



Tour of Wilmarth Waste to Energy Plant

08.24.2022

Overview

- Welcome and Introductions
- Safety / Emergency
- Waste to Energy Community and State Impacts
- Support of the MPCA Waste Hierarchy
- Environmental Permit Compliance Statistics
- Other Environmental / Community Benefits
- Tour

Wilmarth Site

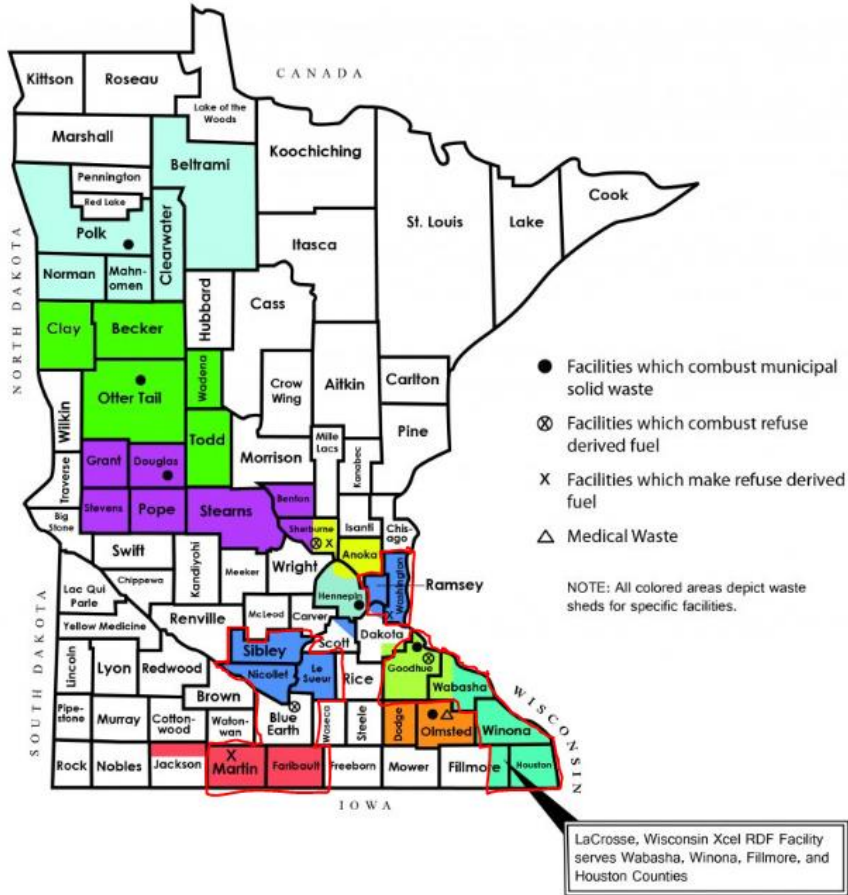
Evacuation Assembly Area in Parking Lot

Fuel Receiving Area



Counties and Minnesota Waste Combustion Facilities

Xcel Waste to Energy Community Impacts



- Waste from portions of 13 MN counties is converted to electricity at Xcel RDF Plants
- \$2M in local tax benefits from 3 Xcel plants
- 200 waste processing jobs and 85 Xcel Energy jobs support WTE
- \$2.14M spent in Greater Mankato for goods and services from Wilmarth in 2020
- \$1.44M spent in Minnesota for goods and services from Wilmarth in 2020

