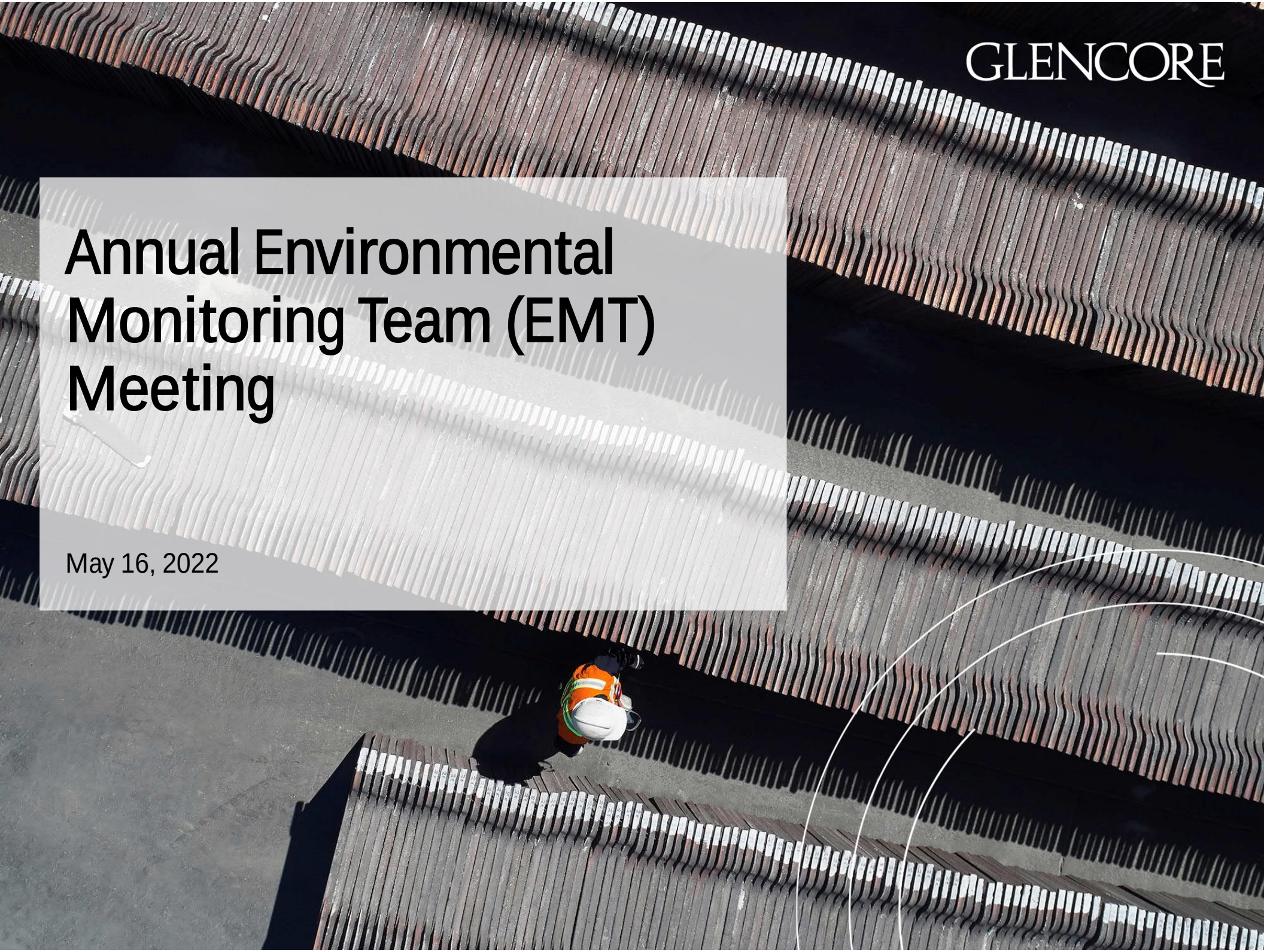

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# Annual Environmental Monitoring Team (EMT) Meeting

May 16, 2022

# Agenda

- Introductions
- Safety Share
- Process Gas Project (PGP) and Particulate Emissions Project (PEP) Completion – Darryl Pike
- Sudbury INO in the Community
- Regulatory Requirements
- Historical $SO_2$ Emissions
- $SO_2$ Monitoring Network
- Community Complaints and Exceedances
- Ambient Air Quality Monitoring
- Site Specific Standards and O. Reg. 652/21
- Noise
- Questions and Open Discussion

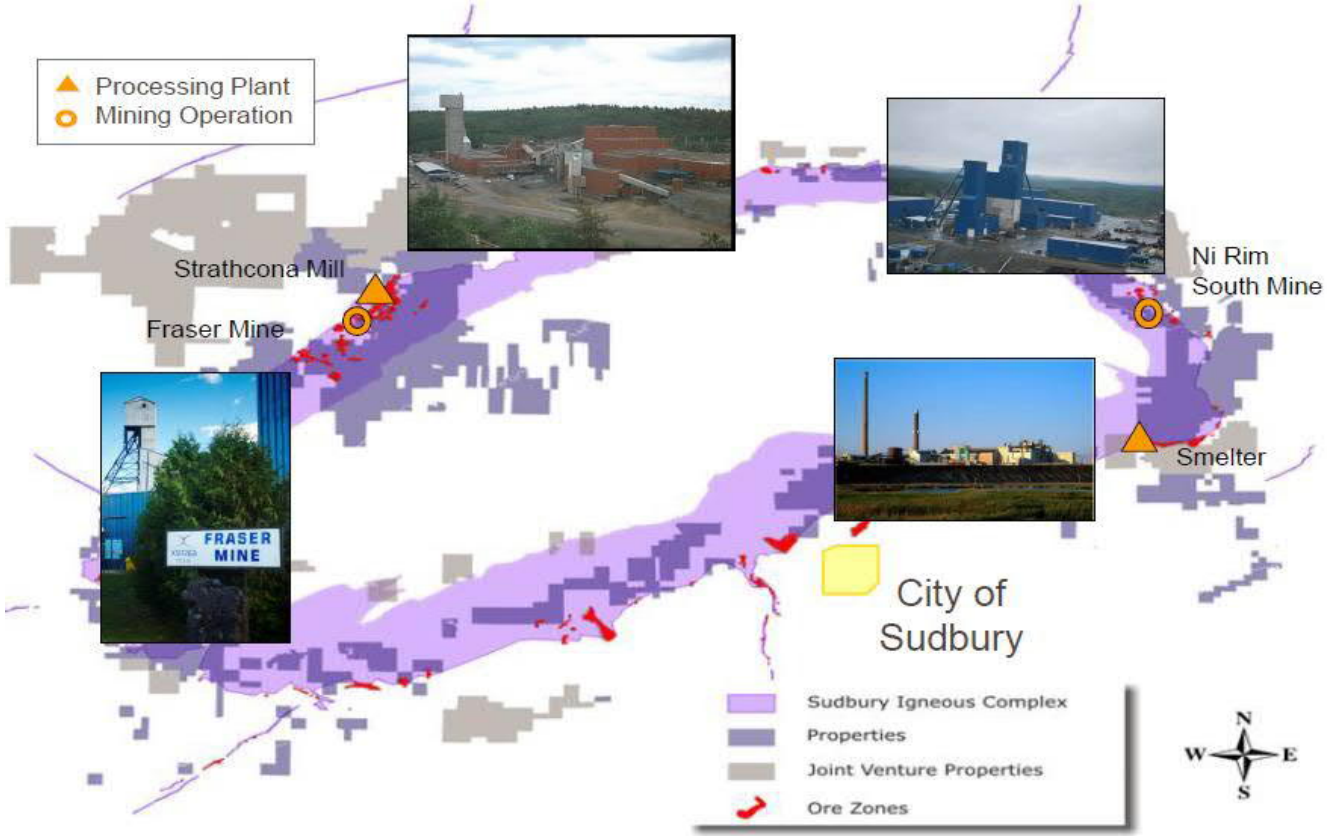
# Safety Share – Complacency in the Workplace

