

What about Waste? Re-envisioning Los Angeles' Waste Paradigm:
An Assessment of the Local Implementation of Conversion Technology and Waste-to-Energy
Waste Management Solutions
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DEFINITIONS AND ACRONYMS

Conversion Technology: Conversion Technology is an umbrella term for any process that takes waste and turns it into energy without the use of combustion (no oxygen is present). It is lack of combustion that differentiates Conversion Technologies from Waste-to-Energy. Conversion Technology can refer to technologies that include, but are not limited to Pyrolysis, Gasification and Autoclaving.

Waste-to-Energy: Waste-to-Energy is a process derived from incineration. It uses a whole sweet of different methods in partnership with combustion (“burning”) to turn waste into energy.

Feedstock: Feedstock refers to any input into a CT/WTE process. A feedstock element can be MSW, biomass (leaf clippings, grass etc) or a combination of both. Most CT/WTE facilities can run off of any feedstock, but for each individual technology there is usually an optimum feedstock. For instance most pyrolysis facilities generally use a feedstock composed of 100% MSW.

Pre-processed Feedstock: Any feedstock that has already been “processed”, in which all recyclable materials have been removed as well as gravel.

BOS—Bureau of Sanitation

CAA—Clean Air Act (1970)

CEQA—California Environmental Quality Act

CT—Conversion Technology

LANCER—Los Angeles City Energy Recovery plan

RCRA—Resource Conservation and Recovery Act (1980)

SCAQMD—South Coast Air Quality Management District

WTE—Waste-to-Energy

EXECUTIVE SUMMARY

The urban waste management movement is on the precipice of great change. Waste management, singularly defined by its reliance on landfills, is facing a dilemma: landfills are overflowing and there is no place left to build new ones. The great change is being brought about by a new technological waste solution that addresses the yawning inadequacies of the current waste system. As a result local governments and urban waste managers are embracing this new technological solution that promises to diminish the volume of waste without taking up space all while creating no pollution. This paper is concerned with ferreting out whether this technological solution is really as clean as it is reported to be. Despite the great potential of the new waste solution to mend the broken waste system, there are still many obstacles that hinder appropriate and fair implementation. Local governments must avoid the historic pitfalls of landfilling and incineration. I intend to analyze whether the new solution is truly safe and clean, whether the local government is using fair siting practices and avoiding discriminatory siting mechanisms and that the local government engages the community early and often in the process. I analyzed technical texts to draw my own conclusions about the safety of conversion technologies. I also interviewed specialists in the field and advocates of the new waste system. My findings are directed toward the City and County of Los Angeles in an attempt to guide their decision making process. I want to inform their decisions to ensure that the local government will take the proper steps to guarantee the safety of the technology, the equality of the siting mechanism and finally engage the community as an integral part of the implementation process. I will outline the history of waste as I see it and highlight the political blunders and errors of past waste management schemes as a warning for the implementation of the new waste scheme. I will also provide a short introduction to the environmental legislation spawned by the environmental justice

movement and waste management scandals. I will briefly acquaint the reader with the successes of the federal and state governments to respond to these issues with effective legislature. I intend to underscore gaps that still exist between the allowances made to industries and federal/state air quality and zoning standards. Finally I will include an analysis of two local projects of urban waste management.

INTRODUCTION

I can remember the first time I thought about waste consciously, as something directly linked to my behavior. I was eating a lunch that I had brought to school in a plastic bag. My crackers came in a plastic tin inside a plastic wrapper. My sandwich was wrapped in a plastic bag itself and while my apple was packed into my lunch unwrapped, I threw away the core. After this incident I felt a pang of guilt; in that moment I assumed the responsibility of not only my trash but I saw myself as an enabling agent for all peoples consumptive ways, an actor in a drama about endless cycles of consumption and wastefulness. That feeling of guilt was fleeting; it was hard to maintain an indignant fervor over something that had such a fleeting presence in my life. As soon as I threw away the plastic bag with all of my lunch waste and walked to class, it was easy to forget my recent wastefulness. At the end of the following week, I had an echoing of that same guilt and then relief when the city hauled my trash away. I felt guilt after bearing witness to my own consumptive habits while watching my trash pile up all week and then relief when it was hauled away. This feeling of guilt and then relief I think was chorused among many consumers in cities across the country. As a nation, we see consumption and wastefulness as the ultimate luxury. Wealth has blinded the modern consumer to the glaring truth: consumers can no longer dispose of “things” that they simply don’t want anymore because they’ve exhausted their original purpose. Resources have become too precious, and space too little.

THE PROBLEM: DIMINISHING SPACE AND INCREASING WASTE/ A WASTE SYSTEM OUT OF JOINT

The issues of waste are manifold; to narrow down the discussion is to diminish and dilute the multiplicative and reiterative consequences of our waste system on the human condition and landscape. Solutions in the past have been short-term fixes to this long-term issue. Because there is big money in waste management (I would pay a person a lot to make my waste disappear) solutions are often more politically salient than environmentally sound. Previous waste systems such as landfilling or incineration attempt only to hide or temporarily alleviate overproduction of waste. The issues that have risen to the surface of the waste dialogue are illimitable. Of concern to waste proponents today are the toxins leaking from landfills and the very landscape of landfills (smell, noise and who lives next to them). The issue commanding the waste dialogue today is the lost energy in landfills; immeasurable amounts of energy stored in the carbon and heat of landfills is never exploited. From this miasma of waste issues, I have chosen to lift up the issue of increasing waste generation and diminishing space. With the U.W. population over 300 million, nearly every nook and cranny of the United States is filling in with people. Since people and trash make very poor neighbors, and growing swaths of land are protected for environmental reasons trash has nowhere left to go. The situation has become so dire that some of our waste is shipped to developing countries. This is a morally despicable interim solution. I have chosen this aspect of the waste debate because of its pertinence to the changing waste paradigm in Los Angeles. The expanding and contracting parts of the waste machine are perhaps the most incendiary issues in the Los Angeles waste debate today.

What nearly every waste statistic will impress upon the common consumer is the magnitude of the monster the U.S. and other developed nations have created. The United States,

according to data from 2000, produces 210 million tons of Municipal Solid Waste (MSW) and 400 million tons of industrial waste annually. Of the 400 million tons of industrial waste (which doesn't account for agricultural or mining waste) "industrial chemicals, agro-chemicals, waste from the iron and steel industry, electric power station waste, and plastics and resin manufacturing constitute the majority". Of the combined waste (MSW and industrial) 63% is landfilled, 17% is recycled and 16% is incinerated. "There are approximately 3200, landfill sites in the US and because of more stringent regulations requiring high standards of site lining, monitoring of gas and leachate and post-closure liabilities, this has led to increased costs. Consequently, the recent trend has been toward fewer, larger landfills, often located further from the source of the waste production."¹ These mega-landfills allow most of the public the luxury of feigned innocence; out of sight, out of mind. Our complacency is engendered (in us) from our complete removal from our waste sites. Our inability to articulate responsibility is because we don't see the evil of our ways.

And the problem will only worsen: historically the growth in the generation of waste paralleled population growth. Recently however, there has been a divorce in the direct parallel between population growth and the generation of municipal solid waste (MSW). Now waste generation mirrors more closely the ups and downs of economies. Even if global population levels off, the growth of waste production will not.²

The hyper-production of waste in cities can no longer be ignored. City governments and waste proponents are being forced to find new and innovative solutions to immediately deal with our excess of waste. The brightest solution on the horizon is a technical marvel that addresses waste reduction and processing within a sustainable framework.

¹ Paul T. Williams. *Waste Treatment and Disposal*. (Sussex, England: John Wiley & Sons Ltd., West, 1998) p.16.

² Mira Engler. *Designing America's Waste Landscapes*. (Baltimore, MA: Johns Hopkins University Press, 2004) p. 6.

Adopting a Sustainable Paradigm

The U.S.'s collective human (exclusively western?) identity is slowly changing. In reaction to a long history of environmental justice, a bevy of sustainable movements have been born. The design discipline of biomimicry portrays "nature as model, measure and mentor"; a common refrain among biomimicrists. We see business, economic and social models moving away from an anthropocentric paradigm towards one in which human societies must operate within the confines of natural law. From the framework of a new sustainable paradigm, we see that our economies and industries consume land with avarice, pouring toxic soup into the soil and moving on to the next acre. We forget that this land is irretrievable, our imprint on it irrevocable, and our consumptive ways irreconcilable with our ultimate survival.

Up until recently the waste management crowd was preoccupied with band-aid solutions that only temporarily alleviated the problem, without touching the true issues of urban waste management. Within the last five years the national conversation about waste has been inverted and taken a sustainable turn. City planners, local governmental agencies and waste specialists are finally talking front-end solutions. Composting and recycling are part of a larger movement towards a cradle-to-cradle system in which the output of any process is an input for another. Any item previously conceived of as trash is repurposed to be an element of another system. The concept of cradle-to-cradle is slowly permeating waste management systems. We are being naïve idealists however, if we believe that these efforts alone will carry us to production/consumption equilibrium before the world is brimming and suffocating with trash. One such solution is lingering near the sidelines of the waste management field. Conversion Technologies and Waste-to-Energy are heralded as the new golden ticket to urban waste management. CT/WTE reportedly diminishes the volume of waste, eliminates toxins and pollutants, and takes up no space all while producing "renewable" energy. Despite its technological prowess, the

implementation of these technologies is fraught with all the same issues of old waste management systems. Local government must still take care to avoid discriminatory siting mechanisms and closed-door politicking. If these technologies are truly as squeaky-clean as they are believed to be, then local governments have nothing to fear from true political transparency and community engagement.

The Los Angeles Dilemma: Finding a Best-fit Solution for a Unique Situation

While the national waste situation is quite disheartening, the local situation in the City of Los Angeles is much more optimistic. Due to a slew of progressive initiatives and political measures passed in the mid 90's up through today, the Municipal Solid Waste (MSW) diversion rates towards recycling are continually increasing. Los Angeles produces nearly 42 million tons of MSW a year, of which over 62% is currently diverted for recycling and composting purposes.^{3,4} This represents 22,000 TPD₅ diverted from landfills every day.⁵ Waste diversion rates notwithstanding Los Angeles is reaching its landfill capacity and must export 8,000 tons of MSW per day to neighboring states.^{6,7} Los Angeles' record for waste diversion is commendable, however there are other variables that threaten to derail the City's fast-track towards sustainable waste management.

³ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

⁴ Mira Engler. *Designing America's Waste Landscapes*. (Baltimore, MA: Johns Hopkins University Press, 2004) p. 16.

⁵ Greg Smith, Council district 12. *RENEW LA A Resource Management Blueprint: Section 5, Getting There June* (2005) p. 1-5.

⁶ Greg Smith, Council district 12. *RENEW LA A Resource Management Blueprint: Section 5, Getting There June* (2005) p. 5-1.

⁷ Coby Sky. *The Southern California Conversion Technology Demonstration Project*. (Los Angeles County Department of Public Works,) PowerPoint. <http://www.socalconversion.org/resources.html>.

Even though regional waste diversion rates are high, the impending closure of Los Angeles' most active landfill threatens the foundation of the local waste system. Puente Hills landfill, which absorbs a third of Los Angeles' daily MSW, is charted to close in 2013. A fixture in the waste management complex, Sunshine Canyon's future is constantly in a state of flux and many environmental and citizen activist groups want to see Sunshine Canyon slowly phased out until it can finally be closed. Beyond the future of each individual landfill, "nearly 50% of the Counties in California are expected to exhaust their disposal capacity within the next 15 years, while new landfills take 10-15+ years to design/permit."⁸

Between the closure of several landfills and the never-ending growth of yearly MSW, the City of Los Angeles is fighting an uphill battle. To exacerbate the situation the City of L.A. unofficially adopted a zero waste policy. The zero waste policy intends to divert 90% of MSW towards recycling and composting by the year 2025. There is a discrepancy now between the zero waste goal and the closing of landfills; to narrow this gap, the City of L.A. is considering CT/WTE. The stage is now set, Los Angeles is primed and ready to play host to two ambitious CT/WTE projects. City Councilman Greg Smith spearheads the first CT/WTE project and the second is by the County Bureau of Sanitation.

METHODOLOGY

- Literature Review: I read extensively about the history of waste management in the U.S. and Los Angeles. As well I read technical texts assessing the economic and environmental feasibility of Conversion Technologies. I read literature produced by both the City and

⁸ Coby Sky. *The Southern California Conversion Technology Demonstration Project*. (Los Angeles County Department of Public Works,) PowerPoint. <http://www.socalconversion.org/resources.html>.

County about their two projects in order to analyze the mechanisms of siting and community outreach.

- Interviews: I conducted many one-on-one interviews with urban waste proponents from the city and county as well as in the environmental justice field and Conversion Technology tech sector.
- Stakeholder meetings: I attended a scoping meeting held by the California Integrated Waste Management Board task force.
- Case studies: I conducted three case studies to provide models by which to compare the Los Angeles projects.

LESSONS LEARNED: A BRIEF HISTORY OF SYSTEMIC LANDFILLING AND INCINERATION ISSUES

Before the dawn and consequent induction of Waste-to-Energy and Conversion Technologies into the waste management repertoire, the waste management machine was defined by landfilling and incineration. The world over has been burning trash in immeasurable and haphazard ways since before governments and environmental groups cared to record. The United States and Europe have been burning MSW in a systematic and intentional endeavor to hierarchize and monitor urban waste for sanitation reasons for at least a century. This waste management schema set an ethically shaky and suspect precedent. For decades cities operated under the belief that landfilling and incinerating were the optimum systems for waste management. This long history of landfilling and incineration was interrupted by brief but prevailing interludes of social discontent driven by health, social and environmental justice scares. The local environmental and social justice community must be alert as the City and County of L.A. charge forth through zoning, permitting and siting processes for their CT/WTE

projects. Past waste management debacles have taught the environmental and social justice community that local government must be held accountable for discriminatory siting mechanisms and dismissal of state and federal industrial emissions standards. Local government cannot afford to be blinded by the exciting success of CT/WTE projects around the globe.

Leaking Landfills: Recognition of Discriminatory Dumping and Social Justice

There is a litany of stories that chronicle the missteps of cities and industries championing the construction and proliferation of landfills and incinerator sites. In 1982 Warren County, North Carolina faced the imminent construction of a landfill intended for the dumping of PCB-contaminated soil. PCB is a well-recognized toxin and the dumping of PCB contaminated soil is outlawed. The contaminated soil was to be shipped in from 14 different counties in the area. The state however, waived the law banning PCB dumping temporarily, and in this suspended state of justice allowed the landfill to be built. The historically predominantly black community in which the proposed landfill would be built organized and pushed back against the states affront on their judicial system. The charge the community brought in front of local government was for discriminatory dumping practices, the first of its kind setting a precedent that would sadly have to be referred to many times subsequently. The NAACP spearheaded the charge against the state. Despite the concerted efforts of the NAACP and the Warren County community, the soil was deposited in the landfill with the idle promise that the site would be “cleaned-up” as soon as possible.⁹

Mounting concern and attention towards discriminatory dumping practices jettisoned the U.S. Government Accounting Office to publish a study of race and income demographics in

⁹ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 49.

relation to hazardous waste facilities and landfill sites in June of 1983. The report was not comprehensive, it only traced the story of 8 southern states, but the findings were revealing and indicative of the state of the rest of the country: “three of every four hazardous waste landfills were located in or near communities of color; three of five African Americans and Latinos lived in communities that had hazardous waste landfills.”¹⁰ When considering cumulative impact, the consequences are twofold. Communities with the fewest resources are disproportionately concentrated near industrial health hazards. One industry alone poses health threats, but industries tend to cluster, do to city zoning laws and the aggregate pollution is magnified to alarming levels. The City and County must take cumulative impact of air pollution into account when proceeding forward with their projects. If the CT/WTE sites are located in poor, minority areas near pollution hot spots it could be the straw that broke the camels back.

Incineration and Air Quality: The Advent of the Environmental Justice Movement

Almost all waste strategy tactics of Cities and Counties have been met with political strife, especially incineration. The 1980’s were the golden decade for incinerator construction in the U.S. By 1990 “more than 15% of all U.S. MSW was burned to retrieve its heat value.”¹¹ Not only did incineration make volumes of trash essentially “evaporate”, but also incineration companies could turn a pretty profit, making, on average, 5.59 cents per kilowatt-hour.¹² The economy of waste incineration was a self-reinforcing agent that perpetuated the practice of burning trash despite mounting public concern. “The rapid growth of Waste-to-Energy saw over

¹⁰ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 50.

¹¹ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 37.

¹² Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p.39.

150 plants built in the U.S.”¹³ From the frenzy of incineration production, only two WTE sites are still in operation in Los Angeles today. The impending construction of WTE plants were often the catalyst for the formation of community organizations, or a call to arms to rally organizations that had already formed. One such group entered onto the stage of the Los Angeles political melodrama twice. The organization Mothers of East Los Angeles formed in 1984 to successfully protest the state of California’s intent to build a prison in their neighborhood. “Mothers” remobilized when the County of Los Angeles proposed building a large mass-burn waste incinerator in East Los Angeles; the LANCER project. Anti-incineration campaigns “challenged the unfair practice of siting health hazards in communities of color. They garnered a great deal of popular support and helped put the concept (if not yet the term) of environmental justice on the Los Angeles map.”¹⁴ The concept and language of Environmental Justice became a part of the national political lexicon in 1991 when the South Coast Air Quality Management District (SCAQMD) established an Ethnic Advisory Board to advise and monitor air quality issues in minority communities.¹⁵

AQMD’s attitude towards WTE is not without reproach however. AQMD is one of the regional agencies that monitors and regulates air quality. Every three years AQMD creates an air quality plan that is then incorporated into state law. Within this document it’s AQMD’s purview to set the maximum allowable level of airborne carcinogens emitted from any polluting facility. This standard, set circa the materialization of the Ethnic Advisory Board “allowed a plant to emit a level of cancer-causing toxics likely to produce a hundred additional cancers per million

¹³ Greg Smith. *Section 1, Executive Summary: RENEW LA Blueprint*. Jan. 4, 2010. p. 1-3.
http://ens.lacity.org/council/cd12/renewla/cd12renewla243164253_01042010.pdf

¹⁴ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p.

¹⁵ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 52.

persons exposed, and for noncarcinogenic toxins it allowed an increase of up to five times the level that health experts considered safe.”¹⁶ The Advisory Board was a hollow mechanism for ensuring air quality standards were met. AQMD had the power to overwrite any good the advisory board could have done with their lax air quality standards.

