Environmental Management System and Community Engagement Report

Site Specific Air Standard Approval

2020 Annual Summary

6/25/2021

Contents

Executive Summary 3

Daily 30-day Rolling Average 4

Door Emissions 4

Lid Emissions 5

Off-take Emissions 6

Charging Emissions 7

Operational Adjustments – doors, lids and standpipe emissions 8

Operational Adjustments to Reduce Fugitive Pushing Emissions 9

Community Liaison Committee Meetings 10

Executive Summary

As of July 2015, Cokemaking facilities in Ontario have been required to operate within strict emission limits governed by the Ministry of the Environment, Conservation and Parks (MECP). There are specific emission limits for coke oven doors, off-takes, topside lids, charging procedures, and pushing opacity. The emission limits drop substantially on a yearly basis between 2015 and 2020, mandating Cokemaking facilities to continually improve their operations to maintain environmental compliance.

As part of this requirement, all facilities must carry out Method 303 and Method 9 observations Monday-Friday each week, as well as 10 Saturdays and Sundays per year. If an observation result is above the daily allowable emission limit, the Company must notify the MECP and submit the corrective action taken to address the exceedance.

This report is an annual summary of the information gathered and submitted by Algoma to the MECP in accordance with Order Number 501-15 issued on March 27, 2015 in support of a Site Specific Standard for suspended particulate matter for the 2020 calendar year.

Daily 30-day Rolling Average

Door Emissions

Door emissions are caused by a gap between the coke oven door diaphragm knife edge and the door frame sealing surface. Emissions also occur when there is a leak outside of the door frame.

Operational Adjustments made by Algoma to address coke oven door emissions include:

- Adjusting door bolts, frame clips, and hour glass clips to ensure tight and proper placement of the door and frame
- Cleaning doors, door frames, and sill plates, to ensure a proper seal and minimize damage to doors and frames
- Replacing door cleaner brushes and frame cleaner blades on a scheduled basis and whenever required
- Replacing damaged door and door frames
- Packing the inner and outer frames to prevent emissions from leaking out of the oven
- Machine spotting systems have been upgraded to a radar location system
- Extensive replacement of steelwork including frames, buckstays, and armour plates have been completed
- Replacement of thruwalls
- Spraying of silicate to seal small leaks

The following graph shows the daily 30-day rolling average door emission performance for each coke oven battery for January to December 2020.

