Environmental Benefits of the Coal Refuse to Energy Industry

By: Jaret Gibbons, ARIPPA Executive Director
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www.arippa.org
JARET GIBBONS - BIOGRAPHY

- Hometown: Ellwood City, Pennsylvania (Lawrence County)
- Graduate of Duquesne University and University of Pittsburgh School of Law
- Member of the Pennsylvania House of Representatives representing the 10th Legislative District in Beaver, Butler, and Lawrence Counties (2007-2016)
  - Member – House Environmental Resources and Energy Committee
  - Sponsor of House Bill 1370 of 2015 – Coal Refuse Energy and Reclamation Tax Credit (Act 86 of 2016)
- Executive Director of the Appalachian Region Independent Power Producers Association (ARIIPPA) since March 2018
WHAT IS COAL REFUSE

- Remnants of centuries-old coal mining, conducted before the advent of modern environmental protection laws like SMCRA
- Consists of low quality coal mixed with rock, shale, slate, coal and other material
- Also referred to as “culm” or “gob” piles, discarded as “waste” during original mining process and randomly disposed in piles near the mine sites
CURRENT INVENTORY

DEP’s inventory of abandoned refuse piles in PA:

- Inventory is not static but growing
- 840 piles scattered throughout the coal fields
- 52 piles are currently burning
- Land mass covers an aggregate area of 10,000 acres
- Contain at least 300 million tons of coal refuse
- Studies conducted in the 1960s and 70s by the PA Dept. of Mines and Mineral Industries and Penn State indicate in excess of 2 billion tons of coal refuse in PA, split evenly between the anthracite and bituminous regions of the state.
More than eyesores – coal refuse piles are prone to subsidence, spontaneous combustion, acid seepage and leachate production, and low soil fertility.

Of the 840 piles in PA, 52 are currently burning, releasing uncontrollable toxic air emissions into the atmosphere.
COAL REFUSE TO ENERGY INDUSTRY
<table>
<thead>
<tr>
<th>State</th>
<th>Plant</th>
<th>Net Operating Capacity (MW)</th>
<th>Fuel Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montana</td>
<td>Rosebud Colstrip Energy</td>
<td>39</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Cambria Cogen</td>
<td>87</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Colver Power Project</td>
<td>111</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Ebensburg Power Company</td>
<td>50</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Gilberton Power Company</td>
<td>80</td>
<td>Anthracite</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Kimberly Clark Chester Operations</td>
<td>67</td>
<td>Anthracite</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Mt. Carmel Cogen</td>
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<td>Anthracite</td>
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<td>Pennsylvania</td>
<td>Northampton Generating Company</td>
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<td>Pennsylvania</td>
<td>Northeastern Power Company</td>
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<tr>
<td>Pennsylvania</td>
<td>Panther Creek Power Operating</td>
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<td>Anthracite</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Rausch Creek Generation</td>
<td>33</td>
<td>Anthracite</td>
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<tr>
<td>Pennsylvania</td>
<td>Schuylkill Energy Resources</td>
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<td>Anthracite</td>
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<tr>
<td>Pennsylvania</td>
<td>Scrubgrass Generating</td>
<td>83</td>
<td>Bituminous</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Seward Generation</td>
<td>521</td>
<td>Bituminous</td>
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<tr>
<td>Pennsylvania</td>
<td>Wheelabrator Frackville Energy Company</td>
<td>42</td>
<td>Anthracite</td>
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<tr>
<td>Utah</td>
<td>Sunnyside Cogeneration Associates</td>
<td>60</td>
<td>Bituminous</td>
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<td>West Virginia</td>
<td>American Bituminous Power Partners</td>
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<td>Bituminous</td>
</tr>
<tr>
<td>West Virginia</td>
<td>Morgantown Energy Associates</td>
<td>50</td>
<td>Bituminous</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL CAPACITY</strong></td>
<td><strong>1,679 MW</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**

ARIPPA Survey (2018)
SCA #2 CCR Certified Dust Control Plan, Sunnyside Cogeneration Facility (2015)
• ARIPPA represents PA’s coal refuse to energy industry, an industry which has helped the Commonwealth turn its environmental challenges into economic opportunities.

• Comprised of electric generation facilities that utilize circulating fluidized bed (CFB) boiler technology to convert coal refuse into energy.