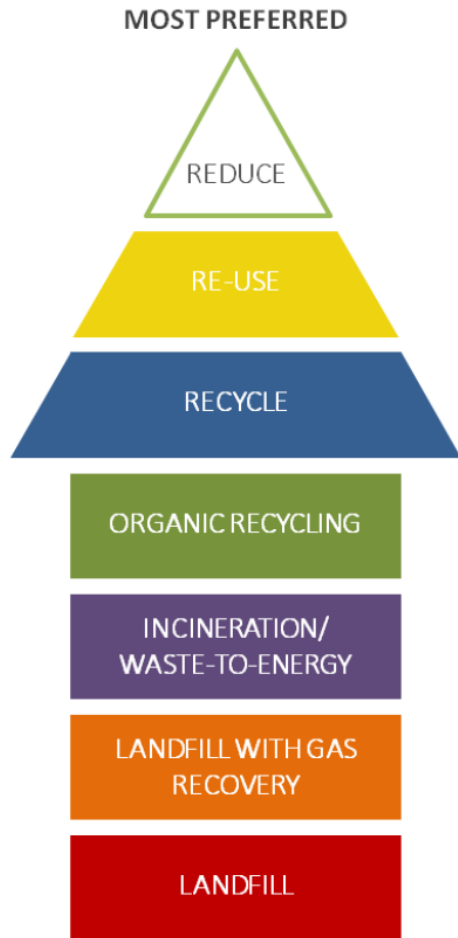
Map from MN Resource Recovery Association
<http://mnresourcerecovery.com/wordpress2/index.php/facilities2/>

Xcel's Impact to State's Solid Waste Plan

Management method	Method	2017		2018	
		Tons	Percent of total waste generation	Tons	Percent of total waste generation
Mixed municipal solid waste	Landfill	1,878,277	32.5%	1,828,801	31.0%
	Onsite	53,682	0.9%	52,766	0.9%
	WTE	1,268,079	21.9%	1,305,101	22.1%
	Total	3,200,038	55.4%	3,186,669	54.1%
Combined recycling and organics	Organics	662,970	11.5%	710,866	12.1%
	Recycling	1,917,370	33.2%	1,995,534	33.9%
	Total	2,580,339	44.6%	2,706,400	45.9%
Grand Total		5,780,378	100.0%	5,893,068	100.0%

- 2018 EPA reported National Average = 4.9 lb trash/day/person*
- 2018 MN population was 5.6M, MN Average = 5.8 lb/day/person
- In 2018, Xcel Energy RDF Plants converted 13% (415,000 tons) of total MN Mixed Municipal Solid Waste (3,186,669) into electricity
- In 2018, ~32% of MN WTE was produced at Xcel plants
- Great work has been done in Recycling and Organics at 46%, however 31% was still landfilled suggesting WTE production could be doubled

*EPA reference <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials>



MOST PREFERRED

REDUCE

RE-USE

RECYCLE

ORGANIC RECYCLING

INCINERATION/
WASTE-TO-ENERGY

LANDFILL WITH GAS
RECOVERY

LANDFILL

LEAST PREFERRED

Why Support the MPCA Hierarchy?

