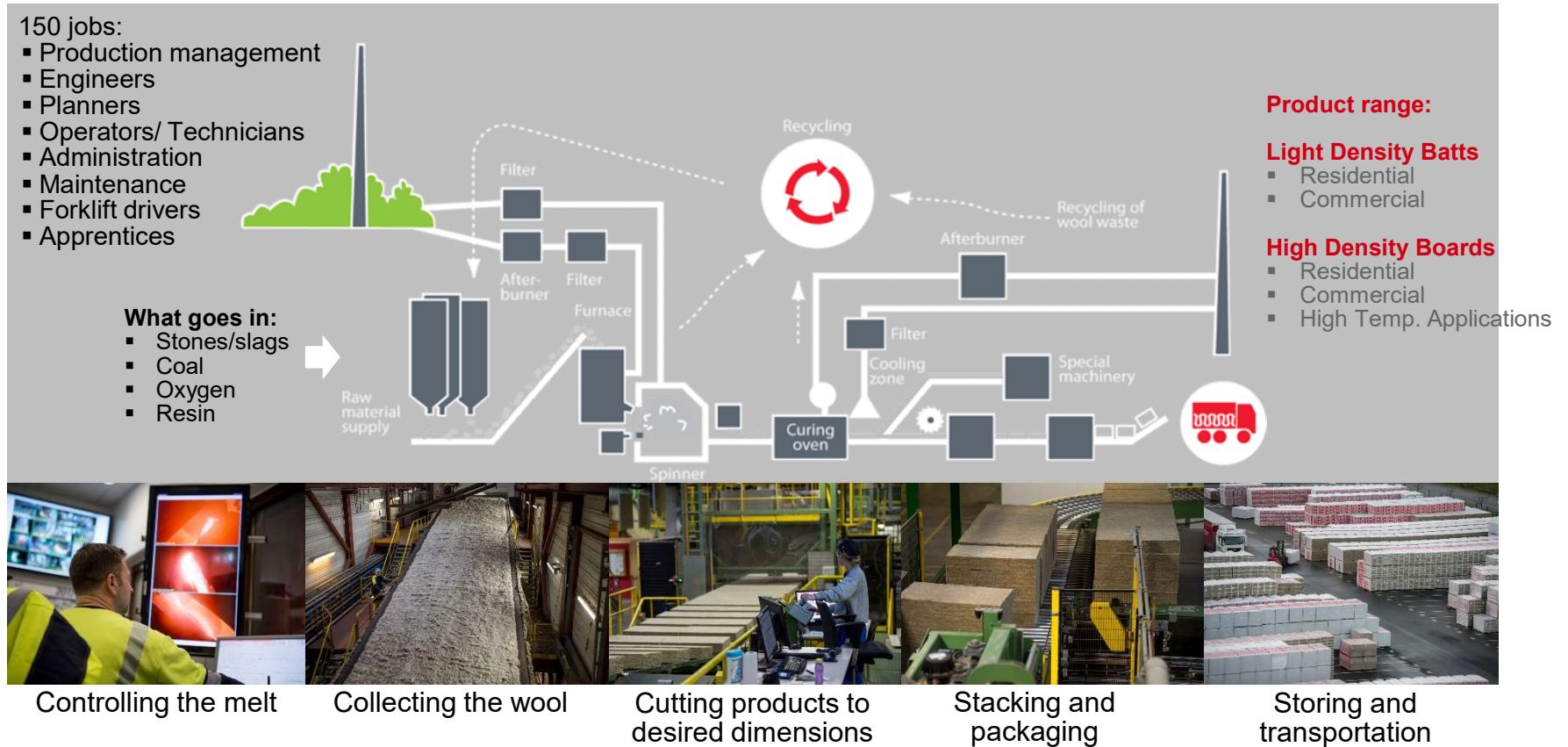


ROCKWOOL Open House

Air Quality and Permitting



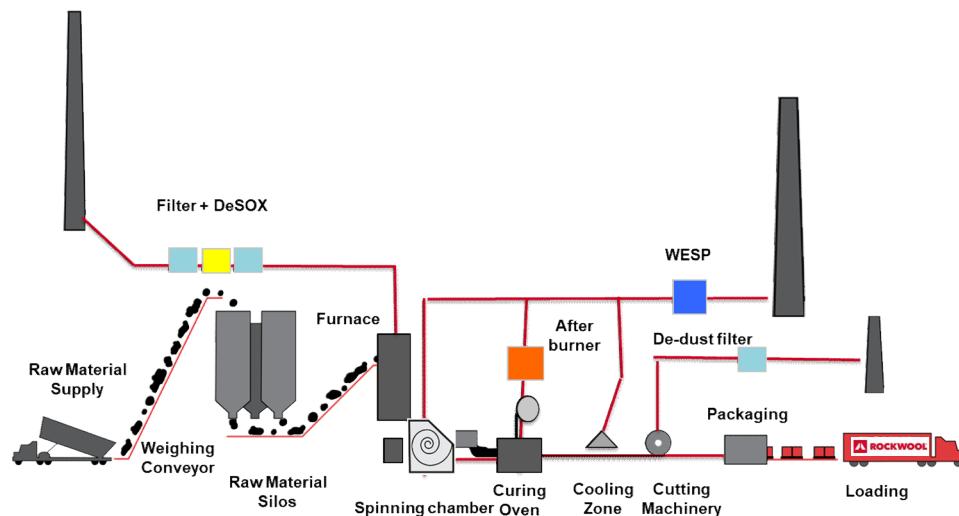