The closing of the decade saw the network of boards, governing agencies, laws and environmental groups concerning air quality and waste management slowly forming but still in great disarray. Comprehensive and effective legislature was still in its infant stages. For every large public push for stricter zoning and air quality standards a small legislative adjustment was made. In the case of AQMD’s air quality standards we see the yawning gaps in legislative fortifications against industrial emissions and pollution. State and federal legislature has a lot of catch-up to do in order to create infallible bulwarks against polluting industries.

Perhaps one of the most visible and historic incineration debacles took place in Los Angeles. The waste management scandal of the greatest geographic importance is the Los Angeles City Energy Recovery project (LANCER) project. The inception LANCER came at the tail end of the climax of the environmental movement concerning incinerators, so chronologically the project was at a disadvantage from its infancy. Then mayor Tom Bradley and the Bureau of Sanitation were trying to bolster support for an incinerator in a community jaded by past WTE projects across the nation.

LANCER: A City Under Siege

The Los Angeles City Energy Recovery Project, LANCER, was the brainchild of the Bureau of Sanitation, an idea they had cooked up a decade prior to its actual entrance onto the

¹⁶ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 57.

political stage. Allies and champions included then Mayor Tom Bradley and leading city council advocate Bilger Lindsay. The idea for a mass-burn incinerator was conceived amidst tension similar to the tension-fraught waste situation today; land scarcity and waste excess. The LANCER project was one of eleven projects proposed in the 1980's for Southern California, and only 1 of 34 proposed incineration sites in the state.¹⁷ The imminent closing of the Toyon I and Lopez Canyon landfills only increased the stakes, forcing the BOS to find a solution rapidly. In their frenzy for a solution, the BOS sought the avenue of least resistance: incineration.

Under the aegis of the Bureau of Sanitation, and with the stamp of approval of waste managers and the California Waste Management Board, the project was lime-lighted as an illustrious catchall solution to Los Angeles' waste problems. All told there were to be three mass-burn incinerators that could handle up to 1,600 tons of waste per day. Incineration at this capacity would turn up to 70% of the city's daily trash production into ash and energy.¹⁸ Political momentum for the LANCER project was snowballing and the BOS's next move was to piece together a proposal for potential sites. The siting proposals were put together in isolation by "representatives from the waste-to-energy industry itself."¹⁹ This close-door decision-making by biased parties would be the downfall of the LANCER project. Without leaking information to the public at large, the BOS moved forward with the project, applying for funding from the EPA to conduct a "feasibility of locating a resource recovery facility in the are of the City" report. The report was said to take into account "issues regarding the technology, the local energy market, and the costs associated with the construction and operation of such a plant." Omitted from this

¹⁷ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 155-56.

¹⁸ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 155-56.

¹⁹ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 161.

report was the potential human cost and impact on health. To illustrate the city's apathy and lassitude for the human health component of this project the more environmentally safe WTE model was passed over for the mass burn system due to economic concerns; the safer and cleaner WTE model was more expensive.²⁰

The City formed a steering committee to referee public discontent and navigate through the permitting process. At this point the City had in mind three potential sites for the three mass-burn incinerators: the central city, the West side and the Valley. The BOS contracted with the private firm Cerrell Associates to draw up a report assessing potential community impact. Cerrell Associates in the report considered and discussed "differences in community response to siting issues" and proposed sites accordingly. The BOS ignored Cerrell's gentle suggestions to seek community input and chose sites circumventing all avenues of public outreach. BOS chose the Alameda site; 13.3 acres of industrial land in south central located next to a young, poor and minority community: "the median age was 23.4 years, while that in the county was 30.8 years; 40% of the residents had incomes below the poverty level as compared with 13.4% in the county. Moreover, the community was 52% black and 44% Hispanic as compared to county averages of 12% and 28 % respectively. Also, the community suffered from a greater incidence of disease than the county at large. In the impact zone outlined by LANCER there were 3,359 homes and a number of schools, churches and community centers."²¹ We see the echoing of a systemic pattern; the disproportionate impact waste systems have on low-income minority communities with above average instances of disease.

²⁰ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 162.

²¹ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 163.

One can only speculate that the BOS thought all the potential suffering was justified by profit and waste reduction because they moved ahead with the project. The incinerator would produce 40 megawatts of electricity that would serve 1.4 million people. Before the project made its public debut, the BOS got city council approval and the Environmental Impact Report was cleared and certified. Now the BOS was finally ready to reach out to the community. The steering committee organized community workshops, more as a defense than an opportunity for the community to voice their concerns. To preclude actual community involvement a \$10 million “community betterment fund” was proposed “and to be controlled by a Lindsay-appointed Citizens Advisory Committee.”²² Further fast tracking took place in order for the project to place their Industrial Development Revenue Bond in escrow before the amendments to the Tax Reform Act made them ineffectual. The BOS pushed up the deadlines all while ignoring the potential human impact.²³

Despite the glut of incinerator projects breaking out across the state, the LANCER project and others could not be heralded as resounding successes by any means. Then Mayor Tom Bradley, who had diligently and ardently won the favor of the inner city black and Hispanic population, forfeited their favor when he allied himself with LANCER. These populations knew that their backyard was the bull’s-eye the architects of the project had set their sights on. These communities, used to political smoke and mirrors, were well rehearsed in the opaque, poorly disguised and thinly veiled rhetoric the BOS was spouting about the new incinerator. The BOS claimed that this project would be the keystone piece in a new waste management solution. The Alameda community was not fooled; issues with incineration projects had been making

²² Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 164.

²³ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 165.

headlines and igniting civil unrest since the 50's and 60's.²⁴ Local politicking and posturing were old tricks. The state legislature had already established air pollution control districts in an attempt to prevent projects such as LANCER. The districts proved ineffectual in the face of so much money and political momentum as there was behind LANCER.²⁵

After the first wave of community workshops, which provided a glimpse as to how communities would be impacted by this project, an opposition force began to form. The Concerned Citizens of South Central Los Angeles pioneered the opposition force, organizing community members and other social justice groups in Los Angeles. Concerned Citizens of South Central Los Angeles joined forces with Not Yet New York “a ‘slow growth’ West Side coalition of environmental and homeowner groups” and California Alliance in Defense of Residential Environments (CADRE) an anti-incineration group.²⁶ Not only did the BOS and Mayor Bradley have the underprivileged East Los Angeles community to contend with, discontent was brewing across the city in Santa Monica as well. In the 70's there was backlash to the “sanitary” landfill solution. The same people who voted Bradley in were now finding fault with the waste system, especially the Santa Monica community. “Opposition emerged especially from community and environmental groups who had organized to protect the Santa Monica Mountains from development . . . this powerful, largely upper-middle class movement which was politically effective and well organized.” In unity with the Alameda community the Santa Monica opposition force challenged the expansionist ideas of the city and county's sanitations

²⁴ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 157.

²⁵ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 158.

²⁶ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 168.

departments. Their opposition platform was based on the environmental threat to groundwater through contamination and noxious gas emissions from the “sanitary” landfills.²⁷

These examples (LANCER and Warrenton, North Carolina) provide two overarching lessons that should inform the decision-making processes of the City and County. Any new government waste program should be flexible and elastic, and should respond to public needs. The County attempted to circumvent the South East community altogether when implementing LANCER and the county met a deluge of civil unrest and pushback. For all future projects, the LANCER debacle offers one resounding message; an organized community can be a force of great opposition. For the future of CT/WTE in Los Angeles, the City and County should establish a working reciprocity between the advocates of CT/WTE and the communities in or near the proposed facilities. Their voice should be incorporated into the chorus of voices that influence the shape of this project.

Political Rectification: The Federal Government’s Response to Environmental Injustice

This list is in no way exhaustive of the scandals and heartache endured during the incineration and mega-landfill heyday. It was these events and other sagas like the Love Canal, Powerine Refinery in south Los Angeles and Mobro barge scandals that marked the advent of the environmental justice movement. The early 1990’s saw waste-to-energy construction and production withering under intense public scrutiny from environmental groups as well as the U.S. congress. National environmental groups created a network of support for local organizations to combat the endemic spread of incineration and mega-landfills. Many environmental groups were vilifying WTE and mega-landfills. Their greatest hope was that there

²⁷ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 160.

would be a suspension of construction until appropriately strong legislature could pass. In the early 90's environmental groups and "members of the U.S. Congress even argued for a national moratorium on the construction of any new WTE facilities".²⁸ The anti-incineration community was quickly realizing that emissions from incinerators and leachates from landfills were released with little control and regulation. Pollutants like Dioxins, Furans and heavy metals, all known emissions from incineration, became markers of disease and disaster.²⁹

Proponents of WTE and incineration fought back. Kiswer and Sussman claim "WTE facilities 'operating in the U.S. contribute less than one percent of the total mercury being released by man made sources, resulting in health risks to the most exposed individual that are 10 to 100 times less than established regulatory threshold.'" Many proponents of incineration argue that incineration emits noxious chemicals "within the limitation of regulatory law" and are usually emitted in quantities "less harmful" than industries such as coal burning.³⁰ Kiswer and Sussman having located the lowest common denominator for the operations of polluting industries and are driving the emission standards towards that inadequate standard with alacrity. Emissions should not be measured by comparative standards; it is not commendable that one industry is emitting half as much as another as long as they are both emitting at hazardous levels. The discussion these two hold about emissions completely precludes the repercussions of cumulative impact.

Steps have been taken by the Federal Government towards recuperating public favor by reflecting the feelings of concern for health and the environment in federal legislation. From the

²⁸ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 9.

²⁹ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 10-11.

³⁰ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 11.

multitude of emissions standards and restrictive laws for industry, two pieces of legislation come to bare forcefully on the history and future of waste management: the Clean Air Act of 1970 (CAA) and the Resource Conservation and Recovery Act of 1980 (RCRA). Both pieces of law “mandate regulations concerning WTE atmospheric emissions and ash management” and outline rules (commonly referred to as the New Source Performance Standards) mandating that all new WTE facilities (any plant wherein construction started after December 1989) “with capacities of more than 250 tons of MSW per day must reduce emissions of furans, dioxins, and heavy metals (except mercury) by more than 99%.”³¹ These mandates drove costs of tipping fees up (the price paid by the city or private trash haulers to dump waste at a landfill/incinerator), yet not nearly towards the range of European tipping fees. Despite the projected increase in tipping fees, they were still not reflective of the actual cost of landfilling or incinerating. The cost not captured in tipping fees are the human and environmental cost.

The CAA was amended in November of 1990. The Clean Air Act Amendments (CAAA) demanded that the U.S. EPA reevaluate the guidelines in terms of size and capacity of industries regulated under the CAA. The amendments to CAA stipulated that all rules passed on air emissions apply to “all size categories of municipal waste combustors” as well that technology employed at these sites be the “Maximum Achievable Control Technology (MACT)”. MACT is one step up from the baseline they were previously using, “Best Demonstrated Technology (BDT)”.³² Despite the EPA’s steps forward towards stronger emission standards, they took one

³¹ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 19.

³² Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 19.

step back. Under the Public Utility regulatory Policies Act (PURPA) “if the WTE plant produces less than 80 MW of electricity they are eligible for certification and get economic incentives.”³³

California State’s Air Resources Board Science Review Panel acknowledged that dioxin was a known animal and potential human carcinogen. The board also acknowledged that no known level of exposure to dioxin was safe and that the “current and planned waste-to-energy facilities in the state would ‘provide a high potential for emissions of dioxins into the air’”. Even in the face of these conclusions the board did not move forward on any statewide dioxin emissions standard.³⁴ It was these local and statewide acts of political negligence towards human and environmental health that incited the environmental justice movement. “The growth of this movement and its synergy with a wide spectrum of economic justice movement resulted in environmental justice becoming a legitimate, recognizable issue for the public, for federal and state governmental agencies, and, as a result, for business.”³⁵ The dawn of the EJ movement in South East Los Angeles in the mid 80’s was brought about by a series of health scares do to toxic hazards and industrial pollution. South East residents were no strangers to polluting industries, but when a dark cloud of chlorine burst from a broken pipeline at the Purex plant next door to an elementary school and hospitalized 27 students, a line had been crossed. This egregious act was rapidly precipitated by the mobilization of the Huntington Park residents to remove a large pile of concrete that had been sitting in their neighborhood for years. The pile of concrete sloughed off a fine dust every day that coated the lungs of residents in the area. Huntington Park employed the help of Communities for a Better Environment to target city officials to remove the

³³ Randal T. Curlee et. al. *Waste-to-energy in the United States : a Social and Economic Assessment*. (Westport, CT: Quorum Books, 1994) p. 21.

³⁴ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 107.

³⁵ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 53.

concrete.³⁶ It was health scares like these, along with the careful shepherding of environmental justice organizations like CBE, that shaped the environmental justice movement into the finely honed tool it is today for combating discriminatory siting practices and lax environmental regulations.

Conversion Technologies and to a certain extent WTE (the newest evolution) have no history; they are a *tabula rasa* onto which we can write a just and equitable development or we can blacken its unwritten history with the scribbles and errors of the incineration and landfilling movement. However flawed, the development of incineration and landfilling was in the states, it provides a model to compare to. The issues plaguing landfills and incinerators are still present and need to be addressed when considering the implementation of CT/WTE in Los Angeles. The reported safety of these new technologies is not a get out of jail free card. The City and County face a battery of obstacles; they must first prove without a doubt that these technologies will have no negative impact on health and standard of living to those living near the waste facilities. Implementation of the new waste scheme must use equitable siting mechanisms and monitoring emissions so that no one community is disproportionately affected.

THE NEW WASTE FRONTIER: A TECHNOLOGICAL SOLUTION ON THE HORIZON

Diminishing space for landfills and increasing waste generation are the local and national catalysts for innovative waste management solutions. These drivers are steering the waste movement towards Conversion Technologies and Waste-to-Energy technologies (CT/WTE). The new sustainable framework, referenced above, provides a rigorous rubric for the new waste solutions. Any new waste solution must address toxicity and environmental health (whether it is

³⁶ Karen Brodken. *Power Politics: Environmental Activism in South Los Angeles*. (New Brunswick, NJ: Rutgers University Press, 2009) p. 53.

through toxic leaching or air emissions). The solution must also be an agent in the cradle-to-cradle system, as well as address the issue of the lost energy in landfills and diminishing space. These sustainable parameters seem constrictive, almost impossible to meet. However there is a natural accession towards one solution. The local and national impulse is to turn to CT and WTE.

Past waste management solutions have fallen short of achieving many of the goals outlined by the new sustainable rubric. Past efforts at waste management have included a medley of strange processes and solutions. Primitive waste-to-energy systems, the precursor to CT/WTE today, were developed in Europe in the late 1890's. While WTE experienced brief success in Europe, it didn't develop in the U.S. until 60 years later. The turn of the century saw the advent of another strange technology called 'reduction'. The process "cooked" the garbage "to extract a variety of marketable by-products, including grease and tankage, the dried animal solids sold as fertilizer." Other solutions sought to turn waste into usable products as well, such as the process patented in Texas that turned waste into fuel bricks called "oakcoal". As waste management solutions preoccupied more and more space in the minds of urbanists stranger and stranger methods for waste management were cooked up. Swine feeding even reappeared as a popular waste reduction tool.³⁷ As we can see, energy from waste is not a new idea; it has been around in different forms for over a century. Throughout the circuitous route that waste management took to arrive at our current destination, it has been shadowed by the same set of systemic issues. A common denominator flows through all waste management schemes, from swine feeding to incineration; waste processing sites are located near the poorest and most wretched parts of the city. While the richest members of urban centers were and continue to be blissfully unaware of how waste is treated, the poorest urbanites were and are intimately familiar with waste

³⁷ Louis Blumberg and Robert Gottlieb. *War on Waste: Can America Win its Battle With Garbage*. (Washington, DC: Island Press. 1989) p. 8-9.

processing. Even if we think our methods of waste treatment today are no longer arcane and antiquated, like swing feeding, the implementation of new waste schemes still remains woefully inept and draconian. Through all the decades and permutations of waste treatment solutions we have not been able to escape issues of social and environmental injustice.

Waste-To-Energy versus Conversion Technologies

Waste-to-Energy and Conversion Technologies differ from each other in critical ways.

Waste-to-Energy (WTE) is the new face of incineration. Historically Waste-to-Energy referred to any process that used combustion to eliminate waste, and for a while referred to incineration.

The term WTE today among waste specialists refers exclusively to technology evolved from incineration that has become much “cleaner” in response to public concern for air quality. Due to the installment of severe federal air quality laws WTE today emits a fraction of what classical incineration emits. Where WTE departs from CT is in the use of oxygen during the processing of waste. WTE permits oxygen to enter into the process, which allows for the combustion of trash, which inherently leads to greater emissions than non-combustion processes. *All* CT’s are non-combustion. By definition, CT’s allow for the sampling and cleaning of the inputs and outputs at different stages in the process, leading in general to a cleaner operation. Conversion Technologies belong to a family of industrial science that takes waste of nearly any kind, and through several processes, usually involving extreme heat, turns waste into energy.^{38,39} CT’s are highly efficient, quiet and odor free. The volume of waste put into the operation is reduced by nearly 90%; if 100 tons of MSW is poured into a CT “machine” 10 tons of “inert” char is expelled on the other end. It is unclear by what standard CT firms are defining “inert”; I was

³⁸ “The Conversion Technology Study” *The County of Santa Barbara and City of Santa Barbara, Goleta, Solvang, and Buelton*. <http://www.conversiontechnologystudy.com/>

³⁹ Alternative Resources, Inc. “Los Angeles County Conversion Technology Evaluation Report: Phase II-Assessment”. Prepared for The County of Los Angeles Department of Public Works and the Los Angeles County. October 2007.

unable to directly contact any firm to ask them explicitly. In the absence of clear definition of inert, we must assume that the char will not cause harm to those exposed to it. CT's and to a certain extent WTE take waste, make it physically disappear without creating pollution, all while generating electricity.⁴⁰

CT's are divided into three families: Thermochemical, Biochemical and Physiochemical. Within a CT "family" each technology differs from the rest depending on the kind of waste you put into the processor (known as appropriate optimum feedstock), whether the technology uses enzymes, bacteria, heat or pressure to break down the waste and the form of the output energy (methane gas or liquid fuel). Conversion Technology science is still so new and advancing so rapidly that each CT plant looks different from the next. This lack of standardization makes it exceedingly difficult to compare technologies across a baseline. For the purpose of this report it is not necessary to differentiate between each individual CT except to note that small variances do exist in terms of efficiency (how much energy an operation produces per ton of waste) and the level of emissions.

