

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 <u>112 W Union Street, Allentown, PA 18102-4912</u>

Dear Messers. 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

submissions<sup>1</sup> 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 15<sup>th</sup> correspondence, that the

<sup>&</sup>lt;sup>1</sup> 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.

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Department was actually holding a public <u>hearing</u> 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. Page 3 December 12, 2013 Mr. Ray Kempa, P.E. Mr. Scott E. Walters, Chief

Our interest in this matter is more fully set forth in our October 15<sup>th</sup> 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 claims<sup>2</sup> 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 <u>each</u> 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

<sup>&</sup>lt;sup>2</sup> See Sec. 5 of the Federal Trade Commission Act, implemented through 16 CFR Part 260.

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Pennsylvania for 2007 was reported to be \$61.00 per ton,<sup>3</sup> 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.<sup>4</sup> 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.<sup>5</sup>

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

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

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

<sup>&</sup>lt;sup>4</sup> See attached *City of Allentown WTE Cost Comparison*, February 1, 2012, prepared by Public Financial Management, Inc. ("Allentown WTE Cost Comparison").

<sup>&</sup>lt;sup>5</sup> 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-servicemayor-sal-panto-jr-easton

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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 30<sup>th</sup> public meeting<sup>6</sup> 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

<sup>&</sup>lt;sup>6</sup> PWIA's copy of the October 30<sup>th</sup> 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;
- 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;
- 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
- 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 <u>comparison</u>", 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 application<sup>7</sup>, 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 <u>net basis</u>.

<sup>&</sup>lt;sup>7</sup> 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.

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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 Page 8 December 12, 2013 Mr. Ray Kempa, P.E. Mr. Scott E. Walters, Chief

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  $SO_2$  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 waste<sup>8</sup>. It produced 204,322 MWh of electricity for export.<sup>9</sup> 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 SO<sub>2</sub> 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 SO<sub>2</sub> per ton of waste combusted.<sup>10</sup> Under the proposed Plan Approval, Delta Thermo will be allowed to emit more than twice as much SO<sub>2</sub> per ton of waste

<sup>&</sup>lt;sup>8</sup> 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.
<sup>9</sup> Obtained from the US Energy Information Administration's database.

<sup>&</sup>lt;sup>10</sup> As reported in the Department's eFACTS system, Covanta emitted 24.7 tons of SO<sub>2</sub> in 2011, which equates to 0.12 lbs SO<sub>2</sub> per ton of waste combusted (24.7 \* 2000 / 415,544.3)

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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 SO<sub>2</sub> 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.<sup>11</sup> 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.<sup>12</sup>

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.

<sup>&</sup>lt;sup>11</sup> 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)

<sup>&</sup>lt;sup>12</sup> Unlike Detla Thermo, Covanta is not located in an environmental justice community.

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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.<sup>13</sup> 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.

<sup>&</sup>lt;sup>13</sup> 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).

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#### 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 <u>parametric</u> 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 AAAA 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

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

#### Comment #7: Delta Thermo Makes Misleading and Untrue Statements regarding the <u>"Output of Facility" Including Slide 16</u>

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.<sup>14</sup> 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

<sup>&</sup>lt;sup>14</sup> It is unclear why Delta Thermo included beneficial use of ash in the original application, as it's a basic and wellunderstood 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).

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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 <u>never</u> been used <u>together</u>. 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." <sup>15</sup>

<sup>&</sup>lt;sup>15</sup> Request for Determination, Section 1.0 submitted September 24, 2010.

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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."<sup>16</sup>

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 <u>Hydrothermal Decomposition</u>)..."<sup>17</sup>

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,

<sup>&</sup>lt;sup>16</sup> E-mail correspondence from Joel Bolstein, Esquire to Sean Robbins, Esquire, dated October 20, 2010.

<sup>&</sup>lt;sup>17</sup> 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.

