Abandoned Mine Land Program: A Policy Analysis for Central Appalachia and the Nation

Eric L. Dixon and Kendall Bilbrey

This paper seeks to educate the public on the Abandoned Mine Land (AML) program and provide an analysis of the policy, economic, environmental, and financial repercussions of the program. This paper is ambitious in its scope—never before has a research project provided such a far-reaching and thorough analysis of the AML program. Relevant analyses are based on previously unreleased AML funding data and on data collected through a survey of state and tribal AML officials. In addition to its educational purpose, the paper also provides a set of policy recommendations that, according to our research findings, are necessary for the AML program to achieve its core purpose of reclaiming America's abandoned mines.

AML Policy Priorities Group

July 8, 2015

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About the Research Project

This paper is the result of a participatory research methodology that prioritizes both scholarly rigor and the inclusion of insights from diverse stakeholders. The project began in June 2014 when Appalachian Citizens' Law Center and The Alliance for Appalachia resolved to partner in leading a collaborative research project to explore the Abandoned Mine Land (AML) program. Eric Dixon at ACLC and Kendall Bilbrey at The Alliance—both of whom were serving in the Appalachian Transition Fellowship program managed by the Highlander Research and Education Center—partnered in spearheading a new, independent group: the AML Policy Priorities Group. Through this group and other networks, the authors solicited input on the AML program. Conference calls and in-person meetings with the AML Policy Priorities Group, other stakeholders, and AML experts and officials enabled the authors to establish a set of initial research questions.

Over the following year, the authors and their colleagues researched the many facets of the AML program broached in this paper. The research was continually guided by conversations with citizens, experts, organizers, elected officials, academics, state and federal officials, and others. In this sense, the research priorities of this paper were crowd-sourced through multistakeholder outreach that emphasized citizen input in affected communities, and the research conducted though thorough investigative and academic methods. At many times, Betsy Taylor of Virginia Tech served as the scholarly advisor of the project, ensuring it met scholarly standards in the conduct of research.

Much of the data on the history of AML fee collections and grant distributions outlined in chapter 5 and the appendix is previously unseen by the public and is the result of a Freedom of Information Act (FOIA) claim filed by Eric Dixon in November 2014. In addition, much of the data outlined in chapter 4 was captured by an IRB-approved survey of state AML officials conducted by the authors, Betsy Taylor, and the Interstate Mining Compact Commission (IMCC) in 2015. Contact the Appalachian Citizens' Law Center to receive a copy of the publicly available data acquired via the FOIA claim. See Appendix 1 for more information about the methodologies utilized for the various parts of this research project.

The photo pictured on the cover page is courtesy of Vivian Stockman of the Ohio Valley Environmental Coalition (OVEC).

Authors' notes:

This paper is concerned almost exclusively with *coal* mine reclamation. Non-coal reclamation is an extremely important issue, but it is not the focus of this report. Unless otherwise stated, "mining" or "mine reclamation" refers to *coal* mining and *coal* mine reclamation.

Most, though not all, of AML funding distribution data cited in this essay (especially chapter 5) is data acquired through the aforementioned FOIA request. Funding data on all historical distributions of AML funding does not exist, according to officials at OSMRE. Thus, note that the *funding data used in this essay—especially data from older years—and referred to as AML "distributions" in some cases is actually data on the "net obligations"* of AML funding to states and tribes for a given year (not distributions), because historic data on net obligations of AML funding is available OSMRE. The difference in a state's distribution and net obligation may vary.[1] It is rare for the difference between the two figures to be more than marginal, though not extraordinary.

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[1] A distribution is the total a state or tribe is owed, under the program, for a certain year. Whereas, net obligations are how much money the state or tribe has actually obligated "in the pipeline" through contracts, etc. over a given period of time. A state may not obligate (or, spend) all of its distribution for a given year, within the strict confines of that time period, for a variety of reasons.

About the Authors

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Acknowledgements

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research project. Mimi Pickering, Dee Davis, Elizabeth Sanders, Ada Smith, Sara Pennington, Tanya Turner, Kevin Pentz, Lisa Abbot, Burt Lauderdale, Beth Bissmeyer, Gabby Gillespie, Rob Goodwin, Bill Price, Alice Howell, Lane Boldham, Michelle Decker, Terry Van Offeren, Nathan Hall, Adam Wells, Erin Savage, Tarence Ray, Aimee Erickson, and many others continued to this paper with their insights, perspectives, feedback, time, and/or, effort, without which the paper simply could not have been written.

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Most importantly, thank you to the citizens of coalfield communities in Central Appalachia and beyond, with whom we've been so privileged to work. Your courage in standing up to the array of issues facing Appalachia is inspiring and the reason we do this work.

Terms and Abbreviations

ACSI= Appalachian Clean Streams Initiative
AML= Abandoned Mine Land(s)
AMLER= Abandoned Mine Land Economic Revitalization proposal, a component of the POWER+ Plan
AMD= Acid Mine Drainage
ARRI= Appalachian Regional Reforestation Initiative
BBEDCA= Balanced Budget and Emergency Deficit Control Act of 1985
BCA= Budget Control Act of 2011
CBF= Combined Benefit Fund of the UMWA
DOI= United States Department of the Interior
e-AMLIS= electronic Abandoned Mine Land Inventory System
EIA= Energy Information Administration
EPACT= Energy Policy Act of 1992
FRA= Forestry Reclamation Approach of the ARRI
IMCC= Interstate Mining Compact Commission
OBRA= Omnibus Budget Reconciliation Act
OSMRE= Office of Surface Mining Reclamation and Enforcement
PAYGO= Pay-As-You-Go Act of 2010
POWER Initiative= Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative
POWER+ Plan= Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Plus Plan
"Prior to August 3, 1977"= AML law requires an AML site to have been adversely affected by coal mining before SMCRA was enacted on August 3, 1977 in order qualify as an eligible site. In many instances in this essay the phrase "Prior to August 3, 1977" is used to designate those sites eligible for AML funding. *It should be noted, however, that, as explained in the section 3.1 of this essay, a post-August 3, 1977 site is eligible if its effects occurred before the AML program in the state or tribe where the site is located gained approval from OSMRE.*
SMCRA= Surface Mining Control and Reclamation Act of 1977
TRHCA= Tax Relief and Health Care Act of 2006 (also referred to as the "2006 AML reauthorization," "2006 reauthorization," or the "2006 law")
UMWA= United Mine Workers of America
UMWAF= United Mine Workers of America Funds

1. Executive Summary and Key Findings

This paper seeks to educate the public on the Abandoned Mine Land (AML) program and provide an analysis of the policy, economic, environmental, and financial repercussions of the program. This paper is ambitious in its scope—never before has a research project provided such a far-reaching and thorough analysis of the AML program. Relevant analyses are based on previously unreleased AML funding data and on data collected through a survey of state and tribal AML officials. In addition to its educational purpose, the paper also provides a set of policy recommendations that, according to our research findings, are necessary for the AML program to achieve its core purpose of reclaiming America's abandoned mines.

Finding 1: The Abandoned Mine Land (AML) program, established by Congress in 1977, has reclaimed over $5.7 billion worth of AML problems—and nearly 800,000 acres of damaged land and water across the country—saving the streams, land, homes, businesses, lives, and communities of innumerable coalfield citizens along the way.[2]

For over 250 years coal provided cheap heat and electricity that powered the American economy. The historical benefit of coal is undeniable, yet it has not come without great costs. Before coal can be burned for energy it must be extracted from the earth, a process that necessarily damages and pollutes land and water. Since the country's first commercial coal mine opened in 1748, the coal industry has extracted *billions of tons* of coal across the country.[3] During this long history, the industry routinely abandoned mines—and the corresponding damage and pollution of those mines—once all of the coal had been extracted. As a result, thousands of abandoned underground and surface coal mines accumulated in predominantly poor, rural communities across the country—especially in the coalfields of Central Appalachia.

This accumulation of abandoned mines was made possible by the lack of any federal system to reclaim the damage caused by coal mining, prior to 1977. Congress passed the Surface Mining Control and Reclamation Act (SMCRA) in 1977, which created the AML program "in order to hold the entire coal industry responsible for reclaiming coal mine lands left abandoned across the country." [4] In line with its explicit purpose of addressing the legacy costs of abandoned mines, the Act boldly established that the coal industry would finance—through a per ton fee on current coal production—the reclamation projects of the AML program.

The Office of Surface Mining Reclamation and Enforcement (OSMRE) within the US Department of the Interior (DOI) administers the program. OSMRE appropriates AML

[2] See chapter 3 to learn more about the AML problems that have been reclaimed through the program; see chapter 5 to learn more about the structure of the program.
[3] Wikes, Gerald W. "MINING HISTORY OF THE RICHMOND COALFIELD OF VIRGINIA." Virginia, Division of Natural Resources, 1988. Web. 6 July 2015.
[4] "FY2015 OSMRE Budget Justifications," p.3

fees in the form of annual AML grants to state and tribal AML programs, which then use the grant funding to coordinate the reclamation of AML sites within their respective state or tribal boundaries. The appropriation of grants is determined by a complex statutory-defined funding formula that does not require annual discretionary approval from Congress.[5] Historically AML funding was financed entirely through the collection of AML fees. Statutory changes in the 2006 AML reauthorization altered this, financing two sub-funds of the AML program with funds from the General Treasury.

The program has achieved significant progress in cleaning up the coalfields due to the valuable work of state and federal AML officials, watershed organizations, conservation districts, community groups, and others. In total, the program has reclaimed over $5.7 billion worth of AML problems—and nearly 800,000 acres of damaged land and water across the country—saving the streams, homes, businesses, land, lives, and communities of innumerable coalfield citizens along the way.[6]

Finding 2: The AML program had a net impact of $450 million on US GDP in FY2013, and supported 4,761 jobs across the country. The program supported 1,317 jobs in Central Appalachian states, and delivered a value-added impact of $102 million in these states.[7]

In FY2013, the AML program made a total economic impact of $778 million, a net impact of $450 million on US GDP, and supported 4,761 jobs through AML reclamation work. Central Appalachian states saw a total economic impact of $182 million, a value added impact of $102 million, and 1,317 jobs supported by the AML program. As demonstrated by a national FY2013 value-added (net) impact of nearly *half a billion dollars*, the program delivers a substantial contribution to the American economy on an annual basis. For its environmental and economic impacts, the AML program is absolutely crucial to the future of coalfield communities in the United States.

[5] See Chapter 5 for more information about the current and historic funding provisions of the AML program.

[6] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015; E-AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015. This acreage value is based on a standardized GPRA unit that OSMRE uses to quantify the reclamation of AML sites. If a reclamation site is typically measured in a metric other than acres—such as *miles* of streams restored—OSMRE converts those units into GPRA figures, so that comparison and sum calculations can be made. From the OSMRE e-AMLIS site: “OSM is required under the Government Performance and Results Act (GPRA) of 1993 to report measurable goals to Congress. One of OSM's key measures under GPRA is the number of abandoned mine land acres reclaimed as reported in the AMLIS. Units not reported as acres are converted to acres when reporting GPRA acres.”

[7] See chapter 6 to learn more about the economic impacts of the AML program.

Finding 3: While great strides have been made in reclaiming America's abandoned mines, it will take at least $9.6 billion to remediate the remaining 6.2 million acres of lands and waters ravaged by abandoned coal mine problems, and, under the current funding scheme, AML distributions are declining by the year.[8]

While great strides have been made in reclaiming America's abandoned mines, the program has a long way to go. It will take at least $9.6 billion to remediate the remaining 6.2 million acres of lands and waters ravaged by abandoned mine features such as: landslides, the collapse of exposed highwalls, mine fires, subsidence caused by the deterioration of underground mines, water problems caused by abandoned mine pollution, and more.[9] These problems continue to markedly impede local economic development and threaten the livelihoods of citizens. If the AML program is to solve these problems in an effective and efficient manner, statutory changes are urgently required to improve the program.

Finding 4: Congress should initiate a five-year wholesale update of the federal inventory of AMLs so that complete, reliable data is available on the remaining size and geographical distribution of all coal AMLs—not just high priority AMLs—in the United States.[10]

Modern changes in the coalfields necessitate modern solutions. Experts agree that the federal AML inventory—e-AMLIS—is technologically out-dated and excludes billions of dollars worth of unreclaimed AMLs that likely exist in the coalfields. Congress should initiate a five-year wholesale update of the federal inventory of AMLs so that complete, reliable data is available on the remaining size and geographical distribution of all coal AMLs—not just high priority AMLs—in the United States. Local community members should be employed for the fieldwork required to update this inventory.

[8] See chapter 3 to learn more about the unreclaimed AML problems in the United States. See chapter 5 to learn more about the decline of AML distributions.
[9] E-AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.; E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[10] See chapter 3 to learn about the federal AML inventory and its shortcomings; see chapter 8 to learn more about the proposed policy solution.

Finding 5: AML funding is not distributed according to need. Congress should enact legislation that replaces all AML sub-funds with a single distribution mechanism based on a state's percentage of the updated federal AML inventory. This would distribute funding to states and tribes that have the largest AML problems and would simplify an unnecessarily complicated funding system.[11]

The formula for AML distributions to states and tribes is broken. AML state and tribal share distributions are presently based on a state or tribe's *current coal production*, which is not an indicator of its remaining AML need. Since the passage of the SMCRA in 1977, coal production in the United States has largely shifted westward across the continent. The result is that a majority of the remaining AMLs lie in the eastern coalfields while the majority of coal production—and thus AML funding—lies in the western coalfields.

The only system that can accomplish the program's goal is one that distributes funding according to the extent of the AML problem in a state or tribe, which the current formula does not accomplish. Congress should enact legislation that replaces all AML sub-funds with a single distribution mechanism based on a state's percentage of the updated federal AML inventory. This would distribute funding to states and tribes that have that the largest AML problems and would simplify an unnecessarily complicated funding system.[12]

Finding 6: Congress should accelerate disbursement of the $2.5 billion AML Fund to states and tribes, and target this funding towards AML projects that support or create long-term economic opportunities in coalfield communities hit hardest by recent mass layoffs in the coal sector.[13]

Over the years an unappropriated balance of $2.5 billion has accumulated in the federal AML Fund. It is currently used to support crucial United Mine Worker of America (UMWA) health and pension plans through interest earned on investing this idle AML Fund in Treasury Securities. Congress first needs to update the law to ensure that these vital UMWAF plans are funded and healthy, without relying on this AML Fund interest.

In the past it may have been sensible to garner interest from the AML Fund, but a number of recent developments, including historically low interest rates, low gas prices, and—most importantly—severe economic distress in coalfield communities, make leaving the AML Fund idle in Washington no longer a viable policy. Congress should accelerate disbursement of the $2.5 billion AML Fund to states and tribes, and target

[11] See chapter 5 to learn more about the funding provisions of the AML program; see chapter 8 to learn more about the proposed policy solution.
[12] Because the distribution formula would be based on the AML inventory, updating the inventory is a necessary pre-requisite for such reform.
[13] See chapter 5 to learn more about the unappropriated balance of the AML Fund and its current uses; see chapter 8 to learn more about the proposed policy solution.

this funding towards AML projects that support or create long-term economic opportunities in coalfield communities hit hardest by recent mass layoffs in the coal sector.

Finding 7: In order to enable the program to effectively reclaim America's abandoned mines in light of modern problems, a number of additional legislative fixed should be made by Congress.[14]

In addition to the aforementioned recommendations, the following proposals could substantially advance the ability of the AML program to fulfill its core purpose in the modern era. These policy solutions call for Congress to:

- Reinstate the historic AML fee levels, which would increase the AML program's annual economic output by an estimated $116 million and would create nearly 750 jobs across the country.[15] AML fee levels have never been updated for inflation and were lowered by 20% in 2006.
- Ensure the long-term financial health of United Mine Workers of America (UMWA) pension and benefit plans currently supported through the AML program.
- Reauthorize AML fee collection beyond FY2021 and continue mandatory AML distributions. Congress should not let such a vital program expire when billions of AML problems will remain in 2022.
- Reform the AML program to underline environmental performance, alongside human health and safety.
- End payments to states and tribes that have no remaining AML problems (i.e. "Certified states and tribes"), and empower OSMRE through statutory changes and increased funding to: a) reclaim future and existing AML problems in Certified states and tribes may they arise, and b) resume the responsibility of addressing AML emergencies. In the cases where Certified states and tribes have remaining AML problems, these programs should receive funding only to the extent of remaining AML problems—and only for the purpose of coal mine reclamation.
- Commission a routine annual study of the economic and environmental effects of the AML program.
- Exempt AML funding from sequestration effects. The program is funded through fee collections—not tax dollars—and thus will not accomplish deficit reduction.
- Establish a federal hard rock abandoned mine land reclamation program within OSMRE. There currently exists no federal program to reclaim the thousands of hardrock mines across America.

[14] See chapter 8 for the full set of policy proposals and their justification.
[15] These estimates are relative to current fee levels. See sections 5.2 and 6.3 to learn more about fee levels.

Finding 8: If designed strategically, AML projects can provide long-term economic impacts and create local jobs. As evidenced by a set of case studies, AML sites have been leveraged to create thousands of jobs in agriculture, recreation, tourism, renewable energy production, retail, and beyond.[16]

AML projects across the country—and world—have demonstrated that, if proper strategic planning is done up front, long term economic impacts including job creation can result from creating economic and business opportunities from AML reclamation.

Finding 9: The AMLER pillar of the Obama Administration's proposed POWER+ Plan would create an estimated 3,117 jobs, contribute a total of $489 million to the US economy, and deliver a net GDP increase of $289 million, annually. Approximately 35% of these impacts would accrue in Central Appalachian states, in FY2016.[17]

In February 2015, the Obama Administration announced the proposed POWER+ Plan, an initiative to improve the economy of frontline communities in Appalachia and other coalfields experiencing the brunt of the shifting energy sector. The AML Economic Revitalization (AMLER) proposal, part of the POWER+ Plan, would disburse $200 million of existing AML funds per year, over five years, "for the reclamation of abandoned coal mine land sites and associated polluted waters in a manner that promotes sustainable redevelopment in economically distressed coal country communities." [18]

The AMLER proposal would create an estimated 3,117 jobs, contribute a total of $489 million to the US economy, and deliver a net a GDP increase of $289 million, annually. Estimates show Central Appalachian states would see a total economic contribution of over $107 million and a value added impact of nearly $39 million, in FY2016. The proposal would create nearly 770 jobs throughout Central Appalachian states, with Kentucky and West Virginia seeing the bulk of those jobs at 253 and 417, respectively.

[16] See chapter 4 to learn more about case studies of AML projects with long-term economic impacts; also see chapter 4 to learn more about how state and tribal AML programs operate.
[17] See chapter 6 to learn more about the economic impacts of the POWER+ Plan; see chapter 8 to learn more about how the POWER+ Plan would operate.
[18] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.

Finding 10: The current version of the AMLER proposal does not go far enough in targeting funding towards the states and tribes that are the most economically distressed.[19]

The President's FY2016 budget and the AMLER proposal lay out a bold set of programs and AML reform initiatives to drive a just economic transition in struggling coalfield communities. The current version of the AMLER proposal, however, does not go far enough in targeting funding towards the states and tribes that are the most economically distressed. As the proposal states, the "majority of un-reclaimed coal mine lands are concentrated in Appalachian states that have experienced coal mining job loss." [20] Yet, the proposal would distribute a mere 35% of funding to Central Appalachian states in FY2016, and would not distribute AML funding to states and tribes according to any factor that incorporates coal mining job loss.

In order to achieve the POWER+ Plan's expressed goal of assisting struggling Appalachian and other coalfield communities, the distribution formula must incorporate some economic distress factor. If such a factor were incorporated, Central Appalachian states would see an estimated total economic output of over $144 million, an impact of $54 million in value added to the regional economy, and 1,038 jobs created. That's nearly *300 more jobs* than the current version of the AMLER proposal, which lacks an economic distress factor.

In addition, the plan presents great potential for progress in coalfield communities, but it must prioritize a robust and inclusive public process and provide power to new, non-traditional partners in shaping AMLER projects. This—and the overarching imperative of a just transition—must be prioritized as the proposal continues to take shape.

Funding 11: A Just Transition framework is crucial for moving ahead with mine reclamation in coalfield communities.[21]

Due to the fact that a majority of the country's abandoned mine sites lie in Appalachia, the transition in this region is vital context for AML reform. The region is experiencing unprecedented economic decline, environmental damage, and inequality. An economic transition in Appalachia is inevitable, and in that inevitability communities see an opportunity to create a new economy that is just, sustainable, and works by and for Appalachians. This framework is guided by a respect for Appalachia's past, and is driven by a belief that we can and must improve the quality of life of people affected by this transition.

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[19] See chapter 6 to learn more about the economic impacts of the POWER+ Plan if it were revised to incorporate an economic distress factor; see chapter 8 to learn more about the POWER+ Plan and how the need for an economic distress factor in the plan.
[20] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.
[21] See chapter 8 to learn more the just transition framework and its importance.

Any responsible approach to AML must be situated within the reality of these changes and the framework of a just Appalachian transition. The analysis of the AML program laid out in this paper, as well as its vision of the AML program moving forward, are situated within the framework of a just transition.

Chapter 2 of this paper lays out a brief legislative history of the AML program. Particular emphasis is placed on the political and policy dynamics of the 2006 AML reauthorization and recent AML amendments. Chapter 3 is useful for understanding what sites qualify as AMLs and on what exactly AML funding can be legally spent. Chapter 3 also provides a national and state-specific summary of reclaimed and unreclaimed AML problems, and highlights the shortcomings of the existing federal AML inventory. Chapter 4 provides some insight as to how state and tribal AML programs select, design, and implement reclamation projects. Chapter 4 also showcases a handful of AML projects that have delivered local economic development impacts.

Chapter 5 explores the current and historic funding provisions of the AML program. The chapter, based on previously unreleased funding data, analyzes historic trends in AML distributions and AML fee collections, and outlines the status and use of the $2.5 billion unappropriated AML balance. Chapter 6 underlines the current and potential economic impacts of the AML program, both nationally and in Central Appalachian states. This chapter includes impact assessments of the current AML program, reinstating historic (pre-2006) AML fee levels, and of accelerating disbursement of the unappropriated AML balance–as proposed in the POWER+ Plan and beyond. Chapter 7 provides a glimpse of the environmental techniques of AML reclamation and the preferred Forestry Reclamation Approach

Chapter 8 lays out a set of federal AML policy recommendations directed towards Congress. These policy recommendations, which are guided by the framework of a just economic transition, are based on the findings of a participatory research project led by the authors and speak to necessary improvements in the AML program that would require statutory changes to the SMCRA. The chapter also explains the President's proposed POWER+ Plan as it relates to AML, and provides a set of policy recommendations aimed at strengthening the plan from the perspectives of economically-distressed coalfield communities.

2. A Brief Legislative History of the AML Program

2.1. Overview

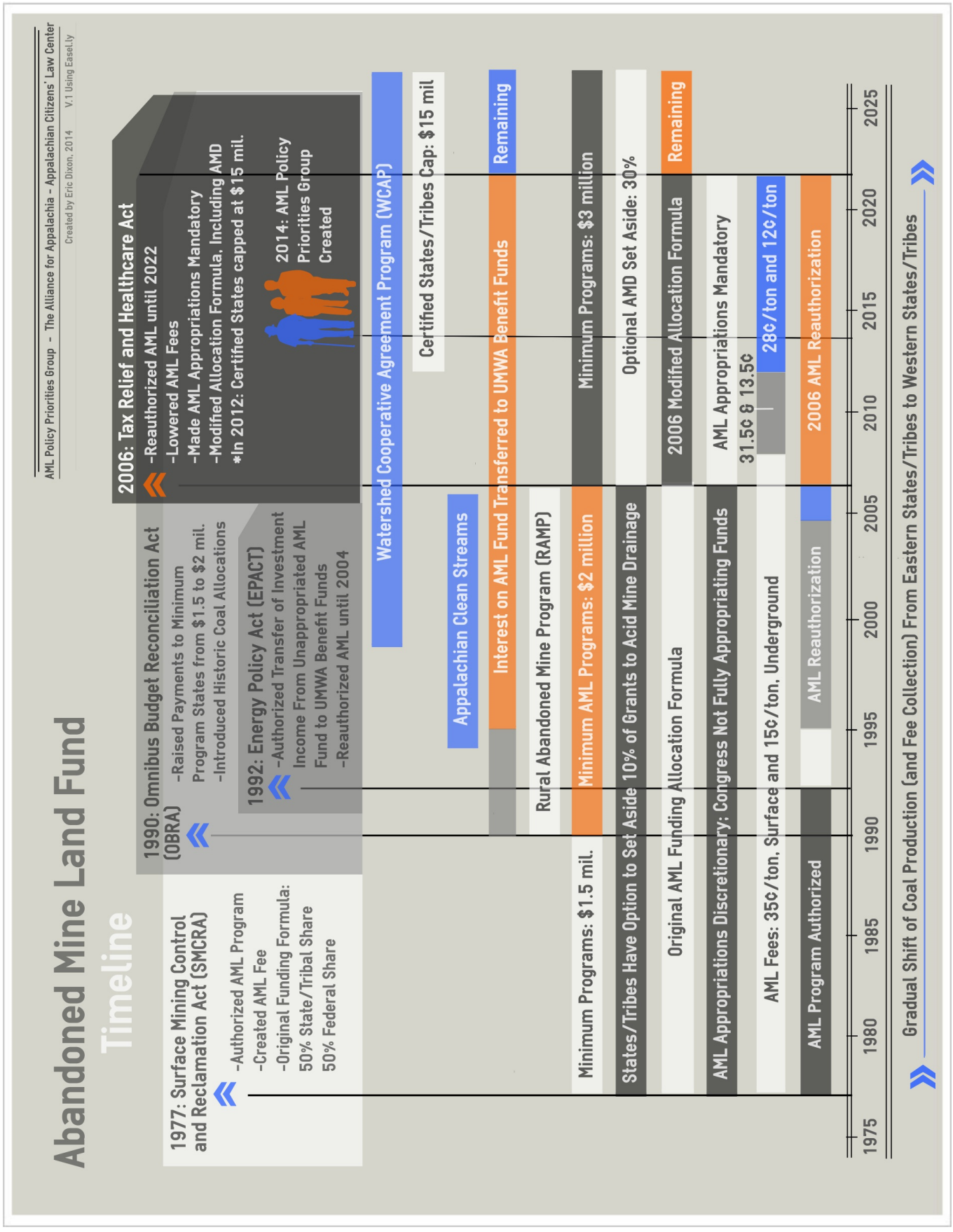
Passage of the Surface Mining Control and Reclamation Act (SMCRA) in 1977 came at the tail end of a wave of environmental activism that swept both Republican and Democratic administrations in the 1970s. President Jimmy Carter signed into law on August 3, 1977 the first piece of legislation in our country's history that provides a system to regulate coal mining: the SMCRA. In addition to the regulatory system established for future coal mining, the Act created a mechanism to address the physical legacy costs of coal mining that occurred prior to the establishment of this new regulatory system. This mechanism is the Abandoned Mine Land (AML) program.

The AML program has experienced a number of programmatic and statutory evolutions since its inception. After the Act's initial passage in the late 1970s, the law went untouched for almost 15 years, until the 1990s when it was reauthorized and statutorily altered on two occasions: the Omnibus Budget and Reconciliation Act of 1990 and the Energy Policy Act of 1992. After this buzz of activity, Congress again left the AML program unchanged for over a decade until it was eventually reauthorized and amended by the 2006 Tax Relief and Healthcare Act. A handful of relatively minor changes to the AML program have been approved by Congress in the ensuing years.

The legislative history of the AML program is a history of intense bursts of Congressional action typically followed by 10 to 15 years of legislative inaction. This history suggests that reauthorizing and/or reforming the AML program is something Congress does not take up often.

The following sections briefly lay out the legislative changes to the program over the years. The AML Program timeline in section 2.1.A. provides a graphic summary of the main changes to the program, many of which are explained in the following sections.

2.1.A. Figure 2.1 AML Program Timeline



2.2. Surface Mining Control and Reclamation Act of 1977 (SMCRA)

> "It is the purpose of this chapter to establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations" – Surface Mining Control and Reclamation Act, 1977 [22]

On August 3, 1977, the 95th Congress of the United States passed Public Law 95-87, commonly known as the Surface Mining Control and Reclamation Act (SMCRA) (30 U.S.C. §1201-1328). The SMCRA was designed to serve two main functions. First, the Act was designed to regulate underground and surface coal mining. These regulations include the process by which mine operators must acquire mine permits, the environmental standards by which mines must comply, related monitoring and inspection of mines, bonds mine operators must post, and the reclamation standards required of mines after use. Second, the Act established a program to reclaim the thousands of abandoned coal mines scattered across the United States: the Abandoned Mine Reclamation Fund.[23] Because the SMCRA requires new mines to be reclaimed by the coal operator after use, the Abandoned Mine Reclamation Fund only applies to mines abandoned prior to the passage of the 1977 law, with a few exceptions. The law established the Office of Surface Mining Reclamation and Enforcement (OSMRE) under the Department of the Interior (DOI) to oversee and enforce the programs created by the SMCRA.

2.2.A. Title IV of the SMCRA: Abandoned Mine Land Reclamation Fund

> "It is the purpose of this chapter to promote the reclamation of mined areas left without adequate reclamation prior to August 3, 1977, and which continue, in their unreclaimed condition, to substantially degrade the quality of the environment, prevent or damage the beneficial use of land or water resources, or endanger the health or safety of the public" –Surface Mining Control and Reclamation Act, 1977 [24]

The Abandoned Mine Reclamation Fund can be found in Title IV of SMCRA (30 U.S.C. §1231-1244). This program—also called the abandoned mine fund, Title IV, the abandoned mine land fund, and the AML fund—will hereinafter be referred to as the AML program. The Act vests the Secretary of the Interior with administrative authority of the program.

Due to a long history of coal mining in the United States and the lack of a federal system to regulate its effects prior to 1977, the SMCRA included the AML program as a backward-looking mechanism to retroactively address historic impacts of coal mining. The AML program is more than a pool of funding, it is a set of programs targeted at addressing the legacy costs of coal mining in the United States. In this spirit, the Act

[22] 30 U.S.C. §1202(a)
[23] 30 U.S.C. §1231-1244
[24] 30 U.S.C. §1202(h)

established that the coal industry would finance—through a per ton fee on current coal production—the repair of environmental damages caused by the industry's mines. Levying this fee on coal companies is a means of internalizing on the coal industry costs of coal production that were previously externalized to affected coal communities.

Chapters 3, 4 and 5 of this essay provide more detail as to the various programs and funding provisions under the AML program. The following sections lay out chronologically the major legislative alterations to the program.

2.3. Omnibus Budget Reconciliation Act of 1990 (OBRA)

The SMCRA initially authorized the collection of AML fees through the end of 1992.[25] In 1990—two years prior to the original sunset of the AML program—Congress passed the Omnibus Budget Reconciliation Act of 1990 (OBRA, or Public Law 101-508), which pushed the sunset of the program slightly down the road to 1995.[26] In addition, the OBRA made the first set of changes to the program.

Under the original structure of grant distributions, the law specified that 50% of the AML fee collections be allocated to states and tribes and 50% be allocated to the federal share.[27] Despite this general funding formula, the SMCRA did not make these funding allocations *mandatory*. Instead, as a part of the annual discretionary appropriations process Congress was supposed to determine the amount of funding distributed through both the state tribal and the federal shares. As a result, Congress routinely under-appropriated AML funding, meaning that a balance of unappropriated fee collections steadily developed throughout the 1980s (see section 5.10 for more information about the AML Fund).[28] Under the OBRA, for the first time Congress authorized the federal government to invest this unapproprated AML balance in US Treasury Securities.[29] The investment of the AML Fund in securities continues today.

The OBRA also updated the AML allocation formula by specifying how OSMRE was to spend its 50% federal share. Under this specification, 40% of the federal share was to be utilized for emergency AML projects and a few other specific programs.[30] 20% of the federal share was to be allocated to a new program: the Rural Abandoned Mine Program (RAMP).[31] RAMP was "designed to restore agricultural land disturbed by strip mining" and was administered through the US Department of Agriculture through a transfer of funds from OSMRE.[32]

The OBRA also specified that the remaining 40% of the federal share be distributed through a new AML sub-fund, one that distributes funding to states and tribes based on

[25] Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.
[26] Ibid.
[27] Ibid.
[28] Ibid.
[29] Ibid.
[30] As Bamberger notes, "As amended by P.L. 101-508, 40% of this federal share (or 20% of the whole of AML collections) is designated for (1) emergency projects in states and on tribal lands; (2) projects in states and on tribal lands without approved reclamation plans; (3) the Small Operator Assistance Program (SOAP); and (4) federal administrative costs;"
Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.
[31] Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.
[32] Ibid.

its *historic* coal production.[33] The historic coal sub-fund began making distributions in FY1996 and has since become a major piece of the AML program. The original version of the SMCRA guaranteed that all eligible states and tribes would receive a minimum of $1.5 million annually in AML funding (see section 5.6 for more about Minimum Programs). The OBRA raised this level to $2 million, though Congress routinely under-appropriated this Minimum Payment. From the mid-1990s through the mid-2000s, Congress continued to appropriate $1.5 million to Minimum Program states and tribes.[34]

2.4. Energy Policy Act of 1992 (EPACT)

In 1992 Congress passed the Energy Policy Act of 1992 (EPACT, or Public Law 102-486), which extended the AML program through FY2004 and resolved that OSMRE deliver an annual transfer of funds to the United Mine Workers of America Combined Benefits Fund (UMWAF) to help finance health and benefit payments to retired miners.[35] The UMWAF "pays the premiums of retirees who worked for companies that went bankrupt, or which no longer exist." [36] The EPACT resolved that these transfers be sourced from the interest earned on the AML Fund (see section 5.10.A) and capped at $70 million per year.[37] Transfers were initiated in FY1996 and continue today as a *mandatory* appropriation, though the sizes of these transfers have fluctuated with interest rates.[38] By incorporating support for miners' health and pension plans under the purview of the AML program, Congress extended the Act's principle of addressing coal's legacy costs to include damage to the health and well-being of miners' affected by work in the mines.

In 1994 the Appalachian Clean Stream Initiative (ACSI) was established "to clean up and restore streams damaged by acid mine drainage, largely the result of past coal mining," but this program was discontinued in the mid-2000s.[39]

2.5. Tax Relief and Health Care Act of 2006

As the FY2004 sunset of the AML program approached, Congress was unable to find a long-term solution for AML reauthorization. As a result, AML fee collection was temporarily extended for 9 months—through June 2005—by the Consolidated

[33] Remaining 40% of federal share "constitutes a pool from which supplemental grants may be awarded to the states for remedy of P1 and P2 sites, based upon historic coal production;"
Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.
[34] Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.
[35] Ibid.
[36] Ibid.
[37] Ibid.
[38] Ibid.
[39] Ibid.

Appropriations Act for 2005 (Public Law 108-447).[40] Through the fall of 2004 and spring of 2005 Congress continued to debate a variety of issues around the AML program. During this period, both the Bush Administration and the House and Senate laid out priorities on the AML question.

In its FY2005 proposed budget, the Bush Administration put forward a set of changes to the program that resolved to:

- extend AML fee collection through FY2018
- lower AML fee levels by 25% through FY2018
- "return unobligated state share balances over a 10-year period" to states and tribes that have no remaining AML problems ("Certified" states and tribes); these states and tribes would have no longer received any funding from the AML unappropriated fund or from new fee collections
- "refund" state and tribal share balances to Non-certified states and tribes through standard annual AML distributions.[41]
- end the $70 million cap on annual transfers to the UMWAF and provide $310 million in support to the UMWAF over the following years
- end funding for the Rural Abandoned Mine Land Program (RAMP) [42]
- end the designation of state and tribal share accounts within the AML fund; As is noted by Bamberger, "The creation of the separate state and federal funds was more an accounting convenience than intended to be literal. However, states have been displeased with the accumulating unobligated balances in their state share accounts and regard these balances as 'state' money to which they are entitled." This proposal was meant to remedy the entitlement felt by states and tribes to the unappropriated balances within state and tribal share accounts by ending future collections being put in such accounts [43]

The FY2006 Bush Administration budget proposed the following year included all of the same AML policy provisions, with a few exceptions. The FY2006 proposal differed from the FY2005 iteration in that it resolved to:

- maintain existing AML fee levels
- lower the level of payments to Minimum Program states and tribes to $1.5 million annually; despite having raised this level to $2 million by the OBRA, Congress had funded Minimum programs at $1.5 since FY1995

In 2004, Senator Thomas of Wyoming introduced competing AML legislation (S. 2086), which differed from the FY2005 Bush proposal in that it would have:

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[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] Bamberger explains some interesting facets of the administration proposal: "The cessation of assigning AML collections to a 'state share' is one of the most interesting features of the Administration proposal. This assignment has been responsible for one of the greatest pressures on OSM. The creation of the separate state and federal funds was more an accounting convenience than intended to be literal. However, states have been displeased with the accumulating unobligated balances in their state share accounts and regard these balances as "state" money to which they are entitled;"
Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.

- extended the AML program through only FY2014
- lowered the AML fees in a single step to an even lower 25, 12, and 8¢ per ton of surface, underground, and lignite coal
- continued to prioritize current—as opposed to historic—coal production as the basis for AML distributions
- required that 50% of the fees collected in a state or tribe be "returned" to that state or tribe, even if it no had remaining AML problems
- ensure that Certified states and tribes receive an AML distribution by funneling funds from land lease revenues paid to the Treasury under the Mining Leasing Act, to make up for any gaps in annual distributions; release $65 of the existing RAMP balance to Certified states and tribes that have no land for leasing
- transfer all of the interest generated on the AML Fund prior to FY2005 to the UMWAF as necessary

In the House, Representative Barbara Cubin—also of Wyoming—and Representative Nick Rahall of West Virginia introduced a bill (H.R. 3796) very similar to the one proposed in the Senate by Thomas. The bill differed only in that resolved to extend the program through an even longer FY2019 and lower the fees to a slightly higher 28, 12, and 8¢.

Senator Thomas's legislative proposal reflected, most importantly, regional differences between the Western coalfields and other basins in the United States. Because so much coal production occurs in these states, a large portion of the total fee collections nationally are assessed at mines in Western states, giving these states a sense of entitlement to national AML funding, even though states like Wyoming and Montana have Certified that they have no unreclaimed AML problems. This context is reflected in a theme throughout the Thomas proposal that ensures Certified states continue to receive AML distributions. In addition, the Thomas proposal sought to lower the fee levels by 30%—more than even the Administration proposal—likely due to the relatively large coal industry in the state of Wyoming.

The final legislation, which was passed in the year following these initial FY2005 proposals, resolved a number of changes to the program that lie somewhere in between this initial set of policy proposals. The final legislation was passed at the eleventh hour of the Congressional session on December 20, 2006 as part of the Tax Relief and Healthcare Act (Public Law 109-432). The law includes provisions that:

- extend the AML program through FY2021
- lowered the AML fees by 20% through a two stage process through FY2013
- made annual AML distributions mandatory payments for the first time[44]
- end funding for the Rural Abandoned Mine Land Program (RAMP)
- raise annual payments to Minimum Program states and tribes to $3 million
- made payments to Non-certified and Certified states and tribes over a seven year period that, in total, equal the unappropriated AML balance of a state or tribe
- raised the Acid Mine Drainage (AMD) Set-Aside provision from a maximum of 10% to an annual cap of 30%

[44] Previously, AML distributions were made through the annual Congressional discretionary funding process.

