

JOINT LEGISLATIVE CONSERVATION COMMITTEE

Coal Refuse Reclamation to Energy Industry: A Public Benefit in Jeopardy

By: Jaret Gibbons, ARIPPA Executive Director

Monday, February 3, 2020

www.arippa.org



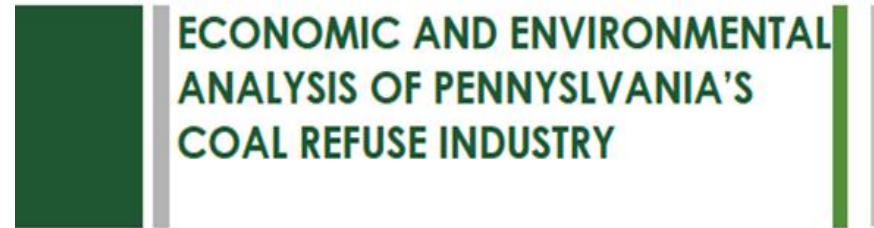
WHAT IS ARIPPA?



- Appalachian Region Independent Power Producers Association
- ARIPPA is a non-profit trade association representing the coal refuse reclamation to energy industry in Pennsylvania and West Virginia.
- Comprised of environmental remediation facilities that utilize circulating fluidized bed (CFB) boiler technology to convert coal refuse into electricity.
- An industry which has helped the states turn environmental challenges into economic opportunities.

2016 Pennsylvania Economic and Environmental Study

“Economic and Environmental Analysis of Pennsylvania's Coal Refuse Industry”



FINAL REPORT
September 8, 2016

FINAL REPORT SUBMITTED TO:
ARIPPA
2015 Chestnut Street
Camp Hill, PA 17011

FINAL REPORT SUBMITTED BY:
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2019 Pennsylvania Economic and Environmental Study

“The Coal Refuse Reclamation to Energy Industry: A Public Benefit in Jeopardy”

The Coal Refuse Reclamation to Energy Industry

A Public Benefit in Jeopardy

Date: June 2019
Submitted to: ARIPPA



ESI ECONSULT
SOLUTIONS INC.

economics | policy | strategy

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1. Assessing Pennsylvania's Coal Refuse Problem

CHAPTER SUMMARY:

- Pennsylvania's coal mining legacy has left the Commonwealth with significant environmental liabilities, including more than 220 million tons of coal refuse piles identified by PA DEP.
- For three decades, the coal refuse reclamation to energy industry has helped the state address these liabilities by removing piles, reusing the coal refuse to generate energy, and restoring mining affected lands.
- Industry activities are undertaken through a closely regulated and proven process, and give the PA DEP a tool to help address sites of significance to communities.
- These public benefits are in jeopardy due to market and regulatory challenges.