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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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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, approximately40% 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 Pedersen

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	e quantity assumptions:								
	0	Waste disposal quantity:	714 tons/week	37,128 tons/year						
	0	Waste disposal cost:	\$90.48 implied per ton cost	t						
	0	Biosolids disposal quantity:	275 tons/week	14,300 tons/year						
	0	Biosolids disposal cost:	\$36.75 implied per ton cost	t						
	0	Electricity usage:	833,050 kwh/month	9,996,600 kWh/year						
	0	Base year:	2011							
•	Currer	nt System Assumptions:								
	0	Existing waste disposal contract:	\$3,359,390 (2011 to	otal cost)						
	0	Existing waste disposal growth rate:	SEE BELOW							
	0	Biosolids disposal cost:	\$525,525							
	0	Biosolids growth rate:	2.30%							
•	DTE Sy	stem Assumptions:								
	0	Waste/Biosolids disposal fee:	\$5,885,000 (year 1)							
	0	Waste/Biosolids disposal fee growth	rate: 2.21%	2.21%						
	0	Electricity credit:	\$0.12 (DTE guarante	\$0.12 (DTE guaranteed for first 5 years)						
			SULIT (assumed credit in year 6)							
	0	Electricity credit growth rate:	0.00% for first 5 yea	irs						
			2.00% annual growt	n beginning in year 6						
	0	Additional revenue assumptions:								
		<ul> <li>Waste disposal cost discount</li> </ul>	*: 25% (City's share we	buid be 75% of revenue)						
		<ul> <li>Iviaximum permitted capacity</li> </ul>	/: +/- 12%							
		<ul> <li>Assumed capacity sold:</li> </ul>								
		<ul> <li>waste disposal cost:</li> </ul>	\$77.50							
		<ul> <li>Waste disposal cost discount</li> </ul>	: 10%							

- Existing Waste Growth Rate sensitivity scenarios have been provided for the following:
  - Scenario 1 Assumes a 3.00% annual growth rate
  - o Scenario 2 Assumes a 3.15% annual growth rate
  - o 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%.

#### WTE COST COMPARISON

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Growth rate assumptions for landfill costs and electricity prices (see pull down tabs) are highly speculative and are dependent upon a variety of factors including, but not limited to, the general inflation rate, fuel prices, state and federal regulations and alternative disposal antions.