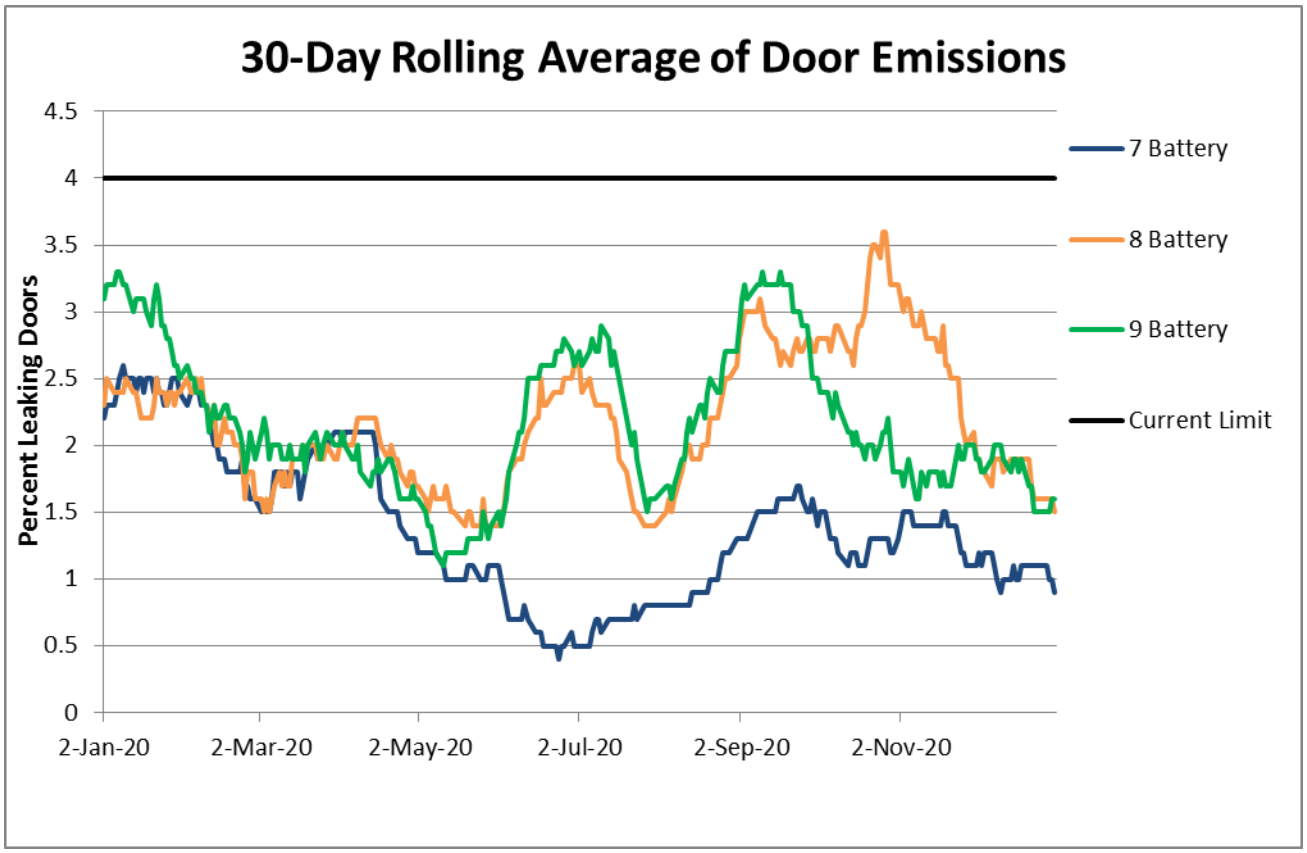

Figure 1.1. Graph of the 30-day Rolling Average Percent Leaking Doors for 2020.

Lid Emissions

Coke oven lids typically cause emissions shortly after the oven has been charged as there is a high amount of gas and volatile material being introduced to the coking process. Lid emissions are also caused when there is a pressure fluctuation in the coke oven, as the lid seal can easily be broken, allowing gasses to escape.

Operational Adjustments made by Algoma to address coke oven lid emissions include:

- Applying the designated lid sealant immediately after charging an oven and whenever emissions are observed
- Replacing damaged or cracked lids
- Repairing, leveling and grouting charge hole bases to ensure no leakage and a proper seal

The following graph shows the daily 30-day rolling average lid emission performance for each coke oven battery for January to December 2020.