Notably, the law extends the AML program further—through FY2021—than any of the original proposals. The law did lower the fee levels, but not to the extent of the 30% reduction found in the original Thomas proposal. The law raised the payments to Minimum Program states and tribes to $3 million, which is significantly higher than can be found in any of the initial proposals. Likely due to the efforts of watershed groups in Pennsylvania and elsewhere, the final law also raised the AMD Set-Aside cap to 30%, which was not originally on the table in any of the original proposals, and the law—somewhat surprisingly—made annual AML distributions mandatory as opposed to discretionary.[45] This latter change was made as part of a few alterations to the AML distribution formula, which established how much states and tribes would receive in AML distributions over the ensuing years. As was found in all of the proposals, RAMP funding was terminated, and the RAMP portion of the unappropriated AML balance was re-allocated as the Federal Share of the balance.

The law also crucially dealt with pressure over the repayment of the unappropriated AML balance that had been building for years by resolving to pay to states and tribes an amount equal to their unappriorated balance. Finally, it is important to note that Certified states and tribes came out well in the final legislation. According to the 2006 law, Certified states and tribes continue to receive AML distributions equal to what they would receive as a Non-certified state or tribe—except their funding is sourced from the General Treasury rather than AML fee collections.

The debate over AML reauthorization in the 108th and 109th Congress was characterized by a handful of crucial policy questions as well as a number of political factors, many of which are still relevant to the question of future AML reauthorization or reform. Historically, AML has not been a partisan issue. The program was signed into law by a Democratic President—Jimmy Carter—and has since been reauthorized during the Administrations of two Republicans—George H. W. Bush and George W. Bush—and one Democrat—Bill Clinton. Congressional debates during these periods were only minimally impacted by partisan politics. Perhaps the most salient factor in the mid-2000s Congressional debates over AML was the political impact of regional or geographic differences. The westward shift of coal production has had a major impact in that Congressmen and Congresswomen from states and tribes where a majority of AML problems remain but where less AML fees are collected—such as Appalachia—often share similar interests around AML regardless of their party affiliation. The same logic applies to Western states with similar coal and AML interests.

These regional differences played a large role in the Congressional debates because Western states, which by the mid-2000s produced much more coal than any other region in the US and thus contribute most of the AML fee collections, feel as though they are “footing the bill” for the cleanup of AMLs in the Eastern coalfields where most

[45] "Congress Passes Reauthorization of Abandoned Mine Reclamation Fee." *PA Environmental Digest*. Crisci Associates, 15 Dec. 2006. Web. 06 July 2015. <http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=5778>

of the problems remain.[46] Another large issue in the Congressional debate was that of how to appropriate annual AML distributions and how to resolve the problems associated with the unappropriated AML Fund. These questions were addressed by the establishment of a provision that makes annual AML distributions mandatory, and by the disbursement of amounts equal to the unobligated state share balances to Non-certified and Certified states. Much discussion was had in Congress over how exactly to fund the disbursement of the unobligated balances. The resolution was found in increasing AML appropriations from the General Treasury of the United States to fund the payouts, despite concern among some members of Congress over the federal deficit.[47]

Lastly, the AML program's effect on the UMWAF is considered by many to be the single most important political factor in getting the 2006 AML law passed. Without the much needed support from the AML program to the UMWAF—and the political pressure that accompanied it—the 2006 legislation may have never gotten off the ground. The result was a law that continues to support the UMWAF via transfers from interested earned on the AML Fund and from mandatory appropriations from the General Treasury.

The Pennsylvania congressional delegation, especially Republican Senator Rick Santorum, was crucial in championing the 2006 AML reauthorization and reform. It took over two years to forge the compromise that made the AML reauthorization possible, and lawmakers have been apprehensive to propose changes ever since.[48]

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[46] Bamberger outlines the westward shift of coal production: "The unobligated balances in the state AML fund account have especially nettled some states as coal production has shifted west of the Mississippi. Contributions to the AML fund have been increasingly borne by western states. In 1950, nearly 525 million tons of coal were mined in the eastern portion of the country, while western production was roughly 36 million tons. By 2003, western coal production was roughly 550 million tons, while production in the East had declined moderately to 376 million tons;"
Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.

[47] Again, context from Bamberger on *"how the return of unobligated state share balances should be funded*. The Administration approach to program reform would finance the return through a higher appropriation from the AML fund at a time of growing concern over federal spending. A competing approach in the 108th Congress, H.R. 3796, would have partly financed the return of these balances with proceeds from federal coal leasing. That bill and one in the Senate, S. 2086, would have also — among other provisions — provided for the return to states of a greater portion of current fee collections."
Bamberger, Robert L., "Abandoned Mine Land Fund Reauthorization: Selected Issues." CRS Report for Congress. Order Code RL32373. Updated March 8, 2005.

[48] Quinones, Manuel. "Transportation bill has unintended consequences for cleanups." E&E Publishing. July 6, 2012. URL: <http://www.eenews.net/stories/1059966910>

2.6. Recent AML Amendments

On July 6, 2012, the Moving Ahead for Progress in the 21st Century Act—also referred to as "MAP-21" or the "Surface Transportation" bill— became law (Public Law 112-141). It included a rider that capped, for the first the time, the annual AML distribution a Certified state or tribe can receive. This cap, which was set at $15 million annually, affected Wyoming—the only Certified state with an annual distribution above $15 million—immediately. There were also concerns from organizations like the Interstate Mining Compact Commission (IMCC) that the cap would have hidden compounding or snowball effects that would impact the distributions paid to Non-certified states as well.[49] The amendment to the SMCRA came as a surprise to many groups and individuals, including Obama Administration officials, mining advocates, and Congressmen who have historically shown great concern for AML issues.[50]

While it's unclear who pushed for the last minute rider, it's likely that it came from someone on the House Ways and Means Committee or the Senate Finance Committee. The MAP-21 bill demonstrated where many elected officials in office today stand on AML issues. After the passage of MAP-21, a spokeswoman for Senator Barasso said that the Senator "has always told Washington that AML money belongs to the people of Wyoming and should already be in Wyoming's treasury," illustrating Barasso's belief that Wyoming is entitled to all of the fees levied on coal production within its borders regardless of whether or not those fees are put towards reclamation.[51]

A number of advocates and reporters have highlighted the "controversial spending habits" of Wyoming, which has spent AML grants on "highway projects and the University of Wyoming." [52] In 2012, the state "gave the University of Wyoming more than $50 million for its School of Energy resources, athletic facilities and other projects. Another $30 million went toward highway projects and $23 million was spent on the Gillette Madison water project." [53]

The office of Senator Max Baucus of Montana, which is also a Certified state, released a statement that Baucus did not introduce the rider but that "he did not oppose it, because it cracks down on wasteful spending while protecting states like Montana who are using their AML money for mine cleanup." [54] In so doing, Montana's congressional

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[49] Ibid.
[50] Ibid.
[51] Ibid.
[52] Ibid.; Roerink, Kyle. "Paul Ryan budget put Abandoned Mine Lands funds, including Wyoming's, on chopping block." Casper Star-Tribune Communications. September 22, 2012. URL: <http://trib.com/news/state-and-regional/govt-and-politics/paul-ryan-budget-put-abandoned-mine-lands-funds-including-wyoming/article_e5a68e48-ec82-53a7-abf6-2e6fdc942466.html>
[53] Roerink, Kyle."Wyoming U.S. Rep. Lummis: House budget bill a 'raid on Wyoming'." Casper Star-Tribune Communications. September 17, 2012. URL: <http://trib.com/news/state-and-regional/govt-and-politics/wyoming-u-s-rep-lummis-house-budget-bill-a-raid/article_85f67d12-717d-5610-8e6f-70a7ccd44aef.html>
[54] Ibid.

delegation distanced itself from Wyoming. While Baucus has fought to kill provisions that would end all payments to Certified states, the Senator argues that unlike Wyoming "AML mine money in Montana goes to hard rock mine cleanup and hard rock mine cleanup only." [55]

This distinction, however, has not been convincing to other officials. The FY2013 budget proposed by 2012 Republican Vice Presidential Candidate Paul Ryan of Wisconsin included a provision that would have ended all payments to Certified states. The Ryan budget stated, "Effectively, for the states that have been 'certified' as having successfully restored critical mining sites, the mine payments serve as an unrestricted Federal subsidy." [56]

Just over a year later, on October 2, 2013, President Obama signed into law the Helium Stewardship Act of 2013 (Public Law 113-40).[57] The Helium Act was a successful effort by the Wyoming congressional delegation—led by Senators Barasso and Enzi—to address the ongoing cap placed on the AML distribution of Certified states—and thus Wyoming—the year prior. The Act raised this cap for the following two years—to $28 million in FY2014 and $75 million in FY2015.[58]

Senator Barrasso's office released a statement following the Act's passage stating, "Thanks to the revenue raised by this bill, Wyoming will soon start receiving part of its AML funding that was stolen last year. Although it's not the full amount—it's a significant step in the right direction. The delegation will continue to take every opportunity to make sure Washington fully restores Wyoming's AML funds." [59] As expected, this amendment to the SMCRA has yielded consequential effects for Wyoming in the past two years.

Since the Helium Act of 2013 the AML law has not seen legislative action.

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[55] Ibid.

[56] Roerink, Kyle. "Paul Ryan budget put Abandoned Mine Lands funds, including Wyoming's, on chopping block." Casper Star-Tribune Communications. September 22, 2012. URL: <http://trib.com/news/state-and-regional/govt-and-politics/paul-ryan-budget-put-abandoned-mine-lands-funds-including-wyoming/article_e5a68e48-ec82-53a7-abf6-2e6fdc942466.html>

[57] "Chronology of Major SMCRA-Related Events." *Office of Surface Mine Reclamation and Enforcement*. US Department of the Interior, 26 May 2015. Web. 06 July 2015. <http://www.osmre.gov/lrg/chronlisting.shtm>

[58] Ibid.

[59] News Release, "Helium Bill With AML Funding is Headed to President's Desk." Office of Senator John Barasso. September 26, 2013. URL: <http://www.barrasso.senate.gov/public/index.cfm/2013/9/post-5c3f20e5-b9c1-a2b9-fe81-9d73d34b7dc7>

3. AML Site and Project Eligibility

3.1. Eligible Land and Water

Hundreds of thousands of lands and waters affected by coal mining practices exist across the US. Lands and waters are only eligible for AML funding if they were *adversely affected by coal mining practices*.[60] More specifically, they are eligible under the AML program if they "were mined for coal or which were affected by such mining, wastebanks, coal processing, or other coal mining processes" and left in an inadequate reclamation status *prior to August 3, 1977*.[61] In addition, the land or water must not be covered under any continuing responsibility pursuant to any State or other Federal law.[62] These land and water eligibility requirements are not applicable to Certified states and tribes.[63]

AML funding may be expended on sites mined *after* August 3, 1977 only under certain circumstances. These sites must meet *either* of the conditions laid out in section 5.9(vi)(a) or section 5.9(vi)(b) of this essay and OSMRE must approve the site.[64] There are two main exemptions to note. First, a post-August 3, 1977 site is eligible if mining occurred prior to the date when the state or tribe where the site is located established an approved AML program.[65] The State or Tribe must demonstrate that the site is *as or more urgent* than other eligible high priority sites in the State or Tribe.[66] Second, if the mining occurred *predominantly*—if not entirely—prior to 1977, then it is eligible.[67]

An eligible site does not lose its AML eligibility if the site is *remined*.[68] In such a scenario, per standard protocol the surface coal mining operation must post a bond or deposit pursuant to section 1269 of the SMCRA for the purpose of reclaiming the site being remined. Once this bond has been released, the site remains eligible under AML law.[69] In the event that the bond or deposit is forfeited and such bond or deposit is inadequate to reclaim the site, then AML funding may be used to bring the site to an adequate reclamation status.[70]

[60] 30 U.S.C. §1233(a)
[61] 30 U.S.C. §1234
[62] Ibid.
[63] Ibid.
[64] 30 U.S.C. §1232(g)(4)(E)
[65] Ibid.
[66] Ibid.
[67] 30 U.S.C. §1233(b)(2)
[68] 30 U.S.C. §1234
[69] Ibid.
[70] Ibid.

3.2. The AML Site Inventory

Current law requires OSMRE to maintain an electronic database of AML sites for the purpose of reclamation project planning and evaluation, and for the purpose of awarding Certification to qualified states and tribes.[71] Officials at approved AML state programs may add eligible sites in their jurisdictions to the AML inventory on a continuing basis.[72] These sites must be approved by federal OSMRE.[73] Completed projects shall be updated in the AML inventory by state AML officials no less than once a year.[74]

It's important to note that the law specifies that OSMRE *shall provide to states and tribes the financial and technical assistance necessary for them to update the AML inventory with eligible sites in their jurisdictions*.[75] OSMRE is required to update the AML inventory for sites in states or tribes without approved AML programs.[76]

3.2.A. Electronic Abandoned Mine Land Inventory System (e-AMLIS)

The official inventory of AML sites maintained by OSMRE and updated by the states and tribes is the electronic Abandoned Mine Land Inventory System (e-AMLIS). This electronic system, housed on the OSMRE.gov website, contains information on the location (state, county, Congressional district, coordinates), type (mine blowout, subsidence, or high wall, etc.), priority ranking, and size (in relevant units, such as miles or acres) of AML problems, as well as the cost—both estimated and, where applicable, actual—of the projects implemented to abate AML problems.[77] The inventory includes data on completed, funded-but-incomplete, and remaining AML sites. e-AMLIS is updated on a regular basis by state, tribal, and OSMRE AML officials. New sites must be approved by officials at OSMRE to be included in e-AMLIS. In this sense it is dynamic: it is revised as new problems are identified and old ones are reclaimed.[78] The data is based on field surveys conducted by states and tribes, which may vary based on limited resources or technology available.

The law only requires high priority AML problems—those that pose a threat to the health, safety, or general welfare of humans—be captured by e-AMLIS.[79] Thus, *e-AMLIS is not an inventory of all AML problems in the US, nor is it intended to be.* Notably, e-AMLIS *does not even include all high priority sites,* for a variety of reasons that will be taken up in the next section. Though not the focus of the inventory, some priority 3 sites are captured in e-AMLIS in instances where state or tribal officials

[71] 30 U.S.C. §1233(c)
[72] Ibid.
[73] Ibid.
[74] Ibid.
[75] Ibid.
[76] Ibid.
[77] OSMRE, E-AMLIS Homepage. July 7, 2015. <http://amlis.osmre.gov/About.aspx>
[78] ibid.
[79] According to law, this inventory shall contain *eligible priority 1 and 2 lands and waters*.

elected to include such estimate data or when priority 3 sites were reclaimed.[80] In the latter cases, the law requires such project completion data to be included. In addition to priority 1-3 AML sites, the inventory also includes some priority 4 and 5 sites—designations that were abandoned with the passage of the 2006 AML reauthorization—and some non-coal projects including: projects completed by Certified states and tribes before and after 2006 AML reauthorization, and some non-coal projects in non-Certified states and tribes when the site was designated as priority 1 by the Governor or governing body of an Indian Tribe and approved by the DOI Secretary, pursuant to section 409 of the SMCRA.[81]

According to e-AMLIS, the first dataset was added to the inventory in the third quarter of 1993, which contained over 10,000 site records.[82] When this inventory was first established, the AML program had been operating in some capacity for over fifteen years. During that time period, the official inventory was not managed through the e-AMLIS system. This first dataset served as the foundation for e-AMLIS, which has been updated with new data on a quarterly basis since 1993.

3.2.B. Summary of Reclaimed and Unreclaimed AML Problems

According to e-AMLIS, over $5.7 billion worth of AML problems—and nearly 800,000 acres of polluted or damaged land and water—have been reclaimed through the AML program, as of April 2015.[83] While the program has made great strides in cleaning up the coalfields, the remaining job is a gargantuan one. More than 6.2 million acres of lands and waters ravaged by abandoned coal mines still exist across the country.[84] According to the inventory, it will take at least $9.6 billion to remediate the remaining AML problems, which continue to pollute and pose hazards on literally millions of acres of land and water.[85] Of the total remaining AML problems, almost $7 billion consist of High Priority sites.[86] Table 3.1 summarizes the various types of problems—from

[80] OSMRE, E-AMLIS Homepage. July 7, 2015. <http://amlis.osmre.gov/About.aspx>
[81] Ibid.
[82] Ibid.
[83] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015; E-AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015. This acreage value is based on a standardized GPRA unit that OSMRE uses to quantify the reclamation of AML sites. If a reclamation site is typically measured in a metric other than acres—such as *miles* of streams restored—OSMRE converts those units into GPRA figures, so that comparison and sum calculations can be made. From the OSMRE e-AMLIS site: “OSM is required under the Government Performance and Results Act (GPRA) of 1993 to report measurable goals to Congress. One of OSM's key measures under GPRA is the number of abandoned mine land acres reclaimed as reported in the AMLIS. Units not reported as acres are converted to acres when reporting GPRA acres.”
[84] E-AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.
[85] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[86] E-AMLIS generated reports, "High Priority (Priority 1, 2 & Adjacent Priority 3) Cost Summary" for each state and tribe. Retrieved April 27, 2015. http://amlis.osmre.gov/Summaries.aspx

underground mine fires to clogged streams—caused by abandoned underground and surface mines across the country. The table lays out the remaining and completed problem types, by cost and units specific to each problem type.

Table 3.1 National Summary of AML Problem Types, By Unit and Cost

Problem Type	Remaining Units	Remaining Costs (dollars)	Completed Units	Completed Costs (dollars)
Bench (Acres)	6,109.40	17,688,722.00	818.70	3,658,805.00
Clogged Stream Lands (Acres)	30,574.74	222,625,848.00	23,517.60	251,414,272.84
Clogged Streams (Miles)	13,553.50	75,584,035.00	901.94	85,038,336.08
Dangerous High Walls (Feet)	284,211.20	892,445,223.67	57,760.17	579,049,342.71
Dangerous Impoundments (Count)	1,243.00	31,617,505.50	2,075.10	70,163,662.41
Dangerous Piles & Embankments (Acres)	21,325.57	368,624,957.04	26,776.68	368,562,216.33
Dangerous Slides (Acres)	3,145.07	102,392,515.42	4,812.22	338,501,023.37
Equipment Facility (Count)	1,414.20	5,776,729.00	872.00	7,934,801.57
Gases: Hazardous/Explosive (Count)	12.00	2,369,001.00	78.90	23,525,630.99
Gobs (Acres)	7,058.06	88,409,375.00	8,877.46	97,279,907.49
Haul Road (Acres)	2,204.00	5,713,443.00	1,273.30	11,626,127.73
Hazardous Equipment & Facilities (Count)	3,205.30	32,655,587.00	5,651.60	38,127,867.79
Hazardous Water Bodies (Count)	1,369.58	80,797,360.50	1,486.80	71,589,672.27
High Wall (Feet)	343,377.00	1,240,997,643.08	74,668.20	19,981,973.66
Industrial/Residential Waste (Acres)	1,298.77	59,018,244.00	2,103.75	38,732,787.33
Mine Opening (Count)	2,963.00	15,057,348.00	1,381.50	5,332,080.79
Other	13,697.10	25,232,018.00	5,568.10	30,552,596.06
Pits (Acres)	5,855.04	51,586,321.00	9,904.30	61,004,929.69
Polluted Water: Agricultural & Industrial (Count)	2,522.00	82,754,878.00	507.60	47,655,862.01
Polluted Water: Human Consumption (Count)	4,378.00	3,031,023,376.50	50,013.70	340,941,661.73
Portals (Count)	16,319.10	59,725,225.55	22,143.54	95,765,285.04
Slump (Acres)	2,252.46	100,110,509.00	865.70	2,014,182,971.53
Slurry (Acres)	824.40	8,791,436.00	3,103.70	36,858,414.00
Spoil Area (Acres)	119,201.14	460,901,740.88	103,019.56	128,008,734.60
Subsidence (Acres)	10,781.76	570,694,860.00	9,472.45	488,888,552.44
Surface Burning (Acres)	451.46	21,521,129.00	2,123.75	85,041,247.50
Underground Mine Fires (Acres)	3,738.00	841,661,866.00	1,750.69	99,435,126.69

Vertical Openings (Count)	7,916.60	183,999,671.37	19,318.99	111,662,676.78
Water Problems (Gallons)	701,167.51	963,170,217.99	49,855.35	67,954,252.32
Report Total		**9,653,921,348.50**		**5,714,445,552.97**

Table 3.2 shows the costs and percentages, by state and tribe, of remaining AML problems, according to e-AMLIS. Pennsylvania's inventoried problems alone will require a minimum of $5 billion for reclamation to clean up 277,000 acres, and its share of the national cost of remaining AML problems represents a whopping 52.12%.[87] Central Appalachian states represent 23.45% of the national total.[88] At least $2.3 billion will be required to reclaim the 233,000 acres of damaged land and water across these states.[89] According to the inventory, $1.3 billion has previously been put to use in Central Appalachian states to reclaim over 485,000 acres of AML problems.[90] It is interesting to note that nearly half a billion dollars worth of unreclaimed AML problems still exist in Certified states and tribes, a designation that exists for states and tribes that have cleaned up all of their AML sites.[91] A full breakdown of the cost, acreage, and state or tribal percentage of remaining and completed AML problems can be found in the Appendix 3.1.

Table 3.2 Remaining Inventoried AML Problem Cost and percentage, By State and Tribe[92]

	Cost of Remaining AML Problems (dollars)	Share of Remaining AML Problem
Alabama	439,214,696.74	4.56%
Alaska	54,424,009.00	0.56%
Arkansas	20,703,293.00	0.21%
California	240,000.00	0.00%
Cherokee	1,840,000.00	0.02%
Colorado	75,993,254.00	0.79%
Fort Berthold	500	0.00%

[87] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[88] Ibid.
[89] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015; E-AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.
[90] Ibid.
[91] Total cost of unreclaimed AML problems in Certified states and tribes equals $438,340,362.21. E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[92] E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015; percentages calculated by author Dixon.

Fort Peck	150,000.00	0.00%
Georgia	223,000.00	0.00%
Illinois	133,621,839.00	1.39%
Indiana	98,933,813.25	1.03%
Iowa	61,450,165.42	0.64%
Kansas	358,662,355.00	3.72%
Kentucky	461,928,279.00	4.79%
Louisiana	14,078,338.00	0.15%
Maryland	65,659,612.00	0.68%
Massachusetts	5,000.00	0.00%
Michigan	5,127,500.00	0.05%
Mississippi	24,785.00	0.00%
Missouri	118,288,532.00	1.23%
Montana	224,316,863.00	2.33%
Navajo Nation	1,956,281.00	0.02%
New Mexico	21,628,056.00	0.22%
North Dakota	39,198,612.00	0.41%
Ohio	274,058,879.50	2.84%
Oklahoma	141,823,918.00	1.47%
Pennsylvania	5,022,586,581.79	52.12%
San Carlos	5,000.00	0.00%
Tennessee	42,622,803.00	0.44%
Texas	9,434,078.21	0.10%
Utah	4,221,356.00	0.04%
Virginia	422,841,982.32	4.39%
West Virginia	1,332,648,210.87	13.83%
White Mountain	500	0.00%
Wyoming	188,530,017.00	1.96%
National Total	**9,636,442,110.10**	**100.00%**

3.2.C. Shortcomings of the Existing AML Inventory

The federal AML inventory—e-AMLIS—provides AML data that is useful for a variety of tasks and applications, including for reclamation planning, tracking project progress, and accomplishment reporting. The inventory is useful to understand the scope of the unreclaimed and reclaimed AML sites across the country—data that is crucial for policy purposes. Yet, e-AMLIS is not a modern or complete picture of abandoned coal mines across the US. It is limited in a number of significant ways.

The law does not require priority 3 AML problems be included in the inventory.[93] Similarly, the law does not require that the inventory contain *all* high priority sites.[94] This is a nuanced and important point. The law establishes e-AMLIS to capture data on high priority AML sites, but it does not encourage or provide funding for states and tribes to ensure that all (or, maximal) high priority sites are included in e-AMLIS.[95] A spring 2015 survey of state and tribal AML officials confirmed that because e-AMLIS is set up for high priority sites only, many AML sites, such as gob piles and other sites not currently causing harm, are known by AML officials but not added to e-AMLIS until they devolve into harm-causing problems.[96] Thus, by statutory design, the existing e-AMLIS is limited to high priority sites, and because of limited resources not all high priority sites are included.

Experts agree that e-AMLIS is out-dated and excludes billions of dollars worth of unreclaimed AMLs that likely exist in the coalfields. The original federal AML inventory was based on aerial photographs taken from fixed-wing aircraft, and many of the state inventories were developed three decades years ago in the 1970s and 1980s. The original assessment no doubt missed some AML features based on its methods, and a wholesale assessment of the AMLs has not been attempted since that initial effort. Though e-AMLIS is continually updated in the sense that it includes all *known* high priority AML sites, there are multiple reasons why the inventory is incomplete.

State AML programs do not have enough resources or capacity to dedicate funds towards cataloging the AMLs within their borders, so they are often left only adding new AMLs to the inventory as landowners bring them the agency's attention or as agency officials discover AML sites while performing reclamation on a nearby site. Nearly two-thirds of AML officials surveyed said that "a significant number of AML sites/features in

[93] 30 U.S.C. §1233(c)
[94] Ibid.
[95] As the OSMRE e-AMLIS website states, the inventory is "Incomplete: Only high priority (Priority 1 and 2) coal mining related problems have been systematically inventoried. These are the primary problems addressed by OSM's Abandoned Mine Land Program. Because resources are limited, States and Indian tribes have not always been able to inventory all their high priority (Priority 1 and 2) coal mining related problems..." <http://amlis.osmre.gov/Default.aspx>
[96] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015; Survey conduced by authors, see Appendix 1.1 to learn more.

[their] state or tribe" are not captured by e-AMLIS.[97] One AML official noted that in his state "the last detailed survey of AML problems was completed in the early '80s."[98] While some states have a much more complete handle on the AMLs within their borders given their geology or geography, this is not the case for the majority of states surveyed.[99] One AML official estimated that "approximately 50% of our known mined areas have been visited and assessed." [100]

The problem posed by the lack of a systematic effort to capture up-to-date data on AMLs is amplified by their *dynamic* nature. Existing AMLs often expand and change, and new AMLs are always developing as old mines deteriorate and decay according to age and the elements. Multiple surveyed state AML officials agree that new AML features develop every year, especially those caused by subsidence, sinkholes, landslides, and mine blow-outs.[101] Also, the priority schedule of AMLs depends on a site's proximity to human populations, so the priority status of an AML often changes as communities encroach or move away from AML sites with time. The lack of an *active* effort to catalogue AMLs presents perhaps the largest unknown, in that updates to the inventory are based on new information *passively* collected in a piece-meal fashion. Without a modern systematic assessment of the coalfields, it is hard to know just how many AML sites exist that are not captured in the current inventory.

In addition to the incompleteness of the inventory, e-AMLIS is technologically and functionally out-dated. Approximately half of the AML surveyed officials agreed that the e-AMLIS needs improvement.[102] As one AML official expressed, the e-AMLIS system is not currently equipped to handle "the complexities of reflecting all the facets and details of AML problems." [103] The state inventories were originally developed as a tool for accomplishment and inventory reporting.[104] Because the system was initially developed for this purpose, it lacks detail in many critical areas. As Eric Cavazza, President of the National Association for Abandoned Mine Land Programs (NAAMLP) explained, old and new "AML data is very generalized, at a '20,000 foot' level" and much of older project-

[97] 62.5% of survey respondents agreed that "there a significant number of AML sites/features in your state or tribe that are not currently captured by the federal OSMRE Electronic Abandoned Mine Land Inventory System (e-AMLIS)." This data is from a survey conducted of state and tribal AML officials by the authors in spring 2015;
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[98] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[99] Ibid.
[100] Ibid.
[101] Ibid.
[102] 7 of 16 respondents indicated that "there things that could be added to or reformed about the e-AMLIS system to allow it to function more effectively;"
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[103] Ibid.
[104] Ibid.

specific data "is not detailed enough nor does it meet accuracy standards of current mapping technologies." [105]

Advancements in technology over the past few decades have produced geographic information systems (GIS) mapping and other technologies that could enable officials to capture very precise data on a site's location and problem. The concern for more updated mapping and GIS capabilities was common among state AML officials surveyed in spring 2015.[106] Cavazza explained that the capacity required to "upgrade the current data within e-AMLIS to the standards necessary to support a modern GIS application would be extensive and likely cost prohibitive." [107] Thus, while the need for modern GIS functionality of the inventory is apparent, many states don't currently possess the capacity or resources to utilize these features.[108]

State officials working in programs that have been able to adopt procedures that utilize GIS technologies have expressed that doing so enables officials to efficiently and effectively acquire detailed data about the AML feature. As Richard Davis, AML Projects Coordinator, VA Dept. of Mines, Minerals and Energy stated, "e-AMLIS needs a geospatial component that AML programs will uniformly adopt for recoding features and accomplishments." [109] When updating e-AMLIS for modern GIS components, attention should be paid to the needs and concerns of states, some of which already have advanced mapping technologies that are working effectively for the operations within their state.[110] In light of these concerns, leadership from OSMRE and more funding to include updated mapping technology features to e-AMLIS—and to acquire the data from the field—is needed.[111]

In addition to the need for an updated geospatial component of e-AMLIS, state AML officials also raised concerns about the following potential areas for e-AMLIS improvement:[112]

- Ability to include and easily utilize Problem Area Description (PAD) maps—not just the global positioning system (GPS) coordinates of AML problems—in e-AMLIS[113]

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[105] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[106] Ibid.
[107] Ibid.
[108] It is important to note that some states already have advanced mapping technologies. The development of federal GIS technologies should be done within this context.
[109] Ibid.
[110] Ibid.
[111] One official stated," Many states have their own geographic information systems (GIS) to meet their mapping and planning needs. This is best left to the individual states and tribes but states should be allowed to purchase survey grade equipment to increase the level of accuracy in their data sets." In light of concern like these, OSMRE should work with the states to develop a solution to the need for mapping technology features that best suits the needs of state programs.
[112] These areas for improvement were taken directly from the survey responses of state and tribal AML officials.
[113] Currently, e-AMLIS "only allows one GPS location entered per PAD," explained one state AML official. "Once each states' PAD maps are uploaded, it would then be helpful to be able to click on a PAD and see

- Better project location delineations within a problem area[114]
- More user-friendly interface
- More flexibility in customization
- Updated cost tracking functions
- Updated and more user-friendly query functionality
- A function that automatically updates cost estimates for inflation. Despite the fact that the AML program has existed for over 35 years, cost estimates in e-AMLIS are updated neither for inflation nor changes in the costs of the various types of reclamation projects.

For all these reasons, AML officials and other experts agree that the federal AML inventory as it stands now is significantly incomplete and out-dated. Indeed, one state AML official noted that improvements are needed "so that users have some degree of confidence the data they are extracting is accurate." [115]

Analyzing data and summaries from e-AMLIS should be done within the context of these shortcomings. While the dynamic—and sometimes hidden—nature of AMLs mean that it is virtually impossible to possess knowledge of all AML problems on every acre of land and in every mile of stream across the country, there is a significant gap between the current status of e-AMLIS and the upper-bound of our feasible knowledge of AMLs.

It is critical to note that the rigor of the inventory varies broadly by state or tribe, which may also maintain its own inventory. Pennsylvania, for example, has done perhaps the best job at maintaining a large, quality inventory of the AML land and waters within its borders. Pennsylvania's effort has no doubt benefited from robust support from watershed, AMD, and abandoned mine reclamation organizations within the state that have developed on-going partnerships with the state AML agency. AML reclamation also appears to be a priority of the state government.

For these and other reasons, some states and tribes could perhaps learn from the inventory of a state like Pennsylvania, which seems to be further along than many states in terms of its inventory functionality and detail. While resources have no doubt been limited, its important to note that the law itself states that federal OSMRE will provide necessary financial and technical assistance for update of e-AMLIS—citizen and watershed groups should be working with federal OSMRE to see that funding gets to states and tribes to catalogue all of the AML sites across the US.

On a related note, in the spring of 2015 survey conducted among state and tribal AML

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the problems associated with that PAD right on the map. It would also be helpful to be able to update current PAD boundaries and create new PADs on the interactive map. And also on e-AMLIS in general, it would be helpful to be able to search for a PAD number by just typing in the number and then hitting enter on the keyboard, instead of using the mouse to click Search."

[114] For example, if multiples projects are located within a single problem area in e-AMLIS, it can be confusing and difficult to acquire the location details of a specific project.

[115] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.

officials, multiple state officials explained that their state has a significant number of non-coal (or, hardrock) AML sites inventoried but not added to e-AMLIS, though few, if any, states have had the resources to complete an expansive survey of non-coal AML sites.[116] As Bruce Stover, Director, Colorado Inactive Mine Reclamation Program, explained, "We have thousands of hazardous non-coal mining features NOT currently in e-Amlis." [117]

[116] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[117] Ibid.

3.3. AML Priority System

According to the law, states and tribes must follow a priority system in the selection of AML sites within their borders for reclamation. The priority system separates AML problems/sites into three classes and ranks these classes according to their priority.[118] A state or tribe must reclaim all of the priority 1 and priority 2 sites within its borders before it may use AML dollars to reclaim any priority 3 sites.[119] A priority 1 site is an AML site that poses *extreme* danger to human health or safety and a priority 2 site is one that poses danger to human health or safety.[120] "High priority" sites refer to priority 1 and 2 sites collectively. A priority 3 site is a one that poses an environmental problem(s) but does not immediately or directly affect human health or safety.[121] The problems on AML sites outlined in the priority schedule must be caused by the "adverse effects of coal mining practices," and the area restored or remediated must be "adjacent" to such problem(s).[122]

Table 3.3 provides the remaining cost and acreage of AML sites classified under each priority ranking, according to e-AMLIS. As the figure shows, the majority of remaining AML problems fall under the priority 2 classification, which total 290,000 acres that will require at least $6.5 billion to reclaim. Almost $0.5 billion worth of priority 1 and $3 billion worth of priority 3 problems remain.

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[118] Section 1233 of the SMCRA classifies the priorities as the following:

(1) (A) the protection of public health, safety, and property from extreme danger of adverse effects of coal mining practices;
(B) the restoration of land and water resources and the environment that—
(i) have been degraded by the adverse effects of coal mining practices; and
(ii) are adjacent to a site that has been or will be remediated under subparagraph (A);

(2) (A) the protection of public health and safety from adverse effects of coal mining practices;
(B) the restoration of land and water resources and the environment that—
(i) have been degraded by the adverse effects of coal mining practices; and
(ii) are adjacent to a site that has been or will be remediated under subparagraph (A); and

(3) the restoration of land and water resources and the environment previously degraded by adverse effects of coal mining practices including measures for the conservation and development of soil, water (excluding channelization), woodland, fish and wildlife, recreation resources, and agricultural productivity.

[119] 30 U.S.C. §1233(a); 30 U.S.C. §1232(g)(2); 30 U.S.C. §1232(g)(5)(A)

[120] 30 U.S.C. §1233(a)

[121] Ibid.

[122] Ibid.