I will highlight two technologies both of which are being considered by the City and County in their waste management projects: gasification/pyrolysis and anaerobic digestion. In order to familiarize the reader with them, I will give a brief overview of how they work.

Anaerobic digestion uses a water-based centrifugal separation system (using gravitational forces to spin trash) in order to recover all recyclable materials before processing the waste. Once the recyclable materials and other non-processible items like stone have been removed from the waste stream, the feedstock is "digested". Digestion refers to millions of microorganisms that are introduced into the "digester" tank that break down, or digest, the

⁴⁰ Alternative Resources, Inc. "Los Angeles County Conversion Technology Evaluation Report: Phase II-Assessment". Prepared for The County of Los Angeles Department of Public Works and the Los Angeles County. October 2007.

waste.⁴¹ From the “digestion” tank comes three products: water, compost (inert residue) and biogas, often in the form of methane. The methane can easily be converted to electricity or a liquid fuel.

The anaerobic digestion process attracted the attention of the City and County because of highly successful commercial scale facilities in Europe and the Middle East. Anaerobic digestion has been demonstrated to process 150 tons per day (TPD) of MSW for several consecutive years. To put that in context, just one of the six waste districts in Los Angeles City produces 831 tons of MSW per day.⁴² Companies are even envisioning 6-acre facilities that can process 100,000 tons of MSW per year, with plans to dilate capacity to 220,000 tons per year (TPY).⁴³

Anaerobic Digestion is a biochemical CT process. At the other end of the CT spectrum is the thermochemical process called Pyrolysis. Pyrolysis uses extreme heat (temperatures above 815°C/1,500°F) and pressure to chemically decompose waste. The waste input is turned into gas, liquid and a small residue of carbon ash or char, similar to anaerobic digestion. The char can even be used by the building industry for construction material. The Pyrolysis prototype can be improved through the use of expensive additional processes. These technological add-ons improve upon the primary pyrolysis model in important ways. In the basic model of pyrolysis the input waste stream must be dried before it is processed, which is both expensive and time consuming. The technology also “has the potential to produce dioxins and furans which are

⁴¹ This process is called *Bacterial Hydrolysis* is a complicated metabolic process in which microorganisms make complex polymers into simple monomers. Organic compounds become methane gas and carbon dioxide. This process is known to be a stabilizing process in which pathogens, odor and volume is greatly reduce.

⁴² Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 3-3
http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁴³ The AD Community. “Anaerobic Digestion Technology Feature: the ArrowBio Process”. http://www.anaerobic-digestion.com/html/arrowbio_process_uasb.php

extremely toxic in the parts per trillion range.”⁴⁴ Additional processing removes all dioxins and furans from the emissions of pyrolysis operations. Pyrolysis can accommodate very toxic waste streams and render them inert, such as poly colycarbons and creosote.

A demonstration facility using the pyrolytic system can process 50+ TPD. Pilot pyrolysis plants have processed various types of waste. The pyrolytic process is a viable alternative to landfilling because it keeps tipping fees relatively low (around \$50 per ton) and can process 220,000 TPD, on only 5 acres of land. To put that in context, the Puente Hills landfill, the largest landfill in the nation, is currently 1,300 acres.⁴⁵

Emissions and the Environment: Are CT/WTE Technologies As Clean As They Claim?

Why are the City and County of Los Angeles exalting CT/WTE technologies as the golden solution? We have seen a little of what they can do above: create energy from waste, decrease the pressure for new land, and diminish environmental impact of toxins and emissions. The City and County of Los Angeles have witnessed the successes of CT/WTE demonstration facilities across the globe and are ready to engage this technology locally. The City and County are hailing CT/WTE as the linchpin of a new waste system. In 2000, the U.S. produced 250 million tons of MSW. International Environmental Solutions, a firm that produces a pyrolytic CT, claims if that waste were converted to energy using pyrolysis, it would generate more than 30,000 Megawatt hours of electricity, “green” renewable electricity. Equal to that of more than

⁴⁴ “Pyrolysis”. June, 2002. <http://www.cpeo.org/techtree/ttdescript/pyrols.htm>

⁴⁵ Clements Environmental Corp., Alternative Resources Inc, “Evaluation of Municipal Solid Waste Technologies”. April 4, 2008. p. 3-1. <http://www.conversiontechnologystudy.com/media/documents/4-4-08FinalEvaluationReport.pdf>

15 large coal-fire power plants.⁴⁶ CT/WTE technologies have even registered on the radar of the United States Department of Energy. The U.S. DOE spent considerable time and money conducting a comprehensive survey on CT/WTE in the United States and abroad. They found that:

World gasification/pyrolysis capacity has grown to 56,000 megawatts thermal of syngas output from 144 major operating plants that employ 427 gasifiers. An additional ten plants involving another 34 gasifiers were expected to become operational by 2010, involving another 17,000 MW thermal of syngas capacity, an increase of 30%. The report, which only included commercial operating plants with a capacity in excess of 100 megawatts electric equivalent, found that gasification plants are now operating in 27 countries, with 34% in Asia/Australia. It reported that 50 gasification projects were in various stages of planning and preliminary engineering for future United States operation.⁴⁷

It seems that the arguments for CT/WTE are self-evident and that the City and County's enthusiasm is in measure with the ability of CT/WTE to reduce the stress on the L.A. waste system. CT/WTE can also boast of a relatively (in comparison to other industries) clean environmental bill of health. Since no commercial scale CT facilities processing MSW yet exist in the U.S., researchers are often forced to go abroad to record emissions. Almost all CT's, and certainly all those being considered in the City and County for their waste projects, have been recorded to emit within the legal levels set by the U.S. Environmental Protection Agency, Air Quality Management District and California Environmental Quality Act. The EPA did an Environmental Technology Verification test in 2000 on the Richland, WA Conversion Technology plant. This is what they found:

Emissions from Thermochemical Conversion Technologies

⁴⁶ International Environmental Solutions. "Waste To Power: Renewable Energy through Advanced Pyrolysis" 2008. <http://www.wastetopower.com/index.htm>

⁴⁷ University of California. "Evaluation of Emissions from Thermal Conversion Technologies Processing Municipal Solid Waste and Biomass" June 21, 2009. p. 10

Emissions (Mg/N-M3 @ 7% O2)	Measured	USA EPA Standard	(Source: University of California. "Evaluation of Emissions from Thermal Conversion Technologies Processing
PM	3.3	20	
HCL	6.6	40.6	
Nox	74	308	
Sox	-	85.7	
Hg	0.0002	50	
Dioxins/furans	0.000013	13	

Municipal Solid Waste and Biomass" June 21, 2009. p. 10)

Data collected from CT plants in Europe and Japan show that dioxins and furans are emitted at levels well below U.S. federal and California State standards. Coby Skye of the Bureau of Sanitation even claims that CT/WTE technologies have been known to create a net reduction in air pollutants such as Carbon Dioxide and Sulfur Oxide (see appendix).⁴⁸ City's that have operating plants however, often find that the reality is not nearly as rosy as the theory. One plant in Ottawa Canada reports that the CT machinery is finicky and in practice often leaks toxins into the air in higher volumes than expected.⁴⁹

As I briefly referenced earlier all CT's include intermediate steps where "gas clean-up" can occur. The variety of "gas clean-up" technologies that can be applied to CT's is greater than to incinerators and WTE. It is much harder to filter emissions from WTE facilities because of the combustion component. As a result WTE plants generally have higher concentrations of dioxins

⁴⁸ Coby Sky. *The Southern California Conversion Technology Demonstration Project*. (Los Angeles County Department of Public Works,) PowerPoint. <http://www.socalconversion.org/resources.html>.

⁴⁹ "Ottawa Officials Under Fire for Plasco-Funded B.C. Trip". CBC News, Canada. Sept. 29, 2008. <http://www.cbc.ca/canada/british-columbia/story/2008/09/29/ot-plasco-trip-080929.html>

furans and heavy metals in their emissions.⁵⁰ Waste-to-Energy has come far since it split from incineration however. It can hold up to federal and state emissions standards, but still it lags slightly behind its competitor Conversion Technologies. Many critics and advocates alike of the RENEW LA plan express concern over Smith's insistence on pursuing WTE. This bipartisan dismay speaks to the deep public distrust of WTE. Smith himself seems unsure of his decision to pursue WTE. In a document that he helped author he claims that, "it is unlikely that WTE will play a key role in Los Angeles in the future".⁵¹ Smith lists the obstacles to future WTE facilities including a deregulated power industry (leading to a lack of lucrative energy contracts), SCAQMD's dislike of WTE and decades of compounded negative public opinion. Smith's own uncertainty undermines the foundations of his project: if Smith cannot justify the use of WTE to himself, how will he justify it to the communities who will live next to it?

CTs, and to a certain degree WTE technologies, address every issue occupying the imagination of sustainable waste management urbanists. CT/WTE technologies capture the trapped energy pilfered away by landfills, clean the air and take up a fraction of the space of landfills. Furthermore, the CT/WTE epitomizes the cradle-to-cradle model; repurposing waste into a resource in a system that generates energy.

CASE STUDIES

Because the CT/WTE movement is so young, Los Angeles must look abroad for models of full commercial CT/WTE plants processing MSW. CT plants are starting to pop up around the country in different capacities, mostly demonstration facilities processing a mishmash of MSW

⁵⁰ University of California. "Evaluation of Emissions from Thermal Conversion Technologies Processing Municipal Solid Waste and Biomass" June 21, 2009. p. 10

⁵¹ Greg Smith, Council district 12. *RENEW LA A Resource Management Blueprint: Section 5, Getting There*. June (2005) p. 5-5.

and organic waste (grass clippings, leaf matter). Two CT demonstration plants are nearing completion in Anaheim, CA and Minneapolis, MN. The City of Los Angeles, and County of Los Angeles, the County of Riverside, Sacramento Municipal utility District, Middletown, NY, and Grove City, OH are all considering CT project plants in their jurisdictions.⁵² Nowhere have Conversion Technologies and WTE been adopted with such vigor but in Japan. Many nations looking for waste models to emulate look to Japan as a success story on limiting emissions and producing energy from CT/WTE. In Japan, the driving reason for the interest in CT's is geographic space. Nearly 90% of the country of Japan is uninhabitable to both people and trash. As a result people and trash are forced into close quarters. This was a powerful expedient to finding alternative ways to deal with waste. "The management of general waste, which consists mainly of domestic waste and some commercial waste is the responsibility of the second tier of local government, the 3245 municipalities, although contracting out of collection and disposal is common. Some 50 million tons of municipal waste is generated each year in Japan, 74.4% of which is incinerated, 20.4% landfilled and 5.2% recycled. There are 1873 municipal waste incinerators in Japan and incineration technology is mainly of the grate, fluidized, bed or rotary kiln combustor design. The ash residue from waste incineration is taken to landfill".⁵³ The precedent for incineration has lent itself to a rapidly burgeoning CT movement in Japan. No such natural incentive existed for the United States in the past. The US is however, starting to feel the effects of living in close proximity to trash through the impending closure of some of our largest landfills.⁵⁴

⁵² Paul T. Williams. *Waste Treatment and Disposal*. (Sussex, England: John Wiley & Sons Ltd., West, 1998) p. 15.

⁵³ Coby Sky. *The Southern California Conversion Technology Demonstration Project*. (Los Angeles County Department of Public Works,) PowerPoint. <http://www.socalconversion.org/resources.html>.

⁵⁴ Paul T. Williams. *Waste Treatment and Disposal*. (Sussex, England: John Wiley & Sons Ltd., West, 1998) p. 15.

Tipping fees determine the success of other urban waste systems; if tipping fees are high, cities are forced through other avenues to achieve the same goal of waste management. If tipping fees are low, there is no incentive or economic momentum to change the status quo of operating systems. The WTE paradigm's success partially rests on the rate of tipping fees. Like other such industries in the U.S. tipping fees have been kept falsely repressed. The city and waste collection companies (and consumers) are not paying the true cost of landfilling their waste. The average tipping fee for a U.S. landfill hovers around \$30, compared to Europe's tipping fees which land somewhere in the range of \$150 per ton.

The Ideal Project

In 2006 the County tentatively outlined what an ideal project would look like. The County issued a Request For Proposals (RFP) to all private suppliers of Conversion Technologies being considered for their project. From the responses the County developed a rough sketch of their ideal plant:

- Approximately 80% (160,000 tons per year) of all MSW tons processed would be diverted from landfill.
- Approximately 35% (70,000 tons per year) are recyclables captured by an upfront MRF and sent to traditional recycling markets
- Approximately 45% (90,000 tons per year) are organic material converted to "green" energy which is a locally sustainable resource
- The resulting landfill diversion creates a long-term disposal scenarios that would otherwise be unavailable (e.g. the projected 15-year life/capacity of Tajigus landfill would be transformed to 50+)

- The cost of conversion (an average of approximately \$25/ton) is competitive with existing (\$35/ton) and future (circa \$80/ton) disposal/landfill costs.
- A conversion facility would require only a fraction of the land necessary for landfill.⁵⁵

Ottawa, Canada

The City of Ottawa, Canada faced a dilemma similar to Los Angeles' current predicament; mountains of waste over 1 million tons that would continue to grow annually without any place to put it. Ottawa was nearing its landfill capacity and was scrambling to find a solution. Despite extensive recycling and composting systems established many years prior, the gap between waste production and landfill capacity was growing; the Ottawa waste machine was overwrought. The City of Ottawa came to the same conclusion that Los Angeles is approaching now. The City of Ottawa pursued the local company Plasco Energy Group to build a commercial scale Conversion Technology waste (pilot) facility. The technology Ottawa thought best suited for their purposes was a variation on what is fast becoming the default technology pyrolysis/gasification. Plasco Energy Group built the pilot facility using Thermal, Plasma-Gasification that could consume more than 110 TPD of MSW. The pilot plant has been in operation since 2007 and proved that it has a yearly capacity of 34,400 tons. "For every tonne of waste processed, enough energy is generated to power the facility and provide 1,150 Kwh of electricity to Hydro Ottawa." Every ton processed can provide enough power to sustain a

⁵⁵ Greg Smith, Council district 12. *RENEW LA A Resource Management Blueprint: Section 5, Getting There*. June (2005) p. 5-6—5-7

household's electrical needs for 45 days. The system will also produce a small amount of inert residual solid that is a useful component in concrete and asphalt.⁵⁶

The CT waste facility is the progeny of a true marriage between the City of Ottawa and the Plasco Energy Group. Together they made a commitment to make Ottawa a zero-waste city. In this relationship the City provides the waste stream and the location; the waste plant is co-located at the Trail Road landfill, a City owned and operated business. Plasco provided the start-up capital; over the last three years of operation Plasco has received over \$90 million in private investment. Plasco was also able to obtain a \$9.5 million grant from the Sustainable Development Technologies Canada and another \$4 million from an entrepreneurial sustainable think tank. The entire conversion happens in a sealed chamber so that all emissions are captured and diverted, though the website doesn't specify what is done with the captured emissions. Provincial Regulations are the governing body in Canada, similar to the EPA in the U.S.; they mandate that the exhaust from the conversion processes be monitored continuously. The environmental benefits associated with the technology are great. Not only does the Plasco Conversion System "displace dirty electricity produced from coal, it diverts the waste it processes from landfill—so that waste will no longer pollute our land, air and water." Air pollutants and greenhouse emissions are significantly less than the alternatives; landfilling, incineration, coal or even natural gas. To prove their commitment, Plasco Energy Group is "assuming all associated risk in building the evaluation facility, guaranteeing environmental performance and removing the facility if the evaluation is not a success." The City of Ottawa

⁵⁶ Clements Environmental Corp. Alternative Resources Inc. "Evaluation of Municipal Solid Waste Conversion Technologies". Concord, MA April 4, 2008.. <http://www.conversiontechnologystudy.com/media/documents/4-4-08FinalEvaluationReport.pdf>

risks very little by entering in upon this venture. The City's commitment is limited to providing the site and paying the \$40 tipping fee, comparable to landfilling.⁵⁷

The plant has experienced some technical difficulties. It is supposed to run 24 hours a day 7 days a week, but has been closed for weeks at a time to fix small operational issues. Many claim it is not the golden solution it was touted to be but the city stands by the project expecting that all the kinks will be worked out. Their devotion may be colored by the fact that they receive royalties from Plasco every time another city buys into the technology.⁵⁸

To a large degree the CT waste facility in Ottawa flew under the radar and therefore received little public opposition. Plasco was able to avoid close public scrutiny because the project was kept hush-hush: the facility was built in a heavily industrialized zone 3 kilometers away from the nearest residential area and there was no effort to reach out to the public. When Plasco made moves to build similar plants in other Cities (Point Moody and Los Angeles) without the 3-kilometer buffer, people began to take notice. The proposed plant in Los Angeles was to be built a mere 300 meters away from residences and 100 meters away from a golf course. Several concerned citizens spoke out against Plasco's closed-door policy. One local resident and City Council member asked Plasco why they had not elicited public input or provided a platform, such as a public hearing, through which the community could voice concerns. Plasco amended that in Port Moody they *had* an agreement with the city to "conduct our preliminary review of the project in a public forum." They claimed they had no "secret deal or hidden agenda". Plasco outlined the five distinct phases to the implementation of the "Plasco Solution". Plasco maintained that "public consultation" has to be the last step before construction begins; the first steps are exclusively concerned with acquiring permitting, land and financing.