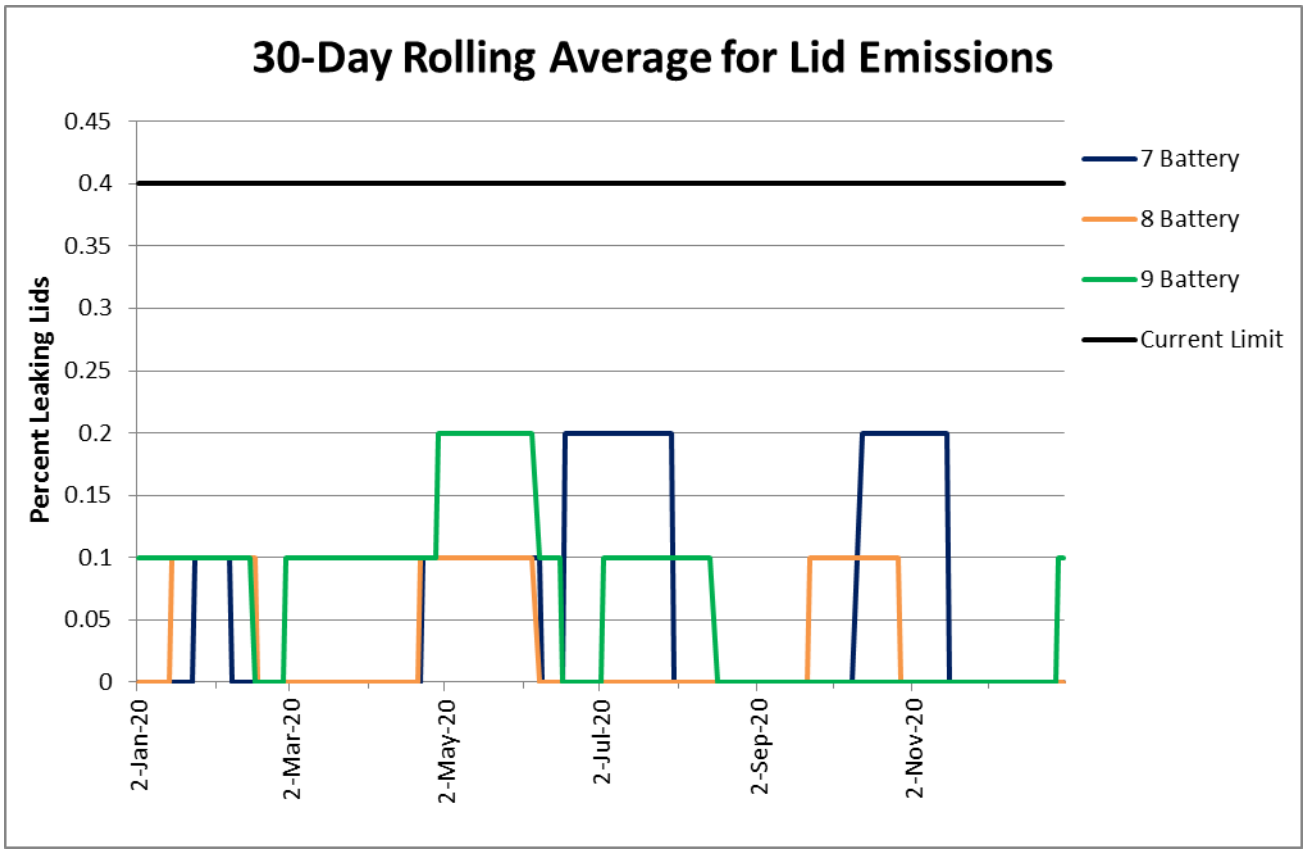

Figure 1.2. Graph of the 30-day Rolling Average Percent Leaking Lids for 2020.

Off-take Emissions

Off-take emissions are typically caused when the pressure inside the oven or collector main is too high. Emissions can escape if a gooseneck or sleeve is cracked. The most common off-take emission is caused when the seal around the cap of the pipe becomes worn and the cap is no longer able to maintain its tight seal.

Operational Adjustments made by Algoma to address off-take emissions include:

- Replacing the soft seal to a water seal
- Cleaning the gooseneck, sleeve to the collector main, and steam jet
- Repacking the collar or base of the pipe with refractory
- Applying masonry seal to small cracks on the pipe until welding can be completed
- Replacing the standpipe at the end of its lifecycle or as needed

The following graph shows the daily 30-day rolling average standpipe emission performance for each coke oven battery for January to December 2020.