• The industry in Pennsylvania consists of 14 electric generating plants
  ➢ 5 that use bituminous coal refuse (western PA)
  ➢ 9 that use anthracite coal refuse (northeast PA)
<table>
<thead>
<tr>
<th>County</th>
<th>Plant</th>
<th>Operating Capacity (MW)</th>
<th>Year First Unit in Service</th>
<th>Tons of Coal Refuse Burned in 2016</th>
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</thead>
<tbody>
<tr>
<td>Cambria</td>
<td>Cambria Cogeneration</td>
<td>87.5</td>
<td>1991</td>
<td>585,921</td>
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<td>Cambria</td>
<td>Colver Power Project</td>
<td>110</td>
<td>1995</td>
<td>591,795</td>
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<td>Cambria</td>
<td>Ebensburg Power Company</td>
<td>50</td>
<td>1991</td>
<td>276,362</td>
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<td>Carbon</td>
<td>Panther Creek</td>
<td>83</td>
<td>1992</td>
<td>143,620</td>
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<td>Delaware</td>
<td>Kimberly Clark Chester Operations</td>
<td>67</td>
<td>1986</td>
<td>171,285</td>
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<td>Indiana</td>
<td>Seward Waste Coal</td>
<td>521</td>
<td>2004</td>
<td>2,428,714</td>
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<td>Northampton</td>
<td>Northampton</td>
<td>112</td>
<td>1995</td>
<td>217,392</td>
</tr>
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<td>Northumberland</td>
<td>Mount Carmel Cogeneration</td>
<td>43</td>
<td>1990</td>
<td>602,452</td>
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<tr>
<td>Schuylkill</td>
<td>John B. Rich Memorial Power Station (Gilberton)</td>
<td>80</td>
<td>1988</td>
<td>663,535</td>
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<td>Schuylkill</td>
<td>Northeastern Power Cogeneration Facility</td>
<td>52</td>
<td>1989</td>
<td>232,413</td>
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<td>Schuylkill</td>
<td>St. Nicholas Cogeneration (SER)</td>
<td>86</td>
<td>1990</td>
<td>1,478,011</td>
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<td>Schuylkill</td>
<td>Westwood Generating Station</td>
<td>30</td>
<td>1987</td>
<td>105,354</td>
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<td>Schuylkill</td>
<td>Wheelabrator Frackville Energy Company</td>
<td>42.5</td>
<td>1988</td>
<td>505,328</td>
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<td>Venango</td>
<td>Scrubgrass</td>
<td>86.1</td>
<td>1993</td>
<td>440,519</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>1450.1</strong></td>
<td></td>
<td><strong>8,442,701</strong></td>
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</tbody>
</table>

*Source: ARIPPA, Electric Power Outlook for Pennsylvania 2015-2020 prepared by PA PUC (2016)*
Figure 1.5 – Annual Industry Energy Generation and Coal Refuse Consumption Trends, 2010 – 2016(p)

Source: ESI analysis of ARIPPA member reported data (2016)
Multimedia Environmental Benefits

- The role that coal refuse EGUs play in environmental remediation distinguishes these plants from traditional EGUs:
  - removing abandoned coal refuse piles from the landscape
  - reclaiming the underlying land
  - restoring impacted water resources
  - protecting human health and safety

- In 2011, the EPA reported, “units that burn coal refuse provide multimedia environmental benefits by combining the production of energy with the removal of coal refuse piles and by reclaiming land for productive use.”

- Tier 2 alternative fuel source under the Pennsylvania Alternative Energy Portfolio Standard (AEPS) Program.
ENVIRONMENTAL SCORECARD

- 200 million tons removed
- 1,200 miles of stream restored
- Over 7,000 acres reclaimed
- Remove on average about 10 million tons and reclaim 200 acres per year
## Quantification of Environmental and Public Use Benefits Going Forward ($M)

<table>
<thead>
<tr>
<th>Category</th>
<th>Benefit Type</th>
<th>Year 1</th>
<th>Year 10</th>
<th>Year 20</th>
<th>Total</th>
<th>20 Year Avg</th>
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<tbody>
<tr>
<td>Water</td>
<td>Cumulative</td>
<td>$1.5</td>
<td>$14.6</td>
<td>$29.2</td>
<td>$306.2</td>
<td>$15.3</td>
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<tr>
<td>Fire/Air</td>
<td>Cumulative</td>
<td>$0.1</td>
<td>$0.5</td>
<td>$1.0</td>
<td>$10.0</td>
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<td>Public Safety</td>
<td>Cumulative</td>
<td>$0.6</td>
<td>$6.4</td>
<td>$12.8</td>
<td>$133.9</td>
<td>$6.7</td>
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<td>Land Reclamation</td>
<td>One-Time</td>
<td>$2.0</td>
<td>$2.0</td>
<td>$2.0</td>
<td>$40.4</td>
<td>$2.0</td>
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<tr>
<td>Nearby Property Value</td>
<td>One-Time</td>
<td>$1.6</td>
<td>$1.6</td>
<td>$1.6</td>
<td>$32.6</td>
<td>$1.6</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$5.8</td>
<td>$25.1</td>
<td>$46.5</td>
<td>$523.1</td>
<td>$26.2</td>
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</tbody>
</table>

Source: ESI Calculations

Environmental Clean-up Benefit: $26.2 million/year
2016 Study: Economic and Environmental Benefits of Pennsylvania’s Coal Refuse Industry

For more information on the environmental and economic impact of the Coal Refuse to Energy Industry in Pennsylvania, read the full report conducted by Econsult Solutions at www.arippa.org.
PA Coal Refuse Remediation Projects