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		CURRENT SYSTEM	DTE SYSTEM				Cumulative	Cumulative	ADDITIONAL REVENUE/(COSTS) ASSUMPTIONS (SEE COLUMN				
	Waste	Biosolids		Waste/	Less:		Less: Additional	Difference	Difference	Waste Disposal/	Maximum	Waste	Waste Disposal
	Disposal	Disposal		Biosollds	Electricity		Revenue/(Cost)	Savings	Savings	Blosolids	Allowed	Disposal	Spot Market
Year	Cost	Cost	Total	Disposal Fee	Credit	Sub-Total	(Columns 11 - 14)	(Cost)	(Cost)	Growth	+12% (tons)	Cost (\$/ton)	Discount
12 - A ( A )					\$ 0.1200	2015 Rate	Waste Disposal		1.				
Assumptions/	A 2000 200 A			C	0.000	2015 2010	Cost Discount			F4 430			
<b>Growth Rate</b>	\$ 3,339,350 \$	323,325		\$ 3,003,000	0,0078	2013-2019				31,428	57,085	\$ 11.50	
	3,00%	2.30%		2.21%	\$ 0.1100	2020 Rate	25.00% -			0.00%	11.00% 💌	3.00%	10,00%
					2.00%	2020 - Beyond							
					Licom	2020 - Deyona							
2015 1	3,781,023	\$75,567	4,356,590	5,885,000	1,199,592	4,685,408	333,079	4,261	4,261	51,428	5,657	87.23	78.50
2016 Z	3,894,454	588,805	4,483,259	6,015,059	1,199,592	4,815,467	343,071	10,863	15,124	51,428	5,657	89.84	80.86
2017 3	4,011,287	602,348	4,613,635	6,147,991	1,199,592	4,948,399	353,363	18,599	33,723	51,428	5,657	92.54	83.29
2018 4	4,131,626	616,202	4,747,828	6,283,862	1,199,592	5,084,270	363,964	27,522	61,244	51,428	5,657	95,32	85.78
2019 5	4,255,575	630,374	4,885,949	6,422,735	1,199,592	5,223,143	374,883	37,689	98,933	51,428	5,657	98,17	88,36
2020 6	4,383,242	644,873	5,028,115	6,564,678	1,099,626	5,465,052	386,129	(50,808)	48,125	51,42B	5,657	101.12	91.01
2021 7	4,514,739	659,705	5,174,444	6,709,757	1,121,619	5,588,139	397,713	(15,981)	32,144	51,428	5,657	104.15	93.74
2022 8	4,650,181	674,878	5,325,060	6,858,043	1,144,051	5,713,992	409,645	20,712	52,856	51,428	5,657	107.28	96.55
2023 9	4,789,687	690,400	5,480,087	7,009,605	1,166,932	5,842,674	421,934	59,348	112,204	51,428	5,657	110.50	99.45
2024 10	4,933,377	706,280	5,639,657	7,164,518	1,190,271	5,974,247	434,592	100,002	212,206	51,42B	5,657	113.81	102.43
2025 11	5,081,379	722,524	5,803,903	7,322,854	1,214,076	6,108,778	447,630	142,755	354,961	51,428	5,657	117.23	105,50
2026 12	5,233,820	739,142	5,972,962	7,484,689	1,238,357	6,246,331	461,059	187,690	542,650	51,428	5,657	120.74	108.67
2027 13	5,390,835	756,142	6,146,977	7,650,100	1,263,125	6,386,976	474,890	234,892	777,542	51,428	5,657	124.36	111.93
2028 14	5,552,560	773,534	6,326,093	7,819,167	1,288,387	6,530,780	489,137	284,450	1,061,992	51,428	5,657	128.10	115.29
2029 15	5,719,137	791,325	6,510,461	7,991,971	1,314,155	6,677,816	503,811	336,456	1,398,449	51,428	5,657	131,94	118.74
2030 16	5,890,711	809,525	6,700,236	8,168,594	1,340,438	6,828,156	518,926	391,006	1,789,455	51,428	5,657	135.90	122.31
2031 17	6,067,432	826,144	6,895,576	8,349,120	1,367,247	6,981,873	534,493	448,197	2,237,652	51,428	5,657	139.97	125.98
2032 18	6,249,455	847,192	7,096,647	8,533,635	1,394,592	7,139,043	550,528	508,131	2,745,783	51,428	5,657	144.17	129.76
2033 19	6,436,939	866,677	7,303,616	8,722,228	1,422,483	7,299,745	567,044	570,915	3,316,698	51,428	5,657	148.50	133.65
2034 20	6,630,047	886,611	7,516,657	8,914,990	1,450,933	7,464,057	584,055	636,656	3,953,354	51,428	5,657	152,95	137,66
2035 21	6,828,948	907,003	7,735,951	9,112,011	1,479,952	7,632,059	601,577	705,469	4,658,823	51,428	5,657	157.54	141.79
2036 22	7,033,817	927,864	7,961,680	9,313,386	1,509,551	7,803,836	619,624	777,469	5,436,292	51,428	5,657	162.27	146.04
2037 23	7,244,831	949,205	8,194,036	9,519,212	1,539,742	7,979,470	638,213	852,778	6,289,070	51,428	5,657	167.14	150.42
2038 24	7,462,176	971,036	8,433,212	9,729,587	1,570,537	8,159,050	657,359	931,522	7,220,592	51,428	5,657	172,15	154.93
2039 25	7,686,041	993,370	8,679,412	9,944,611	1,601,947	8,342,663	677,080	1,013,828	8,234,420	51,428	5,657	177.31	159,58
2040 26	7,916,623	1,016,218	8,932,840	10,164,387	1,633,986	8,530,400	697,393	1,099,833	9,334,253	51,428	5,657	182.63	164.37
2041 27	8,154,121	1,039,591	9,193,712	10,389,020	1,666,666	8,722,353	718,314	1,189,673	10,523,926	51,428	5,657	188.11	169.30
2042 28	8,398,745	1,063,501	9,462,246	10,618,617	1,699,999	8,918,617	739,864	1,283,493	11,807,419	51,428	5,657	193.76	174.38
2043 29	8,650,707	1,087,962	9,738,669	10,853,288	1,733,999	9,119,289	762,060	1,381,440	13,188,858	51,428	5,657	199.57	179.61
2044 30	8,910,22B	1,112,985	10,023,213	11,093,146	1,768,679	9,324,467	784,921	1,483,668	14,672,527	51,428	5,657	205,56	185.00
2045 31	9,177,535	1,138,584	10,316,119	11,338,304	1,804,053	9,534,251	808,469	1,590,337	16,262,863	51,428	5,657	211.72	190.55
2046 32	9,452,861	1,164,771	10,617,632	11,588,881	1,840,134	9,748,747	832,723	1,701,609	17,964,472	51,428	5,657	218.07	196.27
2047 33	9,736,447	1,191,561	10,928,008	11,844,995	1,876,937	9,968,059	857,705	1,817,654	19,782,126	51,428	5,657	224.62	202,15
2048 34	10,028,541	1,218,967	11,247,507	12,106,770	1,914,475	10,192,294	883,436	1,938,649	21,720,776	51,428	5,657	231,36	208.22
2049 35	10,329,397	1,247,003	11,576,400	12,374,329	1,952,765	10,421,564	909,939	2,064,775	23,785,550	51,428	5,657	238.30	214.47
TOTAL	A STATISTICS AND		259,048,391	N. C. Martine	Long and the state of the	255,401,464	20,138,624	23.785.550					

