

**DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY**

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November 23, 2010

Alisdair McLean
VP, Strategic Initiatives
Plasco Energy Group
1000 Innovation Drive, Suite 400
Ottawa, Ontario, K2K 3E7

Re: Regulatory Status of Proposed Salinas Valley Project

Dear Mr. McLean:

You have requested that we confirm the Department of Resources Recycling and Recovery's (CalRecycle) role in RPS certification and whether or not your company's proposed Salinas Valley project would meet the definition of "gasification" in our statutes (which parallel the definition of "conversion" under the RPS statutes). Regarding the first question, although it is our understanding that the California Energy Commission (CEC) guidelines look to CalRecycle's classification of a facility as a type of gasification to confirm RPS eligibility as conversion, you will need to gain express confirmation from the CEC regarding RPS certification, as these are requirements within their authority. We can however offer guidance on whether or not your proposed project, as described, would meet our definition of gasification.

Proposed Facility

You have described the proposed facility as follows:

The Plasco Conversion System is a non-incineration technology that will convert more than 98% of the waste it processes into green power and other marketable co-products. The Plasco Conversion System recycles heat from the process to gasify the waste and then uses the unique characteristics of plasma to refine the gaseous products into a clean, consistent synthetic fuel gas (PlascoSyngas).

MSW Trucks will enter the site, and be weighed and directed to the MSW receiving floor. MSW will be deposited into a receiving pit that will be fully enclosed; the building doors will be kept closed during normal operation. The MSW storage facility will be designed for a minimum of 5 days of storage (2 days of "as received" waste and 3 days of shredded waste). The waste is sorted, screened and fed to the pre-shredder(s) through the use of an operator controlled overhead traveling crane with grapple. Once shredded the material travels on a conveyor underneath the ferrous separation unit(s). The ferrous material is discharged into a bin. The remaining waste is discharged onto a vibrating screen/trommel. Material that meets the 2" minus criteria moves forward to non-ferrous



separation. Material that is oversized is discharged onto a separate conveyor. Inerts are removed from the oversized waste prior to conveying it to the re-shredder(s). 2" minus waste is discharged on a conveyor which combines with the previously screened 2" minus waste. The combined feed is now sent through the non-ferrous separation unit(s). Non-ferrous material is discharged into a bin. The waste is now prepared to be used as fuel in downstream processes. The inert material, including glass, is removed from the waste stream using a density separation technique. Plasco will look for beneficial use of the inert stream as clean fill or in the recyclable concrete market. Inert material diverted during the front-end processing that can't be put to beneficial use would be considered unacceptable waste. Additional front-end diversion of recyclables is possible.

In the Conversion Chamber the MSW is converted into a raw, unrefined syngas. The energy required for the conversion comes from recycled heat; there is no plasma torch in this chamber. Sub-stoichiometric air that is heated by the syngas leaving the refining chamber is introduced to the waste pile in the converter through a perforated, stepped floor. The resulting gases flow into the Refining Chamber above the Conversion Chamber. In the Refining Chamber, the raw syngas is refined to the quality and consistency required by the gas engines. It is here that Plasco takes advantage of the benefits of plasma: intense, controllable heat and the catalytic affect of the ionic plasma plume. As the gas passes through the plasma cloud, the long chain molecules are "cracked" into their elemental components such as H, C, O, H₂ (hydrogen). CO (carbon monoxide) and other simple molecules are formed as the gas is refined in this chamber – it is the H₂ and CO which give the gas its fuel value. The hot, refined syngas that leaves the refining chamber passes through a heat exchanger, otherwise known as the recuperator, which cools the syngas and heats the process air that will drive the conversion in the main chamber of the converter.

The Heat Recovery Steam Generator further cools the syngas to a temperature acceptable to downstream equipment. The heat from the syngas will be used to create additional electricity through a steam turbine (combined cycle operation). The syngas is further cooled in a process quench vessel. Particulate and other contaminants are removed from the gas stream in a variable throat Venturi scrubber. The water droplets are separated from the gas in a cyclone separator with the main liquid stream recirculating back to the Venturi and a particulate slurry flowing to the on-site water treatment system. After the wet scrubbing system the syngas passes through the HCl scrubber. It removes hydrochloric acid from the syngas, condenses excess moisture from the syngas and produces salty water that is sent to the on-site water treatment system. Syngas from the HCl scrubber is fed into the hydrogen sulfide removal system. Hydrogen sulfide is scrubbed out of the syngas. Any trace particulate that passes through the wet scrubbing system is removed in the particulate polishing filter, utilizing bag or cartridge filters. The carbon polishing bed is used for final polishing of the syngas, and it removes residual mercury or any dioxins or furans that were not removed in the wet scrubbing system by absorption into activated carbon granules. The Syngas Storage tank is used to blend syngas production to further improve the consistency of the syngas.

Syngas from the storage tank will flow to 2 MW General Electric (GE) Jenbacher Gas Engine Generators. The Jenbacher engines are characterized by durability, especially high efficiencies, low emissions and high reliability. The engines operate at 38% efficiency on the syngas produced by the system, which is more than what is possible with steam turbines.

Classification and Regulation of Process and Sites

The proposed project, as described, appears to meet the definition of Gasification:

Public Resources Code 40117. "Gasification" means a technology that uses a noncombustion thermal process to convert solid waste to a clean burning fuel for the purpose of generating electricity, and that, at minimum, meets all of the following criteria:

- (a) The technology does not use air or oxygen in the conversion process, except ambient air to maintain temperature control.
- (b) The technology produces no discharges of air contaminants or emissions, including greenhouse gases, as defined in subdivision (g) of Section 42801.1 of the Health and Safety Code.
- (c) The technology produces no discharges to surface or groundwaters of the state.
- (d) The technology produces no hazardous waste.
- (e) To the maximum extent feasible, the technology removes all recyclable materials and marketable green waste compostable materials from the solid waste stream prior to the conversion process and the owner or operator of the facility certifies that those materials will be recycled or composted.
- (f) The facility where the technology is used is in compliance with all applicable laws, regulations, and ordinances.
- (g) The facility certifies to the board that any local agency sending solid waste to the facility is in compliance with this division and has reduced, recycled, or composted solid waste to the maximum extent feasible, and the board makes a finding that the local agency has diverted at least 30 percent of all solid waste through source reduction, recycling, and composting.

The project, as described, will use a noncombustion thermal process to convert solid waste to a clean burning fuel for the purposes of generating electricity; uses air/oxygen only to maintain ambient temperature; produces no air, water, or hazardous discharges in excess of standards; the processing removes recyclable materials from the waste stream to the maximum extent feasible (while the described process doesn't remove green waste from the MSW stream, the Salinas Valley Solid Waste Authority members (it is the local agencies within the Authority that will be using the facility) already have diversion programs that include curbside programs for separation of recyclables and green waste compostable materials from the solid waste stream so that marketable material will have been separated prior to receipt by the facility; and, they all have a diversion rate above 30 percent.

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Conclusion

Based upon the above, the proposed Plasco project, as described, would be considered a gasification facility that would require a solid waste facility permit to operate.

I hope that the foregoing provides the clarity you were requesting. Please feel free to contact me at (916) 341-6080 if you have any further questions.

Sincerely



Elliot Block

Chief Counsel

cc: Mark DeBie, Michael Bledsoe