⁵⁷ Plasco Energy Group. "About the Project". Feb. 12, 2010. <http://www.zerowasteottawa.com/en/About-Project/>

⁵⁸ "Ottawa Officials Under Fire for Plasco-Funded B.C. Trip". CBC News, Canada. Sept. 29, 2008. <http://www.cbc.ca/canada/british-columbia/story/2008/09/29/ot-plasco-trip-080929.html>

This relegation of public input to the end of the process is a clear comment on the importance Plasco places on the community's reaction. It also gives little to no time for the community to formalize a response and organize opposition.⁵⁹

Warrenton, West Virginia

Under the guidance of Mayor Fitch of Warrenton, Virginia, the CT biorefinery plant located at the local landfill will process 70,000 tons of MSW and 30,000 tons of commercial waste annually. The final technology has not been decided upon yet. That's nearly 250 to 300 tons of waste per day. Mayor Fitch states that, "processing, rather than burying these wastes, will eliminate 75,000 tons of greenhouse gases emitted every year from the landfill sites," which in turn would reduce the cities carbon footprint by 25%. The CT plant would prove immediately economically viable. The County tipping fee at the local landfill is \$46. If instead the waste is sent to the CT plant, there is an "estimated avoidance cost \$13 to \$22 per ton" of waste. The CT plant is slated to process a wide variety of waste streams and produce electricity and liquid fuel in the form of ethanol. Mayor Fitch is optimistic even though at the time of construction this process had not yet proved its mettle on a commercial scale.⁶⁰ A private firm, Antares, crunched the numbers in order to find the estimated time until the CT paid for itself:

The capital costs for a 250 ton/day MSW to ethanol conversion plant based on feedstock properties ranges from \$25 million to \$70 million. Assuming an alcohol yield of 51 gallons per ton of MSW feedstock and a negative feedstock cost of \$13 per ton, the ethanol sales price would have to be \$2.91 per gallon to achieve a 10% return on capital investment. If the scale were 400 tons per day, the ethanol sales price would have to be \$2.42 per gallons. For MSW to electricity, the economics are not as attractive. To yield a 10% rate of return on a \$25 million

⁵⁹ Plasco Energy Group. "Port Moody Questions: Part 2" Transcription from Meeting. April 2, 2010. <http://zerowastevancouver.com/docs/Port%20Moody%20Questions%20-%20Part%202.pdf>

⁶⁰ "Virginia Takes First Step Toward Energy Independence". Alternative Energy Press. Jan. 2, 2008. <<http://www.alternative-energy-news.info/press/virginia-energy-independence/>>

capital cost, the electricity sales price would have to be 8.8 cents per kWh. The energy produced would provide electricity for the entire town of Warrenton.⁶¹

The County owns the landfill and the adjacent lots and is offering these sites up for the project. Here again we see a relationship between the local government and a private company; the private company will own and operate the plant. Both the US Environmental Protection Agency and the Virginia Department of Environmental Quality have endorsed the project providing significant political heft. The government supplies the waste stream and negotiation power and is mediating a contract in which a local utility will purchase the power through a Power Purchase Agreement. The government also believes that they can stir up support for the project. Despite this inflated sense of imminent success, the local government hasn't actually reached out to the community yet.⁶²

Honolulu, Hawaii

A CT "plasma enhanced Melter" plant was built in Honolulu to compensate for the closure of a small medical waste landfill. The plant, owned and operated by Asian Pacific Environmental Technology had been operating since 2002, but it wasn't until 2005 that the State of Hawaii Department of Health filed a complaint against the plant for air quality issues. It turned out that the plant had failed to test their end products on a quarterly bases and were in violation of permit conditions. The plant however, was not required by the EPA to monitor their emission (that was just a requirement of their permit) because the plant was processing such small amounts of waste even though it was known to emit dioxins and other pollutants. Integrated Environmental Technologies still claims on their website that the plant is an

⁶¹ "Virginia Takes First Step Toward Energy Independence". Alternative Energy Press. Jan. 2, 2008. <<http://www.alternative-energy-news.info/press/virginia-energy-independence/>>

⁶² "Virginia Takes First Step Toward Energy Independence". Alternative Energy Press. Jan. 2, 2008. <<http://www.alternative-energy-news.info/press/virginia-energy-independence/>>

operational success, even though it has had to close several times due to equipment malfunction, is still deeply opposed by local community members and is not in compliance with their permit.⁶³

Other demonstration facilities in the U.S. have suffered similar fates. The North American Power Company was to receive permits from the state to site a medical waste pyrolysis facility in a diverse working class neighborhood in San Joaquin Valley. The Air District regulators were days away from approving the permits when community members and environmental justice groups got wind of the project. When they confronted North American Power Company, the company responded by saying there would be no hazardous emissions. What they failed to say was that they had not yet completed an Environmental Impact Report. The community, infuriated by the lack of communication and transparency demanded that the power company prove that there would be no emissions and that an EIR be completed. Minutes before the scheduled construction of the plant the power company pulled out of their contract because they could not back up their claim of no hazardous emissions.⁶⁴

Despite its seemingly flawless resume, the CT/WTE really hasn't had time to prove itself one way or the other in the United States; that is why I tell a cautionary tale. Even if CT/WTE is the new frontier of waste management, we should proceed with caution until the city and county can prove without a doubt that these technologies are sound. The history of waste management has been fraught with issues of environmental and social *in*justice; we can look to historic models and waste schemes as the antithesis of how the city and county should conduct themselves today.

⁶³ Greenaction for Health and Environmental Justice and Global Alliance for Incinerator Alternatives. "Incinerators in Disguise: Case Studies of Gasification, Pyrolysis, and Plasma in Europe, Asia, and the United States". June 2006. p. 15.

⁶⁴ Greenaction for Health and Environmental Justice and Global Alliance for Incinerator Alternatives. "Incinerators in Disguise: Case Studies of Gasification, Pyrolysis, and Plasma in Europe, Asia, and the United States". June 2006. p. 6.

THE CT/WTE PROJECTS: A MULTIFACTED AND COMPREHENSIVE APPROACH TO WASTE MANAGEMENT

The sophistication of CT/WTE technologies is a hallmark of the progress we have made; the amount of time and money spent designing and perfecting these technologies is a comment on the importance of finding a waste management solution. What I have attempted to outline thus far is a framework of all the traps and weaknesses of past waste management solutions that stand in front of the City and County today. The failings of past waste management schemes must be kept alive in the imagination of the City and County. Both agencies must aim to achieve and exceed all federal and state emissions standards. Not only must they achieve these standards, but consider the cumulative impact of introducing another polluting industry into a neighborhood. It is imperative that both agencies strive to engage, at a meaningful level, communities potentially affected by the waste facilities in order ensure that the cries of the community are not muffled by the cacophony of voices and opinions put forth by businesses and governmental agencies. Los Angeles is home to two burgeoning CT/WTE projects, one jettisoned by the County Bureau of Sanitation and the other by City Councilman Greg Smith of council district 12. Councilman Smith's project is commonly referred to as the RENEW L.A. Plan. For the sake of brevity I will refer to the two projects throughout the rest of my paper as the "City" project and the "County" project (Smith's RENEW LA plan and the County Bureau of Sanitation respectively).

Two Projects: The City and County Re-envision the Waste Machine

Councilman Greg Smith of Los Angeles District 12 worked with his office to draw up a blue print of what they coined the RENEW LA plan. All of the initiatives laid out in the RENEW LA blueprint work towards the City's zero waste goal. While not yet ratified in city legislature,

the zero waste goal is implicit in many of the cities waste mandates: “the goal of zero waste as defined in this plan is to reduce, reuse, recycle, or convert the resources now going to disposal so as to achieve an overall diversion level of 90% or more by 2025; and to leave for disposal only a small inert residual.”⁶⁵ Los Angeles is not alone in their drive for zero waste, other cities and countries that have taken up the mantle of this crusade include San Francisco CA, Seattle WA, South Korea, Germany and New Zealand. The RENEW LA plan is multifaceted; the mission of Councilman Smith and the city is to attack waste excess with a fleet of initiatives not limited to CT/WTE. But certainly WTE and CT act in the starring role of this waste campaign.

Envisioning the Ideal Outcome

Councilman Smith wants bipartisan cooperation for the RENEW LA plan, and he is right in believing that it is the cornerstone to the success of the project. The key players that Smith must win over are “political leaders, the Bureau of Sanitation, the waste industry, and the populace as a whole.”⁶⁶ Such sweeping support his hard to win and maintain, however the RENEW LA project has many good talking points. Smith claims the new waste paradigm outlined in the RENEW LA Blueprint “will carry us beyond the current traditional waste management hierarchy of reduce, reuse, recycle and dispose – to a more overarching system of beneficial use of resources.” Smith wants to emphasize the idea that this blueprint will revolutionize the waste system; turn on its head the way we think about trash, as merely an idle and useless output of a chain of consumption. The driving mission behind RENEW LA is

⁶⁵ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-2

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁶⁶ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-3.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

“ensuring that products are made to be reused, repaired or recycled back into society and promoting front-end design efficiency in manufacturing to conserve virgin materials and reduce waste.”⁶⁷ The City and County of Los Angeles have been moving towards more efficient waste management for decades. In the 1990’s Los Angeles City saw “the passage of the California Integrated Waste Management Act (AB 939) which created the three “R’s”: reduce reuse and recycle. AB 939 mandated a 50% diversion level from landfilling by the year 2000.” In AB 939 we see the beginnings of the zero waste legacy. To work towards the 50% diversion goal the City of Los Angeles launched a combination of policies and programs overseen by the Bureau of Sanitation including residential curbside recycling, Greenwaste chipping, grinding and composting, construction and demolition debris recycling, education and outreach programs recycled content procurement policies.⁶⁸

The city achieved its 62% diversion level in 2002. The California Integrated Waste Management Board (CIWMB), an agency created in the 70’s concerned with promoting sustainability through maximizing recycling efforts and exploring renewable energy, officially recognized the national zero waste movement. The recycling programs outlined in AB 939 were fortified during the 2000’s. At the close of the decade The City of Los Angeles was the grand puppeteer of a profligate recycling and composting system: “multi-family pilot recycling programs, commercial sector pilot recycling programs, rebate programs for haulers delivering material to material recovery facilities for sorting and recycling, supermarket foodwaste recovery and composting, restaurant foodwaste recovery and composting pilot program AB 939 fees for

⁶⁷ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-3.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁶⁸ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-5.

private haulers, requirements for haulers of more than 1,000 tons per year to offer recycling services to their clients.”⁶⁹

The RENEW L.A. plan is the inevitable outcome of decades of waste management evolution. Over the next 15 years Smith plans on building seven CT/WTE plants in each of the 6 wastesheds (see appendix 1) and one in unincorporated Los Angeles. Smith is considering developing both Conversion Technologies and Waste-to-Energy facilities. Councilman Smith is also exploring CT’s that have not yet achieved full commercialization. Smith’s analysis of emerging CT’s recognized great market potential in the untried technologies and he saw an opportunity to jump-start the careers of these burgeoning technologies. In order to qualify for the commercial scale facility bids the private technology firms had to have a facility that could process 150 TPD of MSW or more for a minimum of a year to demonstrate economic viability. Requirements for emerging CTs are less stringent: a plant can process up to 200 TPD with no time minimum required.⁷⁰ Both the emerging and “established” CT/WTE’s the City considered had to pass stringent tests to qualify for the last round of eliminations (the “shortlist”).

The RENEW LA project is still in the bid and award phase. The Los Angeles City Planning Commission mandates that all construction plans proposed by political agencies within the city’s jurisdiction must follow the bid and award program. The bid and award program allows private firms to compete for the city’s bid through responses to Request For Proposals (RFP). The RENEW LA RFP was sent out to eligible CT/WTE companies, chosen through a strict screening process as briefly explained above. All bids have been evaluated by Councilman Greg Smith’s office and potential candidates have been short-listed. This list, along with the RFP

⁶⁹ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-5.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁷⁰ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

responses, will be presented to the City Planning Commission for final evaluation early this summer (2010). After final evaluation the responses to the RFP will become public (by law); until then that information is “proprietary”. The RFP itself has already been made public, but is exceedingly hard to track down. My contact in Councilman Smith’s office, Nicole Bernson, Smiths Senior Policy Advisor and co-author of the RENEW LA plan, gave me several names of people who would purportedly give me a copy of the RFP. All of the contacts failed to respond to my emails, and I could not locate a copy of the RFP on the city’s website. An in depth analysis of the RFP and the requirements stipulated by the city would be very informative for further research. Bernson was able to generally outline the shape the project was taking. Smith’s office will present the City Planning Commission with four technologies that they believe will be the most successful and effective in Los Angeles at processing MSW. The RFP’s are slowly matriculating through the bureaucratic permitting system right now. The city is already behind schedule by a matter of years. Once the city council and Smith have voted the project will remobilize but for now it is a waiting game.⁷¹

Bernson wanted to emphasize that not even she has seen the responses to the RFP from the private technology firms. The responses are only available to the City Planning Commission and the evaluation committee. I believe Bernson thought she was proving her office had nothing to hide (my questions may have taken a rather accusatory tone when I realized how little she could tell me). I was not reassured by her lack of inclusion in the process, in fact I had the opposite reaction; deep suspicion. The earliest drafts and renderings of the RENEW LA plans estimated that construction would start in late 2009. The project is now nearly a year behind schedule and still there is a glaring dearth of information open to the public, and even to

⁷¹ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

employees in Smith's office. A few months into 2010 and Smith's office has still not released the final locations going in front of the City Planning Commission.⁷² These delays only make their general silence even more shameful. Smith should be using this idle time to reach *out* to the public, not retract from it. Bernson was unsure even during the course of our conversation what she could and could not tell me. At the beginning of our discussion she mentioned that the list of firms being considered was still under lock and key, but near the end she did reveal the identity of at least one firm. From what I could gather, the information the city is unable to share with public for proprietary reasons are the potential sites, the technologies to be used, and the firms being considered for the shortlist. That leaves very little in the way of concrete facts to discuss. My personal fear is that even once all documentation becomes un-proprietary, it will still be inaccessible. The city website is a web of hyperlinks and city jargon. It is difficult to navigate and the common browser might not be able to locate the pertinent documents. Even with the help of the Vice President of the City Planning Commission it took two computer savvy policy students 45 minutes to locate the documentation generated thus far on the city website.

What Bernson was allowed to share were a select few sweeping generalizations about the project: all three of the firm finalists for the *commercial* scale facility include a WTE component. In fact two of the firms bidding for the commercial scale facilities propose WTE as their only technology. One of the firms employs a sweet of technologies including a gasifier and anaerobic digester. Most of the potential firms, commercial and emerging, are international companies. For the purpose of this bid many of the international companies partnered with firms in or around Southern California in order to achieve some geographic relevance. In these symbiotic relationships a firm specializing in CT/WTE technology will work with an engineering firm and

⁷² Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

another non-tech firm that lends financial stability to the consortium. Perhaps because I was so persistent Bernson eventually released the name of one of the firms that had been short-listed for emerging technologies. ArrowBio, based in Israel, has built a partnership with the local recycler CART. After emphasizing the differences between each potential waste facility Bernson explained that it was this profusion of variables and fluctuating parts of the project that has paralyzed their community outreach component. Bernson defended the lack of community engagement thus far citing the fluidity of their plans. I see the City's silence as a first step towards political delinquency. The longer they ignore community relations the more and more they are dooming their project to the fate that LANCER met.⁷³

In my initial readings of the RENEW L.A. plan I was shocked that the city had the budget to even entertain the idea of 7 new waste processing facilities. Bernson assured me that the private firms would bear all costs of running and operating the waste facilities. The private firms would in fact own and operate the facilities. The only cost that the city would have to burden would be a per ton tipping fee. The City expects the tipping fees to be on average higher than the per ton tipping fee at landfills, but this is a cost they are willing to burden in order to succor the rewards of CT/WTE technologies. As part of the contract, the DWP would have the opportunity to buy the energy from the plant. The contract is written so that after 20 years, the waste plant will roll over in ownership: the city has the opportunity to buy the facility from the private firm. When asked if the City views this as an opportunity to generate profit, Bernson informed me that it could never be a profit making venture. When the city provides any service it is not allowed to make a profit; it can only charge for services the cost incurred to generate them.

⁷³ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

Bernson is confident that if all seven plants are built on schedule, with the help of supplemental recycling and composting efforts, that the city can meet the 90% diversion goal by 2025.⁷⁴

Where the City is bold and intrepid, the County is cautious and reserved. The County is considering *only* CT technologies. The County Bureau of Sanitation (BOS) wishes to avoid the inevitable tension that WTE will create if they introduce it into their waste scheme. While WTE technologies are proven to be viable options to landfilling, they face greater public opposition, perhaps unjustly. Even though WTE technology emits within the EPA CEQA, and SCAQMD standards and well below comparable industries, it does emit more than CT's. Either way, the County wishes to avoid a media maelstrom and public pushback that will only waste money and time.⁷⁵

The county is also only considering Conversion Technologies that have reached full commercialization. In this fledgling movement the County fears the economic and environmental repercussions of floating a technology that is yet untried. The County is only proposing constructing 3 CT facilities. The last phase of the County's project, expansion upon the most successful of the three CT facilities, has a floating deadline. The County has not circumscribed their project with a timeline, they admit that the last phase of implementation could take years even decades and it depends entirely on the successes (or failures) of their three demonstration facilities. In most respects the County is taking the safer route. The City is considering emerging CT's, the County only full-commercialized CT's. I believe with all of the upheaval surrounding the issue of CTs, the County's method of plotting their tactics slowly and methodically seems

⁷⁴ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

⁷⁵ Interview with Tobi Mithell Environmental Programs Division of the Los Angeles County Department of Public Work.

more appropriate than the City's approach to jumping in feet first.⁷⁶ The County is considering their three waste processing plants "demonstration facilities". What at first glance may seem a negligible nuance is in fact a systemic attitude indicative of the County's careful reserve. Calling the waste sites "demonstration facilities" is an acknowledgement on the part of the County that this is an experiment from which to learn. The City's plan of forging ahead leaves little room for err or defeat.

The County has a four-phased approach to implementing the CT/WTE facilities. The fourth and last phase is concerned with evaluating the success of the three demonstration projects. Ideally all three facilities, each using a different technology will prove successful. In the event that one facility should suffer, do to environmental, financial or technical reasons; the county will then determine the best model and technology for moving forward. The fourth phase intends to turn the most successful demonstration project(s) into fully-fledged commercial scale Conversion Technology plants. The County intends to build many more CT/WTE facilities, however they are struggling with scarcity of appropriately zoned land. The City is already considering parceling off land now so that their project has room to grow. The county has not expressed any such plans yet, although land is very much on their mind.⁷⁷

All told the construction of the County's three plants will cost \$200 million (the City hasn't generated a similar statistic). All operational and construction costs will be burdened by the private technology firms. Consequently the firm keeps all the profits. When the final commercial scale facilities are built Tobie Mitchell of the Bureau of Sanitation was unsure as to who would actually own them and is similarly unsure of ownership in the distant future. The

⁷⁶ Interview with Tobi Mithcell Environmental Programs Division of the Los Angeles County Department of Public Work.

⁷⁷ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

design process and authorship of the RFP have incurred a large bill that the private firms won't cover. Funding for CT research has been generated from County ordinances that extract fees from landfills. The county is receiving royalty fees from the two major landfills in the area: Puente Hills in the city of industry and Sunshine Canyon. The County issued a conditional use permit to each of these landfills that demands a yearly operational fee.⁷⁸ All money generated from these fees has been allocated towards the furthering of CT research in Los Angeles. Coby Skye of the BOS is also looking for money from the current federal stimulus package.⁷⁹

The private firms benefit greatly by having a municipal partner. The County sees its self as an enabler; finding grants and loans from the state and federal government and easing the permitting process for the private technology firms. In this way it is hard to imagine a fully commercial scale CT/WTE project succeeding in Los Angeles without the sponsorship of the local government (City or County). One of the ultimate goals of the demonstration projects is to map out the most efficient avenues for permitting and generate a permitting model for future projects. It seems that both the City and County are optimistic about receiving final approval from their respective governing boards (City Planning Commission and County Board of Supervisors respectively). But both the City and County suffer from some anxiety about passing muster on all their permitting requirements. As I dug deeper, permitting became an endless labyrinth of codes, ordinances and exemptions.