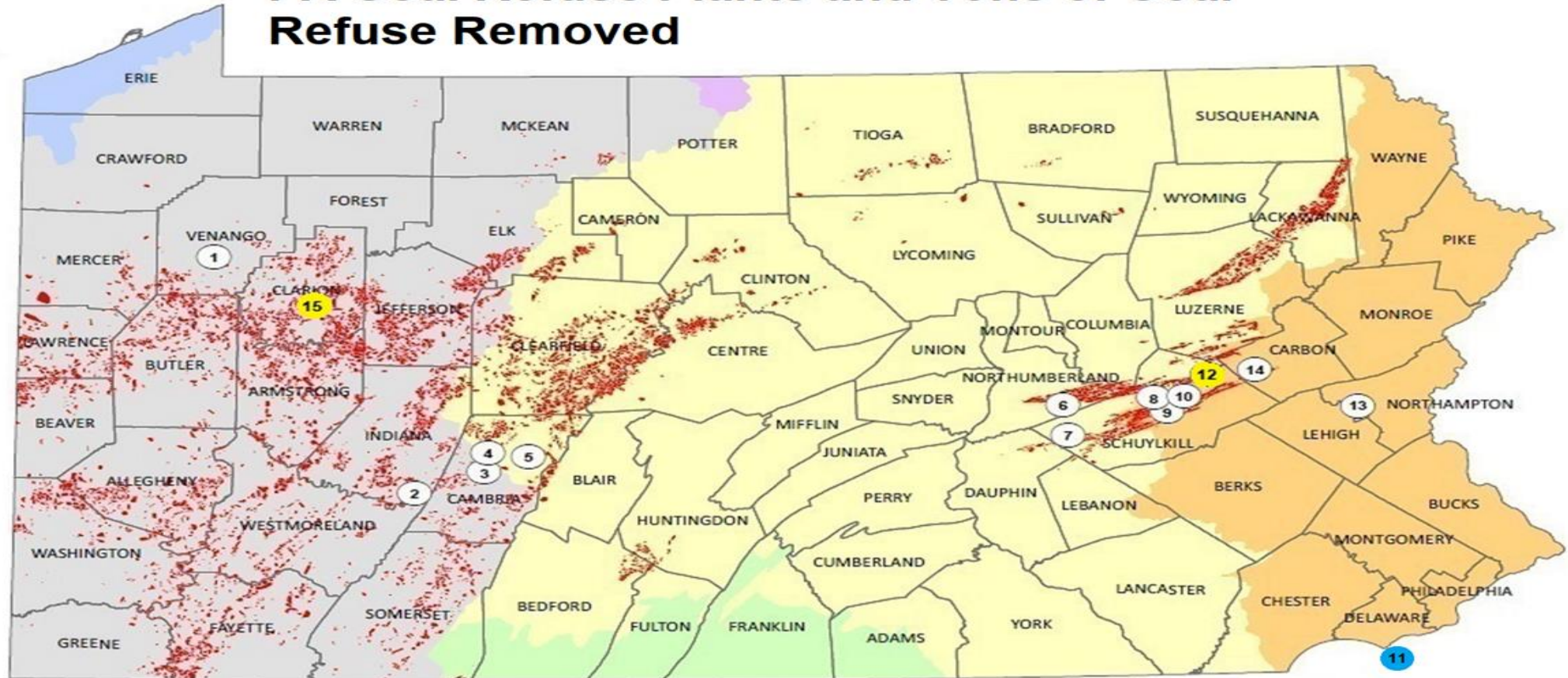
CURRENT INVENTORY



PADEP's inventory of coal refuse piles in PA (June 2019):

- Inventory is not static but growing
- 772 piles scattered throughout the coal fields
- 45 piles are currently burning
- Covers an aggregate area of 8,300 acres
- Contain at least 220 million tons of coal refuse

PA Coal Refuse Plants and Tons of Coal Refuse Removed








1. Scrubgrass Generating - 83 MW; 517,092 tons
2. Seward Generation - 521 MW; 2,103,272 tons
3. Ebensburg Power Company - 50 MW; 423,635 tons
4. Colver Power Project - 111 MW; 657,410 tons
5. Cambria Cogen Company - 87 MW; 536,977 tons
6. Mt. Carmel Cogen - 43 MW; 577,962 tons
7. Rausch Creek Generation - 33 MW; 369,593 tons
8. Schuylkill Energy Resources - 80 MW; 1,529,810 tons

9. Gilberton Power Company - 80 MW; 723,885 tons
10. Wheelabrator Frackville Energy Company - 42 MW; 521,062 tons
11. Kimberly Clark Chester Plant - 67 MW; N/A
12. Northeastern Power Company - 52 MW; 256,878 tons [2018]
13. Northampton Generating Company - 112 MW; 193,183 tons
14. Panther Creek Energy - 80 MW; 159,995 tons
15. Piney Creek LP - 32 MW; N/A [2013]

*MW = Net capacity; Tons of coal refuse removed in 2018

Watersheds

- | | |
|---|---|
|  Ohio |  Genesee |
|  Delaware |  Potomac |
|  Erie |  Susquehanna |
|  Abandoned Mine Land Problem Areas |  Closed or Announced Closure |
| |  Converting to Natural Gas |

