

December 12, 2013

Via Email and Regular Mail

Mr. Ray Kempa, P.E.
Chief, New Source Review Section
Air Quality Program
Pennsylvania Department of Environmental Protection
2 Public Square
Wilkes-Barre, PA 18701-1915

Via Email and Regular Mail

Scott E. Walters, Chief
Permits Section
Division of Municipal and Residual Waste
Bureau of Waste Management
P. O. Box 69170
Harrisburg, PA 17106-9170

**Re: Additional Comments on Proposed Plan Approval #39-00099A
Additional Comments on General Permit Application No. WMGM047
Based on the Public Meeting of October 30, 2013
Delta Thermo Energy, A, LLC
112 W Union Street, Allentown, PA 18102-4912**

Dear Messrs. Kempa and Walters:

Based on the public meeting of October 30, 2013, Pennsylvania Waste Industries Association ("PWIA") submits the following comments, which supplement our previous submissions¹ for the proposed Delta Thermo Energy, A, LLC ("Delta Thermo") facility, to be located at 112 West Union Street, Allentown, PA 18102. While PWIA appreciates the Pennsylvania Department of Environmental Protection ("Department") holding the public meeting, it was our understanding, as communicated in our October 15th correspondence, that the

¹ Comment Letter dated October 15, 2013 on proposed Plan Approval No. 39-00099A and comment letter dated November 25, 2013 on pending Solid Waste General Permit Application No. WMGM047.

Department was actually holding a public hearing on the proposed Plan Approval pursuant to 25 Pa. Code § 127.48. The difference between a public meeting and a public hearing is more than mere semantics. Based on our representative's attendance at the public meeting, as well as a review of unofficial videotape of the meeting, Delta Thermo made a number of materially false statements to the public regarding their proposed project and the waste disposal industry as a whole. Unfortunately, because the procedural requirements that attach to public hearings were not in place, there is no official Department transcript or record of the meeting that can be corrected or relied upon to identify all of those misstatements.

PWIA renews its protest of the proposed issuance of this Plan Approval, pursuant to 25 Pa. Code § 127.46, and continues to urge denial of Delta Thermo's Plan Approval Application under 25 Pa. Code § 127.13b. PWIA continues to recommend that the Department deny Delta Thermo's General Permit Application No. WMGM047.

PWIA's Interest in the Above-Referenced Matter

PWIA is the Pennsylvania chapter of the National Solid Wastes Management Association, a non-profit organization that represents the interests of the North American waste service industry. PWIA members include both privately held and publically traded companies that own and operate commercial solid waste facilities throughout the Commonwealth. In addition to solid waste landfills, our members operate resource recovery facilities, recycling facilities, transfer stations, and collection operations. PWIA's primary missions are to advance the safe, efficient, and environmentally responsible management of solid waste and to promote sound public policy in rulemaking that affects the management of solid waste.

Our interest in this matter is more fully set forth in our October 15th submission, and for brevity's sake, we will not re-state those facts here. However, please be clear that Delta Thermo's continued use of false environmental marketing claims² in discussing its project are unacceptable to PWIA and its members, and are wholly inconsistent with the environmentally responsible management of solid waste upon which our members pride themselves.

PWIA appreciates the Department's efforts to limit discussion at the public meeting to issues germane to the two pending environmental permit applications. Unfortunately, Delta Thermo's representatives often strayed from those topics while addressing the 150 attendees and press, and as a result, we feel compelled to formally identify and, where possible, correct these misstatements. Although PWIA recognizes that some of these issues are not directly relevant to the pending applications, we nonetheless ask that the Department evaluate these issues as the misstatements were made at a Department sanctioned, and led, public meeting.

Comment #1: Representatives from Delta Thermo Falsely Exaggerated Landfill Tipping Fees

During the question and answer period of the public meeting, Delta Thermo's representatives claimed that landfill tipping fees have increased 7% a year over each of the last ten years. This is false. Although data on landfill tipping fees is sparse, there is a consensus in publicly available information that over the last ten years, on a national basis, landfill tipping fees have increased only slightly more than the rate of inflation, and that tipping fees in the mid-Atlantic region have remained within a fairly narrow band. The average landfill tipping fee in

² See Sec. 5 of the Federal Trade Commission Act, implemented through 16 CFR Part 260.