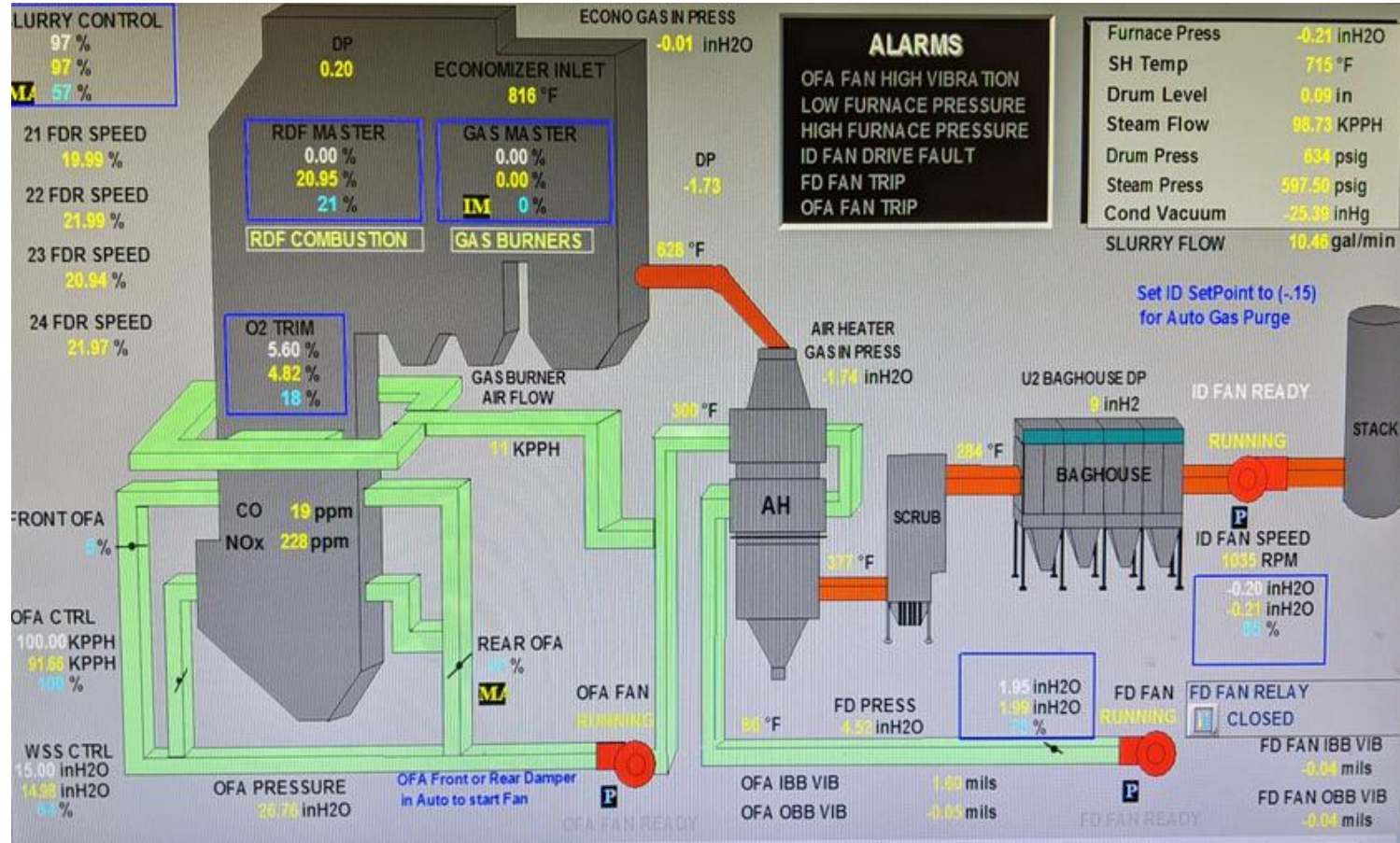
- 4.9 – 5.8 lb trash/day/person
- Efforts at the top of Hierarchy have yielded ~46% reduction, still leaving 54% to dispose, until society waste decreases, Xcel Energy WTE is part of the solution
- WTE and Landfills have different greenhouse gas impacts
- Methane has a global warming potential of 28-36 over 100 years versus CO₂ (1)*
- Best Landfill technology captures methane to energy recovery at ~65% with ~ 17% emitted, ~13% flared and ~5% oxidized.**
- We are performing a study with State University of New York at Buffalo, results show our WTE sites Global warming negative or neutral verses landfilling.

