Air Quality Advisory Committee

November 10, 2021

Agenda

1. Welcome/Introductions
2. Recap of previous meeting
3. Community Opens
4. AQAC Opens
5. Good Neighbor Agreement Items Update
6. Agenda for next meeting
7. Public comments/questions

GNA-Specified Agenda Items

- Intel to report to the AQAC at its quarterly meetings on:
  - Stack testing completed since the last AQAC meeting, any stack testing planned before next AQAC meeting,
  - Annual or semiannual reports submitted by Intel to DEQ pursuant to Intel's air permit.
  - Any requests to DEQ for authority to modify emission factors or emission sources that were submitted since the last AQAC meeting or that Intel anticipates will be submitted prior to the next AQAC meeting;
  - Update on the implementation of the measures identified on Attachment A and any measures raised in prior AQAC meetings that require further action or consideration;
  - Any excess emissions and upsets reported to the Department during the most recent calendar quarter

Stack Testing Overview

- Why does Intel perform stack testing?
  - Determination of compliance with Best Available Control Technology (BACT) emission limits
  - Determination of Rotary Concentrator Thermal Oxidizer (RCTO) control efficiencies
  - Development of emission calculations for fluorides and hydrogen fluoride
  - Good Neighbor Agreement Attachment B requirements
- Stack testing plans are reviewed and approved by Oregon DEQ and utilizes standard EPA and/or DEQ test methods
- DEQ and AQAC committee members can be onsite and witness testing events
- Stack testing performed by a 3rd party stack testing firm

2021 Stack Testing Plan

- 2021 Stack testing activities – almost complete. Began mid-October
  - Acid Gas Scrubbers
    - Initial testing of new scrubbers
  - Rotary Concentrator Thermal Oxidizers (RCTOs)
    - Initial testing of new RCTOs. Certify BACT compliance and establish DRE%
    - Recertify BACT compliance and update DRE% for D1D RCTO system
  - Boiler
    - Certify BACT compliance and establish equipment emission factors for new boiler

Continuous Emissions Monitoring System Overview

- Rotor Concentrator Thermal Oxidizer (RCTO)
  - Used to control emissions of VOCs
  - Method of control: Thermal oxidation (combustion)
    - Temperature = Key operating parameter
    - Measurement via thermocouple
    - Minimum temperature established during stack testing
    - Temperature measurements are reviewed on an ongoing basis
    - Alarms are also set to alert when measured value outside the acceptable range
      - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