Pennsylvania for 2007 was reported to be \$61.00 per ton,³ and Pennsylvania landfill tipping fees are little changed from 2007 levels. In fact, partially due to the 2008 economic downturn, landfill tipping fees have decreased at some Pennsylvania landfills over the last five and ten year periods.

The economic analysis of the original Delta Thermo proposal to the City of Allentown used a tipping fee of \$90.48 per ton of waste, with significant annual increases inconsistent with real world market conditions.⁴ The \$90.48 per ton figure is significantly higher—by 50% or more—than tipping fees commonly charged for disposal at landfills serving the Lehigh Valley. We also note the recent news report that the City of Easton signed a long-term waste disposal contract that has a tipping fee of just \$40.44 per ton, with a written guarantee that there will be no tipping fee increases for the next seven years.⁵

Comment #2: Delta Thermo's Claim that The Inability to Pay Landfill Tipping Fees is "Bankrupting" Local Municipalities is Simply False

During the question and answer period of the public meeting, Delta Thermo's representatives claimed that local municipalities were being "bankrupted" by their inability to pay "landfill tipping fees." This is false. There are no news reports, whatsoever, of any municipality in Pennsylvania facing, contemplating or discussing filing bankruptcy due to cost of

³ Solid Waste Digest, Year 17, Report No. 1. 2007 Chartwell Gate Price Progress Report, as reported by PennFuture at <http://www.pennfuture.org/UserFiles/Tipping%20Fee%20Fact%20Sheet.pdf>. Generally, information on tipping fees is proprietary information. A review of available public sources, including reports from PennFuture, NSWMA (<http://www.environmentalistseveryday.org>), and the Department indicate that it is likely that landfill tipping fees are relatively unchanged over the last 10 years. Clearly, there was no evidence whatsoever for a 70% increase in Pennsylvania landfill tipping fees as claimed by Delta Thermo.

⁴ See attached *City of Allentown WTE Cost Comparison*, February 1, 2012, prepared by Public Financial Management, Inc. ("Allentown WTE Cost Comparison").

⁵ See Easton to save \$1 million a year on garbage service, Allentown Morning Call, September 25, 2013. http://articles.mcall.com/2013-09-25/news/mc-easton-garbage-contract-finalized-20130925_1_garbage-service-mayor-sal-panto-jr-easton

waste disposal generally, or landfill tipping fee costs specifically. PWIA and its members are not aware of any municipality facing any type of economic distress, let alone bankruptcy, due to the cost of landfill tipping fees.

On the other hand, the City of Harrisburg's financial woes—including an attempt by its city council to file for bankruptcy and subsequent appointment by the Commonwealth of a receiver—are well documented. It has been widely reported by news outlets that the city's relationship with the Harrisburg Incinerator—a facility that combusts municipal solid waste to generate electricity, for the purpose of reducing long-term disposal costs—has contributed to their problems. While the Department does not have authority or expertise in evaluating municipal contracts, we also recognize that Delta Thermo injected the topic of finances into the Department hosted public meeting (in addition to Delta Thermo's comments on local municipality bankruptcies, see slide 3, titled "Here is Why Our Project is Good"). Of course, the City of Allentown is entering into its long-term agreements for disposal at Delta Thermo's facility, which will combust municipal solid waste to generate electricity, for the purpose of reducing long-term disposal costs (despite costs more than twice as high as the aforementioned City of Easton contract)—with the best of intentions, just like what happened out in Harrisburg.

Comment #3: Delta Thermo's Statement, Including Presentation Slide 3: "The Project Only Handles Allentown Waste", is false.

The PowerPoint slide presentation displayed by representatives of Delta Thermo during the October 30th public meeting⁶ contains a number of false and/or misleading statements. Slide 3, titled "Here is Why Our Project is Good!" states that "The Project Only Handles Allentown

⁶ PWIA's copy of the October 30th PowerPoint presentation was obtained directly from the Department (filename "DEP Public Meeting Executive Overview Presentation 10-30-13 RVN Rev 4 6.pptx")

Waste.” In response to questions from the public, Delta Thermo admitted during the question and answer period portion of the meeting that:

1. the City of Allentown is contractually obligated to fully supply the facility with waste to ensure full operation;
2. that the City of Allentown is contractually obligated to obtain waste from outside of the City boundaries if necessary to meet its waste supply obligations;
3. that Delta Thermo is allowed to import waste from outside the City of Allentown in the event that the City fails to meet its waste supply obligations; and
4. that Delta Thermo already has a contract in place to obtain waste generated from “five local universities” to supply its project.

