New Mexico Environment Department

Air Quality Bureau

Intel Title V Permit

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The Mission of the Air Quality Bureau is to protect the inhabitants and natural beauty of New Mexico by preventing the deterioration of air quality.

Air Quality Standards: Criteria Pollutants

- The Clean Air Act required EPA to set **National Ambient Air Quality Standards** (40 CFR *P*art 50) for pollutants considered harmful to public health and the environment. These limits protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Limits also protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

- National Ambient Air Quality Standards (NAAQS) exist for criteria pollutants:
  - Oxides of Nitrogen (NOx, expressed as NO_2)
  - Carbon Monoxide (CO)
  - Oxides of Sulfur (SOx, expressed as SO_2)
  - Particulates less than 10 microns (PM10)
  - Particulates less than 2.5 microns (PM2.5)
  - Ozone (O_3, created by photochemical reactions with NOx and Volatile Organic Compounds (VOC) in the presence of sunlight)
  - Lead (Pb)

NAAQS & NMAAQS

Pollutant	Averaging Period	Significant Level ($\mu g/m^3$)	Class I Sig. Level ($\mu g/m^3$)	NAAQS	NMAAQS	PSD Increment Class I	PSD Increment Class II
CO	8-hour 1-hour	500 2,000		9,000 ppb 35,000 ppb	8,700 ppb 13,100 ppb		
NO_2	Annual 24-hour 1-hour	1.0 5.0 7.54	0.1	99.67 $\mu g/m^3$ 188.06 $\mu g/m^3$	50 ppb 100 ppb	2.5 $\mu g/m^3$	25 $\mu g/m^3$
SO_2	Annual 24-hour 3-hour 1-hour	1.0 5.0 25.0 7.8	0.1 0.2 1.0	 1309 $\mu g/m^3$ 196.4 $\mu g/m^3$	20 ppb 100 ppb	2 $\mu g/m^3$ 5 $\mu g/m^3$ 25 $\mu g/m^3$	20 $\mu g/m^3$ 91 $\mu g/m^3$ 512 $\mu g/m^3$
Reduced S	½-hour ½-hour				3 ppb 10 ppb		
H_2S	1-hour ½-hour ½-hour	1.0 5.0 5.0			10 ppb 100 ppb 30 ppb		
Pb	Quarterly	0.03		0.15 $\mu g/m^3$			
O_3	8-hour			80 ppb			
$PM_{2.5}$	Annual 24-hour	0.3 1.2	0.06 0.07	15 $\mu g/m^3$ 35 $\mu g/m^3$		1 $\mu g/m^3$ 2 $\mu g/m^3$	4 $\mu g/m^3$ 9 $\mu g/m^3$
PM_{10}	Annual 24-hour	1.0 5.0	0.2 0.3	 150 $\mu g/m^3$		4 $\mu g/m^3$ 8 $\mu g/m^3$	17 $\mu g/m^3$ 30 $\mu g/m^3$
TSP	7-day 30-day Annual 24-hour	 1.0 5.0			110 $\mu g/m^3$ 90 $\mu g/m^3$ 60 $\mu g/m^3$ 150 $\mu g/m^3$		

Toxic Air Pollutants (TAPs)

- 20.2.72.400 NMAC regulates specific toxic air pollutants that are not regulated by EPA.
- Triggered by construction of a new source that emits a TAP in excess of the emissions rate thresholds in 20.2.72.502 NMAC.
- Emissions in excess of the thresholds shall disperse emissions to below the Occupational Exposure Limit (OEL) at the property line.