Continuous Emissions Monitoring System Overview

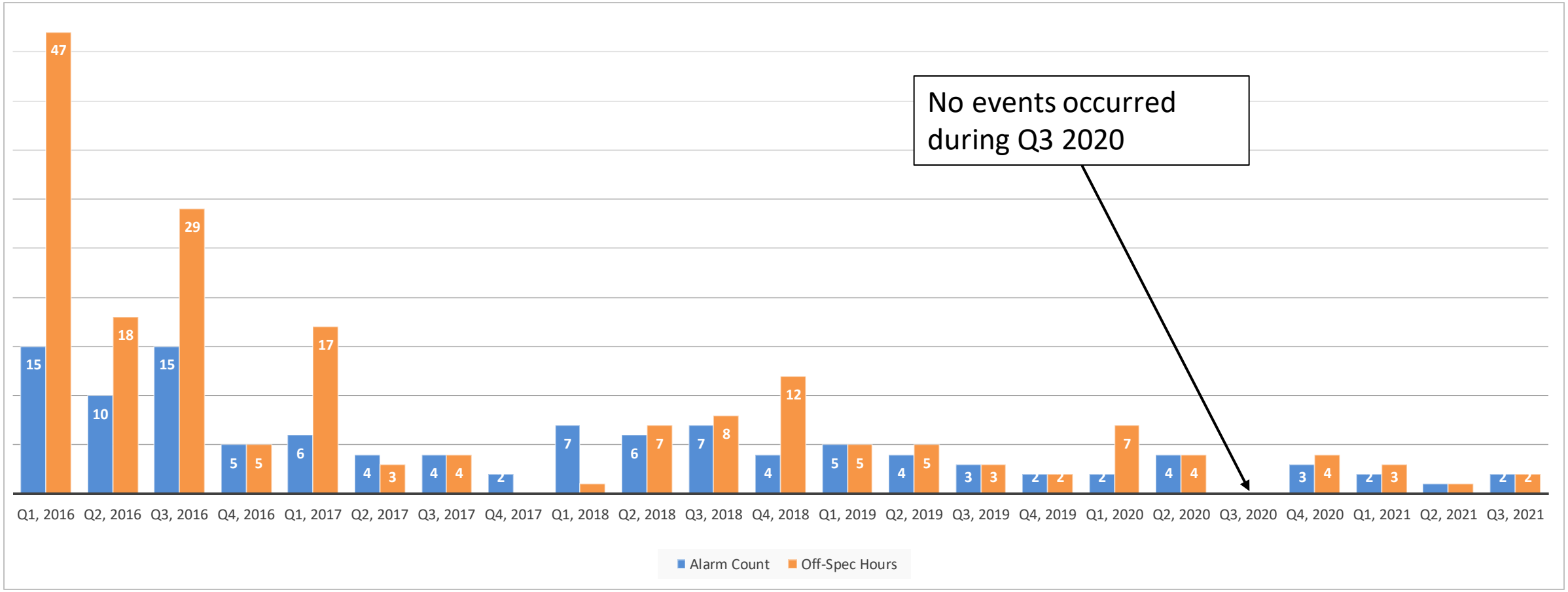
- Wet Scrubbers
  - Used to control emissions of acid gases, primarily Fluorides, HF, and HCl
  - Method of control: pH adjusted water absorption
    - Water flow rate and pH = Key operating parameters
    - Measurements via pH probe and flow meter
    - Minimum pH and flow established during stack testing
    - Measurements are reviewed on an ongoing basis
    - Alarms are also set to alert when measured value outside the acceptable range
      - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

Continuous Emissions Monitoring Report – Q2 & Q3, 2021

Attachment C

Source	Frequency	Parameter	Equipment	Q2, 2021 Report	Q3, 2021 Report
Rotary Concentrator Thermal Oxidizers (RCTO)	Continuous	Temperature	Thermocouple	No issues	Two low temp events
Acid Gas Scrubbers	Continuous	Flow pH	Flow Meter pH probe	One low flow event No issues	No issues No issues
Emergency Generators	When used	Hours of operation including time of engine start, time of engine stop and reason for operating		No issues	No issues

Continuous Emissions Monitoring Report



- Normal hourly operations for Q2 & Q3, 2021 is over 99.99%
  - Off-spec operation is not an indication of excess emissions and was limited to <0.01% of the hours for Q2 & Q3, 2021
- Blue bars indicate the number of alarms per quarter
- Orange bars indicate the number of hours outside of normal operation per quarter

DEQ Submittals

- Type 2 Notice to Construct
  - Replace D1B RCTOs, add RP1 scrubbers, add TMXW treatment pilot, add EGENs
  - Submitted June 15
  - Approval letter from DEQ dated June 23
- RY2020 Air Toxics Emission Inventory
  - Submitted August 23

Cleaner Air Oregon / GNA Toxics Inventory

- Inventory completed utilizing CAO methods and toxics list in support of:
  - GNA Attachment A - Compare actual emissions inventory in 2020 to inventory used in HRA
  - Cleaner Air Oregon - Calendar Year 2020 inventory due to DEQ no later than September 1, 2021