It is our understanding that there is only one university—Muhlenberg University—located within the City of Allentown boundary. In addition, the *Allentown WTE Cost Comparison* shows that the cost savings to the City of Allentown are almost entirely dependent on the importation of waste from outside Allentown.

Comment #4: Delta Thermo’s Statement, including Presentation Slide 4: “Creating 4MW of power cleanly vs. the equivalent power from a coal fired power plant-no comparison”, is false and misleading

It is standard practice to rate electricity generating facilities by their net, not gross, generation. As documented in Delta Thermo’s plan approval application⁷, the generator has a nominal rating of 4.0 MWh, and can only produce 3.7 MWh (gross) over time. In addition, the facility will have a heavy parasitic load—internally consuming 1.4 MWh of its 3.7 MWh gross generation—resulting in only 2.3 MWh of electricity generation on a net basis.

⁷ See page 3 of the applicant’s third written response, dated August 8, 2013, to the Department’s Technical Deficiency letter on Delta Thermo’s Plan Approval application.

Obviously, a facility that claims to be in the energy generation and sales business does not generate any revenue from electricity it consumes internally, and it is misleading to claim that 4.0 MWh of electricity are generated when the generator is only capable of 3.7 MWh, and when 1.4 MWh of that is necessary to make the 3.7 MWh in the first place. The facility's parasitic load is 37.8% of its total generation, and Delta Thermo's continued references to its nominal gross generation, without either disclaiming it as nominal gross generation or providing its net generation rate, is misleading. Delta Thermo's continued misrepresentations, after the Department addressed this issue in its Technical Deficiency letter, appear to be intentional.

In addition, Delta Thermo presented no facts or data comparing or contrasting its projected emissions versus those from a coal-fired power plant. Slide 12 contrasts the fuel constituents, not emissions from the facilities. Coal-fired power plants are subject to strict emission and emission control requirements established under state and federal law, including federal New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants. The cleanliness of the combustion source is measured by what comes out of the stack, not what goes in the combustion chamber.

Comment #5: Delta Thermo's Statements, Including Presentation Slide 24: "Emissions Comparison with Covanta Plymouth Meeting Facility", are Incomplete and Misleading

As foreshadowed on slide 4, where it states "MSW is not incinerated which creates much more harmful pollution see upcoming slide comparison", slide 24 purports to demonstrate that the proposed Delta Thermo facility will have lower emissions, per ton of waste combusted, than the Covanta Plymouth Meeting ("Covanta") facility. The data on slide 24 compares the allowable emission levels from the Covanta facility, as set forth in its state and federally

enforceable Title V Operating Permit, to the proposed allowed emission levels from the proposed Delta Thermo facility, as set forth in its state-only enforceable proposed Plan Approval. On its face, the slide indicates that Delta Thermo will emit much lower levels of each listed pollutant than Covanta. This is both misleading and inaccurate.

The Covanta facility has been operating for more than 20 years. The Covanta facility uses continuous emission monitors to measure its air emissions, including emissions of SO₂ and CO. The Covanta facility reports its emissions to the Department, and the Department posts those emissions on its eFACTS database. Covanta also reports its waste receipts to the Department's Bureau of Waste Management, Division of Reporting and Fee Collection.

In 2011, Covanta received 415,544.3 tons of waste⁸. It produced 204,322 MWh of electricity for export.⁹ Its emissions of many pollutants were significantly lower than its allowable emission levels. The 2011 waste acceptance rate, electricity production, and air emission rates are completely consistent with previous years' results.

In several instances, Covanta emissions were considerably lower than the limits listed in Delta Thermo proposed Plan Approval. For example, Delta Thermo touts that it will emit just 0.27 lbs of SO₂ per ton of waste combusted, or "25.47%" of the "1.06 lbs per ton rate" emitted by Covanta. In 2011, Covanta was more than 8-times cleaner than the 1.06 lb/ton figure in its permit, and emitted just 0.12 lbs SO₂ per ton of waste combusted.¹⁰ Under the proposed Plan Approval, Delta Thermo will be allowed to emit more than twice as much SO₂ per ton of waste

⁸ See Bureau of Waste Management, Division of Reporting and Fee Collection, Landfill Waste Receipts for Year 2011, page 13, which shows that Covanta received 405,881.3 tons of MSW and 9,663.0 tons of residual waste.

