RULES COMMITTEE: 12/5/18
ITEM: G. 5

CITY OF SAN JOSÉ
CAPITAL OF SILICON VALLEY

Memorandum

TO: RULES AND OPEN GOVERNMENT COMMITTEE

FROM: Councilmember Johnny Khamis District 10

SUBJECT: **SEE BELOW**

DATE: November 30, 2018

Approved _____ Date _____

SUBJECT: REPLACEMENT MEMORANDUM TO CLARIFY WORDING TO READ "THERMAL CONVERSION" INSTEAD OF "CLEAN INCINERATION": ACTIONS RELATED TO MUNICIPAL SOLID WASTE THERMAL CONVERSION TO GENERATE ENERGY

RECOMMENDATIONS

A) Direct the City Manager to have staff:
   1) Explore the possibility of using thermal conversion technology to reduce the volume of materials that are not being recycled or consumed in the anaerobic digester that are sent to landfills and to recover energy from this waste.
   2) Research California laws or regulations that help or hinder the implementation of thermal conversion.
   3) Return to the Rules Committee with preliminary findings for consideration of placing item on the Transportation & Environment Committee workplan.

B) Add the pursuit of thermal conversion to our Legislative Priorities.

C) Direct the City Manager to have Government Relations staff and City lobbyists reach out to our State legislative delegation to pursue thermal conversion of municipal waste that would otherwise be sent to a landfill.

BACKGROUND

In 2017, China passed the National Sword policy banning mixed paper and plastic waste from being imported from western countries, including the United States. By 2030, an estimated 111 million metric tons of plastic waste alone will be displaced because of China's new law. What makes this situation even more complicated, is that the U.S. and other Western countries do not seem to have a

long-term solution to this problem, which is leading to massive pileups of these non-recyclable materials. On the bright side, however, non-recycled plastics and papers are an energy resource via thermal conversion. Thermal conversion reduces waste volume and decreases the quantity of waste sent to a landfill by approximately 80 percent. Thermal conversion of solid waste can be used to generate hot water and/or electrical power (1.5 to 2 MW-hr/metric ton (MT)). Finally, thermal conversion eliminates the release of fugitive methane from waste that would otherwise be landfilled, and it will be cheaper than expanding landfills.

ANALYSIS

Thermal conversion of municipal solid waste is a proven technique used in much of the developed world to reduce the volume of material sent to landfills and to recover energy from waste. For example, in Sweden, more than 99% of all household waste is recycled or utilized in one way or another. 50% of the household waste is burned to produce energy at thermal conversion plants. These plants work by loading furnaces with garbage and burning it to generate steam, which, in turn, spins turbine generators used to produce electricity that is then distributed across the country. In 2014, Sweden even imported 2.7 million tons of waste from other countries, in addition to the roughly 2.0 million tons of their own waste that they burn. Sweden profits from this trade to the tune of about $100 million a year. The ash that remains after the thermal conversion process constitutes 15% of the pre-thermal conversion weight. From the ashes, metals are recovered and recycled. The rest, such as porcelain and tile which do not burn, are sifted to extract gravel to be used in road construction. About 1% of the waste remains and is deposited in landfills.[1] With China reducing its intake of recyclables, more municipal solid waste will need to be diverted into landfills, which will more quickly exhaust space in existing landfills and require development of new landfills. Also, if we capture the GHGs via thermal conversion, we may be able to reduce the carbon footprint of this waste to less than that of comparable volume of garbage off-gassing in a landfill.

Further research could help us understand the cost and benefits of thermal conversion of non-recyclable municipal solid waste and its use as a source of energy. If feasible, this process could speed achievement of our Green Vision Goals. The potential financial and environmental benefits are too great to ignore.

[1] https://sweden.se/nature/the-swedish-recycling-revolution/