Table 3.3 National Summary of AML Problems By Priority Ranking[123]

	Remaining Cost (dollars)	Remaining Acres	Completed Cost (dollars)	Completed Acres
Priority 1	438,346,071.51	53,946.51	1,154,559,309.91	66,653.53
Priority 2	6,467,616,882.98	289,925.54	2,019,526,267.17	349,819.94
Priority 3	2,736,942,832.01	5,875,114.21	2,439,221,147.67	375,991.99
Total	**9,653,921,348.50**	**6,219,614.26**	**5,714,445,552.97**	**796,992.46**

There are two notable exceptions to the rules imposed by this strict priority rule. The first exception is in the case of a priority 3 site adjacent to a priority 1 or 2 site that the state or tribe is already reclaiming.[124] Accordingly, a state or tribe may reclaim a priority 3 site when there are priority 1 and 2 sites remaining in the state or tribe *if* the priority 3 site is reclaimed "in conjunction" with a priority 1 or priority 2 site.[125] The second exception is in the case of the Acid Mine Drainage (AMD) Set-Aside program outlined in section 7.3 of this essay.[126] In this case, a state or tribe may annually set-aside a portion of its AML funding to reclaim an AMD site(s), even if the AMD site is a priority 3 site and the state or tribe still contains priority 1 and 2 sites.[127] In addition, Certified states and tribes are *not* required to follow the standard AML priority system outlined in this section—a more flexible set of priorities are laid out to guide Certified programs—and they are not eligible to expend AML funds for water restoration projects as outlined in this section.[128]

[123] This acreage value is based on a standardized GPRA unit that OSMRE uses to quantify the reclamation of AML sites. If a reclamation site is typically measured in a metric other than acres—such as *miles* of streams restored—OSMRE converts those units into GPRA figures, so that comparison and sum calculations can be made; The "Total" values include figures for other priority rankings (Priority 4, Priority 5, Priority B, Priority F, and Priority H) not listed in the figure; E-AMLIS generated report, "Problem Type Unit & Cost (National2) w/ GPRA." Retrieved April 28, 2015.
[124] 30 U.S.C. §1232(g)(7)
[125] Ibid.
[126] 30 U.S.C. §1232(g)(6)(B)
[127] Ibid.
[128] 30 U.S.C. §1233(a); 30 U.S.C. §1233(b)(1)

3.4. Projects Eligible for AML Funds

According to the law, the AML program's primary purpose is the "reclamation and restoration of land and water resources adversely affected by past coal mining." The law manifests this general purpose through a variety of specific projects. The following are the main projects eligible for the use of AML funding under the law:

1. reclamation and/or restoration of abandoned surface mine areas[129]
2. reclamation and/or restoration of abandoned coal processing areas[130]
3. reclamation and/or restoration of abandoned coal refuse disposal areas[131]
4. filling and sealing of deep mine entries and voids[132]
5. planting of land adversely affected by coal mining to prevent erosion and sedimentation[133]
6. prevention, abatement, treatment, and control of water pollution created by coal mine drainage, including but not limited to:
    a. restoration of stream beds[134]
    b. construction and operation of water treatment plants, water distribution facilities, and water line extensions[135]
    c. restoration of streams affected by acid mine drainage (AMD).[136] The law provides special priority and a funding mechanism for states to fund AMD projects; see section 7.3 of this essay to learn more about the AMD Set-Aside program[137]
7. prevention, abatement, treatment, and control of burning coal refuse disposal areas and burning coal in situ[138]
8. prevention, abatement, and control of coal mine subsidence [139]
9. Small Operator Assistance Programs (SOAP): state-administered programs that assist small coal operators—those that produce less than 300,000 tons annually—in doing hydrology and related tests required in the permitting process[140]
10. establishment of state-administered programs to insure private property against damages caused by land subsidence resulting from underground coal mining[141]

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[129] 30 U.S.C. §1231(c)(1)
[130] Ibid.
[131] Ibid.
[132] 30 U.S.C. §1231(c)(1)
[133] Ibid.
[134] Ibid.; See chapter 7 of this essay to learn more about the water restoration projects eligible under the law. 30 U.S.C. §1233(b)
[135] 30 U.S.C. §1231(c)(1); 30 U.S.C. §1233(b)
[136] 30 U.S.C. §1232(g)(6)(A)
[137] Ibid.
[138] 30 U.S.C. §1231(c)(1)
[139] Ibid.
[140] No more than $10,000,000 shall annually be available for this purpose. (30 U.S.C. §1231(c)(9));
[141] Only those states that have established a state regulatory program approved by the Secretary of Interior are eligible, and funds used for this purpose shall not exceed $3,000,000 from the annual State or Tribal Share. (30 U.S.C. §1231(c)(1))

11. acquisition and filling of voids and sealing of tunnels, shafts, and entryways of any mining operation, *including non-coal operations*, if such spaces constitute a hazard to public health and safety; the disposal of mine wastes meeting the purpose of filling and sealing tunnels may also be eligible for funding[142]
12. restoration, reclamation, abatement, control, or prevention of adverse effects of coal mining which constitutes an *emergency* as defined by AML policy; see section 3.6 of this essay for more information on AML emergency projects[143]

AML funding may also be used for the following varied programs and purposes, which may not strictly fall within the category of reclamation projects. Many of these purposes include the costs associated with administering and enforcing an AML program at the federal or state level:

13. acquisition of land according to AML policy; see section 3.5 of this essay for an outline of the land acquisition policy[144]
14. enforcement and collection of the AML reclamation fee[145]
15. grants to the States to accomplish those purposes enumerated by the AML program[146]
16. administrative expenses of federal OSMRE and each state and tribe to accomplish the purposes of the AML program[147]
17. grants for use by Certified States; see section 5.8 for details on the AML funding and project eligibility for Certified States[148]
18. transfers to certain United Mine Workers of America (UMWA) benefit and pension funds, as outlined in section 5.11 of this essay[149]

[142] Such a project must be at the request of a Governor or governing body of any Indian tribe; the law declares such spaces constitute a hazard to public health and safety; OSMRE may acquire by purchase, donation, easement, or otherwise land they find necessary for this purpose; Certified states are not eligible; 30 U.S.C. §1239(d); 30 U.S.C. §1231(c)(2); 30 U.S.C. §1239
[143] 30 U.S.C. §1231(c)(5); 30 U.S.C. §1240
[144] 30 U.S.C. §1231(c)(3); 30 U.S.C. §1237
[145] 30 U.S.C. §1231(c)(4); 30 U.S.C. §1232
[146] 30 U.S.C. §1231(c)(6)
[147] 30 U.S.C. §1231(c)(7)
[148] 30 U.S.C. §1231(c)(8)
[149] 30 U.S.C. §1231(c)(10)

3.5. Right of Entry and Land Acquisition Policy

The SMCRA authorizes state and federal AML officials to enter a property to reclaim an AML site in cases when the landowner will not give permission to enter or when the landowner is not known.[150] In order to acquire this right of entry, the property must contain an eligible AML site that presents adverse effects to the public welfare to such an extent that action is required.[151] In such cases, officials may enter this and any other property necessary to access the AML site, only for the purpose of reclaiming or abating the AML problem in question. The SMCRA also provides a right of entry to AML officials for the purpose of conducting studies or doing exploratory work needed to determine the extent of the adverse effects of a site.[152]

The SMCRA also authorizes the United States—or an approved state or tribe—to acquire land by purchase, donation, or condemnation, if the land is affected by an AML problem and acquisition of the land is deemed necessary for reclamation.[153] In order to qualify for such acquisition, the site must meet *either* of the following scenarios: [154]

A. a permanent facility such as a treatment plant or a relocated stream channel constructed on the land is needed for the purpose of reclaiming the site, [155]
B. or acquisition of coal refuse on the site helps achieve the purpose of the AML program, or that ownership of the land is desirable to meet emergency situations and prevent recurrences of the adverse effects of the AML problem[156]

The reclaimed site must serve recreation and historic purposes, conservation and reclamation purposes, or provide open space benefits.[157]

Under the SMCRA, OSMRE has the authority to provide grants on a matching basis to states and tribes for the purchase of such land.[158] A grant cannot exceed 90% of the total cost of the acquisition.[159] The SMCRA allows the federal government to sell the

[150] A notice of entry must be delivered to the landowner—if known—prior to entry. If the landowner is not known, a public notice must be given on the site and in the local newspaper prior to entry. “Such entry shall be construed as an exercise of the police power for the protection of public health, safety, and general welfare and shall not be construed as an act of condemnation of property nor of trespass thereon... The moneys expended for such work and the benefits accruing to any such premises so entered upon shall be chargeable against such land and shall mitigate or offset any claim in or any action brought by any owner of any interest in such premises for any alleged damages by virtue of such entry...” (30 U.S.C. §1237(a))
[151] 30 U.S.C. §1237(a)
[152] 30 U.S.C. §1237(b)
[153] 30 U.S.C. §1237(c); From the SMCRA: “The price paid for land acquired under this section shall reflect the market value of the land as adversely affected by past coal mining practices.” 30 U.S.C. §1237(d)
[154] 30 U.S.C. §1237(c)
[155] Ibid.
[156] Ibid.
[157] 30 U.S.C. §1237(c)
[158] 30 U.S.C. §1237(e)
[159] Ibid.

reclaimed land to a state or local government at a price below the fair market value (but not lower than the cost of the purchase and reclamation of the site), for valid purposes outlined above.[160] In the event that acquired land is deemed suitable for industrial, commercial, residential, or recreational development, it may be publicly sold through a competitive bidding process, consistent with local and state land use plans and other relevant regulations.[161]

Crucially, the SMCRA requires that a state or tribe, if requested, hold a public hearing on the potential use or disposition of reclaimed land acquired under the authority of the AML program.[162] As the law states, "The hearings shall be held at a time which shall afford local citizens and governments the maximum opportunity to participate in the decision concerning the use or disposition of the lands..." [163]

3.5.A. Land Acquired for Displaced, Disabled, or Dislocated Persons

Interestingly, the SMCRA authorizes the use of AML funds for the acquirement, reclamation, and transfer of land affected by an AML problem, if that land is necessary to construct or rehabilitate housing for: [164]

a. persons disabled as the result of employment in the mines or incidental work
b. persons displaced by acquisition of land through the AML program
c. persons dislocated as the result of an AML emergency
d. persons dislocated as the result of natural disasters or catastrophic failures from any cause

Such land may be transferred to a state or tribe, any political subdivision thereof, or to any person, firm, association, or corporation, with or without monetary consideration, for the purpose of housing listed above.[165] AML funds cannot be used for the actual construction costs, only to acquire and reclaim the site.[166]

[160] Ibid.
[161] 30 U.S.C. §1237(g)(1)
[162] Ibid.
[163] Ibid.
[164] 30 U.S.C. §1237(h)
[165] Ibid.
[166] Ibid.

3.6. Emergency AML Reclamation

It is not rare for AML sites to develop suddenly, or for an existing AML site to quickly and dramatically deteriorate. In many cases, these AML sites present emergencies that must be remedied immediately. AML emergencies are classified under the SMCRA as AML problems that pose an emergency danger to the public health, safety, or general welfare.[167]

For many years, OSMRE was financially responsible for the reclamation of emergency AML sites in many states and tribes across the US, including states and tribes that have approved AML programs. As the OSMRE e-AMLIS website states, "Until FY 2011, OSMRE provided Abandoned Mine Land (AML) State Emergency grants to the 15 states that manage their own emergency programs... OSMRE managed emergencies in [thirteen other states and tribes that had approved AML programs... as well as in Federal Program States without AML programs." [168] With the increased AML distributions to states and tribes that followed the 2006 AML amendments, OSMRE saw no need to continue to absorb the financial responsibility of AML emergencies in states and tribes with approved AML programs.

In 2011, OSMRE utilized its authority to transfer financial responsibility of emergency reclamation to the states and tribes. As of 2011, states and tribes with approved AML programs finance emergency reclamation through their standard annual AML distribution.[169] OSMRE continues to maintain financial and reclamation responsibility for AML emergencies that develop in states or tribes without an approved AML program.[170]

[167] 30 U.S.C. §1240
[168] OSMRE, E-AMLIS Homepage. July 7, 2015. <http://amlis.osmre.gov/About.aspx>
[169] Ibid.
[170] Ibid.

3.7. Acid Mine Drainage (AMD) Set-Aside Provision

Because the AML priority system explained in section 3.3 of this essay requires states and tribes to prioritize the reclamation of sites that pose a direct threat to humans, the priority system restricts a state or tribe's ability to abate some environmental problems, such as acid mine drainage (AMD), posed by AML sites. To address this difficulty, the AML law was amended by the 2006 reauthorization legislation to expand what is often called the "Acid Mine Drainage Set-Aside" (or, "AMD Set-Aside") program.

The current law allows a state or tribe to set-aside up to 30% of its total annual grant money from State and Tribal grants and Historic Coal grants for acid mine drainage projects.[171] The portion of the annual grants set-aside is not subject to the typical AML priority system, though it *must* be used for AMD projects and sites are only eligible for AMD set-aside money if they contain *any* of the three AML priorities explained in section 5.3 of this essay.[172] In order to utilize the 30% AMD set-aside option, a state or tribe must have a fund established under state law for the purpose of AMD abatement.[173] All grant money and interest earned in the set-aside fund must be used to abate "the causes and the treatment of the effects of acid mine drainage in a comprehensive manner." [174]

In order to be eligible for the use of AMD set-aside money, a waterway's water quality must be "significantly affected by acid mine drainage from coal mining practices in a manner that adversely impacts biological resources" *and* the water must be affected by a coal mine(s) that was abandoned prior to the approval of the AML program in the state or tribe where the water is located.[175] To be clear, a site must contain at least one of the AML priorities, but the priority system does not otherwise apply to the use of AMD set-aside money.[176] So priority 3 AMD sites, for example, may be reclaimed before priority 1 or 2 AMD sites.

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[171] 30 U.S.C. **§**1232(g)(6)(A)
[172] Ibid. 30 U.S.C. **§**1232(g)(6)(B); State and Tribal Share grants and Historic Coal grants may be used "for the purpose of protecting, repairing, replacing, constructing, or enhancing facilities relating to water supply, including water distribution facilities and treatment plants," to remedy water problems posed by the adverse effects of coal mining practices. To qualify, the water problem(s) must have been caused *prior* to August 3, 1977. If the adverse effects on water occurred both before and after August 3, 1977, then the adverse effects must have occurred *predominantly* before August 3, 1977 in order for the site to qualify. 30 U.S.C. §1233(b)(1); 30 U.S.C. §1233(b)(2)
[173] 30 U.S.C. **§**1232(g)(6)(A)
[174] Ibid.
[175] 30 U.S.C. **§**1232(g)(6)(B)
[176] Ibid.

4. State and Tribal AML Programs

OSMRE delivers annual AML grants to states and tribal AML programs to complete reclamation within their borders. The state and tribal AML programs utilize this funding to develop and complete an annual body of reclamation work. The programs follow processes for cost estimate development, site selection, project design, contract bidding, and more. It is crucial to note that the circumstances and processes of state and tribal AML programs are far from uniform. There are overarching commonalities among the programs, but the programs do differ in important ways given a number of factors affecting the situation of AMLs within the state or tribe. In order to acquire approval from the federal government, each state and tribal AML program had to develop a state AML plan. These plans, whose specifics vary by state or tribe, serve as a basis for the state or tribe's AML operations. In addition, state and tribes use the AML-1 Abandoned Mine Land Inventory Manual as a guiding document for their operations.

This chapter is based on data from a 2015 survey of state AML officials conducted by the authors.[177] The chapter outlines general themes gleaned from this data on the processes that states and tribes utilize to complete AML reclamation within their state. The chapter also highlights eight case studies of AML projects that have delivered long term economic impacts. These case studies range from Missouri, Pennsylvania, Maryland, New Mexico, Colorado, Virginia, and Germany, and demonstrate the potential of AML projects for economic development in tourism, recreation, agriculture, renewable energy production, retail, and beyond.

4.1. Basics of AML Cost Estimates

When state AML officials discover and add a new AML site to e-AMLIS, the first step is often the development of an estimate for the cost of reclaiming the site. Cost estimates are useful for planning purposes as state AML programs develop annual plans of work, though the difference between preliminary estimates and actual estimates may vary greatly, especially since many cost estimates date back to the 1980s.

The processes by which state and tribes develop initial cost estimates for AML sites vary by state or tribe. Robert Rice, West Virginia AML Chief, provides a sketch of the first steps West Virginia undergoes when adding a new AML problem to the system: "Evaluate the site, develop an abatement plan, collect field measurements, compare required units with recent bids, compile totals." [178]

[177] See Appendix 1.1 for an explanation of the methodology this survey.
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[178] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.

While they may vary by state or tribe, the following are factors considered by a state or tribal AML program when developing a cost estimate for an AML site: [179]

- Problem type (highwall, gob pile, clogged stream, etc.)
- Size and location of project area
- Site conditions, especially with regard to past and potential weather (rainfall)
- Methods of reclamation, including required equipment usage and costs
- Fuel costs
- Labor costs, considered within the context of current wage levels
- Contractor profit and overhead

The most common tool utilized by state and tribal AML programs is to consult previous actual construction expenditures, which naturally incorporate many of factors listed above, as a rule of thumb to develop a cost estimate for an AML problem of similar type and size. Many AML programs utilize multi-year averages of previous project costs as a basis to develop new cost estimates. For example, one state AML official explained the process utilized in his state, "To develop the estimated cost of reclamation of a feature, our state utilizes past actual costs as the basis. We assign costs of reclamation using the five-year average cost per unit for each feature type. Example: Dangerous Highwall unit of measure is feet. Past highwall projects average cost per unit (feet) has been approximately $145/foot. In this case, a 1000 foot highwall reclamation project estimated cost will be $145,000." [180]

While the experience and expertise of AML officials has enabled programs to develop processes that incorporate a number of important factors, Bruce Stover, Director of Colorado's Inactive Mine Reclamation Program, notes that "preliminary estimates can vary significantly from the actual completed project costs." [181] William Dodd of North Dakota's Abandoned Mine Lands Division, explains, "Initial cost estimates were generally made more than 30 years ago and have not been updated. The cost for reclamation work has increased since then. These initial cost estimates are rough estimates only and actual project costs are very likely to differ from them..." [182] State and tribal AML officials note that initial and actual project costs often differ according to the following factors: [183]

- Contractor availability
- Economic factors affecting local contractors and the competitive bidding atmosphere at the time of construction
- Changes in project design, such as final closure specifications chosen for each feature within the project; or changes in design due to compliance with the National Environmental Policy Act (NEPA)
- Increases in equipment and fuel costs
- Landowner concerns and wishes, which may vary from initial project design

[179] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[180] Ibid.
[181] Ibid.
[182] Ibid.
[183] Ibid.

- Unforeseen site conditions, including varying effects caused by geology or weather (rainfall)
- Inflation

As Robert Rice, West Virginia AML Chief, explains, "The length of time between generation of a cost estimate and construction determine accuracy of cost estimates." [184] This suggests that the more time that elapses between initial cost estimates and actual construction, the more the above factors cause actual expenditures to differ from initial. This, of course, has massive repercussions on the fact that many cost estimates in e-AMLIS are decades-old and, thus, actual construction of those sites will likely be *much* higher than they current estimates suggest.

As Mr. Stover notes, "A more refined estimate is developed as the project goes through the design phase...[and] *actual* project costs are corrected and entered into e-AMLIS at the conclusion and close-out of each project and the OSM grant." [185]

In 2014, OSMRE commissioned a working group to review and consider cost estimating guidelines, which "were established in 1984 and are applied using easily determined measurements or counts to develop very rough and presently undervalued estimates." [186] The basic guidelines are contained in Chapter 6 of OSM's AML-1 guidance 'Abandoned Mine Land Inventory Manual.'" As Eric Cavazza, Director of Pennsylvania's Bureau of Abandoned Mine Reclamation, explains, "The AML-1 manual encourages the use of more accurate estimating methods, but to be more accurate these methods rely on a higher level of site reconnaissance and are only occasionally used for Unfunded cost estimates" because of the cost.[187] The 2014 OSMRE working group is currently ongoing.

4.2 Basics of AML Project Selection and Design

The reclamation of an AML site begins with the selection of the site by the state or tribal AML program within which the site lies. Unlike other governmental initiatives, AML projects are not selected or awarded through a competitive grants or selection process. In other words, individuals or organizations cannot apply directly for reclamation. Rather, officials within the state or tribal AML program make selection decisions and develop an annual body of work, according to a set of factors taken into account.[188] The selection process in most states is not a written policy whereby a decision is made

[184] Ibid.
[185] Ibid.
[186] Cavazza, Eric, response to spring 2015 AML survey;
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[187] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[188] Ibid.

according to some group decision-making process.[189] Typically, sites are selected according to an informal process or policy adopted by the state or tribal program. Most frequently, the state AML officer—or a small group of AML officials within a state or tribe—selects a set of sites to reclaim for a given year.

While most AML programs do not incorporate much public input into site selection and design, a few state programs have developed such mechanisms. Ohio acquires final approval of AML projects at regional open house meetings.[190] Virginia has established an ongoing AML committee that meets on a routine basis to review the program's proposed body of work and offer suggestions. The committee is typically comprised of local representatives, academics, industry officials, and others.

Perhaps the best model of public input has been developed in Colorado, which has established a standing AML Project Advisory Council comprised of "citizen stakeholders from around the state and includes local government, coal industry, local contractors, environmental interests, agricultural interests as well as federal land management agency representation and input." [191] Each proposed AML project is reviewed by the Council, and the Council's framework is written into the state's AML operational policies.[192]
The examples provided by a number of successful citizen AML committees suggest that other AML programs might stand to gain by establishing an inclusive and open committee comprised of citizen and other stakeholders that provides routine review—and perhaps even approval—of AML projects, especially those with community impact.

While individuals cannot directly apply for AML reclamation, owners of property that qualifies for AML reclamation can inform the AML program within their state or tribe of their AML site and/or desire for reclamation. An inquiry from a landowner is typically the first step in the reclamation process.[193] In Pennsylvania, "approximately 500-800 inquiry investigations or requests for assistance... from the general public, property owners, watershed groups, non-profit organizations, community groups, legislators, OSM, local officials, and others" are completed annually.[194]

AML problems are also brought to the attention of programs via "watershed plans and studies, referrals, legislative or senior [state environmental] initiatives, bond forfeitures, bankrupt mining operations, District Mining Offices, and other [state] programs." [195] If the site is already inventoried in e-AMLIS, then the site is taken into consideration by the program in light of property-owner interest and extent of need. If the site is not inventoried in e-AMLIS, the AML program will typically send an official to investigate the site. If a state or tribe identifies a high priority site, then the site is reviewed and cost

[189] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[190] Ibid.
[191] Ibid.
[192] Ibid.
[193] Ibid.
[194] Ibid.
[195] Ibid.

estimate and, in some states, benefits of reclamation completion are calculated.[196] In Pennsylvania, for example, the result of these calculations is a project worth assessment that enables the state to make informed comparisons regarding site selection.[197]

The state or tribe then makes a determination as to whether or not the site qualifies under the SMCRA as an AML problem. This usually hinges on whether or not the state is able to determine if the site is adversely affected by a mine abandoned pre-SMCRA.[198] In some cases, litigation has been pursued by property owners who believed their property qualified as a legal AML site but was denied such designation by the state AML program.

Landowner interest, the AML priority system (see section 3.3), and reclamation cost are the three most important factors taken into consideration by AML officials when selecting sites for reclamation.[199] Most states reclaim the sites that pose the greatest threats to public safety or well-being first.[200] AML emergencies, which fall under the Priority 1 designation, are given particular consideration by states, such as Kentucky, which actually has an AML emergency hotline and staff capacity in place to deal with AML emergencies as quickly as possible once they develop. Other factors considered in site selection include: geographic location, citizens complaints, proximity to other AML sites, and permit requirements, especially for those that require off-site mitigation.[201] In addition, one state AML program expressed giving concern to community—not just landowner—interest in an AML project.[202]

It is not rare for AML programs to experience landowners who are weary of allowing the state to access their property for reclamation, which can require long periods of time for completion. The willingness of the landowner to consent to AML reclamation is a strong consideration. Often AML officials will discover an eligible site in proximity to a site currently undergoing reclamation. In these cases, one state AML official explains, "We then make efforts to contact the landowners and obtain permission to work on their property. Even if we are not successful in obtaining permission, we add the sites to our inventory and make efforts to contact the property owners every 5-10 years and determine if they are open to reclamation." [203] The apprehensiveness from landowners suggest a great need for education around AML, its policies, and the benefits of reclamation.

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[196] Ibid.
[197] Ibid.
[198] See chapter 3 to learn more about site and project eligibility.
[199] This claim is based on the results of a spring 2015 survey of state AML officials;
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[200] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[201] Ibid.
[202] Ibid.
[203] Ibid.

In sum, states vary greatly in terms of their site selection and design processes, but across the country the landowner inquiry process is the main mechanism that brings AML projects before the consideration of state AML programs. Landowner interest, cost, and the AML Priority System are the biggest determining factors of site selection. In most states and tribes, site selection decisions are made by an individual AML official or small group of AML officials within the program. In some pockets of the country, good models of citizen and public input in site selection have been developed.

4.3 Considerations Given to Contractor Selection for AML Projects

A 2015 survey of state and tribal AML officials found that virtually all AML programs utilize a public bid process for AML projects.[204] Projects are, on the whole, awarded to the "lowest responsive and responsible bidder." [205] This is usually, but not always, handled by a state procurement mechanism housed in a separate agency and governed by state law. In some states such as Pennsylvania, a subset of projects are handled by in-house reclamation teams rather than an external contractor.[206] In some cases, state AML programs only utilize a public bid process if the estimated cost of the project is significantly high—for example, above a threshold of $25,000 or $50,000.[207]

Some states require a more thorough review of potential contractors, as one state AML official explains, "Contractors must be a registered vendor with the [state's] Office of Administration and be a registered to conduct business with the Secretary of State's Office. A contractor is also checked for any environmental violations. A contractor's ability to perform the worked required by the contract is also reviewed, which includes obtaining information about the contractor's employees, equipment, bonding, and other available resources." [208]

The vast majority of AML programs do *not* formally prioritize local contractors in the bidding process.[209] A few states, such as Virginia and others, do have a written policy to set-aside some of their projects for "micro-businesses and/or SWOM contractors (small, woman owned, and minority)" or some similar designation.[210] Some state officials explain that state law or policy disallows them from prioritizing local contractors. Despite the lack of many formal policies for prioritizing local contractors, most state and tribal programs expressed that more than half of their AML projects end up being completed by in-state contractors, likely due to a natural mobilization/demobilization advantage.[211] At present few, if any, selection processes give consideration to the wages paid to reclamation employees.

[204] Ibid.
[205] Ibid.
[206] Ibid.
[207] Ibid.
[208] Ibid.
[209] Ibid.
[210] Ibid.
[211] Ibid.

Bruce Stover of Colorado's Inactive Mine Reclamation Program explains some innovative practices that have allowed Colorado to foster the utilization of small and local reclamation contractors: "This is accomplished by keeping projects small enough so that local smaller contractors can bond the work as required by state procurement rules, and by inviting local contractors to job showings in their regions of operation. The time of performance is also adjusted to accommodate smaller contractor's equipment and man-power limitations. This has worked well, such that, through the years, probably on the order of 75 to 80% of the total number of AML reclamation projects in Colorado have gone to smaller 'mom-and-pop' type contractors." [212]

To provide some context, Table 4.1 lists the AML projects awarded through a public bid process in the Virginia in FY2014.

Table 4.1 FY2014 AML projects awarded in the state of Virginia

Project Name	County	Contract Amount	Date Awarded	Contractor	Special Designation
Smith Branch Portals	Buchanan	$6,875.00	9/10/2014	Cleco Corporation	
Penhook AMD	Lee	$510,159.48	8/25/2014	Estes Bros. Const., Inc.	
Yellow Creek Drainage	Wise	$72,655.00	8/20/2014	Greenway Services, Inc.	
Pole Bridge Road Reclamation Phase II	Wise	$34,758	8/12/2014	Guest River Enterprises, Inc.	Small Business Set-Aside Award Priority
Grundy Airport Highwalls Maintenance	Buchanan	$40,410.50	6/3/2014	C & S Construction & Excavating, Inc.	
Flatrock Portals Project	Honaker, Russell	$149,354.00	5/22/2014	Cleco Corporation	
Harman III-Deel Fork RAMP Site Project	Buchanan	$68,820.40	5/23/2014	AJS, Inc.	
Baker AMD Site	Lee	$60,910.00	5/28/2014	Guest River Enterprises, Inc.	
Rowe Impoundment	Wise	$77,676.50	4/23/2014	Natural Resource Services, Inc.	
Jackson Fork Portals	Tazewell	$98,875.00	3/19/2014	Guest River Enterprises, Inc.	
Horse Branch Landslide Phase II	Buchanan	$334,372.50	4/14/2014	Bailey & Wells, Inc.	
2013 Tree Planting Project	Wise, Buchanan, Montgomery	$11,790	2/25/2014	Guest River Enterprises, Inc.	Small Business Set-Aside Award Priority

[212] Ibid.

	and Russell				
Scott County Gob Piles	Scott	$354,565.50	3/11/2014	Greenway Services, Inc.	
M&H Re-Design	Lee	$140,650.00	5/28/2014	Gress Engineering, PC	
Dean AMD Site	Lee	$123,940.00	3/12/2014	Coal Mining Engineering Services	
Lick Branch Wetland Maintenance	Lee	$185,840.61	3/3/2014	Estes Bros. Const., Inc.	
Davis Wetland	Lee	$103,822	2/25/2014	CARDNO MM&A	
Joseph Drive Subsidence	Henrico	$32,975.40	3/13/2014	Wayne Norman, Inc.	Small Business Set-Aside Award Priority
Big Branch Portals	Lee	$34,680.00	1/28/2014	Greenway Services, Inc	Small Business Set-Aside Award Priority
Klondyke Portals Project	Russell	$159,391.00	1/27/2014	C&S Construction & Excavating, Inc.	
Baker School Blowout Post Act Driveway Repair II	Wise	$9,045.00	10/24/2013	McFall Excavating, Inc.	Small Business Set-Aside Award Priority
Wilson Seam Outslopes IV	Lee	$21,020.00	11/25/2013	Guest River Enterprises, Inc.	Small Business Set-Aside Award Priority
Farmer Landslide Project	Russell	$182,919.60	12/6/2013	C&S Construction & Excavating, Inc.	
Route 650 Portals Project	Buchanan	$5,650.00	11/18/2013	AJS, Inc.	Small Business Set-Aside Award Priority
Brady Drainage Project	Wise	$36,750	11/5/2013	Hoss-Saltz Excavating Co., LLC	
Stonega Mines Project	Wise	$86,750.00	11/25/2013	Guest River Enterprises, Inc.	
Triple R Mine Project	Lee	$73,576.00	10/22/2013	L & M Construction	

4.4 AML Project Economic Development Case Studies

State and tribal AML programs across the country have completed AML projects that go above and beyond the current statutory requirements. Most of these exemplary projects are impressive for their environmental and ecological impacts. OSMRE awards annual reclamation awards to these sorts of outstanding projects, many of which prioritize water, habitat, and forestry restoration to an extent not required under current law. Some examples include warm-season grassland prairies in Missouri restored to a productive wildlife habitat, the Ely Creek Acid Mine Drainage Project that abated AMD discharges into a tributary of the Powell River watershed in Virginia, the Lake Valley Mine Safeguard Project in New Mexico, and the Aaron Run Watershed AMD Remediation Project in Maryland. Many of these outstanding AML projects can found on OSMRE's website, and they provide high bar of environmental performance that other reclamation projects should strive to achieve when possible.[213]

In addition to AML projects that serve as models for their ecological and environmental performance, a number of AML projects across the country are crucial in terms of creating new local economic opportunities. All AML projects provide short-term economic impacts through the reclamation work itself, as well as the increased livability and attractiveness of a clean community that supports business growth. The impact of construction and reclamation work on relatively small, rural economies is noticeable, yet these impacts are temporary. Some AML projects create additional long-term economic impacts by designing the site with a post-reclamation land use in mind that has economic potential. These sorts of projects include AML sites reclaimed for use as recreational tourism sites, agricultural sites, industrial sites, or other sites that create local economic opportunities in ways.

A few popular examples of AML projects that provide positive economic impacts include the Pittsburgh Botanic Garden, the Dents Run Project in Pennsylvania that has created a number of outdoor recreation opportunities by reclaiming a site home to a growing Elk herd, and the Deckers Creek Watershed in West Virginia.[214] A preliminary report on the Deckers Creek project found that approximately $10 million of investments in AMD remediation would yield more than $14 million in local economic benefits, and the spending would also spur an increase in $2 million in non-market quality of life value. [215]

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[213] A log of the AML projects that have received OSMRE's reclamation awards can be found here: URL: "Awards." *Office of Surface Mine Reclamation and Enforcement*. US Department of the Interior, 4 June 2015. Web. 06 July 2015. <http://www.osmre.gov/programs/Awards.shtm>.

[214] Commonwealth of Pennsylvania. *The Dents Run AML/AMD Ecosystem Restoration Project*. By Eric E. Cavazza. State Department of Pennsylvania, 30 Mar. 2012. Web. 7 July 2015. URL:<http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/Award2012/2012Nomination.pdf>

[215] Schrecongost, Alyse and Evan Hansen. 2005. Local Economic Benefits of Restoring Deckers Creek: A Preliminary Analysis. Dellslow, WV: Friends of Deckers Creek. August.<http://www.downstreamstrategies.com/documents/reports_publication/AMD_remediation_%20West_Branch_Susquehanna_Jul2008.pdf>

Studies have found that these sorts of AML and AMD reclamation projects provide concrete economic benefits in the form of: [216]

- Money spent locally on reclamation/remediation
- Increased recreation spending
- Higher property values
- Cleaner, cheaper drinking water
- Environmental Improvements (EI), such as non-use values like aesthetics
- Business opportunities

The following are exemplary case studies of AML projects that can help create local economic opportunities in a variety of ways. These projects have been completed across the country and world—from Pennsylvania, Missouri, Colorado, Virginia, Maryland, New Mexico, and Germany—and they demonstrate the economic impacts of outdoor recreation and tourism, renewable energy production, agriculture, commercial business, and other economic opportunities on mine sites. While these case studies and other research demonstrate the economic potential of AML sites, even more innovative and creative economic opportunities could likely be created on these sites—such as apiaries, fruit and nut orchards, and innovative outdoor recreation business models—if AML funding was more targeted to these sorts of projects, as is proposed in the President's POWER+ Plan.[217]

[216] Hansen, Evan, et al. "An Economic Benefit Analysis for Abandoned Mine Drainage in the West Brand Susquehanna River Watershed, Pennsylvania." Submitted for: Trout Unlimited. Submitted by: Downstream Strategies. July 3, 2008.

[217] See "Orange Water, Green Jobs" by Evan Hansen, et al. <http://www.thesolutionsjournal.org/node/703?page=6%2C0%2C0%2C0%2C0%2C3> and the EPA report "Wetland Banking at Former Mine Lands: An Ecological Solution with Economic Benefits" <http://www.epa.gov/superfund/programs/aml/revital/wlfact.pdf> for more information on the potential economic opportunities of former mine sites.

Case Study 1: North Branch Potomac River AMD Project

The North Branch Potomac River is a perfect example of how a river terribly polluted by abandoned mines can become an economic asset worth *millions* to the local economy. The following is an excerpt from a 2010 *Downstream Strategies* report that tells the story of the North Branch Potomac River Project, located: [218]

> "After decades of impairment, a successful program initiated by innovative staff at Maryland state agencies has transformed the North Branch Potomac River into a popular recreational river and a driver of local economic development. This remarkable improvement in water quality is the direct result of the installation of eight dosers since 1992, which add alkaline material to the river and its tributaries to treat acid mine drainage from abandoned coal mines...
>
> "In the 1940s, an estimated 173,000 pounds of acidity entered the Potomac River system from abandoned coal mines each year; through the 1960s, the problem worsened—to 120,000 pounds *daily*. Even as recently as the 1970s, abandoned coal mines discharged a significant amount of acid mine drainage and impaired an estimated 450 stream miles...
>
> "Currently, at least 13 commercial angling and whitewater boating outfitters use the North Branch for their businesses. In addition, tens of thousands of recreational visits to Jennings Randolph Lake are now logged each year; the lake, managed by the United States Army Corps of Engineers, provides a range of amenities for visitors...
>
> "Taking into account the cycling of expenditures through the local economy, we find that the boaters' and anglers' spending results in an output, or economic impact, of about $3.0 million per year in Garrett and Allegany Counties. This impact includes the $2.1 million in direct spending, as well as indirect and induced effects. It includes, for example, employee compensation for about 40 full-time equivalent jobs and $266,000 in state and local taxes. These tax dollars alone approach the roughly $321,000 per year needed to operate and maintain the dosers. The full economic impact is almost ten times higher than the annual doser costs... According to our survey results, anglers and boaters receive a higher value from their recreational experiences than they already pay. In fact, they are willing to pay an additional $4.1 million per year for these experiences..." [219]

Funds from the AML program were used to construct the AMD remediation project, and AML funding is used annually to partly fund the dosers that make this recreational asset a continuing possibility. The funding required to maintain the dosers in only a *tenth* of the total economic impact of this AML project, making it an outstanding investment in the economic future of this rural coalfield community.

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[218] Hansen, Evan, et al. "The Benefits of Acid Mine Drainage Remediation on the North Branch Potomac River." Prepared for: Maryland State Water Quality Advisory Committee. Downstream Strategies. December 1, 2015. <http://downstreamstrategies.com/documents/reports_publication/amd-remediation-nbp_downstreamstrategies.pdf>

[219] Ibid.

Case Study 2: West Suscon AML Project

The West Suscon Project, located in Luzerne County, Pennsylvania in the Northern Field of the Anthracite Coal Region, is an example of the massive job potential of reclaimed AML sites. Once the site's AML problems were reclaimed, a commercial site was developed on the former mine site by the real estate developer that owned the site. The businesses that were able to locate on the site *employed 1,700 people* in only two years following the completion of the site. The following is an excerpt from A Pennsylvania DEP report on the project: [220]

> "The West Suscon project was a poster-child mine scarred area with a veritable stew of AML features such as dangerous highwalls (DH) associated with the strip mining, shafts, slopes, cropfalls and other similar openings from the surface to the abandoned underground mine workings classified as vertical openings (VO), mine spoil areas (SA), water bodies in some of the pits associated with the highwalls and for good measure, abandoned mine drainage (AMD) emanating from several of the features...
>
> "The area is now the site of the CenterPoint Commerce and Trade Park which has attracted such tenants as Lowe's, FedEx Ground, Men's Wearhouse, Entenmann's, DHL, Northstar Communications, New Horizons Computer Learning Center, Factory Direct, Safelite, Ferguson Enterprises, Emery Waterhouse, Communications Testing and Design, Inc., Cintas Corp, a uniform clothing company, Quiet Flex, a manufacturer of flexible duct work for heating and air conditioning, Kinetic Concepts, Inc., a global media and technology company, Kimberly Clark, a producer of paper products and cleaning solutions, and the most recent addition, JP Bowden, an upscale mail order apparel retailer headquartered in the United Kingdom... Currently, these firms employ 1700 people on these reclaimed sites." [221]

While the traditional economic development model focused on recruitment of big, non-local businesses is not the solution for many communities, the growth of this commercial complex on a former AML site demonstrates the ability of businesses to flourish once abandoned mines are cleaned up and provided a space—and opportunity—for business growth. The West Suscon Project underlines the potential presented by AML sites that could be reclaimed to provide opportunities in rural areas for local, small businesses, for example, to operate. Focusing on local business growth would ensure that more resources remained in the local area and could create the same employment growth provided by opportunities on reclaimed AML sites.

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[220] Commonwealth of Pennsylvania. Department of Environmental Protection. Bureau of Abandoned Mine Reclamation. *2009 ABANDONED MINE LAND RECLAMATION AWARDS WEST SUSCON ABANDONED MINE RECLAMATION*. , 2009. Web. 7 July 2015. URL:<http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/2009Nomination.pdf>

[221] Ibid.

Case Study 3: Leipziger Land Solar Power Plant

The Leipziger Land Solar Power Plant Project is an example of the potential for renewable energy on former abandoned mine sites. The project, completed in Germany, constructed a 5 MegaWatt (MW) solar array—a *massive* commercial-scale solar site—on a former lignite ash site, and a 3.4 MW solar array on the site of a former lignite processing plant. The following is a summary of the project from an EPA report on the potential of solar production on abandoned mines: [222]

> "The Espenhain site, located near Leipzig, was a former settling area for lignite ash and dust - a type of brown coal. Based on this prior use and the amount of contamination at the settling area, the site did not offer many traditional reuse or redevelopment options. However, a solar energy plant was an option, but only after on-site contamination was addressed. At the Espenhain site, the lignite had to first be buried under a foot of soil before the specially designed wood frames that support the solar panels could be built
>
> "Situated on 49-acres of land that was a former lignite-mine ash deposit in Espenhain, Germany, the 5-MW photovoltaic power plant is made up of 33,500 solar modules that generate electricity that is fed directly into the German electricity grid. The project, which has operated since 2004, was initiated and developed by the energy company GEOSOL for $26.5 million...
>
> "The solar modules were installed at the site using an innovative wood framing method that relied on a local material - the robinia tree. The tree's wood is almost indestructible and resistant to all kinds of weathering and was used to build the frames upon which the solar modules were mounted...
>
> "In 2005, GEOSOL installed an additional PV array near Espenhain at the Borna Solar Plant. The array has a maximum output of 3.4 MW, and utilizes a solar tracking system to track the sun. This plant has been built on the site of a former factory producing lignite briquettes. The Borna plant was installed for $28 million, and has an annual electricity output of 3.5 million kWh." [223]

The Leipziger Project is an outstanding example of transforming the economic liability of an abandoned coal mine into a large economic asset in the form of a renewable energy production site. These sorts of projects pose a number of ecological and economic benefits, including job creation, increased revenues, revitalization of contaminated property, local energy security, and economic development.[224] The 2011 EPA report highlights other large solar arrays that have already been established on a number of abandoned non-coal mine sites, landfills, and Superfund sites in the US, including:

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[222] United States. Environmental Protection Agency. *Fact Sheet Wetland Banking at Former Mine Lands: An Ecological Solution with Economic Benefits*. Environmental Protection Agency, Web. 6 July 2015. United States. Environmental Protection Agency. Office of Superfund Remediation and Technology Innovation. *Shining Light on a Bright Opportunity*. US Environmental Protection Agency, Dec. 2011. Web. 6 July 2015.
[223] Ibid.
[224] Ibid.

- "A former landfill site at Fort Carson in Colorado got a new life in 2007 as a 2-MW solar energy plant covering nearly 15-acres...
- "A public-private partnership between Aerojet, Solar Power, Inc. and the Sacramento Municipal Utility District has led to the development of a 6 MW solar farm on the Aerojet Superfund site near Sacramento...
- "Under a public-private joint-venture between the U.S. Air Force, PowerLight, Nevada Power Company, and MWA Renewable Ventures, a 14-MW solar power plant operates 140 acres on the 14,000- acre Nellis Air Force Base in Southern Nevada. The 140 acres includes a 33-acre landfill that was capped in 1996...
- "Chevron Mining Inc. (CMI, formerly Molycorp) is planning to build a one MW concentrating photovoltaic solar facility on the tailing site of CMI's molybdenum mine in Questa, New Mexico.... The facility will include approximately 175 solar panels placed on 20 acres of the Questa Mine's tailings site...
- "Preliminary negotiations are underway to assess the feasibility of constructing a solar energy power plant on the tailings at the San Manuel copper mine in Pinal County, Arizona." [225]

[225] Ibid.

