



U.S. Coal Industry Roundtable

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2014 U.S. Coal Mine Methane Conference

Pittsburgh, Pennsylvania

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About CONSOL Energy

- ❑ Founded in 1860, began operations in 1864



- ❑ \$3.3 billion revenue – 2013
- ❑ Member – Fortune 500; S&P 500
- ❑ Nearly 5,000 employees



About CONSOL Energy

- ❑ Best-in-class legacy coal position, 3 premiere mining complexes with access to seaborne markets via wholly-owned Baltimore Marine Terminal
 - 756 million tons coal reserves
- ❑ One of the largest independent natural gas exploration and production (E&P) companies, with operations centered in the major shale formations located in the Appalachian basin
 - 5.7 tcf natural gas reserves
- ❑ Marcellus Shale partnership with Noble Energy; Utica Shale partnership with Hess Corporation
- ❑ Private R&D facility working with U.S. DOE and others on advanced technologies for energy production and utilization



Mining Complex Locations



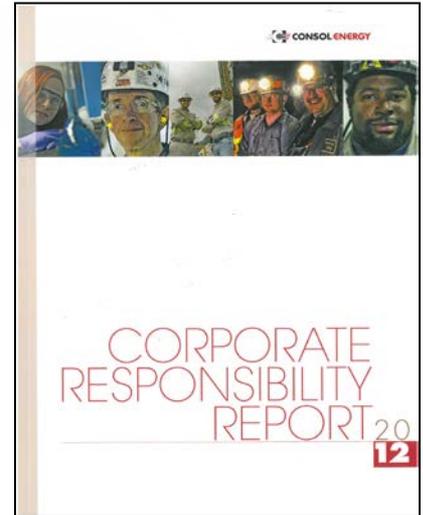
Bailey Complex

Buchanan

Miller Creek Complex

Location	Southwestern Pennsylvania	Southwestern Virginia	Southern West Virginia / Mingo County
Method	5 Longwalls and Continuous Mining Machines	1 Longwall System and Continuous Mining Machines	Stripping Shovels and Front-end Loaders
Reserves	625 MT	98 MT	33 MT
Seam	Pittsburgh 8	Pocahontas 3	Upper Dorothy (Coalburg), Kittanning, Freeport, Coalburg Rider, Stockton and 5 Block
Mine Life	25+ years	20+ years	20+ years
Production Capacity	28 MMT	5.2 MMT	4 MMT
Type of Coal	Primarily Thermal	Primarily Met	Primarily Thermal

CONSOL Energy Core Values



CONSOL's History of Greenhouse Gas Emission Reductions



- ❑ 70 kW microturbine at Bailey Mine gob vent in PA
 - PA Energy Harvest Grant
 - Ingersoll Rand
- ❑ 30,000 cfm RTO demonstration project at abandoned Windsor Mine, West Liberty, WV with simulated mine ventilation air
 - DOE/EPA funding
 - MEGTEC Systems



- ❑ 250 kW microturbine at Fallowfield CBM Gas Processing plant on waste gas
 - DEP PA Energy Development Authority (PEDA) Grant
 - Capstone/E-Finity Distribution Generation
- ❑ Full scale 160,000 cfm RTO system at former McElroy Mine
 - Verdeo Sindicatum
 - Durr Systems



Methane Abatement Opportunities



- ❑ Green Holdings Corporation is conducting feasibility studies to install up to four methane abatement projects on bleeder fans at the PA Mine Complex
- ❑ Technology of choice is a regenerative thermal oxidizer (RTO) that can operate between 0.3% - 1.2% CH₄
- ❑ Currently gathering methane concentration data; historical and continuous
- ❑ Previously proposed Enlow Fork project was canceled due to the short remaining active life on fan when the coalmine methane protocol was finally approved
- ❑ CONSOL is also exploring the opportunity to install an RTO on a bleeder fan at Buchanan Mine

Methane Abatement Projects – Enclosed Flares

- ❑ CONSOL is partnered with Environmental Commodities Corporation (ECC) to install an enclosed flare on a gob vent at the abandoned Windsor Mine
- ❑ ECC intends to finance, build and operate the equipment and obtain the offset carbon credits
- ❑ Challenges of obtaining historical data from life of abandoned mine operation
- ❑ Lower capital investment than regenerative thermal oxidizer
- ❑ Fewer carbon offsets generated
 - 164,000 credits over 10 years
- ❑ Schedule is to install the system in 1st quarter 2015 at West Liberty, WV
- ❑ Provides opportunity to evaluate design before installing a similar system on an active coal mine



Hurdles & Values of Methane Abatement Projects

❑ Challenges

- Mining plans
- Moving the abatement equipment
- Foundations and soil quality
- Available flat area for equipment
- Working in several MSHA districts
- Permitting constraints
- Increasing capital costs of equipment
- Utilization of heat
- Uncertainty of offset market

❑ Benefits of abatement projects

- Revenue stream
- No CONSOL capital required
- Reduce CONSOL's greenhouse gas footprint
 - Former McElroy Mine abatement system was project to reduce methane emissions by 920 MM cubic feet per year
 - 322,000 tonnes of CO₂e per year – during 2013 reporting period reached 48% of target
- Prepare for potential future regulations