⁹ Obtained from the US Energy Information Administration's database.

¹⁰ As reported in the Department's eFACTS system, Covanta emitted 24.7 tons of SO₂ in 2011, which equates to 0.12 lbs SO₂ per ton of waste combusted (24.7 * 2000 / 415,544.3)

than the Covanta facility actually emits, despite the fact that Covanta has demonstrated that technology is available to prevent, reduce and/or control emissions of the air contaminant SO₂ to a degree significantly better than Delta Thermo believes acceptable.

Similarly, Delta Thermo claims that it will emit CO at just “8.09%” of the level achieved by Covanta. This is false. Covanta’s actual CO emission rate in 2011 was 0.24 lbs per ton of waste combusted; Delta Thermo’s allowable rate of 0.5 lbs/ton of waste combusted is 208%, not 8%, of the Covanta rate.¹¹ Again, Covanta has demonstrated (using data collected from continuous emission monitors) that much better levels of control are regularly achieved than the levels set forth in Delta Thermo’s proposed plan approval.

Covanta and Delta Thermo are subject to emission limits in their permits for additional pollutants than those listed on slide 24. For example, Covanta’s permit imposes an emission limit of 166 ug/dscm for lead. For this toxic pollutant, which has historically impacted environmental justice communities and children disproportionately, Delta Thermo’s proposed permit limit is 200 ug/dscm; i.e. more than 20% higher than Covanta’s limit.¹²

All of Delta Thermo’s characterizations of its emission profile are made on the basis of “per-ton” of waste combusted. PWIA agrees that this is the correct metric for facilities in the waste disposal business—the amount of pollution that will occur for each ton of disposed waste. Of course, Delta Thermo denies that it is in the waste disposal business or subject to the stringent air permitting requirements that apply to companies in the waste disposal business.

¹¹ As reported in the Department’s eFACTS system, Covanta emitted 49.6 tons of CO in 2011, which equates to 0.24 lbs CO per ton of waste combusted ($49.6 * 2000 / 415,544.3$)

¹² Unlike Delta Thermo, Covanta is not located in an environmental justice community.

Delta Thermo's mischaracterization of its emission profile as superior to Covanta's emission profile is even more egregious if Delta Thermo's assertion that it is in the "energy production" business were accepted at face value. If that were actually the case, then the amount of air emissions occurring per MWh of electricity produced for sale would be the key metric for comparison of the two facilities. Delta Thermo omits any discussion of electricity production on a "per-ton" of waste combusted basis, which is a significant omission that further invalidates their claims of environmental superiority to traditional waste to energy facilities, such as Covanta.

After factoring out the 1.7 MWh parasitic load, Delta Thermo will generate just 2.3 MWh of electricity from its operations. This is considerably less electricity per ton of waste accepted than the amount of electricity generated per ton of waste by Covanta's operations.¹³ The bottom line is that to produce the identical amount of electricity, Delta Thermo must combust approximately 50% more waste than Covanta, and Delta Thermo will therefore have even higher air pollution levels than they reported during their presentation. The amount of electricity produced per ton of fuel combusted (regardless of whether the fuel is coal, gas, waste, etc.) and the amount of pollution per MWh of electricity produced are the key environmental metrics for any facility that claims to be in the "energy production" business. Failing to compare or disclose how it compares to Covanta on either of these bases is misleading.

¹³ In 2011, Covanta averaged 0.492 MWh per ton of waste accepted (204,322 MWh / 415,544.3 tons of waste). Best case based on accepting Delta Thermo's assertions at face value, Delta Thermo will average 0.331 MWh per ton of waste accepted (generating 55.2 MWh per day (2.3 MWh * 24 hrs) from 167 tons of waste per day(120 tpd MSW and 47 tons WWTP sludge).

**Comment #6: Delta Thermo makes Misleading and Contradictory Statements regarding
Emission Monitoring Requirements**

The proposed Plan Approval does not require installation of any Continuous Emission Monitors. At various times throughout the meeting, Delta Thermo's representatives implied that they would be conducting continuous emissions monitoring. Slides 22 and 23 (and particularly the heading on slide 23 "Continuous Emissions Monitoring. Trinity, a best available technology company"), strongly imply that Delta Thermo will be conducting continuous emissions monitoring when they will not actually be doing so.