# Safety Share – Complacency in the Workplace

Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteer be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.

# Sudbury INO in the Community

- **Glencore (formerly Xstrata, and Falconbridge) has been part of the community since 1928.**
- **Sudbury INO employs more than 1,300 people in the Sudbury area directly, as well as 500 trade-partners.**
- **The Smelter employs more than 300 employees.**



# Sudbury INO Regulatory Commitments

- Ontario Regulation 419/05
  - Establishes limits for ground-level concentrations of $SO_2$ and metals.
- Base-Level Industrial Emissions Requirements (BLIERs)
  - This (federal ECCC) program replaces former Pollution Prevention Plan (P2).
  - Glencore has already achieved over 90% sulphur capture and particulate emissions less than 4 kg / tonne of Ni+Cu produced annually.
- Environmental Compliance Approval (ECA) and Site-Specific Standards (SSS)
  - Establish conditions and requirements tailored for equipment, performance, documentation, reporting, operation/maintenance, testing and monitoring.
- Ontario Regulation 652/21
  - Sector-specific regulation (Vale and Glencore) establishing $SO_2$ limit with requirement for community monitoring and reporting.

# Health Interpretation of $SO_2$ Levels

13.1 The Company shall take all reasonable steps to establish, maintain and participate in the Environmental Monitoring Team (EMT), and ensure that:

(c) The following information is communicated with the public on the Company website:

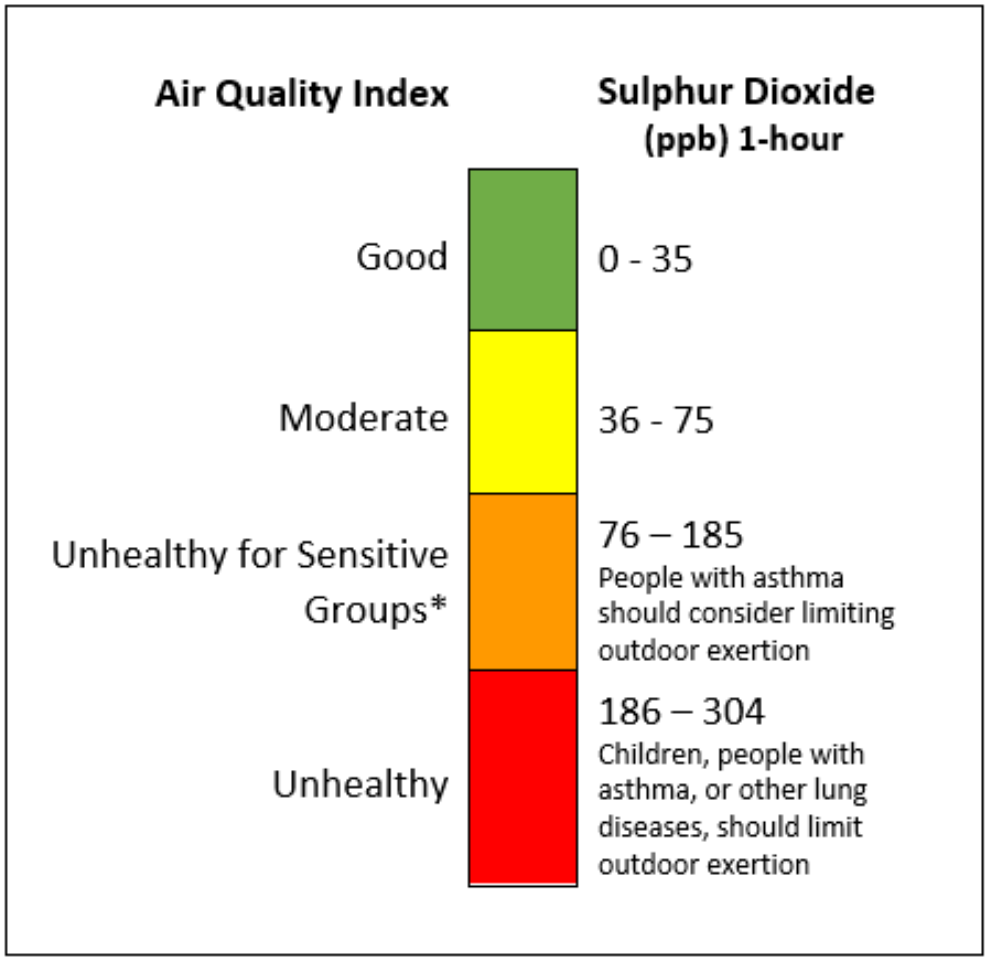
(iv) health interpretation of the Real Time Data, that describes the potential health impacts of the ground level concentrations at each location measured by the Sudbury Monitoring System.