* <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials#:~:text=Methane%20>

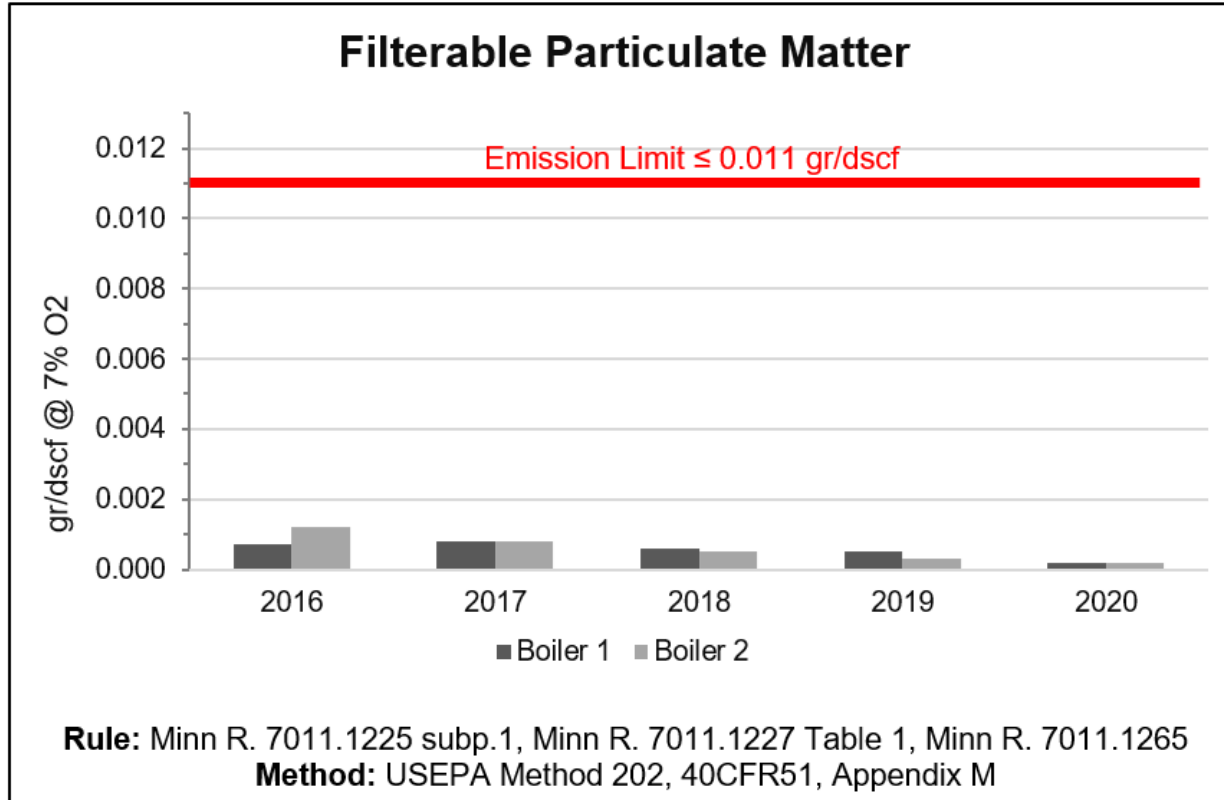
** https://www.epa.gov/sites/production/files/2016-03/documents/lanfl_gas_mont_carlo_modl.pdf

*** <http://www.buffalo.edu/renew/news-and-events/latest-news.host.html/content/shared/university/news/news-center-releases/2018/02/018.detail.html>