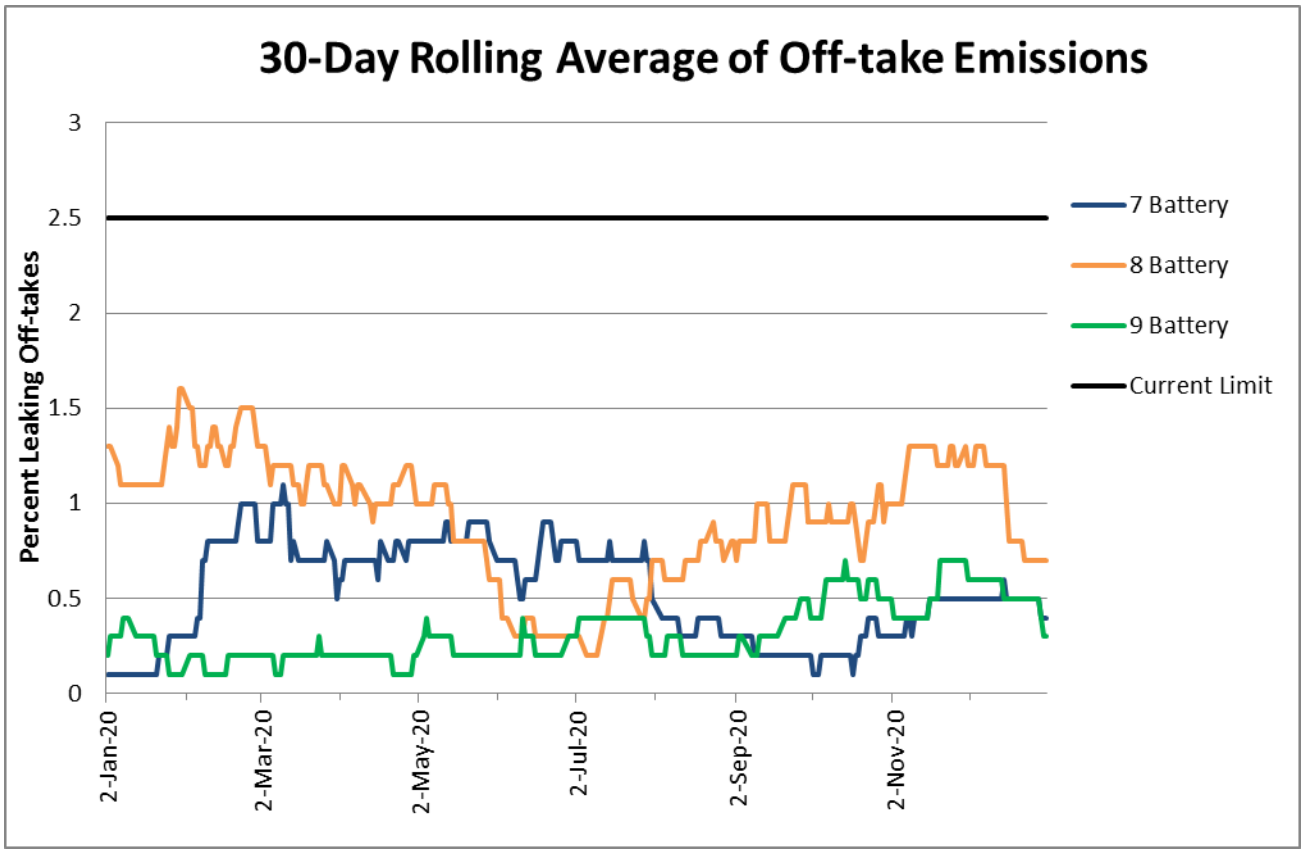

Figure 1.3. Graph of the 30-day Rolling Average Percent Leaking Off-takes for 2020.

Charging Emissions

Emissions observed during the coke oven charging process can be caused by multiple variables for any given charge. Since the charging process is so dynamic, all procedures must be strictly followed to avoid fugitive emissions. The conditions of the oven, the coal, and the Larry Car, must all be correct in order for a charge to be successful and have no emissions.

Operational Adjustments made by Algoma to address Charging emissions include:

- Adjusting the carbon scraper bar
- Decarbonizing standpipes, goosenecks, and charge holes
- Cleaning the gooseneck, sleeve to the collector main, and steam jet
- Replacing drop sleeve donuts, bellow bags, carbon seals, on the Larry Cars
- Adjusting the coal feed radar system to optimize coal charging volume
- Leveling charge hole bases to ensure proper elevation
- Monitoring coal moisture levels

The following graph shows the daily 30-day rolling average charging emission performance for each coke oven battery for January to December 2020.