⁷⁸ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

⁷⁹ County of Los Angeles, Department of Public Works. "Alternative Technology Advisory Subcommittee/Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force: Minutes of March 9, 2009". March 9, 2009. <http://dpw.lacounty.gov/epd/tf/minutes/tfminATAS2009-03approved.pdf>

A Fork in the Road: The Different Technological Approaches of the City and County

The major difference between the City and County's projects is the City's consideration of WTE. There is overlap among the CTs being considered by both projects. The County is considering Pyrolysis, Gasification and anaerobic digestion.⁸⁰ The five basic technologies the City is looking at are: gasification and pyrolysis, anaerobic digestion, MSW composting, autoclaving and fermentation.⁸¹ The projects have a dual purpose; first and foremost to alleviate the stress on the waste system and second to suss out which of the CT's is most efficient and environmentally sound. The variations between each CT facility (size, input material, discrepancies in technology) render ineffable any discussion as to the best technology.⁸² At the end of the trial run, the City and county will be able to hold up a CT, or many, that work well within the pre-existing Los Angeles waste infrastructure.

All sites, for both city and county, will only use a fraction of the space available so that the plants may be expanded as need. Both County and City projects are modular in design so additional processors or "digesters" can be added on like legos. All told "the seven CT plants [in the RENEW LA plan] could generate between 100-340 MSW depending on the mix of technologies. This would provide up to 30% of the renewable energy goal targeted by DWP for their Renewable portfolio standard program."⁸³ Greg smith supports the reciprocity of the RENEW LA plan and the Renewable Portfolio Standard that calls for 13% renewable energy by

⁸⁰ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

⁸¹ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. "Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles" Jan. 4, 2010. p. 1-11.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁸² Greg Smith. *Section 1, Executive Summary: RENEW LA Blueprint*. Jan. 4, 2010. p. 1-10.
http://ens.lacity.org/council/cd12/renewla/cd12renewla243164253_01042010.pdf

⁸³ Smith, Greg. *Frequently Asked Questions*. Jan. 4, 2010. p. 1-4.

http://ens.lacity.org/council/cd12/renewla/cd12renewla243164254_01042010.pdf

2010 and 20% by 2017. By 2025 of the estimated total tonnage generated (56,000 TPD) Smith expects only 4,000 (inert) tons will go to disposal compared to today in which we produce 38,000 of which 14,000 goes to landfills and is not inert. These statistics normalize for a 2% growth in generation of MSW tonnage each year (see appendix 2).⁸⁴ The scale of the County's project is much more modest. The facilities proposed by the County will range in processing size from 150 TPD to 360 TPD.⁸⁵ Tobie Mitchell, who works in the Environmental Programs Division of the Los Angeles County Department of Public Works is unsure of how much energy these facilities can produce per ton of waste. The RENEW LA plan assumes (even though the county's efforts wont count towards zero waste initiative) that all 7 CT/WTE facilities will elevate the waste diversion rate from the current 62% to 80% by 2025 (even accounting for the inflation of post-processed waste).⁸⁶ An artillery of progressive composting will address the gap between the assumed 80% diversion rate and the goal of 90% and recycling programs outlined by the RENEW LA plan.

Councilman Smith anticipates that the operation of these plants will pay for themselves many times over. These economic dividends will free up money in the City budget. CTs are less expensive to operate than existing recycling programs, and certainly in terms of real cost CTs are less expensive than landfilling. Tipping fees at landfills are superficially low, lower than CT tipping fees, hiding the true economic toll of landfilling when you consider the social cost (detriment to health) and environmental costs (compensating for leeching landfills etc).

⁸⁴ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. "Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles" Jan. 4, 2010. p. 1-10.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

⁸⁵ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

⁸⁶ City Planning Commission. "Department of City Planning Recommendation Report". Case No. CPC 2007-1455-CA. August 23, 2007. p. 6.

“Curbside recycling programs often cost well over \$100 per ton of recyclables recovered. Recycling does not pay for itself no matter how it is done.”⁸⁷

The “inert” residue discharged from most CT’s is a fraction in volume of the waste that was ingested at the beginning. The RENEW LA plan estimates that between all the different CT’s, the average volume of trash being discharged will be 7% of the initial volume. The County makes no claims as to the decrease in volume so we are left to assume that since they are using CT’s as well, they will experience similar success. Such a flawless resume made me inherently incredulous. The first issue that caught my eye was the liberal use of the word “inert” in reference to the outputs of the CT/WTE system. I was unable to contact any of the private firms (some refused to have a conversation with me) and my contacts at the city and county were unable to explain explicitly what is meant by inert. In order to honestly make that claim the City and County have to be able to stand by the definition of “inert”. In moving forward with this project that is something that must be clarified.

CT/WTE technologies have the potential to strengthen the local economy; “conversion technologies produce 10 jobs for every one job associated with landfilling.”⁸⁸ The waste business is a profitable business, and is the foundation for an entire sub-economy. Smith estimates that in Los Angeles alone the CT/WTE endeavor involves more than 8,000 employees. These 8,000 employees make up a \$2 million payroll with the private companies securing 1.8 billions dollar in revenue every year.⁸⁹ The introduction of CT/WTE will be supported by the pre-existing sustainable waste economy.

⁸⁷ Smith, Greg. *Frequently Asked Questions*. Jan. 4, 2010. p. 4.
http://ens.lacity.org/council/cd12/renewla/cd12renewla243164254_01042010.pdf

⁸⁸ Smith, Greg. *Frequently Asked Questions*. Jan. 4, 2010. p. 2.
http://ens.lacity.org/council/cd12/renewla/cd12renewla243164254_01042010.pdf

⁸⁹ Greg Smith, Council district 12. *RENEW LA A Resource Management Blueprint: Section 5, Getting There*. June (2005) p.

Harsh Realities: Where the Vision Falls Short

Zoning and Permitting: the Agonies and Intricacies of Equitable Siting

Both the City and the County have several political hurdles to overcome before construction can begin on either project. The two greatest obstacles for these projects are passing environmental muster and deciding on a just and equitable siting mechanism. Greg Smith's office is currently consumed with navigating through the City Planning Department. Once the plan receives the final O.K. from the City Planning Commission, which Bernson expects to happen at the beginning of this summer (2010), construction can finally begin. There were, however, many intermediate steps taken between the inception of the plan and the imminent approval from the planning commission. And some steps that were not taken. In order to receive proper permitting Smith had to maneuver his project through a labyrinth of smaller agencies, each plan adding its own parameters and siting contingencies. I often lost track of the plan as it moved through the planning department. My research suffered because of the plan's seeming political obscurity. The Vice President of the city planning commission, Regina Freer, barely recalls the RENEW L.A. plan coming in front of the commission in early 2006. About 15 minutes after we had begun talking, Freer slowly began to remember the finer details of the RENEW LA plan and the commission's reaction. Even as the memories began to precipitate we were both challenged to find any hard documentation on the City website that proved the plan had passed through their office. These obstacles were a foreshadowing for the rest of my research; I found the information I uncovered and many of the tactics employed by Smith's office to be contradictory and difficult to find. In general I found the RENEW LA's siting

mechanism and circumspect permitting adventures to be enshrouded in uncertainty and riddled with discrepancies.⁹⁰

Freer recalls being struck by the inadequacy of the siting mechanism proposed by Smith in the original RENEW LA plan. At first blush, Smith's siting mechanism seemed to consider aspects of equality and environmental justice: seven plants would be located in each of the six waste districts (wastesheds) and one in unincorporated Los Angeles, in theory evenly distributing throughout the city the burden of this new waste industry. Smith designed this layout in hopes of avoiding issues of NIMBYism. When councilman Smith's office pitched the project to the planning commission they claimed it was safe enough to put next to a restaurant or a home and even included images of CT plants in Europe across the street from McDonalds. As Freer pointed out though, evenly distributing the facilities between the 6 wastesheds assumes a "baseline equality" among the neighborhoods; Smith is assuming that poverty level, density, and social capital is homogenous throughout the entire wasteshed. Each wasteshed ranges over a large area and encompasses many different cultural and socio-economic microcosms (see appendix 1). As defined by the city a wasteshed is an area that has a fully functional and self-sufficient waste system that includes at least one waste repository (landfill), transfer station and trash collection routes. The six wasteshed areas are: East Valley, West Valley, North Central, Harbor, Western and South.⁹¹ Smith believes this "even" distribution of the waste processing sites will circumvent any issue of discriminatory siting practices and preclude any dialogue of discriminatory siting mechanisms.⁹²

⁹⁰ Interview with Regina Freer, Vice President of the City Planning Commission.

⁹¹ City Planning Commission. "Department of City Planning Recommendation Report". Case No. CPC 2007-1455-CA. August 23, 2007. p. 10

⁹² Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

With the inadequacies of RENEW LA's siting plan in mind the planning commission sent the plan on to its next board with a list of suggested edits. Freer was the loudest proponent of editing the siting mechanism laid out in the RENEW LA plan. Freer's misgivings about the project were not echoed among her colleagues who seemed indifferent. Freer's persistence resulted in a declamation from the committee intending to edit some of the original language and intent of the RENEW LA document in order to incorporate a more comprehensively equitable siting mechanism. More guidelines were added with stronger language in the declamation that was tagged onto the end of the RENEW LA document. Any subsequent board reviewing the plan would also review the planning commission's edits. Freer believes the plan left her office and went in front of PLUM, but we were unable to find PLUM's comments, or any proof that the board had revised the plan. When the City Planning Commission votes on the plan at the beginning of this summer, they will decide whether or not to ratify the changes proposed by Freer and her colleagues in 2006.

If the edits proposed by the City Planning Commission are ratified, the edits would appear in the city zoning code actually changing the zoning laws in Los Angeles. The zoning code is a live document. Its intent and language are fluid, changing with the evolving needs of the city. Changing the zoning code however should be considered carefully. Changes made to the zoning code now will set a precedent for all future CT/WTE projects in the City. The lack of recognition among the local government and paucity of media attention to these plans (both the city and county) is not comparable to the impact they will have on the zoning code. The blueprint outlines what the optimum site for a CT/WTE plant would be. The plants need at least 5-10 acres of industrial property zoned for M-2 or M-3. Ideally (not mandatorily) the sites would be removed from residential zones and within easy access of arterial traffic ways that already

accommodates heavy truck traffic. Although not specifically stipulated, co-location with an existing Materials Recovery Facility or Department of Water and Power plant is optimal.⁹³ Many fear that these “suggestive” guidelines are not strong enough to ensure the egalitarianism of the siting process. The plants should *have* to be sited far away from residential areas not “*ideally*” sited in industrial areas. The first modification to the plan outlined by the CPC is to actually allow the CT/WTE plants to be sited in M-2, M-3 *and* PF zones. To give the reader context, M2 and M3 zones are heavy industrial areas. Landfills can only be built in areas zoned M3. Public Facility zones generally include manufacturing; essentially its industrial *light*. Public facility zones uses include: Agricultural Uses, Parking Under Freeways, Fire and Police Stations, Government Buildings, Public Libraries, Post Offices, Public Health Facilities, Public Elementary and Secondary Schools.⁹⁴ Under the proposed changes to the zoning code, a CT/WTE plant that emits dioxins, furans and traces of heavy metals can be located next or even with a public health facility or public elementary school (but not a private one).⁹⁵

The CT/WTE facility can only be sited in a Public Facility zone under a conditional use permit. The City Planning Commission defends its decision to allow CT/WTE in public facility zones: “specifically listed public facility uses are subject to the conditional use process adding alternative technology to the list of uses is consistent with the zone.”⁹⁶ Conditional use allows “the city planning commission additional authority to conduct a public hearing, evaluate all required safeguards and subsequently determine the appropriate site and conditions for

⁹³ Smith, Greg. *Frequently Asked Questions*. Jan. 4, 2010. p. 3.

http://ens.lacity.org/council/cd12/renewla/cd12renewla243164254_01042010.pdf

⁹⁴ City of Los Angeles, Department of City Planning. “Generalized Summary of Zoning Regulations City of Los Angeles” April 12, 2010. http://cityplanning.lacity.org/zone_code/Appendices/sum_of_zone.pdf

⁹⁵ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 10

⁹⁶ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 11

alternative technology facilities in said zones.”⁹⁷ The City Planning Department supports the use of the conditional use permit because it serves as an “effective tool for stakeholder participation, as well as for education and outreach of new emerging technologies, [and] provides opportunity for neighborhood improvements, and further contribute to transparency in the review process.” Conditional use allows for site specific conditions, public hearings and the review of environmental documents.⁹⁸ If the City is active in the relationship between the neighborhood and the CT/WTE facility they have the ability to effect great change through the conditional use permit. If the city is negligent in their duties, the flexibility afforded by the conditional use permit could actually hurt the project and surrounding communities more than it can help them.

Additionally, the CPC recommends that all CT/WTE facilities must operate inside an enclosed building or construct a wall at least 8 feet high to protect against smell, noise pollution and visual blight. “An effort must be made to locate the facility in proximity to existing solid waste facilities/transfer stations/solid waste resource collection vehicle yards/material recovery facilities/green waste facilities.” Here the language seems as weak as in the original plan. The CPC demands the facility must also “not detrimentally affect nearby residential uses and other sensitive land uses, taking into consideration the number and proximity of residential buildings, churches, schools, hospitals, public playgrounds nursing homes, day care centers, and other similar uses within a 1,500 foot radius of the proposed site.” These measures attempt to curb noise and health impacts on neighboring properties.⁹⁹ The ordinance requires “that each facility

⁹⁷ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 3.

⁹⁸ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 8.

⁹⁹ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 9

will be located at least 1,000 feet from an A or R Zone or a residential use, nursing home, playground, park, school (K-12), day care, hospital, or church.”¹⁰⁰

As an additional safeguard all facilities must publish a quarterly newsletter with updates, emissions standards and emergency contact information. A Community Protection Program will be created by the facility operator to mitigate the potential impacts of an alternative technology facility. The Program will include a Community Improvement Fund that will finance public improvements; streetscape, infrastructure, community amenities, and provide amore livable environment. The funds will be generated from per-ton tipping fees determined by the City Council.¹⁰¹

Both projects intend to grow over the next decade until all waste is diverted through a CT/WTE facility. Land, especially industrial land, is at a premium. “There is little heavy industrial zoning outside of four areas: the harbor, LAX, south central LA, and Sun Valley.”¹⁰² I fear that the City and County’s attempts to reconcile growing waste sites and disappearing industrial land will force future CT/WTE sites into closer and closer proximity to residential and commercial areas. Already, under the planning commissions new edits, CT/WTE sites can be located next to schools and health facilities in PF zones.

The planning commission’s edits also make cursory attempts to codify and simplify the riddle of terms. The CPC defines alternative technologies as “a municipal solid waste residual processing technology to process refuse or post-source separated waste using one or a

¹⁰⁰ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 9

¹⁰¹ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 3

¹⁰² Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-26.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

combination of thermal, biological/chemical and or other physical processes.” Because the term “Conversion Technology” has now been appropriated by many different technologies the CPC abandons the term Conversion Technology and instead refers to the proposed waste processing plants as “Solid Waste Alternative Technology Processing Facility”.¹⁰³ By definition alternative technologies must “provide an alternative to landfill disposal of solid waste.” The ordinance makes no claim as to the quality of the waste stream. They do not include in the definition of alternative technologies that the waste stream has to be source separated. Recycling and composting champions will pounce on this omission, exposing the vulnerability in their project. Many recycling proponents fear that the economic incentives of CT will overwrite any progress made towards recycling.¹⁰⁴ Clarifying terms will expedite the acceptance of CT’s into city and county waste schemes across the country. The plan cannot progress forward with any coherence unless clarification and standardization of terms is completed. The City should remain flexible however, as current bills are making efforts towards standardization of terms on a federal level. If the terms don’t agree, the city must be prepared to default to the federal standards (and rewrite the zoning code again).

The City is contracting with the private company HDR to conduct a siting study for possible locations within the City of Los Angeles. Bernson would not share the criteria stipulated by the city or generated by HDR for siting locations, however we can get a feel for what they were from the “ideal” site mentioned above. Bernson shared however, that many

¹⁰³ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 9

¹⁰⁴ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. Appendix A.

councilmembers from several districts have expressed interest in being involved in the project and have offered up potential sites within their jurisdictions.¹⁰⁵

Between the siting and permitting requirements for a large waste facility, the project has accrued a dizzying number of boards and agencies watching and monitoring their progress. The project must obtain permitting from all of the following agencies: Bureau of Sanitation, the Environmental Affairs Department and the Department of Building and Safety, South Coast Air Quality Management District (AQMD), the Los Angeles Regional Water Quality Control Board, the California Integrated Waste Management Board (CIWMB), the California Department of Fish and Game, the State Department of Health Services, the U.S. Army Corps of Engineers, Los Angeles County and Los Angeles Local Enforcement Agency. Each agency held responsible to provide the highest technically accepted mitigating standards. The City of Los Angeles Local Enforcement Agency has the added responsibility of determining if the RENEW LA plan meets all stipulated requirements post-construction.¹⁰⁶

It seems premature to change city zoning code to accommodate a technology that has yet to be built in the U.S. at a commercial scale.¹⁰⁷ It also seems premature to change zoning code when definitions and terms are changing on a federal level. I believe there is one glaring hole in the CPC's recommendations: I believe it is imperative that all CT/WTE facilities be co-located at an existing waste treatment site, either MRF or DWP waste processing plant. Even though

¹⁰⁵ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greg Smith.

¹⁰⁶ City Planning Commission. "Department of City Planning Recommendation Report". Case No. CPC 2007-1455-CA. August 23, 2007. p. 7, 10, Appendix A, A-2.