Case Study 4: West Branch Susquehanna Watershed Project

The West Branch Susquehanna Watershed is a large watershed in Pennsylvania in which over 1,200 miles of streams were polluted by acid mine drainage from old coal mines. It is estimated that this remediation project spurred $616 million in local economic activity and created over 4,000 jobs from the initial capital expenditure. The following is an excerpt from a preliminary report of the economic impacts of the project, completed by *Trout Unlimited* and *Downstream Strategies*: [226]

> "The West Branch Susquehanna River watershed drains a 6,978 square-mile area in northcentral and central Pennsylvania. The majority of the mountainous area is covered with dense forests, with approximately 10% of the land use for agriculture. Half of the watershed is contained in state forest, state parks, and state game lands. Nearly 75% of the watershed is located within the Pennsylvania Wilds region, a section of the commonwealth that is the focus of ecotourism and outdoor recreation...
>
> "Despite the abundance of natural beauty in this region, the legacy of past unregulated coal mining continues to pollute the streams and scar the lands... 1,205 miles of streams in the West Branch Susquehanna River watershed are impaired by AMD...
>
> "One-time capital costs for remediation projects throughout the watershed are estimated to be at least $110 million...[and] Annual operation and maintenance costs for treatment systems could be as much as $16 million. These costs include the purchase of chemicals or acid-neutralizing materials for active systems, management and removal of accumulated metal sludge, replenishment of limestone and compost, and other expenses such as monitoring and labor for operation and maintenance activities...
>
> "For every $1 in external funds spend on local AMD remediation, local economies receive $1.36-$1.87 in local economic activity. This translates into up to $616 million for capital expenditures and up to $23 million annually for operation/maintenance. It is estimated that up to 4,120 jobs throughout the West Branch Susquehanna watershed will be created from initial capital expenditures for AMD remediation projects. These jobs include positions such as environmental scientist who collects data and manages the AMD project, the engineer who designs the treatment system, the equipment operator who constructs the treatment system, and the truck driver who delivers the materials." [227]

[226] Wolfe, Amy, "Cleaning Up Abandoned Mine Drainage in the West Branch Susquehanna Watershed: Why it Makes Economic Sense." Trout Unlimited. July 2009. Web. July 2015.
[227] Ibid.

Case Study 5: Hurley Regional Water Project

The Hurley Regional Water Project in Southwest Virginia demonstrates the opportunities for community development that can be created for small, rural communities through the AML program. The project, which was announced in March 2015, will invest $1 million in the sixth phase of the multi-year project to build out water infrastructure to small mining communities in the Hurley Area of Buchanan County, whose water supplies have been polluted by abandoned mines in the area. As a statement on the project notes, "The project consists of approximately 13.5 miles of water lines, two pump stations and two tanks... AML water grants in Buchanan County have totaled $26.8 million and helped provide clean water to 2,197 homes." [228]

Few assets are as vital to local economic development as clean water. The build out of clean water infrastructure in rural Appalachian communities has a tremendous impact on the ability of these places to support small, new, and growing businesses that can create jobs in the region. In total, Virginia's DMME has awarded over $46 million to localities to replace or restore domestic water supplies impacted by pre-SMCRA mining.[229] The benefits of clean water infrastructure are also apparent in neighboring Kentucky, where the state AML program "has expended more than $94.3 million for waterline improvements providing more than 13,400 households with a potable water supply in 24 coalfield counties in eastern, southern and western Kentucky." [230]

[228] "Governor McAuliffe Announces $1 Million Funding For Water System Expansion in Buchanan County." Office of Governor Terry McAulliffe, Commonwelath of Virginia. March 25, 2015. URL: <http://www.dmme.virginia.gov/DMME/pdf/news%20releases/2015Releases/HurleyWateRGrantRelease.pdf>

[229] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.

[230] 11, Issue, and Spring 2012. "Laurel County Commissioner's Corner." *Natural Resources Review* 11 (2012): *Department of Natural Resources*. State of Kentucky, Spring 2012. Web. 6 July 2015. URL:<http://dnr.ky.gov/Natural%20Resource%20Review/Spring%202012.pdf>

Case Study 6: Madrid Stormwater Improvement Project

The Madrid Stormwater Improvement Project was a project completed by the New Mexico AML program, wherein a number of mine waste piles in proximity to a small New Mexico town were reclaimed to prevent erosion and stormwater flooding.[231] The project provided a massive economic impact to the community "by protecting businesses from flooding in a small town dependent on tourism." [232] The reclaimed site has prevented flooding that damaged homes and businesses in the town, enabling existing business to remain open and new businesses to develop in the locale without fear of dangerous flooding and property damage.[233]

Case Study 7: Lester Davis State Memorial Forest Project

The Lester Davis State Memorial Forest Project, located in Missouri, is an example of the recreational—and thus economic—benefits that can be provided to the public through the reclamation of an AML site. Prior to reclamation, the site was devoid of vegetation and released a number of acidic discharges. Now that the former mine is reclaimed it is enjoyed by hunters, fishers, and other recreationists who contribute through their spending to the growth of the local economy. AML projects help clean up public spaces that provide recreational tourism opportunities for small, rural communities that can now leverage their local assets for growth. The following is an excerpt from a report about the project: [234]

> The site was covered with "numerous barren mine spoils either devoid of vegetation or inhabited with invasive unwanted vegetation... Most of these mine spoils were acidic and highly erosive which contributed to acid mine discharges and heavy sediment loads to nearby creeks and streams contributing to periodic fish kills. Numerous water filled pits remained, some acidic in nature, unable to support fish or other aquatic life. In addition, many of these water filled pits were located adjacent to state and county roads, posing a threat to public health and safety..."
>
> Now "the public can now enjoy 38 acres of land in the Lester Davis State Memorial Forest that was previously the site of a coal mine thanks to cleanup efforts by the Missouri Department of Natural Resources... The reclamation project has added open

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[231] "Madrid Stormwater Improvement Project." *Madrid Mining Landscape*. New Mexico-Energy, Minerals and Natural Resources Department, Web. 06 July 2015. URL:<http://www.emnrd.state.nm.us/MMD/AML/MML/news.html>

[232] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.

[233] "Madrid Stormwater Improvement Project." *Madrid Mining Landscape*. New Mexico-Energy, Minerals and Natural Resources Department, Web. 06 July 2015. URL:<http://www.emnrd.state.nm.us/MMD/AML/MML/news.html>

[234] "Restoration at Lester Davis State Memorial Forest." *Missouri Department of Natural Resources*. , Web. 06 July 2015. URL: <http://dnr.mo.gov/env/lrp/lester-davis.htm>

vegetated areas to enhance wildlife habitat, improved hunting and fishing opportunities and aiding in reducing acid mine drainage from entering nearby waterways." [235]

[235] Ibid.

Case Study 8: Smith Hill Coal Mine Reclamation

The Smith Hill Coal Mine Reclamation Project demonstrates the potential of reclaimed sites to be used to support agricultural and recreational purposes. The reclaimed site is used as a cattle load-out area in Colorado, supporting the local agricultural industry. In addition, the reclaimed site no longer negatively impacts the local environment or aesthetic assets of the area, which supports the ability of local recreational outfits, such as the neighboring ski resort, to sustain local employment. The following is a description of the project provided by OSMRE: [236]

> The site "lies less than a mile from one of America's best known ski resorts, Crested Butte Mountain Resort. In fact, mining at this site in Colorado goes back to 1884. More than 1.2 million tons of anthracite coal was produced before the site was abandoned in 1946. For more than 50 years, the site remained unused. During that time, the land deteriorated, buildings collapsed, and the presence of coal waste provided just enough nutrients to support invasive plant species and noxious weeds. Then, a coalition formed between the state and private owners. These partners were willing to join the Crested Butte Land Trust in taking the risk on this property that was showing a lot of degradation from historic mining.
>
> "The land trust also maintains a conservation area on the property, and a local rancher uses part of the site as a cattle load-out area. The stakeholders faced a tough reclamation project. The cattle load-out area was in poor shape and an artificial pond had formed through sedimentation, which flooded both the access road and coal waste piles.
> The entire cattle load-out area was 100% coal, it was fine grained, and there were large rilles and gullies...
>
> "The Trust removed 11,000 cubic yards of coal waste from the wetlands and planted approximately 15,000 live plants, another five thousand live willow cuttings that were harvested onsite. They planted about 30 patches of wetland sod that were harvested from the surrounding area, and also planted a hundred live willow plants." [237]

[236] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *2014 OSMRE AML Reclamation Awards, Western Region Winner: Smith Hill Coal Reclamation Project*. By Christopher Holmes. US Department of the Interior, 27 Oct. 2014. Web. 7 July 2015. URL: <http://www.osmre.gov/programs/awards/2014AMLWinners.shtm>
[237] Ibid.

5. Funding Provisions of the Abandoned Mine Land (AML) Program

5.1. Overview

The Abandoned Mine Land (AML) program is a national initiative established by Congress to "promote the reclamation of mined areas left without adequate reclamation."[238] The program is funded by a per-ton fee on coal mining, and is administered by the Office of Surface Mining Reclamation and Enforcement (OSMRE) in the US Department of the Interior (DOI). The AML program was established "in order to hold the entire coal industry responsible for reclaiming coal mine lands left abandoned across the country." [239]

Fees are collected by OSMRE and allocated annually through grants to states and tribes with approved AML programs. The appropriation of grants is determined by a complex statutorily-defined funding formula that, as of 2006, does *not* require annual discretionary approval from Congress. The AML program consists of four sub-funds, each with its own particular funding formula: State and Tribal Share grants, Historic Coal grants, Minimum Program Make-Up grants, and Certified In Lieu grants. An additional sub-fund, Prior Balance Replacement grants, ended in FY2014.

State and tribal AML programs use grant money to reclaim abandoned mine lands within their boundaries. Funding may be used to abate problems caused by abandoned underground or surface mines, such as: highwalls left exposed from surface mining, subsidence caused by the caving in of old underground mines, landslides, open mine portals and shafts, flooding caused by runoff from surface mines or flooded underground mines, water quality problems, clogged streams from AML debris that can cause flooding or pollution, AML-related large-volume water impoundments, gob piles (piles of waste or refuse removed from underground mines), old coal mining or processing equipment, mine fires or associated hazardous or explosive gases, and abandoned mine sites that have been illegally used for the dumping of residential or commercial waste.

The SMCRA gives priority to the reclamation of AML problems that pose a hazard to human health or safety. Accordingly, AML problems in proximity to human populations are often the sites selected for reclamation. AML features are logged by state and tribal officials in a federally-managed inventory of AMLs called the Electronic Abandoned Mine Land Inventory System (e-AMLIS).[240] AML programs select an AML problem to be reclaimed and then develop designs for reclamation. Typically, the state or tribal program then bids out the project through a state procurement mechanism to a private contractor with the lowest bid. The contractor completes the AML project under routine oversight from the state or tribal program.

[238] 30 U.S.C. §1202(h)
[239] "FY2015 OSMRE Budget Justifications," p.3
[240] Some state and tribal AML programs do maintain their own AML inventory database.

Some states and tribes have reclaimed all AML sites within their boundaries. These states are known as "Certified" states and tribes. Yet, under the law these states and tribes still receive annual AML funding. The 2006 AML reauthorization extended the program's authority to collect AML fees through FY2021. Any remaining AML funding will be paid out to the non-Certified states and tribes in the years following the FY2021 expiration of fee collection.

5.2. AML Fees

Fee levels were originally set at 35¢ per ton of surface-mined coal (or, "surface-coal), 15¢ per ton of underground-mined coal ("underground-coal"), and 10¢ per ton of lignite. Fees were collected at these levels until 2008, when they were lowered by 10% to 31.5¢ per ton of surface-coal, 13.5¢ per ton of underground-coal, and 9¢ per ton of lignite.[241] This 10% reduction was a "phase-in period" that lasted five years until the fees were lowered by another 10% in 2013.[242] At 28¢ for surface-mined coal, 12¢ for underground-mined coal, and 8¢ for lignite, the current fee levels stand at 80% of the original levels and are set to expire in 2021. This 20% reduction in levels was enacted by Congress's 2006 AML reauthorization.

None of the fee levels and percentage reductions mentioned above incorporate the effects of inflation over the past 37 years. Adjusted for the rise in prices throughout the economy since 1977, the current fee levels are roughly a *quarter* of the original levels set by Congress.[243] If the *current* fee levels were "indexed" so that they had been annually raised at a rate equal to the inflation rate, the levels in 2013 would be 85, 36, and 24¢ per ton of coal.[244] In 2013, if the original AML fee levels, not updated for inflation, had hypothetically been reinstated, the *surface-coal fee would still be 70¢ cheaper* per ton than if these levels were indexed to the inflation rate ($1.06, 45, and 30¢). This means that the original fee levels would be only *one-third of the real value* they possessed when the AML program was created, because the levels have failed to be updated for inflation.[245]

When the law was passed, the AML fee for surface-coal represented 1.6% of the average price of a ton of coal produced in the US, and the underground-coal fee represented only 0.7% of a ton of US-produced coal.[246] As of 2013, those percentages had dropped drastically, coming in at 0.75% and 0.32% of the price per ton of surface-

[241] *Pub. L. 109–432, §202(a)(2)*
[242] *Ibid.*
[243] Adjusted for inflation, the current fee levels stand at only 9.2¢, 3.9¢, and 2.6¢ per ton of surface-coal, underground-coal, and lignite. These estimates are in 1977 dollars, the year the original fee levels were set. Inflation adjustments were made using a GDP Price Deflator with an index of 1977=100. The data was acquired on the Federal Reserve data website: <http://research.stlouisfed.org/fred2/>.
[244] Ibid.; And if the original fee levels (before the 20% reduction enacted by Congress in 2006) were to be indexed to the inflation rate, the levels would be even higher: $1.06, 45, and 30¢ per ton of coal in 2013.
[245] In 2013, the original surface-coal fee of 35¢ per ton would be $106.33 per ton if it were indexed to the inflation rate.
[246] These percentages were calculated using 1977 nominal dollars and the original fee levels.

and underground-coal, respectively.[247] This means that, given the increase in coal prices since 1977 and the reduction of fee levels in 2006, current fee levels represent *less than half of their original percentage* of the price per ton of US coal. Thus, the fee levels could be raised significantly and still not pose the same real burden on the coal industry, per ton of coal, as when Congress originally engineered the program.

In addition to fee collection, the law also allows the AML program to be supported by donations, any user charges imposed for land reclaimed through the AML program, recovered moneys as provided for in the AML law, and any and all interest earned by investing the AML Fund.[248] The only notable non-fee source of revenue is interest earned on the Fund. To learn more about the interest earned from AML Fund investments, see section 5.10.A.

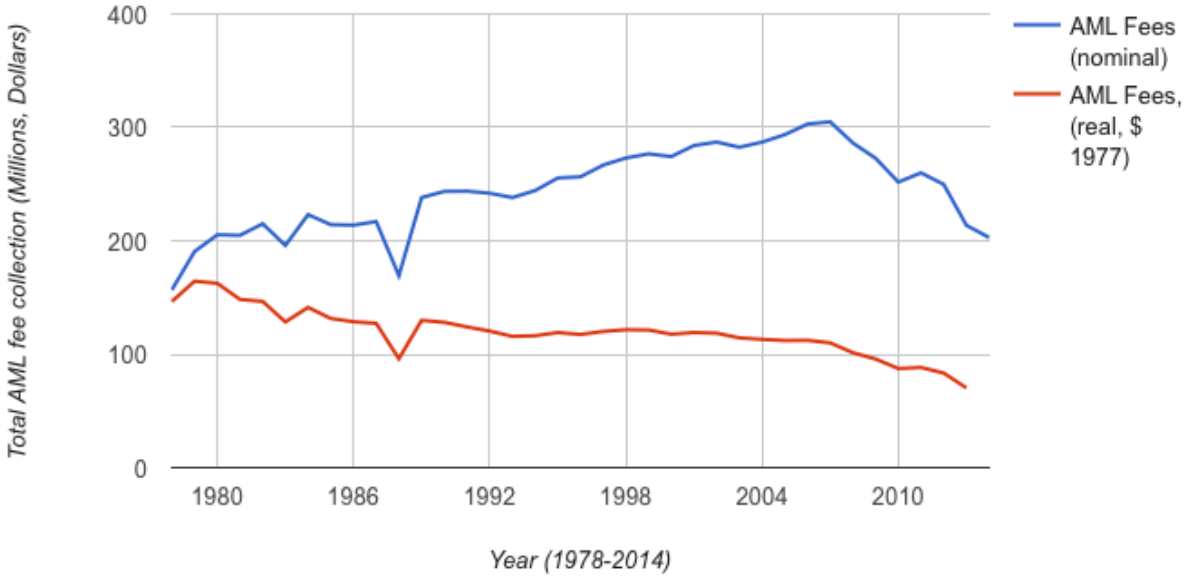
5.2.A. History of AML Fee Collections

Since the inception of the program, $9.04 billion have been collected in total fees, but the program has seen significant decline in fee collection in recent years.[249] Figure 5.1 illustrates the precipitous decline in fee collection that has accompanied the reduction in fee levels. National AML fee collection peaked in FY2007, as indicated by the blue line in Figure 5.1. As of FY2014, fee collections had fallen by *one-third* (roughly $100 million) since the 2007 apex.[250]

The decline in fee collection is even more dramatic when we incorporate inflation. The red line in Figure 5.1 demonstrates that because AML fee levels were never indexed to the inflation rate, the real value of annual AML fee collection has been slipping since the start of the program. As of FY2013, real annual AML fee collection is *less than half* of its FY1979 peak.[251] For a program that is financed primarily through fee collection, this has very large consequences on the program's ability to fulfill its purpose.

[247] These percentages were calculated using 2013 nominal dollars and the current nominal fee levels.
[248] 30 U.S.C. §1231(b)
[249] All AML fee collection data is from a dataset "AML Fee Collections" delivered to author Dixon and Appalachian Citizens' Law Center from OSMRE as the result of a Freedom of Information Act (FOIA) claim filed with the office in November 2014.
[250] "AML Fee Collections," FOIA claim with OSMRE, November 2014; (304,879,883-202,871,590)/304,879,883
[251] "AML Fee Collections," FOIA claim with OSMRE, November 2014; (164,423,696.60-70,333,969.99)/164,423,696.60

Figure 5.1 AML Fee Collection, US, nominal and real



5.2.B. History of Fee Collections in Central Appalachian States

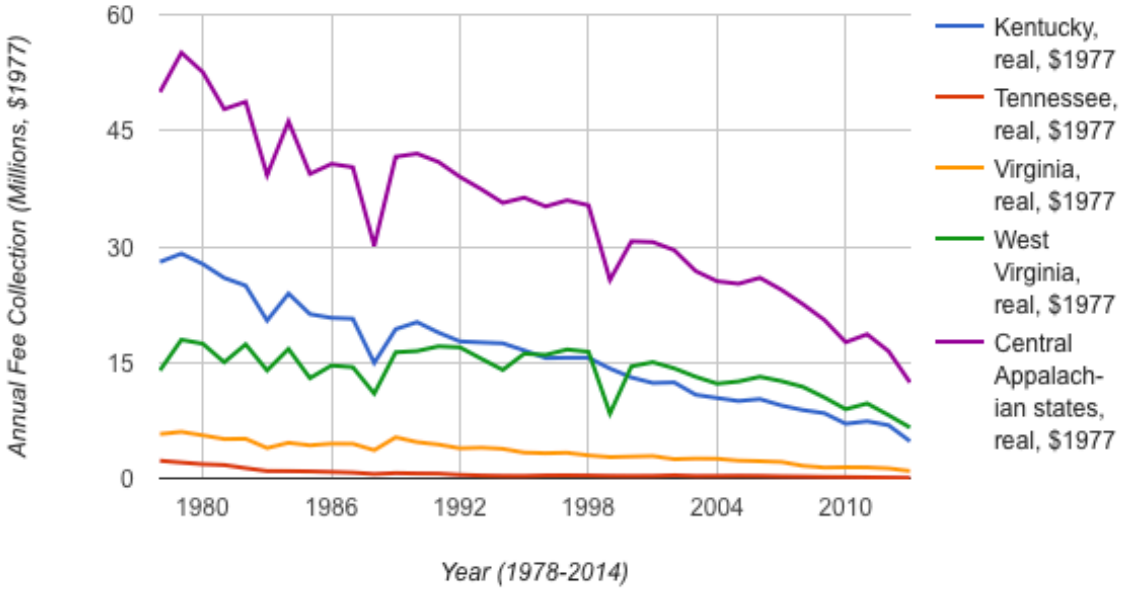
Over the lifetime of the program, the Central Appalachian states, which include Kentucky, Tennessee, Virginia, and West Virginia, have contributed almost $2.5 billion in fees (roughly 27%) to the program, as of FY2014.[252] Outside Central Appalachia, Wyoming has contributed *over one-third* (36%; $3.3 billion) of the total collections.[253] Figure 5.2 shows *real* annual fee collections in Central Appalachian states over time.[254] It wasn't until FY1996 that West Virginia overtook Kentucky in terms of annual fee collections.

All of the Central Appalachian states have seen significant reductions in annual collections since FY2006.[255] As Figure 5.2 demonstrates, adjusting the historical fee collections for inflation reveals that collections in Central Appalachian states have been

[252] See Appendix 5.1 to learn more about cumulative fee collections, 1978-2014, in Central Appalachian states; These fee collection values include collections that were made outside the official Central Appalachian region as designated by the Appalachian Regional Commission in the states Tennessee, Kentucky, and Virginia. For example, these values include collections that were made in Western Kentucky, which falls outside of Central Appalachia. Hence, these collections are those from "Central Appalachian states" not strictly "Central Appalachia;"
"AML Fee Collections," FOIA claim with OSMRE, November 2014.
[253] "AML Fee Collections," FOIA claim with OSMRE, November 2014.
[254] "AML Fee Collections," FOIA claim with OSMRE, November 2014.
[255] This is due to a multitude of factors, especially the 2007 fee level reductions and a continued decline of coal production in Central Appalachian states. This regional trend matches the larger national decline in collections. It is interesting to note that Central Appalachian collections did have a relative peak in FY2006, declining marginally in FY2007 before the rate of decline increased when the congressional fee level decreases took effect in FY2008. See Appendix 5.1 for more information on nominal fee collections in Central Appalachian states.

in inevitable decline from the start. Real collection in Central Appalachian states in FY2013 was astonishingly *less than one quarter* (22.5%) of its peak in FY1979.[256]

Figure 5.2 AML Fee Collection, Central Appalachian states, real



[256] "AML Fee Collections," FOIA claim with OSMRE, November 2014; (12,413,039.47/55,081,492.99)= 0.2253577163

5.2.C. Examining the 2007 Fee Reductions and Proposed Fee Level Changes

Figure 5.3 shows 2016-2025 projections of annual fee collections based on three different fee levels.[257] All of the projections are relatively stable over the next decade. The blue line shows projections over the next decade for annual US fee collections based on the current fee levels. The red line indicates projections for annual US total fee collections based on the historic fee levels of 35, 20, and 10¢.

The yellow line represents projections for annual fee collections based on the historic fee levels *indexed to the inflation rate* (as of 2013): 106, 46, and 31¢.[258] To be precise, the yellow line does *not* incorporate the continuing effect of raises in prices *throughout the next decade*.[259] Similarly, Figure 5.4 shows that 2016-2025 projections of annual fee collections in the Central Appalachian region are relatively stable for the next decade.[260]

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[257] These projections are based on coal production projections from the "EIA 2014 Annual Energy Outlook." The EIA report does not break down coal production into mutually exclusive surface/underground/lignite categories, so these projections assume that all lignite production will utilize a surface mining method. The author subtracted the projected lignite values from the US total surface mining projections and then applied the fee levels accordingly. Note that these projections may be marginally higher than OSMRE estimates or actual collections because "The OSM projections are usually lower because AML fees are assessed on the tonnage sold, used, or transferred while the DOE figures are based on the tonnage produced*"* (see Table 8 of "FY2015 OSMRE Budget Justifications"). These projections assume, of course, reauthorization of the AML program beyond 2021.

These and all other projections of higher AML fee levels do not incorporate any effects on coal demand or coal production due to higher AML fee levels, which, though expected, would be marginal. Higher fee levels might cause marginally lower, though virtually impossible to model, projections.

[258] These projections are in 1977 dollars are and are indexed to the GDP price deflator, as of FY2013.

[259] It simply projects collections as if the fee levels were raised one time to levels that are equal to the historic fee levels indexed to the inflation rate, *as of 2013*.

[260] Based on these projections of future AML fee collections, over the next decade $2.38 billion in fees will be collected in the US, and $197 million in Central Appalachia, at the current levels. If the historic fee levels were reinstated, over the next decade $2.97 billion in fees would be collected in the US and $247 million in Central Appalachia. This is a net increase of $49 million in Central Appalachia and $594 million across the entire US. Similarly, if the inflation-indexed historic fee levels (mentioned above) were reinstated, over the next decade $8.97 billion in fees would be collected in the US and $745 million in Central Appalachia. These collections would result from fee levels that reflect the real value they possessed when they were enacted by Congress in 1977. The collections would garner a net increase of $548 million in Central Appalachia and $6.6 billion across the entire US.

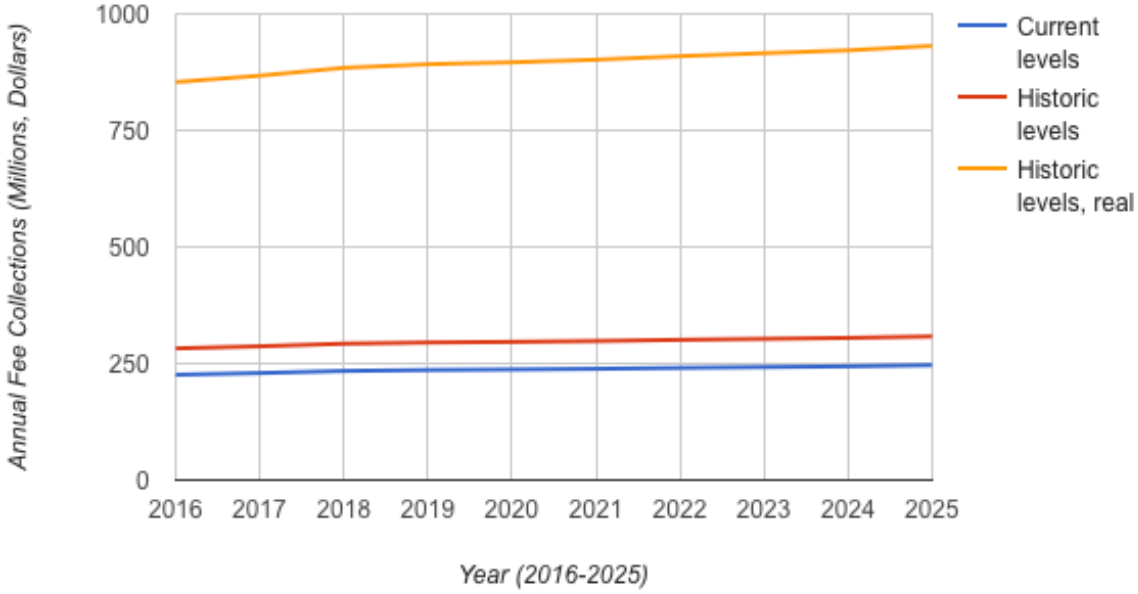
Note: Central Appalachian (CAPP) *region*, not Central Appalachian *states*; The CAPP projections are based on two things. First, projections of total Central Appalachian coal production values taken directly from the "EIA 2014 Annual Energy Outlook." Second, five-year averages (2009-2013) of the percentages of underground and surface mining in Central Appalachia calculated from the "EIA 2013 Annual Coal Report" and EIA's on-line Coal Data Browser. The CAPP total coal production projections were multiplied by the (average) percentage values for underground and surface mining. Then, the fee levels were applied accordingly. The author assumed that no lignite mining will occur in Central Appalachia over the next decade. Note that these projections may be marginally higher than OSMRE estimates or actual collections, because "The OSM projections are usually lower because AML fees are assessed on the tonnage sold, used, or transferred while the DOE figures are based on the tonnage produced*"* (see Table 8 of "FY2015 OSMRE Budget Justifications").

The blue line shows projections for annual Central Appalachia fee collections based on the current fee levels, the red line indicates projections based on the historic fee levels, and the yellow line for projections based on historic fee levels *indexed to the inflation rate* (as of 2013).

These graphs illustrates how much less revenue the current fee levels garner in light of the fact that they aren't updated for inflation. It also illustrates how much less revenue would be collected even if the fee levels were reinstated to their historic levels.

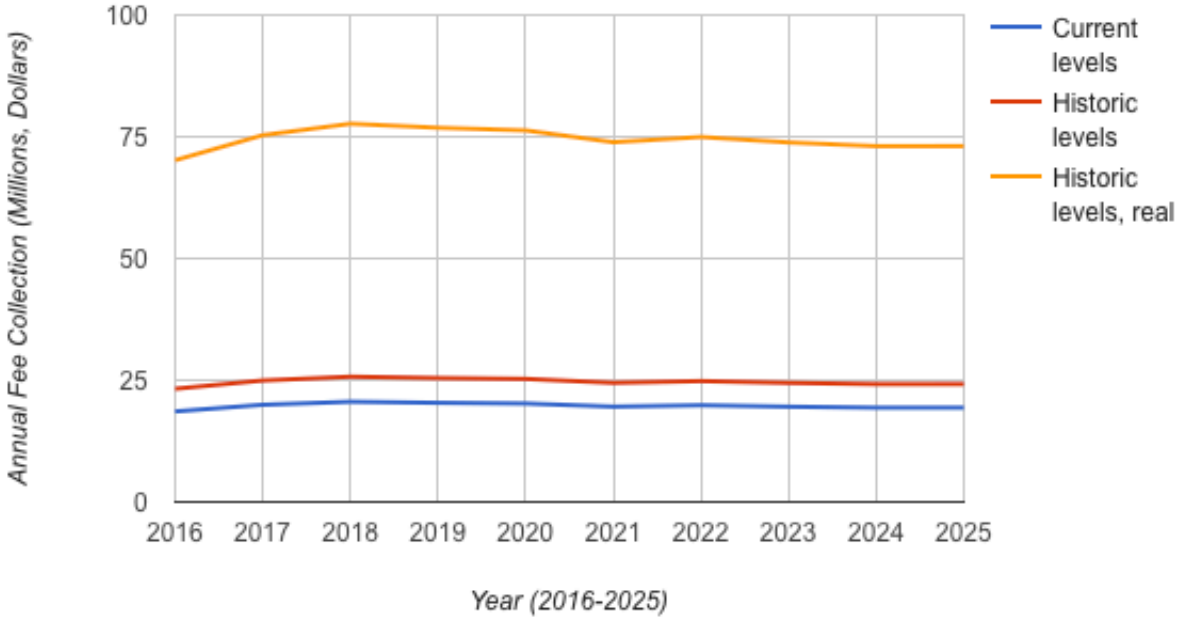
The results of these projections are clear: under the current, reduced fee levels, millions of dollars in AML reclamation will not happen. If the real historic fee levels—those set by Congress in 1977, updated for inflation—were still in place, the AML program would garner a whopping $6.6 billion *more* in funding for reclamation over the next decade. Even if Congress opted not to update the fee levels for inflation and just reinstated the historic levels, the AML program would have nearly $600 million *more funds* to put towards reclaiming America's abandoned mines over the next decade. This would result in Central Appalachian states alone having nearly $50 million *more* in funding for reclamation.

Figure 5.3 Annual fee collections, projections, US total



[260] These projections are in 1977 dollars and are indexed to the GDP price deflator, as of FY2013.

Figure 5.4 Annual fee collections, projections, Central Appalachia



5.3. AML Funding Overview

The purpose of the AML program is to reclaim mine sites abandoned prior to the passage of the SMCRA in 1977. In order to fulfill this objective, federal OSMRE appropriates AML fees in the form of annual grants to state and tribal AML programs, which then use the funding to coordinate the reclamation of AML sites within their boundaries. The distribution for a given year is drawn from the fee deposits made to the AML Fund *in the preceding year*. OSMRE follows a complex statutorily-defined allocation formula to distribute AML grants to states and tribes.

To be precise, the AML program consists of four AML "sub-funds," each of which operate according to a distinct funding formula. In some cases one sub-fund depends on the allocations within one or more other sub-funds. Because the funding formulas of the sub-funds are unique and linked together in some cases, the total allocation is very complex. For example, altering one variable can change the allocation to states and tribes throughout multiple sub-funds.

The four sub-funds are: i) State and Tribal Share grants, ii) Historic Coal grants, iii) Minimum Program Make-Up grants, and iv) Certified In Lieu grants. The total amount distributed to states and tribes equals the sum of the allocations from these funds.[261] In addition, OSMRE keeps a portion of the AML fees primarily for the federal administration of the AML program. Minimum Program Make-Up funds are paid to states and tribes with moneys from this "Federal Expenditure Share." An additional sub-fund, Prior Balance Replacement grants, ended in FY2014.

The "AML Fund" is main account through which AML financing and sub-fund distributions flow. The AML Fund is where fees are deposited annually and from where funds are allocated for annual distributions (other than Certified In Lieu funds, which are sourced through the General Treasury). The unapproppriated AML balance is housed in the AML Fund. To learn more about the unappropriated balance of the AML Fund see section 5.10 of this essay. Historically, AML funding was financed entirely through the collection of AML fees. Statutory changes in the 2006 AML reauthorization altered this, financing two sub-funds of the AML program through the General Treasury.

Of the total AML fee collections in a year, 50% go to the non-Certified state or tribe within whose borders the fees were collected; 30% of the *total* fees collected across the country are allocated through Historic Coal grants to eligible states and tribes (note: this does *not* mean that a state or tribe receives an additional 30% of the fees collected in its boundaries); and 20% is designated as the Federal Expenditure Share to be used for administrative costs and various programs. Certified In Lieu funds are funded through the General Treasury.

The following are synopses of each sub-fund, which are covered in-depth in the succeeding sections of this chapter. Table 5.5 provides basic information on each sub-

[261] 30 U.S.C. §1231(f)(2)(A)

fund's eligible recipients, funding formula, and funding source(s). Figure 5.6 describes how the AML fees are divided among various programs.

i) **State and Tribal Shares grants:** the shares authorized to non-Certified states and Indian tribes, distributed based on *recent coal production*. A State or Tribal Share equals 50% of the AML fees collected in that state or tribe in the preceding year. State and Tribal Share grants represent the foundational source of funding for AML reclamation, though this sub-fund is not necessarily the largest for a given state or tribe. To learn more about State and Tribal Shares see section 5.4 of this essay.[262]

ii) **Historic Coal grants:** the shares distributed according to a non-Certified state or tribe's *pre-1977 coal production*. Historic Coal grants are funded from a pot that consists of 30% of the total fees collected nationwide in the preceding year.[263] To learn more about Historic Coal grants see section 5.5 of this essay.

iii) **Minimum Program Make-Up grants:** the funding authorized to ensure that all Minimum Program states and tribes each receive at least $3 million in annual AML funding.[264] Minimum Program Make-Up grants (or, "Minimum Make-Up Grants") are funded from the 20% Federal Expenditure Share of AML fee collections. These grants were created to ensure that states and tribes that have little current coal production receive *at least some* funding to reclaim their AML problems. To learn more about Minimum Program Make-Up funds see section 5.6 of this essay.

iv) **Certified In Lieu grants:** AML grants authorized to the states and tribes that have Certified that they have reclaimed all of their AML sites ("Certified" states and tribes). These grants are funded from the General Treasury. To learn more about Certified in Lieu funds see section 5.8 of this essay.

Prior Balance Replacement grants: from FY2008 through FY2014, states and tribes received seven equal installments of AML distributions, which totaled a state or tribe's allocation that had accumulated in the unappropriated AML Fund since 1977. These grants were funded from the General Treasury, not AML fee collections. At the same time that these distributions were made to states and tribes through FY2014, the equivalent state and tribal share

[262] 30 U.S.C. §1232(g)(1)
[263] Historic Coal grants are only available to states and tribes that have remaining Priority 1 and Priority 2 sites; 30 U.S.C. §1232(g)(5)(A)
[264] 30 U.S.C. §1232(g)(8)

balances in the AML Fund were re-allocated under Historic Coal to be distributed post-2021. To learn more about Prior Balance Replacement funds see section 5.7 of this essay.

Table. 5.5 An overview of the allocation formulas, eligible recipients, and funding source(s) of each AML sub-fund

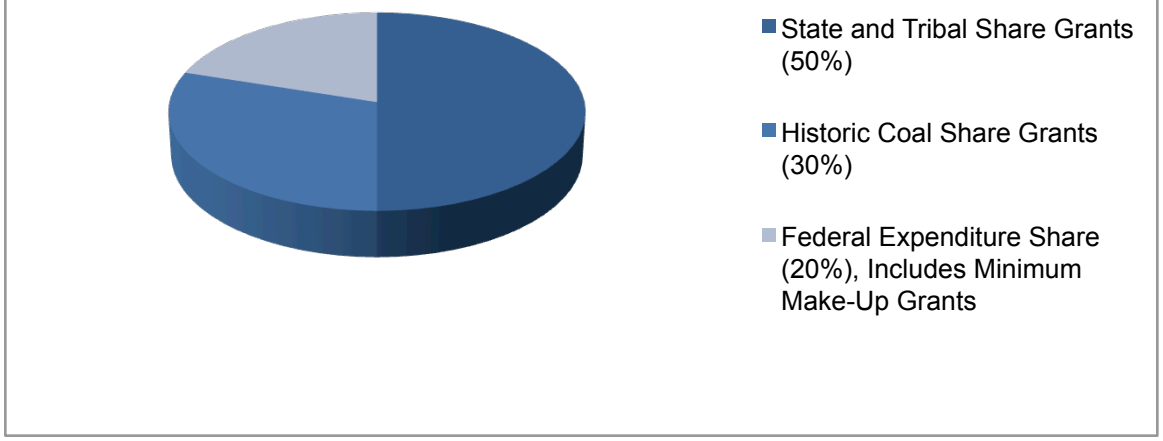
Sub-fund	Allocation Formula	Eligible Recipient(s)	Funding Source(s)
State and Tribal Share grants	Equals 50% of total AML fees collected in a state or tribe	Non-certified state and tribal AML programs	50% of AML fee collections from the preceding year
Historic Coal grants	HCG=HC*P; where HCG equals a state or tribe's Historic Coal grant, HC equals the total funds in the national Historic Coal pot, and P equals a state or tribe's percentage of the total coal produced (tonnage) in the US prior to 1977	Non-Certified state and tribal AML programs	Primary: 30% of AML fee collections from the preceding year; Secondary: transfers from Certified states and tribes equal to the State or Tribal Share grant that a Certified state or tribe would have received if it weren't ineligible; Tertiary: 60% of any other revenues deposited in the AML fund, except interest earned from investment activities[265]
Minimum Program Make-Up grants	Equals the total amount of funds necessary to ensure that an eligible state or tribe receives a minimum $3,000,000 in total AML funding, or the total unfunded high priority AML problems in its inventory, whichever is less (the preliminary total by which Minimum Make-Up funds are determined is equal to the total of a state or tribe's State and Tribal Share grant, Historic Coal grant, and Prior Balance Replacement funds)	Non-Certified state and tribal AML programs	AML fee collections from the preceding year (from the Federal Expenditure Share)
Certified In Lieu grants[266]	Equals 50% of the total AML fees collected in a state or tribe, or $15 million, whichever is less	Certified states and tribes	US General Treasury

[265] See 2010 Federal Assistance Manual, Chapter 4-110, "Annual Distribution of Title IV Grants." URL: <http://www.osmre.gov/lrg/fam/4-110.pdf>

[266] Note: the total of a Certified state or tribe's Certified In Lieu grant and Remaining Prior Balance Replacement funds cannot exceed $15 million; this annual cap was raised to $28 million for FY2014 allocations and $75 million for FY2015 distributions.

