



BIOENERGY AND WASTEWATER TREATMENT

California has roughly 250 wastewater treatment plants (WWTPs) that collectively can be major producers of renewable energy and transportation fuels. Many of these facilities beneficially use the biogas generated from anaerobic digestion of wastewater solids to provide onsite power, using renewable gas instead of fossil fuels to power their operations. California's WWTPs have the potential to generate significant additional power and to produce ultra-low carbon transportation fuels - lower carbon per mile than electric or fuel cell vehicles.¹ Increasing energy and fuel production from California's WWTPs will reduce greenhouse gas (GHG) emissions, provide energy and/or revenue to public agencies, produce jobs and economic development, and increase in-state renewable energy and low-carbon fuel supplies.

**LOS ANGELES COUNTY
SANITATION DISTRICTS PRODUCE 80
MW OF RENEWABLE ELECTRICITY
FROM WASTEWATER AND LANDFILL
BIOGAS, SAVING \$19 MILLION IN
ELECTRICITY COSTS AND CUTTING
GHG EMISSIONS BY 325,000 METRIC
TONS PER YEAR.**

The wastewater sector is actively engaged in helping the state meet its clean energy and waste reduction goals, but the sector has the potential to provide significantly more bioenergy and greater GHG and waste reductions with the right policies and incentives in place.

Bioenergy Potential from Wastewater Treatment. If California's existing WWTPs anaerobically digest their solids, they could generate more than 6 billion cubic feet of biomethane per year.² This biomethane could be used to produce 66 million gallons of ultra-low carbon transportation fuels. If WWTPs co-digest food and/or other organic waste, they could generate 450 megawatts of renewable electricity, enough to power a quarter of a million homes. WWTPs could generate even more megawatts of power and gallons of fuel if all the facilities have anaerobic

¹ California Air Resources Board, Look-Up Table on fuel pathways carbon intensities, available at: <http://www.arb.ca.gov/fuels/lcfs/reportingtool/registeredfacilityinfo.htm>.

² Fuels Potential from Organic Residues in California, compiled by Rob Williams, UC Davis, May 2014. http://biomass.ucdavis.edu/files/2015/04/CA_Biomass_Resource_2013Data_CBC_Task3_DRAFT.pdf

digestion and use the biogas that they generate to produce electricity and transportation fuels.

GHG Reductions. Increasing bioenergy production at WWTPs would significantly reduce GHG emissions. Capturing and converting all biomethane from anaerobic digestion of wastewater solids to electricity and fuels alone could significantly reduce California's GHG emissions, not including the further reductions from fossil fuel displacement or the addition of diverted food waste from landfills. In addition, studies have shown that land application of the digested material (i.e., biosolids from WWTPs) provide for long term carbon sequestration in soil. The land application of biosolids can also greatly reduce the need for inorganic synthetic fertilizer, which requires vast amounts of fossil fuel for its production (roughly 0.22 gallons per pound of inorganic nitrogen) thereby significantly reducing GHG emissions.



VICTOR VALLEY WASTEWATER
AUTHORITY PRODUCES 9 MILLION
KILOWATT HOURS AND AVOIDS
LANDFILLING 1,400 TONS OF WASTE PER
YEAR.

Public Health Benefits. In addition to reducing GHG emissions, bioenergy from anaerobic digestion of wastewater solids serves to protect public health by providing renewable electricity and low-carbon fuels. Using biomethane in place of diesel cuts toxic air contaminants, smog-forming pollutants and other air and water pollutants. Since many WWTPs are in or near disadvantaged communities, increasing bioenergy production – especially biomethane used as a substitute for diesel in heavy-duty trucks – is an important way to reduce environmental justice impacts.

Jobs and Economic Development. Increasing bioenergy production from WWTPs can provide revenue and jobs in local communities. Implementing bioenergy projects produces jobs and economic development in fields of construction, operations and maintenance, fueling, power contracting and more. WWTPs can also generate revenue by exporting (selling) the power or fuel to utilities or other buyers.