POLLUTION CAUSED BY COAL REFUSE

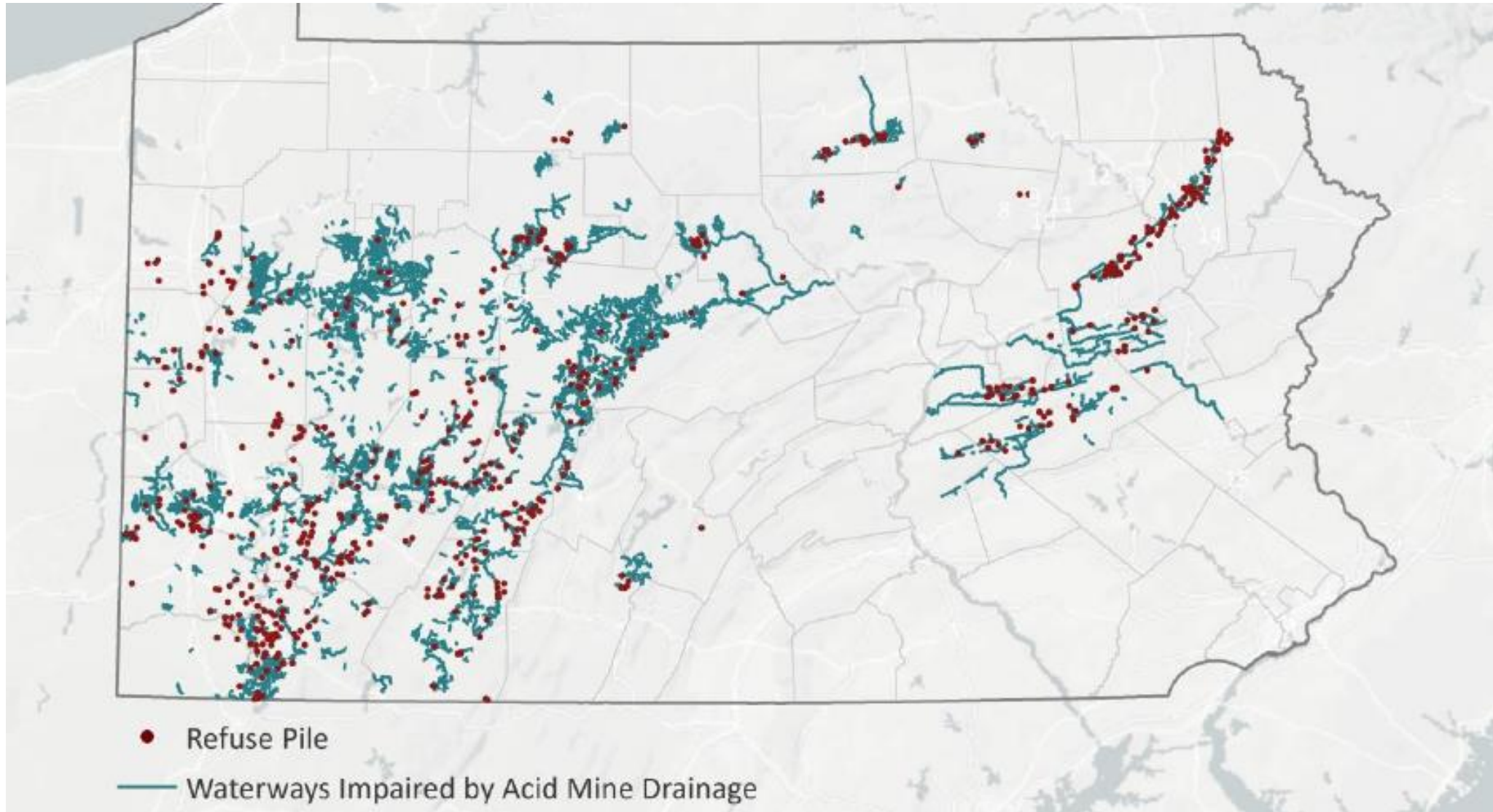


Stream adjacent to the Lucerne Mine, Indiana County, PA



Solomon's Creek, outside Wilkes-Barre, PA

AMD IMPAIRED WATERWAYS



COAL REFUSE PILE FIRES



Coal refuse pile fire at the Loomis Culm Bank in Nanticoke, PA



2014 fire at Simpson Park, Lackawanna County required 1.6 million gallons of water daily to contain and was extinguished at a cost to the state of nearly \$2.2 million

INDUSTRY ENVIRONMENTAL SCORECARD



- Removed at least 225 million tons of coal refuse
- Restored more than 1,200 miles of stream
- Reclaimed over 7,200 acres of land

Reclamation of Refuse Piles using Fluidized Bed Combustion Ash in the Blacklick Creek Watershed, Pennsylvania



Gregory Aaron, Rock Martin, and Gregory Greenfield

South Branch Blacklick Creek



"We've got fish in the water now. People weren't fishing here before. This is a good news story."

*- Cambria County
Commissioner Tom Cherinsky*

ENVIRONMENTAL AND PUBLIC PARTNERS



Swoyersville Culm Bank Removal and Restoration Project



Project Partners

- Keystone Reclamation Fuel Management LLC (Panther Creek Power/Northampton Generation)
- Eastern PA Coalition for Abandoned Mine Reclamation (EPCAMR)
- Swoyersville Borough
- Pagnotti Enterprises Inc.
- Foundation for PA Watersheds
- Office of Surface Mining Reclamation and Enforcement
- PA Department of Environmental Protection

2. An Existential Crisis for the Coal Refuse Reclamation to Energy Industry

CHAPTER SUMMARY:

- Economic conditions for the industry have severely worsened due to market disruptions stemming in large part from renewable subsidies and to the abundant availability of natural gas generation from the Marcellus Shale formation.
- For large portions of the year, wholesale energy prices do not allow the industry to recover its cost of production for each unit of energy. These pricing realities have already led to seasonal idlings and plant closures, reducing the industry's level of production and therefore its environmental and economic benefits to the Commonwealth.
- These economics are not sustainable over the long run, and are exacerbated by a significant drop in capacity revenue commencing as of June 2019. Without intervention, more plants will be forced to close, resulting in a permanent loss of their public benefits.