Prior Balance Replacement grants[267]	An annual grant equals 1/7 of a state or tribe's total "Prior Balance Replacement" funds, which equal a state or tribe's unappropriated balance in the AML Fund as of November 30, 2007; "Prior Balance Replacement" funds were delivered to states and tribes in seven equal installments, from FY2008 through FY2014	All state and tribal AML programs	US General Treasury
Federal Expenditure Share	Equals necessary transfers to Minimum Program Make-Up funds share as outlined above; Also includes payments to various other programs, such as federal OSMRE, according to the annual discretion of Congress	Federal OSMRE	20% of AML fee collections from the preceding year

Figure 5.6 Division of Annual AML Fee Collections



[267] Ibid.

5.3.A. History of Total AML grants to States and Tribes

Figure 5.7 illustrates AML distributions over the years, adjusted for the effects of inflation.[268] These values are in 1977 dollars, the year of the program's creation, and thus this data is most useful for making comparisons of annual distributions over time (as opposed to considering the absolute value of an annual figure in isolation).[269] Once we adjust this data for inflation, we see that FY2014 funding was only two-thirds of the relative peak of FY1984. And while the nominal values make the 2012 peak seem approximately twice as large as the nominal FY1984 value, the real values (Figure 5.7) show that the sharp peak in 2012 is approximately equal in value to what states and tribes received in FY1984. Put simply, the massive increases in prices over the past 35+ years show that AML funding is lower now than it was in the mid-1980s, and we are continuing to see a fall in total distributions.

Figure 5.8 shows the annual distributions of various AML sub-funds, including the State and Tribal Share, Historic Coal share, Federal Expenditure share, and Certified In Lieu share.[270] All distributions have been adjusted for inflation. Figure 5.8 illustrates that Historic Coal payments did not begin until FY1996 and Certified In Lieu payments did not start until FY2009.[271] All of these payments are funded through the AML fee except for the Certified In Lieu payments. The drop in Federal Expenditure payments in the mid-1990s was largely due to the creation of Historic Coal payments. This is because the 30% of fees that are currently used to fund Historic Coal grants were pre-1996 designated to the Federal Expenditure Share. The drop in State and Tribal Share grants starting in 2007 was due to a statutory end to payments to Certified states and tribes. A portion of this money is now placed in the Historic Coal fund to be distributed accordingly, which is why the fall in State and Tribal Share payments is matched by a simultaneous rise in Historic Coal payments.

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[268] Most, though not all, data on AML distributions that are cited in this paper are the result of a FOIA claim filed in November 2014 with OSMRE: "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; NOTE: funding data on all historical distributions of AML funding does not exist, according to officials at OSMRE. Thus, *the funding data used in this essay—especially data from older years—and referred to as AML "distributions" may actually be "net obligations" of AML funding to states and tribes for a given year*, because historic data on net obligations of AML funding has been archived at OSMRE. The difference in a state's distribution and net obligation may vary. It is rare for the difference between the two figures to be more than marginal, though it is possible.

Figure 5.7 does not include values for 2015 because GDP Deflator values will not be available for 2015 until early 2016.

[269] See Appendix 5.2 to learn about History of Total (*Nominal*) AML grants to States and Tribes

[270] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; Note that Figure 5.8 does not include Prior Balance Replacement payments.

[271] These values are shown in 1977 dollars.

Figure 5.7 Total AML Distribution to States and Tribes, real

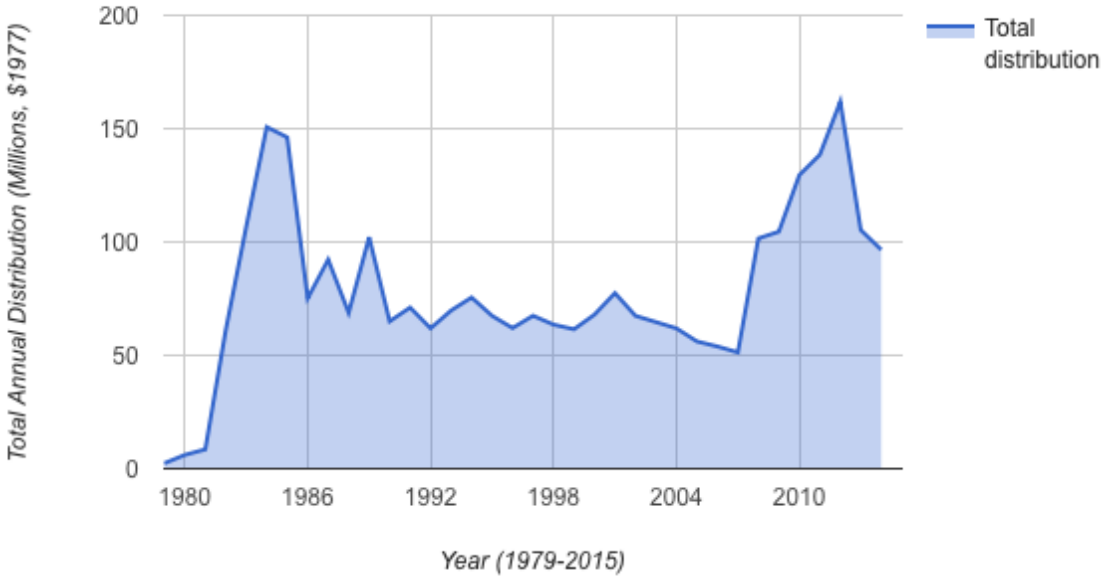


Figure 5.8 Annual AML Distributions by Sub-Fund, real

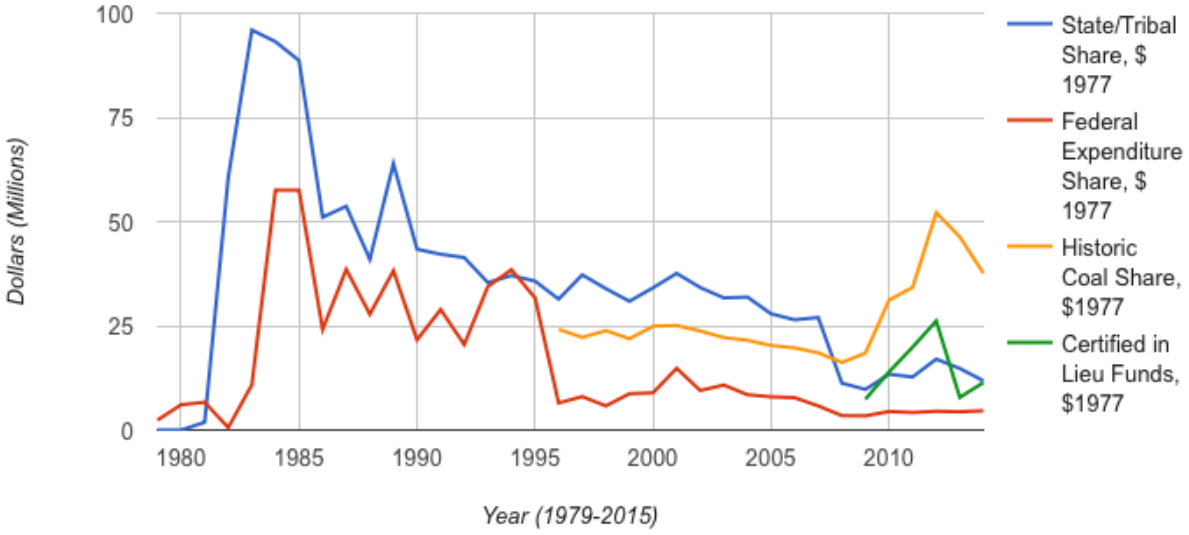
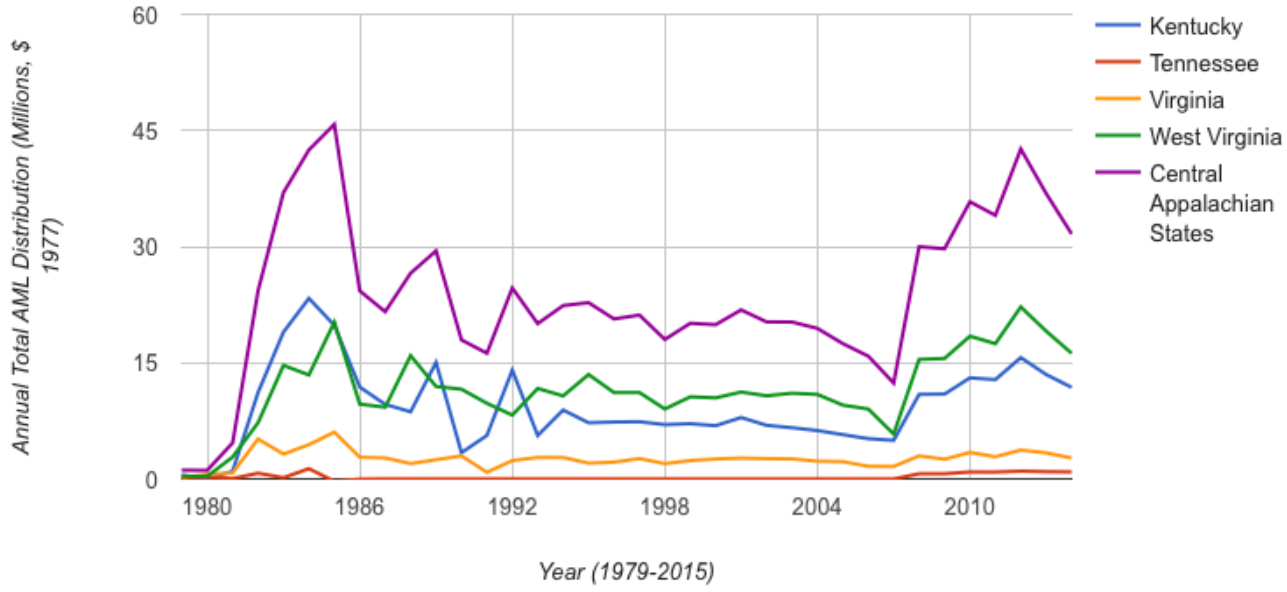


Figure 5.9 illustrates the distributions to Central Appalachian states, adjusted for inflation.[272] The recent AML distributions aren't worth as much as the nominal values make them appear, given the increases in prices throughout the economy over the past few decades. Once adjusted for inflation, we see that in the relative peak of 2012 Central Appalachian states received fewer real AML dollars than in the mid-1980s. This trend differs from the national trend because coal production has decreased in the Central Appalachian states over the last few years, meaning that these states are receiving less AML funding, all else being equal. To conclude, inflation and a decline in Central Appalachian coal production has resulted in less AML funding coming now into Central Appalachia now than in the 1980s. If the current downward swing of AML funding to Central Appalachia continues, which seems likely, Central Appalachia will be at the much lower 1990s funding levels by approximately 2017.

See Appendix 5.2 to learn about the nominal distributions to Central Appalachian states. This appendix provides more detail on state-specific fluctuations over time.

Figure 5.9 Total AML Distribution to Central Appalachian States, real



[272] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014

5.3.B. Effect of Sequestration on AML Distributions

Since FY2013, annual AML distributions to states and tribes have been sequestered by OSMRE pursuant to the Budget Control Act (BCA) of 2011. The BCA established across-the-board reductions in both discretionary and mandatory programs of the federal government.[273] As a mandatory payment program, a percentage of annual AML distributions to states and tribes have been sequestered every year since FY2013, and these reductions stand to continue through FY2021. The percentage reduction has increased over time. In FY2013, the sequestration level was 5.1%, meaning that the total AML distributions were 94.9% of what they would have been absent sequestration.[274] The total funding level dropped further in FY2014 to 92.8% and to 92.7% in FY2015.[275] The cumulative loss to AML funding due to sequestration has been $57.3 million over the past three years (see Figure 5.10).[276] The program stands to lose a total of $136 million over the nine-year sequestration period.[277]

OMB has classified AML distributions as mandatory since the 2006 reauthorization. The BCA gives the federal Office of Management and Budget (OMB) the authority to determine which mandatory accounts qualify under the law as exempt from sequestration. Since the passage of the BCA, OMB has classified AML payments as *not exempt* from sequestration.

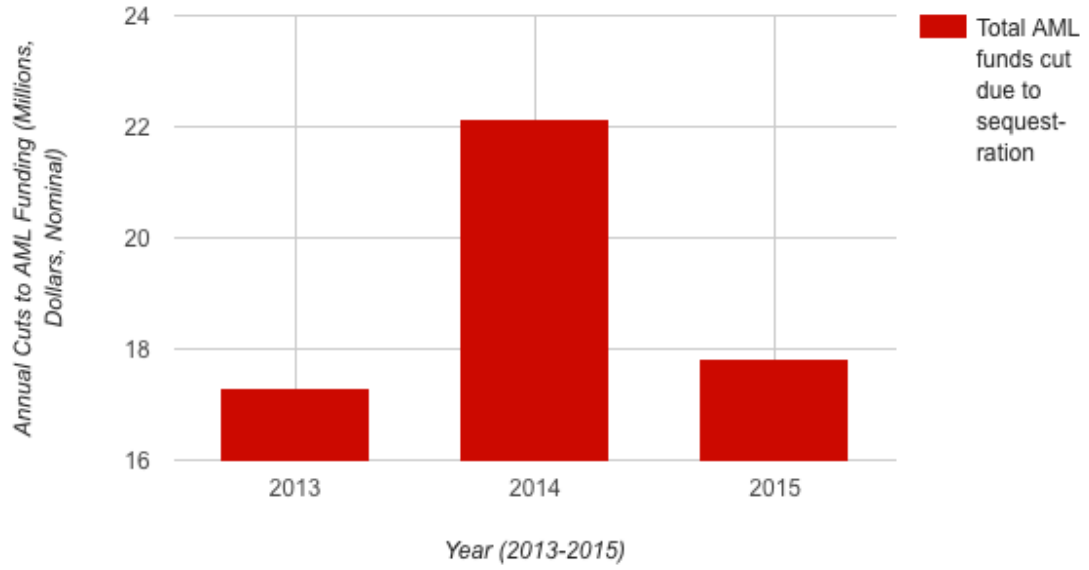
Yet, because AML funding is financed primarily by fee collection, many experts argue that AML distributions are exempt under the law.[278] As a formal letter delivered to OMB from the Interstate Mining Compact Commission (IMCC) and the National Association for Abandoned Mine Land Programs (NAAMLP) argues, “There is no benefit to sequestering these funds because doing so does not benefit federal budget deficit reduction… [and the effects are] wreaking havoc on these vital state programs to the

[273] Discretionary spending was declared exempt from sequestration in FY2014-15 due to statutory changes.
[274] “FY2013 OSMRE AML Grant Distribution”; See Appendix 5.3 to learn more about Annual AML Distributions Pre- and Post-Sequestration
[275] “FY2014 OSMRE AML Grant Distribution”; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.
[276] “FY2013 OSMRE AML Grant Distribution”; “FY2014 OSMRE AML Grant Distribution”; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.
[277] Source: A formal letter from the Interstate Mining Compact Commission (IMCC) and National Association for Abandoned Mine Land Programs (NAAMLP) to the US Office of Management and Budget (OMB), October 17, 2014.
The Interstate Mining Compact Commission (IMCC) and National Association for Abandoned Mine Land Programs (NAAMLP). Letter to US Office of Management and Budget. 17 Oct. 2014. MS. Washington, District of Columbia.
[278] The SMCRA clearly states that AML fee collections are only to be used for AML reclamation (SMCRA Title IV Sec. 402(g)). Given this statutory directive, its unclear as to whether and/or what portion of the sequestered AML moneys have remained in the AML Fund for future distribution, or if these funds have been transferred elsewhere.

severe detriment of the program's public health and environmental benefits. These effects are sure to worsen as time goes on and sequestration impacts begin to compound and snowball." [279]

Pursuant to section 255 of the Balanced Budget and Emergency Deficit Control Act of 1985 (BBEDCA), "payments to trust funds from excise taxes or other receipts properly creditable to such trust funds" qualify as exempt from sequestration.[280] The AML Trust Fund is clearly the type of dedicated trust that is meant to be exempt under the law: it is a program funded primarily by fee collections, not the general treasury, and its fees are used exclusively for the dedicated purpose of AML reclamation. Because the AML program is funded primarily through fee collections, sequestering its payments does not reduce the federal budget. The only exceptions are reductions to Certified In Lieu and Prior Balance Replacement funds, given that these grants are funded through the general treasury. Still, there is reason to believe that Certified In Lieu Payments and Prior Balance Replacement funds should be exempt as well, given that the BBEDCA holds that if portions of a fund or program are exempt, then the entire program qualifies as exempt (the "Even Application Rule").[281] As the IMCC concludes, "It is reasonable that this money be exempt from sequestration because the fees collected and deposited into the AML Trust Fund can only be used for a prescribed set of purposes related to reclamation of abandon mine lands as authorized under SMCRA…" [282]

Figure 5.10 AML Funding Sequestration Cuts



[279] Ibid.
[280] Ibid.; 2 U.S.C. §905(g)(1)(A)
[281] Ibid.; BBEDCA Sec. 256(k)(2) reads, "Except as otherwise provided, the same percentage sequestration shall apply to all programs, projects, and activities within a budget account."
[282] The Interstate Mining Compact Commission (IMCC) and National Association for Abandoned Mine Land Programs (NAAMLP). Letter to US Office of Management and Budget. 17 Oct. 2014. MS. Washington, District of Columbia.

In addition to the main argument that the AML Fund is exempt because it is a dedicated trust for a specifically designated purpose and funded by its own operational fee, the AML distributions may also be considered exempt under other parts of the law: the UMWA trust funds are explicitly exempt and are part of the AML program, private donations (which legally support the AML program) are exempt, the SMCRA requires distribution of these fee-supported grants, among other reasons.[283] For more information, see the 2014 letter from IMCC and NAAMLP to the OMB, which includes a detailed explanation of these justifications.[284]

Because of the interconnections of the AML sub-funds, sequestering each sub-fund has resulted in multiple instances of double sequestration. For example, Historic Coal is partially funded by transfers equal to a Certified state or tribe's State or Tribal Share grant (because Certified programs are ineligible for State and Tribal Share grants). Under the current sequestration scheme, these transfers *into* the Historic Coal fund are sequestered, and then the distributions *from* the Historic Coal fund are also sequestered, resulting in double sequestration.[285] Unless an exemption is granted for AML payments, sequestration effects will continue through 2021, resulting in more than $100 million in cuts to AML distributions.

[283] Ibid.
[284] Ibid.
[285] Ibid.

5.4. State and Tribal Share Distributions

According to the SMCRA, states and Indian tribes must satisfy two criteria to qualify for AML distributions from OSMRE. First, the state or tribe must have an approved AML program. Second, it must have land and waters deemed eligible under the law, which essentially means that the state or tribe must have remaining pre-1977 abandoned coal mine sites on e-AMLIS. See section 3.1 to learn more about land and water eligibility.

If the state or tribe meets these two criteria, then *it receives an annual grant from OSMRE equal to half (50%) of the AML reclamation fees collected in that state or tribe in the preceding year.*[286] State and Tribal Share grants must be spent in accordance with the priority system laid out in section 3.3, until the state or tribe is Certified.[287]

The State or Tribal Share represents the foundational—though not necessarily most substantial—source of AML funding used by a state or tribe to finance its AML program. It is only one AML sub-fund, but it has historically served as the primary source of funding for states and tribes. Recently, that has changed as non-Certified programs have received significantly more funding through the Historic Coal and Prior Balance Replacement sub-funds. Because the State and Tribal Share is entirely dependent on a state or tribe's current coal production, this sub-fund does not deliver according to any criteria of AML need.

5.4.A. History of State and Tribal Share Distributions

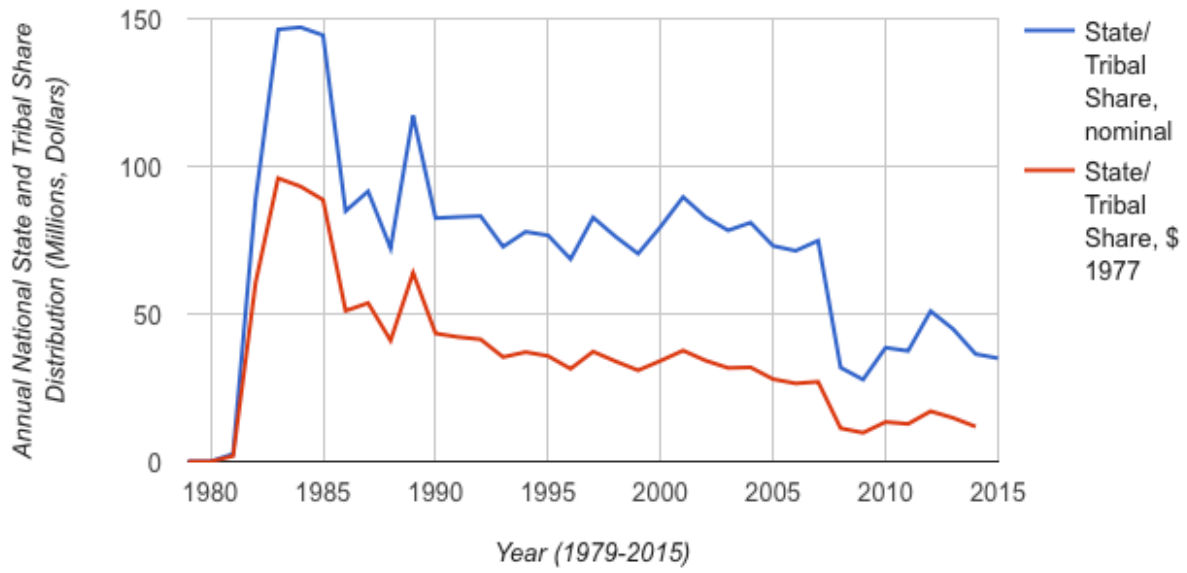
Figure 5.11 illustrates the annual State and Tribal Share payments to all AML programs across the nation, in both nominal terms and figures adjusted for inflation.[288] In the first few years of the program, most AML funding came through federal expenditures because state and tribes were still setting up their AML programs. This is reflected in zero State and Tribal Share grants until the early 1980s. In real terms, these grants peaked in FY1983.

A sharp fall occurred in the late 1980s. Nominally, State and Tribal Share payments were relatively stable from 1990 through 2005. However, in real terms the State and Tribal Share payments have been on a gradual downward trend ever since the late 1980s. Real State and Tribal Share payments are *only a quarter* of what they once were

[286] 30 U.S.C. §1232(g)(1); These "State or Tribal Share grants" must be used strictly on "annual reclamation project construction and program administration," and any of the money not spent by a state or tribe within three (3) years of receiving it must be returned by OSMRE and put into the portion of the AML Fund allocated to states and tribes for Historic Coal production (30 U.S.C. §1232(g)(1)(C); 30 U.S.C. §1232(g)(1)(D)) Note: for State and Tribal Share grants awarded in 2008, 2009, or 2010, the state or tribe has five (5) years to spend the grant (30 U.S.C. §1232(g)(1)(D)).
[287] 30 U.S.C. §1232(g)(2)
[288] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

in the early 1980s. The sharp fall in the late 2000s reflects a statutory end of State and Tribal Share grants to Certified states and tribes and a 20% reduction in AML fee levels, both of which were enacted by the 2006 reauthorization. As of FY2015, a cumulative total of $2.6 billion has been distributed to states and tribes through the State and Tribal Share sub-fund.[289] The FY2015 payments totaled $35 million.[290]

Figure 5.11 National State and Tribal Share Distribution, Nominal and Real



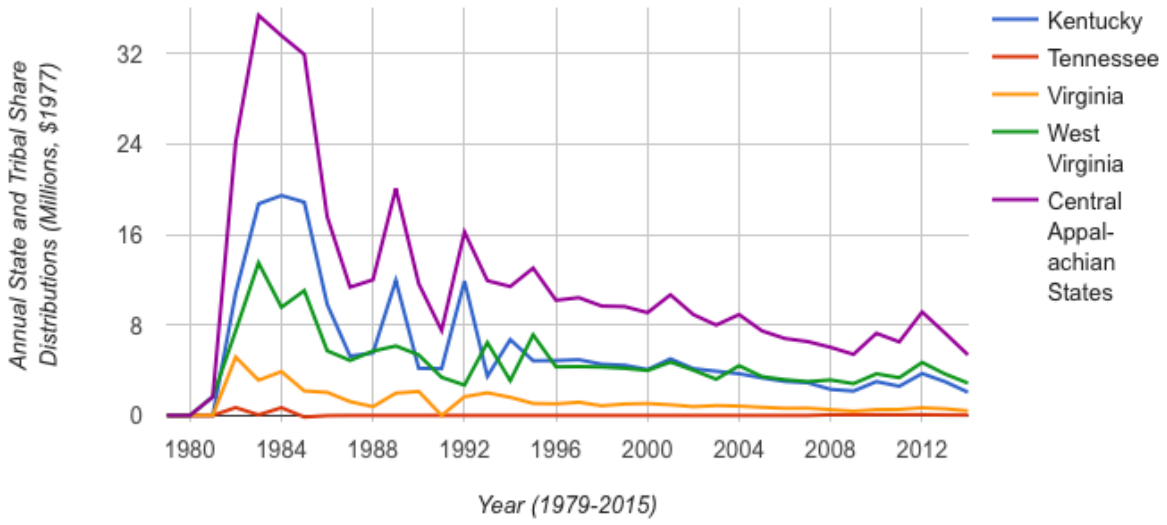
[289] To be precise, a total of $2,601,574,659 has been distributed; "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

[290] To be precise, a totaled $34,975,795; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

Figure 5.12 shows the real State Share payments to Central Appalachian states.[291] The 2014 total payments to Central Appalachian states was just 15% of its peak in 1983. Aside from some volatility in the late 1980s, Central Appalachia's grants have been on a downward trend since the 1983 peak.[292] With significantly less coal production, Virginia's State Share has always been much smaller than West Virginia or Kentucky. Tennessee lost primacy in 1987 and thus did not receive State and Tribal share funds from then until the state gained a statutory exemption in the 2006 reauthorization. Tennessee's near negligible State Share grants reflect the state's small coal industry, relative to neighboring Central Appalachian states.

As of FY2015, a cumulative total of $860 million has been distributed to Central Appalachian states through the State and Tribal Share AML sub-fund.[293] The FY2015 payments totaled $15 million, approximately 43% of the national total.[294] The variability in these payments over the years reflects the boom and bust periods that Central Appalachian coal production has faced over the past 35 years. The significant decrease in funding over this period is reflective of the sharp decline in coal production in the region, meaning less funding is coming into Central Appalachia for reclamation.

Figure 5.12 State and Tribal Share Distributions, Central Appalachian States, real



[291] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014

[292] Grants to West Virginia were generally stable, while Kentucky's varied widely from year to year until the mid 1990s. Prior to that time, West Virginia and Kentucky would often annually trade which state received the largest State Share of the Central Appalachian states.

[293] To be precise, the cumulative total is $858,930,946; "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

[294] To be precise, the total is $15,410,336; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

5.5. Historic Coal Distribution

In addition to State and Tribal Share grants, non-Certified states and tribes also receive annual Historic Coal grants.[295] 30% of the total AML fees collected *across the country* in the preceding year are put in a pot for Historic Coal grants.[296] This 30% is then allocated to States and Tribes *according to "the amount of coal historically produced" in the State or Tribe prior to August 3, 1977.*[297] To be clear, this does *not* mean that a state or tribe's Historic Coal allocation is 30% of the AML fees collected *in that state or tribe*. Rather, a state or tribe's Historic Coal allocation is a percentage of the *30% of total AML fees collected across the US*. A state or tribe's percentage is the fraction of pre-August 3, 1977 coal produced in its borders relative to the total amount of pre-August 3, 1977 coal produced in the US.[298]

Certified states and tribes are ineligible to receive Historic Coal grants, so the proportions for states and tribes are calculated based on only eligible (non-certified) states and tribes.[299] A state or tribe receives its corresponding percentage of the Historic Coal fund for that year, or the total funding required to reclaim its high priority AML sites, whichever is less. In FY2015, for example, Utah only received the amount required to reclaim its remaining high priority AML sites (according to the e-AMLIS inventory).[300] Utah's remaining ineligible funds were distributed among the other eligible states and tribes.

Chart 5.13 shows the percentages of each state and tribe's historic coal production.[301] States and tribes are listed in descending order with respect to their percentage of total historic coal production. These figures are based on the sum of all historic (pre-1977) coal production tonnage *in all eligible states and tribes.* Note that these calculations exclude Certified states and tribes. Texas, for example, has over 60 million tons of historic coal production but because it is a Certified state it is *ineligible* for Historic Coal funding and, accordingly, its historic coal production is not included in the calculations used to determine historic coal percentages.

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[295] 30 U.S.C. §1232(g)(5)(A)
[296] Ibid.
[297] Ibid.
[298] Historic Coal production percentages are based on an OSMRE Environmental Impact Statement released in March 1980;
Office of Surface Mining Reclamation and Enforcement, "Implementation of program policies for Federal, State, and Indian abandoned mine land reclamation under Title IV of the Surface Mining Control and Reclamation Act of 1977: Final environmental statement OSM-EIS-2." 1980.
[299] Because Certified states and tribes are eligible to receive neither State and Tribal Share grants nor Historic Coal grants, the money that hypothetically would be allocated to Certified states and tribes under State and Tribal Share grants is instead reallocated to the Historic Coal fund.[299] These transfers are added to the 30% of total fee collections mentioned above, which, taken together, comprise the Historic Coal fund. (30 U.S.C. §1232(g)(5)(B))
[300] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[301] Ibid.

Pennsylvania has the most historic coal production and receives almost 35% of all Historic Coal payments annually. West Virginia is second with a significantly smaller 20%. Illinois and Kentucky receive virtually half that at 10.7 and 10.5%, respectively. The other Central Appalachian states, Virginia and Tennessee, receive relatively small percentages of 3.2% and 1.2%, respectively. A state or tribe's percentage may fluctuate when a new state or tribe becomes ineligible after gaining Certification, or if a state or tribe is added to the calculations. This latter circumstance is rare but happened, for example, when Tennessee was made eligible for Historic Coal grants in the 2006 reauthorization and the state's AML program was approved.

Chart 5.13 Historic Coal Production and Percentage, by State and Tribe[302]

State/Tribe	HC Prod Tonnage (x 1000)	HC Eligibility	HC Percentage
Program Totals	44,420,477		100.0000%
Pennsylvania	15,022,237	Yes	34.6502%
West Virginia	8,633,592	Yes	19.9142%
Illinois	4,647,256	Yes	10.7193%
Kentucky	4,554,605	Yes	10.5056%
Ohio	2,848,828	Yes	6.5711%
Indiana	1,513,001	Yes	3.4899%
Virginia	1,397,951	Yes	3.2245%
Alabama	1,254,440	Yes	2.8935%
Colorado	611,350	Yes	1.4101%
Tennessee	526,185	Yes	1.2137%
Iowa	367,329	Yes	0.8473%
Missouri	359,548	Yes	0.8293%
Utah	353,866	Yes	0.8162%
Kansas	297,779	Yes	0.6869%
Maryland	295,137	Yes	0.6808%
Oklahoma	214,174	Yes	0.4940%
North Dakota	190,256	Yes	0.4388%
New Mexico	148,627	Yes	0.3428%
Arkansas	104,296	Yes	0.2406%
Alaska	13,536	Yes	0.0312%
Louisiana		No	0.0000%
Mississippi		Yes	0.0000%
Montana	282,225	No	0.0000%
Texas	60,503	No	0.0000%
Wyoming	594,834	No	0.0000%
Crow Tribe	14,119	No	0.0000%
Hopi Tribe	12,860	No	0.0000%
Navajo Tribe	101,943	No	0.0000%

[302] Ibid.

Historic Coal grants must be used for the same purpose and projects as specified for State and Tribal Share grants in section 5.4 of this essay.[303] Basically, this means that Historic Coal grants must be used for the reclamation of pre-August 3, 1977 eligible lands and water and spent in compliance with the AML priority system until a state or tribe is Certified.[304] A state or tribe is eligible to receive Historic Coal grants only if it still has Priority 1 and Priority 2 sites, but the law does not specify that states and tribes must use these grants on Priority 1 and 2 sites.[305]

All State and Tribal Share grant money that a state or tribe does not spend within three (3) years upon it being appropriated is returned to OSMRE and put into the Historic Coal fund to be allocated under Historic Coal grants under the next annual distributions.[306]

5.5.A. History of Historic Coal Distributions

Historic Coal payments were not introduced until FY1996.[307] A change in the AML law moved some funds that were previously allocated through the Federal Expenditure Share to the newly created Historic Coal Share. Figure 5.14 shows Historic Coal distributions from FY1996-2015 to all state and tribal AML programs, both in nominal terms and in inflation-adjusted figures.[308] Adjusted for inflation, total Historic Coal payments in FY2014 were approximately 50% higher than in FY1996 at the start of the program.[309] Historic Coal payments totaled $115 million in FY2015, and since it started $1.5 billion has cumulatively been paid to states and tribes through the sub-fund as of FY2015.[310]

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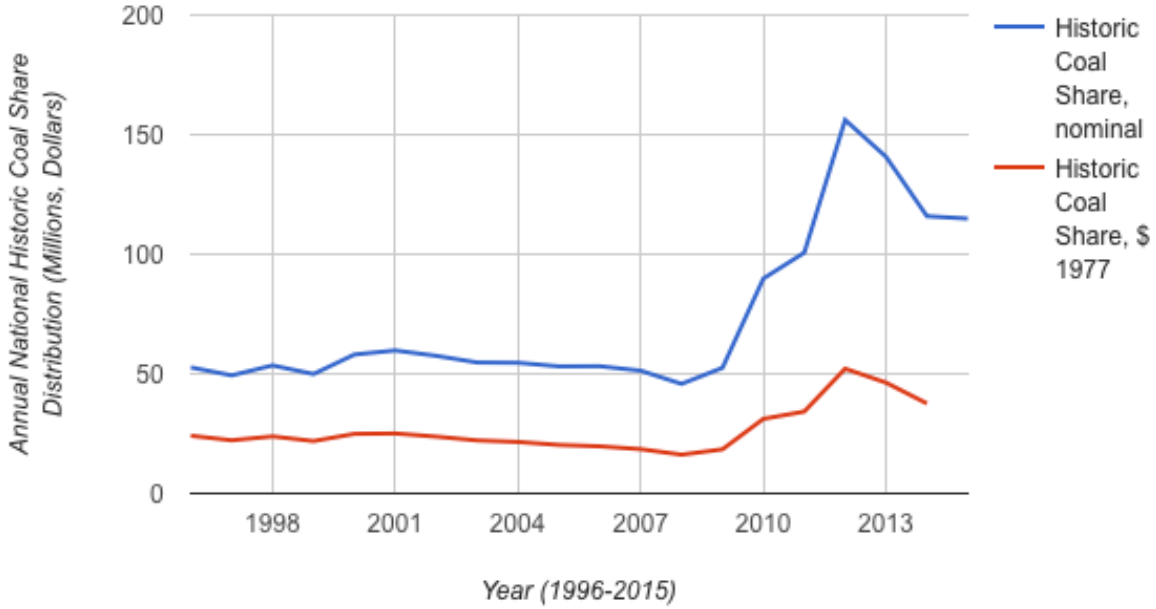
[303] 30 U.S.C. §1232(g)(5)(A)
[304] 30 U.S.C. §1232(g)(2)
[305] 30 U.S.C. §1232(g)(5)(A)
[306] Additionally, in 2008-2010, OSMRE withheld a portion of funds from State and Tribal Share grants and placed this money in the AML Fund. When a state or tribe gains Certification it receives a one-time Certified In Lieu payment of these withheld funds. An amount equal to this one-time payment is simultaneously deposited in the Historic Coal fund for that year's distributions; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015; 30 U.S.C. §1232(g)(1)(D)
[307] See chapter 2 of this essay to learn more about the legislative history of the AML program, including the introduction of Historic Coal grants.
[308] Historic Coal payments to states and tribes were relatively stable at around $50 million annually from FY1996 through FY2009. The inflation-adjusted figures show that Historic Coal payments have not been as volatile as payments through many of the other AML sub-funds. Real Historic Coal payments were on a slow downward trend until 2009 when statutory changes to the AML law provided an influx of more moneys into the Historic Coal fund, such as 50% of fee collections from Certified states and tribes which are ineligible to receive funding through State and Tribal Share grants; "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.
[309] (37,609,907.73-24,136,804.26)/24,136,804.26
[310] To be precise, payments totaled $114,905,728 in FY2015 and $1,464,404,757 has cumulatively been paid.

Historic Coal distributions hit a peak of $150 million in the FY2012 distributions and have fallen sharply since that time. Distributions have decreased in recent years due to a fall in total fee collections spurred by a decrease in coal production. From 2012 to 2013, for example, US coal production fell by nearly 32 million tons.[311]
See Appendix 5.4 to learn about the changes in Historic Coal Share distributions to Central Appalachian states over time.

Figure 5.14 Historic Coal Share Distribution, Nominal and Real



[311] EIA, "Aggregate coal mine production: all coal: total 2013." Coal data browser: generated report. July 6, 2015. URL: <http://www.eia.gov/beta/coal/data/browser/#/topic/33?agg=0,2,1&rank=g&geo=vvvvvvvvvvvvo&mntp=g&linechart=COAL.PRODUCTION.TOT-US-TOT.A&columnchart=COAL.PRODUCTION.TOT-US-TOT.A&map=COAL.PRODUCTION.TOT-US-TOT.A&freq=A&start=2001&end=2013&ctype=map&ltype=pin&rtype=s&maptype=0&rse=0&pin=>

5.6. Minimum Program States and Tribes

Under the current AML program, a state or tribe's annual State or Tribal Share and Historic Coal grants represents a majority of its annual AML distribution. Because both of these sub-funds are tied to the nation's current coal production in one way or another, a state or tribe with a massive number of AML sites may receive almost nothing in AML funding if coal production within its borders has diminished, and/or if the state or tribe produced little coal prior to 1977. In order to ensure that a state or tribe has at least some funding, the current AML law guarantees that non-Certified states and tribes receive at least $3 million annually in total AML distributions, regardless of current or historic coal production.[312]

If a state or tribe *would* receive less than $3 million in annual AML funding under the standard funding formula outlined in previous sections (State and Tribal Share grants, Historic Coal grants, etc.), then it is considered a "Minimum Program" state or tribe. Under the law, OSMRE must take funds from its 20% Federal Expenditure Share to make up the difference between a Minimum Program's preliminary allocation and $3 million, so that all Minimum Programs receive at least $3 million in annual AML funding, or the total unfunded high priority AML problems in its inventory, whichever is less.[313] Note that a state or tribe's preliminary AML distribution is the sum of its State and Tribal Share, Historic Coal grants, and Prior Balance Replacement distribution. In order qualify for "Minimum Program Make-Up Funds," a state or tribe must:

a. have an approved AML program.[314]
b. contain eligible land and water within its borders, as outlined in section 3.1 of this essay.[315]
c. require this funding to fulfill priorities 1 and 2 of the AML priority system outlined in section 3.3 of this essay.[316]
d. not be a Certified state or tribe.