State of the art ROCKWOOL production



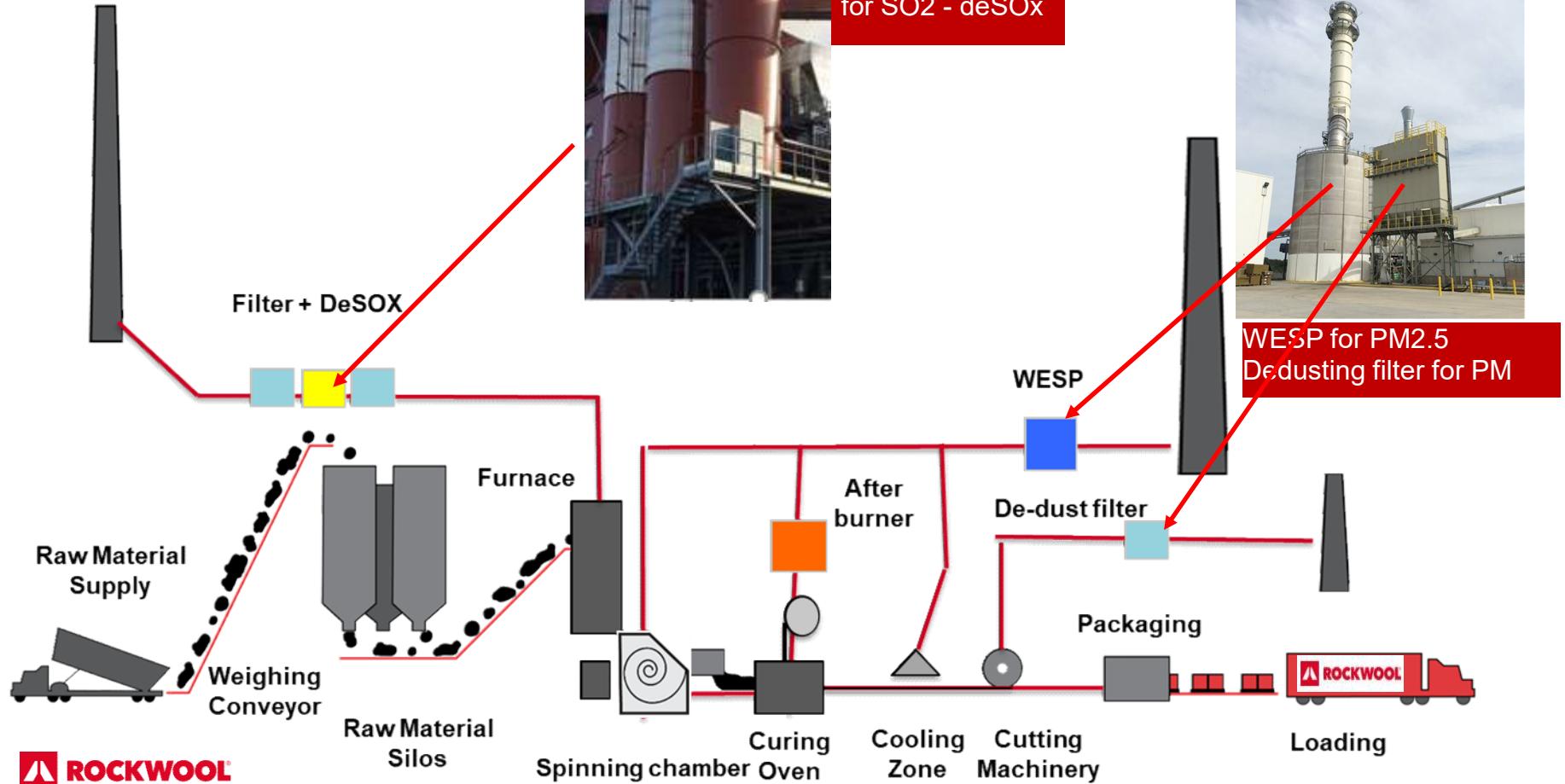
"State of the art" Ranson factory environmental controls