PA COAL REFUSE PLANTS BY COUNTY

County	Plant	Net Operating Capacity (MW)	Year First Unit in Service	Tons of Coal Refuse Burned in 2018
Cambria	Cambria Cogeneration (Closed 2019)	87	1991	536,977
Cambria	Colver Power Project	111	1995	657,410
Cambria	Ebensburg Power Company	50	1991	423,635
Carbon	Panther Creek Power	80	1992	159,995
Delaware	Kimberly Clark Chester Operations (Converted 2019)	67	1986	175,000 (est)
Indiana	Seward Generation	521	2004	2,103,272
Northampton	Northampton Generating Company	112	1995	193,183
Northumberland	Mount Carmel Cogeneration	43	1990	577,962
Schuylkill	John B. Rich Memorial Power Station (Gilberton)	80	1988	723,885
Schuylkill	Northeastern Power Cogeneration Facility (Closed 2018)	52	1989	256,878
Schuylkill	St. Nicholas Cogeneration (SER)	80	1990	1,529,810
Schuylkill	Westwood Generating Station	33	1987	369,593
Schuylkill	Wheelabrator Frackville Energy Company (Closing 2020)	42	1988	521,062
Venango	Scrubgrass Generating	83	1993	517,092
	TOTALS	1,193*		8,745,754

Source: ARIPPA, 2018 PA Coal Refuse Tax Credit

*Excluding closed and closing facilities

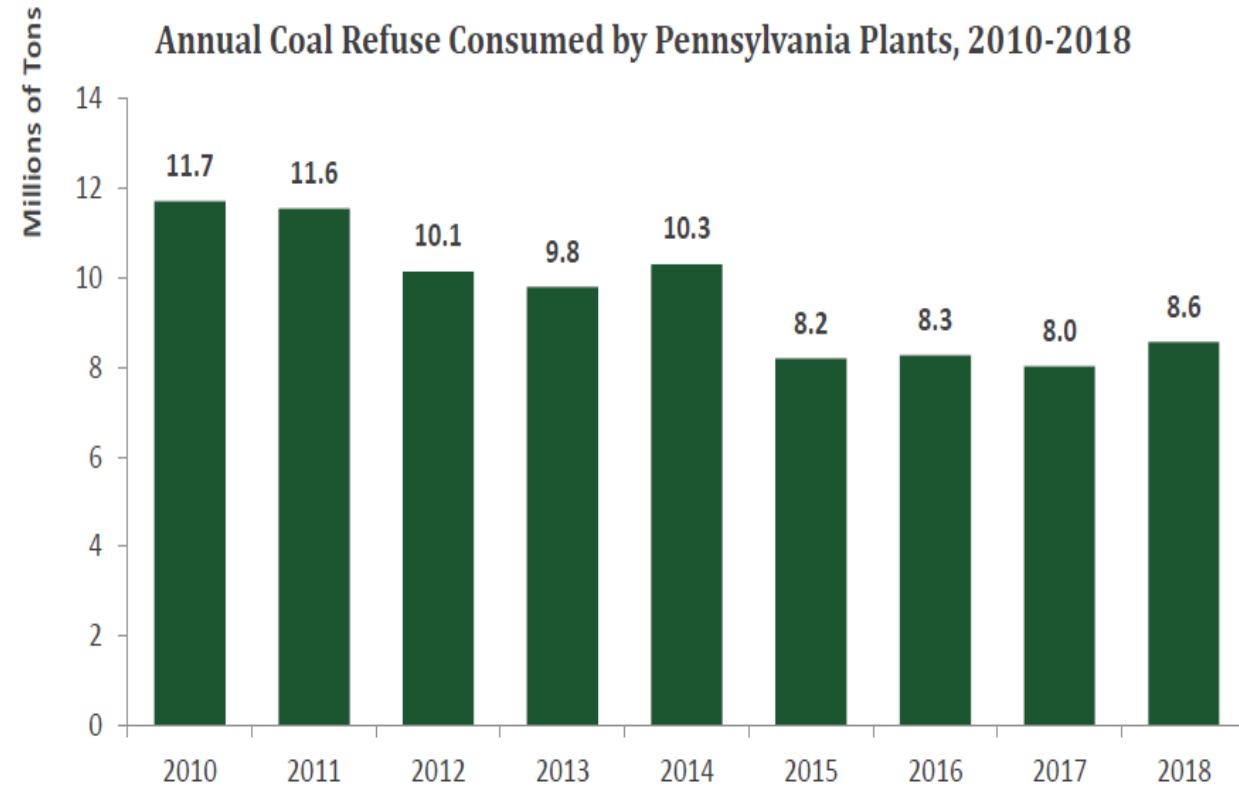
DEMOLITION OF THE PINEY CREEK POWER PLANT