GNA Toxics Inventory / HRA Timeline

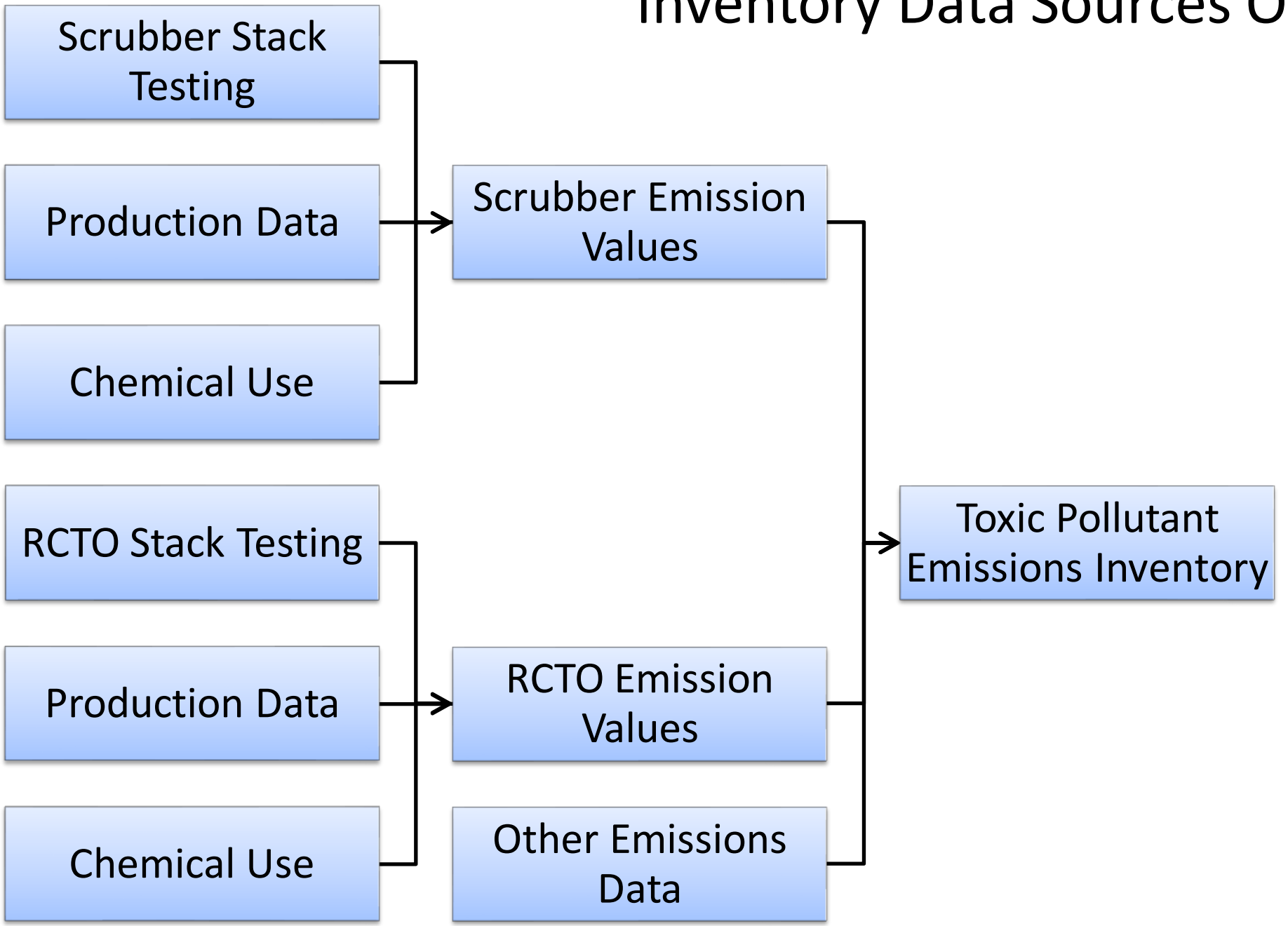
Projected Toxics Emissions Inventory
(Q2 2015)

Air Quality Health Risk Assessment Completed; Results Compared to AB2588/Rule 1402 Risk Levels
(October 2015)

Actual 2020 Toxics Emissions Inventory
(Submitted to DEQ August 23, 2021 – prior to the September 1 due date)