When the AML program was first enacted, the minimum program guarantee was set at $1.5 million per year. This level was raised to $2 million by the Omnibus Budget Reconciliation Act of 1990 and again raised in the 2006 reauthorization to the current level of $3 million.

Table 5.15 shows the Minimum Program Make-Up payments to all Minimum Programs in FY2015.[317] Payments totaled almost $20 million. New Mexico had the smallest payment at $910 thousand and Alaska had the largest payment at $2.76 million. These payments show that Minimum Program Make-Up funds are a relatively small portion of

[312] 30 U.S.C. §1232(g)(8)
[313] Ibid.
[314] Ibid.
[315] Ibid.
[316] Ibid.
[317] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.

the total AML budget. As is the case with Historic Coal distributions, Minimum Program Make-Up payments may be less than the $3 million guarantee if the state or tribe requires less than that to reclaim its remaining high priority AML sites.[318]

Table 5.15 2015 Minimum Program Make-Up Payments[319]

State	Minimum Program Make-Up Funds
Alaska	2,758,055
Arkansas	2,695,684
Iowa	1,943,401
Kansas	2,140,436
Maryland	1,940,863
Missouri	1,908,429
New Mexico	910,779
North Dakota	1,316,600
Oklahoma	2,278,478
Tennessee	1,427,204
Total	**19,319,929**

[318] 30 U.S.C. §1232(g)(8)(A); This was the case in FY2015 with Utah and Mississippi because these states received enough funding through State and Tribal Share grants and Certified In Lieu payments to reclaim all of the high priority sites remaining within their borders according to e-AMLIS; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015; These figures do not account for sequestration.

[319] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015; These figures do not account for sequestration.

5.7. Prior Balance Replacement Grants

The Tax Relief and Healthcare Act of 2006 made a number of changes to the AML program, including the creation of a "new" stream of AML funding to states and tribes: Prior Balance Replacement grants. When the SMCRA was originally passed in 1977, AML distributions to states and tribes were not mandatory payments, meaning that the actual amount distributed to states and tribes was at the annual discretion of Congress. As years passed, the AML program collected more in receipts than Congress spent. As Congress repeatedly under-appropriated AML distributions relative to the grants under the statutory formula, a pool of unspent AML funding gradually built up in the AML Trust Fund. The 2006 AML reauthorization resolved to "pay back" a state or tribe's allocated but unappropriated balance that had been withheld in the AML Fund (often called a state or tribe's "Prior Balance").

Rather than disbursing these prior balance allocations directly from the unappropriated AML Fund, the law moved to source payments equal to these balances from the US general treasury and leave the actual funds in the AML Fund. These payments have been called the "Prior Balance Replacement" grants because they are, in effect, replacing a state or tribe's balance that built up in the unappropriated AML Fund prior to the 2006 law.[320]

Rather than disbursing a state or tribe's entire prior balance in a single year, the law resolved to make seven equal payments from FY2008-2014 to states and tribes (hence, these annual payments are often referred to as "*Remaining* Prior Balance Replacement" funds).[321] The total prior balances for each state and tribe and the annual payments are illustrated in Table 5.16.[322]

As Table 5.16 shows, the total prior balances equaled $1.32 billion as of 2007, meaning that total annual installments equal $187 million. These prior balances vary largely from state to state. Wyoming had the largest at over half a billion dollars. At nearly $150 million and $136 million, respectively, West Virginia and Kentucky each had sizeable balances as well. As Table 5.16 shows, the annual Prior Balance distributions were, for some states and tribes, fairly large relative to their State and Tribal Share and Historic Coal grants.

Despite statutory requirements that the total repayment be made in seven equal installments, the annual distributions varied slightly for some states and tribes, but by the end of FY2014 all prior balances had been distributed. There are two exceptions: 1) the funding sequestered from these distributions in FY2013-FY2015, and 2) the Prior

[320] More specifically, the prior balances come from the total state share allocation in the AML Fund as of November 30, 2007; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015
[321] SMCRA §411(h)(i)(C)
[322] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2008 Grant Distribution*. US Department of the Interior, 2008. Web. 7 July 2015.

Balance Replacement funds withheld from Wyoming in FY2013 and FY2014 due to the statutory cap.[323] Prior Balance Replacement grants provided a significant influx of funds for state and tribal AML programs in FY2008-2014, but these temporary payments have ended and AML programs are now seeing a sharp corresponding decline in total AML distributions.

[323] See more on the effects of sequestration in section 5.3.B. of this essay; in 2013, the SMCRA was amended to cap AML distributions to Certified states and tribes, meaning that in some rare cases a Remaining Prior Balance payment to a state or tribe was reduced or eliminated. Because of this cap, Wyoming's 2013 Remaining Prior Balance distribution, for example, was zero because the state was Certified and had been paid the full annual amount in accordance with the cap through Certified In Lieu funds; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *FY 2013 AML Final Mandatory Distribution*. US Department of the Interior, Web. 7 July 2015.
the SMCRA was amended by Public Law 112-141 (MAP-21)

Table 5.16 Prior Balance Replacement Funding, by state and tribe

State/Tribe	Total Prior Balance	Annual installments, FY2008-2014
Alabama	20,392,585	2,913,226
Alaska	2,262,652	323,236
Arkansas	64,925	9,275
Colorado	29,824,086	4,260,584
Illinois	31,337,588	4,476,798
Indiana	45,968,101	6,566,872
Iowa	26,612	3,802
Kansas	453,776	64,825
Kentucky	136,629,091	19,518,442
Louisiana	1,724,874	246,411
Maryland	4,434,692	633,527
Michigan	0	0
Mississippi	934,789	133,541
Missouri	1,118,259	159,751
Montana	56,483,602	8,069,086
New Mexico	21,066,519	3,009,503
North Dakota	13,921,230	1,988,747
Ohio	26,214,335	3,744,905
Oklahoma	2,394,017	342,002
Pennsylvania	63,459,961	9,065,709
Tennessee	0	0
Texas	23,348,839	3,335,548
Utah	16,521,374	2,360,196
Virginia	29,799,415	4,257,059
West Virginia	149,851,959	21,407,423
Wyoming	578,905,314	82,700,759
Crow Tribe	9,227,459	1,318,208
Hopi Tribe	6,156,671	879,524
Navajo Tribe	36,277,453	5,182,493
Program Totals	1,308,800,176	186,971,454

5.8. Certified State and Tribal AML Programs

According to the SMCRA, an approved state or tribal AML program may petition OSMRE for "Certification" status.[324] This status "Certifies" completion of all coal AML priorities enumerated in the AML policy in a given state or tribe.[325] Additionally, Certification signifies that a state or tribe has reclaimed all of the eligible post-August 3, 1977 coal sites noted in section 3.1 of this essay.[326] In sum, if a state or Indian tribe is Certified, then *theoretically* all its abandoned coal mine lands have been reclaimed. In some cases, states or tribes have achieved Certification while still having remaining AML problems.

If a state or tribe is Certified, then the regular AML land and water eligibility requirements do not apply. Instead, eligible lands, waters, and *facilities* are those that a) were "mined or processed for minerals" (*note: any mineral, not only coal*) or "were affected by such mining or processing" and left in an "inadequate reclamation status" prior to August 3, 1977, *and* b) for which there is no other reclamation responsibility under state or federal law.[327] Utilities that have been adversely affected by mineral mining or processing are also eligible for AML funding for Certified states and tribes. Specifically, the "protection, repair, replacement, construction, or enhancement of utilities, such as those relating to water supply, roads, and such other facilities serving the public adversely affected by the mineral mining and processing practices, and the construction of public facilities in communities" impacted by mineral mining or processing" are eligible.

It is important to note that, pursuant to Certification, if a coal AML site develops within the boundaries of a Certified State or Tribe, that state or tribe is responsible for reclaiming such sites before using its Certified In Lieu funding for any non-coal AML sites. Sites designated under the Uranium Mill Tailings Radiation Control Act of 1978 or those sites that have been identified for remedial action under the Comprehensive Environmental Response Compensation and Liability Act of 1980 are not eligible.[328]

Similarly, if a state or tribe is Certified, then the standard AML priorities do not apply. Instead, AML moneys for Certified states and tribes shall be spent according to the following priorities:

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[324] In order to achieve Certification, the petition of a state or tribe must be approved by the Secretary of the Interior (30 U.S.C. §1240a(a)). In effect, OSMRE handles Certification petitions. OSMRE must publish such approval in the Federal Register and must provide time for public comment before verifying the state or tribe's Certification (30 U.S.C. §1240a(a)). The Secretary has the power to initiate Certification of a state or tribe without the request or petition of a state or tribe if all of its coal AMLs listed in the federal inventory have been reclaimed according to the priorities enumerated in the AML policy (30 U.S.C. §1240a. (a)(2)(A)).
[325] 30 U.S.C. §1240a(a)
[326] 30 U.S.C. §1232(g)(4)(F)
[327] 30 U.S.C. §1240a(b)
[328] 30 U.S.C. §1240a(d)

(P1) “The protection of public health, safety, general welfare, and property from extreme danger of adverse effects of mineral mining and processing practices” [329]

(P2) “The protection of public health, safety, and general welfare from adverse effects of mineral mining and processing practices” [330]

(P3) “The restoration of land and water resources and the environment previously degraded by the adverse effects of mineral mining and processing practices” [331]

The Certification of a state or tribe expands the eligibility of lands and waters, as well as the program priorities, beyond coal to include the adverse effects of *any mineral mining or processing*. However, the law also includes a provision that cedes authority over the discretion of how AML grants can be spent in Certified states and tribes to the state legislature or governing body of the tribe.[332] While most Certified states and tribes use the above priorities related to reclamation of mineral mining or processing as guidelines for how to spend their AML grant, many states interpret the law as stating that the final decision as to how the state or tribe spends the AML grant—whether on AML reclamation or something not related to environmental reclamation whatsoever—ultimate lies in the hands of the state legislature.[333]

Rather than receiving State and Tribal Share or Historic Coal grants, Certified states and tribes annually receive “Certified In Lieu” grants, funded through the US General Treasury. This change was made in the 2006 reauthorization, prior to which Certified states and tribes still received State and Tribal Share grants. The 2006 law specifies that a Certified state or tribe shall receive an amount from the general treasury equal to *50%* of the total reclamation fee collections in the state or tribe in the previous year. This effectively amounts to a Certified In Lieu payment from the general treasury equal to what the state or tribe would have received in a State or Tribal Share grant. Certified programs are not eligible to receive Historic Coal grants, State and Tribal Share grants, or Minimum Program Make-Up funds, but they were eligible for Prior Balance Replacement funds before they expired in FY2014.

Recent legislation capped Certified In Lieu funding at $15 million annually for each state or tribe.[334] In FY2014 and FY2015, this cap was raised to $28 million and $75 million, respectively.[335] The only state or tribe affected by this cap and its temporary raise is Wyoming, which is Certified but produces such a substantial amount of coal that it pays more in AML fees annually than any other state or tribe in the country. .

[329] 30 U.S.C. **§**1240a(c)
[330] Ibid.
[331] Ibid.
[332] 30 U.S.C. **§**1240a.(h)(1)(D)(i)
[333] See section 2.6 to learn more about how some Certified states have spent their AML grants.
[334] The SMCRA was amended by Public Law 112-141 (MAP-21) to cap payments to Certified states and tribes at $15 million.
[335] See chapter 2 to learn more about recent amendments to the AML law.

In FY2008-2010, OSMRE phased in State and Tribal Share grants to non-Certified states and tribes, withholding some of these distributions in the AML Fund. According to the law, once a state or tribe gains Certification, it shall receive a one-time payment of these withheld funds.[336] Because Mississippi, for example, acquired Certification in late 2014, the state received a one-time payment of $154,000 through its FY2015 Certified In Lieu payment.[337]

5.8.A. History of AML Grants to Certified States and Tribes

Certified states and tribes began receiving Prior Balance Replacement grants in FY2008, which was also the first year that Certified states and tribes no longer received State and Tribal Share distributions. It wasn't until FY2009 that Certified states and tribes began receiving Certified In Lieu funds. Figure 5.17 shows that Certified in Lieu grants started in FY2009 and grew steadily until FY2013 when Congress enacted a $15 million cap on AML funding per state/tribe.[338] The raise in the cap is reflected in the growth of the total Certified In Lieu distributions in FY2014 and FY2015.

A total of $316 has been distributed through Certified In Lieu payments as of FY2015.[339] Combined with the total Prior Balance Replacement fund payouts, $1.6 billion has been distributed to states and tribes from the General Treasury through the AML program, as of FY2015.[340]

As of FY2015 five states and three tribes (eight total programs) are Certified: Wyoming, Montana, Texas, Louisiana, Mississippi, Crow Tribe, Hopi Tribe, and Navajo Nation.[341] Wyoming, who's FY2015 Certified In Lieu payment was $54 million, receives the vast majority of all Certified in Lieu payments.[342] At $4.4 million, Montana received the second largest distribution. The Navajo Nation received $1.8 million and Texas received $1.7 million. The rest of the Certified programs received less than $1 million each. Based on these figures, once the cap is again lowered to $15 million in FY2016, we can expect total Certified In Lieu distributions to land between $15 and $25 million annually for the foreseeable future, barring any legislative changes that raise the $15 million cap.

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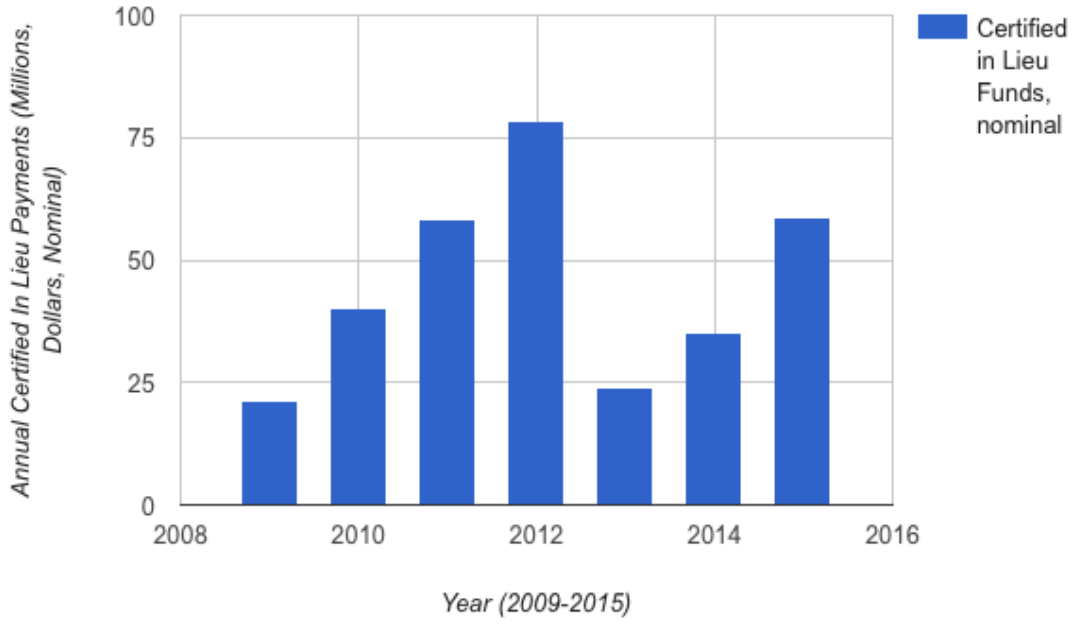
[336] 411(h)(2)(A) of SMCRA
[337] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[338] This data is pulled from the "OSMRE AML Grant Distribution" documents for every year from FY2009-FY2015.
[339] To be precise, a total of $315,716,457 has been distributed; OSMRE AML Grant Distributions for FY2009-2015; Note: these values do reflect the effects of sequestration in FY2013-2015.
[340] To be precise, $1,624,516,632 has been distributed to states and tribes from the general treasury through the AML program.
[341] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[342] Ibid.; These figures do not account for sequestration effects.

Figure 5.17 Certified In Lieu Fund Distributions



5.9. Federal Expenditure Share

The 20% share of AML collections that are not allocated through State and Tribal Share grants or Historic Coal grants is the "Federal Expenditure Share" and may be used by OSMRE for any of the following:

i) The Small Operator Assistance Program (SOAP), which financially assists small coal operators (those with less than 300,000 tons produced annually) in doing hydrology and related tests required in the mine permitting process.[343] OSMRE may assist operators directly or through grants to state programs, but no more than $10,000,000 may be spent on this program annually.[344] SOAP, though still supported by the law, has not been funded in recent years.

ii) The "*emergency* restoration, reclamation, abatement, control, or prevention of adverse effects of coal mining practices, on eligible lands." [345]

iii) The reclamation of eligible land and water sites that are in *a State or Tribe that does not have an approved AML program*.[346]

iv) The costs required to administer the federal AML program.[347]

v) Payment to those Minimum Program states or tribes whose annual AML fee collection total less than $3,000,000.[348] For a Minimum Program state or tribe, OSMRE must make up the difference between the total AML fee collections in that state or tribe and $3,000,000, so that, in total, Minimum Program states and tribes receive at least $3,000,000 in AML grants annually.[349]

vi) The reclamation or drainage abatement of unreclaimed surface mine sites that were "mined for coal or which were affected by such mining, wastebanks, coal processing or other coal mining processes and left in an inadequate reclamation status." [350] When determining which sites to select, OSMRE must follow the priorities in listed in section 3.3.[351] In order to qualify, the site must meet *either* of the following conditions:

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[343] 30 U.S.C. §1232(g)(3)(A); 30 U.S.C. §1257(c)
[344] 30 U.S.C. §1232(g)(3)(A); 30 U.S.C. §1231(c)(9)
[345] 30 U.S.C. §1232(g)(3)(B); 30 U.S.C. §1240; Learn more about the powers vested to OSMRE for these emergency programs in section 3.6.
[346] 30 U.S.C. §1232(g)(3)(C)
[347] 30 U.S.C. §1232(g)(3)(D)
[348] 30 U.S.C. §1232(g)(3)(E)
[349] 30 U.S.C. §1232(g)(3)(E); 30 U.S.C. §1232(g)(8)
[350] 30 U.S.C. §1232(g)(4)(A); These reclamation projects are also authorized to be funded with money collected as civil penalties under section 1268 of SMCRA (30 U.S.C. §1232(g)(4)(D)).
[351] 30 U.S.C. §1232(g)(4)(C)

a. The coal mining operation must have occurred during the period between August 4, 1977 and the date that the AML program in the state where the site is located was approved, *and* any bonds, financial guarantees, or other sources of money for the purpose of reclaiming the site must be insufficient for adequate reclamation.[352]

b. The coal mining operation must have occurred during the period between August 4, 1977 and November 5, 1990, the operator must have become insolvent between such period, *and* all funds available from any financial guarantee(s) or the proceedings surrounding such insolvency must be insufficient to provide for adequate reclamation.[353]

See Appendix 5.5 to learn more about the history of Federal Expenditure Share distributions.

[352] 30 U.S.C. **§**1232(g)(4)(B)(i)
[353] 30 U.S.C. **§**1232(g)(4)(B)(ii)

5.10. Unappropriated AML Fund & Post-2022 Distributions

When the SMCRA was originally enacted in 1977, the law established a formula by which to allocate AML distributions to states and tribes. The original law did not, however, make these distributions mandatory and thus left the determination of actual distributions to the will of Congress. Until the Tax Relief and Healthcare Act of 2006 was passed, the AML program repeatedly collected more in AML fees than Congress elected to distribute through the AML program. The result was a gradual build up of an unappropriated balance of AML funds. This unappropriated balance is part of something often called the "AML Fund." It is the main account in which fee collections are still annually deposited and from where annual AML distributions are pulled. Since 2006, however, the AML program distributes approximately as much as it collects in AML fees every year because the 2006 Act made AML distributions mandatory payments of the federal government. This took Congress out of the annual AML distribution process and means that the AML Fund has not grown significantly from unappropriated fee collections since 2006 because it annually collects and distributes approximately the same amount (though, the AML Fund has grown substantially since 2006 due to interest and transfers from the general treasury).

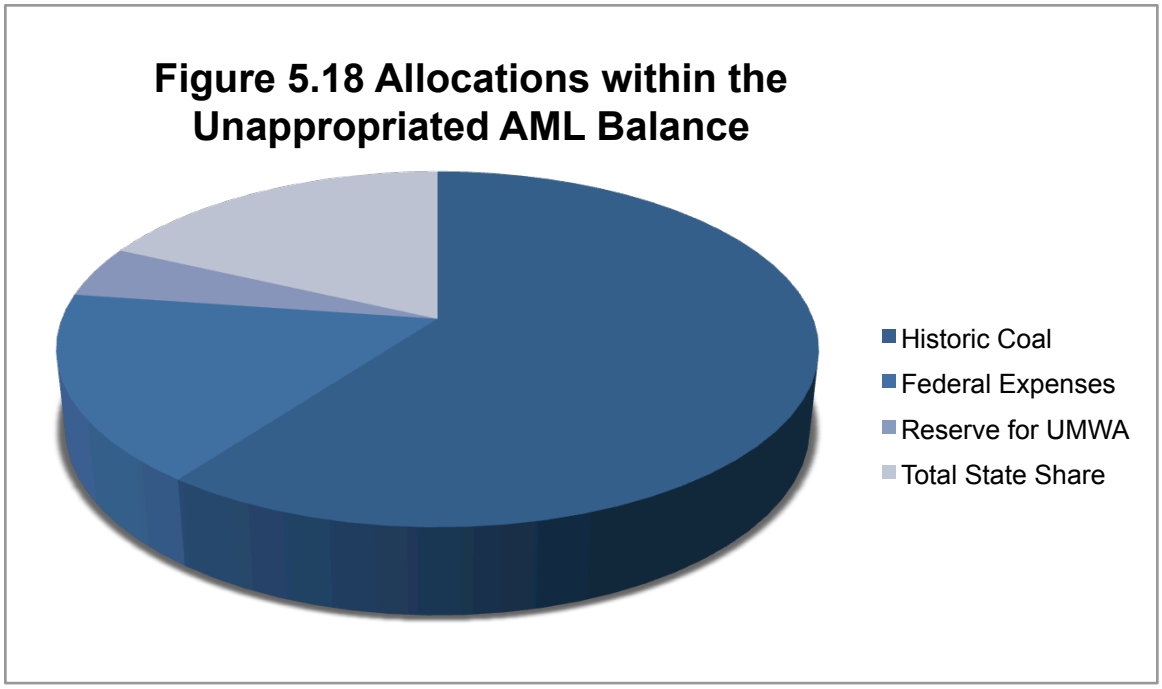
As of November 2014, the AML Fund has collected $10,524,644,935 in *total receipts* (not just fees) and distributed $8,040,363,662 in *total appropriations* over the lifetime of the AML program.[354] The remaining unappropropriated balance in the AML Fund currently stands at $2,484,281,273.[355] According to the current law, this unappropriated balance is to sit idle until the sunset of AML fee collections in FY2021. The AML Fund, though unappropriated, is allocated into various "buckets." The Fund is allocated into two main groups:

1. Total Federal Share Allocation, which stands at $2,036,438,944 (82% of AML Fund). This Share has three sub-allocations:
    a. Historic Coal: $1,494,425,792 (73.4% of Federal Share)
    b. Federal Expenses Allocation: $425,589,782 (20.1% of Federal Share)
    c. Reserve for UMWA Health and Retirement Funds: $116,423,371 (5.7% of Federal Share)

2. Total State Share Allocation, which stands at $447,842,328 (18% of AML Fund)

Figure 5.18 provides a visual breakdown of the allocations within the unappropriated balance.[356]

[354] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.
[355] Ibid.
[356] Ibid.



The unappropriated AML balance has grown by almost half a billion dollars since FY2008 when the Fund stood at $2,043,043,781. This growth has been due to a variety of receipts, including: approximately half of the Federal Expenditure share (so, approximately 10% of fee collections) not spent and left in the Fund annually, transfers to the Fund from the general treasury equal to the total Prior Balance Replacement funds distributed to states and tribes over FY2008-2014 (this match in funds was included in the 2006 reauthorization and provided a large influx of moneys to the Fund from the treasury), and interest earned from investing the AML Fund.[357]

The current law states that, starting in FY2023 and extending through each fiscal year thereafter, to the extent that funds are available in the unappropriated AML fund, they will be distributed to states and tribes according to the distributions in FY2021.[358]

5.10.A.

[357] Some private donations may have also been made to the Fund over that time.
[358] 30 U.S.C. §1231(f)(2)(B)

5.10.B. History of Interest Earned on Unappropriated AML Fund

The unappropriated portion of the AML Fund that the Secretary of the Interior deems "not, in his judgment, required to meet current withdrawals" may be invested in Treasury Securities in order to gain interest.[359] Specifically, this portion of the Fund may be invested in "public debt securities with maturities suitable for achieving the purposes of the transfers (to the UMWA benefit plans, see section 5.11) and bearing interest at rates determined by the Secretary of the Treasury, taking into consideration current market yields on outstanding marketable obligations of the United States of comparable maturities." [360]

In effect this means that OSMRE has the authority to invest the unappropriated AML balance annually in Treasury Securities in order to gain interest on the balance. Table 5.19, which is a table taken directly from the "FY2015 OSMRE Budget Justification" document, shows the annual interest earned by the AML Fund since FY1992.[361] The highest annual earning came in FY2007 when the investments garnered $105.8 million. The lowest came in FY2015, when only $21.6 million was earned from the interest on investments. The annual earning has fluctuated widely but over the past 24 years but has averaged around $55 million annually.

The unappropriated balance of the AML Fund has experienced a general upward trend since FY1978, though it did experience a few spurts of decline. It grew to $513 million by 1982 and then declined over the next five years to $405 million. It expanded significantly over the next 13 years, growing by over $1 billion to a balance of $1.5 billion in FY2000. After a temporary fall in FY2001, the unappropriated AML balance grew by another billion to $2.46 billion in FY2012. In the past three years the AML Fund has stayed relatively stagnant, growing or shrinking marginally from year to year, and now stands at $2.477 billion.

[359] 30 U.S.C. §1231(e)
[360] 30 U.S.C. §1231(e)
[361] "FY2015 OSMRE AML Budget Justifications"; Table 5.19 also provides the annual cumulative amount appropriated from the AML Fund and the cumulative unappropriated balance, since the AML program's inception in FY1977. The annual appropriations from the AML Fund grew slowly yet steadily from FY1978 to FY1982. [Note: these annual appropriations figures do not account for payments from the general treasury, such as Prior Balance Replacement payments or Certified In Lieu funds]. Since that time the annual AML appropriations have landed between $100 and $300 million. Over those 30 plus years, annual appropriations exceeded $200 million only a handful of times, with the vast majority of annual appropriations falling between $175 and $200 million. Annual appropriations from the AML Fund peaked in FY1985 at $297 million.

Table 5.19 Summary Status of Abandoned Mine Reclamation Fund[362]

(dollars in thousands)

Fiscal Year	Receipts and Interest Income			Appropriations						
	Amount	Interest Earned	Cumulative	Amount Appropriated from AML Fund /1	footnote	Appropriations from Other Sources /2	Transfer To UMWA Health & Retirement Funds		Cumulative Appropriated Balance	Cumulative Unappropriated AML Fund Balance
1978	105,444		105,444	36,647					36,647	68,797
1979	184,433		289,877	61,451					98,098	191,779
1980	199,000		488,877	94,843					192,941	295,936
1981	192,657		681,534	82,485					275,426	406,108
1982	222,644		904,178	115,333					390,759	513,419
1983	197,196		1,101,374	213,079					603,838	497,536
1984	216,554		1,317,928	271,228					875,066	442,862
1985	226,426		1,544,354	296,941					1,172,007	372,347
1986	219,162		1,763,516	197,277					1,369,284	394,232
1987	215,304		1,978,820	203,720					1,573,004	405,816
1988	229,890		2,208,710	199,380	/1	7,000			1,772,384	436,326
1989	235,493		2,444,203	193,160					1,965,544	478,659
1990	243,519		2,687,722	192,772					2,158,316	529,406
1991	243,761		2,931,483	198,955					2,357,271	574,212
1992	241,954	39,328	3,212,765	187,803					2,545,074	667,691
1993	238,153	30,633	3,481,551	187,930					2,733,004	748,547
1994	244,296	40,090	3,765,937	190,107	/2	7,200			2,923,111	842,826
1995	255,416	61,730	4,083,083	182,386					3,105,497	977,586
1996	256,451	69,383	4,408,917	173,887			47,184		3,326,568	1,082,349
1997	266,783	81,006	4,756,706	177,085			31,374		3,535,027	1,221,679
1998	273,039	67,031	5,096,776	177,624	/3	3,163	32,562		3,745,213	1,351,563
1999	276,674	82,831	5,456,281	185,392			81,766		4,012,371	1,443,910
2000	274,297	94,370	5,824,948	195,873	/4		108,959	/4	4,317,203	1,507,745
2001	284,044	103,496	6,212,488	215,038	/5		182,018	/5	4,714,259	1,498,229
2002	287,066	43,278	6,542,832	203,455	/6		90,179	/6	5,007,893	1,534,939
2003	282,555	23,620	6,849,007	190,499	/7		89,858	/7	5,288,250	1,560,757
2004	287,023	45,694	7,181,724	190,591			14,966		5,493,807	1,687,917
2005	293,604	75,017	7,550,345	188,205			66,533		5,748,545	1,801,800
2006	302,992	95,687	7,949,024	185,248			59,004		5,992,797	1,956,227
2007	304,880	105,818	8,359,722	185,393			114,329		6,292,519	2,067,203
2008	286,272	83,764	8,729,758	139,334	/8		100,394		6,532,247	2,197,511
2009	272,764	55,465	9,057,987	142,977	/9		61,224		6,736,448	2,321,539
2010	251,784	55,193	9,364,964	177,502	/10		63,926		6,977,876	2,387,088
2011	259,935	54,881	9,679,780	185,649	/11		57,246		7,220,771	2,459,009
2012	249,725	54,789	9,984,294	247,595	/12		48,430		7,516,796	2,467,498
2013	213,675	36,634	10,234,603	225,393	/13		54,789		7,896,978	2,437,625
2014	207,369	32,351	10,474,323	184,965			12,359		7,994,302	2,480,023
2015	209,011	21,645	10,704,979	211,965			21,645		8,227,912	2,477,067

/1 Total does not include $7M transferred into the fund by supplemental authority, which does not affect the Unappropriated Balance.
/2 Total includes $7.2 M transferred into the fund by supplemental authority, which does not affect the Unappropriated Balance.
/3 Total does not include 3.2M transferred into the fund by supplemental authority, which does not affect the Unappropriated Balance.
/4 Total includes one-time $68M emergency appropriation, as well as the annual appropriation of $41M.
/5 Total includes annual amount of $102.9M, as well as $81.6M of the one-time $96.7M mandated under PL 106-291.
/6 Total includes annual amount of $113.6M, less $23.4M returned by UMWACBF trustees mandated under PL 106-291.
/7 Total includes annual amount of $56M as well as $33.8M mandated under PL108-7.
/8 Total includes annual amount of $52M as well as $87.4M mandated under PL 109-432.
/9 Total includes annual amount of $52M as well as $90M mandated under PL 109-432.
/10 Total includes annual amount of $35.5M as well as $141.9M mandated under PL 109-432.
/11 Total includes annual amount of $35.5M as well as $150.1M mandated under PL 109-432.
/12 Total includes annual amount of $27.4M as well as $220.2M mandated under PL 109-432.
/13 Total includes annual amount of $25.9M as well as $199.4M mandated under PL 109-432 (after sequestration withheld).
Notes: FY 2014 figures are estimates except for the UMWA transfer. FY 2015 and FY 2016 figures are estimates

[362] This table is taken directly without edit from the "FY2015 OSMRE Budget Justifications." It is listed as "Table 9 – Summary Status of Abandoned Mine Reclamation Fund" on page 112.

5.11. History of Transfers to UMWA Health and Pension Plans

Since FY1996 transfers to select United Mine Workers of America (UMWA) healthcare and pension plans have been made through the AML program. These transfers are authorized by section 1233(h) of the SMCRA to financially support struggling benefits plans. These plans are now administered collectively under the UMWA Health and Retirement Funds (UMWAF), after most of the companies that previously managed the plans filed for bankruptcy.[363]

According to a 2013 report of the DOI's Office of Inspector General, as of FY2012, "UMWAF provided healthcare to 31,871 retired union coal-mine workers and their dependents for a total of $392,263,098. There are three primary trusts that provide coverage for health benefits: the Combined Benefit Fund (CBF), the 1992 Benefit Plan (92BP), and the 1993 Benefit Plan (93BP)… Amendments passed in 1992 and 2006 require that interest from the AML fund be transferred to the three trusts to support healthcare benefits."[364]

The report outlines the process by which the AML Fund annually supports the UMWAF:

> *"At the beginning of each fiscal year, UMWAF submits a funding request that details projected costs to OSM. OSM then transfers interest earned from the AML fund to support UMWAF; adjustments are made at the end of the year based on actual expenditures. In the event that interest generated does not cover expenses, the three trusts are entitled to payments from the U.S. Treasury, subject to a $490 million cap on all combined annual transfers from the Treasury and the AML fund. These payments cover the costs of providing healthcare benefits to unassigned beneficiaries, or miners who retired from a coal operator that is no longer in business."* [365]

By the time OSMRE began making transfers to these UMWA plans, the unappropriated AML balance was near $1 billion. The idea was to finance the UMWA transfers from interest earned by investing the unappropriated AML balance in Treasury Securities. Figure 5.20 shows an annual side-by-side comparison of the interest earned and the transfers to the UMWA plans.[366] This figure demonstrates that the interest and transfers have been comparable over the years. In some years the interest exceeded the UMWA transfers, in other years the opposite was true. These values indicate that the UMWA transfers are not dollar-for-dollar transfers from the AML interest.

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[363] 30 U.S.C. §1233(h)

[364] "United Mine Workers of America Health and Retirement Funds (Revised)," Office of Inspector General, U.S. Department of the Interior. Report No. ER-IS-OSM-0007-2013. December 2013.; The Inspector General report found that the administrative costs of the USWAF appear reasonable—at or below the industry average.

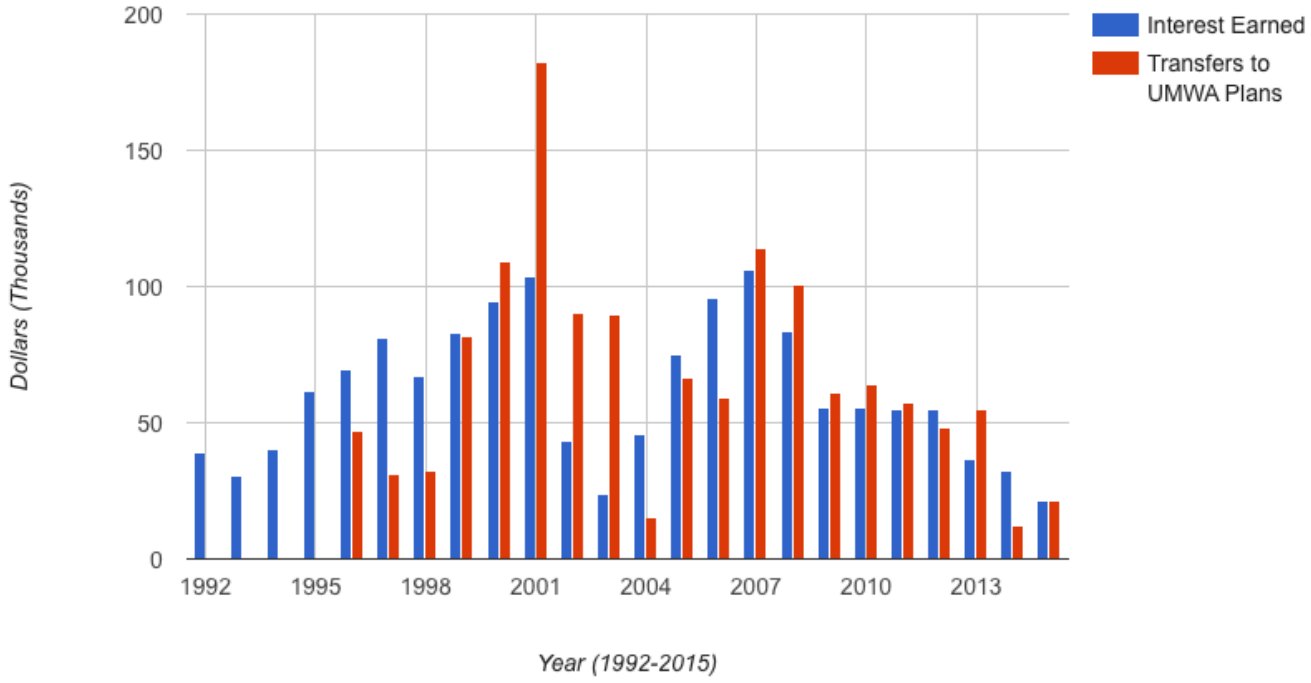
[365] Ibid.

[366] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Budget Justifications and Performance Information Fiscal Year 2015.* US Department of the Interior, 2014. Web. 7 July 2015.

As the Inspector General report states, “in fiscal year 2012, interest earned on the AML fund was used to pay $48.4 million (19%) into UMWAF, while the Treasury paid $205.6 million (81%), for a total of $254 million… Moving forward, the availability of funding from the interest earned on the AML fund will continue to decrease because of maturing bonds, and the Treasury will be required to take on an even larger percentage of the funding for UMWAF.” [367] Thus, transfers from AML interest are a relatively small portion, with most of the total transfers to the UMWAF coming from the general treasury (these values are not included in Figure 5.20).

Total transfers to the UMWAF have historically been in the ballpark of $50 million annually. These transfers peaked in FY2001 at $182 million, when legislation provided an additional one-time payment to the UMWAF. Recently, they’ve been much smaller: FY2014 was $12.3 million and FY2015 was $21.6 million. In fact, the FY2014 transfer was the smallest since the transfers started in FY1996.

Figure 5.20 Annual Interest Earned on AML Fund & Transfers to UMWA Plans



[367] Ibid.

6. Economic Impacts of the AML Program

6.1. National Economic Impact and Jobs Supported

The Department of the Interior releases an annual report on the economic impacts of the past year's DOI activities.[368] The DOI Office of Policy Analysis has compiled and released these reports since FY2009, and as of this publication the latest report analyzes DOI's FY2013 programs.[369]

According to the FY2013 economic report, the AML program made a direct contribution of $322.13 million to the US economy and directly supported 1665 jobs across the country.[370] This *direct* contribution—and the jobs directly supported by it—is the total money spent on AML grants in FY2013. The $322 million equals the total grants awarded to state and tribal AML programs, which were injected into the economy through spending on AML work. The effect of the $322 million in AML grants extends far beyond its direct economic impacts, however.