The phrases "continuous emission monitoring" and "continuous emission monitors" are common terms of art used by professionals working in the environmental compliance field, and their definitions are well-understood. Based on a careful review of the audio and video tapes of the meeting, Delta Thermo only commits to performing parametric monitoring. The totality of Delta Thermo's presentation and discussion on this issue appears to be directed towards giving the impression that continuous emission monitors will be used, when in actuality they will not be installed or used. Delta Thermo's approach to discussing this very important issue is troubling, and could be construed as implicating much wider concerns regarding the validity of Delta Thermo's applications, submissions, and other statements regarding this project.

We further note that both 40 CFR Part 60, Subpart AAAAA and the Department's seventeen page manual, 275-2101-007, titled *Air Quality Permitting Criteria Including Best Available Technology for Municipal Waste Incineration Facilities* ("Waste Combustion BAT") require installation and operation of continuous emission monitors. Both the Department, through issuance of the Waste Combustion BAT, and US EPA, through promulgation of Subpart

AAAA, have each independently concluded that parametric monitoring is never an adequate substitute for continuous emission monitoring from this type of facility.

**Comment #7: Delta Thermo Makes Misleading and Untrue Statements regarding the
“Output of Facility” Including Slide 16**

Delta Thermo claims that both the ash from the combustion chamber, as well as the “liquid fertilizer” from its water treatment system, can be sold in commerce as products. This is not true. Selling either output in commerce requires, at a minimum, a beneficial use permit from the Department. Delta Thermo has not applied for a beneficial use permit for either the ash or “liquid fertilizer”. The Department, in its second Technical Deficiency Letter to the Municipal Solid Waste General Permit Application dated September 10, 2013, clearly indicated that the ash could not be approved for beneficial use at this time, and would not even qualify for consideration until after the facility was constructed and in operation.¹⁴ It is very troubling that Delta Thermo’s representatives told the public that the ash “can be sold to both cement and road construction companies” (slide 16) after they were specifically informed, in writing by the Department more than 45 days prior, that the ash would not be approved for beneficial use.

In addition, while ash from other Pennsylvania waste combustors has been approved for use/sale under beneficial use permits, it is typically deposited in landfills because manufacturers view it as an essentially valueless product that is oversupplied. In simple terms, there is no economic market for ash. In regards to the so-called “liquid fertilizer”, PWIA is not aware of any general permit that would authorize land application of liquids produced by a wastewater

¹⁴ It is unclear why Delta Thermo included beneficial use of ash in the original application, as it’s a basic and well-understood fact that beneficial use applications must be supported by chemical data and physical characteristic derived from actual process operation (as noted in the Department’s second Technical Deficiency Letter).

treatment plant, and our members are highly skeptical that the Department would approve such a waste for beneficial use.

Comment #8: Delta Thermo has Engaged in a Pattern of Misleading and Contradictory Statements Regarding its Technology

In Slide 8, titled “**Is It New Technology?**” Delta Thermo indicates that its technology has been in “commercial operation” in six countries “for 6-7 years”. It is our understanding, based on a review of submissions to the Department as well as other governmental bodies at both the state and federal level, that the various technologies proposed for installation in Allentown by Delta Thermo have never been used together. It is our further understanding that the combustion chamber has only been used for homogenous waste, such as sludge from a paper-making operation, and has never been used commercially to combust a mixture of MSW and WWTP sludge. Delta Thermo’s latest of many positions—that this technology is demonstrated—is directly contradicted by applications, letters and e-mails, variously signed by Delta Thermo’s CEO, its consultants and its attorneys. In fact, this facility was originally approved under the “research and development” exemption from air permitting by the Department, based on signed statements that the facility’s operation was:

“to demonstrate that MSW and sludge can be used as an alternative fuel” in “technology [that] has not yet been deployed in the United States” and will use “CCC technology [which] is a unique innovation.”¹⁵

¹⁵ Request for Determination, Section 1.0 submitted September 24, 2010.