NPV @ 3.00% - \$10,848,360 \*

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\* \$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.



At the request of the City of Allentown, Public Financial Management, Inc. ("PFM") prepared the attached presentation of costs of the City's waste disposal activities under various assumptions supplied to us, including the effect of the proposed DTE System. All information employed in the attached presentation was provided to PFM by the City or third parties designated by the City. We have been authorized to assume that all such information is accurate, complete and reasonable, and, with the consent of the City, we have made no examination as to the accuracy or completeness of any such information or the reasonableness of any assumptions as to future conditions which have been furnished to us. PFM assumes responsibility only for the reliability of computations made and presented on the basis described above and, where appropriate, giving effect to historic relationships. PFM makes no representation as to the achievability of any state of facts portrayed in the attached presentation.

SCENARIO 1

14

#### WTE COST COMPARISON

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Growth rate assumptions for landfill costs and electricity prices (see pull down tabs) are highly speculative and are dependent upon a variety of factors including, but not limited to, the general inflation rate, fuel prices, state and federal regulations and alternative disposal patients.

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ive disposal options.				
Assumptions:	User Inputs In Blue		Notes	
Waste Quantity* Waste Disposal Cost Biosolids Quantity*	714 tons/week	37,128 ton \$ 90,48 imp 14,300 ton	/year Facilities, and Disposal Only	es City Curbside Collection Program, City Litter Recepticles, (Collection and transportation factored ou
Biosolids Disposal Cost	cro construcce	\$ 36.75 Imp	iled per ton Includes Disp	osal, Labor and Transportation Costs
Electricity Usage	833,050 kwh/month	9,996,600 kW	h/year	
Base Year		2011		
Base Assumptions: (Use th	ese values to return to t	he 2011 starting conditio	ns)	1
Waste Quantity	714	DTE Fee/Growth	\$5,885,000/2.219	6
<b>Biosolids Quantity</b>	275	<b>Electricity Rate/Growth</b>	\$0.12/0.00%/2.009	6
Biosolids Disposal Cost	\$36,75	Waste Disposal Growth	0.009	6
Electricity Usage	833,050	Waste Disposal Cost/Gr	owth \$77.50/3.159	6
Waste Contract/Growth	\$3,359,390/3.15%	Max Excess Tonnage	11.009	6
Blosolids Growth	2.30%	Waste Disposal Discourt	10.009	6