# Health Interpretation of $SO_2$ Levels

Proposed:

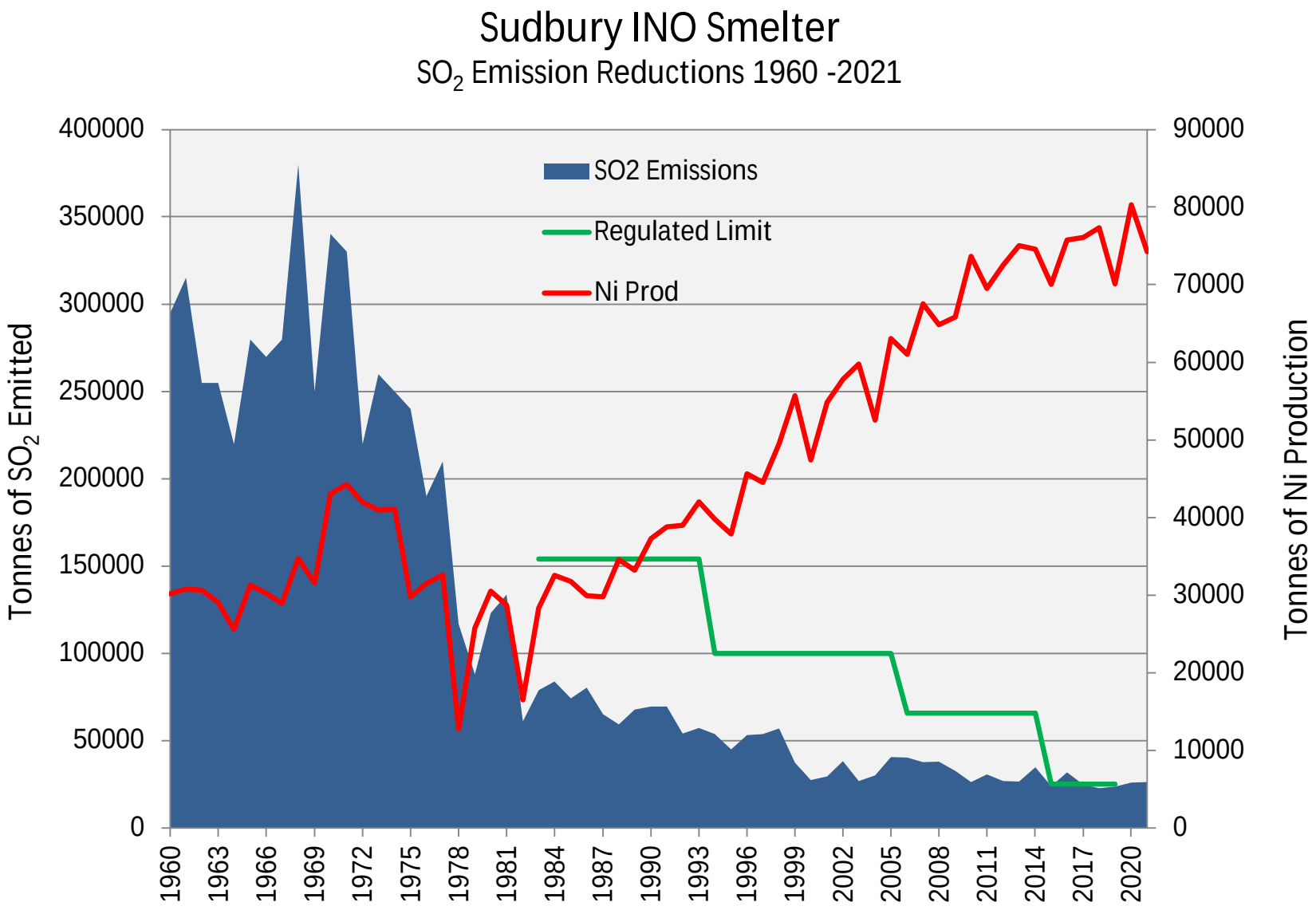
Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI)

U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Air Quality Assessment Division (September, 2018)




*People with asthma, children, and older adults are the groups most at risk

# Sudbury INO Historical $SO_2$ Emissions



# Sulphur Dioxide ($SO_2$) Monitoring Network

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# $SO_2$ Monitoring System On-line Time