One of Delta Thermo's attorneys subsequently described the project in an email to the Department by stating:

"We are attempting to combine Japanese, Korean and German recycling technologies in a way that has never been done before" and further noting that the project "clearly involves research into new processes...it is a new process that has never been used before anywhere in the world."¹⁶

The Plan Approval Application makes similar claims, referencing the period between the R&D approval and submission of the application thusly:

"In the intervening period, the facility [sic] fundamental design has been finalized, allowing DTE to operate on a full-scale, commercial basis, rather than only on a research & development basis" and reiterating that "this particular type of technology to produce the renewable clean fuel has not yet been deployed in the United States...[w]hile this plant will be a commercial operation, it will also be used to collect valuable data for research purposes" and that it uses "a unique process called Hydrothermal Decomposition..."¹⁷

Although Delta Thermo may have refined its facility *design* in the three years between receiving its R&D Exemption and filing its Plan Approval Application, there is no indication that anyone has ever "commercially" operated a plant of this design (let alone for "6-7 years"), fueled by a mixture of MSW and wastewater treatment plant sludge, anywhere in the world.

Comment #9: Slide 20 Appears to Present an Adulterated and Inaccurate Impact Analysis of Delta Thermo's Air Emissions on Surrounding Neighborhoods.

In its Plan Approval application, Delta Thermo included a "Results of Ambient Impact Analysis" that provided, in graphical format, the "maximum concentrations", on an annual basis,

¹⁶ E-mail correspondence from Joel Bolstein, Esquire to Sean Robbins, Esquire, dated October 20, 2010.

¹⁷ See cover letter and Attachment 1 of the March 29, 2013 Application for Plan Approval. These quotes represent a small sample size of averments by Delta Thermo regarding R&D nature of its technology.

of air emissions in the ambient atmosphere. Delta Thermo stated that the analysis was performed using the emission rates proposed in the Plan Approval application, which are the identical rates in the Proposed Plan Approval. In the Plan Approval application, Figure 4-5 gives the 2012 plot of “annual concentration contours”.

Slide 20 from Delta Thermo’s presentation purports to show the limited impact of air pollution on surrounding neighborhoods. Except for one aspect, Slide 20 is identical to Figure 4 -5:

1. Exact same title:
 - a. Figure 4-5 – AERMOD Results Contour Plot (2012, Annual)
Delta Thermo Energy A, LLC – Allentown, PA
2. Exact same footer:
 - a. Calendar Year 2012.
Annual concentration contours displayed.
3. Exact same Google earth image
 - a. Same coordinates (latitude, longitude, and elevation)
 - b. Same image “eye” (2628 ft)
 - c. Same image date (5/10/2012)

There is one difference, and it is significant. Figure 4-5 in the Plan Approval application shows a much wider dispersion and impact from air emissions than the same Figure 4-5 shows in the slide presented to the public. The application’s Figure 4-5 shows that the impact of air emission is roughly twice as large as the Figure 4-5 presented to the public. The application’s Figure 4-5 shows that neighboring buildings, including what appear to be residential buildings, will be impacted. The version presented to the public does not; the lack of impact on neighboring residents was touted by Delta Thermo’s representatives during the public meeting, despite evidence to the contrary in the Plan Approval application.

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December 12, 2013
Mr. Ray Kempa, P.E.
Mr. Scott E. Walters, Chief

Although not legible during the presentation, the scale of the color coding on the Figure 4-5 used during the presentation has been changed so that the lowest contour line value is 4.4328 E00, approximately 40% higher than the value used in the graphic in the application.

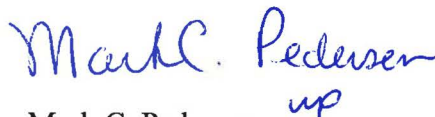
Delta Thermo's discussion of ambient air impacts on the neighboring citizens was intentionally misleading.

Conclusion

Based on our analysis of the data in the PowerPoint presentation, as well as unofficial audio and video tapes of the meeting, PWIA is further convinced that this is nothing more than a waste combustion facility despite Delta Thermo's strained arguments to the contrary.

PWIA renews its protest of the proposed issuance of this Plan Approval, pursuant to 25 Pa. Code § 127.46, and continues to urge denial of Delta Thermo's Plan Approval Application under 25 Pa. Code § 127.13b. PWIA continues to recommend that the Department deny Delta Thermo's General Permit Application No. WMGM047.