Compare Actual and Projected 2020 Toxics Emissions Inventories

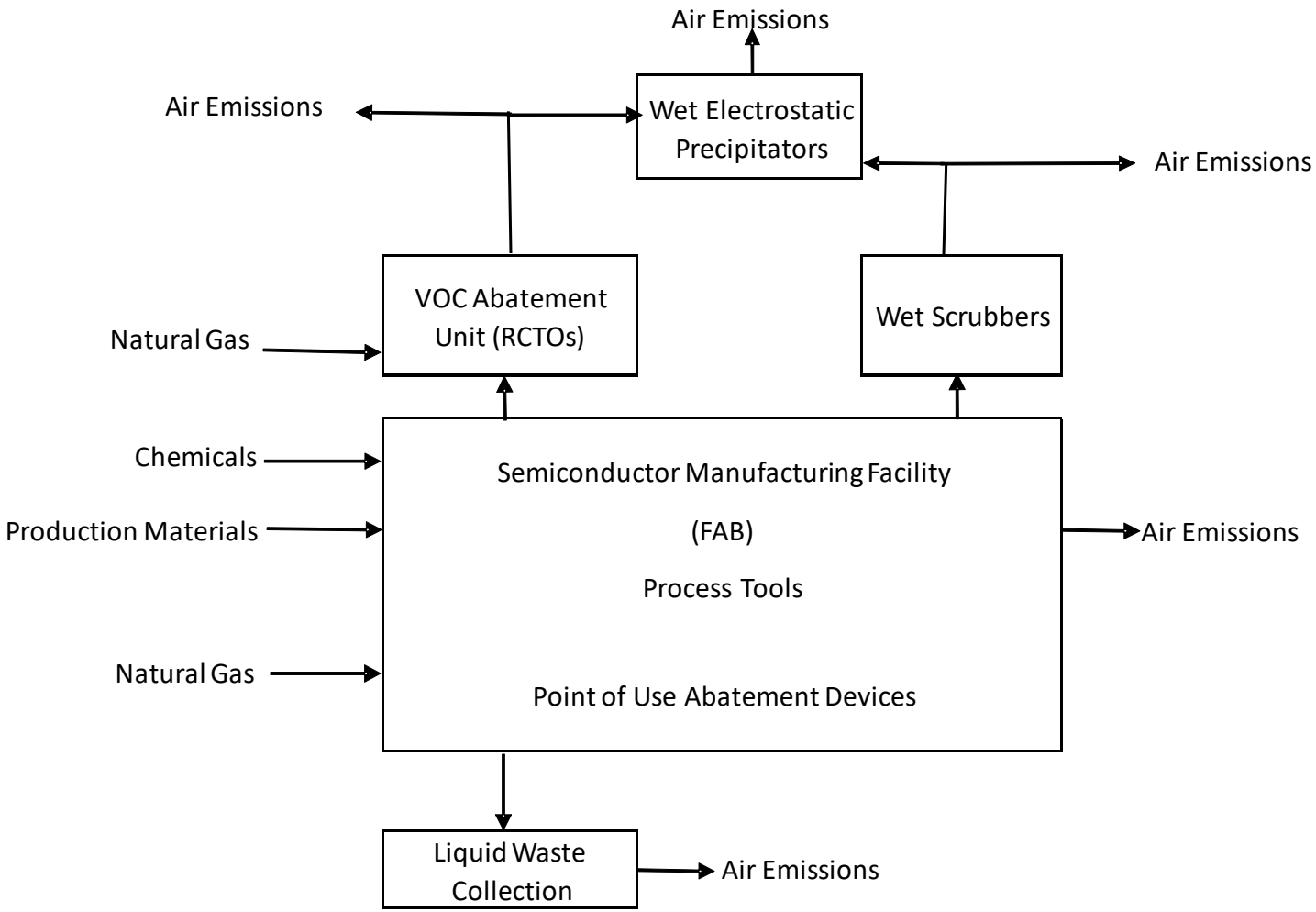
Inventory Data Sources Overview



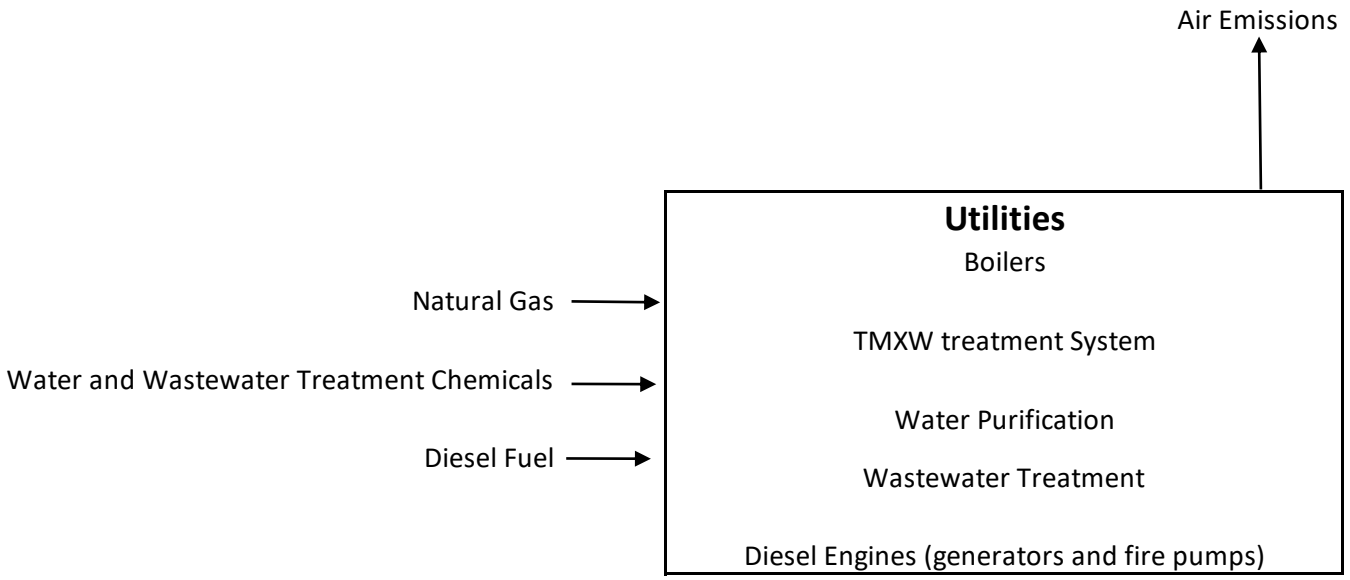
Emission Inventory

- Emissions inventory is sum of emissions from:
  - Natural Gas Combustion
    - Boilers, hot water heaters, comfort heaters
  - Diesel Combustion
    - Emergency generators and fire pumps (rarely operated)
  - Wastewater treatment systems
    - TMXW, WATR
  - Process Emissions
    - VOC abatement units (RCTOs)
    - Acid gas and ammonia scrubbers
    - Wet electrostatic precipitators
    - General exhaust

Simplified Factory Schematic – Air Emissions Focused



Simplified Utility Schematic – Air Emissions Focused



2020 Actual Toxics Emission Inventory

- The inventory was submitted to DEQ on August 23 (due September 1)
- Health Risk Assessment completed in 2015 based on projected 2020 toxics considered 3 categories – Cancer, Non-Cancer Chronic, and Acute.
  - Top 10 chemicals in each of these categories made up at least 95% of each category's total risk
  - For all of these chemicals, the actual 2020 emissions were below the projected emissions