The *total* economic impact of the AML program in FY2013 was $777.79 million.[371] This money supported 4761 *total* jobs across the country.[372] These total economic impacts are "a measure of the cumulative effects of spending as it cycles through the economy" and include the direct, indirect, and induced impacts on the local economies in which AML reclamation is occurs.[373] The flow of this spending through the economy produced $281.8 million in total labor income.[374] See the FY2012 DOI economic report (page 125) for a thorough explanation of the methodology behind these economic impact measures.[375]

Perhaps the most useful measure of the program's economic impact is its value-added impact on the economy, which is "the contribution of an activity to overall Gross Domestic Product (GDP) and equals the difference between an industry's gross output (e.g., sales or receipts and other operating income, commodity taxes, and inventory change) and the cost of its intermediate inputs (including energy, raw

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[368] See the DOI Office of Policy Analysis website: <http://www.doi.gov/ppa/economic_analysis/index.cfm>
[369] Note: by the time of publication of this research paper, the FY2015 economic report may be published.
United States. Department of the Interior. Office of Policy Analysis. *FY2013 Economic Report*. Department of the Interior, 11 July 2014. Web. 6 July 2015. <http://www.doi.gov/ppa/economic_analysis/fy-2013-economic-report.cfm>
[370] Ibid.
[371] Ibid.
[372] Ibid.
[373] "U.S. Department of the Interior, Economic Report, FY 2010." p.107.
United States. Department of the Interior. Office of Policy Analysis. *FY2010 Economic Report*. US Department of the Interior. Web. 6 July 2015.
[374] United States. Department of the Interior. Office of Policy Analysis. *FY2013 Economic Report*. Department of the Interior, 11 July 2014. Web. 6 July 2015. <http://www.doi.gov/ppa/economic_analysis/fy-2013-economic-report.cfm>
[375] "U.S. Department of the Interior, Economic Report, FY 2012." p.125.
United States. Department of the Interior. Office of Policy Analysis. *FY2012 Economic Report*. US Department of the Interior. Web. 6 July 2015.

materials, semi-finished goods, and services that are purchased from all sources)."[376] In FY2013, the AML program's net—or, "value added"—impact on the US economy was $449.8 million.[377]

In review, the AML program had a total (gross) economic impact of $777.79 million, a value-added (net) impact of $449.8 million on US GDP, and supported 4761 jobs in FY2013.[378] With a value-added impact of nearly half a billion dollars, the AML program made a serious contribution to the American economy in FY2013.

In the previous year, the AML program had a total economic impact of $1.2 billion, a value-added economic impact of $720 million, and supported 7817 total jobs throughout the economy.[379] The substantially larger economic contribution of the AML program in FY2012 was a result of the nearly $170 million more in AML funding that was delivered to states and tribes in FY2012 than in FY2013. At $490 million in total AML distributions to states and tribes, FY2012 saw the largest disbursement of AML funding since the program's inception. Table 6.1 illustrates that in just one year the jobs supported and value-added to the US economy by the AML program dropped by 39% and 38%, respectively. The fall in AML funding that has occurred in years since FY2012 has resulted in a smaller—yet still significant—impact on the American economy. We can expect that without statutory changes to the AML program, total AML distributions will continue to decline or stagnate until the program sunsets in 2021. As this funding falls, so will the annual economic and jobs impact of program.

Note that caution should be taken when comparing these economic figures over time, given that annual changes may be the result of a plethora of variables.

[376] "U.S. Department of the Interior, Economic Report, FY 2010." p.107.
United States. Department of the Interior. Office of Policy Analysis. *FY2010 Economic Report*. US Department of the Interior. Web. 6 July 2015.
[377] United States. Department of the Interior. Office of Policy Analysis. *FY2013 Economic Report*. Department of the Interior, 11 July 2014. Web. 6 July 2015.
<http://www.doi.gov/ppa/economic_analysis/fy-2013-economic-report.cfm>
[378] Ibid.
[379] "U.S. Department of the Interior, Economic Report, FY 2012." p.125.
United States. Department of the Interior. Office of Policy Analysis. *FY2012 Economic Report*. US Department of the Interior. Web. 6 July 2015.

Table 6.1 Recent Economic Impacts of the AML Program

Economic Indicator	FY2012	FY2013	Percent Change
Direct Economic Contribution (millions; nominal dollars)	490	322	-34
Total Economic Contribution (millions; nominal dollars)	1210	778	-36
Total Jobs Supported	7817	4761	-39
Value Added (millions; nominal dollars)	720	450	-38

6.2. Central Appalachian Economic Impact and Jobs Supported

Central Appalachian states have received a sizeable portion of AML distributions annually. Accordingly, the AML program has had a serious economic impact in these states. Table 6.2 illustrates the economic and jobs impacts of the AML program in Kentucky, Tennessee, Virginia, West Virginia, and the Central Appalachian states taken together.[380]

Table 6.2 Economic Impacts of AML Program in Central Appalachian States, 2013

FY2013	Output		Jobs		Value Added		Labor Income	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Kentucky	$42,428,407	$70,799,049	254.1	524.8	$21,962,063	$38,847,332	$15,116,411	$25,446,028
Tennessee	$2,847,000	$5,069,661	14.9	34.8	$1,588,377	$2,975,079	$1,108,605	$1,967,694
Virginia	$10,371,716	$17,577,583	53	116.5	$5,561,393	$10,205,385	$3,899,854	$6,705,238
West Virginia	$59,552,894	$89,140,379	338.6	640.4	$32,273,280	$49,740,263	$21,843,100	$32,564,346
Central Appalach-ian States	**$115,200,017**	**$182,586,672**	**660.6**	**1316.5**	**$61,385,113**	**$101,768,059**	**$41,967,970**	**$66,683,306**

In FY2013, Central Appalachian states saw a total economic impact of $182.6 million, a value added impact of $101.8 million, and 1317 jobs supported by the AML program. Kentucky and West Virginia, by virtue of receiving significantly larger AML distributions, felt the lion's share of economic and jobs impacts in the region. Kentucky felt a total economic impact of $70.9 million and 525 jobs supported by AML funding. West Virginia realized a total economic impact of $89.1 million and supported a region-high 640 jobs through the AML program and its effects on the local economy.

These economic impacts have not been evenly distributed throughout the region—or within a given state. A state's economic estimates assume that contractors hired to do AML reclamation are located within its borders, which has not always been the case. It's also crucial to note that the economic and jobs impacts of AML funding have benefited the areas where reclamation occurs *to the extent that contractors (and their laborers, suppliers, and customers) are located within the same local economies as the sites they are hired to reclaim.* As a result, the sizeable economic and jobs impacts of the AML program throughout Central Appalachian states only benefit the communities ravaged with AML sites *if* qualified local contractors exist and are hired to perform the reclamation. For this and other reasons, the economic impacts of the AML program may not be experienced in the exact locales where reclamation is occurring.

[380] This data was delivered by email to author Dixon by the authors of the "U.S. Department of the Interior, Economic Report, FY 2013."

6.3. Economic Impact of Reinstating Historic AML Fee Levels

Some groups have called for a reinstatement of the historic AML fee levels of 35, 20, and 10¢ per ton of coal. Table 6.3 provides projected annual economic impacts of the AML program, funded at various fee levels. According to these estimates, reinstating the historic fee levels would yield an annual economic output that is $116 million greater than at the current fee levels. Reinstating the historic fee levels would also create nearly 750 more jobs across the country than at current levels. If, more ambitiously, fee levels were instated equal the historic levels *indexed to the inflation rate* (see section 5.2), then the American economy would experience an annual output from the AML program $1.3 billion larger than at the current levels. These fee levels would create a massive 8,200 jobs across the country.

Table 6.3 Projected Total U.S. Economic Impacts at Various Fee Levels, Annual Estimates[381]

	Direct Output	Total Output	Value Added	Total Jobs
Current Fee Levels	190,005,543	464,492,834	274,487,291	2,961
Historic Fee Levels	237,506,928	580,616,043	343,109,114	3,701
Historic Fee Levels, Inflation-Indexed	717,913,320	1,755,030,870	1,037,117,550	11,188

[381] Fee collection figures are based on US coal production projections from the EIA for 2016-2025 (EIA 2014 Annual Energy Outlook; EIA 2013 Annual Coal Report; EIA Coal Data Browser). The cumulative projected fee collections for 2016-2025 (see section 5.2.C) were averaged to determine an annual average fee collection estimate. This annual average was then multiplied by 80% (50% for State and Tribal Share grants, plus 30% for Historic Coal grants) to determine an estimate of the annual total distribution to states and tribes (the "Direct Output" values). These Direct Output values were then multiplied by output and jobs multipliers gleaned from the "U.S. Department of the Interior, Economic Report" for the years FY2011-2013. The multipliers utilized for these economic impact projections are averages for the years FY2011-13. Output and jobs multipliers for a given state often vary by year, so caution should be taken when considering these annual projections. These estimates are only rough approximations. Note: fee collection projections do not account for the potential marginal impact of higher fee levels on coal production.

6.4. Economic impact of Accelerating Disbursement of the AML Fund

Some experts have suggested disbursing the $2.48 billion unappropriated AML balance prior to the 2021 sunset of the AML program. Accelerating disbursement of the balance would require statutory changes to the AML law, such as those included in the Obama Administration's FY2016 proposed budget. Table 6.5 provides projected estimates for the economic impacts of three disbursement proposals.[382] All three of the scenarios presented in Table 6.5 assume hypothetically that the disbursement of AML funding will be done in a one-time lump sum fashion. The economic projections in Table 6.5 thus represent the single year impacts of the lump sum assumption.

Table 6.5 Projected Total U.S. Economic Impacts of Disbursing the AML Fund, Lump Sum Estimates
(dollar figures in billions)

	Direct Output	Total Output	Value Added	Total Jobs
POWER+ Plan	$1.000	$2.445	$1.445	15,584
Half of Unappropriated Balance	$1.250	$3.056	$1.806	19,480
Entire Unappropriated Balance	$2.500	$6.112	$3.612	38,960

The first scenario represents the proposal in the President's FY2016 budget, which includes a provision that would disburse $1 billion of the unappropriated AML Fund. Though the President's POWER+ (Plus) Plan would disburse the funding over five years, this one-time lump sum scenario is presented in Table 6.5 for the sake of comparison. Under this proposal, projected estimates show that almost $1.5 billion would be added to the US GDP and over 15,500 jobs would be created across the country. The second proposal would disburse $1.25 billion, half of the unappropriated AML Fund. Under this scenario, the disbursement would produce over $3 billion in total economic output, it would add $1.8 billion to the US GDP, and it would spur the creation of nearly 20,000 jobs throughout the US. Under the final proposal, which would disburse the entire $2.5 billion unappropriated AML Fund, the American economy would see a net increase of $3.6 billion and nearly 40,000 total jobs created.

[382] These projections are based on the methodology utilized in the annual DOI economic reports to produce estimates of the annual economic impacts of the AML program, among many DOI activities. The DOI economic reports utilize IMPLAN software to produce output and jobs multipliers that are used to determine the total economic contribution, value added, and total jobs supported by a given policy or program. The multipliers are based models that incorporate the economic relationships between sectors and geographic areas. Thus, these multipliers vary by year. The projected estimates in Tables 6.5 and 6.6 utilize output and jobs multipliers that equal the three-year average of these multipliers as gleaned from the DOI economic reports for years FY2011-2013. The annual multipliers for years FY2011, FY2012, and FY2013 were determined by working backwards from the estimates provided in the reports, such as by dividing the total output by the direct output to determine the output multiplier, for example. The projected value added estimates are found by subtracting direct output from total output. Some of the scenarios provided in Tables 6.5 and 6.6 assume the unappropropriated AML balance stands at $2.500. This assumption is made in order to produce approximate estimates, given that the exact status of the AML balance varies by day because the Fund is invested in securities constantly garnering interest.

The second and third scenarios assume that the unappropriated AML balance stands at $2.500 billion, which is slightly larger than the $2.484 that it stood at in November 2014 (the latest released status). This assumption is made in light of the rate of growth of the AML Fund: the unappropriated balance will likely stand at $2.500 billion or higher by the time any of these proposals are implemented, which as of this publication could be FY2016 at the earliest. These future projections are based on a number of variables and should be considered approximate estimates.

Table 6.6 Projected Total U.S. Economic Impacts of Disbursing the AML Fund, Annual Estimates
(dollar figures in millions)

	Direct Output	Total Output	Value Added	Total Jobs
POWER+ Plan	$200	$488.93	$288.96	3,117
Half of Unappropriated Balance	$250	$611.16	$361.16	3,896
Entire Unappropriated Balance	$500	$1,222.31	$722.31	7,792

Table 6.6 presents the same disbursement scenarios as Table 6.5 *except* these disbursements are assumed to be delivered in five equal annual installments as opposed to the one-time lump sum disbursements as above.[383] Accordingly, the projections in Table 6.6 equal the estimated impacts on the economy from a single annual installment. The proposed POWER+ Plan would create an estimated 3,117 jobs, contribute a total of $489 million to the US economy, and net a GDP increase of $289 million, annually. Under the second scenario, $250 million would be disbursed each year. These AML distributions would yield a projected total economic output of $611 million, a value added impact of $361 million, and support nearly 4,000 jobs annually. Disbursement of the entire AML Fund would result in annual distributions of $500 million. This scenario would produce over $1.2 billion in projected total economic output, $722 million in value added to US GDP, and support nearly 8,000 jobs annually.

[383] Ibid.

Table 6.7 Projected Economic Impacts of the POWER+ Plan, Central Appalachian States, FY2016 Estimates

	Share of Total Disbursement	Direct Output	Total Output	Value Added	Total Jobs
Current POWER+ Formula					
Kentucky	10.51%	20,485,920	34,184,259	13,698,339	253.39
Tennessee	1.21%	2,366,715	4,214,416	1,847,701	28.93
Virginia	3.22%	6,287,775	10,656,278	4,368,503	70.63
West Virginia	19.91%	38,832,690	58,125,818	19,293,128	417.59
Sum of CA states	34.86%	67,973,100	107,180,771	39,207,671	770.53
Composite POWER+ Formula					
Kentucky	21.40%	41,730,000	69,633,638	27,903,638	516.16
Tennessee	3.53%	6,883,500	12,257,468	5,373,968	84.14
Virginia	2.95%	5,752,500	9,749,114	3,996,614	64.61
West Virginia	17.78%	34,671,000	51,896,489	17,225,489	372.83
Sum of CA states	45.66%	89,037,000	143,536,709	54,499,709	1037.75

Table 6.7 lays out the projected economic impact of the POWER+ Plan in Central Appalachian states, for FY2016.[384] The first set of projections is based on the version of the POWER+ Plan AML Economic Revitalization proposal released by the Administration in March 2015.[385] The current version of the POWER+ Plan proposal would disburse $195 million annually, for five years, to Non-certified states and tribes, according to Historic Coal production. See section 8.3 for the details of the AML Economic Revitalization proposal.

Under the current version of the proposal, Kentucky, Tennessee, Virginia, and West

[384] These projections were found using the same basic methodology as outlined for Tables 6.5 and 6.6. The only exception is that these projections were made using state specific FY2013 output and jobs multipliers as gleaned from the estimates in "U.S. Department of the Interior, Economic Report, FY 2013" and data delivered to author Dixon by the authors of the FY2013 report. Output and jobs multipliers for a given state often vary by year, so caution should be taken when considering these annual projections. These estimates are only rough approximations. The "Share of Total Disbursement" figures are calculated by the authors according to the proposed formula by the White House and a composite formula proposed by the authors. These are only approximations.

[385] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.

Virginia would receive 10.5, 1.2, 3.2, and 19.9%, respectively, of the total annual $195 million AML distributions proposed in the POWER+ Plan. If this were the case, then projected estimates show Central Appalachian states would see a total economic contribution of over $107 million and a value added impact of nearly $39 million, annually. The proposal would create nearly 770 jobs throughout Central Appalachian states, with Kentucky and West Virginia seeing the bulk of those jobs at 253 and 417, respectively.

The second set of projections is based on a Composite Formula developed by the authors based on Historic Coal production and an Economic Distress Factor (see section 8.3). Under the Composite Formula, where Central Appalachian states receive a significantly larger share at 45.66% of the distribution, the region would see a total economic output of over $144 million, an impact of $54 million in value added to the regional economy, and 1038 jobs created. For a more detailed analysis of the POWER+ Plan and potential distribution formulas, see section 8.3 of this essay.

The above projections rely on a large number of variables that often change annually, so these estimates should only be considered rough approximations. Because the figures in Table 6.7 are annual estimates, the total economic impacts of the POWER+ Plan can be found by multiplying the annual figures by five, except for the jobs figures, given that one unit in the “Jobs” category is equal to one full time employment-*year*.

7. Environmental Techniques for AML Reclamation

There has been limited research conducted about environmentally sustainable reclamation methods for abandoned mine lands (AML) in Central Appalachia. The Appalachian Regional Reforestation Initiative has contributed several years of scientific forestry research in partnership with universities to recommend techniques, including a series of advisories and manuals for reclamation practitioners. This method is called the *Forestry Reclamation Approach (FRA)* and it functions to increase reforestation as post-mining land use. This chapter summarizes some regional efforts that are working toward reforestation as post-mining land use.

The *Appalachian Regional Reforestation Initiative (ARRI)* is a coalition established in 2004 to bring together citizens, industry, and the government to work toward reforestation in the eastern United States. ARRI is a cooperative effort of the States of Virginia, Ohio, Tennessee, Kentucky, Maryland, Pennsylvania, and West Virginia; the federal Office of Surface Mining Reclamation and Enforcement; coal industry partners; some environmental organizations; universities; government agencies at the local, state, and federal levels; and private landowners.

The Forestry Reclamation Approach (FRA) includes five key steps to achieve a productive, reforested post-mining land use: 1) Create a suitable rooting medium for good tree growth that is no less than 4 feet deep and comprised of topsoil, weathered sandstone, and/or the best available material; 2) Loosely grade the topsoil or topsoil substitutes established in step one to create a non-compacted growth medium; 3) Use ground covers that are compatible with growing trees; 4) Plant two types of trees: *a.* early succession species for wildlife and soil stability, and b. commercially valuable crop trees 4) Use proper tree planting techniques

The FRA includes eleven advisory documents published by the ARRI Science Team from December 2005 through November 2013. The eleven advisories make up the guidelines for practitioners to incorporate the FRA into their reclamation plans. The advisories were published in an open, easy to understand format for the use of not only reclamation practitioners but to agency personnel, landowners, or any stakeholder who wants to learn about the reforestation of abandoned mine lands.

Aside from ARRI's work, the work of nonprofit organizations such as Rural Action and Green Forests Work have been highlighted in this chapter. Michelle Decker and Terry Van Offeren of Rural Action were generous with their knowledge of Ohio AML work and shared Rural Action's related work with us. Nathan Hall, graduate student at the Yale School of Forestry and former employee of Green Forests Work (GFW) shared the history and work of GFW, with the caveat that GFW mostly works with post-SMCRA reclamation sites. Many of the conditions are similar, and techniques should be used in more reclamation of pre-SMCRA sites.

7.1. Appalachian Regional Reforestation Initiative

ARRI was established in 2004 along with a core team made up of OSMRE and state agency officials. The idea was to partner government agencies with industry, citizens, academics and state regulatory agencies to work toward the goal of successful reforestation of reclaimed mine lands. A Core Team was established and drafted a Statement of Mutual Intent, which included the FRA, environmental and economic benefits of reforestation, objectives, accomplishments, and ensuring that the FRA and recommendations of ARRI could be executed in full compliance of the law.[386] Aside from the Core Team, the Science Team was formed to execute forestry research in support of ARRI's recommendations.

ARRI's main work focuses on eliminating existing barriers to abandoned mine land reclamation, including cultural, technical, and regulatory barriers. ARRI works to *shift cultural perceptions* that planting trees on mine sites is more risky or expensive to complete than conventional reclamation—ARRI is sharing information about what good forest reclamation should be. There is a need for shift in *technical perceptions* to eliminate needless surface competition, competition for ground cover and ill-suited growth mediums, and to plant hardwood trees with high value. Finally, there is a need to shift regulatory perceptions that regulations interrupt bond release or prevent effective reforestation techniques.

In order to eliminate the barriers identified, ARRI has identified three major goals. Firstly, plant more high-value hardwood trees on reclaimed coal mined lands in Appalachia; secondly, increase the survival rates and growth rates of planted trees; and thirdly, expedite the establishment of forest habitat through natural succession.

[386] See the Statement of Mutual Intent here: <http://arri.osmre.gov/SMI/ARRI_SMI_revised.02.2007.pdf>

Figure 7.1 Diagram of ARRI partners[387]

7.2. Forestry Reclamation Approach

During research conducted on succession rates of pre-SMCRA mine lands versus post-law lands, it became evident that there were higher success rates with native, hardwood species. Additionally, the pre-SMCRA sites had less soil compaction than some post-law sites, a factor emphasized in the Forestry Reclamation Approach (FRA) that is critical in growth and success of hardwood species.

The FRA was determined to be a method of achieving successful reforestation. It was established to promote productivity and value of timber; to foster diversity of plant species; to promote conservation of soil and water; to establish habitat for the local ecosystem; and sequestration of carbon. ARRI was formed to achieve these goals.

The FRA are a set of guidelines, and each state agency is expected to establish their own reclamation approach that tailors to the land and needs of the community. There are five steps to the FRA.

[387] From the *About ARRI* webpage

1. Create a suitable rooting medium for good tree growth that is no less than 4 feet deep and comprised of topsoil, weathered sandstone, and/or the best available material.

- In Pennsylvania and Ohio, it is encouraged to utilize topsoil available in the region for reforestation.
- In other Appalachian regions, sandstone has proven to be a good growth medium.

2. Loosely grade the topsoil or topsoil substitutes established in step one to create a non-compacted soil growth medium.

- Techniques for low compaction have proven to be highly successful in forest success, especially when avoiding ripping of the soil with machinery.
- Such techniques can reduce erosion, provide enhanced water infiltration and restore the hydrologic balance, and allow trees to achieve good root penetration.

3. Use native and non-competitive ground covers that are compatible with growing trees.

- Species to be avoided include: tall fescue such as Sericea Lespedeza, all clovers except Ladino, and Kentucky-31.
- Reduce seeding and fertilizer rates to decrease groundcover and competition for nutrients such as sunlight, soil moisture and rooting area.
- Grasses that are compatible with reforestation efforts include, Foxtail Millet, Rye, Red Top, Perennial, Ryegrass, and Orchard Grass. Tree compatible legumes include Kobe Lespedeza, Birdsfoot Trefoil, and Appalow lespedeza.

4. Plant two types of trees – early succession species for wildlife and soil stability, and commercially valuable crop trees.

- By planting small trees with early succession, the trees act as complimentary nurses to the larger hardwoods through providing ground cover and food for surrounding wildlife.
- Good nurse plants include, Black Alder, Black Locust, Redbud, Bicolor Lespedeza and Dogwood. If crop trees are desired, select the species based on the environmental conditions in the local area. Research proves the success of the following hardwoods: Sugar Maple, Red Oak, Green Ash, White Oak, Black Walnut, White Ash, and Yellow Poplar. Conifers like Loblolly Pine and White Pine and have also been known to thrive on sites reclaimed with the FRA.

5. Use proper tree planting techniques.

- It is crucial that trees are properly handled and stored prior to the planting. Keeping the trees in cold, dry storage and immediately transitioning to a planting bag can significantly reduce mortality.

The economic and environmental benefits reaped from the FRA are what separates it from other types of reclamation, and can be easily achieved through collaboration with citizens, government, industry and regulatory agencies. Some of the *environmental benefits* of FRA aforementioned in this chapter include creation of critical endangered species habitat, hydrologic balance recovery, and biomass creation through long-term carbon sequestration.

Economic benefits are abundant when proper reclamation and reforestation has occurred to various stakeholders, especially to local communities, coal mining industry, and landowners. For landowners, the economic benefits include: increased timber value, tax incentives, and carbon credits. For the local community the benefits include: job creation, increase of clean and reclaimed land, and revenues from local sales taxes. There are many cost-saving benefits to the FRA, such as: reduced cost of grading the land, reduced cost of fertilizer and seeding, and lower overall maintenance costs.

Site productivity is measured through a Site Index (SI) per species. This measurement shows what height a dominant tree should be by a certain age, comparatively. Through the site index, you can predict the yield of a forest after so many years. The FRA has been proven to both increase economic and environmental benefits, but also to increase the site index of a species with a resulting increase in timber value.

7.3. Forestry Reclamation Advisories

Reforestation experts from universities throughout the region have partnered to form ARRI with several goals of academic research and knowledge creation. A major goal of the academic team was to generate guidance documents for scientific reclamation procedures for reclamation practitioners, coal operators, landowners, and agency personnel. These documents have been called Forest Reclamation Advisories. There are currently twelve Forest Reclamation Advisories published between December 2005 and June 2015, with more in the pipeline.

Forest Reclamation Advisory No. 1 - The Appalachian Regional Reforestation Initiative explains the purpose and goals of the Forestry Reclamation Approach and introduces the Appalachian Regional Reforestation Initiative.[388] It details how proper reforestation on post-SMCRA reclamation has not been widespread, and how important it is for restoration of land and ecosystem function.

[388] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.1.7-18-07.Revised.pdf>

Forest Reclamation Advisory No. 2 - The Forestry Reclamation Approach (FRA) details the five steps of the FRA and its ability to improve value, succession, and diversity of forests.[389]

Forest Reclamation Advisory No. 3 - Low Compaction Grading to Enhance Reforestation Success on Coal Surface Mines explains final-grading techniques that can be used during reclamation to prepare surface mined lands to support a forest land use post-mining.[390]

Forest Reclamation Advisory No. 4 - Loosening Compacted Soils on Mined Sites describes how many areas on mine sites suffer from extreme compaction from traffic, machinery operation and storage of natural resources and equipment.[391] This advisory details techniques for ripping compacted areas , loosening soils for successful reforestation.

Forest Reclamation Advisory No. 5 - Mine Reclamation Practices to Enhance Forest Development Through Natural Succession describes how certain techniques can enhance natural changes in plant community composition over time, or succession.[392] This advisory details specific reclamation methods that foster rapid succession and development of reforested mine lands.

Forest Reclamation Advisory No. 6 - Tree Compatible Groundcovers for Reforestation and Erosion Control details the FRA's noncompetitive, tree-compatible ground cover recommendations.[393] It addressed the third step in the Forest Reclamation Approach details methods on establishing ground cover vegetation for erosion management that does not hinder the success of other trees planted.

Forest Reclamation Advisory No. 7 - Planting Hardwood Tree Seedlings on Reclaimed Mine Land in Appalachia describes the necessary techniques and care needed for successful seedling plantings and reforestation.[394] Due to the often rocky terrain of tree plantings on mine sites, the emphasis on careful planting is extremely important to success.

Forest Reclamation Advisory No. 8 - Selecting Materials for Mine Soil Construction When Establishing Forests On Appalachian Mine Sites describes methods for native forest establishment, and techniques for soil management to restore the capabilities of post-mining land use and soil and forest diversity.[395]

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[389] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.2.7-18-07.Revised.pdf>
[390] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.3.pdf>
[391] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.4.pdf>
[392] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.5.pdf >
[393] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.6.pdf>
[394] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.7_Feb.26.2010.pdf >
[395] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.8%20Soil%20Materials.pdf>

Forest Reclamation Advisory No. 9 - Selecting Tree Species for Reforestation of Appalachian Mined Land is a guide for tree selection for reforestation, with several site and species specific guidelines for tree prescription (selection of trees per site).[396] The variety of options for tree prescription showcases the biodiversity and varied landscapes we have in the region.

Forest Reclamation Advisory No. 10 - Reforestation to Enhance Appalachian Mined Lands as Habitat for Terrestrial Wildlife provides instructions for reforesting to provide high quality habitat for native forest wildlife on formerly mined lands in Appalachia. Specifically, it discusses techniques to support ground dwelling or burrowing species, young forest species, and mature forest species.

Forest Reclamation Advisory No. 11 - Establishing Native Trees on Legacy Surface Mines walks readers through the step by step process of productive forest establishment on AML legacy lands from pre-reclamation surveying through the restoration of ecosystem services.[397] These ecosystem services include watershed protection, water quality enhancement, carbon storage and native wildlife habitat and are crucial goals of the whole reclamation process.

Forest Reclamation Advisory No. 12 - Re-Establishing American Chestnut on Mined Lands in the Appalachian Coalfields specifically describes the re-establishment of the American chestnut--which has suffered severe decline nationwide, leading to a shortage.[398] It specifically discusses reclamation and planting techniques for chestnut trees on mined lands and development of new chestnut varieties.

The forest reclamation advisories are crucial tools in the implementation of ARRI's goals, and quality reclamation of abandoned and post-law mine lands. It is highly recommended that those conducting reclamation of lands in Appalachia use these methods to reforest and reestablish biodiversity.

[396] See <http://arri.osmre.gov/FRA/Advisories/FRA_No.9_TreeSpeciesSelection.pdf>
[397] See <http://arri.osmre.gov/FRA/Advisories/FRA-10-Wildlife-Nov2013.pdf>
[398] See <http://arri.osmre.gov/FRA/Advisories/FRA-12-ChestnutAdvisory-Jun2015.pdf>

7.4. Non-Profit Organizations Working for Better Reclamation and Restoration

Nationwide, there are hundred and hundreds of volunteers, practitioners, scientists, and regulators who are working toward reforestation and restoration of habitat on mined lands. In Appalachia, ARRI has led the way in a regional effort for proper reclamation techniques, but not without the support and knowledge of nonprofit organizations and communities sharing their expertise and hard work toward these efforts.

Our team reached out to two organizations who have been working on reforestation and restoration of abandoned mine lands issues. Firstly, we spoke with Nathan Hall, a graduate student at the Yale School of Forestry who spent many years working for Green Forests Work (GFW) around Central Appalachia, and we spoke to Rural Action in Ohio about their great efforts for watershed restoration from abandoned mine lands effects at the basin level.

Green Forests Work use a methodology for reclamation that aims to enable rapid recovery of the ecosystem post-mining. GFW partners with landowners to access surface mines, compacted rock is ripped for proper root establishment using a 4 foot shank, removal or control of invasive species is implemented to allow for less resource competition and greater success, and finally--volunteers come together for tree plantings.

Nathan Hall spoke about the great efforts GFW have made in intentional reforestation of mined lands. Green Forests Work is a nonprofit organization established to assist in reforestation of Appalachian Mine Lands, a co-product of ARRI. This organization raises money for reclamation and reforestation, therefore being more flexible that regulatory agencies and their ability to focus on success rather than hazard elimination or stabilization. While most all of GFW's projects have been focused on post-law mine site reclamation, there are still opportunities for them to work on pre-SMCRA sites. Hall spoke about the low soil quality of pre-SMCRA sites that hindered forest success, and on the other hand that many of these sites are able to re-forest on their own after being abandoned for so many years. Green Forests Work continue to be an important organization in the efforts for mined lands reclamation.

Rural Action is an anchor organization in Appalachian Ohio that has taken the lead on all things environment. From sustainable forestry efforts to developing watershed basin level restoration plans, it's an organization with many staff and volunteers that are taking great strides to restore and preserve their regional lands and water. I spoke with Executive Director of Rural Action Michelle Decker and Terry Van Offeren, formerly with the Ohio Department of Natural Resources about their exciting programs and methodology. Most unique is their approach to watershed restoration at the basin level. When restoring water from a regional scale, there must be coordination between many agencies and communities in order to be more cost effective and efficient.

Generally, there seemed to be a focus on small watersheds rather than regional watersheds. Rural Action and others were doing comprehensive assessment planning, and long-term monitoring of streams to discover best practices for Water Basin level restoration. The idea of basin-level restoration has multiple objectives. Officials from Ohio EPA Division of Surface Water, Ohio Department of Natural Resources, Division of Water Resources, Acid Mine Drainage coordinator for the Divisions of Mineral Resources Mgmt, Ohio University Voinovich School, and Rural Action's Watershed Team came together to develop a plan. The team has met a few times, setting objectives and tasks that team members are going out and accomplishing. By scaling up watershed restoration there are opportunities for more citizen and political interaction, more funding, and more collaboration. This method will ensure greater, widespread efforts for watershed restoration. Rural Action also published The Economic Impact of AML Restoration: Investments on Ohio's Economy that gives facts and figures in support of restoration. An argument from industry is that proper reclamation is too expensive--reports like this are crucial to support widespread restoration efforts.[399]

While there are many more organizations that work on supporting reclamation and addressing the legacy costs of coal mining, Rural Action and Green Forests Work were partners we wanted to make sure to capture their unique methodologies. These groups focus in primarily Central Appalachia and Appalachian Ohio, but many of these techniques could be used for restoration efforts anywhere.

7.5. Reclamation Recommendations

The FRA has been proven to be much more effective than many standard reclamation practices. It is our recommendation that reclamation practitioners abide the Forestry Reclamation Approach in circumstances that are applicable for such an approach, and work to move beyond those standards for the highest quality reclamation possible. We see restoration of habitats and productive lands as a necessary part of safe and healthy communities, as well as a just economic transition.

We also encourage practitioners to work with community groups such as local environmental organizations or Soil and Water Conservation Districts to achieve a more holistic, community approach to the reclamation. We would like to see impacted citizens involved in every step of the process, and for their concerns to be a top priority in all decisions made. We know that citizens are the experts of their own experience and are an invaluable resource when it comes to local knowledge of abandoned mine land issues.

[399] See The Economic Impact of AML Restoration: Investments on Ohio's Economy <https://drive.google.com/file/d/0By8-TEYuKj4WUDk2NWZWemZtZUFrYjZnUTM0VmtfNWZMRWpz/view>

8. Policy Proposals and Recommendations

The AML program urgently requires legislative reform. Since the creation of the program in 1977, massive strides have been made in cleaning up the coalfields, due to the valuable work of state and federal AML officials, watershed organizations, and community groups. The SMCRA established a program whose purpose is to address the legacy costs of abandoned coal mines, and in the ensuing years the AML program has laid the infrastructure of a robust and experienced coal mine reclamation apparatus in this country. The program has reclaimed $5.7 billion worth of AML problems over the years, saving the streams, homes, businesses, land, lives, and communities of innumerable coalfield citizens along the way.[400] It is a program absolutely crucial to the future of coalfield communities in the United States.

While great progress has been made in reclaiming America's abandoned mines, billions of dollars worth of AML problems remain. Modern changes in the coalfields—especially the westward shift of coal production—necessitate modern solutions. If the AML program is to solve these problems in an effective and efficient way, statutory changes must be made to improve the program. Based on our research, we have developed a set of proposals that if adopted could substantially advance the ability of the AML program to fulfill its core purpose in the modern era.

This chapter lays out the Just Transition framework in which our policy analysis and proposals are situated (section 8.1), a set of federal policy recommendations for Congressional action on the AML program (section 8.2), and an analysis of the Administration's proposed POWER+ Plan (section 8.3), including a set of additional policy recommendations specific to the POWER+ Plan (section 8.3.B.).

8.1. Just Transition Framework

The analysis of the AML program laid out in this essay, as well as its vision of the AML program moving forward, are situated within the framework of a just economic transition.

Appalachia is experiencing unprecedented economic decline, environmental damage, and inequality. An economic transition in Appalachia is inevitable, and in that inevitability communities see an opportunity to create a new economy that is just, sustainable, and works by and for Appalachians. This framework is guided by a respect for Appalachia's past, and is driven by a belief that we can and must improve the quality of life of people and communities affected by this economic and environmental disruption. Emphasis is placed on generating good, stable jobs and access to new

[400] E-AMLIS generated report, "Cost Summary National"; includes all priorities (not just high priority; not just coal priorities) and problem types; received March 10, 2015.

economic opportunities. In addition, the framework prioritizes the pursuit of these just ends through a robust inclusive, participatory, and collaborative process.[401]

Due to the fact that a majority of the country's abandoned mine sites lie in Appalachia, the transition in this region is vital context for AML reform. Any responsible approach to AML must be situated within the reality of these changes and the framework of a just Appalachian transition. The policy proposals laid out in the following section are situated within this framework. Accordingly, the framework serves as a set of policy principles by which specific policy recommendations are derived. In the event that a set of AML policy proposals adopted by Congress are not the ones proposed in this essay, it is imperative that, at the least, the policy solutions selected—and their implementation—be guided by the framework of a just transition.

8.2. Federal Policy Recommendations

The following are a set of federal policy recommendations for Congressional action on AML reform. This list is followed by a more thorough explanation of each proposal, its justification, and relevant context.

1. Accelerate disbursement of the $2.5 billion AML Fund to states and tribes, and target this funding towards AML projects that support or create long-term economic opportunities in coalfield communities hit hardest by recent mass layoffs in the coal sector.

2. Initiate a five-year wholesale update of the federal inventory of AMLs so that complete, reliable data is available on the remaining size and geographical distribution of all coal AMLs—not just high priority AMLs—in the United States. Local community members should be employed for the fieldwork required to update this inventory.

3. Update the AML distribution formula so that funding is distributed to states and tribes according to AML need, based on the updated AML inventory.

4. Reinstate the historic AML fee levels.

5. Ensure the long-term financial health of United Mine Workers of America (UMWA) pension and benefit plans currently supported through the AML program.

6. Reauthorize AML fee collection beyond FY2021 and continue mandatory AML distributions.

[401] The just transition framework has been prioritized by many grassroots organizations in Appalachia, including Kentuckians for the Commonwealth (KFTC), Mountain Association for Community and Economic Development (MACED), The Alliance for Appalachia and its member groups, Appalachian Citizens' Law Center, and others.

7. Reform the AML program to underline environmental performance, alongside human health and safety.

8. End payments to states and tribes that have no remaining AML problems (i.e. "Certified states and tribes"), and empower OSMRE through statutory changes and increased funding to: a) reclaim future and existing AML problems in Certified states and tribes may they arise, and b) resume the responsibility of addressing AML emergencies.

9. Commission a routine annual study of the economic and environmental effects of the AML program.

10. Exempt AML funding from sequestration effects.

11. Establish a federal hard rock abandoned mine land reclamation program within OSMRE.

1. Accelerate disbursement of the $2.5 billion AML Fund to states and tribes, and target this funding towards AML projects that support or create long-term economic opportunities in coalfield communities hit hardest by recent mass layoffs in the coal sector.

The need to clean up the dirty, dangerous AML sites impeding economic growth in coalfield communities is urgent, but as the law now stands the AML Fund will not be disbursed to states and tribes until 2023 and thereafter. Disbursing these resources now *would not require any new money*. The funding already exists and is currently used to support various UMWA benefit plans through interest earned on investing this idle AML Fund in Treasury Securities. Congress first needs to update the law to ensure that transfers to the UMWAF continue without relying on this AML Fund interest (see policy proposal 5). This would free up billions in AML funding while guaranteeing the solvency of UMWA plans vital to the well being of many coalfield communities. It is imperative that Congress enact legislation to disburse this crucial funding now—not six years down the road.

In the past it may have been sensible to garner interest from the AML Fund, but changes to the economy in the past decade no longer make it a defensible policy. Interest rates are now so low that interest on the AML Fund is minimal—a fraction of what it once was—and economic distress in the coalfields has become even direr in the past five years.[402] In addition, the current low price of gasoline—a major input cost for reclamation projects—means funding spent on AML projects can go further now. For all the recent changes that make the old policy no longer viable and for the sake of

[402] See section 5.11 for data on how AML-supported transfers to the UMWAF have been shrinking in recent years.

struggling coalfield communities, Congress must immediately accelerate the disbursement of the AML Fund.