¹⁰⁷ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. "Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles" Jan. 4, 2010. p. 1-16.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

RENEW LA hasn't passed, in February of 2006 the city council adopted RENEW LA as their "guide" for waste management for the next 20 years.¹⁰⁸

The county has a similar four-phased approach for implementing CT/WTE in Los Angeles. Phase one directed the County's gaze overseas, looking internationally for Conversion Technologies (thermal biological and chemical) that could possibly be transplanted to the U.S. The County, like the City is only considering firms that have operable demonstration facilities so they can assess whether the technology is viable. Phase two of the County's program brought the County's gaze back inward; the BOS reflected on which companies they had evaluated would be best to pursue seriously. An RFP was issued to the companies on the short-list that was generated from their review. Phase two also began the process of looking for appropriate sites. It is here that the County and City's decision-making processes diverge, to the detriment of the cities project. The County *only* considered co-locating their future waste facilities at existing Material Recovery Facilities (MRF's). The city is considering not only MRF's but other land lots as well. The benefits of co-locating at an existing MRF are obvious and overwhelming; truck routes are already in place so no truck traffic is added (as a result no extra noise and diesel fumes will be made) and the MSW destined for the CT/WTE facility is already on site to be pre-sorted by the MRF. It shows a great economy of space.¹⁰⁹ The county required all MRF's to have well-established relationships with their surrounding neighborhood and "good standing" (no outstanding citations or noncompliance with regulations). The BOS intuited whether or not an MRF had "well-established relationship" with their neighbors by briefly surveying the other businesses in close proximity. Mitchell didn't know what questions were asked of the MRF's in

¹⁰⁸ City Planning Commission. "Department of City Planning Recommendation Report". Case No. CPC 2007-1455-CA. August 23, 2007. p. 5-6

¹⁰⁹ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

order to determine well-established relationships. The appeal behind this decision was to avoid pre-existing tension between the MRF and the community.¹¹⁰

The Department of Regional Planning oversees planning laws and zoning code for the county and unincorporated areas not under the auspices of the city planning commission. The first of the County's proposed site is in Huntington Beach at the Rainbow Disposal Material Recovery Facility. The company Entech will be supplying the MRF with pyrolysis/gasification technology. This site is the most contentious of the three, Sky acknowledge, because it sits across the street from an elementary school. The other two sites are both located in Riverside County. One site is in the city of Perris at the CR&R MRF. The County has employed the company ArrowBio to supply anaerobic digestion technology. The last facility is in unincorporated Riverside at the Burrtec MRF and it will process MSW using pyrolysis supplied by International Environmental Solutions. All sites, because they are co-located at MRF's are in either M2 or M3 zones, which are heavily industrialized zones.¹¹¹ Through no fault of Mitchell's I was lead falsely to believe that these sites would be far away from residential areas. I will explain later how I came to a different conclusion. The County, like the City, has been approached by different representatives from cities expressing interest in being host to a CT waste facility in the future. Cities that have stepped forward are Calabasas, Glendale, Lancaster, and Long Beach.¹¹²

The county Evaluation Committee is the acting governmental agency for the County's project (they play a similar role to the City Planning Commission for the City's project). The Evaluation Committee gives the final pass/fail vote to all proposed sites and companies. The

¹¹⁰ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

¹¹¹ Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

¹¹² County of Los Angeles, Department of Public Works. "Request for Proposals Environmental Consultant Services Conversion Technology Project Phases III and IV" Nov. 17, 2008. p. 6
http://socalconversion.org/pdfs/Phase_III-IV_RFP.pdf

County Board of Supervisors is the silent adjudicator, hovering over the process like an ominous specter. They have the right to “exercise [their] judgment concerning the selection of a Proposer and the terms of any resultant agreement, and to determine which Proposer best serves the interests of the County of Los Angeles (County). The Board of Supervisors is the ultimate decision-making body and makes the final determinations necessary to arrive at a decision to award, or not award, a contract.” They hold the ultimate veto power.¹¹³ Public Works is working collaboratively in this effort with the Los Angeles County Integrated Waste Management Task Force and primarily the Alternative Technology Advisory Subcommittee to thoroughly evaluate and promote the development of conversion technologies in California.

When I talked to Mitchell at the County she was exhaustively thorough and accommodating to all my questions. There was hardly any information that she refused to share with me for proprietary reasons or not. Upon reflection of my two conversations with the City and County, I am curious as to why the City was unable to share the location of the proposed sites where the County gave me exact locations and the names of the firms. I am especially surprised in light of the fact that one of the County’s proposed sites is located not 50 feet away from an elementary school. In my research I have come across several evaluation reports conducted by third parties at the request of the County to document and record the known environmental impacts of the these technologies and how they will pass environmental standards. In all my research I have come across only one report done by request of the city to evaluate the economic and environmental impact of the CT/WTE facilities. The City’s project is a political behemoth with many moving parts. But of the two projects the City has the fewest

¹¹³ County of Los Angeles, Department of Public Works. “Request for Proposals Environmental Consultant Services Conversion Technology Project Phases III and IV” Nov. 17, 2008. p. 4
http://socalconversion.org/pdfs/Phase_III-IV_RFP.pdf

resources available and the least communication between the different arms of the project and the public.

Air Quality Standards

Both projects have to contend with three separate environmental and air quality agencies: California Environmental Quality Act (CEQA), Environmental Protection Agency (EPA) and the South Coast division of the Air Quality Management District. The County of Los Angeles has conducted several extensive evaluation reports, all researched and produced by private firms. The “conversion technology evaluation report, developed by the Alternative Technology Advisory Subcommittee of the Los Angeles county Solid Waste Management Committee/Integrated Waste Management Task Force” provides an in depth analysis of the economic and environmental impacts of CT’s in the United States.¹¹⁴ The County feels safe in their belief that all technologies put forth by their project will meet all air quality standards.

Despite the snowballing momentum of the City’s project, with efforts to change the city zoning code, Smith’s office still has not conducted an Environmental Impact Report. CEQA requires Smith to eventually complete an EIR, but I could not find any timeline associated with the EIR. I’m unsure whether the EIR must be completed before the plan goes in front of the city this summer for final approval. I would hope that the city planning commission would suspend any further movement on the RENEW LA plan until the EIR can be conducted.^{115, 116} In any case, concerned citizens and environmental groups should not implicitly trust that the EIR will

¹¹⁴ URS Corp. “Conversion Technology Evaluation Report”. Prepared for County of Los Angeles Department of Public Works, Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force’s Alternative Technology Advisory Subcommittee. August 18, 2005.

http://ladpw.org/epd/tf/Attachments/SubCommittee%20Attachments/CT_Eval_Report.pdf

¹¹⁵ Interview with Nicole Bernson Senior Policy Advisor to Los Angeles City Councilman, Greig Smith.

¹¹⁶ City Planning Commission. “Department of City Planning Recommendation Report”. Case No. CPC 2007-1455-CA. August 23, 2007. p. 10

be comprehensive, nor will it be likely to consider cumulative impact. Despite the lack of EIR and other comprehensive environmental assessment reports the declaration put forward by the CPC stipulates that the City's waste facility sites will be **exempt** from the requirements of the California Environmental Quality Act (CEQA). CEQA is one of only a handful governing agencies that monitors air and environmental quality in Southern California. An exemption from CEQA is shattering to the integrity of the project, or so Jonathan Parfrey of Green L.A. believes. The "City guidelines for the implementation thereof pursuant to Article II, Section 2, Subsection (m) of the Los Angeles City CEQA Guidelines, as it will not have a negative impact on the physical environment. The enactment of this ordinance will not result in any environmental impacts."¹¹⁷ Jonathan Parfrey of Green L.A. was shocked that the project received exemption from CEQA, especially so early in the process. I was unable to locate what document (certainly not the EIR that never was) that proved to CEQA the project would have "no negative impact" on the environment. Without any environmental evaluation reports (that are at least accessible to the public) it seems premature to exempt the project from certain environmental standards. If no commercial scale plants exist in the U.S. I would think it would be hard to assess the impact, negative or not. I am personally devastated by the exemption from CEQA standards. I think that the exemption, whether it is justified in the end or not, is a stain on what could have been a wonderfully revolutionary waste management solution.

Another potential hurdle to attaining proper permitting is Los Angeles's Non-attainment status for Nitrogen Oxide. The Clean Air Act of 1970 (referenced above) requires the EPA to set air quality standards and thresholds for air pollutants including carbon monoxide, ozone, nitrogen dioxide, particulates, sulfur dioxide, and lead. Non-attainment status means that

¹¹⁷ City Planning Commission. "Department of City Planning Recommendation Report". Case No. CPC 2007-1455-CA. August 23, 2007. p. 4, Exhibit A.

contaminants in the air far exceed the National Ambient Air Quality Standards set by the EPA. The air quality situation in Los Angeles is rated as “severe”, one of only a handful of cities with such a poor grade. The EPA creates an entirely separate permitting process for areas that have not reduced any of the six specified pollutants below threshold. Despite CT/WTE reputation for efficiency and low emissions, the EPA requires all industries siting in non-attainment areas to follow a strict set of permitting requirements above and beyond those associated with city zoning permitting requirements. Under the Clean Air Act Amendments of 1990, states must “administer a comprehensive permit program for the operation of sources emitting air pollutants.”¹¹⁸ In non-attainment areas EPA requires additional permitting for any facility that emits 50, 25 or 10 tons of identified pollutants per year. This permit includes many small industries not regulated by the general EPA permitting process, which only regulates industries that emit over 100 tons per year.¹¹⁹ As a part of the permit process for non-attainment areas each facility is responsible for drafting a “compliance plan” and providing a certification mechanism to prove that they are in compliance. The permit elapses every 5 years and must be renewed at the end of its term. “The EPA can veto a permit; however, this authority is essentially limited to major permit changes.”¹²⁰

Regina Freer explained that there is no threshold for air contamination: meaning that even if the air in Los Angeles were completely saturated with pollutants, polluting industries would still be able to build considering they were properly permitted (through the EPA’s extra non-attainment permitting process).¹²¹ Jonathan Parfrey was similarly unsure if there was such a

¹¹⁸ Department of Natural Resources and Environment. “Federal Air Quality Standards”. 2004. p. 2. <http://www.deq.state.mi.us/documents/deq-ess-caap-airpermittechmanual-Tab04.PDF>

¹¹⁹ Department of Natural Resources and Environment. “Federal Air Quality Standards”. 2004. p. 3.

¹²⁰ Congressional Research Service Support. “Summaries of Environmental Laws Administered by the EPA: Clean Air Act II”. <http://ncseonline.org/NLE/CRSreports/BriefingBooks/Laws/d2.cfm>

¹²¹ Interview with Regina Freer, Vice President of the City Planning Commission.

standard.¹²² Despite Los Angeles non-compliance with federal standards for air contaminants, the City can still build a waste facility known to emit dioxins and furans that won't even be held accountable to CEQA standards. This dodging of laws and contortion of justice can have unintended consequences on communities living near the proposed waste facilities. Perhaps a threshold should exist that prohibits construction of any polluting industries in a region with non-attainment status. Such a severe threshold would have consequences for the economy that I cannot predict. Even if the enforcement of a threshold is impossible now, it should at least exist in the imaginations of waste proponents.

Elva Yanez of California Community Foundation referred me to a report put together by an Occidental professor and the Building a Regional Voice for Environmental Health & Justice collaborative that “demonstrates pollution levels in some areas of the city are consistently higher than what is considered safe by state standards.” Yanez believes that “given what the City controls and does not control and the nature of the bureaucracy in a city the size of LA, it is unlikely that the City would move forward with [cumulative impact] legislation unless pushed to do so. The Ground Truth report that is soon to be completed will lay out a very full picture about the extent of cumulative environmental impacts in the City of LA.” Unfortunately, the current city council recently voted to not fund the implementation of the program. Yanez believes that the report will not procure any hard legislative change from the city of L.A. The only city that has tried to regulate cumulative impacts, to Yanez’s knowledge, is Cincinnati OH.¹²³

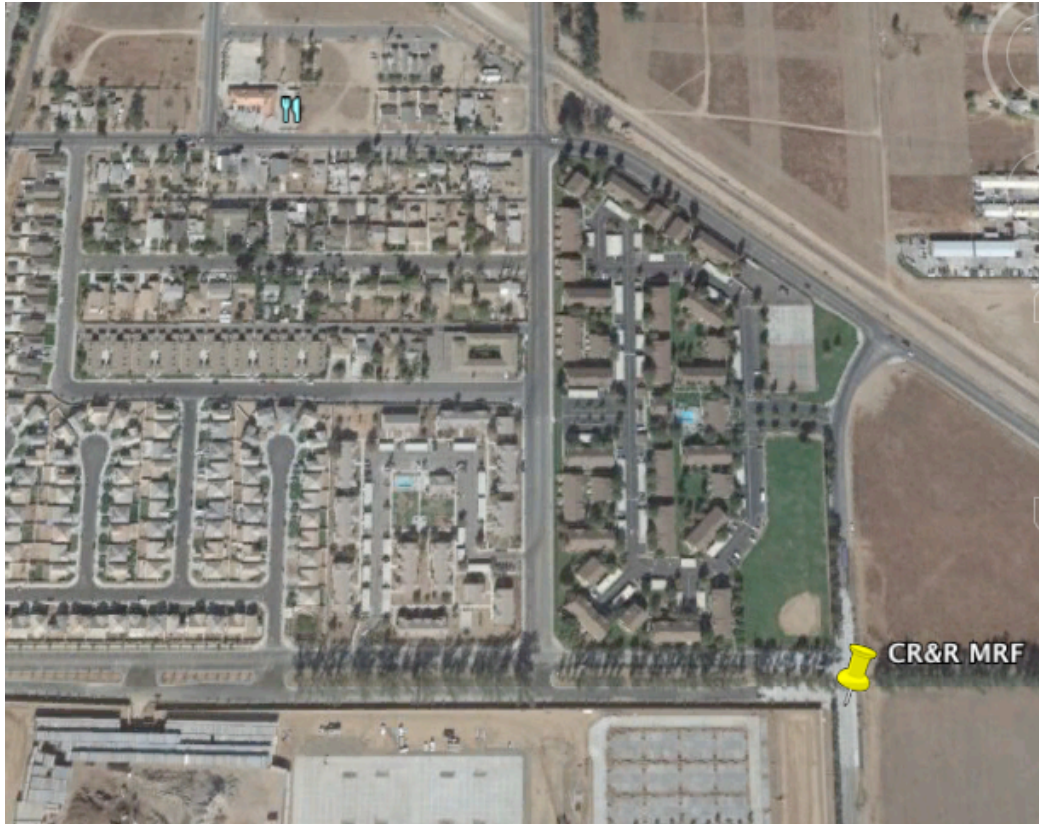
In light of Yanez’s comments, the locations of the County’s three projects pose a great, unregulated threat to the communities they are next to. I was lead to believe by Tobie Mitchell’s comments that the location of Rainbow MRF next to an elementary school was an anomaly and

¹²² Interview with Jonathan Parfrey of Green L.A.

¹²³ Interview with Elva Yanez of the California Community Foundation

that by law CT waste facilities must be in industrially zoned areas. I assumed such zoning restrictions would preclude any issue of extreme proximity to homes and schools. To verify that the other two sites proposed by the County were not next to residential areas I entered the addresses of the MRF's in "healthcity.org". The Healthy City website agreed with what I had inferred from my interview with Mitchell, that nobody lived in close proximity to these sites. Google Earth told a different story entirely. When I entered the addresses into Google Earth's search engine, it generated three maps of similar composition. All three potential sites had housing developments incredibly close, even across the street in one case. In light of the County's lack of community outreach, and the lack of cumulative impact legislature, the waste facility's close proximity to residential areas is unnerving and disheartening.

Below is an image of the CR&R MRF. The yellow tack represents the address of the MRF, the land owned by the MRF is the area to the bottom left in the screen shot. As you can see, right across the street is a large housing development and even a restaurant represented by the blue knife and fork (please see appendix 6 for images of the Burrtec MRF).



Source: Google Earth Images

Once the final sites for the City are declared, it is imperative for someone to do a similar spatial analysis of the closest residential neighborhoods to the proposed sites. I think the findings and conclusions will echo my findings for the County's sites. It is exceedingly important in light of Los Angeles's non-attainment status for NO_x that this spatial analysis and cumulative impact assessment be done. These standards are set to protect public health.¹²⁴

Los Angeles is no safe asylum for polluting industries however. The city is orchestrating many different agencies and enacting great change to the city zoning code. Even though construction hasn't started, nor sites been finalized, the City is moving forward with other waste reduction mandates. The City is slowly phasing out Sunshine Canyon; they have mandated that

¹²⁴ Department of Natural Resources and Environment. "Federal Air Quality Standards". 2004. p. 2. <http://www.deq.state.mi.us/documents/deq-ess-caap-airpermittechmanual-Tab04.PDF>

over the next five years that the tonnage of MSW going to Sunshine Canyon is reduced from 3,500 TPD to 500 TPD. City plans also to “provide reductions in city taxes based on companies recycling performance and add residential foodwaste to the green can program.”¹²⁵ The summary proposes creating a governing agency responsible for overseeing the project holding it accountable and reporting to the city. As well “instruct the City department of Environmental Affairs, with support from the B.O.S. and C.A.O. to carry on the work started in this RENEW LA plan to research and develop a comprehensive cost/benefit analysis of the six waste management systems.”¹²⁶

Community Involvement: In writing but not Reality/Alive in Spirit Only

I will attempt to untangle the mess that is the City and County’s community outreach and education plan. From myriad sources I gleaned that the City was using at least three different platforms for community outreach and involvement. Not all my resources agreed with the others. When talking to Bernson from Councilman Smith’s office she explained that it was the County who would know the most about the community outreach plan. Considering the projects have been completely separate until now I was curious as to how the County’s efforts would inform the City’s outreach program. When I asked Skye about the City’s outreach plan she claimed that she knew nothing about it. Through further reading of the RENEW LA plan I realized the City was using the SWIRP model, which *was* designed by the County. Even though the County already has a community outreach plan drafted and at their disposal, during my conversation with the Skye it became apparent that their efforts were nebulous and haphazard. The RENEW

¹²⁵ Smith, Greg. *Renew LA Synopsis*. Jan. 4, 2010.

http://ens.lacity.org/council/cd12/renewla/cd12renewla243164255_01042010.pdf

¹²⁶ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. “Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles” Jan. 4, 2010. p. 1-28.

http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

LA blueprint, a comprehensive document put together by Smith's office, explained that the City would be conducting a series of stakeholder meetings. Through all my investigations I was unable to decipher whether the stakeholder meetings were a part of the SWIRP model or another arm of the tentacled beast that is the City's outreach plan. Lastly the RENEW LA blueprint mentions the use of Neighborhood Council meetings as a vehicle for community outreach. Bernson wasn't able to speak to the use of neighborhood councils in their plan, but believes that they will be effective.