The design is based on assessment of Best Available Control Technology (BACT)

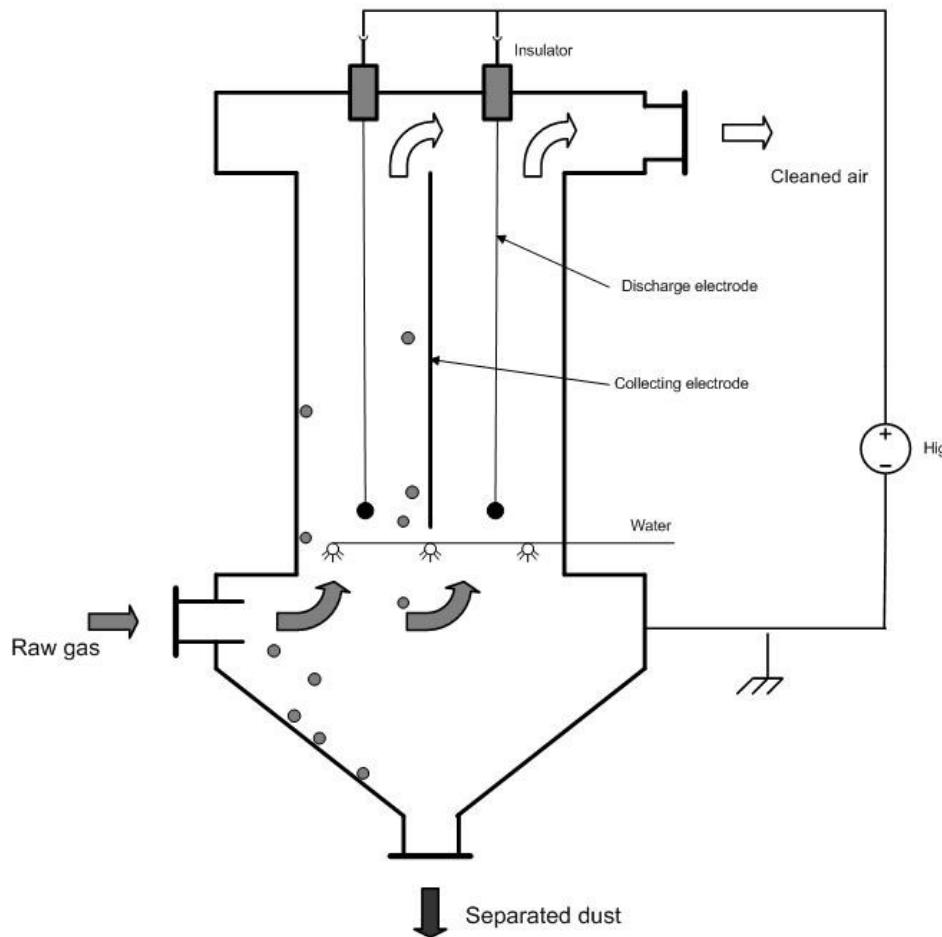
\$21m USD will be invested in Ranson factory environmental controls