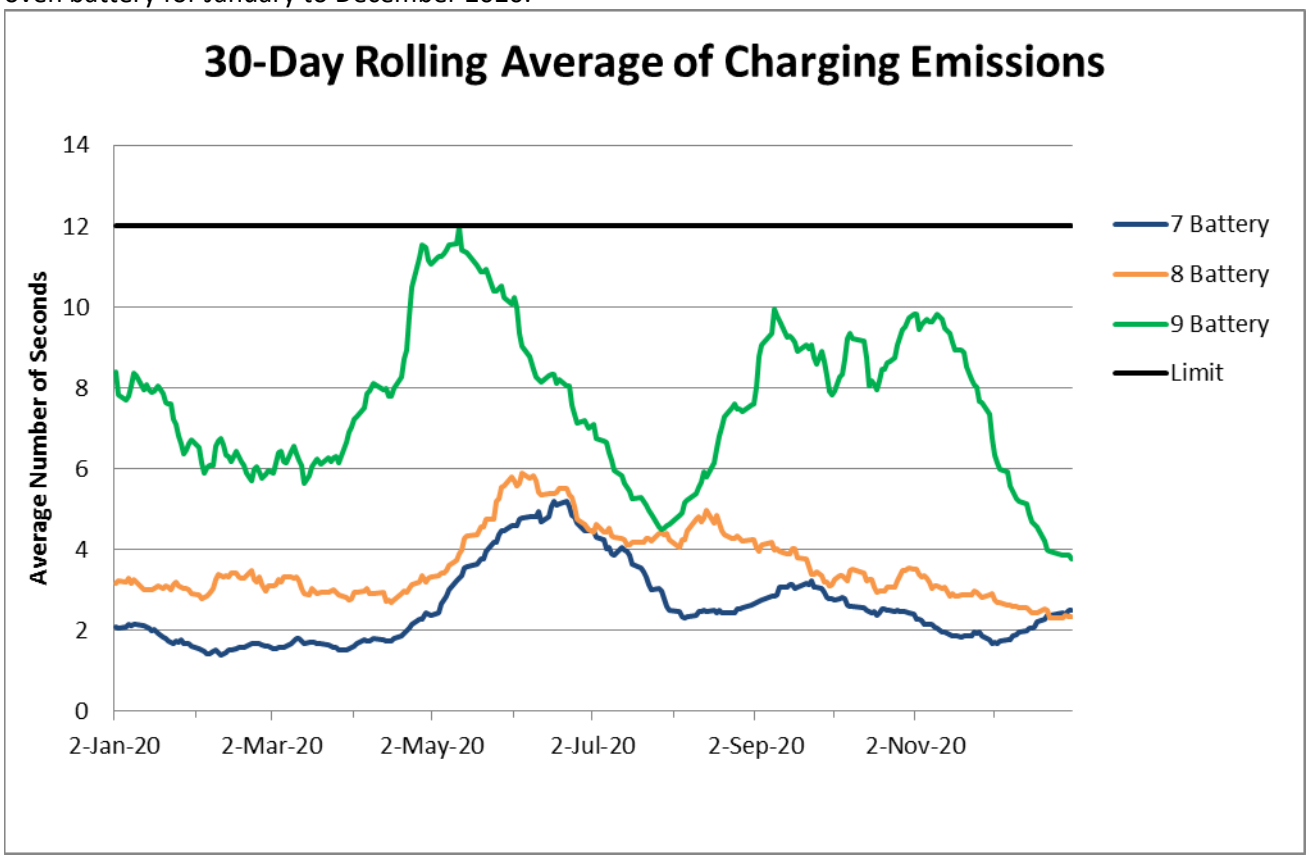

Figure 1.4. Graph of the 30-day Rolling Average Charging Time for 2020 (in seconds).