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	CURRENT SYSTEM			and the second	DTE SY	STEM	Sector States	Cumulative	Cumulative	ADDITIONAL REVENUE/(COSTS) ASSUMPTIONS			S (SEE COLUMN 8)
M	Waste Disposai	Biosolids Disposal	Tabel	Waste/ Blosolids	Less: Electricity	Cub Tabal	Less: Additional Revenue/(Cost)	Difference Savings	Difference Savings	Waste Disposal/ Biosolids	Maximum Ailowed	Waste Disposal	Waste Disposal Spot Market
Tear	Lost	Lost	Total	Disposal Fee	Credit	Sub-Total	(Columns 11 - 14)	(Lost)	(Lost)	Growth	+12% (tons)	Cost (\$/ton)	Discount
Assumptions/	\$ 3,359,390 \$	525,525		\$ 5,885,000	\$ 0.1200 0.00% •	2015 Rate 2015 - 2019	Waste Disposai Cost Discount			51,428	57,085	\$ 77.50	
Glowbi Rate	3.15%	2.30%		2.21%	\$ 0,1100 2,00% •	2020 Rate 2020 - Beyond	25.00%			0.00%	11,00%	3.15%	10.00%
2015 1	3.803.097	575.567	4.378.664	5.885.000	1.199.592	4.685.408	335.023	28.279	28,279	51,428	5.657	87.74	78.96
2016 2	3,927,894	588,805	4.511.699	6.015.059	1,199,592	4.815.467	345.074	41.306	69.585	51,428	5.657	90.37	81.33
2017 3	4.046 465	607.348	4.648.813	6,147,991	1,199,592	4.948.399	355.426	55.840	125,425	51.428	5,657	93.08	83.77
2018 4	4.173.929	616,202	4.790.131	6,283,862	1,199,592	5.084.270	366.089	71,949	197.374	51,428	5,657	95.87	86.28
2019 5	4.305.408	630,374	4,935,782	6,422,735	1,199,592	5.223.143	377.071	89.710	287.084	51,428	5.657	98.75	88.87
2020 6	4.441.028	644.873	5.085.901	6,564,678	1.099.626	5.465.052	368.384	9,233	296.317	51.428	5.657	101.71	91.54
2021 7	4.580.920	659,705	5,240,625	6,709,757	1.121.619	5.588.139	400.035	52.522	348,839	51,428	5.657	104.76	94.79
2022 8	4,725,219	674.87B	5,400,098	6.858.043	1.144.051	5.713.992	412.036	98,142	446.981	51.428	5.657	107.90	97.11
2023 9	4,874,064	690,400	5.564.464	7.009.605	1,166,932	5.842.674	424,397	146,188	593,169	51,428	5.657	111.14	100.03
2024 10	5.027.597	706,780	5.733.876	7,164,518	1,190,271	5.974.247	437,129	196,758	789.927	51.428	5.657	114.4R	103.03
2025 11	5.185.966	722,524	5,908,490	7.322.854	1,214.076	6.108.778	450.243	249,955	1.039.682	51.428	5 657	117.91	106.12
2026 12	5.349.324	739.142	6.088.466	7,484,689	1.238.357	6.246.331	463,750	305.885	1.345.768	51,428	5,657	121.45	109.30
2027 13	5.517.828	756,142	6.273.970	7.650.100	1.263.125	6.386.976	477,663	364.657	1.710.425	51,428	5,657	125.09	117.58
2028 14	5.691.639	773,534	6.465.173	7.819.167	1.288.387	6.530.780	491,993	426.385	2,136,810	51,428	5.657	128.84	115.96
2029 15	5,870,926	791,325	6.662.251	7,991,971	1.314.155	6.677.816	506.752	491.167	2.627.997	51.428	5,657	132.71	119.44
2030 16	6.055.860	809.525	6.865.385	8,168,594	1.340.438	6.828.156	521,955	559,185	3.187.182	51.428	5.657	136.69	123.02
2031 17	6.246.620	828,144	7.074.754	8.349.120	1.367.247	6.981,873	537,614	630,505	3.817.687	51,428	5.657	140.79	126.71
2032 18	6.443.388	847,192	7,290,580	8,533,635	1.394.592	7.139.043	553,742	705,279	4.522.966	51.428	5.657	145.01	130.51
2033 19	6.646.355	866.677	7.513.032	8,727,228	1.422.483	7,299,745	570.354	783,642	5,306,607	51.428	5.657	149.36	134.43
2034 20	6.855.715	886.611	7.742.326	8,914,990	1,450,933	7.464.057	587,465	865,734	6.172.342	51,428	5.657	153.85	138.46
2035 21	7.071.670	907.003	7.978.673	9.112.011	1,479,952	7.632.059	605,089	951.703	7.124.044	51.428	5.657	158.46	142.62
2036 22	7,294,428	927.864	8.222.292	9.313.386	1,509,551	7.803.836	623,742	1.041.698	8.165.742	51,428	5.657	163.22	146.89
2037 23	7.524.202	949,205	8,473,407	9.519.212	1.539,742	7,979,470	641.939	1,135,875	9,301,617	51,428	5,657	168.11	151.30
2038 24	7.761.215	971.036	8.732.251	9,729,587	1,570,537	8,159,050	661.197	1,234,398	10,536,015	51,428	5,657	173.15	155.84
2039 25	8.005.693	993.370	8.999.063	9,944,611	1,601,947	8.342.663	681.033	1.337.433	11.873.448	51,428	5,657	178.35	160.51
2040 26	8.257.872	1.016.218	9.274.090	10.164.387	1.633.986	8,530,400	701.464	1.445.154	13,318,602	51,428	5,657	183.70	165.33
2041 27	8.517.995	1.039.591	9.557.586	10.389.020	1.666.666	8.722.353	722,508	1.557.740	14,876,342	51.42B	5.657	189.21	170.29
2042 28	8.786.312	1.063,501	9,849,813	10.618.617	1,699,999	8,918,617	744,183	1,675,379	16,551,722	51,428	5,657	194.89	175.40
2043 29	9.063.081	1.087.962	10,151,043	10,853,288	1,733,999	9,119,289	766,509	1,798,262	18,349,984	51.428	5,657	200.73	180.66
2044 30	9.348.568	1.112.985	10,461,553	11.093.146	1,768,679	9,324,467	789.504	1,926,590	20,276,574	51,428	5.657	206.76	186.08
2045 31	9,643,048	1,138,584	10,781,631	11,338,304	1,804,053	9,534,251	813,189	2,060,569	22,337,143	51,428	5,657	212.96	191.66
2046 32	9,946,804	1.164,771	11,111,575	11,588,881	1,840,134	9,748,747	837,585	2,200,413	24,537,556	51,428	5,657	219.35	197.41
2047 33	10.260.128	1.191.561	11,451,689	11,844,995	1,876,937	9,968,059	862,712	2,346,343	26,883,898	51,428	5,657	225.93	203.34
2048 34	10,583,322	1.218,967	11,802,289	12,106,770	1,914,475	10,192,294	888,594	2,498,588	29,382,487	51,428	5,657	232.71	209.44
2049 35	10,916,697	1,247,003	12,163,700	12,374,329	1,952,765	10,421,564	915,251	2,657,387	32,039,873	51,428	5,657	239.69	215.72
TOTAL	and the second	and the second s	267 185 145	and in case of the local division of the	CONTRACTOR OF THE	255,401,464	20,256,193	32.039.873	1. 11 m 1. 1. 1. 1	Contraction in the local division in the	a state of the second		

