F.A.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. s. 403.7046, F.S., and r. 62-722.400(2), F.A.C.
[22] r. 62-701.320(14)(a)&(b) and r. 62-701.710(1)(a), F.A.C.
[23] r. 62-701.200(108), F.A.C.
[24] r. 62-701.200(21), F.A.C.
[25] s. 403.7045(1)(e)1., F.S.
[26] A polymer is a chemical compound or mixture of compounds formed by polymerization and consisting essentially of repeating structural units. Merriam-Webster, Polymer, https://www.merriam-webster.com/dictionary/polymer, (last visited Feb. 9, 2017).

- A "pyrolysis facility" is a facility that collects, separates, stores, and converts recovered materials using gasification, pyrolysis, or another thermal conversion process. A pyrolysis facility is not a waste management facility.

Further, the bill amends s. 403.703. F.S., to change the following definitions for terms used in the expanded exemption:

- “Recovered materials” will now include post-use polymers that are converted to manufacture crude, fuels, or other raw materials or intermediate or final products using gasification, pyrolysis, or another thermal conversion process;
- “Recovered materials processing facility” will now include a pyrolysis facility; and
- “Recycling” will now include materials that are returned to use in the form of intermediate or final products, including, but not limited to, crude, fuel, and fuel substitutes.

Thus, facilities that use gasification, pyrolysis, or other thermal conversion process on recovered materials that were not previously exempt from solid waste regulations by rule or statute, will now be exempt. DEP will likely need to revise its solid waste rules as a result of the statutory changes in the bill.

Facilities using gasification, pyrolysis, or other thermal conversion processes on recovered materials that would be exempt from solid waste regulations under the proposed change, may still be required to meet other permitting criteria, such as registration of recovered materials processing facilities with DEP, obtaining a stationary source of air pollution 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 make conforming changes.

B. SECTION DIRECTORY:

Section 1. Amends s. 403.703, F.S., providing and revising definitions.

Section 2. Amends s. 403.7045, F.S., relating to application of the Resource Recovery and Management Act and integration with other acts.

Section 3. Amends s. 171.205, F.S., conforming a cross reference.

Section 4. Amends s. 316.003, F.S., conforming a cross reference.

Section 5. Amends s. 377.709, F.S., conforming a cross reference.

Section 6. Amends s. 487.048, F.S., conforming a cross reference.

Section 7. Provides an effective date of July 1, 2017.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

None.

2. Expenditures:

   The bill appears to have an insignificant negative fiscal impact on DEP because the department will likely need to revise its solid waste rules as a result of the statutory changes in the bill.

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

   None.

2. Expenditures:

   None.

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

The bill may have a positive fiscal impact on individuals or companies who operate facilities that use gasification, pyrolysis, or other thermal conversion processes on solid waste by exempting them from solid waste regulations.

D. FISCAL COMMENTS:

None.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

   Not applicable. This bill does not appear to require counties or municipalities to spend funds or take action requiring the expenditures 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.

2. Other:

   None.

B. RULE-MAKING AUTHORITY:

DEP has sufficient rulemaking authority to amend its solid waste regulations to conform to changes made by the bill.

C. DRAFTING ISSUES OR OTHER COMMENTS:

None.

IV. AMENDMENTS/ COMMITTEE SUBSTITUTE CHANGES

On February 22, 2017, the Natural Resources & Public Lands Subcommittee adopted an amendment to the amendment and an amendment and reported the bill favorably with committee substitute. Specifically, the amendment to the amendment and the amendment:

- Corrects a line number for the lines being amended;
- Changes the definition of “gasification” to mean the process of heating and converting “recovered materials” rather than “post-use polymers.” Thus, the exemption from solid waste

regulations will apply to “gasification” of “recovered materials,” not just “post-use polymers.” Further, the amendment also includes “crude” as one of the products of “gasification;”
- Changes the definition of “post-use polymers” to allow post-use polymers to contain “impurities” when used during gasification, pyrolysis, and another thermal conversion process;
- Changes the definition of “pyrolysis” to mean the process of heating and converting “recovered materials” rather than “post-use polymers.” Thus, the exemption from solid waste regulations will apply to “pyrolysis” of “recovered materials,” not just “post-use polymers.” Further, the amendment also includes “crude oil” as one of the products of “pyrolysis;”
- Changes the definition of “pyrolysis facility” to mean a facility that collects, separates, stores, and converts “recovered materials” rather than “post-use polymers.” Thus, the exemption from solid waste regulations will apply to “pyrolysis facilities” that collect, separate, store, and covert “recovered materials,” not just “post-use polymers.”
- Changes the definition of “recovered materials” to include “crude” as one of the products that recovered materials may be converted to through the process of gasification, pyrolysis, or another thermal conversion process;
- Changes the definition of “recycling” to include “crude” as one of the products that solid waste or materials may be reused or returned to thorough collection, separation, and processing;
- Limits the exception from solid waste regulations for gasification, pyrolysis, and another thermal conversion process to instances where those processes are used to convert recovered materials into crude, fuel, feedstock, or other raw materials or intermediate or final products.

This analysis is drawn to the committee substitute reported favorably by the Natural Resources & Public Lands Subcommittee.