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STATE OF NEW YORK PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission )  
Regarding a Retail Renewable Portfolio Standard ) Case 03-E-0188

COMMENTS OF TAYLOR RECYCLING FACILITY, LLC.

**I. Summary of Comments**

Taylor Recycling is an innovative processor of mixed and source-separated waste materials located in Montgomery, NY just west of Newburgh. We are most well-known for having set up and operated the highly-effective debris sorting systems used by the FBI and NYPD to sift through most of the debris from the World Trade Center attacks in an extraordinary multi-agency effort during the nine months following 9/11/01. We have created a number of systems for processing and refining materials recovered from waste of various sorts and build such systems to create products useful to industrial customers, such as gypsum recovered from scrap drywall used by US Gypsum Company to make new drywall.

Taylor Recycling intends to modify our existing construction and demolition debris sorting system to recover a mix of lumber, brush, unrecyclable corrugated boxes, plywood, particleboard and other resin-contaminated wood for use as renewable fuel for a 20MW integrated biomass gasification and combined cycle power plant co-located on our Montgomery site. NYSERDA has selected Taylor Recycling for support in the amount of \$100,000 to cost-share our initial plant engineering. We have also attracted a major utility partner interested in participating in our biomass gasification project. They have become interested in large part because of the exceedingly high thermodynamic efficiency of the FERCO SilvaGas™ Process we have licensed and the fact that the SilvaGas™ Process creates a sulphur-free syngas that is completely substitutable for natural gas because of its 500 Btu/dscf energy density. The SilvaGas™ Process uses heating in the absence of oxygen (high temperature pyrolysis) to efficiently and completely convert biomass, including biomass with minor resin contamination, such as plywood and plastic-contaminated paper or creosote-treated wood, into a gas mix of carbon monoxide, hydrogen, and methane that can be fired in most all gas industrial boilers and industrial combustion turbines, allowing the efficiency of combined cycle power generation.

Our development model is to employ Taylor's separation technologies to recover recyclable materials from mixed solid waste, isolate any hazardous materials (e.g. CCA-treated wood, batteries), and refine an energy-appropriate biomass feedstock for use in the SilvaGas™ Process.

Taylor Recycling believes that inclusion of biomass recovered from solid waste would allow cost-effective advanced biomass energy technology to be deployed widely in the lower Hudson Valley, New York City, and Long Island. Taylor Recycling supports RETEC's position in many ways with the major exception that their straw proposal does not clearly admit waste-derived biomass within "low-emission biomass technologies using sustainably grown biomass fuels". We intend to continue soliciting the support of RETEC members and others for our science-based approach to improving air quality and increasing recycling through deployment of best available biomass energy technology.

To recap the intended result of what we are propose become eligible under the RPS:

- Build 6 to 10 new SilvaGas biomass energy facilities in mostly severe non-attainment areas of downstate NY including Long Island, NYC, and Lower Hudson Valley counties. Each plant would generate 20Mw-60Mw of renewable electricity in this grid-constrained region and add potential for combined heat and power (CHP).
- Each facility would divert to local disposal a minimum of 160,000 tons per year of biomass that is now being long-hauled to landfills in Western NY, PA, and OH as is now the case. This avoids the NO<sub>x</sub>, CO, and PM generated by **8,000 truck round-trips annually** each going at least 300-500 total miles further than local disposal. The total mobile NO<sub>x</sub> from this excess use of trucks exceeds total plant emissions – a net NO<sub>x</sub> reduction - by at least 40 tons per year.
- The process of separating biomass from other waste and recyclable materials (as Taylor Recycling does now) **increases net recycling** of metal, glass, stone, recyclable paper/boxes, textiles, and sulfur-bearing drywall. This recycling is in addition to curbside and source separated recycling efforts and further increases the reduction in global warming potential attributed to the SilvaGas biomass energy system, which requires separation of most recyclables, rather than competing with recycling as mass-burn technology does.
- Emissions rates of criteria pollutants from each SilvaGas plant approach or equal that of much larger, modern gas combined cycle plants because ours is essentially a small, modern gas-fired combined cycle plant – this is the most important unique feature of the SilvaGas technology. Taylor Recycling's ability to sort biomass from waste allows the economic basis for rapidly deploying the SilvaGas technology.