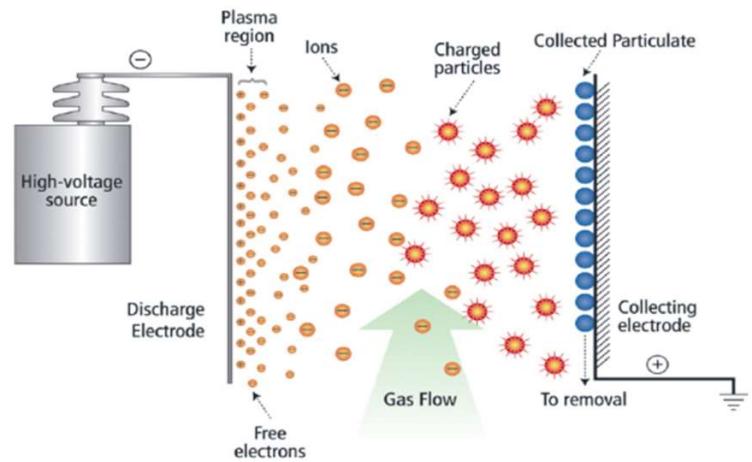
Ranson environmental controls



WESP – Wet Electrostatic Precipitators



The Precipitation Process



The corona discharge generates ions that electrically charge and collect suspended particles.

Air Permit Timeline and Stages

Nov 22, 2017

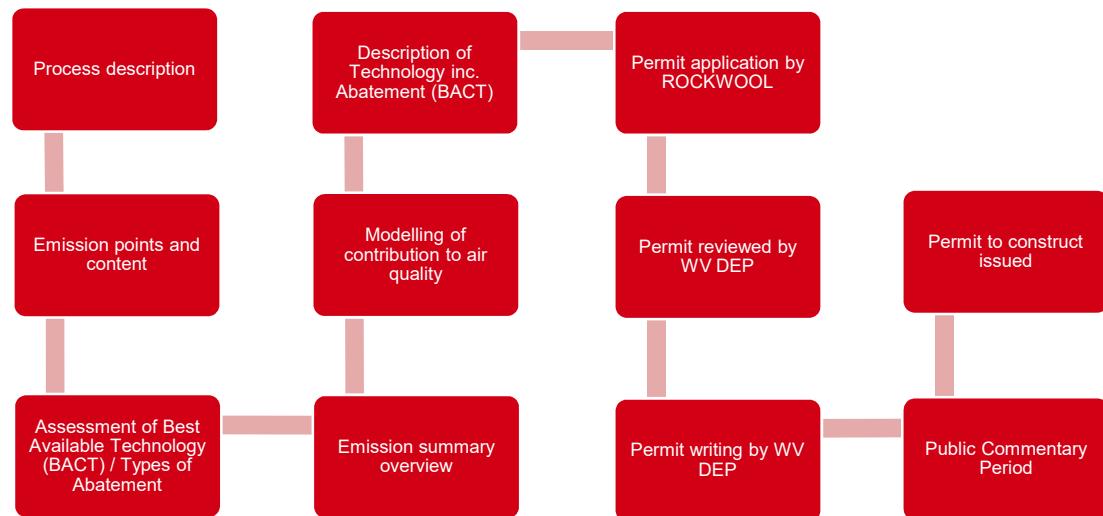
- Roxul Advertisement in the Spirit of Jefferson stating submission of permit application.