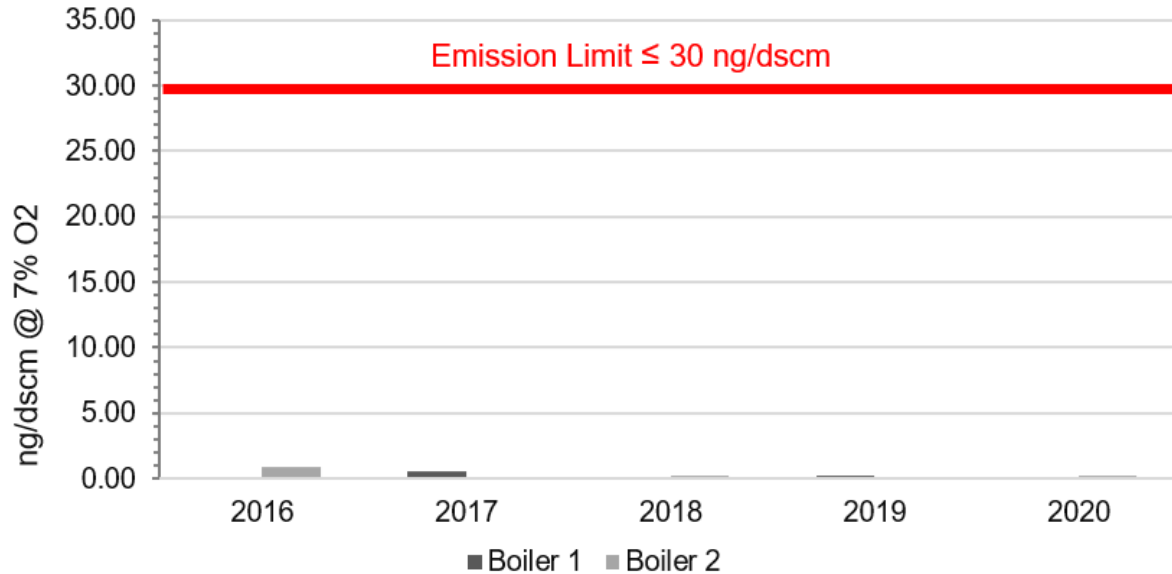
How Emissions Compliance is Maintained



3rd Party Stack Testing Permit Compliance - Wilmarth



Dioxins

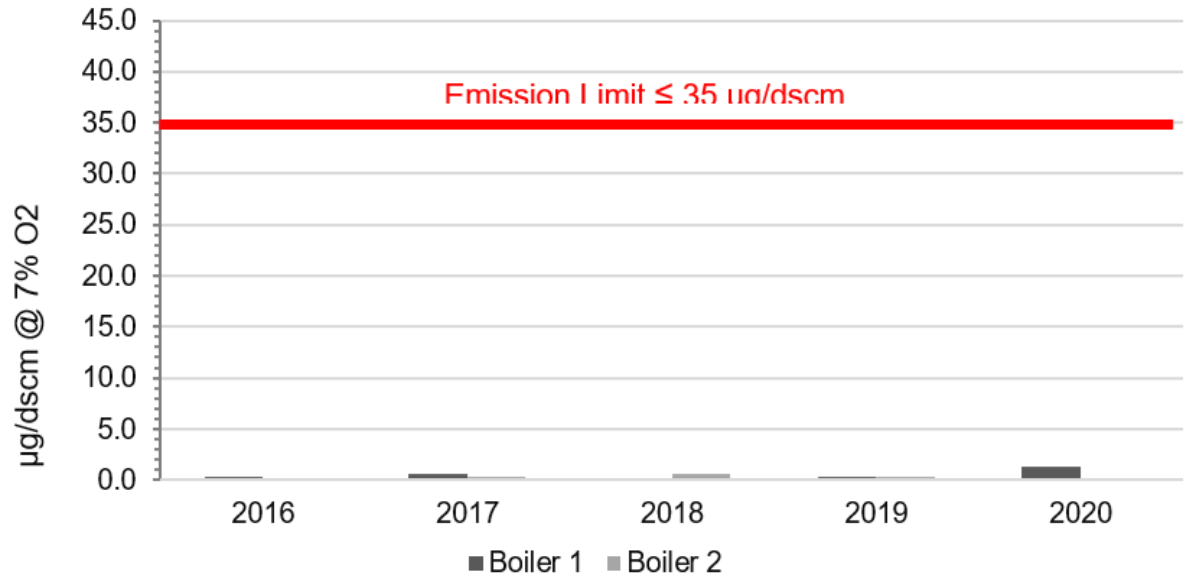


Rule: Minn R. 7011.1225 subp.1, Minn R. 7011.1227 Table 1, Minn R. 7011.1265

Method: USEPA Method 23 40CFR60, Appendix A