Very truly yours,



Mark C. Pedersen
President



City of Allentown

**CONFIDENTIAL
FOR DISCUSSION PURPOSES ONLY**

WTE Cost Comparison

February 1, 2012

Waste-to-Energy Project Topics for Discussion

- As requested by City Council, a model has been created to analyze the cost impact of the proposed Waste-to-Energy Project. The City's Waste Experts have developed the following base case assumptions based on the proposed service agreement:
- **Waste quantity assumptions:**
 - Waste disposal quantity: 714 tons/week 37,128 tons/year
 - Waste disposal cost: \$90.48 implied per ton cost
 - Biosolids disposal quantity: 275 tons/week 14,300 tons/year
 - Biosolids disposal cost: \$36.75 implied per ton cost
 - Electricity usage: 833,050 kwh/month 9,996,600 kWh/year
 - Base year: 2011
- **Current System Assumptions:**
 - Existing waste disposal contract: \$3,359,390 (2011 total cost)
 - Existing waste disposal growth rate: **SEE BELOW**
 - Biosolids disposal cost: \$525,525
 - Biosolids growth rate: 2.30%
- **DTE System Assumptions:**
 - Waste/Biosolids disposal fee: \$5,885,000 (year 1)
 - Waste/Biosolids disposal fee growth rate: 2.21%
 - Electricity credit: \$0.12 (DTE guaranteed for first 5 years)
\$0.11 (assumed credit in year 6)
 - Electricity credit growth rate: 0.00% for first 5 years
2.00% annual growth beginning in year 6
 - Additional revenue assumptions:
 - Waste disposal cost discount*: 25% (City's share would be 75% of revenue)
 - Maximum permitted capacity: +/- 12%
 - Assumed capacity sold: 11%
 - Waste disposal cost: \$77.50
 - Waste disposal cost discount: 10%
- **Existing Waste Growth Rate** – sensitivity scenarios have been provided for the following:
 - Scenario 1 – Assumes a 3.00% annual growth rate
 - Scenario 2 – Assumes a 3.15% annual growth rate
 - Scenario 3 – Assumes a 3.30% annual growth rate

***For these purposes, assumes approximately 50% of excess capacity is sold by the City (resulting in 100% revenue retention for the City) and approximately 50% of excess capacity is sold by DTE (resulting in 45% revenue retention for the City). The blended revenue retention rate for the City is approximately 75%.**

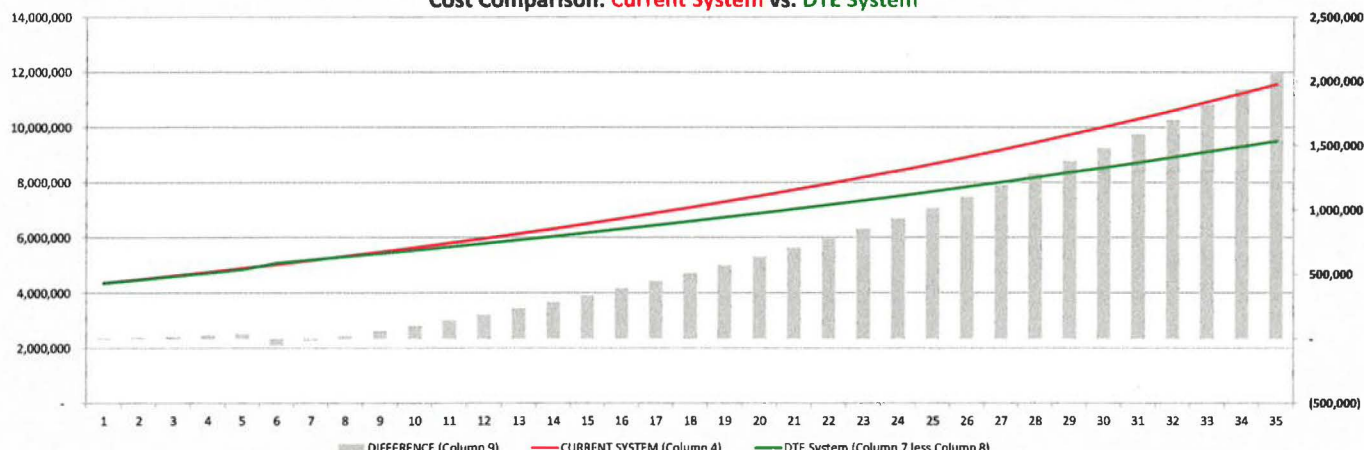
SCENARIO 1

Assumptions:	User Inputs in Blue		
Waste Quantity*	714 tons/week	37,128	ton/year
Waste Disposal Cost		\$ 90.48	implied per ton
Biosolids Quantity*	275 tons/week	14,300	ton/year
Biosolids Disposal Cost		\$ 36.75	implied per ton
Electricity Usage	833,050 kwh/month	9,996,600	kWh/year
Base Year		2011	