Mar 28, 2018

- WV DEP DAQ Legal Advertisement in the Spirit of Jefferson stating intent to approve the permit. Start of 30-day public comment period. The draft permit, modeling study and engineering evaluation is posted on the DAQ website.
- The DAQ response to EPA Comments was sent to the EPA (no follow-up comments from EPA). No other comments received.

April 30, 2018

- Permit Issued and signed permit made available on DAQ Website:
<https://dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx>



Air Permit Application – Modeling of SO₂, NO₂, PM₁₀, PM_{2.5}



- Prepare Model Protocol for Department For Environmental Protection (DEP), describing modeling method and area data
- Modeling to establish impact area
- First modeling of Rockwool's contribution in surroundings
- Make inventory of other sources, i.e. other factories
- Modelling of cumulative concentrations (ROCKWOOL and other sources)
- Document that results are below National Ambient Air Quality Standards (NAAQS)
- Maximum allowed emission is calculated by the model to evaluate increase in concentration compared to background ("PSD increment limit")

Protecting Air Quality

What is Air Quality Dispersion Modeling?

- A computer simulation that predicts concentrations of pollutants from various industrial sources

How is Air Quality Modeled?

- AERMOD (model used in the ROCKWOOL permit application) has been validated extensively by EPA and is known to predict conservative results
- Modeling is done in accordance with EPA's Guideline on Air Quality Models (40 CFR 51, Appendix W), and modeling protocol approved by WVDEP



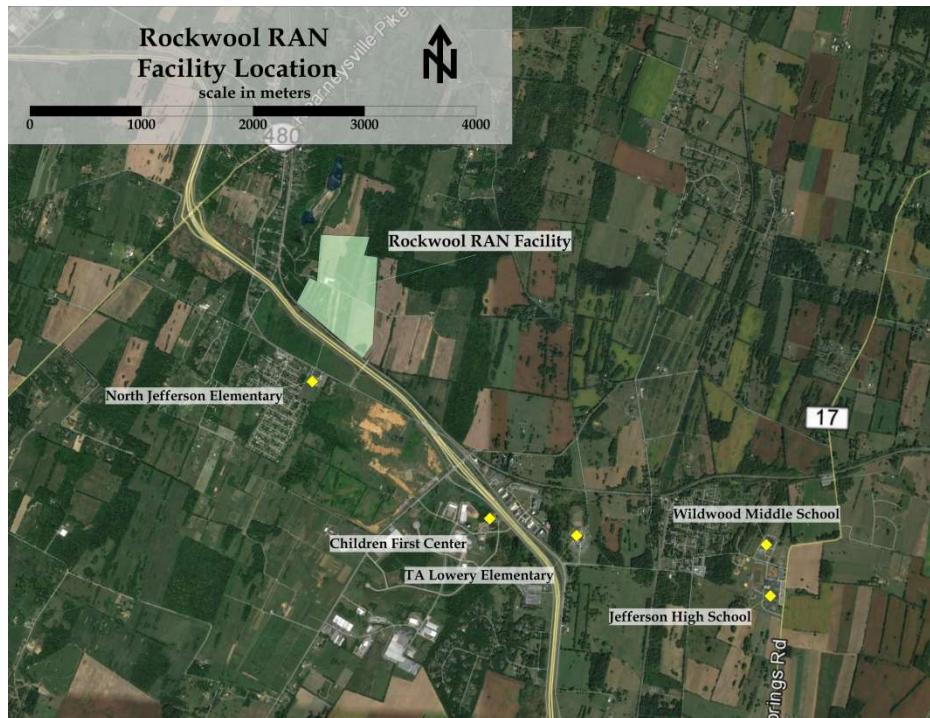
Protecting Air Quality

What data is in the Air Quality Dispersion Modeling?

