

# Aircraft Deicing Fluid Co-Digestion

Recovered energy from aircraft deicing fluid (ADF) runoff at Philadelphia's airport helps power PWD's wastewater operations.



Typical commercial aircraft being deiced prior to takeoff (Photo: Rick Mullin).

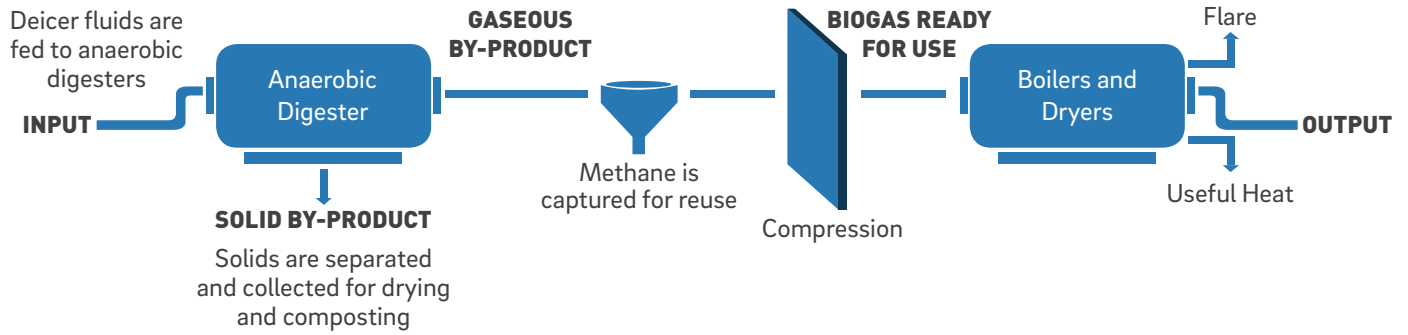
In the winter of 2008, the Philadelphia Water Department (PWD) began accepting ADF from the Philadelphia International Airport to feed to the anaerobic digesters at its Southwest Water Pollution Control Plant. This increases the production of energy-rich methane gas that PWD can use to decrease fossil fuel consumption, thereby reducing the Department's dependence on non-renewable energy sources.

The Federal Aviation Administration requires airports in the United States to use deicers for removing ice from runways and aircraft surfaces because this ice may interfere with proper flight. Although deicers are necessary

for protecting passenger safety, they pose severe health and environmental concerns. 21 million gallons of deicer-contaminated runoff reach our waters annually (2010, U.S. Environmental Protection Agency). This runoff compromises aquatic habitats, killing plants and animals and polluting drinking water. Many of the chemicals in deicers are toxic to both human and animal health and can cause neurological, cardiovascular, and gastrointestinal problems; severe birth defects; and even death. Collecting the ADF and preventing its introduction to our waters effectively curtails the environmental and public health problems associated with deicer use.

*In alignment with the City's Municipal Energy Master Plan, the Philadelphia Water Department developed a Utility-Wide Strategic Energy Plan, establishing energy conservation and greenhouse gas reduction objectives for the Department.*

# Getting to Biogas



## Important Facts

Through the addition of deicer to the anaerobic digesters at Southwest, PWD increased its digester methane production by an average of 7,600 MMBTU per year.

Calendar Year	Deicer Fed to Digesters (millions of gallons)	Methane Production (1000 MMBTU)
2013	3.6	6.18
2014	6.39	17.9
2015	7.14	18.4
2016	2.18	2.84
2017	3.77	2.09
Average	4.6	9.5

Volume of ADF added to the Southwest digesters and the associated biogas generation between 2013 and 2017 (YTD).



The anaerobic digesters at work.

## Co-Benefits of ADF Co-Digestion

- ▶ **Fosters local business development** by using local contractors and installers
- ▶ **Raises public awareness** about alternative energy sources and sustainability
- ▶ **Aids the City** in meeting its Municipal Energy Master Plan goals
- ▶ **Increases operating revenue** by charging tipping fees for ADF, resulting in jobs for Philadelphia residents related to environmental protection
- ▶ **Reduces the City's** use of non-renewable energy sources
- ▶ **Reduces the amount of energy** the City purchases from commercial providers
- ▶ **Diversifies the City's** available bank of energy sources
- ▶ **Reduces the City's** exposure to volatile energy prices
- ▶ **Increases the yield of biogas** that can power plant operations