Colorado Solar Regional Mitigation Strategy & San Luis Valley-Taos Plateau Landscape Assessment

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Soil Resources and Air Quality (including Climate Change)

Potential Impacts of Solar Energy Development:

Direct (on the SEZ):

- Grading, excavating and drilling would cause soil compaction, soil horizon mixing, erosion by soil and surface runoff, sedimentation, and possibly soil contamination.
- Dust is generated from disturbed soils, possibly leading to exceedance of air quality guidelines near the SEZ or at nearby specially designated areas; visibility issues
- Dust also a potential health hazard – fine particulates and/or microbes on dust
- Invasive plant species on disturbed soils within the SEZ
- Positive – generated solar power will reduce demand for energy from fossil fuels, decreasing CO_2 in the atmosphere (estimate that emissions avoided far exceed loss of carbon storage capacity in the soil – see SEZ-specific estimates below)

Indirect (outside the SEZ):

- Invasive plant species on disturbed soils outside of the SEZ (for example, for construction of new transmission)
- Dust-on-snow accumulation, leading to early spring runoff
- If large amounts of palliatives (for example, magnesium chloride) are used to control dust, could result in variety of adverse effects (contamination of surface and/or groundwater, toxicity to plants)

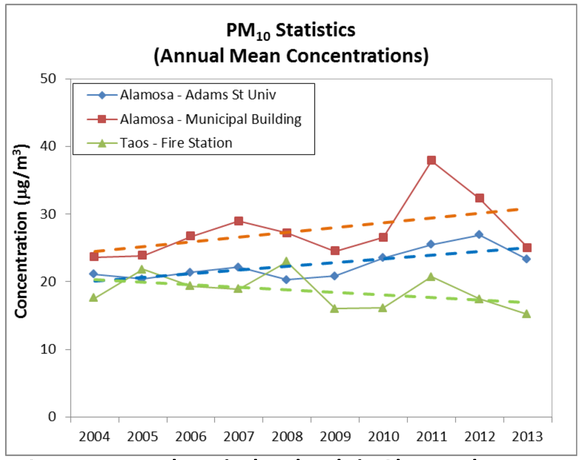
Cumulative (resulting from solar development in the SEZs and changes occurring outside the SEZs:

- from solar development of more than one SEZ
- from other development near the SEZs (for example, new solar on private lands, new roads or towns)
- from other changes, such as climate change, invasive species spread, or wildfires

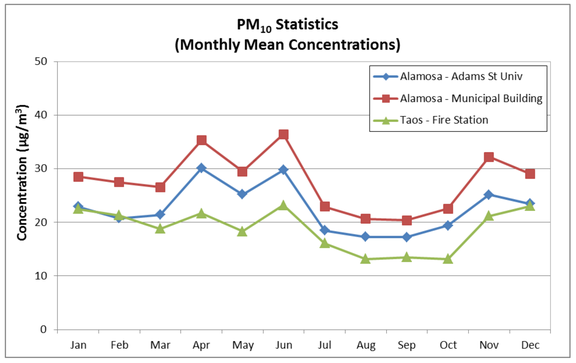
Alamosa 37 MW, 225 acre Concentrating PV Facility, Graded

Sun Edison 8 MW, 83 acre PV Facility, Vegetation Undisturbed

Background on Dust in Air



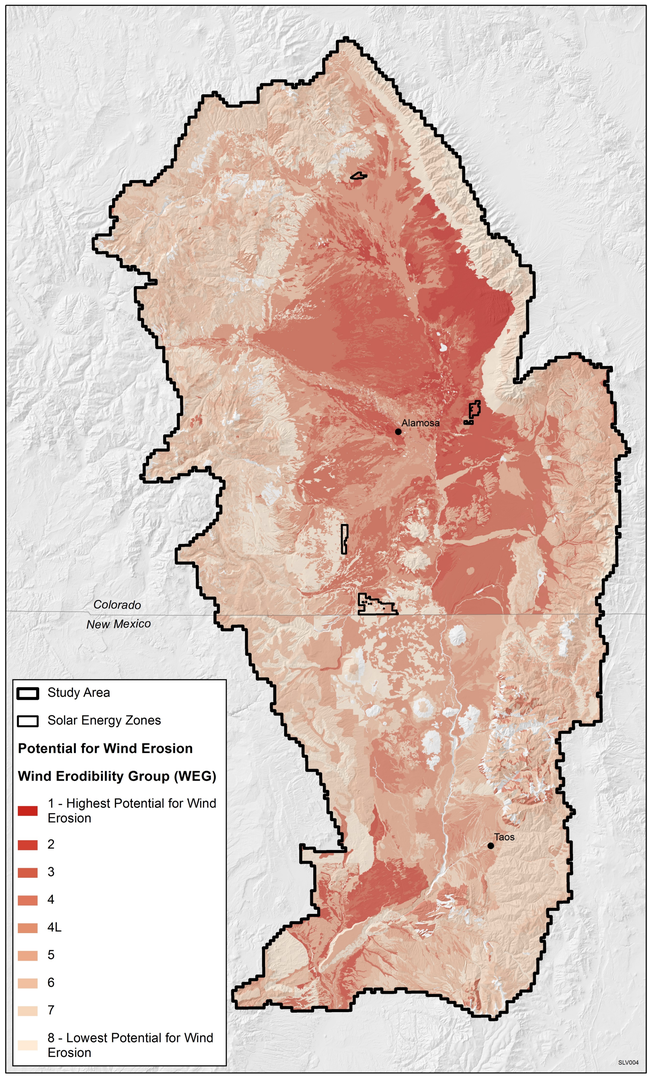
Average annual particulate levels in Alamosa have increased over the last 10 years



Generally, dust levels are highest in spring

Dust storm: San Luis Valley, Colorado
https://fieldfrei.wordpress.com/2010/05/

Where are Soils Susceptible to Wind Erosion?



Examples of Required Onsite Avoidance Measures:

- Develop Vegetation Management Plan to maintain maximum acreage of native vegetation to avoid new dust sources
- Siting project structures and facilities to avoid disturbance of areas with existing biological soil crusts.

Examples of Required Onsite Minimization Measures:

- Use dust suppression measures (such as water, paving, gravel, and/or regulation-compliant palliatives
- Consider methods to limit soil disturbance (for example, method of solar panel mounting, no grading of the site, placing gravel on roads) in project-level NEPA
- Restrict driving on unstabilized roads
- Cover vehicles transporting loose materials
- Minimize soil erosion (for example, by controlling culvert outlets, recontouring and revegetating project areas no longer in use, placing barriers around drainages and wetlands