- Source information:
 - Emission rate (e.g. grams/sec)
 - Stack height
 - Stack temperature and flow
 - Building dimensions
- Meteorological data:
 - Five years of data from Eastern WV Regional Airport
 - Approx 6.1 miles from ROCKWOOL
- Air quality data:
 - Background air quality monitor data
 - Emissions from nearby existing industrial facilities



Air Quality Standards: Securing Public Health

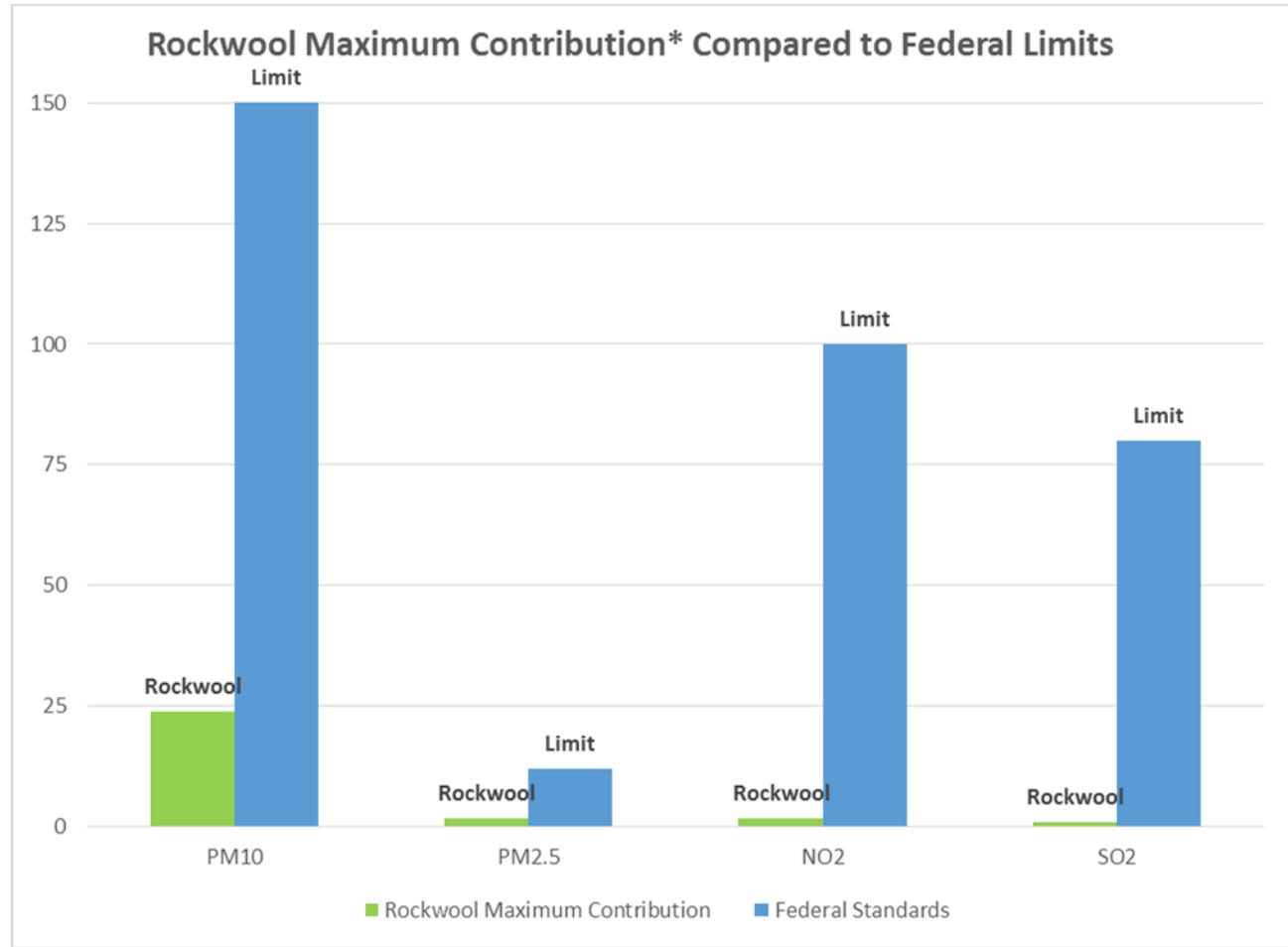


Federal Air Quality Standards protect the health of the public, including sensitive populations such as asthmatics, children, and the elderly.

The Standards also protect visibility and prevent damage to animals, crops, vegetation, and buildings.

Air Quality

***Rockwool
Maximum
Contribution is
modeled using the
worst case
scenario**



Other Emissions

- Specific limits for other elements are defined in “**Maximum Achievable Control Technology (MACT) for Mineral Wool Production**”
- These limits were updated by EPA following a thorough risk assessment process in 2015.
- Even if not required by the permitting procedure we have done a thorough assessment of the expected levels of **formaldehyde, phenol, and methanol** in the proximity of the factory.
- For these three pollutants, we assess the yearly average impact in the proximity of the factory to be respectively **1/10th, 1/100th, and 1/1,000th of the allowed limits under Virginia regulations.**

Formalde-hyde	Factory contribution in proximity	Human breath	Ambient air Rural areas	Ambient air Urban areas	WHO indoor air guideline
µg/m ³ , annual	0.23	~ 1	~ 2	~ 1-20	98



Source: NRC, 2011. Review of EPA Draft IRIS Assessment of Formaldehyde

Other emissions

Ozone

- Our contribution to the levels of ozone in the neighborhood will be insignificant.
- Ozone is not emitted directly from the factory, but it may be formed in the atmosphere from the reaction of different emissions from the factory.
- The impact of the Factory is below 2 $\mu\text{g}/\text{m}^3$, representing an **insignificant contribution** to the ozone formation.

	Factory Max contribution	Ambient air Berkeley County	National Ambient Air Quality Standard
Ozone, $\mu\text{g}/\text{m}^3$	2	118-130	137

Our commitment to air quality

We are committed to monitoring air quality by:

1. Installing monitoring stations
2. Ensuring they are managed by a third party
3. Making the information publicly available.