The NREL report "Life Cycle Assessment Comparisons of Electricity from Biomass, Coal, and Natural Gas" (11/02) was submitted to the July 8, '03 Biomass working group meeting because it clearly lays out the factors that lead to effective reduction of global warming potential (GWP) through conversion of waste biomass to energy. (This net reduction of GWP does not accrue to energy crops or biomass that is not derived from the solid waste stream) If anything, the NREL report significantly understates the environmental improvement that would come from the implementation of Taylor's proposed system which also recovers recyclable materials. The NREL report is on Ed Gray's RPS webpage: [www.antaesgroupinc.com/NYRPSdocs.htm](http://www.antaesgroupinc.com/NYRPSdocs.htm)

The RPS process is a significant opportunity to improve New York's environment by including biomass recovered from waste as an eligible resource and setting a meaningful standard for such biomass that requires removal of metals, glass, all hazardous materials and limits the presence of non-renewable resins or combustible treatments (e.g. creosote) to that of resin in engineered woods (10% by weight) which requires the removal of most plastic.

If the RPS in effect created a "middle way" that either excluded or radically improved the operation of existing mass-burn waste incinerators by limiting them to waste biomass and requiring the separation of toxics and recyclable inorganics, advanced biomass technologies such as the SilvaGas Process would have a level playing field for competing in the downstate energy market. This is a clear alternative to allowing mass-burn plants to count mixed solid waste as "renewable", while encouraging the construction of new advanced technology biomass plants in the regions that need deliverable renewable energy and mobile source pollution reduction the most.

## II. Comment on the Revised Working Objectives

No comment.

## III. The RETEC Straw Proposal

Taylor Recycling and RETEC share many views of the RPS. In particular:

- Existing biomass facilities are useful and the Commission may choose to include them in the RPS, but technology incapable of meeting low NOx standards is not appropriate in downstate New York.
- A high-value location tier or premium could offset some of the additional costs of locating in severe non-attainment areas.

## IV. Eligibility

### A. The Baseline

We support the use of the DPS staff compromise proposal.

### B. Target Levels

Taylor Recycling encourages the adoption of the 25% renewables target by 2013 as well as increases above 25% and beyond 2013 as becomes practical in the coming years. The earliest possible start date will improve our ability to develop renewable projects and the likelihood of reaching the 25% target before 2013. The staff table of interim targets also seems reasonable and we also encourage flexibility in increasing the interim targets to accelerate the 25% target's achievement if this becomes feasible. That is, we support "front loading" the RPS mandate as much as possible. As potential renewable project developers, Taylor Recycling strongly encourages the Commission to avoid reducing interim targets in almost any case because of the deleterious effect this would have on the ability of project developers to acquire financing. We believe a stable development environment is preferable to an "optimal" outlook that might change for the worse.

### C. Eligibility

#### 2. Solid Waste

As far as we can tell, Taylor Recycling is the only active party advocating what we think of as a "middle path" between old-style mass-burn waste incineration with some energy recovery and traditional wood-only biomass combustion utilizing forestry residues. As far as the former is concerned, Taylor Recycling urges the Commission to exclude mass-burn incineration of mixed solid waste from inclusion in the RPS. While there are air quality advantages to local disposal (avoids hundreds of miles of waste hauling by truck and landfill air emissions) that are shared by our approach and local incineration, we join RETEC and other parties in pointing out several negative features that overwhelm these advantages:

1. Too much of what is burned in waste incinerators is not renewable and often not appropriate for an energy process.
  - a. 30-35% of mixed solid waste is not biomass (plastics, synthetic rubber, metals, stone, glass, fiberglass, other inorganics) and is not renewable by definition.

