New Jersey Department of Environmental Protection
Division of Sustainable Waste Management

Evaluation Form for Plastic Conversion Technologies

Purpose: For NJDEP to review new, emerging, and updated technologies that convert postconsumer plastics to new plastics (excluding plastics-to-fuel, which is not considered "recycling") and whether such technologies can be considered 'recycling' pursuant to existing statutory and regulatory definitions. The ultimate purpose of collecting this data is for NJDEP to determine whether the products of certain technologies can be considered *postconsumer recycled content* pursuant to New Jersey's Recycled Content Law (N.J.S.A. 13:1E-135 et seq.).

Disclaimer: All information will be considered and kept confidential and used only for the purposes stated above. Additionally, the form has been developed as a fillable PDF file. In order to properly complete the form, the file must be opened in Adobe Acrobat Reader with a version of XI or higher. Adobe Acrobat Reader is a free software available for download at https://get.adobe.com/reader/.

SECTION A. COMPANY INFORMATION

Company Name: _____

Company Website (*if applicable*): _____

SECTION B. CONTACT INFORMATION

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Country: _____ Municipality: _____State: _____ Zip Code: ___

Email Address: _____

SECTION C. FEEDSTOCK IDENTIFICATION AND DESCRIPTION

Provide a description detailing the source and composition of the feedstock(s). *Feedstock* means the material that is being converted into a usable form or product. The description should address the following questions, if applicable, as well as any other important information the NJDEP should be aware of:

- What is the specific source(s) of the material used as feedstock (e.g., transfer stations, material recovery facilities, landfills, off-take agreements, corporate partnerships, etc.)?
- What is the composition of the material used as feedstock (e.g., type(s) of plastic compatible with the conversion process, products best suited for the conversion process, contamination rates, etc.)?
- How is the feedstock collected (curbside collection/MRFs, bottle bill materials, manufacturer etc.) and transported (mode, distance, etc.) to the facility where the conversion occurs?
- Is any pre-consumer waste (post-industrial material) in the initial feedstock? If so, how much compared to the overall feedstock weight?
- Is any pretreatment necessary of the feedstock either onsite or offsite? With reference flow, describe the process including any energy, heat, and material inputs including, solvents or washing agents, and any necessary treatments or activities.
- How sensitive is the conversion process to the presence of contamination in the feedstock?
- Does the company maintain control and custody over the feedstock, additives, and any byproducts or coproducts produced throughout the process? *Additives* refer to any materials added during conversion that were not in the initial feedstock, *byproducts* are incidental products produced intentionally or unintentionally during the conversion, and *coproducts* are secondary products produced intentionally or unintentionally during the conversion.

SECTION D: TECHNOLOGY AND PROCESS DESCRIPTION

Provide a description of the technology and associated processes by which the feedstock material is converted into a usable form. The description should address the following questions, if applicable, as well as any other important information the NJDEP should be aware of:

- What is the primary conversion mechanism used (e.g., pyrolysis, gasification, dissolution (solvent-based purification), etc.) and operating conditions (e.g. temperature, pressure, pH, atmosphere etc.)?
- How much feedstock, in terms of weight, is needed for the conversion to run successfully? Do the feedstock weight and product yields fluctuate or remain consistent? What is the typical ratio of input to output? Are additives, including water, solvents, gases, catalysts, or other chemical agents, introduced during the process? If so, please identify the additives, reference amount, and their purpose.
- What intermediate steps and activities occur during the conversion process? *Intermediate steps* refer to any processing that occurs after the feedstock first enters the conversion process but before end product creation.
- Does the material or a usable byproduct or coproduct ever leave site? If so, where is it going? Is a third party involved?
- Is there any burning, combustion, or incineration involved (including pyrolysis and/or gasification processes)? Are any byproducts, coproducts, or fractions of the material at any point utilized for heat or energy production?
- Are there byproducts or coproducts and what happens with them (e.g., Syngas)?
- Is any material lost or disposed of as waste during the conversion, including wastewater? If so, where does it go and how much is lost or disposed of in terms of weight or percentage of the initial feedstock material?
- Is there any hazardous waste produced as a result of the conversion process? If so, what hazardous waste is produced, and how is it managed?
- What are the lifecycle emissions and how does this compare to the lifecycle emissions for mechanical recycling and landfilling? *Lifecycle emissions* prioritizes total greenhouse gas emissions produced during collection, including all transportation, pretreatment, and material processing, starting from the feedstock's arrival at the facility where the conversion takes place through completion of the conversion into the final usable form or product. When providing lifecycle emissions, detail the system boundary, functional unit, impact assessment methodology, allocation method, detailed tables, figures, flowcharts, and provide a complete inventory of inputs and outputs, including energy and heat, used in the analysis.

SECTION E. FINAL PRODUCT DESCRIPTION

Describe the composition of the final product that results from the conversion process. The description should address the following questions, if applicable, as well as any other important information the NJDEP should be aware of:

- What is the final product of the technology, where does it go once produced, and how is it used (e.g., is the final product equivalent to plastic pellets sold to other companies to create plastic products through a molding process; is it equivalent to a raw material, such as naphtha or monomers, etc.)?

- Is this final product from this process being used manufacture the same product or similar that is used as feedstock?

- For a given amount of the final product(s), what is the ratio for each material input required as well as byproducts and waste produced?

- Can the final product be used to produce plastic products on its own or does it need to be blended with other chemicals, compounds, or additives?

- Does the final product require additional processing, such as polymerization, to be made into plastic products? If the final product requires additional processing, where and how does that final product fit in the conventional plastic production process (e.g., fractional distillation for Naptha; steam cracking for monomers etc.)?

- How does the physical form of the final material produced compare to the finished product of a mechanical recycling process?