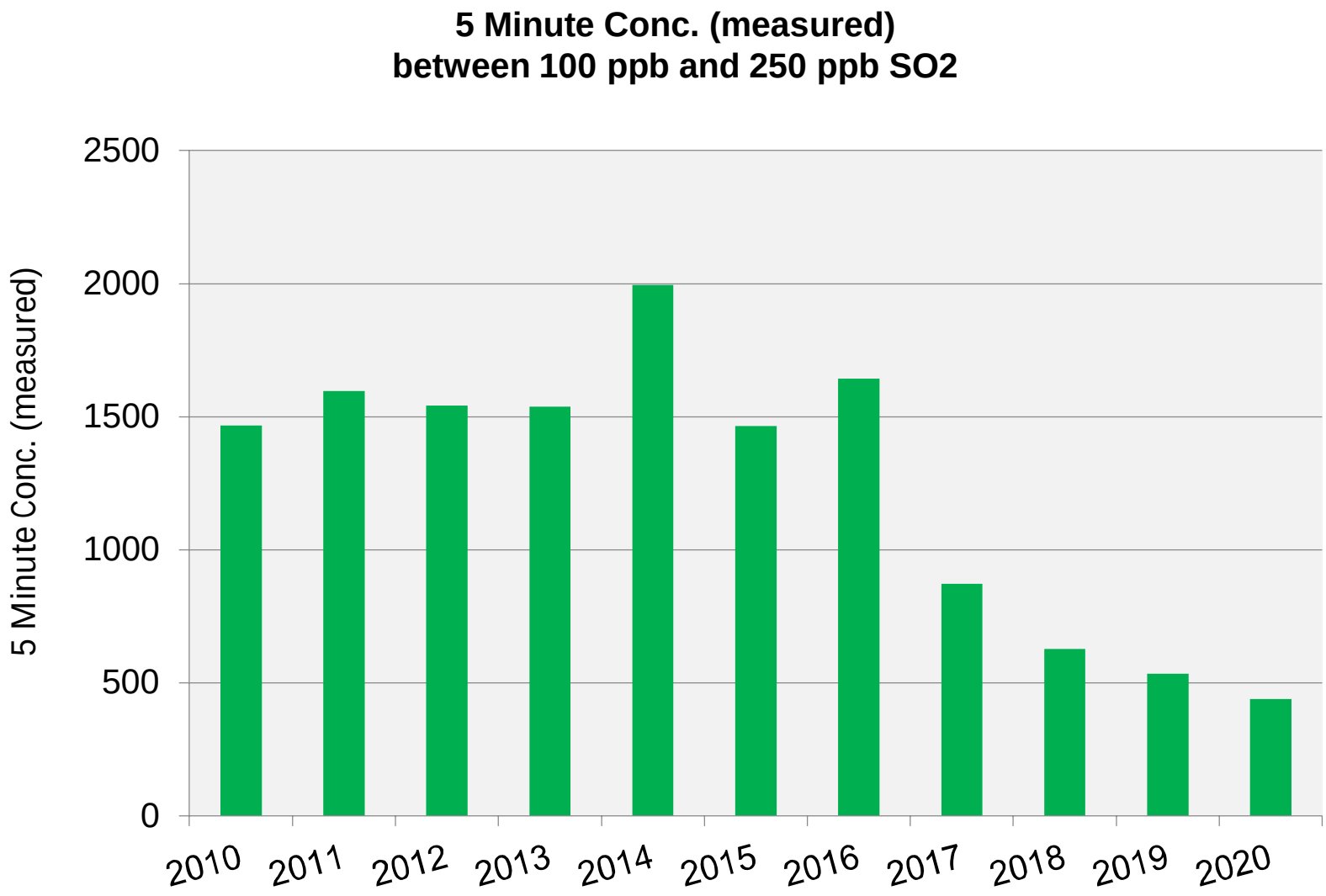
| On-line Time | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|
| CEM (%) | 98.0 | 99.2 | 98.2 | 99.2 | 99.6 | 97.5 | 98.2 | 97.9 |
| AMS – Edison | 99.6 | 99.5 | 99.7 | 99.8 | 99.4 | 99.7 | 99.7 | 99.5 |
| AMS – Parkinson | 99.7 | 99.6 | 99.6 | 99.7 | 99.5 | 99.8 | 99.0 | 99.8 |
| AMS - Sunderland | 99.2 | 99.3 | 99.7 | 99.7 | 99.4 | 99.8 | 99.8 | 99.3 |
| AMS - Wahnapitae | 99.7 | 99.6 | 99.6 | 99.6 | 99.6 | 99.8 | 99.6 | 99.7 |
| AMS – Skead | 99.7 | 99.6 | 99.6 | 99.7 | 99.7 | 99.8 | 98.6 | 99.0 |
| AMS – Hanmer | 99.8 | 99.7 | 99.7 | 99.7 | 99.5 | 99.7 | 99.8 | 99.7 |
| AMS – Coniston | 99.7 | 99.7 | 99.7 | 99.7 | 99.5 | 99.7 | 99.7 | 99.8 |

# 5 Min. Concentrations > 100 ppb $SO_2$

All 8 Stations Combined:

2006 = 2669
2007 = 2487
2008 = 1915
2009 = 1538
2010 = 1468
2011 = 1597
2012 = 1543
2013 = 1539
2014 = 1995
2015 = 1465
2016 = 1643
2017 = 888
2018 = 628
2019 = 535
2020 = 439

78% Reduction from 2016

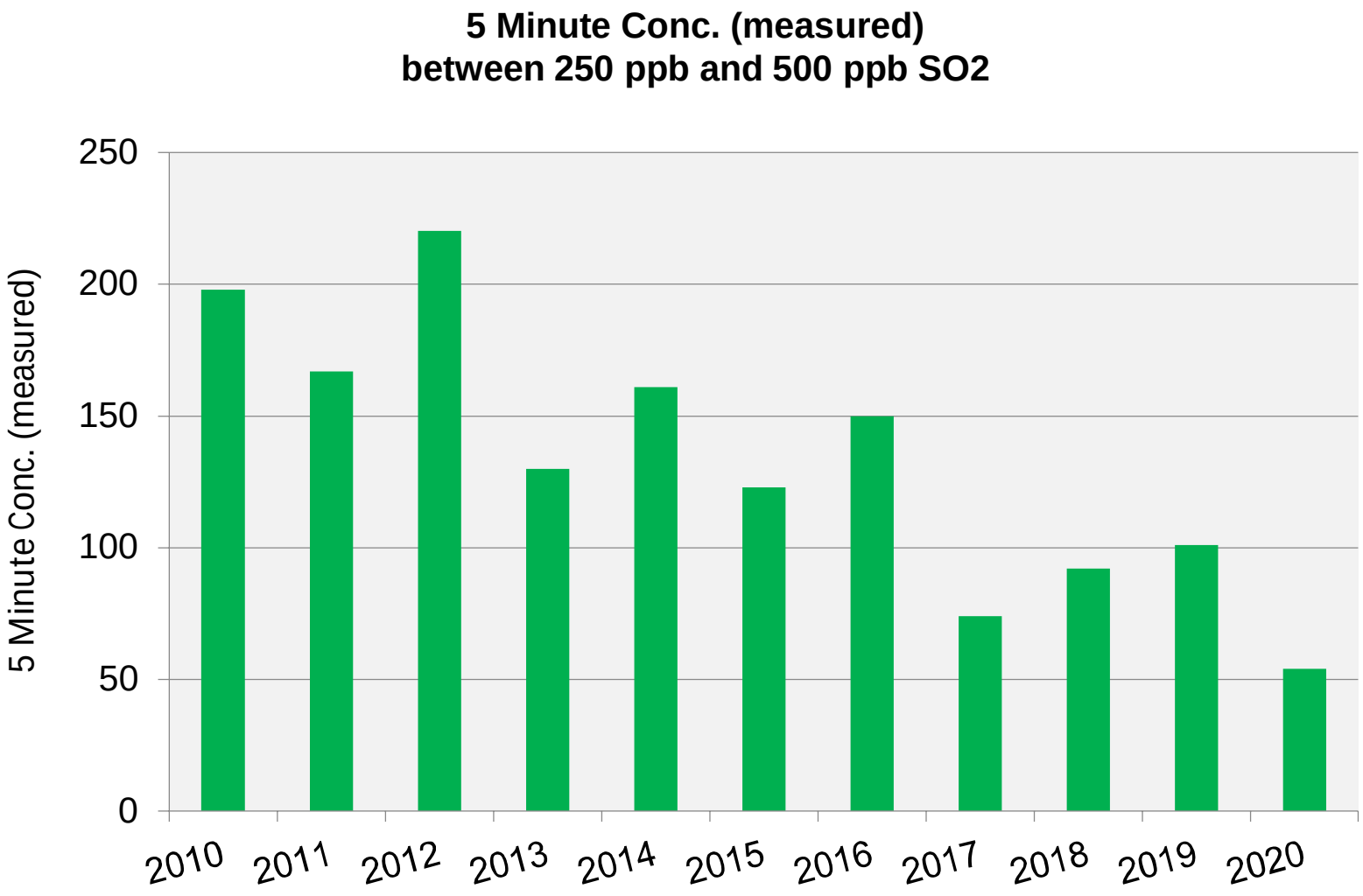


# 5 Min. Concentrations > 250 ppb $SO_2$

All 8 Stations Combined:

2006 = 414
2007 = 305
2008 = 239
2009 = 196
2010 = 198
2011 = 167
2012 = 220
2013 = 325
2014 = 161
2015 = 123
2016 = 150
2017 = 77
2018 = 92
2019 = 83
2020 = 54

66% Reduction Since 2016

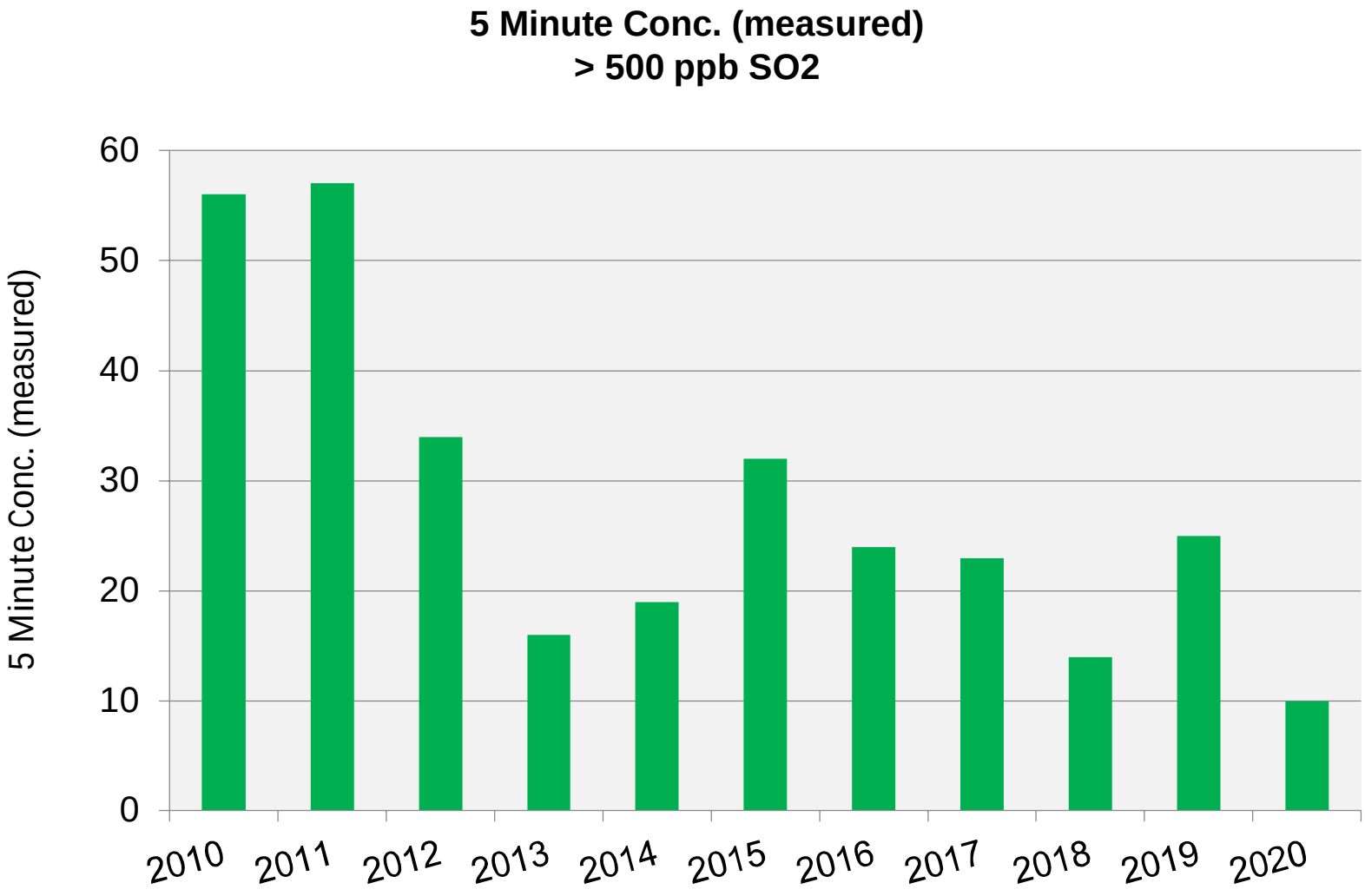


# 5 Min Concentrations > 500 ppb $SO_2$

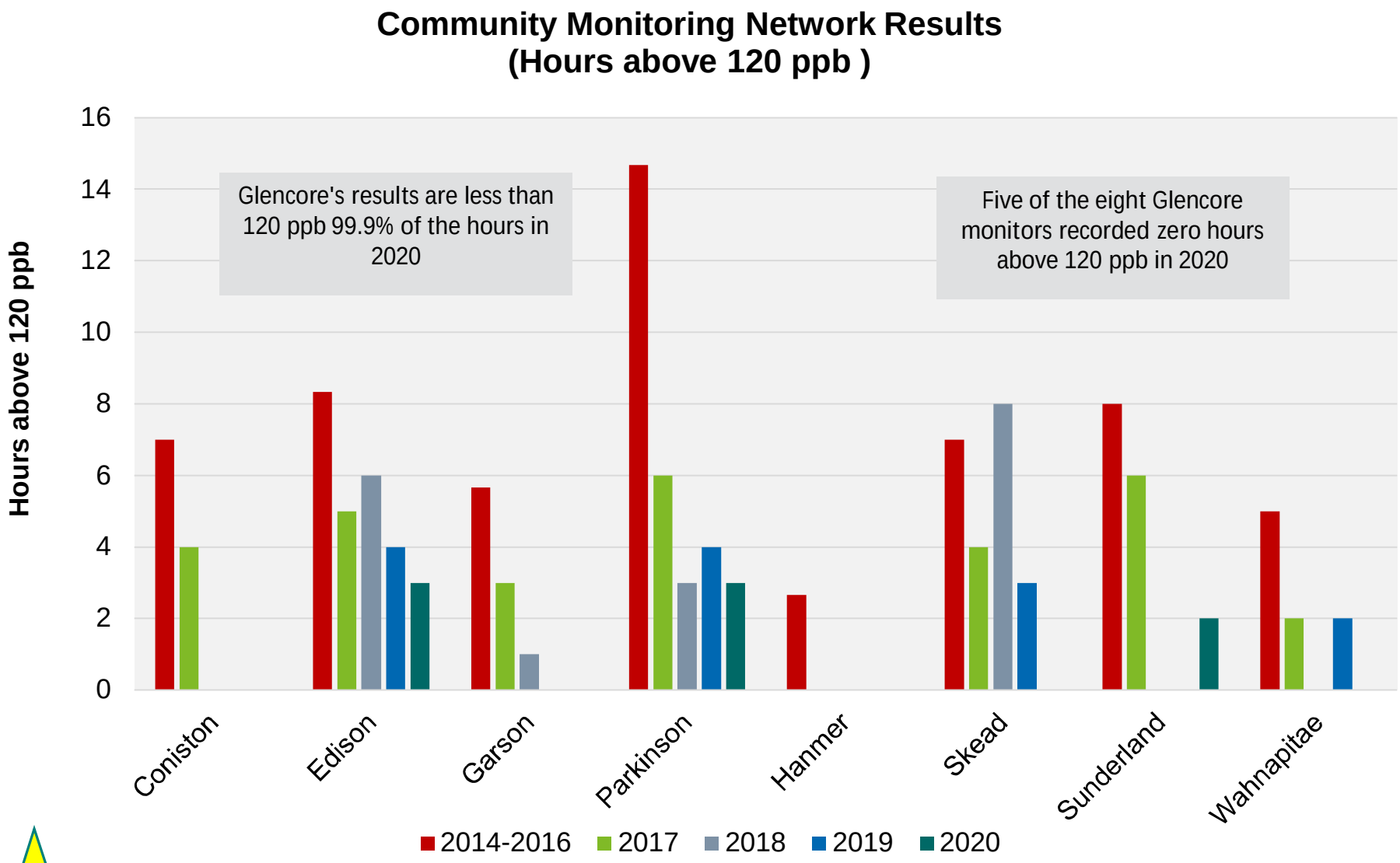
All 8 Stations Combined:

2006 = 55
2007 = 67
2008 = 34
2009 = 32
2010 = 56
2011 = 57
2012 = 34
2013 = 16
2014 = 19
2015 = 32
2016 = 24
2017 = 22
2018 = 14
2019 = 23
2020 = 10