- b. Some of the biomass fraction of waste is treated in ways that make it inappropriate for conversion to energy, specifically chromium and arsenic (CCA) treated wood, pentachlorophenol treated wood and lead-bearing painted wood.
  - c. Some of the non-biomass fraction is hazardous when burned and made volatile (e.g. electronics, lead/NiCd batteries, mercury-bearing fluorescent lamps).
2. Burning mixed waste also pre-empts the opportunity to recover recyclable materials which limits greenhouse gas reduction potential through recycling as well as economic development and manufacturing jobs within New York.
- a. Much of the inorganics (metal, glass, concrete, brick) and some of the biomass (paper, corrugated cardboard, textiles) in mixed waste are recoverable with modern separation technologies.
  - b. The mixed waste recovery process employs 20 union laborers and machine operators at Taylor Recycling alone. Conversion of recovered materials into industrial feedstocks employs more people (e.g. hundreds of textile sorters in Brooklyn) and the conversion of industrial feedstocks at NYS paper mills and other manufacturers (e.g. US Gypsum Co., Stony Point, NY makes drywall using Taylor's recovered gypsum recycled from construction debris) employs even more people. Empire State Development estimates over 20,000 jobs in New York State alone that are wholly or in part dependent on recycling activity. Scrap metal and scrap paper are the number 1 & 2 volume exports from the Port of NY/NJ. Landfills and incinerators employ very few people in NYS (we estimate less than 600). Private recycling businesses pay property taxes, while municipal landfills and incinerators generally do not.

It seems disingenuous for IWSA to attempt to conflate and equate mixed solid waste with energy-appropriate biomass: mixed solid waste contains biomass but also contains heavy metals, non-renewable/non-biomass materials, etc. and they simply are not the same thing. We know this because every day we sort 300-400 tons of mixed construction and demolition debris into recyclable materials and in that process we have to isolate hazardous items such as lead-acid batteries, pesticide containers, etc., but we also separate 50 tons of completely unadulterated wood (lumber, pallets, brush, logs) that is recycled into landscape mulch and cardboard recycled into new boxes. It is completely feasible to separate the energy-appropriate biomass fraction of mixed solid waste and we do it in our own way right now. This is not what the waste-to-energy working group is advocating because it is too costly for incinerator technology plants to recover recyclables, isolate hazardous materials, and combust only the energy-appropriate biomass fraction of mixed solid waste.

We urge the Commission to require any combustion or pyrolysis technology to utilize a waste-derived fuel that is 90% energy-appropriate biomass (excludes CCA, but allows minor resin content, e.g. glue in plywood) and is nearly free of inappropriate contamination as determined for that technology by NYSDEC. While it is not at all likely because of their thermodynamic inefficiency, if new waste units somehow did all of the work necessary to screen through mixed waste and incurred the cost to prepare recyclables and isolate inappropriate materials and burn only energy-appropriate biomass, we would not have a scientific basis to object to the inclusion of that facility in the RPS. Additional requirements such as a NYSDEC site monitor paid for by the monitored facility and material testing to periodically verify fuel stock quality could also be required to make sure that all facilities benefiting from RPS eligibility are in fact using renewable biomass and not mixed waste.

### 3. Biomass

Unlike inorganic waste that can be landfilled with less consequence, biomass of whatever type incurs a "cost" to air quality and global warming potential (GWP) no matter what course is taken. As a tree grows it absorbs CO<sub>2</sub> and when it decomposes on the forest floor (with the help of aerobic bacteria), it releases CO<sub>2</sub> in a roughly balanced cycle. Broadly speaking, once we do anything else to it

(transport it, chip it up, make paper, or put it in a landfill) the air quality “cost” and GWP is increased. The proceeding is not formally concerned with improving waste management practices in NYS, but the choices made in regards to including waste-derived biomass as an eligible resource in the RPS will significantly affect air quality in New York and the effectiveness of the RPS in achieving its environmental improvement goals.