Notes
Waste includes City Curbside Collection Program, City Facilities, and Utter Receptacles.
Disposal Only (Collection and transportation factored out)
Includes Disposal, Labor and Transportation Costs

Waste Quantity	714	DTE Fee/Growth	\$5,885,000/2.21%
Biosolids Quantity	275	Electricity Rate/Growth	\$0.12/0.00%/2.00%
Biosolids Disposal Cost	\$36.75	Waste Disposal Growth	0.00%
Electricity Usage	833,050	Waste Disposal Cost/Growth	\$77.50/3.00%
Waste Contract/Growth	\$3,359,390/3.00%	Max Excess Tonnage	11.00%
Biosolids Growth	2.30%	Waste Disposal Discount	10.00%

* \$11,318,204 of the total NPV difference is a result of assumed revenue from sale of unused tonnage capacity (column 8). NPV difference of columns 4 and 7 is -\$469,844



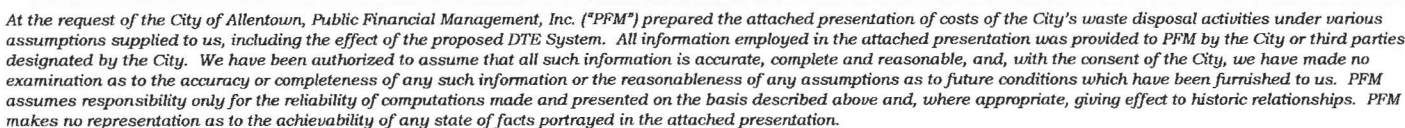
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SCENARIO 2

Notes
Waste includes City Curbside Collection Program, City Facilities, and Litter Receptacles.
Disposal Only (Collection and transportation factored out)
Includes Disposal, Labor and Transportation Costs

Waste Quantity	714	DTE Fee/Growth	\$5,885,000/2.21%
Biosolids Quantity	275	Electricity Rate/Growth	\$0.12/0.00%/2.00%
Biosolids Disposal Cost	\$36.75	Waste Disposal Growth	0.00%
Electricity Usage	833,050	Waste Disposal Cost/Growth	\$77.50/3.15%
Waste Contract/Growth	\$3,359,390/3.15%	Max Excess Tonnage	11.00%
Biosolids Growth	2.30%	Waste Disposal Discount	10.00%

* \$11,384,279 of the total NPV difference is a result of assumed revenue from sale of unused tonnage capacity (column 8). NPV difference of columns 4 and 7 is \$3,531,503.



SCENARIO 3

Assumptions:	User Inputs in Blue		
Waste Quantity*	714 tons/week		37,128 tons/year
Waste Disposal Cost		\$ 90.48	implied per ton
Biosolids Quantity**	275 tons/week		14,300 tons/year
Biosolids Disposal Cost		\$ 36.75	implied per ton
Electricity Usage	833,050 kwh/month	9,996,600	kWh/year
Base Year		2011	

Base Assumptions: (Use these values to return to the 2011 starting conditions)				
Waste Quantity	714	DTE Fee/Growth		\$5,885,000/2.21%
Biosolids Quantity	275	Electricity Rate/Growth		\$0.12/0.00%/2.00%
Biosolids Disposal Cost	\$36.75	Waste Disposal Growth		0.00%
Electricity Usage	893,050	Waste Disposal Cost/Growth		\$77.50/3.00%/2.00%
Waste Contract/Growth	\$3,359,390/3.30%	Max Excess Tonnage		11.00%
Biosolids Growth	2.30%	Waste Disposal Discount		10.00%

* \$11,450,644 of the total NPV difference is a result of assumed revenue from sale of unused tonnage capacity (column 8). NPV difference of columns 4 and 7 is \$7,680,818.