47% decrease since 2016

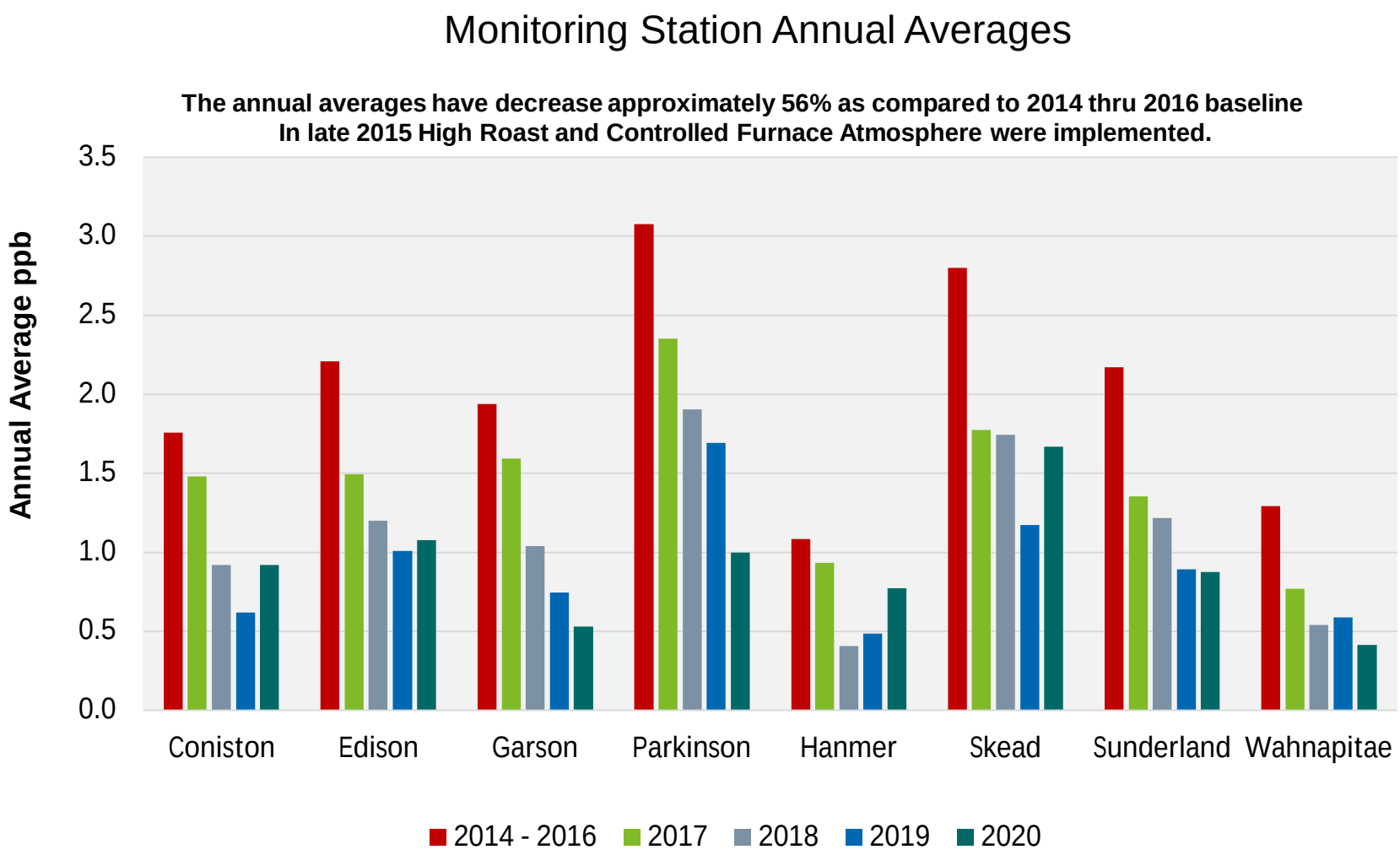


# 2020 Total hours > 120 ppb $SO_2$




86% Reduction in hours above 120 ppb since 2014

# Annual Average $SO_2$ Concentration




56% Reduction in annual average SO2 concentrations since 2014

# Community Complaints and Exceedences

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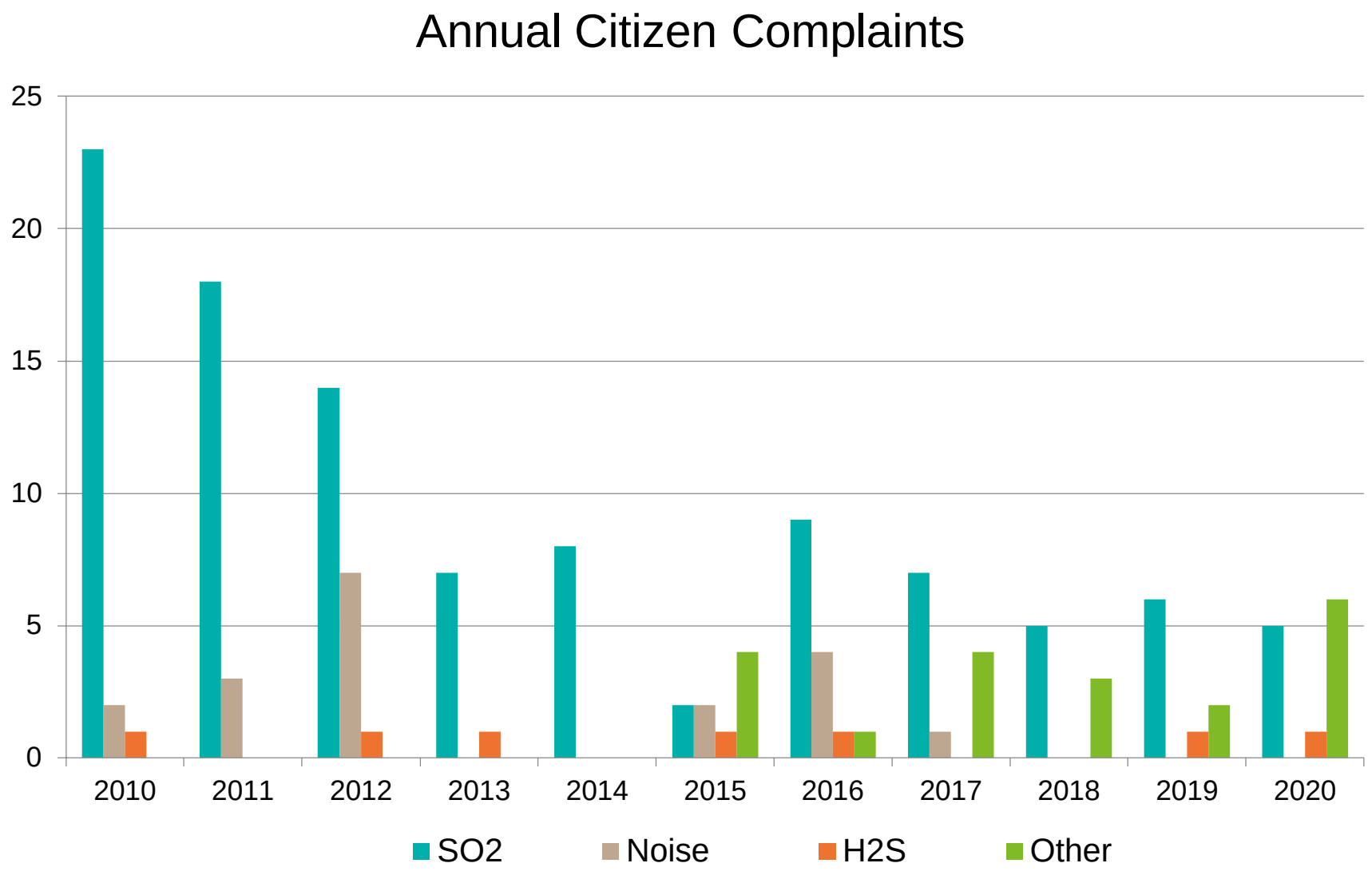
# $SO_2$ Citizens Complaints



# $SO_2$ Complaints and Exceedences 2021

There were six community complaints in 2020:

Mar 28th – smell of "…rotten eggs…" ($H_2S$)
Apr 23rd – smell of $SO_2$ in the community
May 16th – strong odour of $SO_2$
May 18th – smell of $SO_2$ at the residence
May 23rd – could smell $SO_2$
Aug 2nd – odour of "…matches and iron…" ($SO_2$)

# $SO_2$ Exceedences 2021

There was one Ambient Air $SO_2$ exceedence of Action Trigger of 250 ppb on October 29th at Parkinson AQM

- Unexpected loss of the $SO_2$ Blower, affecting Roaster off-gas conveyance to the Acid Plant due to automated safeguard control (interlock) on the bearing lubrication system
- The $SO_2$ Blower restart was not possible
- $SO_2$ dissipated locally, and carried into the community by unfavourable meteorological conditions
- No citizen complaints received on the day of the exceedance.
- The Site-Specific Standard limit of 0.89 ppm (issued under O.Reg. 419/05 s. 36(1) – 501-12-rv1) was not exceeded

# Ambient Air Monitoring

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# Metals Exceedence 2021

| Station | Metal | Date | Concentration ($\mu g/m^3$) | Limit ($\mu g/m^3$) | Cause | Actions |
|---|---|---|---|---|---|---|
| Edison | Co | March 16 | 0.18 | 0.10 | Wind-driven dispersion of seasonally accumulated, site-wide particulate. | Activate roads/yards maintenance, wherever allowable by weather. |
| Edison | Ni | March 16 | 2.6 | 2.0 | Wind-driven dispersion of seasonally accumulated, site-wide particulate. | Activate roads/yards maintenance, wherever allowable by weather. |
| Edison | TSP | March 16 | 130 | 120 | Wind-driven dispersion of seasonally accumulated, site-wide particulate. | Activate roads/yards maintenance, wherever allowable by weather. |
| Edison | Fe | March 16 | 31 | 25 | Wind-driven dispersion of seasonally accumulated, site-wide particulate. | Activate roads/yards maintenance, wherever allowable by weather. |