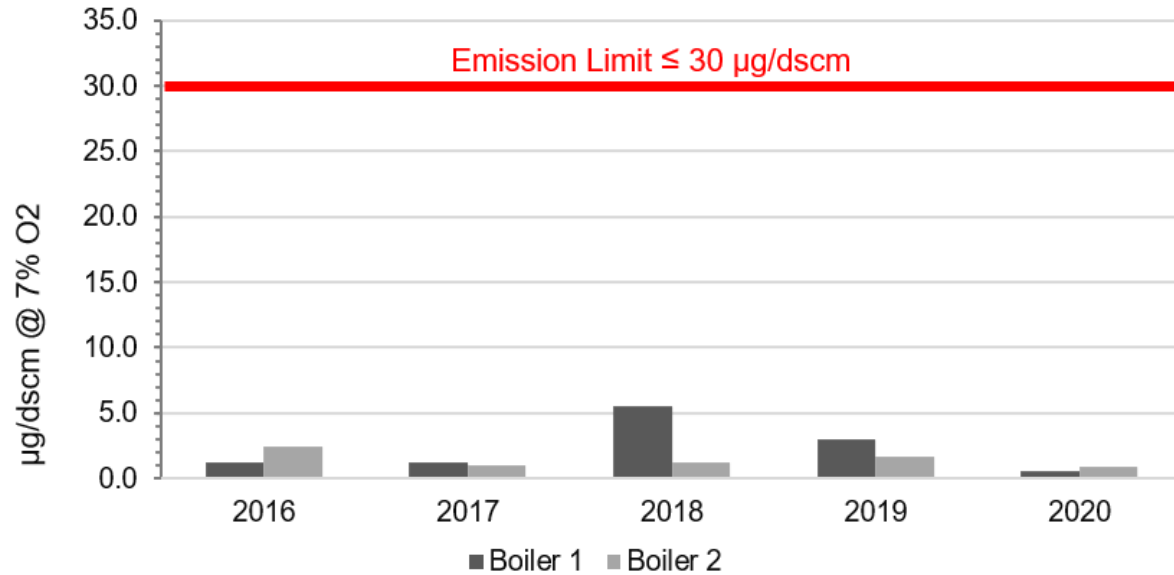
Note: Dioxins are tested on alternating years as allowed by Minn R. 7011.1270(A)

Metals - Cadmium (Cd)



Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265
Method: USEPA Method 29, 40CFR60, Appendix A

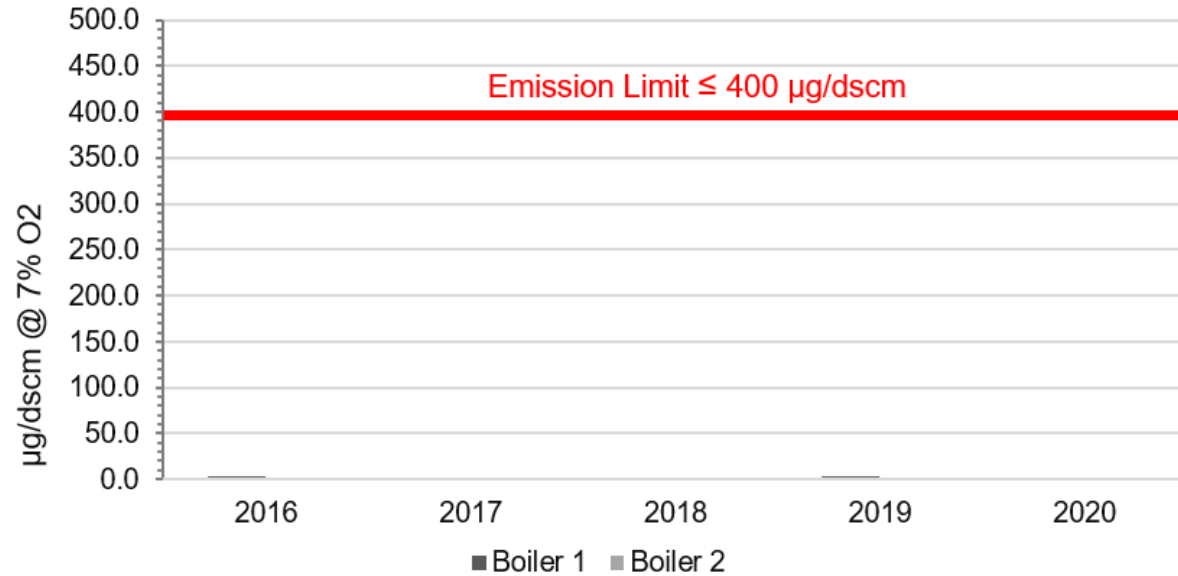
Metals - Mercury (Hg)



Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265

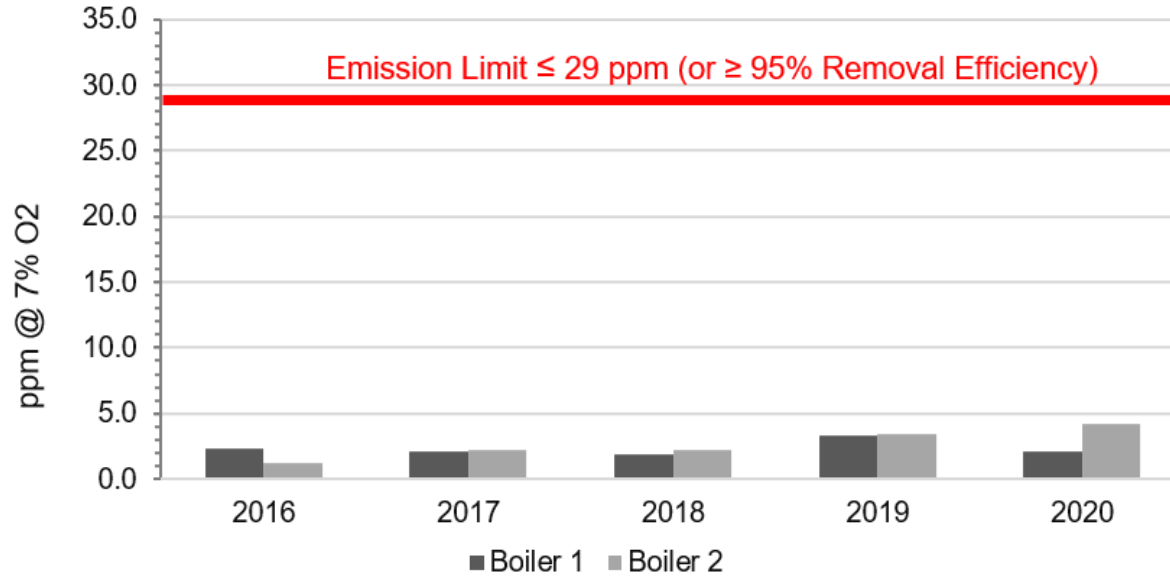
Method: USEPA Method 29, 40CFR60, Appendix A

Metals - Lead (Pb)



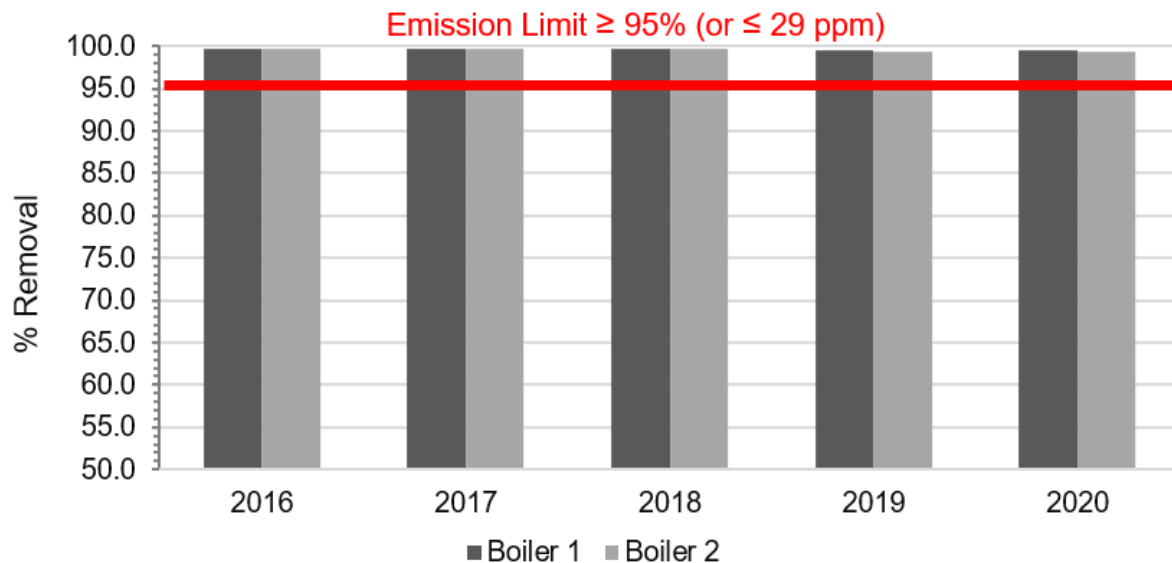
Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265
Method: USEPA Method 29, 40CFR60, Appendix A