NPV @ 3.00% - \$14,915,782 \*

\* \$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.



At the request of the City of Allentown, Public Financial Management, Inc. (\*PFM\*) prepared the attached presentation of costs of the City's waste disposal activities under various assumptions supplied to us, including the effect of the proposed DTE System. All information employed in the attached presentation was provided to PFM by the City or third parties designated by the City. We have been authorized to assume that all such information is accurate, complete and reasonable, and, with the consent of the City, we have made no examination as to the accuracy or completeness of any such information or the reasonableness of any assumptions as to future conditions which have been furnished to us. PFM assumes responsibility only for the reliability of computations made and presented on the basis described above and, where appropriate, giving effect to historic relationships. PFM makes no representation as to the achievability of any state of facts portrayed in the attached presentation.

SCENARIO 2

#### WTE COST COMPARISON

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Growth rate assumptions for landfill costs and electricity prices (see pull down tabs) are highly speculative and are dependent upon a variety of factors including, but not limited to, the general inflation rate, fuel prices, state and federal regulations and

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tve disposal options.					
Assumptions:	User Inputs in Blue				Notes
Warte Quantity	714 tons/weak		37 178	ton/unar	Waste includes City Curbside Collection Program, City
Waste Disposal Cost	/ AN CONS/ WEEK	\$	90.48	implied per ton	Disposal Only (Collection and transportation factored ou
Biosolids Quantity*	275 tons/week		14,300	ton/year	
<b>Biosolids</b> Disposal Cost		\$	36.75	Implied per ton	Includes Disposal, Labor and Transportation Costs
Electricity Usage	833,050 kwh/month		9,996,600	kWh/year	
Base Year			2011		
Base Assumptions: (Use th	ese values to return to t	he 20	11 starting con	ditions)	
Waste Quantity	714	DTE	Fee/Growth	5	5,885,000/2.21%
<b>Biosolids Quantity</b>	275	Elec	tricity Rate/Gr	owth \$0	.12/0.00%/2.00%
Biosolids Disposal Cost	\$36.75	Was	te Disposal Gr	owth	0.00%
Electricity Usage	833,050	Was	te Disposal Co	st/Growth	\$77.50/3.30%
Waste Contract/Growth	\$3,359,390/3.30%	Max	Excess Tonna	ge	11.00%
Biosolids Growth	2 30%	Was	te Disnosal Di	tount	10.00%