CLARION COUNTY- JANUARY 2019

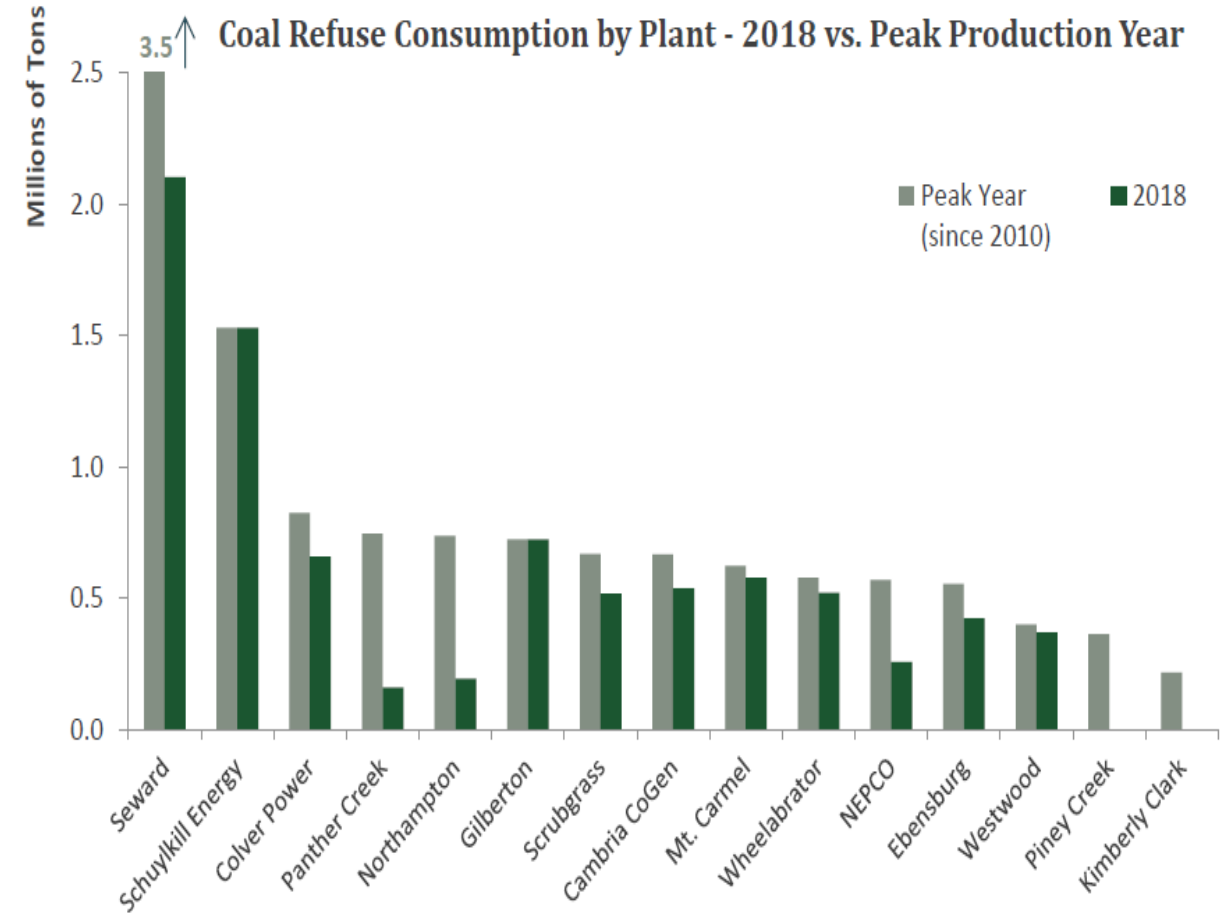


COAL REFUSE CONSUMPTION DECLINING

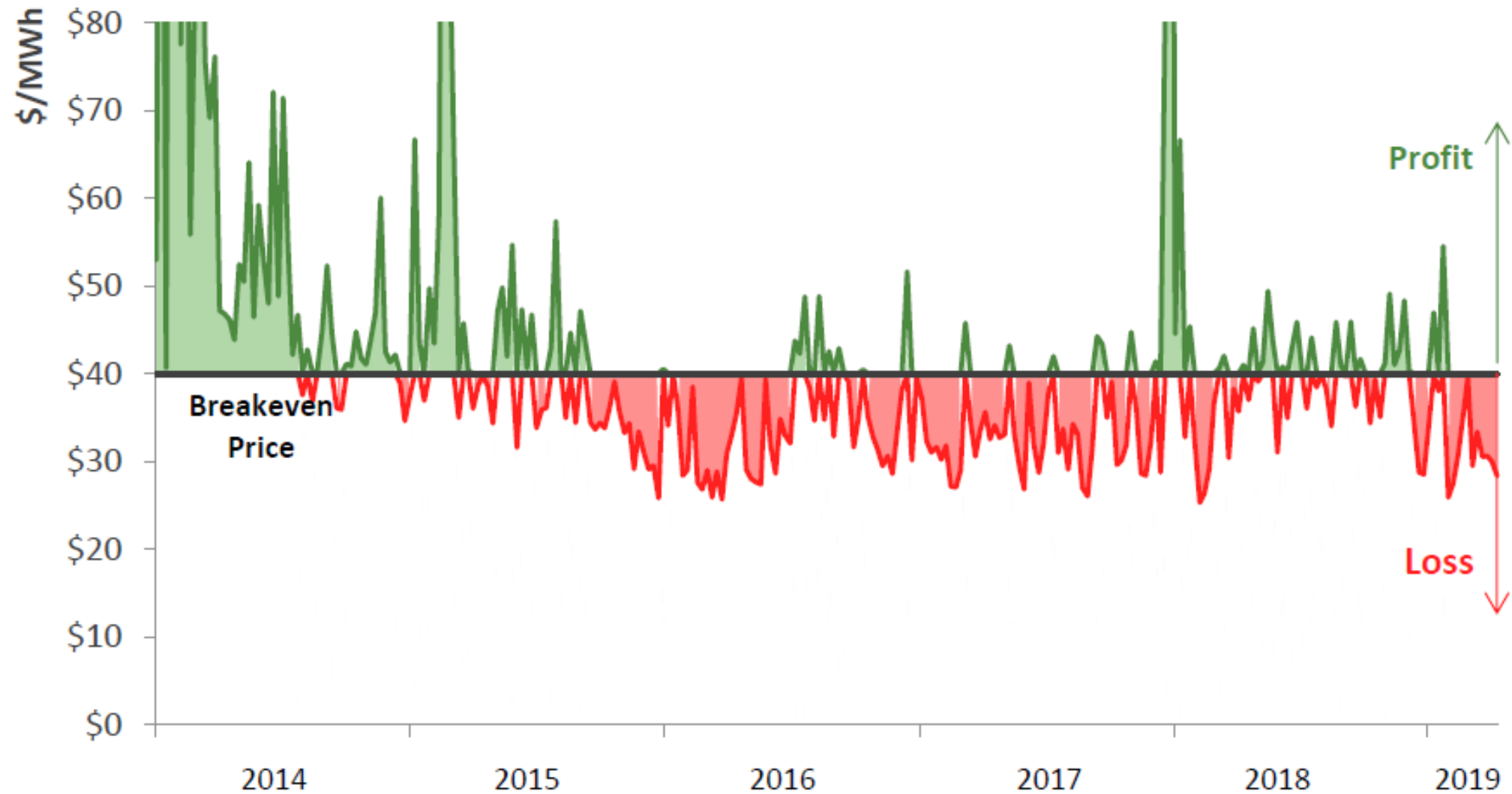