TAP (examples)	OEL (mg/m3)	Threshold (lb/hr)
Ammonia	18.0	1.2
Copper fume/dust	0.2/1.0	0.0133/0.0667
Fluorides, as F	2.5	0.167
Tungsten, as W insoluble/soluble	5.0/1.0	0.333/37.3

When a Construction Permit is Required

- **Minor New Source Review (NSR) Permit - a pre-construction permit** required for facilities that have a potential emission rate (PER) that is **greater than 10 pounds per hour (pph) or 25 tons per year** (tpy) for any pollutant that is subject to a NAAQS or NMAAQS (excludes VOC). Refer to 20.2.72 NMAC

- **Prevention of Significant Deterioration (PSD) permit (** 20.2.74 NMAC)**–** pre-construction permit required if potential emissions:

  ≥250 tons per year (tpy) of any one criteria pollutant

  ≥100 tons per year (tpy) of any one criteria pollutant for selected sources

  ≥100,000 tpy of carbon dioxide equivalent (CO_2e) - *NEW*

When an Operating Permit is Required

- **Title V permit** (20.2.70 NMAC) **-** Operating permit required if potential emissions :
  - ≥100 tons per year (tpy) of any one criteria pollutant
  - ≥10 tpy of any one hazardous air pollutant
  - ≥25 tpy of combined hazardous air pollutants
  - ≥100,000 tpy of carbon dioxide equivalent (CO2e) - *NEW*

Intel's NSR permit 0325-M11

Facility-Wide Limits	[1]NO_x tpy	CO tpy	VOC tpy	SO_2 tpy	TSP/PM_{10}/$PM_{2.5}$ (each) tpy	Any Individual HAP[2] tpy	Total HAPs tpy
Sum of emissions from all sources	95.7	94.7	96.5	95	95	9.0	24

- All Criteria pollutants < 100 tpy
- All Individual HAP < 10 tpy
- Total HAPs < 25 tpy
- TAPs not regulated based on previous analysis

Why Is Intel now a Major Source of Emissions

- April 2, 2007 *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act
- December 7, 2009 – EPA Endangerment and Cause or Contribute Findings
- January 2, 2011- EPA Greenhouse gas Tailoring Rule initiates permitting of major sources (≥ 100,000 TPY)

Greenhouse Gas (GHG) Emissions

Greenhouse gas or GHG means carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and other fluorinated greenhouse gases as defined in this section. (40 CFR §98.6)

Global Warming Potential

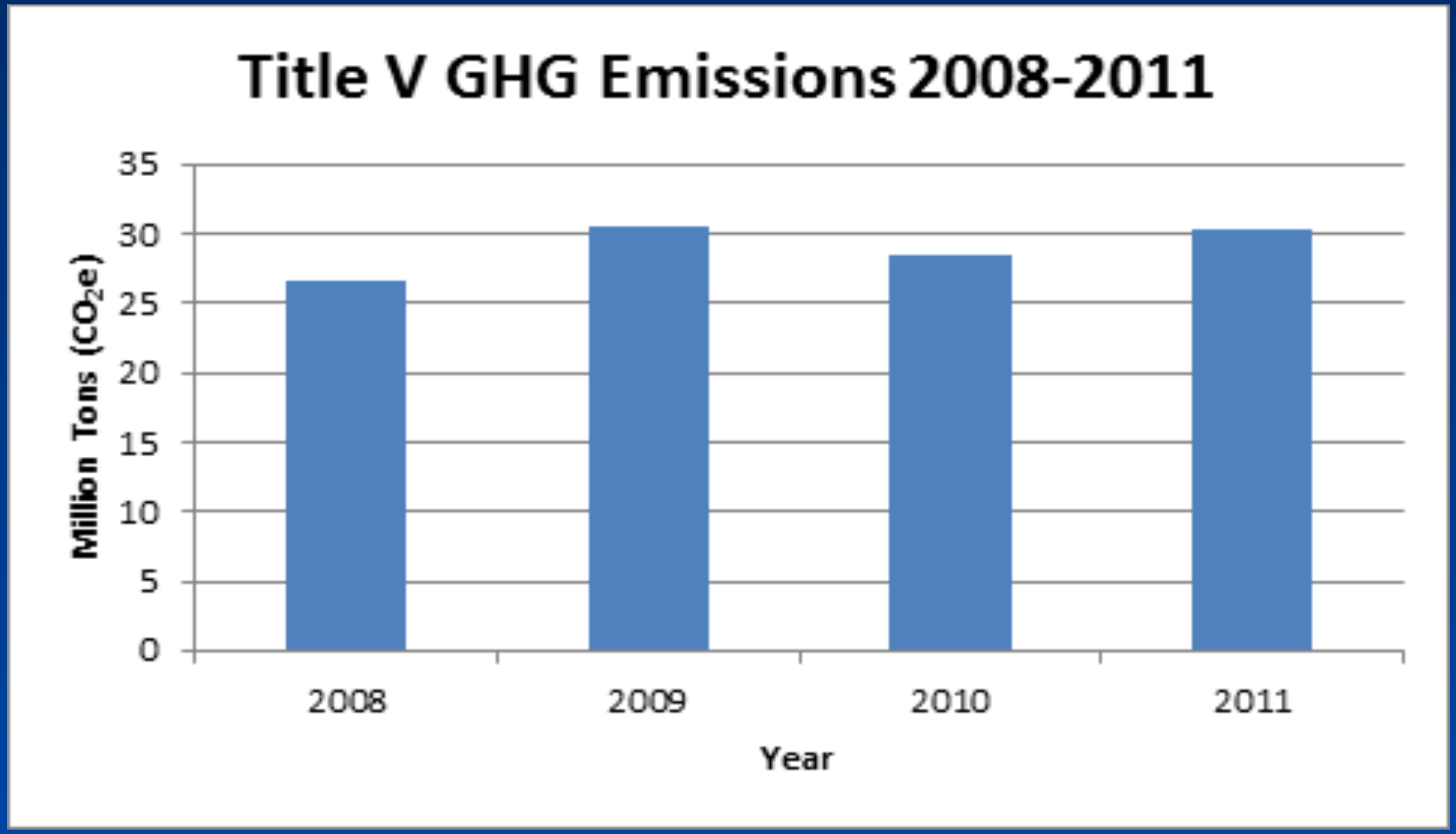
Global warming potential or GWP means the ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of a reference gas, i.e., CO2.