- Will complete a full risk assessment under Cleaner Air Oregon when we are called into the program

Agenda for 2022

TBD (Q1, 2022)

- AQAC members to have input into the next agenda for each AQAC meeting
  - Standing agenda items
    - DEQ Submittals
    - Stack Testing Update
    - Project Update
  - Other?

Public Comments/Questions

BACKUP

Attachment A

Emission Reduction Project	Target Date	Status / Method of Confirmation
Advocate to contractors working at the Facility to use newer onroad and nonroad diesel engines	2nd quarter 2016	Ongoing collaboration with suppliers to encourage reductions
Evaluate ways to reduce (if possible) diesel particulate matter emissions either with onsite or offsite projects	3rd quarter 2016	Reported out during Q3, 2016 AQAC quarterly meeting
Decommission four Fab 5 boilers	3rd quarter 2016	Completed
Assess feasibility of reducing waste tank emissions	4th quarter 2016	Completed
Retrofit RCTOs to optimize natural gas usage	2nd quarter 2017	Completed
Boiler replacement with ultra low-NOx burner boilers at RA2 and RP1	3rd quarter 2017	Project completed. Report out during Q3, 2017 AQAC meeting
Compare actual emissions inventory in 2020 to inventory used in HRA	2nd quarter 2021	Report to AQAC at quarterly meeting