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	CURRENT SYSTEM			and the second second	DTE SY	STEM	the strategy of	Cumulative	ADDITIONAL REV	ENUE/(COSTS) ASSUMPTIONS		S (SEE COLUMN 8)	
Your	Waste Disposal	Biosolids Disposal	Total	Waste/ Biosolids	Less: Electricity	Sub Total	Less: Additional Revenue/(Cost)	Difference Savings	Difference Savings	Waste Disposal/ Biosolids	Maximum Allowed	Waste Disposal	Waste Disposal Spot Market
tear	LOST	COST	Total	Disposal ree	Creat	Sub-Total	(Columns 11 - 14)	(COST)	(COST)	Growth	+12% (cons)	Lost (\$/ton)	Discount
Assumptions/	\$ 3,359,390 \$	525,525		\$ 5,885,000	\$ 0.1200 0.00% •	2015 Rate 2015 - 2019	Waste Disposal Cost Discount			51,428	57,085	\$ 77.50	
Growin nate	3,30%	2,30%		2.21%	\$ 0.1100 2.00% •	2020 Rate 2020 - Beyond	25,00%			0.00%	11.00%	3.30%	10,00%
2015 1	3.825.267	575.567	4,400,834	5.885.000	1.199.592	4.685.408	336.976	52,402	52,402	51,428	5.657	88.25	79.42
2016 2	3.951.500	588,805	4.540.306	6.015.059	1.199.592	4,815,467	347.085	71,924	124.326	51,428	5.657	90.90	81.81
2017 3	4,081,900	602,348	4,684,248	6,147,991	1,199,592	4,948,399	357,498	93,346	217,672	51,428	5,657	93.62	84.26
2018 4	4,216,603	616,202	4,832,804	6,283,862	1,199,592	5,084,270	358,223	116,757	334,429	51,428	5,657	96.43	86.79
2019 5	4,355,751	630,374	4,986,125	6,422,735	1,199,592	5,223,143	379,270	142,251	476,681	51,428	5,657	99.32	89.39
2020 6	4,499,490	644,873	5,144,363	6,564,678	1,099,626	5,465,052	390,648	69,959	546,640	51,428	5,657	102,30	92.07
2021 7	4,647,973	659,705	5,307,678	6,709,757	1,121,619	5,588,139	402,367	121,907	668,547	51,428	5,657	105,37	94.84
2022 8	4,801,357	674,878	5,476,235	6,858,043	1,144,051	5,713,992	414,438	176,681	845,227	51,428	5,657	108.53	97.68
2023 9	4,959,801	690,400	5,650,202	7,009,605	1,166,932	5,842,674	426,871	234,399	1,079,627	51,428	5,657	111.79	100,61
2024 10	5,123,475	706,280	5,829,754	7,164,518	1,190,271	5,974,247	439,677	295,185	1,374,811	51,428	5,657	115.14	103.63
2025 11	5,292,549	722,524	6,015,073	7,322,854	1,214,076	6,108,778	452,868	359,163	1,733,975	51,428	5,657	118.60	106.74
2026 12	5,467,204	739,142	6,206,346	7,484,689	1,238,357	6,246,331	466,454	426,468	2,160,443	51,428	5,657	122.16	109.94
2027 13	5,647,621	756,142	6,403,764	7,650,100	1,263,125	6,386,976	480,447	497,235	2,657,678	51,428	5,657	125.82	113.24
2028 14	5,833,993	773,534	6,607,526	7,819,167	1,288,387	6,530,780	494,861	571,607	3,229,285	51,428	5,657	129.59	116.64
2029 15	6,026,515	791,325	6,817,839	7,991,971	1,314,155	6,677,816	509,707	649,730	3,879,015	51,428	5,657	133.48	120.13
2030 16	6,225,390	809,525	7,034,915	8,168,594	1,340,438	6,828,156	524,998	731,757	4,610,772	51,428	5,657	137.49	123.74
2031 17	6,430,827	828,144	7,258,972	8,349,120	1,367,247	6,981,873	540,748	817,847	5,428,618	51,428	5,657	141.61	127.45
2032 18	6,643,045	847,192	7,490,236	8,533,635	1,394,592	7,139,043	556,970	908,163	6,336,782	51,428	5,657	145.86	131,27
2033 19	6,862,265	866,677	7,728,942	8,722,228	1,422,483	7,299,745	573,679	1,002,877	7,339,658	51,428	5,657	150.24	135.21
2034 20	7,088,720	886,611	7,975,331	8,914,990	1,450,933	7,464,057	590,890	1,102,164	8,441,822	51,428	5,657	154.74	139.27