# Source Testing 2020 used in ESDM

- Main stack – annual program
- Certification and Relative Accuracy Test Audit (RATA) for Main Stack Continuous Emissions Monitor (CEM)
- Matte-end baghouse, and Slag-end baghouse
- Monovent and Secondary Stack assessment

# Site Specific Standards

**ON Reg. 419**

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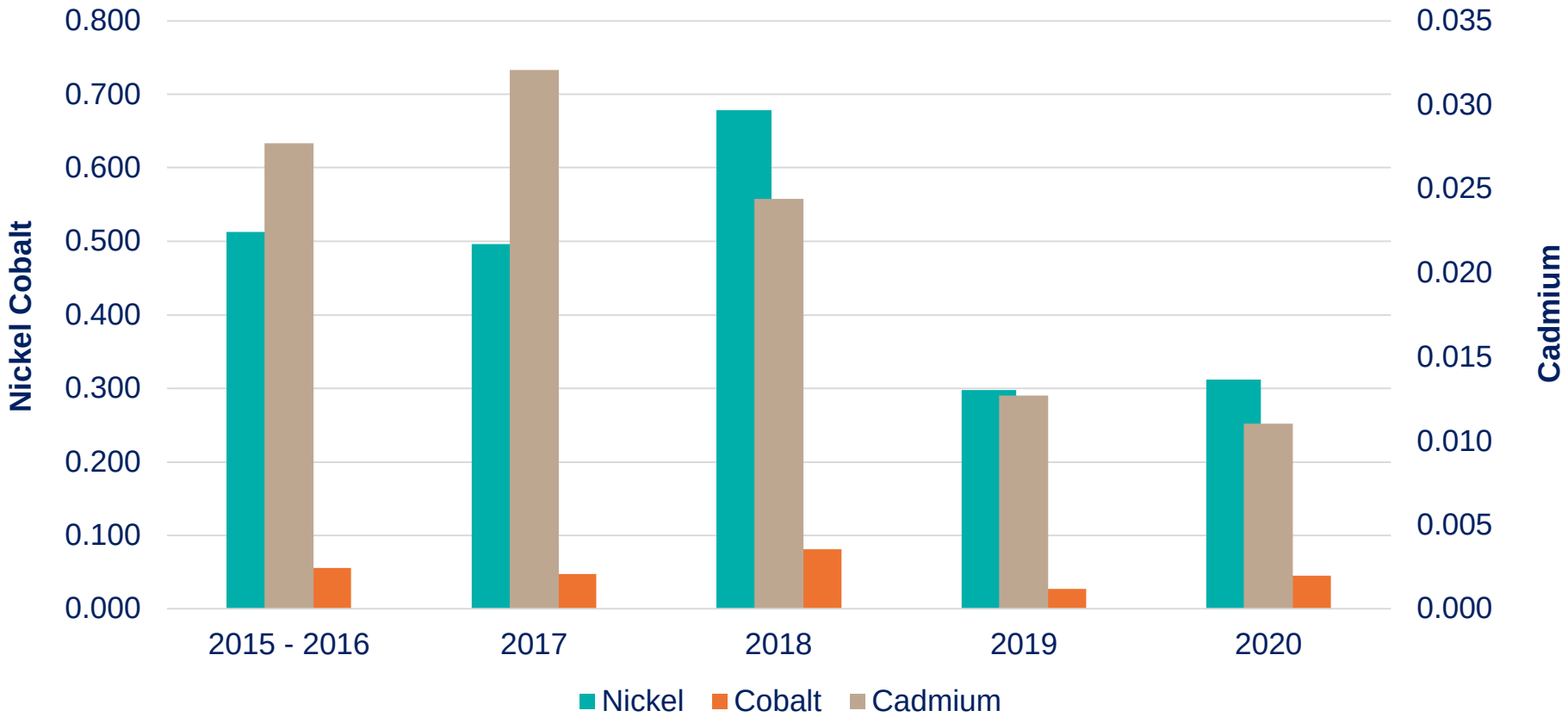
# Site Specific Standard Approvals

## O. Reg. 419/05, O. Reg. 652/21

- **Approvals**
  - Ontario Regulation 652/21 - *Air pollution - Discharge of Sulphur Dioxide from Nickel Smelting and Refining facilities in the Sudbury Area*
  - Cadmium Approval received October 2020 in effect until 2030
  - Nickel Approval received December 21, 2015 in effect until 2026

# Metals Reductions in the Community




- 62% reduction in measured Cd concentrations.
- 50% reduction in measured Ni concentrations.
- 66% reduction in measured Co concentrations.

# Noise

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# Noise Mitigation to Date

| Source | Abatement | Year |
|---|---|---|
| 075 & 076 Baghouses Exhaust | elbow and silencer | 2009 |
| Matte-end Baghouse Exhaust | silencer | 2010 |
| Slag Exhaust | silencer | 2010 |
| Matte Granulation | source mitigation | 2010 |
| Raglan Building Exhaust | elbow | 2011 |
| 075 & 076 Baghouses Fans | acoustic insulation | 2012 |
| Matte Granulation | improvements to rubber curtains | 2012 |
| Overall Site | noise barrier | 2012 |
| General, Exhaust Fans | administrative controls (SOPs) | 2013 |
| 075 & 076 Baghouses Exhaust | engineering for more effective silencers | 2014 |
| Roaster Roof Fan 225 | fan replacement (quieter) | 2015 |
| Matte Granulation | further sealing of the granulation room | 2018 |
| Raglan Receiving Baghouse | silencer on the new baghouse | 2019 |

# Noise Complaints in 2021

- **There were no noise complaints in 2021.**

- **As part of the Process Gas Project, Hatch did a modeling study of the effect of building demolitions on community noise levels.**
  - No further controls were needed

# Updated Noise Measurements in 2020

- Updates to Noise Model
  - Noise model updated in December of 2019 indicated that the Smelter is compliant with O. Reg. 419/05 noise limits.
  - Independent verification (confirmation) of community noise levels was conducted in 2020. Revision(s) to the Acoustic Audit Report have been requested by the MECP Environmental Permissions Branch.

# Questions/Comments/Discussion

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