BEFORE & AFTER
Cambria Cogen – Ebensburg, PA
Ernest Site – Indiana County

177 ACRES, 11 MILLION TONS OF COAL REFUSE

ADJACENT TO MCKEE RUN

OVER 10.5 MILLION TONS OF COAL REFUSE REMOVED SINCE MID-1990’S

A SUBSTANTIAL REDUCTION IN ACID, IRON, MANGANESE AND ALUMINUM TO MCKEE RUN IS OCCURRING.
Cambria Cogen – Ebensburg, PA
Lucerne Site – Indiana County

197 ACRES, 9 MILLION TONS OF COAL REFUSE
ADJACENT TO YELLOW CREEK, WHICH IS AN AMD IMPAIRED STREAM

OVER 5 MILLION TONS OF COAL REFUSE REMOVED SINCE 2012
SUBSTANTIAL REDUCTIONS IN ACID, IRON, ALUMINUM, AND MANGANESE EXPECTED TO YELLOW CREEK.
Colver Power Project – Colver, PA

3.5 MILLION TONS COAL REFUSE PILE FROM COAL MINE OPERATED FROM 1911-1978

COAL REFUSE PILE VIRTUALLY ELIMINATED OVER THE PAST 23 YEARS, ELK CREEK HAS ACHIEVED ALMOST PRE-MINING WATER QUALITY
Ebensburg Power – Ebensburg, PA
Revloc Site – Cambria County

56 ACRES

3.2 MILLION TONS OF COAL REFUSE

RECLAMATION PROJECT COMPLETED IN 2011

6 MILES OF BLACKLICK CREEK RETURNED TO QUALITY TO SUPPORT AQUATIC LIFE, INCLUDING TROUT
Northampton Generating – Northampton, PA
Loomis Bank Site – Luzerne County

OVER A MILLION TONS OF CULM MATERIAL DURING 11 YEAR PROCESS TO RECLAIM SITE

RECEIVED THE “EXCELLENCE IN SURFACE COAL MINING AND RECLAMATION” NATIONAL AWARD
Northampton Generating – Northampton, PA
Loomis Bank Mine Fire

BEFORE

AFTER
Panther Creek Energy – Nesquehoning, PA
Bank A Site

COAL REFUSE PILE WAS LEFT OVER FROM A 1940’S PP&L COAL PLANT

TODAY BANK A REMAINS ABLE TO SUPPORT WILDLIFE, NO LONGER POLLUTES THE STREAMS, AND IS A Viable LOCATION FOR LOCAL BUSINESSES
Seward Generation – New Florence, PA
Beaverdale Site – Cambria County

15.8 ACRES, SITUATED DIRECTLY ON AN UNNAMED TRIBUTARY TO THE CONEMAUGH RIVER

250,000 TONS OF COAL REFUSE WAS REMOVED, RECEIVED A RECLAMATION AWARD FROM THE PENNSYLVANIA COAL ASSOCIATION IN 2016
Seward Generation – New Florence, PA
Seanor Site – Westmoreland

SITUATED DIRECTLY ON AN UNNAMED TRIBUTARY TO GETTY RUN AND LOYALHANNA CREEK

PROJECT RECEIVED THE GOVERNOR’S EXCELLENCE AWARD IN 2014
Schuylkill Energy Resources – Shenandoah, PA

“STRIPPING PITS” AT THE SER PLANT

RECLAIMED WITH ASH FROM THE SER PLANT
Gilberton Power Company – Frackville, PA

BEFORE

AFTER

PLANT HAS BEEN OPERATING FOR 27 YEARS
Scrubgrass Generating – Kennerdell, PA Armstrong County Site

BEFORE

AFTER
Scrubgrass Generating – Kennerdell, PA Clearfield County Site

BEFORE

AFTER
CONCLUSION

• The coal refuse to energy industry is historically the most effective and prolific actor in the remediation of coal refuse piles across the Commonwealth.

• Public funding of AML remediation continues to dwindle.

• ARIPPA and our members want to partner with you to promote the values of reclamation and find ways to secure multiple sources of funding that will sustain and increase the current level of AML reclamation activities.

• No one but the coal refuse industry can remove the abandoned coal waste piles and address these attendant environmental and safety hazards in a holistic, efficient, and permanent manner.
ARIPPA AML/AMD RECLAMATION GRANT AWARDS

Applications Now Being Accepted

ARIPPA will once again contribute $5,000 to deserving watershed and conservancy organizations facilitating abandoned mine land (AML) and/or acid mine drainage (AMD) remediation projects in Pennsylvania this year. Since 2010, the ARIPPA AMD/AML Reclamation Award Program provided $65,000 in funding.

Grants up to a maximum of $2,500 will be awarded to at least one eligible organization in the anthracite region and one in the bituminous region.

Awards are granted under the guidance and administration of EPCAMR and WPCAMR.

More information and copies of the application are available online at: www.amrclearinghouse.org, www.wpcamr.org, www.epcamr.org

All proposals must be postmarked by June 29, 2018.
Questions & Contact Info

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