



Plastics Recovery Project Oregon Department of Environmental Quality and Metro May 2013 - June 2014

As part of the development of Oregon's Materials Management 2050 Vision and Framework for Action, an analysis was done of the materials currently being disposed of or underutilized in terms of potential energy and greenhouse gas savings¹. Of all the materials analyzed, plastics as a whole showed the greatest potential for energy savings, and also was one of the most significant materials in terms of potential for greenhouse gas reduction through recovery. Based on these findings, The Oregon Department of Environmental Quality and Metro are about to begin a major project to analyze waste and recycling streams and to determine how more plastic can be recovered from the waste stream, and how that plastic can be recovered in such a way that it can be utilized to its highest extent. To that end, we are looking to partner with industry and other experts in plastics manufacture, recycling, and sorting technology and with other governmental organizations to carry out this project. Below is an outline of the scope of work of the project:

- a) Assemble a small advisory group that can provide expertise on plastics recycling and pyrolysis and provide feedback on study design.
- b) Hire a contractor who can help compile the information specified below and work with DEQ, Metro, and the advisory group to analyze the information.
- c) Compile information on methods and technologies that can be used to process or purify plastic streams for recycling, including streams that may include a mix of plastics and other materials. Examples could include:
 - i) Optical sorting
 - ii) Sink-float processing
 - iii) Air classification
- d) Determine functional categories that will be used for evaluating the quantity of plastic available to be recycled and technical issues relating to recycling those plastics. Factors used in categorization include resin type, melt index, whether rigid or film, whether solid or foam, whether generated as a pure plastic or as part of a mixed resin or multi-material item, presences of fillers, pigments, degradation additives, and other non-plastic constituents, and contamination level.
- e) Develop estimates of the amount of plastic being disposed of for each of the functional categories.
- f) Develop estimates of the amount of plastic being disposed of in specific sectors that might be ripe for increased plastics recovery, such as hospitals or grocery stores
- g) For each of the functional categories, compile information on the ways the plastic could be utilized, such as:
 - i) Recycling it back into products made from the same type of plastic
 - ii) Recycling it into a composite plastic product such as plastic lumber or an asphalt extender
 - iii) Pyrolyzing the plastic to produce usable fuels, lubricants, or other products
 - iv) Using the plastic to reduce iron ore in virgin steel smelting.
 - v) Directly burning the plastic to recovery energy
- h) For any plastic utilization methods that look promising, investigate potential collection methods, and potential barriers to recovery of the plastic
- i) Compile life cycle analysis information for utilization of different functional categories of plastic that show promise of being collected, processed, and utilized through one of the processes described above.

If you are interested in this project and would like to participate in some way, please contact:

Peter Spendelow
Oregon Department of Environmental Quality
spendelow.peter@deq.state.or.us
503-229-5253

¹ <http://www.deq.state.or.us/lq/pubs/docs/sw/2050vision/BriefingPaperMaterialRecovery.pdf>