Annual Coal Refuse Consumed by Pennsylvania Plants, 2010-2018



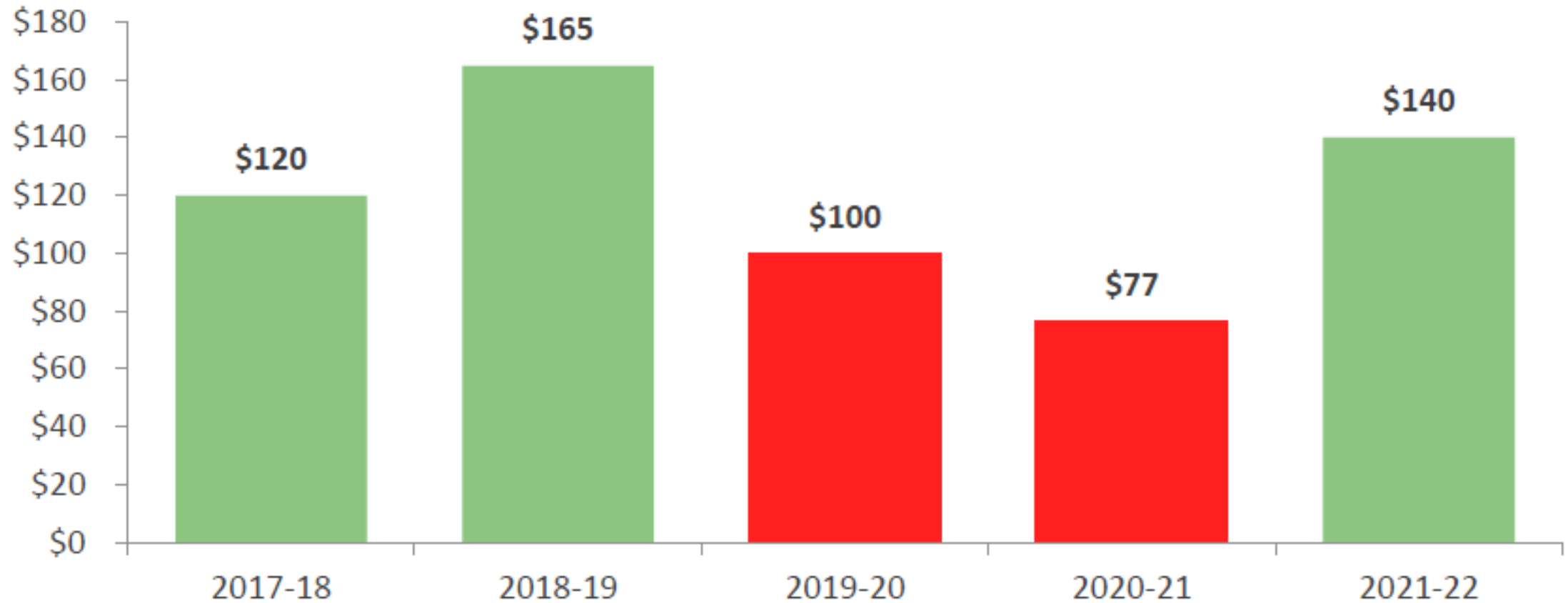
Coal Refuse Consumption by Plant - 2018 vs. Peak Production Year