Operational Adjustments – doors, lids and standpipe emissions

In addition to the 30-day rolling averages for doors, lids and standpipe emissions, there are also daily maximum leak limits for each. If a coke battery is observed to be out of compliance with a daily maximum limit, the Company executes an Operational Adjustment to reduce the fugitive emissions below the appointed limit. When top side port lids, standpipes or doors are observed over the allowable daily limit, the Company notifies the MECP and explains the Operational Adjustment that was performed and if it was successful in reducing emissions.

The following graph shows the total number of operational adjustments made for each coke oven battery for January to December 2020.

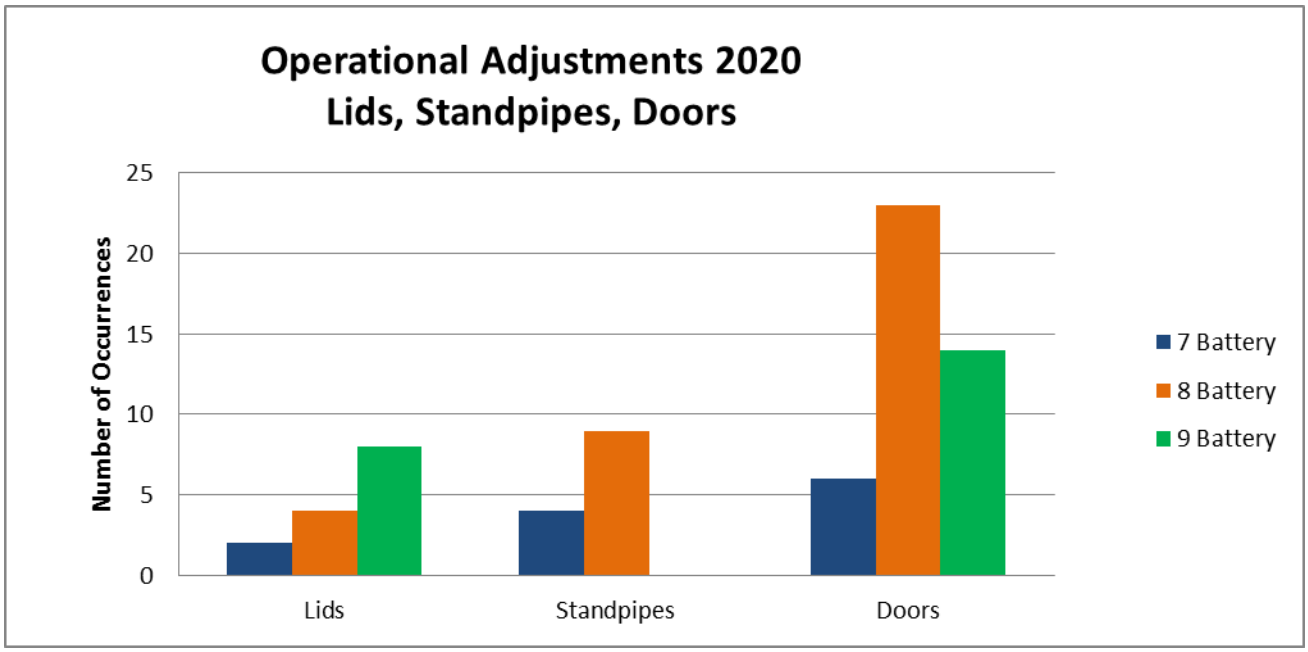

Figure 2. Graph of the Total Operational Adjustments submitted to the MECP for Doors, Lids, Standpipes in 2020.