The City's community outreach mission states that "the key to successful siting and project development is to involve the community early and often in the process. This can be achieved through the host city council office and also through the neighborhood councils and their committees. It is imperative, and mandated by the public hearings called for in the permitting process, to have an open and honest discussion with the local community about the project, its importance in the large scheme of things, its design, operation, potential impacts (both positive and negative), and regulatory controls." They have identified the issues of highest importance to convey to the community as "truck traffic, its circulation patterns, impacts and mitigation measures, aesthetics (architectural design, landscaping etc.), air emission control technologies, storm water control and reuse, other health and safety issues, creation of jobs during construction and operations, sustainability benefits"¹²⁷

The SWIRP Model

The most developed and comprehensible platform of the City's community outreach plan involves the Solid Waste Integrated Resource Plan (SWIRP). Developed by the county several

¹²⁷ Greg Smith and Chip Clements and Ivy Guano of Clements Environmental Corp. "Recovering Energy Natural Resources and Economic Benefits From Waste for Los Angeles: A Resource Management Blueprint for the City of Los Angeles" Jan. 4, 2010. p. 1-26.
http://cd12.lacity.org/pdf/Complete_RENEW_LA_Plan_NEW.pdf

years ago, the City has repurposed the plan for the implementation of the RENEW LA community outreach (although the SWIRP model is not mentioned in the RENEW LA blueprint). Translating SWIRP into a format usable by RENEW LA was easy because the plan was initially designed to address issues in the waste water system. In its original form SWIRP intended to gather information and feedback about the successes and failures of current waste systems through a tiered system of meetings and interviews. SWIRP employees started engaging “community groups” on a street by street, then community wide and finely regional level. In its third year as a water resource community outreach model, SWIRP has so far completed interviews with community groups businesses, environmental organizations, unions, private sector haulers, facility operators, recyclers and government partners. At the city level SWIRP has been a part of 3 citywide conferences. At the regional level they are now conducting workshops; 36 regional workshop meetings in all six wastesheds.¹²⁸ All these efforts are synthesized on the SWIRP website where a colossal effort has been made to create a database of all stakeholder responses.¹²⁹

The initial impetus behind SWIRP was to mend the broken highways of communication between the City government and the public in an attempt to make the local government more responsive to civic milieu. There was a disconnect between the public/local government interface. The city wanted the problem resolved before the next Integrated Resources Plan was drafted. The Integrated Resource Plan is a decennial meeting that every city must conduct as per the EPA’s recommendations. This next regeneration of the IRP will be the debuting of many great changes.

¹²⁸ City of Los Angeles Sanitation Department of Public Works. “Counting Down to Zero Waste Plan: Solid Waste Integrated Resources Plan”. Feb. 28, 2010 <http://www.zerowaste.lacity.org/home/index.html>

¹²⁹ City of Los Angeles Sanitation Department of Public Works. “Goals Identified in Early Outreach Meetings”. Zero Waste Plan. http://www.zerowaste.lacity.org/files/info/fact_sheet/SWIRPFAQS.pdf

The major overhaul to the IRP plan is the emphasis on a series of in depth stakeholder meetings over the next 6 years. Because the BOS intends to engage all levels of civic strata, they also hold “house meetings”; a grassroots approach to canvassing support on the ground. The house meetings have been highly successful, attendance is sometimes as high as 25 local residents. The Bureau of Sanitation, DPW supports the restructuring of the waste power dynamics. “one-on-one meetings have been held with neighborhood council members, community organization leaders, community environmental activists, chambers of commerce, homeowner associations and other members of the community identified as persons with key information and understanding of the issues. This is an on-going project in the first phase of the six year process.”¹³⁰

What became difficult in my research was disentangling the efforts made to engage communities by the water resource management team using the SWIRP model, and efforts made by the RENEW LA crew under the SWIRP model. SWIRP has done commendable work at eliciting responses at every level from top to bottom. On their website however, they do not differentiate between those efforts driven by the RENEW LA plan and those done in the name of water management. I am dubious as to how much of SWIRP’s success can be claimed by the RENEW LA plan since Bernson was barely able to speak to their efforts. The incoherence and inarticulacy of Smith’s office on community outreach speaks, I believe, to a flippancy towards public input.

When I asked the County about their community outreach plan they ironically made no reference to SWIRP. They gave vague answers about talking to stakeholders and conducting meetings, but there seemed to be no organized structure informing their comments, just general

¹³⁰ Diverse Strategies for Organizing. “Case Study: City of Los Angeles, Bureau of Sanitation, SWIRP”. April 15, 2010. http://www.victorgriego.com/case_studies_swirp.php

impressions of what they should be doing. During our discussion I asked Mitchell whether or not she was concerned about the reaction of the community where the plant was sited next to the elementary school. She said she wasn't concerned, and was unsure whether or not they had actually started talking to community members on the ground. I am afraid that they believe siting at MRF's that have good relationships with the community lead them falsely to believe their duty was done. Lulled them into a sense of accomplishment.

Stakeholder Meetings: Gathering the Waste Family Around the Table

The RENEW LA blueprint briefly references a list of environmental groups that they intend to contact. On that list were the Sierra Club, The Clean Air Coalition, Environment California and Californians Against Waste. I was only able to get into contact with Jonathan Parfrey of the Green L.A. institute. Through Parfrey I learned that the city was contracting with Center for Energy Efficiency and Renewable Technology (in addition to the firm HDR?) to do the community outreach component. Rhonda Mills of CEERT reached out to Parfrey and Green L.A.. Mills pitched the RENEW LA plan to Parfrey and a representative of Communities for a Better Environment about 6 months ago. There were not any follow up meetings and Parfrey is unsure of how these meetings were used towards bettering or informing the City's project. Parfrey is similarly unsure of CBE's reactions to the RENEW LA plan. Parfrey couldn't share with me the position Green L.A. took on the RENEW LA plan but he did share his personal belief that this project is a boon to the City's broken waste system.¹³¹

The County is also using stakeholder meetings as a component of their community outreach. When I asked whether or not the County had told the public that CT's emit dioxins and

¹³¹ Interview with Jonathan Parfrey of the Green L.A. Institute.

furans (in very low quantities), Mitchell's response was that that information would be expressed in their future "scoping" meetings. Mitchell also mentioned that as per CEQA regulations all documents concerning emissions standards and health risks would be available for public viewing. If they aren't telling anyone that the projects are being constructed, how will the public know to look for obscure documentation that the facilities emit dioxins and furans?¹³²

When I met with Hillary Moglen of Cerrell associates, the firm contracting with the County for the community outreach program, I met resistance similar to the information roadblock put up by the City. I was told over and over "that information is not public yet". Moglen did share that initial meetings have been held with elected representatives in the vicinity of the proposed projects. Cerrell has engaged local level city councils where the projects are mainly at the supervisor level. Cerrell is exchanging information with the county board of supervisors, public works and "the people working at the county level for environmental issues". Coalition for Clean Air; environment now, Green L.A. institute; NRDC LAANE were all contacted.¹³³ Moglen claims they "tell anyone who is interested" but that it depended on "the interest level and how responsive organizations are". Moglen says yes, there has been and will be outreach to the neighbors of the sites, but the first round was a shallow survey because they had little concrete information to share. Moglen explained that Cerrell is making rounds now contacting communities and presenting general information such as the size of the plants. This is not a proactive community outreach plan, its more defense than offense. I was interested, and was refused information. I am not sure how, as Moglen claims, some outreach has been done, yet she is unable to share information with me. There will be more "aggressive" follow-ups once the

¹³² Interview with Tobie Mitchell Environmental Programs Division of the Los Angeles County Department of Public Work.

¹³³ Interview with Greg Good. Director of Waste & Recycling Project for LAANE.

demonstration facilities are built, she assured me.¹³⁴ Once the demonstration facilities are built, the original point of community outreach becomes moot. Outreach provides communities the opportunity to craft and shape or ultimately deny the construction of plants in their neighborhood.

My concern for the public's ignorance of the dioxin and furan emissions is ungrounded according to Moglen. According to Moglen the *community* approves the permit provided by AQMD. This permit is only issued once an EIR has been completed. In that case, the city must also complete an EIR before the City Planning Commission approves the sites. This mechanism is in place in order that issues, such as dioxin emission from a waste facility, cannot be overlooked by the community.¹³⁵

Neighborhood Councils

I was unable to unearth anything more about the use of neighborhood councils by the City as a tool for civic engagement. From Bernson's responses to my questions about neighborhood councils it became clear to me that there was no one tracking and assessing the effectiveness of the meetings. The City often uses neighborhood councils as a vehicle for disseminating news, ideas and updates. It is a great a gateway into communities, a revolving door of information and influence. However, if neighborhood councils are the City's tool of choice for community outreach, they must craft a careful campaign. This haphazard approach to neighborhood councils will not produce fruitful synergy between the City's efforts and the community's reactions. Greg Good, of the social justice organization LAANE is doubtful of the success of using neighborhood councils.¹³⁶

¹³⁴ Interview with Hillary Moglen of Cerrell Associates

¹³⁵ Interview with Hillary Moglen of Cerrell Associates.

¹³⁶ Interview with Greg Good. Director of Waste & Recycling Project for LAANE.

FINDINGS

Confusion and Chaos Abound: The Absence of a Clear, Common Language

One overarching takeaway from the City and County's general plan is the lack of standardization among terms. Many governments and environmental agencies are wary of implementing CT/WTE technology schemes in their own cities because they simply don't know what they are getting into. Without cohesion across the movement fear and unease will persist and CT/WTE will face great opposition. Even for Los Angeles, lack of standardization of terms will hinder the public outreach component of both the City and County's projects. The City and County must be completely clear on the meaning of Conversion Technology, Waste-to-Energy and other critical terms, such as "inert", before they can relay the information to the public. Between clarification and community outreach however, community outreach is paramount. It is better to engage the community early than to appear completely put together and infallible.

The degree of confusion I met in my research was alarming. Many differing and disagreeing definitions of CT and WTE exist. The County maintains that they are pursuing CTs exclusively; pyrolysis is one of the technologies they will be using. The City also claims that one of the WTE facilities will be using pyrolysis. So is pyrolysis a CT or a WTE technology? Can it be both depending on how you treat it? To complicate matters further IES admits on their website that pyrolysis is "incineration with less oxygen".¹³⁷ It is these kinds of discrepancies that will confuse the public and keep local governments wary.

¹³⁷ "International Environmental Solutions". <http://www.wastetopower.com/>

Game Changing Legislation: Assembly Bill 222 and Redefinitions

Several attempts are being made to create uniform standardization across the CT movement. Assembly Bill 222, drafted by Assembly member Anthony Adams (R), seeks to clarify what CT's are and what they are not. Assembly Bill 222 at first blush looks like a progressive's dream, outlining how best to allocate funds and resources for the green energy industry and how to bolster renewable energy infrastructure. One of the reasons CT technologies remain virtually anonymous is because they can be prohibitively expensive; up front costs are high and while the technologies pay for themselves eventually, the first down payment can be an insurmountable obstacle. AB 222 hopes to dissolve market obstacles in order that CT technologies might become a viable alternative to landfilling.

AB 222 seeks to reroute the way CT's would be permitted. AB 222 proposes that instead of permitting as a solid waste facility, CT's would be considered a manufacturing process. Permitting for solid waste facilities requires a majority/majority rule (a majority of the cities in the county would have to vote to approve any facility anywhere). Under AB 222 CT's would have a similar permitting process as an MRF and avoid the restrictive and arduous permitting standards of landfills (Bernson). Even among environmentalists, opinions are split over the bill. The California Integrated Waste Management Board task force and the County Bureau of Sanitation decided to support the bill. The task force supports diverting energy produced by CT's towards the Renewable Energy Portfolio as well.¹³⁸

The general feeling towards the bill among local governmental agencies and environmental justice groups is hesitancy: many people in the waste field feel that not enough is known about the bill to form an opinion. The fear echoed among many environmental groups is

¹³⁸ County of Los Angeles, Department of Public Works. "Alternative Technology Advisory Subcommittee/Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force: Minutes of March 9, 2009". March 9, 2009. <http://dpw.lacounty.gov/epd/tf/minutes/tfminATAS2009-03approved.pdf>

that the bill “would allow controversial and environmentally-unproven waste-to-energy technologies to count as “recycling” under the state’s landmark recycling law (even though they destroy resources) and to count as “renewable” under the state’s renewable energy law (even though they generate electricity from fossil sources and recyclable materials).” Furthermore many read the bill to be a relaxation of emissions standards for solid waste conversion facilities. The Californians Against Waste, an organization formed around issues of resource conservation, waste reduction and recycling efforts, have come out strongly against AB 222.¹³⁹

CAW’s main beef with AB 222 is its potential to handicap current recycling systems. Bill champions point to language in the bill that requires “that to the maximum extent feasible that all recyclables be removed from the waste stream before it is converted into energy”, “Independent studies conducted by the California Integrated Waste Management Board have concluded that the pre- processing of incoming residual wastes by a biorefinery will actually result in a 7- 13% net increase in the recovery of glass, metal, and plastics.” Proponents of AB 222 claim that it actually increases the severity of standards for CT’s.¹⁴⁰

There is also concern that energy generated by the CT/WTE process should not count towards the REP (renewable energy portfolio). The induction of CT/WTE energy into the renewable energy portfolio may be premature: the technology should first be able to be proven economically and environmentally viable before its energy counts towards California’s renewable energy credit. However, once this has been proven I believe it is appropriate that energy produced by a CT/WTE facility can be counted as “green” technology.

¹³⁹ Californian’s Against Waste. “AB 222 (Adams) Bio-Refineries / Conversion Technologies”. Dec. 17, 2009. http://www.cawrecycles.org/issues/current_legislation/ab222_09

¹⁴⁰ BioEnergy Producers Association. “CAW Misrepresents Renewable Energy Bill (AB 222)”. April 8, 2010. http://www.bioenergyproducers.org/documents/caw_myths_ab_222_facts.pdf

Many countries, including the United States, reevaluated their waste management systems and their definitions of hazardous waste and created a legacy of waste management legislature. Several California initiatives have recently passed or are passing through legislature now, which are direct descendents of earlier bills. Assembly Bill 939, drafted and passed in 1989, introduced the “waste hierarchy” to the Los Angeles City government. Under the direction of the Integrated Waste Management Board, which was created under this act, municipalities and localities throughout the city were supposed to reprogram their waste management in accordance with the waste hierarchy. The Integrated Waste Management Act stipulated more stringent permitting standards and monitoring of solid waste facilities (including transfer stations and also waste diversion mandates).¹⁴¹ AB 1075 and AB 1150, passed in 2007 and 2009 respectively, are reactions to the new interest in conversion technologies. Each bill is a two-year bill that more specifically defines “solid waste conversion”, “incineration” and “transformation”. As more is learned about these conversion technologies and their nuances the city wishes to differentiate between them in order that some should be economically rewarded through tax breaks and rebates while others (incineration) should be condemned. These redefinitions may seem trivial, but with clarification of what each technology is and how the city sees it, the technologies, once they are differentiated from incineration are eligible for city tax credits. AB 842 is another two-year bill created to monitor and regulate Conversion Technology (CT) plants through the authority of the State Air Resources Board or Air Quality Management Districts. This bill is a double-edged sword; its existence will help proliferate CT plants around the city, but it was created in order that CT plants could avoid the absolute zero emissions threshold.¹⁴² Instead of

¹⁴¹ California Integrated Waste Management Board. “History of California Solid Waste Law, 1985-1989”. Nov. 16, 2009, p. 8

¹⁴² The Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force. “Conversion Technologies”. Nov. 16, 09. http://dpw.lacounty.gov/epd/tf/conv_tech.cfm

the zero emission threshold the two governing bodies (The State Air Resource Board and Air Quality Management Districts) will monitor and regulate emissions: They decide when the plant is emitting too much and their tolerance for emissions will surely be greater than the zero emissions threshold.^{143,144,145}

Confusion of Power: A Mishmash of Boards and Agencies

The confusion of terms bleeds over into the hierarchy of boards and agencies governing the two projects. As a general rule I agree that the greater number of agencies monitoring the movements of the City and County the better. A network of watchdog groups is better at enforcing codes and ensuring safety than one is. However, beyond the boards and agencies that already exist, both the city and County propose the formation of many steering and oversight committees. The city is consumed with appearing on paper to be progressing forward equitably. In order to justify each decision the RENEW LA plan is forging new political apparatuses that ensure the actualization of each decision and commitment they make; these apparatuses are the multitude of boards, task forces, steering committees and oversight groups. This convoluted hierarchical bureaucracy is a diffusion of power among the actors of the waste sector. Committees and boards with horizontal power and overlapping responsibilities will weaken power dynamics and enforcements of environmental codes. Their effort to create mechanisms that curb unrestrained decision-making is commendable, however they need to clean up their organization so that decision making avenues are streamlined.

¹⁴³ Paul T. Williams. *Waste Treatment and Disposal*. (Sussex, England: John Wiley & Sons Ltd., West, 1998) p. 3.

¹⁴⁴ California Integrated Waste Management Board. "History of California Solid Waste Law, 1985-1989". Nov. 16, 2009, p. 8

¹⁴⁵ The Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force. "Conversion Technologies". Nov. 16, 09.

Keeping Up Appearances

The City's effort to pursue all avenues of community outreach is commendable but it compromises the success of their plan. The City, and to a certain extent the County, claims that the project is riddled with too many uncertainties to start talking to the community. Having spent the last 80 or so pages expounding upon different aspects of the City and County's projects, I think that they could find something of value to share with the communities. It is better to begin a dialogue with only the skeletons of ideas and designs, than to present to the community after an entire project that has been permitted and built. In this way the process can benefit from a reciprocal relationship between the community and the local government. Perhaps the City should channel their energies into one output, in this way they can devote time and energy into reaching out to the community in a meaningful way. The City's redundant and ineffective outreach plan is compounded by their lack of transparency. More than halfway through their project, the City has still not released the final list of sites. If this information is not open to the public, I am inferring that they have not contacted those communities. If the City is not already, they should faithfully follow through on the SWIRP model. If they are already, they should publicize in a coherent report all community outreach efforts. If working is being done on the SWIRP plan that I was unable to uncover, then the City should be proud of their efforts.