Weekly PJM Wholesale Energy Prices, 2014 – April 2019



PJM Capacity Market Base Residual Auction Price (\$Mw-Day)



REGULATORY CONCERNS: POTENTIAL IMPACT OF RGGI



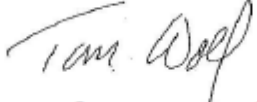
PAUL HORN / InsideClimate News

Executive Order

Commonwealth of Pennsylvania Governor's Office

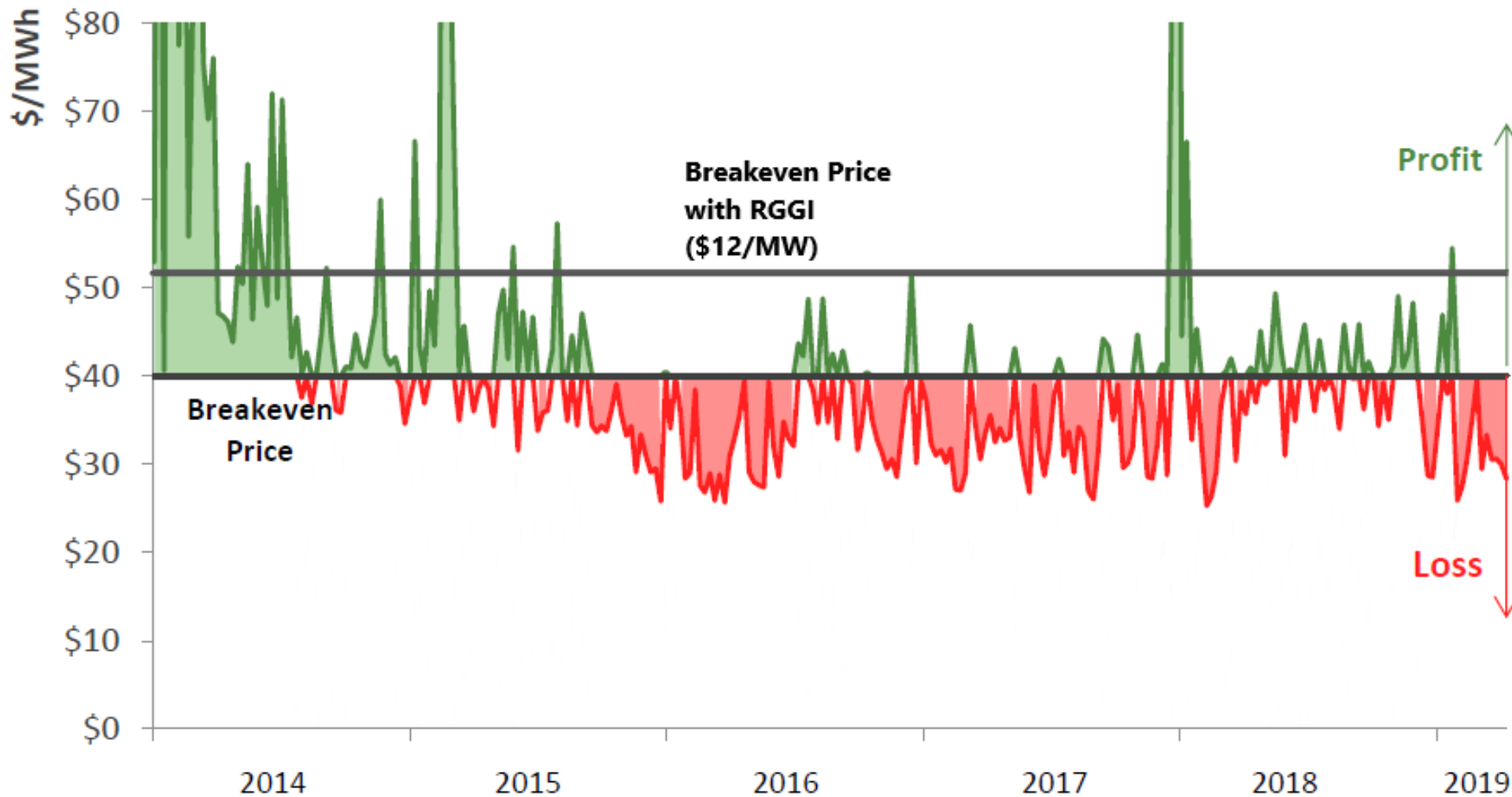
Subject:
Commonwealth Leadership in
Addressing Climate Change through
Electric Sector Emissions Reductions