Operational Adjustments to Reduce Fugitive Pushing Emissions

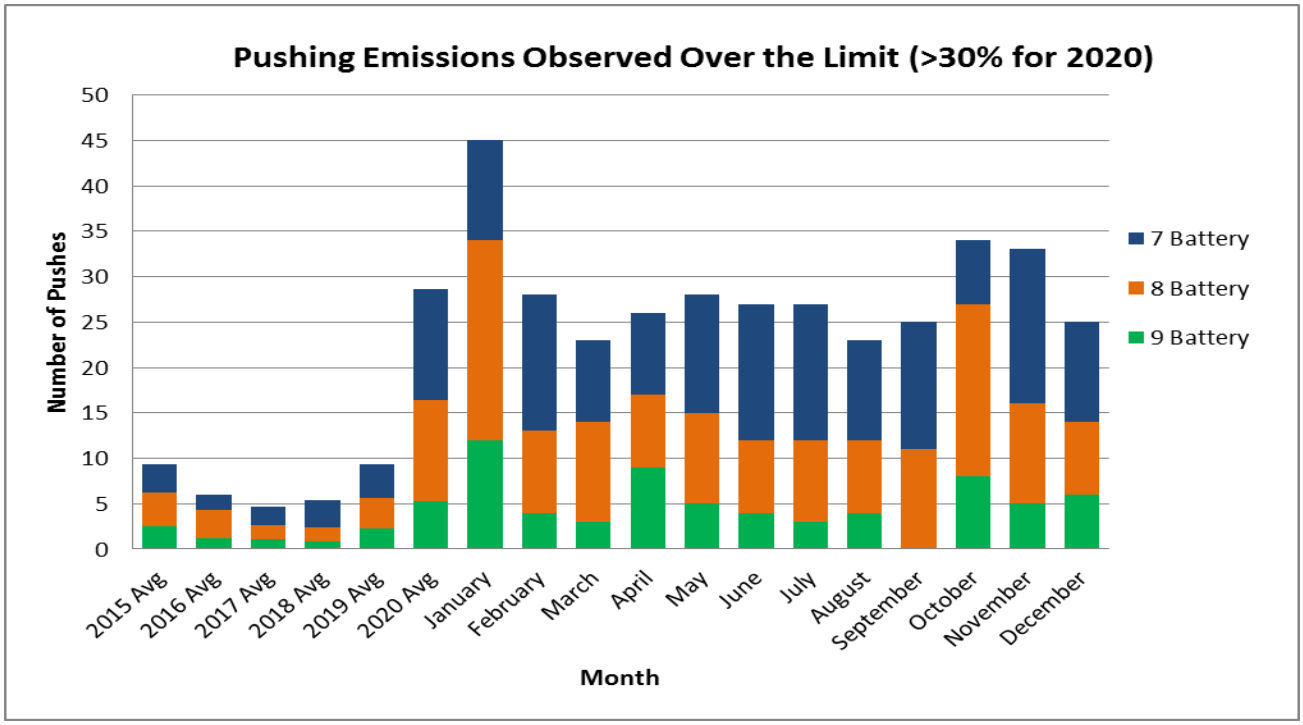

Figure 3. Graph of the Total Operational Adjustments submitted to the MECP for Pushing Emissions in 2020.

In order for a coke oven Pushing emission to be within compliance, it must have an average opacity of less than 30%. When a Pushing emission is observed above 30%, 30 days are granted by the MECP to correct the oven and re-observe a Push within compliance. If the oven cannot be corrected in 30 days, a plan is submitted by the Company and approved by the MECP. If the plan is not approved, the oven is taken out of service for 30 days. For all Pushing emissions observed in 2020 above 30% opacity, Algoma successfully executed corrective actions and reduced opacity to below 30%.

Corrective actions taken by Algoma to address Pushing emissions include:

- Taking cross-wall temperature readings to identify heat issues and problem flues
- Cleaning the flues, pins, orifices, risers, flex hoses, venturies and bus flues
- Adjusting fuel or air to improve combustion
- Executing masonry repairs to oven walls
- Repairing adjacent ovens and ensure proper heating of the shared walls
- Extending coking time

Community Liaison Committee Meetings

Community Liaison Committee Meeting minutes can be found on the Algoma corporate website: https://www.algoma.com/environment/clc-meetings-minutes/