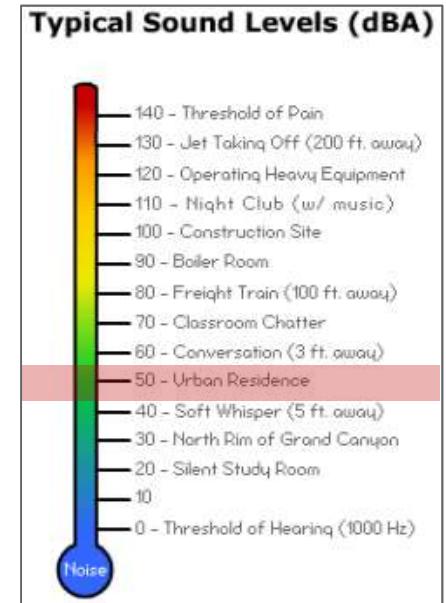
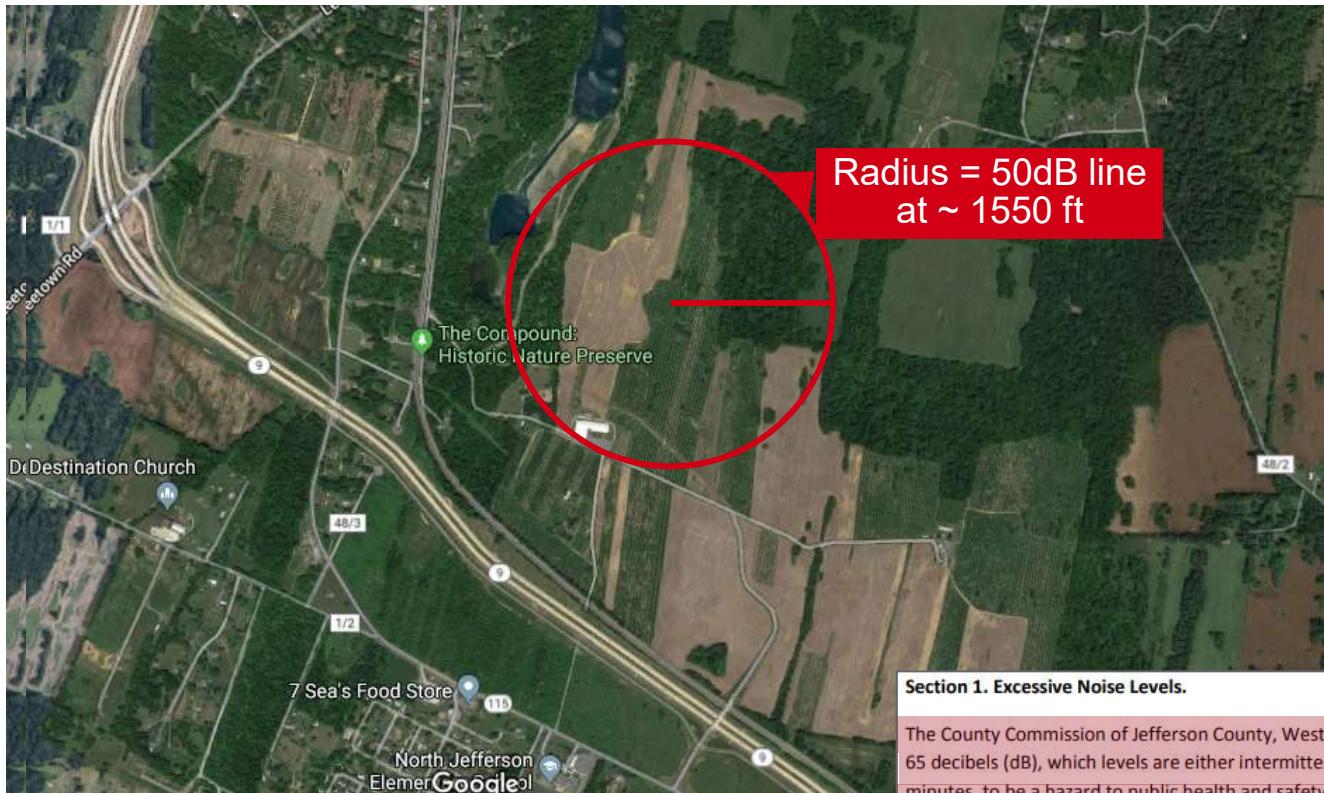


Next steps “what and where”

- Establish a baseline for Air Quality
- Dialogue with stakeholders
- Use maximum modeled facility impact
- Determine type of emissions to measure
- Agree on location of monitoring stations (e.g. schools)
- Using climatological factors
- According to US EPA siting criteria
- Considering other known significant local emission sources



Ensuring Minimal Noise Impact



Section 1. Excessive Noise Levels.

The County Commission of Jefferson County, West Virginia does hereby declare noise levels in excess of 65 decibels (dB), which levels are either intermittent or continuous for a duration of at least thirty minutes, to be a hazard to public health and safety in Jefferson County, West Virginia, exclusive of any municipality therein, and where such noise levels rise to the level of a public nuisance, the same are subject to abatement by the procedures set forth herein.

Reference: Jefferson County Commission – Noise Ordinance Policy