Number:
2019-07


By Direction of: Tom Wolf, Governor

Date: October 3, 2019

Weekly PJM Wholesale Energy Prices, 2014 – April 2019




RGGI would potentially increase the breakeven price for coal refuse facilities as much as \$12 per MW

3. Environmental and Public Benefits under Threat

CHAPTER SUMMARY:

- Industry activity generates positive externalities, meaning that plants can deliver a net positive societal value even if their activity is not profitable in a private market context.
- The removal of coal refuse piles and the reclamation of mining-affected lands has demonstrated benefits including water quality, public health and safety, and land value. The environmental and public benefits produced by the industry are estimated at an annual value of \$37 million over a twenty-year horizon.
- Alternately, industry activity can be valued as an avoided cost to the Commonwealth. The avoided costs to the state of undertaking remediation itself are estimated at \$93 to \$267 million per year.

QUANTIFICATION OF ENVIRONMENTAL AND PUBLIC USE BENEFITS GOING FORWARD (\$M)

\$37 Million in Annual Benefits			Year 1	Year 10	Year 20	Total	20 Year Avg
	Water Quality	Cumulative	\$2.2	\$21.8	\$43.6	\$457.9	\$22.9
	Public Health and Safety	Cumulative	\$0.7	\$7.4	\$14.9	\$156.0	\$8.0
	Land Value	One-Time	\$6.2	\$6.2	\$6.2	\$124.9	\$6.2
Total (\$M)			\$9.1	\$35.4	\$64.7	\$738.7	\$36.9

Source: ESI Calculations

Environmental Clean-up Benefit: \$36.9 million/year

AVOIDED COST BENEFITS TO STATE & FEDERAL GOVERNMENT

	Rosebud	Average Bidders	Modeled Annual Industry Activity	Avoided Cost Range
Removal (per ton)	\$5.40	\$7.40	8 million tons	\$43 - \$59 M
Disposal(per ton)	\$5.60	\$25.30	8 million tons	\$45 - \$202 M
Rehabilitation (per acre)	\$20,000	\$23,000	240 acres	\$5 - \$6 M

Annual avoided costs to the Commonwealth: \$93 - \$267 M

4. Economic Benefits under Threat

CHAPTER SUMMARY:

- Plant operations are a driver of economic opportunity and employment in rural communities throughout the state.
- Direct expenditures by the industry are estimated at \$363 million annually, and industry employees earn an average salary of greater than \$75,000.
- Including spillover effects, the annual economic impact of the industry is \$615 million within Pennsylvania, supporting nearly 3,000 jobs and generating \$18 million in state taxes and fees.
- This activity is concentrated in coal country, creating family-sustaining jobs and purchasing power in areas that have lost population and struggled to create economic opportunities.

\$615 Million in Annual Economic Impact



\$363M
Direct
Expenditures



2,960
FTE Jobs



\$252M
Indirect/ Induced
Impact



\$194M
Earnings
Supported



\$615M
Total Economic
Impact



\$18M
State
Taxes/Fees

Annual direct and spillover impacts within Pennsylvania

5. Saving the Industry: Options to Sustain the Public Benefits under Threat

CHAPTER SUMMARY:

- Industry activity is not viable under current market conditions, but nonetheless remains a valuable public resource as a means of environmental remediation. To sustain these public benefits, the economic and regulatory framework must recognize the positive externalities that the industry delivers.
- Options include raising the statutory cap on the existing state tax credit to \$45 million so that funding is sufficient to achieve its purpose, and leveraging the state credit with a long-term federal tax credit program.
- Alternative regulatory approaches could also be used to financially recognize the positive externalities detailed throughout this report.

CONCLUSIONS

- ❖ The coal refuse to energy industry is historically the most effective and prolific actor in the remediation of coal refuse piles across Pennsylvania.
- ❖ The removal of coal refuse piles and the reclamation of mining-affected lands has demonstrated environmental and public benefits, including water quality, public health and safety, and land value.
- ❖ No one but the coal refuse industry can remove these abandoned coal waste piles and address these attendant environmental and safety hazards in a holistic, efficient, and permanent manner.
- ❖ Market and regulatory challenges have altered the economics of the industry, as wholesale energy prices are now regularly below the “breakeven” point required for coal refuse reclamation to energy plants to simply recover their costs.
- ❖ Pennsylvania joining RGGI would significantly increase the operating cost of coal refuse remediation to energy facilities resulting in the immediate closure of every plant and loss of the resulting economic and environmental benefits.
- ❖ Any regulations in Pennsylvania must exempt or otherwise take into account the positive environmental impacts of the coal refuse reclamation to energy facilities to protect these important environmental policy resources.
- ❖ The current economics of the industry are unsustainable, and without some intervention will lead to further plant closures and a permanent loss of their public environmental and economic benefits.

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
VIALE 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



QUESTIONS & CONTACT INFO

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