2035 21	7,322,648	907,003	8,229,650	9,112,011	1,479,952	7,632,059	60B,616	1,206,208	9,648,030	51,428	5,657	159,39	143,45
2036 22	7,564,295	927,864	8,492,159	9,313,386	1,509,551	7,803,835	626,875	1,315,198	10,969,228	51,428	5,657	164.17	147.75
2037 23	7,813,917	949,205	8,763,121	9,519,212	1,539,742	7,979,470	645,681	1,429,332	12,392,560	51,428	5,657	169.09	152.18
2038 24	8,0/1,//6	971,036	9,042,812	9,729,587	1,570,537	8,159,050	665,051	1,548,814	13,941,374	51,428	5,657	174.16	156.75
2039 25	8,338,145	993,370	9,331,515	9,944,611	1,601,947	8,342,663	685,003	1,6/3,855	15,615,228	51,428	5,657	1/9.39	161,45
2040 26	8,613,303	1,010,218	9,629,521	10,104,387	1,033,980	8,530,400	705,553	1,804,674	17,419,902	51,428	5,037	164.77	166,29
2041 27	8,897,542	1,039,591	9,937,133	10,389,020	1,000,000	0,722,353	726,720	1,941,499	19,361,402	51,428	5,657	190,31	171.28
2042 28	9,191,101	1,005,501	10,234,003	10,010,017	1,039,333	0,510,017	740,521	2,004,307	21,445,508	51,428	5,037	190,02	10.42
2043 29	9,494,470	1,087,982	10,562,452	11 002 146	1,755,939	9,119,209	770,377	2,234,120	25,000,000	51,428	5,657	201.90	101./1
2045 30	10 121 444	1 120 594	11 370 028	11 338 304	1,00,079	9,324,407	794,100	2,330,412	20,070,300	51,428	5,057	207,98	107.17
2045 31	10,131,444	1,136,584	11 630 553	11 599 991	1 840 134	9 748 747	847,929	2,333,700	31 348 470	51,428	5,657	214.20	192.78
2040 32	10,405,762	1,104,771	12 002 713	11,000,001	1 876 037	9,146,141	867 741	2,124,213	34 250 875	51,428	5,057	220.03	204 52
2047 33	11 167 021	1 219 067	12 286 987	12 106 770	1 014 475	10 197 294	803 774	3 088 367	37 339 747	51 / 28	5,657	234.06	210 66
2049 25	11 536 462	1 247 002	12 783 440	12 374 370	1 952 765	10 421 564	920 597	3 282 497	40 621 729	51 428	5,657	241 08	216.00
2043 33	13,530,402	4,247,005	125 (40) 403	22,314,323	4,552,105	155 401 404	10 274 275	10 621 730		31,420	5,057	241.00	210.50
IUTAL	Contraction of the local sector	A REAL PROPERTY AND A REAL PROPERTY AND A	275,648,918	And the Party of t		235,401,404	20,374,276	40,021,729					

NPV @ 3,00% - \$19,131,462 \*

\* \$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.



At the request of the City of Allentown, Public Financial Management, Inc. (\*PFM\*) prepared the attached presentation of costs of the City's waste disposal activities under various assumptions supplied to us, including the effect of the proposed DTE System. All information employed in the attached presentation was provided to PFM by the City or third parties designated by the City. We have been authorized to assume that all such information is accurate, complete and reasonable, and, with the consent of the City, we have made no examination as to the accuracy or completeness of any such information or the reasonableness of any assumptions as to future conditions which have been furnished to us. PFM assumes responsibility only for the reliability of computations made and presented on the basis described above and, where appropriate, giving effect to historic relationships. PFM makes no representation as to the achievability of any state of facts portrayed in the attached presentation.

SCENARIO 3

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