Global Warming Potentials of Select Gases (40 CFR 98 Subpart A Table A-1)

Historic 10-year Maximum Annual GHG (CO2e) Emissions - Intel Rio Rancho Facility

CO2e (source)	2003 (tons per year, reported to CCX)	2004 (tons per year, reported to CCX)
Natural Gas combustion (e.g. boilers)	44,030	41,183
Diesel combustion (emergency generators)	17	16
FAB (PFCs, HFCs and SF6)	281,054 (33 actual tons)	251,655 (30.25 actual tons)
FAB (N2O)	5,470	18,169
Total	330,571	311,023

GHG Emissions From Title V Facilities (Major Sources) in New Mexico



http://www.nmenv.state.nm.us/aqb/GHG/documents/GHG_data_outreach_VER20_Final.pdf

GHG Plant-wide Applicability Limit (PAL) Permit

- Setting the GHG PAL annual emissions cap
  - Average of any two representative and consecutive years in the previous 10 years (Intel chose 2003/2004 = 320,797 tpy)
  - Add 75,000 tpy to the average
  - GHG PAL annual cap = 395,797 tpy CO_2e
- Limit may be re-evaluated at the 10-year renewal

GHG Plant-wide Applicability Limit (PAL) Permit (continued)

- Establish Monitoring, Recordkeeping and Reporting that adequately confirms compliance with the GHG PAL cap.
  - Closely follows EPA reporting rules 40 CFR part 98
  - Subpart C for combustion sources
  - Subpart I for Semiconductor Manufacturing (FAB)

GHG Plant-wide Applicability Limit (PAL) Permit (continued)

- EPA gave authority to establish GHG PAL permits in either NSR or Title V permits
- Intel's GHG PAL permit is an attachment to the Title V permit
- GHG PAL allows operational flexibility if the GHG PAL cap is not exceeded
- Although regulated as a Criteria Pollutant, no ambient standards exist for GHGs

Title V Permit

- Maintains same emissions limits as existing NSR permit
- Renewed Every 5 Years
- Maintains and potentially enhances monitoring, recordkeeping and reporting to ensure compliance.
- Semi-annual monitoring reporting
- Annual Compliance Certification
- Annual Compliance Inspections

Questions?