The inclusion of waste-derived biomass represents a tremendous opportunity to divert biomass from increasingly distant landfills which magnify the biomass contribution to global warming potential as it is driven there (one truck round trip per 20 tons) and as it converts to methane and CO<sub>2</sub> through anaerobic decomposition once buried. (Methane has 23 times the GWP of CO<sub>2</sub>.) There seems to be wide acceptance of including this landfill methane as an eligible resource despite the fact that significant methane and CO<sub>2</sub> are vented during the years-long active life of landfill cells and only partial capture of methane is possible in the best managed landfill closures. We assert that this is something like closing the door after the horse is out of the barn from an environmental improvement standpoint. We urge the Commission to accept that utilizing waste-derived biomass local to its generation avoids the substantial NO<sub>x</sub>, PM and other air pollution from trucking brush and wood from Smithtown to Pennsylvania (a real example that costs Smithtown \$2 million annually) and substitutes minimal emissions of CO<sub>2</sub> for 50% conversion to methane and 25% CO<sub>2</sub> in a landfill.

For whatever reason, only the NO<sub>x</sub> emissions standards proposed by RETEC were included in the Biomass Working Group’s consensus statement even though RETEC agreed to also have our proposal included alongside theirs as well as a willingness to consider our proposed standards. We include it here to make sure it is on record:

Based on projected emission rates developed by our engineers, we are confident that the mix of biomass Taylor Recycling proposes to feed to a FERCO SilvaGas biomass pyrolysis plant would be able to meet the following emissions standards for NO<sub>x</sub>:

Plants built in severe ozone non-attainment areas before 2008:

1.0 lbs/MWh at the bus bar

Built after 2008: 0.6 lbs/MWh at the bus bar.

As noted in our comments appended to the statement of the Biomass working group, while we do not argue with and support the inclusion of forestry residues and traditional biomass combustion technology as RPS eligible resources, there was not enough time to address the issues involved with gaining consensus on the inclusion of waste-derived biomass that might be energy-appropriate (e.g. plywood or wood with residual resin contamination) in advanced technology such as ours in that forum. The consensus statement acknowledges this unfinished business. Given that we were the only participant arguing the environmental advantages of utilizing waste-derived biomass in advanced technology pyrolytic biomass gasification, we did not feel that it was appropriate to “hold up” the group and pursued the topic separately with the Attorney General’s office and RETEC members. Those active parties have made efforts to discuss the issue, but were not able to engage in the face of the initial comments deadline. We will continue our efforts to gain the clear support of these and other parties through subsequent discussions. In the meantime, we ask the Commission to allow for a middle path between the simplistic positions that “mixed waste is fine” and “anything waste-derived is garbage burning” because there is clearly environmental advantage including increased recycling and reduced air pollution that will come from allowing biomass recovered from mixed waste as an eligible resource.

A final advantage of including waste-derived biomass as eligible is that with advanced biomass gasification technology, it is clearly feasible to build 20MW-60MW biomass plants in severe ozone non-attainment areas of New York which are burdened with both high electricity pricing, transmission constraints, and plenty of waste-derived biomass, but little access to forestry residues, energy crops and the like. By developing such projects on Long Island, in New York City and the lower Hudson Valley, we can have baseload renewable power in the areas that need it most. If the biomass resource is limited by excluding biomass recovered from waste, there is little likelihood of seeing other biomass resources utilized within this megazone.

#### 4. Fuel Cells

While we do not oppose the inclusion of fuel cells as eligible, they are a power conversion technology and are not inherently “renewable” even if there is some future prospect for creating renewable hydrogen. In fact, the FERCO technology converts biomass into a synthesized substitute for natural gas that includes 15%-18% hydrogen and we look forward to being able to utilize fuel cells as our power island technology, but are fuel cells that use hydrogen reformed from fossil fuels going to receive preference over renewable technologies? We ask that the Commission consider this distinction in including fuel cells in a renewable portfolio standard for intellectual consistency’s sake.

#### **X. Conclusion**

Generation diversity, economic benefits, and maximum improvement to New York’s environment come from the multiple benefits of utilizing recycling and biomass energy as an alternative to landfills/long-distance trucking or mass-burn incineration. We sincerely appreciate the opportunity to participate in this proceeding.

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