



Permitting Issues for Anaerobic Digesters in the San Joaquin Valley

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San Joaquin Valley

- Hot, sunny summers
 - VOC, NO_x
 - Ozone Problem
- Cool, foggy winters
 - Particulate problem



Federal Clean Air Act

- Requires District to achieve clean air, or
 - Huge fees on local industry
 - Lose federal highway funds
 - Feds take over local air program
- Limited Authority – District only controls stationary sources of emissions – state and feds retain right to control biggest part of our problem – mobile sources
- 2007 ozone plan
 - Maps out attack on ozone
 - Every feasible VOC and NOx reduction
 - Achieves clean air in 2023 only with reliance on “black box” of unknown technology
- “Extreme” non-attainment with federal ozone standards



General Permitting Requirements

- Permits required for over 30,000 units in the San Joaquin Valley (if emissions > 2 lbs/day)
 - From refineries and power plants down to little facilities like gas stations and dry cleaners
 - Most stringent regulations in the nation
- Rule 2201, “New and Modified Source Review.” Requirements to get an “Authority to Construct” permit:
 - Best Available Control Technology (BACT)
 - Emissions offsetting
 - Notify public of intent to issue permit



Dairy Digesters

- Methane gas created by bacteria in dairy waste lagoons
- Covered lagoons trap methane so it can be used for energy production
- Great opportunity to reduce a potent green house gas
- Nice renewable energy resource
- Small reduction in VOC emissions from lagoons
- Potential large source of NOx emissions



Air Friendly Technologies

- Fuel Cells
 - Near-zero emissions, super efficient
 - Proven technology, but costly
 - Large incentives available for installation (but are incentives enough? – no dairy proposals, yet)
- Gas pipeline injection
 - Avoids NOx emissions associated with combustion
 - Limited availability (must be close to pipeline)
 - One installation in operation (others permitted)



Combustion Technologies

- Microturbines – low NO_x, but poor reliability reputation (probably undeserved)
- Internal Combustion Engines
 - As low as 35-50 ppm NO_x (best lean-burn engines, without external pollution controls)
 - Engine controls
 - Three-way catalysts on rich-burn engines
 - Selective Catalytic Reduction (SCR) on lean-burn
 - New lean-burn engines w/ 3-way catalysts



The Path Forward

- Air District looking for opportunities to encourage GHG reductions, without sacrificing the health of the residents of the San Joaquin Valley
 - Encourage no-NOx and low-NOx innovation:
 - Gas pipeline injection, fuel cells
 - Advanced engine controls
 - Multi-dairy gas manifolding to central plant
 - Allow flexible permit – use controls, but 9 ppm limit can be increased, if not achieved
 - Agencies working together to find ways to fund or partially fund promising low-NOx proposals



Air District Contacts

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