LAANE is putting together a parallel waste campaign with many of the same long-term goals, but different intermediary steps. I found that LAANE's project was very much disassociated from the City's efforts. LAANE hasn't formed an opinion yet as to the RENEW LA plan however, Greg Good, the director of Waste and Recycling projects at LAANE is skeptical the community outreach plan will be as extensive as it is written on paper. Good shared with me what he could of LAANE's parallel waste campaign. Good commiserated that the waste complex in Los Angeles is extremely complicated and "woefully inadequate". LAANE's

campaign is to enhance community involvement in the waste system and hold the waste industry accountable. LAANE is working in partnership with International Brotherhood of teamsters, local teamster 396 (waste workers in the commercial sector), Green L.A. the Sierra Club and Green for All, many of the same names being contacted by RENEW L.A.. Their campaign will have three main pillars: reforming the waste hauling structure, facilities standards and what potential new markets will help make diversion goals. They are working on policy possibilities that would ensure greater accountability to workers and communities (city and county policy). Good commiserates that LAANE, despite their very pertinent waste campaign was not invited to the RENEW LA roundtable. The introduction of the RENEW LA plan and the County's project provides another entrance point for LAANE. These projects are ripe for public input because they are still in their formative stages. Better to enact change now than when the projects have calcified and set political (and zoning) momentum in motion that is hard to stop.

The main thrust of LAANE's campaign will focus on the commercial sector and not necessarily on the new CT/WTE. It's relatively easy to become a private waste hauler and so the sector has become saturated with private companies (over 150) making the system inefficient and driving down wages and job standards.¹⁴⁶

CONCLUSIONS

Conversion Technologies and Waste-to-Energy has the potential to truly revolutionize urban waste management. The County and the City are taking advantage of CT's good reputation and using it as a get out of jail free card, bypassing the appropriate steps towards permitting, zoning and community outreach. Because these projects are the first of their kind, and the scale is so grand, they need to take time and care to complete every permitting step. If the city is

¹⁴⁶ County of Los Angeles, Department of Public Works. "Request for Proposals Environmental Consultant Services Conversion Technology Project Phases III and IV" Nov. 17, 2008. p. 4
http://socalconversion.org/pdfs/Phase_III-IV_RFP.pdf

exempt from the CEQA standards, its sets a precedent for all future projects that could possibly jeopardize the integrity of the CT/WTE movement. If the County is not talking to the elementary school near their CT site, can they claim to be using a just and equitable siting mechanism?

POLICY RECOMMENDATIONS

The key to successful implementation of Conversion Technologies and Waste-to-Energy Technologies is a clear and agreed upon set of terms and definitions. If confusion exists, many local governments will shy away from using CT/WTE technologies. If one interested party cannot be assured that their facility will operate like the model they are basing it off of then they may seek different waste management solutions. As well, confusion of standards and terms is a hindrance to civic engagement; if the public is not sure who or what is being introduced into their community it is difficult to fight back. It prevents communities from creating tools to fight back if they don't know the nature of the monster they are up against. Terms need to be set and defined in a fashion that is honored by all: government at the federal, state and local level, private industry and the public. Perhaps of the greatest importance is the clarification of terms in order that proper and appropriate zoning and emissions restrictions can be set. If it is unclear whether a pyrolysis plant is a recycling facility or a waste processing facility, to whom are they accountable? To what standards must they live up to? These issues need to be resolved before movement can be made towards implementing CT/WTE technologies in Los Angeles. Or, Los Angeles should be prepared to revisit zoning and emissions standards in light of the commandments of AB 222.

All parties must be invited to the table immediately. The County and the City need to engage communities now. It is clear to me that there are people who reside next to the County's proposed sites, Parfrey and Good are in accord that the City's sites will most likely be next to

disenfranchised neighborhoods as well. The County and City need to move beyond cursory attempts at eliciting reactions from local environmental groups. First deploy a fleet of surveyors to speak to the community concurrently with a drive to draft a comprehensive report addressing the concerns of environmental groups. I believe it is wildly inappropriate that Green L.A. is unsure of CBE's stance towards RENEW LA. I'm shocked that LAANE has not been invited to participate in the RENEW LA plan, either as an ally or as a constructive critic. Both the City and County have the script for a great community outreach plan, if only they could remain faithful to it.

As I mentioned earlier, the per ton tipping fee at landfills is incredibly low, the true costs of landfilling have been externalized. If the cost of landfilling remains unnaturally low, then there is little incentive for private haulers in Los Angeles to divert their waste through the CT/WTE complex. The County has made several initial steps towards adding extra operating fees to landfills to fund CT research. I believe that CT's need to be incentivized, or rather landfilling de-incentivized in order that landfilling become the least attractive option to private haulers. The City and County should add a tax or increase the tipping fee for private haulers for dumping their trash at landfills. Several models already exist, but I believe that a tax break for private haulers who divert their waste streams towards CT/WTE should be implemented County/Citywide.

I believe CEQA should reconsider the exemption for RENEW LA plan, at least until the EIR has been completed. The exemption is unearned in light of the fact that an EIR has not been completed and that no similar facility exists in the U.S. Without any facility to reference to I am unsure of how Smith can prove to CEQA that the technologies have no negative impact on the environment. Many waste proponents claim that it is difficult to get accurate emissions data, and

that even when data is acquired, the efficiency of a plant is site specific. A plant in Japan may emit at completely different levels than one in Los Angeles.¹⁴⁷ The County Board of Supervisors and the City Planning Commission need to hire a third part (perhaps ARI or URS, one of the firms that has already completed Conversion Technology Evaluation Report) to do a comprehensive air quality study for all the demonstration facilities littered around the country.

Further Research:

After the cursory spatial analysis of the County's sites and cumulative impact done in my report, a more comprehensive study must be done to determine the actual impact these new waste facilities will have on the communities they are next to. I was unable to determine whether with the addition of emissions from these plants, it would push the total air pollutant saturation over some threshold that would make it dangerous.

¹⁴⁷ Joe Murdoch and Dan Costello of HDR. "Conversion Technologies: Separating Myths from Realities". 2009 SWANA Northwest Symposium. April 1, 2009. PowerPoint.

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Appendix 2

Waste Reduction Timeline for Conversion Technologies in Los Angeles

**TABLE 1.3
STRATEGIC PLAN
FACILITY DEVELOPMENT SUMMARY
(Initial Plant Construction and Expansions)**

CT Plant	Plant Capacity Constructed During Period (TPD)				Total Plant Capacity 2025
	2005-2010	2010-2015	2015-2020	2020-2025	
Plant 1	500	750			1,250
Plant 2	500	750		750	2,000
Plant 3		750	1,500		2,250
Plant 4		750	1,500	750	3,000
Plant 5			1,500		1,500
Plant 6			1,500	1,500	3,000
Plant 7				1,500	1,500
TOTAL CAPACITY					14,500

Indicates initial plant construction
 Other boxes indicate plant expansions

Source: Greg Smith, Council district 12. "RENEW LA A Resource Management Blueprint: Section 5, Getting There" June 2005. <http://cd12.lacity.org/#>

Appendix 3

TABLE 5.2
ALTERNATIVE TECHNOLOGIES
SUMMARY EVALUATIONS

Alternatives	Description	Pros	Cons
Gasification/Pyrolysis	Thermal conversion of organic material to syngas (high percentage of methane), a small volume of ash, and water. The core of the technology is the thermal conversion unit, primarily various kinds of fluidized-bed, or fixed-bed, with the product gas used to generate steam or electricity.	<ul style="list-style-type: none"> • Capable of handling up to 1,500 TPD of MSW per plant • Generates very low air emissions and achieves high rates of burnout leaving little ash residue. • Gasification can be used as the front end of a bio-refinery to produce gas for conversion to ethanol. 	<ul style="list-style-type: none"> • No commercial plants that gasify MSW are operating in the U.S. • High capital and operating costs means that the net tipping fee would likely be over \$50 per ton. • Negative public acceptability of a thermal process
Fermentation	Breakdown of the organic fraction of MSW (paper, food waste, and greenwaste) to sugar (glucose), followed by the bacteriological fermentation and distillation of the glucose to bio-fuels or bio-chemicals. The two dominant products are ethanol (clean burning fuel and gasoline additive), and acetic acid.	<ul style="list-style-type: none"> • Capable of handling up to 1,500 TPD of processed MSW per plant • Ethanol is a renewable, clean-burning fuel that results in a net-zero increase in greenhouse gases. Huge California market as MTBE replacement • Many large plants in operation with corn and sugarcane feedstock 	<ul style="list-style-type: none"> • Capital intensive • Lending institutions are hesitant to participate since there are no reference plants. • Cost of operation may be high • Difficult initial hydrolysis step
MSW Composting	In-vessel composting of MSW for production of soil amendment. Features controlled oxygen, moisture, and temperature environments to accelerate the decomposition of organics. Each in-vessel stage is generally followed by a curing stage, which is either an aerated-static pile or traditional windrow.	<ul style="list-style-type: none"> • Capable of handling up to 750 TPD of MSW per plant • Over 50 operational plants in Japan. • Four firms currently pursuing projects within the U.S. • Designed to handle raw MSW and biosolids. Does not need pre-processing of the MSW. 	<ul style="list-style-type: none"> • Tipping fee of approximately \$50 per ton is strongly impacted by the cost of residue disposal, and the value of the final compost • Marketability of the final product still a question. Some plants assign the compost a negative value in the early years.
Anaerobic Digestion	Anaerobic decomposition of organics, primarily biosolids and other distinct MSW wastestreams, including greenwaste, foodwaste and the other organic fractions.	<ul style="list-style-type: none"> • Capable of handling up to 500 TPD of processed MSW per plant. • Produces methane for heat and power generation, and liquid fertilizer and dry compost • Low environmental impacts • Over 50 operational plants in Europe • Accepts a diversity of organic feedstocks 	<ul style="list-style-type: none"> • Only N. American reference plant is small demonstration facility in Toronto using the BTA technology • Requires good front end separation and feedstock preparation • Requires composting of digester residue, which can equal up to one-third or more of the incoming tonnage
Autoclaving	The steam "pressure cooking" of MSW in large rotating drums to facilitate recovery of recyclables and paper pulp, and the optional generation of gas for energy or fuel production.	<ul style="list-style-type: none"> • 2 plants in construction in the U.S. • Capable of handling up to 1,500 TPD or more of mixed MSW in 250 TPD modules • Recovers high levels of paper pulp • Can generate renewable energy • Can accept a diversity of feedstocks • Pulp and paper industry testing of recovered paper fiber is positive 	<ul style="list-style-type: none"> • No reference plants-but two in construction in U.S. • Project costs yet to be confirmed at commercial sites. • No long term experience with use of pulp product in mills

Emissions from Thermochemical Conversion Technologies

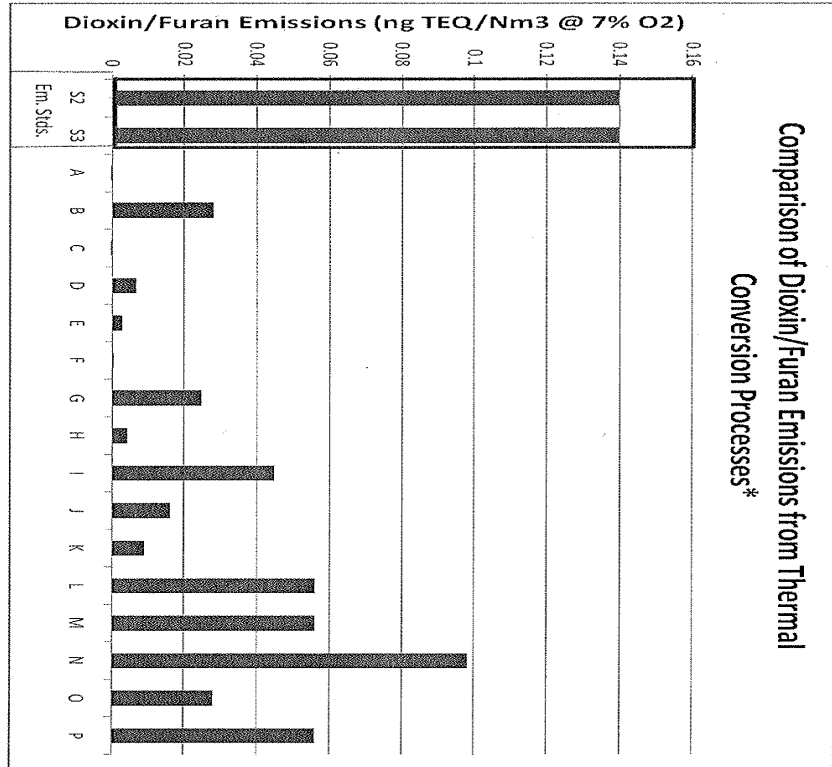


Figure 6 - Dioxins/Furans Emissions Comparison
 * US EPA limit (13 ng/Nm³) deleted for scale. There are no SCAQMD permit limits for dioxins/furans, as facilities are evaluated on an individual basis in a health risk assessment

Appendix 5

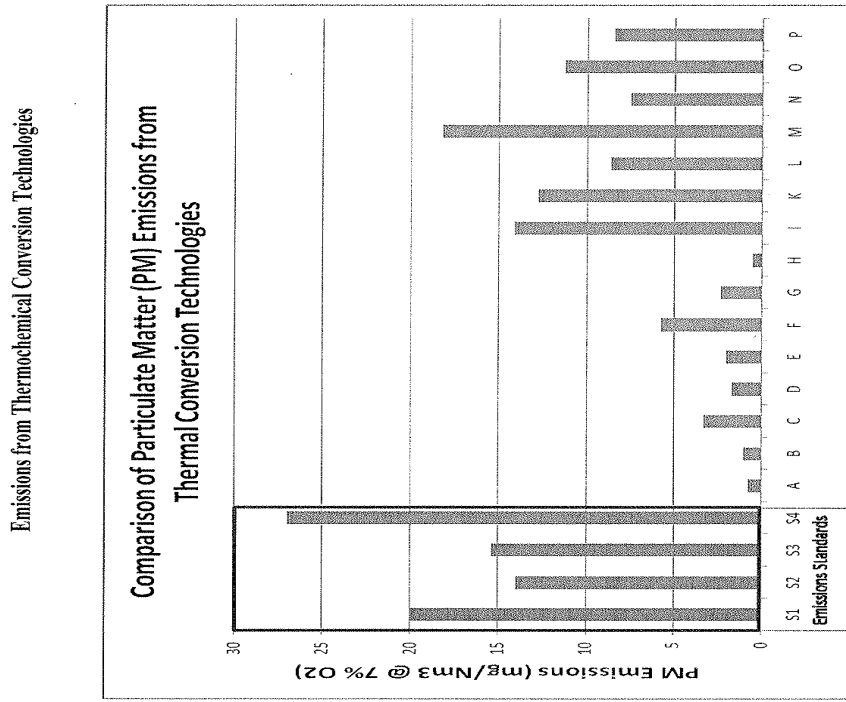
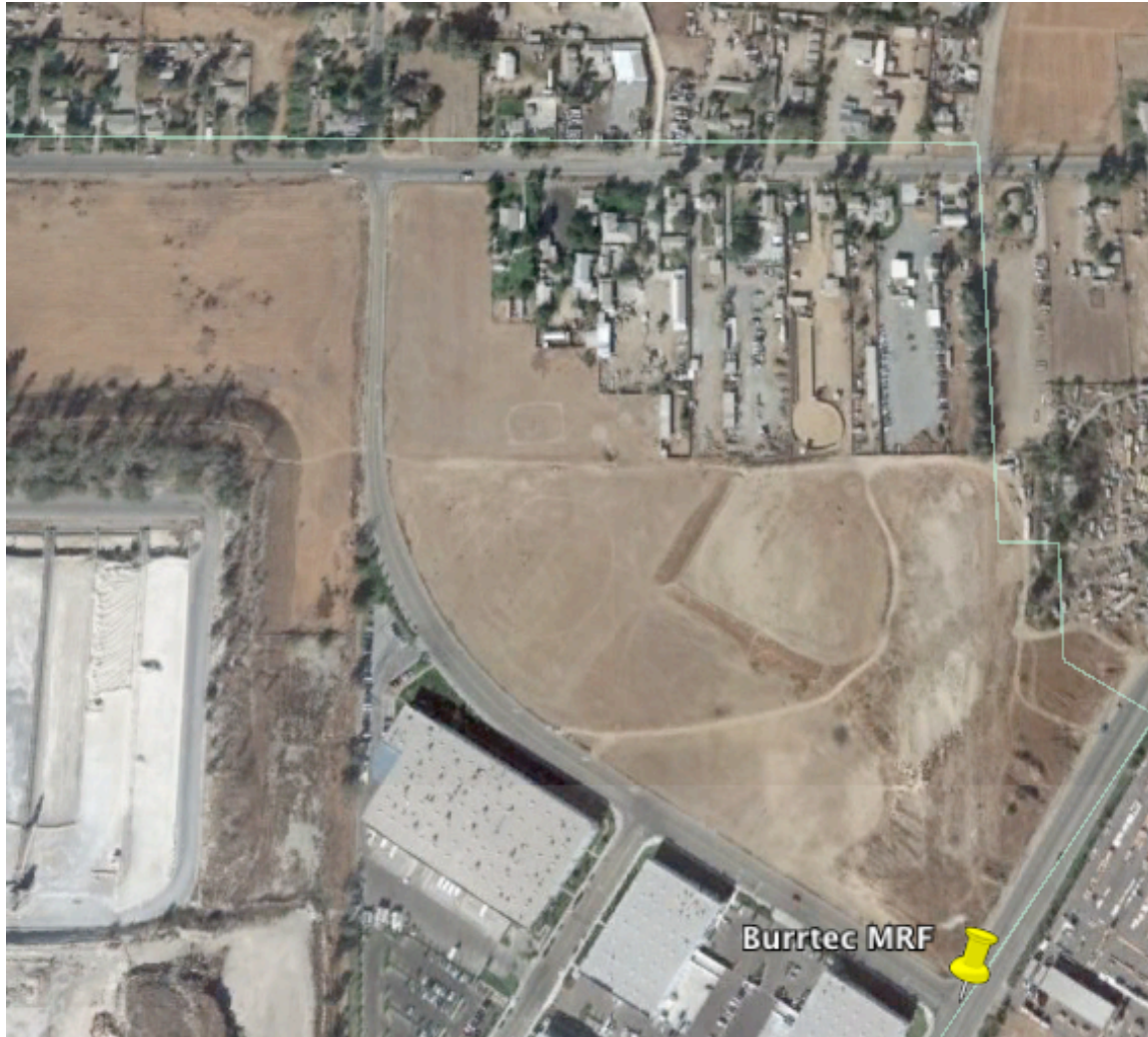


Figure 1 - Particulate Matter Emissions Comparison

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Appendix 6

Location of Burrtec MRF



Source: Google Earth Images

Note: We can clearly see here that the MRF location intended to house the new CT facility is incredibly close to residential zones.