Hydrogen Chloride (HCl ppm)



Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265
Method: USEPA Method 26A, 40CFR60, Appendix A

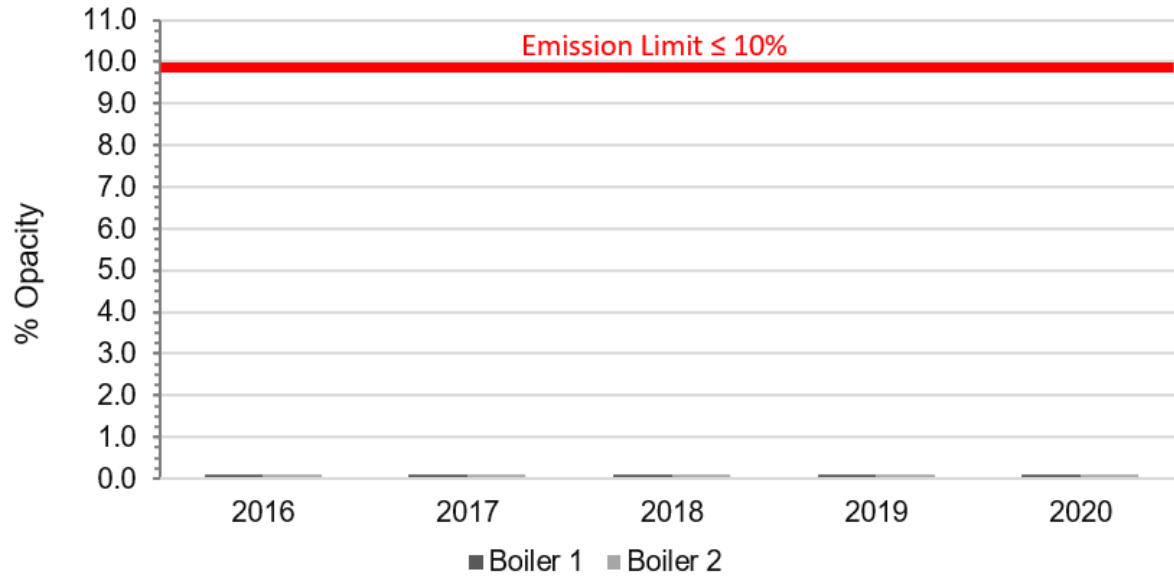
Hydrogen Chloride (HCl) Removal Efficiency



Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265

Method: USEPA Method 26A, 40CFR60, Appendix A

Visible Emissions / Opacity



Rule: Minn R. 7011.1227 Table 1, Minn R. 7011.1265

Method: USEPA Method 9, 40CFR60, Appendix A

Other Environmental / Community Benefits

- Cumulative Xcel RDF burn since 1987 at 3 sites would fill Target Field (8 acres) about 6 times at 237' tall. Each year ~42'.
- Ash currently goes to separate landfill, saving 90% volume compared to garbage.
- Landfill avoided costs \$2.6M/year from 3 plants, ~\$143k/year Ponderosa
- Increased recycling rates for host communities
- Local commerce, Tax Benefits, Jobs
- Less global warming
- Wilmarth is permitted to burn Pharmaceutical and Controlled Substances as a FREE service to local communities and law enforcement since 2011.
 - 2020 burned 18,733 lbs from 27 jurisdictions as far away as Pipestone County.

Tour Safety

- There is a lot of moving equipment and stored energy in a power plant, in general please don't touch equipment
- Potential hazards on the tour: Slip / trip, Head Knockers, Hot Surfaces, Noise, and see-through grating
- PPE – Hard hat, safety glasses, gloves, hearing protection, high visibility vest
- Is your Head in the Game?