2. Initiate a five-year wholesale update of the federal inventory of AMLs so that complete, reliable data is available on the remaining size and geographical distribution of all coal AMLs—not just high priority AMLs—in the United States. Local community members should be employed for the fieldwork required to update this inventory.

Experts agree that the federal AML inventory—e-AMLIS—is technologically out-dated and excludes billions of dollars worth of unreclaimed AMLs that likely exist in the coalfields. The original federal AML inventory was based primarily on aerial photographs taken from fixed-wing aircraft in the late 1970s and 1980s. While this inventory has continued to receive some updates, there are multiple reasons why the inventory is out-dated and incomplete.

The original inventory assessment no doubt missed some AML features based on its methods, and a wholesale assessment of the AMLs across the US has not been attempted since the initial project. Additionally, AML problems are dynamic. Existing AMLs often expand and change, and new AMLs are always developing as old mines deteriorate and decay according to age and the elements. Also, the priority schedule of AMLs depends on a site's proximity to human populations, so the priority status of an AML often changes as communities encroach or move away from AML sites with time. Many of the cost estimates of AMLs in the federal inventory are out-dated, given that the AML program has existed for over 35 years and cost estimates are updated neither for inflation nor changes in the costs of the various types of reclamation projects.

State AML programs do not have enough resources to dedicate towards cataloging the AMLs within their borders, so they are often left only adding new AMLs to the inventory as landowners bring them the agency's attention or as agency officials discover AML sites while performing reclamation on a nearby site. For all these reasons, the federal AML inventory as it stands now is significantly incomplete. Congress should authorize and fund a five-year program to do a wholesale update of the inventory of AMLs in coalfields across the country, as needed.

The program will require strong coordination between OSMRE, state AML programs, and other stakeholders, and should utilize the most updated technology, including new GIS technology, so the inventory is comprised of the most accurate and useful data possible (site location, problem type, cost estimate, etc.). Congress should make it a priority to employ local community members for the fieldwork necessary for the inventory update. Citizens possess local insight that is valuable in locating and tracking AMLs, and this program could help provide a short-term economic impact to coalfield areas.

States such as Ohio and Virginia already employ contract workers to complete fieldwork for their AML inventories, and work in these states could serve as a starting model for

how to employ contract or part-time workers effectively for AML inventory fieldwork on a larger-scale.[403] Multiple state officials explained that rigorous safety and technical training would be required for the fieldwork necessary.[404] In addition, the need for an inventory update—and thus fieldwork employees—varies greatly by state.[405]

While the current inventory is specified for high priority AML sites, the AML inventory should be expanded to include all priority 3 AML problems. An inventory update that excludes some AMLs would only delay the inevitable: priority 3 AMLs pose serious problems for the long-term future of the coalfields and reclaiming them must be part of the solution. In order to do so, an accurate assessment of priority 3 AMLs and the problems they pose is crucial. Without basic data on the problem of all coal AMLs in the United States, it is impossible to develop programs to efficiently and effectively address those problems.

3. Update the AML distribution formula so that funding is distributed to states and tribes according to AML need, based on the updated AML inventory.

The formula for AML distributions to states and tribes is broken. AML state and tribal share distributions are presently based on a state or tribe's *current coal production*, which is not an indicator of its remaining AML need. Since the passage of the SMCRA in 1977, coal production in the United States has largely shifted westward across the continent. The result is that a majority of the remaining AMLs lie in the eastern coalfields while the majority of coal production lies in the western coalfields. Despite this massive incongruency between the region currently producing coal and the regions where the most need remains, the program continues to base funding distributions on coal production.

Distributing some or all AML funding according to historic coal production does not address this fundamental problem. The only system that can accomplish the program's goal is one that distributes funding according to the extent of the AML problem in a state or tribe. Under the SMCRA's explicit purpose of the AML program, this is the only relevant indicator.

Congress should enact legislation that replaces all AML sub-funds with a single distribution mechanism based on a state's percentage of the updated federal AML inventory. The result would be a system that distributes 80% of annual fee collections according to a state or tribe's AML need.[406] This would distribute funding to states and

[403] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[404] Ibid.
[405] A state AML official from Pennsylvania, for example, has expressed that the circumstances of their AML program would not benefit greatly from a wholesale update of the AML inventory.
Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.
[406] The remaining 20% would be utilized for federal expenses, as under current law.

tribes that have that the largest AML problems, and would simplify an unnecessarily complicated funding system.[407]

Congress should enact legislation under which the new distribution formula would take effect after a five-year period for the inventory update. This delay would provide OSMRE and state and tribal AML programs adequate time to both update the inventory within their borders and prepare operations for the updates in the funding scheme.

4. Reinstate the historic AML fee levels.

Since the original AML fee levels were established by Congress in 1977, prices throughout the economy have nearly tripled. Rather than updating these fee levels according to inflation, in 2006 Congress actually lowered the fee levels by 20%. As a result of these factors and the decline of coal production, fee collection in 2013 was *less than half* of its 1979 peak.[408]

The AML program is premised on the idea that the coal industry has a role in addressing the costs of mining's impacted communities. With over $9 billion of inventoried AML problems, communities desperately need more funding for reclamation. AML fees are the primary source of funding for this reclamation, and reinstating the original fee levels would raise $600 million more in funding across the country over the next decade for crucial reclamation projects. Thus, congress should reinstate the historic AML fee levels of 35, 20, and 10¢.

Reinstating the historic fee levels is a modest proposal, given that fee levels would currently be *three times higher* than the historic levels—at 106, 45, and 30¢—if they had been indexed to the inflation rate. Critics might argue that reinstating the historic fee levels is more economically problematic now, given that the coal industry isn't as robust as it once was, but the facts don't support such a claim. The historic fee for surface-coal would be only 0.09% of the current price of coal, meaning the fee now would be almost half of its percentage of the price of coal when the law was passed.[409] The impact of these fee levels on the coal market would be marginal and significantly less in real terms than their impact when the SMCRA was originally enacted.

5. Ensure the long-term financial health of United Mine Workers of America (UMWA) pension and benefit plans currently supported through the AML program.

[407] Because the distribution formula would be based on the AML inventory, updating the inventory is a necessary pre-requisite for such reform.
[408] "AML Fee Collections," FOIA claim with OSMRE, November 2014; (164,423,696.60-70,333,969.99)/164,423,696.60
[409] 2013 price per ton of coal stands at $37.24. When the law was passed, the AML fee for surface-coal represented 1.6% of the average price of a ton of coal produced in the US (Table 28. of EIA 2013 Annual Coal Report).

The AML program currently supports the United Mine Workers of America Fund (UMWAF), which is comprised of various UMWA healthcare and pension plans, through transfers from both the General Treasury and interest on the AML Fund. Congress should make it a priority to shore up these struggling UMWA plans. Critical retirement and healthcare payments to some of the most vulnerable and disadvantaged populations in the US depend on the financial well being of these UMWA plans.

Congress should also amend this transfer mechanism so that vital transfers to the UMWAF are sourced exclusively from the General Treasury, no longer partly sourcing the transfers from interest earned on the AML Fund. Multiple reasons support detaching transfers to the UMWAF from the AML Fund, including historically low interest rates and the urgent need to disburse the AML Fund to reclaim coalfield communities.

6. Reauthorize AML fee collection beyond FY2021 and continue mandatory AML distributions.

The AML program has made great strides in cleaning up the coalfields, but experts overwhelmingly agree that the program does not have the funding necessary to reclaim all of the country's AML features by FY2021. Massive AML problems will undoubtedly remain. Congress should statutorily extend AML fee collection beyond the current FY2021 sunset.

Complete and accurate data on the scope of America's remaining AML problem does not currently exist, so we do not possess the information needed to establish a responsible future expiration date for the AML program. Accordingly, Congress should extend fee collection indefinitely, and revisit the question of ending the crucial AML program only when reliable data is able to verify that its existence is no longer necessary.

Congress should statutorily uphold OSMRE's mandatory distribution of AML funding to states and tribes. Mandatory distributions have proven to be a much more effective and efficient means of funding state and tribal AML programs than through the annual discretionary funding mechanism. Mandatory AML distributions have brought stability to the program and enabled officials to develop reliable funding projections on which to base reclamation planning.

7. Reform the AML program to underline environmental performance, alongside human health and safety.

As the current law is written, the emphasis of the AML program is placed squarely—and almost exclusively—on the abatement of hazards. In accordance with this statutory emphasis, an AML reclamation project is currently assessed on its abatement of the site's threat to human health and safety. The abatement of hazards should continue to

be a top priority of the program, but a greater emphasis should also be placed on environmental performance and ecological health.

The current law directs state and tribal AML programs to focus the efforts of their AML projects on eliminating hazards without necessarily ensuring that the land or water is reclaimed according to a strong environmental performance standard. The result is a program that does not necessarily emphasize environmental and ecological health in AML project development. Congress should reform the AML law so that project development emphasizes environmental and ecological performance where applicable, in addition to the current focus on abating hazards.

8. End payments to states and tribes that have no remaining AML problems (i.e. "Certified states and tribes"), and empower OSMRE through statutory changes and increased funding to: a) reclaim future and existing AML problems in Certified states and tribes may they arise, and b) resume the responsibility of addressing AML emergencies.

Currently, when a state or tribe reclaims all of the AML problems within its borders, it is designated by OSMRE as a "Certified" state or tribe. Despite not having any coal AMLs, these states and tribes continue to receive millions of dollars of funding annually through the AML program. As Congressman Paul Ryan made note in his 2012 proposed budget, "Effectively, for the states that have been 'certified' as having successfully restored critical mining sites, the mine payments serve as an unrestricted Federal subsidy." [410] Accordingly, congress should eliminate payments to Certified states and tribes that continue to receive AML funding despite having no remaining AML problems.

In a parallel move, Congress should empower OSMRE through changes in the law and increased funding to reclaim future AML sites that may develop in Certified states and tribes. Given the dynamicity of mine sites, Certified states and tribes may likely develop AML problems in the future as old mines decay and deteriorate. The possibility of these future problems does not necessitate an entire standing state AML program, but it does require the preparation of robust means by OSMRE to reclaim AML sites in Certified states and tribes as is necessary.

OSMRE could also utilize these same agency means to address AML emergencies across the country. Currently, state and tribal AML programs are forced to use significant sums of their annual distributions to alleviate emergencies that quickly develop on AMLs within their borders. This was not always the case. OSMRE should resume the duties and responsibilities of AML emergency reclamation, so that state and tribes possess greater financial means to strategically clean up the coalfields within their borders. Accordingly, Congress should allocate greater funding to OSMRE to absorb

[410] Star Tribune Editorial Board. "You Can't 'save' AML Funds and Vote to Kill Program." *Casper Star-Tribune*. 30 Sept. 2012. Web. 06 July 2015. <http://trib.com/opinion/editorial/you-can-t-save-aml-funds-and-vote-to-kill/article_b698e9d1-0be9-5474-8da3-c9478bc6e58c.html>

such responsibilities, and should statutorily empower OSMRE to address AML emergencies.

Some states and tribes across the country achieved Certification yet have many remaining AML problems. In these cases, states and tribes should received AML funding only to the extent of remaining AML problems and only for the purpose of AML reclamation.

9. Commission a routine annual study of the economic and environmental effects of the AML program.

Currently, there exists little economic or environmental research on the effects of the AML program on pre-1977 AMLs across the country. The DOI releases an annual report that includes the economic impacts of the program. While this data is useful, it is incomplete. County-specific data, wage-data of reclamation employees, and other data that would provide a more complete picture of the AML reclamation market in specific locales is still critically needed. The study should also include the economic *benefits* (which differ from the economic *impacts*) of AML reclamation. This sort of analysis would incorporate things like increased property values or improved ecosystem services—such as a reclaimed mine site resulting in cleaner water downstream—due to AML reclamation. The economic benefits are the changes in the value—monetary or otherwise—of various things as a result of the reclamation. These figures are not captured in economic impact analysis, but are crucial numbers in getting a complete picture of the AML program's effect on citizens of the coalfields and their local economies.

OSMRE also lacks a routine environmental analysis of AML sites and reclamation processes. This research is critical for programs to continue to improve the environmental performance of their reclamation projects. The fundamental first step is acquiring reliable scientific data on these sites. Without it, it is impossible to develop an informed understanding of the environmental and ecological health of AMLs and the corresponding effectiveness of various reclamation projects and methods. Congress should secure the funds necessary for OSMRE to commission a routine annual study on the economic impacts, economic benefits, and the environmental aspects of the AML program.

10. Exempt AML funding from sequestration effects.

Since FY2013, annual AML distributions to states and tribes have been sequestered by OSMRE pursuant to the Budget Control Act (BCA) of 2011. The cumulative loss to AML funding due to sequestration has been $57.3 million over the past three years.[411] The

[411] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *FY 2013 AML Final Mandatory Distribution*. US Department of the Interior, Web. 7 July 2015; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *FY 2014 AML Final*

program stands to lose a total of $136 million over the nine-year sequestration period.[412] As a formal letter delivered to OMB from the Interstate Mining Compact Commission (IMCC) and the National Association for Abandoned Mine Land Programs (NAAMLP) argues, "There is no benefit to sequestering these funds because doing so does not benefit federal budget deficit reduction… [and the effects are] wreaking havoc on these vital state programs to the severe detriment of the program's public health and environmental benefits..." [413]

AML distributions are sequestered because they are mandatory payments. While mandatory programs typically qualify for sequestration, the law lays out a clear and reasonable exemption for payments funded through trust funds, as opposed to the General Treasury of the United States.[414] Yet, efforts to have the Office of Management and Budget (OMB) exempt AML distributions have thus far been unfruitful. In accordance with this clear exemption, Congress should explicitly exempt the AML program from the effects of sequestration.

11. Establish a federal hard rock abandoned mine land reclamation program under OSMRE.

There currently exists no federal program for the reclamation of abandoned hard rock mines. The result is that hundreds of abandoned hard rock mines are scattered across the country, dealing harm to public health, the environment, and the economy. In a spring 2015 survey conducted among state and tribal AML officials, multiple officials explained that their state or tribe has a significant number of non-coal (or, hardrock) AML sites inventoried but not added to e-AMLIS, though few, if any, states have had the resources to complete an expansive survey of non-coal AML sites.[415] As Bruce Stover, Director, Colorado Inactive Mine Reclamation Program, explained, "We have thousands of hazardous non-coal mining features *not* currently in e-AMLIS." [416] Similiarly, John Ktrezmann, Program Manager, New Mexico Energy, Minerals and Natural Resources Department, explained that "No coordinated statewide inventory of the more numerous non-coal sites in the state has been completed" in New Mexico.[417]

The lack of a federal hard rock AML program continues to put pressure on some states and tribes to use their coal AML funding for pressing hard rock AML problems. It is

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Mandatory Distribution. US Department of the Interior, Web. 7 July 2015; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.

[412] The Interstate Mining Compact Commission (IMCC) and National Association for Abandoned Mine Land Programs (NAAMLP). Letter to US Office of Management and Budget. 17 Oct. 2014. MS. Washington, District of Columbia.

[413] Ibid.

[414] Ibid.

[415] Bilbrey, et al. "Abandoned Mine Land Program: A Survey of Government Officials." Survey. February 27, 2015.

[416] Ibid.; Italicized "*not*" transformed from a capitalized "NOT" captured in the survey.

[417] Ibid.

imperative that Congress address this void and establish a federal hard rock AML program housed within OSMRE, an agency that has developed significant experience and expertise at AML reclamation.

8.3. POWER+ (Plus) Plan

In February 2015, the Obama Administration announced the POWER+ Plan as part of the President's proposed FY2016 budget. The POWER+ Plan is a federal initiative developed in response to the "rapid energy transformation [that is]…impacting workers and communities who have relied on the coal industry as a source of good jobs and economic prosperity, particularly in Appalachia, where competition with other coal basins provides additional pressure." [418] It is a fundamentally economic initiative meant to address the legacy costs of coal and to "help these communities adapt to the changing energy landscape and build a better future." [419]

The POWER+ Plan's explicit purpose is to improve the economy of the frontline communities in Appalachia and other coalfields experiencing the brunt of the shifting energy sector and rightly places emphasis on job creation. As a sizeable federal initiative targeted at Appalachia, the proposal is the first of its kind since the War on Poverty of the 1960s. The POWER+ Plan would disburse billions of dollars in funding for workforce development, job training, economic diversification, mine reclamation, and the support of miners' struggling health and pension plans. The plan was developed against the backdrop of an Appalachian economy experiencing severe economic decline and environmental disruption. It is because the initiative is rooted in the realities that coalfields are currently facing that this proposal has the potential to be a valuable part of a just Appalachian transition.

The POWER+ Plan consists of four policy pillars. One of these pillars—the AML Economic Revitalization Proposal—targets "the continuing legacy of coal abandoned mine lands (AML) on the health, safety, environment and economic development potential of communities..." [420] The following section analyzes this pillar in detail.

[418] United States. Office of the President. *Investing in Coal Communities, Workers, and Technology: The POWER+ Plan*. Whitehouse.gov, 2015. Web. 6 July 2015. <https://www.whitehouse.gov/sites/default/files/omb/budget/fy2016/assets/fact_sheets/investing-in-coal-communities-workers-and-technology-the-power-plan.pdf>
[419] Ibid.
[420] Ibid.

8.3.A. Abandoned Mine Land Economic Revitalization (AMLER) Proposal

1. Disburse $1 billion of the unappropriated Abandoned Mine Reclamation Fund.

This proposal would disburse $200 million of existing AML funds per year, over five years, "for the reclamation of abandoned coal mine land sites and associated polluted waters in a manner that promotes sustainable redevelopment in economically distressed coal country communities." [421] The funding, which will be sourced from the unapproprated AML Fund (see section 5.10), must be used for AML reclamation, so it must meet current site and project criteria, with a few exceptions. Thus, this money cannot be utilized as a source of general economic development funds. It can only be used for the earth-moving, planting, and water quality type of work allowed under the SMCRA, targeted towards economic development.

Funding Distribution Mechanism

The POWER+ Plan's AML proposal would *not* alter the funding scheme for existing AML grants. Annual AML distributions to states and tribes under the current AML program (and current site and project criteria) will continue unchanged. This new proposal would supplement standard AML distributions with distributions under the POWER+ Plan's AML Economic Revitalization.

In March 2015, the Administration released an updated fact sheet laying out the formula by which funding would be distributed to states and tribes under the AML Economic Revitalization Proposal.[422] According to this fact sheet, all states and tribes with an approved AML program (25 states and 3 tribes) will be eligible for funding. OSMRE will administer the program. The agency will distribute $200 million per year, from FY2016 through FY2020. $195 million each year will be sourced from the Historic Coal Share of the unappropriated AML Fund. The Historic Coal Share is $1.49 billion (60%) of the $2.48 billion AML Fund (see section 5.10). This $195 million will be made eligible to the 20 Non-certified states and tribes only. An additional $5 million will be sourced annually from the Federal Expenses Share, which currently stands at $430 million (17%) of the AML Fund, and will be made eligible to the 8 Certified states and tribes only.

The $195 million from Historic Coal and $5 million from Federal Expenses will be distributed according to *different* criteria, and the exact distribution formula for each of these pots *will change slightly* by year as the program progresses. In FY2016, the $195 for Non-certified states and tribes will be distributed according to *historic coal production tonnage*. These distributions will utilize a distribution formula identical to the one used for current Historic Coal distributions. According to this formula, a state or tribe will receive a portion of the total annual funding based on its percentage of the total tonnage of coal produced in the United States prior to 1977 (see section 5.5). Figure 8.1 shows

[421] Ibid.
[422] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.

the Historic Coal percentages and projected FY2016 grants of each state. Central Appalachian states would receive 34.9% of the total $195 distribution, amounting to $67.97 million. Pennsylvania would receive the largest share at 34.7%.

The $5 million for Certified states and tribes will be distributed on a competitive basis, selected by the OSMRE Director, for eligible projects that meet prioritization criteria listed below.

Figure 8.1 FY2016 Grant Distributions under AML Economic Revitalization Proposal

State/Tribe	Historic Coal percentage	FY2016 Grant Projected	Un-reclaimed AML
Alabama	2.89%	5.642	4.78%
Alaska	0.03%	0.061	0.59%
Arkansas	0.24%	0.469	0.23%
Colorado	1.41%	2.750	0.83%
Illinois	10.72%	20.903	1.45%
Indiana	3.49%	6.805	1.08%
Iowa	0.85%	1.652	0.67%
Kansas	0.69%	1.339	3.90%
Kentucky	10.51%	20.486	5.03%
Maryland	0.68%	1.328	0.71%
Missouri	0.83%	1.617	1.29%
New Mexico	0.34%	0.668	0.24%
North Dakota	0.44%	0.856	0.43%
Ohio	6.57%	12.814	2.98%
Oklahoma	0.49%	0.963	1.54%
Pennsylvania	34.65%	67.568	54.65%
Tennessee	1.21%	2.367	0.46%
Utah	0.82%	1.592	0.05%
Virginia	3.22%	6.288	4.60%
West Virginia	19.91%	38.833	14.50%
Total, Non-certified AML Programs	100.00%	195.000	100.00%

In FY2017, the $5 million will be distributed according to the same process as in FY2016, but the formula for the $195 will evolve slightly. A Non-certified state or tribe's distribution will equal the percentage of its FY2016 distribution that was "obligated" (or, used) for eligible projects. Unobligated FY2016 funds and the portion of the $195 million not distributed in FY2017 will be placed in a separate federal account—call it the "AML unobligated fund"—for disbursement starting in FY2018.

In FY2018 through FY2020, distributions from both the $195 million for Non-certified states and tribes and the $5 million for Certified states and tribes will continue by the same formulas as in FY2017. In addition, OSMRE will distribute the AML Unobligated Fund to states and tribes *that have no unobligated funds* according to their proportion of "inventoried un-reclaimed sites nationally". [423] It is unclear how often distributions from the AML Unobligated Fund will be made, or to what exactly the "inventoried un-reclaimed sites nationally" refers.

Because the AML Economic Revitalization proposal expands AML reclamation beyond high priority AML problems, the formula for "inventoried un-reclaimed sites nationally" should include all AML priorities. Figure 8.1 displays each eligible state's "Un-Reclaimed AML." These figures are based on the remaining AML problems *of all priorities*—not just high priorities—in Non-certified states, according to E-AMLIS.[424]

Site and Project Criteria

The proposal would modify both the *sites eligible* for AML reclamation and the *criteria that AML reclamation projects are required to meet*, for projects funded through the new program. In terms of site eligibility, *all* lands and waters that are adversely affected by pre-1977 coal mining are eligible. Sites do not have to be high priority. Expanding site eligibility beyond sites that pose hazards to human health and safety enables the program to more effectively target economic development. Still, a site must be an eligible pre-1977 AML site.

In terms of project criteria, reclamation projects must present potential for economic development. Accordingly, a project must meet three criteria:

1. Project must "create the conditions for the community's economic development." [425] This can be demonstrated through a "Comprehensive Economic Development Strategy, another economic development planning process, or other documentation that demonstrates the planned beneficial economic use..." [426] Examples include agricultural and horticultural production, reforestation, siting a business on the reclaimed site, recreation, and tourism activity.
2. Priority must be given to projects located in counties that have at least one of the following: [427]

[423] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.
[424] These percentages are based on the author's assumption of the formula including all AML priorities. The Administration's proposal does not currently specify percentages are based on unfunded AML costs according to E-AMLIS. E-AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[425] "OSMRE FY 2016 AML ECONOMIC REVITALIZATION PROPOSAL: A COMPONENT OF THE PRESIDENT'S POWER+ PLAN." March 15, 2015.
[426] Ibid.
[427] Ibid.

a. An unemployment rate that is at least one percentage point greater than the national average
b. Per capita income that is 80% or less of the national average
c. Coal mining employment loss over the previous 5 years

3. Project must include the partnership, at the minimum, of the following stakeholders:
    a. Watershed and community groups engaged in local ecological restoration and economic development
    b. Economic development organizations and workforce development boards
    c. Local government entities
    d. The state's economic development agency

In order to ensure that states and tribes have the necessary means to develop project proposals, OSMRE will distribute 10% of a state or tribe's annual grant up front. This initial grant will be used by Non-certified states and tribes to develop "a plan that identifies the projects they propose to remediate under this program, documents how these sites meet the eligibility and prioritization criteria listed above, estimates the reclamation cost of each project, and demonstrates how the state program administering these funds consulted and plans to partner with, at a minimum, the [aforementioned] stakeholders." [428]

OSMRE must approve the annual plan submitted by a state or tribe. Once OSMRE has given approval, a state or tribe will receive the remaining 90% of its allocation. A state or tribe must then "prepare detailed documentation packages on specific AML projects for OSMRE's review and approval prior to the commencement of field reclamation activities..." and is required to submit post-project progress and financial reports to OSMRE.[429]

The AML Economic Revitalization proposal is the only AML legislative proposal *technically* included in the POWER+ Plan, but the Obama Administration simultaneously proposed a set of AML legislative proposals as part of the FY2016 OSMRE budget.[430] Theseproposals appear to be—in conjunction with the POWER+ Plan—a high priority for the Administration. These additional proposals include:

2. Reinstate historic AML fee levels.[431]

This proposal would reinstate the fees assessed on each ton of coal produced in the US prior to the 20% reduction these levels received by Congress in 2006. The restored fee levels would stand at 35¢ per ton of surface-coal, 20¢ per ton of underground-coal, and 10¢ per ton of lignite.

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[428] Ibid.
[429] Ibid.
[430] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *President's FY2016 Budget for Office of Surface Mining Reclamation and Enforcement Calls for $160.5 Million in Discretionary Funding*. US Department of the Interior, 2 Feb. 2015. Web. 6 July 2015.
[431] Ibid.

3. End payments to Certified states and tribes.[432]

This proposal would end payments to states and tribes that have verified they have no remaining AML problems—"Certified states and tribes"—yet still receive payments from the General Treasury through the AML program. The Administration argues that ending these payments would save "$224 million over 10 years" and would "help reduce the deficit." [433]

4. Create a hard rock AML reclamation program.[434]

This proposal would seek to build on the success and experience of the coal AML program by establishing a parallel program to reclaimed abandoned hard rock (gold, silver, copper, etc.) mines. It would be housed within OSMRE.

[432] Ibid.
[433] Ibid.
[434] Ibid.

8.3.B. POWER+ Plan Policy Recommendations

As a federal initiative explicitly committed to alleviating the severe economic distress in Appalachia and other coalfields, the POWER+ Plan is a responsible approach by the federal government at addressing the economic windfall of a shifting national energy landscape. Accelerating disbursement of $1 billion of the AML Fund could serve as a sizeable investment in struggling local economies that urgently require assistance. Targeting this funding towards projects that pose economic development potential could provide both short-term and long-term economic benefits for poor, rural communities where many AML problems are currently impeding economic growth.

The legislative proposals laid out by the Administration are a strong framework for forward-looking use of the AML program. In order to be successful, though, the details and implementation of the program must be developed in a way that fulfills the explicit purpose of the POWER+ Plan. The following are a set of policy recommendations specific to the POWER+ Plan:

1. **Include an Economic Distress Factor in the distribution of AML Economic Revitalization funds to states and tribes.**

The latest version of the POWER+ Plan promulgated by the Administration would distribute AML funds to states and tribes strictly according to Historic Coal Production. Such a funding mechanism ignores any factor of economic distress. If the objective of the AML Economic Revitalization proposal is to assist economically distressed coalfield communities, then it is imperative that some indicator of economic distress be incorporated into how funding is distributed to states and tribes. Without such an indicator, the POWER+ Plan lacks real commitment to helping the most vulnerable communities in the coalfields.

Accordingly, funding should be distributed based on a Composite Formula that includes both Historic Coal Production and an Economic Distress Factor. Under this proposal, two-thirds of a state's Composite Formula is based on Historic Coal Production and one-third is based on a state's Economic Distress Factor. Figure 8.2 displays the expected percentages and projected FY2016 grants for each eligible state according to the Composite Formula.

Figure 8.2 Projected FY2016 Grants Based on Composite Formula[435]

State/Tribe	Historic Coal percentage	Economic Distress Factor	Composite Formula percentage	FY2016 Grant Projected (millions)
Alabama	2.89%	1.28%	2.36%	4.59
Alaska	0.03%	0.68%	0.25%	0.49
Arkansas	0.24%	0.00%	0.16%	0.31
Colorado	1.41%	4.23%	2.35%	4.59
Illinois	10.72%	10.62%	10.69%	20.84
Indiana	3.49%	2.74%	3.24%	6.32
Iowa	0.85%	0.00%	0.56%	1.10
Kansas	0.69%	0.13%	0.50%	0.98
Kentucky	10.51%	43.19%	21.40%	41.73
Maryland	0.68%	0.00%	0.45%	0.89
Missouri	0.83%	0.68%	0.78%	1.52
New Mexico	0.34%	2.12%	0.94%	1.83
North Dakota	0.44%	0.00%	0.29%	0.57
Ohio	6.57%	3.42%	5.52%	10.77
Oklahoma	0.49%	1.68%	0.89%	1.73
Pennsylvania	34.65%	1.37%	23.56%	45.94
Tennessee	1.21%	8.16%	3.53%	6.88
Utah	0.82%	3.75%	1.79%	3.50
Virginia	3.22%	2.40%	2.95%	5.75
West Virginia	19.91%	13.52%	17.78%	34.68
Total, Non-certified AML Programs	**100.00%**	**100.00%**	**100.00%**	**195.00**

Under this formula, Pennsylvania would still receive the largest percentage of funding—at 23.56%—but states with coalfield communities experiencing economic distress would receive a much greater share. Central Appalachian states would receive a 45.66% share, and, notably, Kentucky's share would rise considerably relative to the Administration's current proposal. This rise can be attributed to the overwhelming majority of job losses in the coal sector that Kentucky experienced from 2009-2013.[436]

[435] A state or tribe's Composite Formula percentage (CFP) is based on its Historic Coal percentage (HCP) and its Economic Distress Factor (EDF). The Historic Coal percentage is weighted by 2/3 and the Economic Distress factor is weighted by 1/3. The resulting formula is: 2/3(HCP) + 1/3(EDF) = CFP. Historic Coal percentages are based on the "FY2015 OSMRE AML Grant Distributions." Note that all percentages are calculated among only eligible states and tribes: those with Non-certified AML programs. Economic Distress Factors are based on recent job losses in the coal sector and county unemployment rates. They are explained in Figure 8.3. Projected FY2016 grants assume a total of $195 million will be distributed to Non-certified states and tribes.

[436] From 2009 to 2013, Kentucky experienced 66% of total coal jobs lost among eligible states and tribes that experienced a net negative coal employment change over this time period.
"Aggregate coal mine average employees." Report generated by Coal Data Browser, Energy Information Administration. Retrieved April 28, 2015.
<http://www.eia.gov/beta/coal/data/browser/#/topic/36?agg=1,0&geo=g801qag9vvlpg&mntp=g&freq=A&start=2001&end=2013&ctype=map&ltype=pin&rtype=s&maptype=0&rse=0&pin=>

The Economic Distress Factor is based on two variables: job losses in the coal sector and county unemployment rates. A state is given priority to the extent that it has experienced:

A. Job losses in the coal sector in the most recent five year period for which data is available
B. A greater share of counties with unemployment rates at least 1 percentage point higher than the national average. Counties must have remaining AML problems.

Figure 8.3 illustrates the two factors (Percentage of Coal Job Loss and percentage of High Unemployment Counties) that comprise the Economic Distress Factor for each Non-certified state or tribe. Each of these factors is given a 50% weight. Figure 8.3 lays out the data and method on which the Economic Distress Factor is based.

In addition, while distributing funding according to “Inventoried un-reclaimed sites”—as the most recent AML Economic Revitalization plan proposes—is a good idea in principle, it should not be implemented unless or until the inventory is updated with accurate and complete data. Thus, unless the inventory can be updated in time for the proposed distribution of “AML unobligated funds” in FY2018 and beyond, these funds should be distributed according to the Composite Formula percentage rather than any formula that utilizes E-AMLIS data.

Figure 8.3 Projected Economic Distress Factors by State and Tribe[437]

State/Tribe	Coal Employment Net Change (2009-2013)	Percentage of Coal Job Loss	Number of High Unemployment Counties	Percentage of High Unemployment Counties	Economic Distress Factor
Alabama	-46	0.51%	3	2.05%	1.28%
Alaska	6	0.00%	2	1.37%	0.68%
Arkansas	36	0.00%	0	0.00%	0.00%
Colorado	-270	2.99%	8	5.48%	4.23%
Illinois	616	0.00%	31	21.23%	10.62%
Indiana	177	0.00%	8	5.48%	2.74%
Iowa	N/A	0.00%	0	0.00%	0.00%
Kansas	-24	0.27%	0	0.00%	0.13%
Kentucky	-5945	65.84%	30	20.55%	43.19%
Maryland	17	0.00%	0	0.00%	0.00%
Missouri	1	0.00%	2	1.37%	0.68%
New Mexico	-136	1.51%	4	2.74%	2.12%
North Dakota	205	0.00%	0	0.00%	0.00%
Ohio	136	0.00%	10	6.85%	3.42%
Oklahoma	-56	0.62%	4	2.74%	1.68%
Pennsylvania	301	0.00%	4	2.74%	1.37%
Tennessee	-484	5.36%	16	10.96%	8.16%

[437] A state or tribe's Economic Distress Factor (EDF) is based on its percentage of Coal Job Loss (CJL) and percentage of High Unemployment Counties (HUC). Each of these factors is weighted 50%. The resulting formula is: ½(CJL) + ½(HUC) = EDF. Note that all percentages are calculated among only eligible states and tribes: those with Non-certified AML programs. Coal Employment Net Change refers to the net job loss or gain in the coal sector over the most recent five-year period for which data is available. percentage of Coal Job Loss is equal to a state's percentage of recent coal jobs lost among total coal jobs lost in *only states that had a recent negative net change in coal employment.* The Number of High Unemployment Counties is a state's number of counties that meet both of the following criteria: a) contain un-reclaimed AML problems, and b) possess an unemployment rate at least 1 percentage point greater than the national average unemployment rate. County employment rates equal the average unemployment rate of a county over 24 months, according to BLS data. The national 24-month unemployment rate for February 2015 is 6.58%, thus, for these calculations a county unemployment rate must be 7.58% or higher to be eligible. Coal employment data source: "Aggregate coal mine average employees." Report generated by Coal Data Browser, Energy Information Administration. Retrieved April 28, 2015.
<http://www.eia.gov/beta/coal/data/browser/#/topic/36?agg=1,0&geo=g801qag9vvlpg&mntp=g&freq=A&start=2001&end=2013&ctype=map&ltype=pin&rtype=s&maptype=0&rse=0&pin=>
County unemployment data source: "Distress Report" for every state with an approved AML program, generated by StatsAmerica.org, a program supported by the US Economic Development Agency (EDA).
<http://www.statsamerica.org/distress/distress.aspx>

Utah	-554	6.14%	2	1.37%	3.75%
Virginia	-125	1.38%	5	3.42%	2.40%
West Virginia	-1390	15.39%	17	11.64%	13.52%
Total, Non-certified AML Programs	-7535	100.00%	146	100.00%	100.00%

2. Prioritize a robust and inclusive public process around the development and implementation of projects under the AML Economic Revitalization proposal.

The significant investment represented by this proposal will only be effective if it is accompanied by robust public deliberation. The back-and-forth of such public deliberation is a healthy and effective means to collectively identify the best projects possible. The people best equipped to shape these projects are those in communities directly affected by it. The policies of the POWER+ Plan must include mechanisms to encourage public discourse, including community listening sessions, press opportunities, and other public meetings. Taking full advantage of AML funds for economic development will not be easy. It will require serious innovation and unorthodox solutions. Appalachians and others in affected communities are extremely creative and innovative people, well situated to develop unique AML solutions suited to their local context. The POWER+ Plan must be carried forward through a deliberately open process that capitalizes on the innovation and creativity of affected citizens.

3. Empower affected communities by placing representatives from community groups, watershed groups, and—most importantly—citizens directly affected by these AML problems on the boards that make decisions about AML economic development projects.

A public process around the POWER+ Plan, though vital, does not go far enough on its own. It is crucial that citizens, grassroots groups, community organizations, etc. have real power in shaping and selecting the AML projects created under this program. Creating a new, stronger economy in coalfield communities will require leadership and decision-making power from groups that have not traditionally had a voice in economic development. In order to achieve this, the POWER+ Plan should require that each Non-certified AML program establish a project approval board that provides numerically comparable representation to community groups, watershed groups, grassroots organizations, and affected communities—especially the AML landowner—as is provided to state and federal AML representatives and professional economic development organizations. If grassroots representatives are given real power in shaping these solutions, the resultant projects will end up being most effective in growing a just local economy.

Conclusion

In sum, the AML Economic Revitalization proposal lays out a bold set of programs and AML reform initiatives to drive a just economic transition in struggling coalfield communities. The current iteration of the proposal, however, does not go far enough in targeting funding towards the states and tribes that are the most economically distressed.

As the proposal states, the "majority of un-reclaimed coal mine lands are concentrated in Appalachian states that have experienced coal mining job loss." [438] In order to achieve the POWER+ Plan's expressed goal of assisting struggling Appalachian and other coalfield communities, the distribution formula must incorporate some economic distress factor. The most common sense way to do so is to incorporate job losses in the coal sector and county unemployment rates—two factors that the POWER+ Plan proposal itself identifies as relevant—into the distribution formula. The plan presents great potential for progress in coalfield communities, but it must prioritize a robust and inclusive public process and provide power to new, non-traditional partners in shaping AML Economic Revitalization projects.

[438] Ibid.

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Appendix

Appendix 1.1 Research Project Methodologies

This research paper has been the result of a collaborative research project through the AML Policy Priorities Group, which is comprised of nearly 200 citizens, organizers, attorneys, scientists, governmental officials, and others. The AML Policy Priorities Group was co-coordinated by Appalachian Citizens' Law Center and The Alliance for Appalachia. In addition to its collaborative nature, the research project utilized a participatory research model, explained in the "About this Research Project" section at the beginning of the paper. This research was driven by conversations with citizens in AML-affected communities, experts, officials, and others, many of whom are members of the AML Policy Priorities Group.

The research paper includes data and analysis captured by a survey of state AML officials conducted by the authors, Betsy Taylor at Virginia Tech, and the Interstate Mining Compact Commission. 16 AML officials responded to the survey, each from a different state AML program. For context, there are currently 28 approved state and tribal AML programs. Analysis of the survey data used in this research paper is based on these 16 responses, some of whom have opted for anonymity as outlined below.

Data from the survey is currently being organized for a forthcoming Data Report from Virginia Tech. The survey was approved by Virginia Tech's Institutional Review Board (IRB) for research of human subjects. The following is the consent form given with the AML survey. It provides some background and framing of the survey. Contact Betsy Taylor or Eric Dixon (see below form for contact information) for more information about the survey, the consent form, the data protocol, the IRB approval, or the forthcoming data report.

The economic analysis in this paper is based on an economic analysis methodology utilized in the economic reports released by the Department of the Interior (DOI) in the past five years. See Appendix 1 of the 2012 DOI economic report to learn about this methodology. Because the economic projections calculated by the authors for various AML policy proposals (see chapters 6 and 8) are based on the multipliers found in the DOI economic reports, all of the economic analysis in this paper relies on this methodology:

United States. Department of the Interior. Office of Policy Analysis. *FY2012 Economic Report*. US Department of the Interior, 29 July 2013. Web. 6 July 2015. URL:<http://www.doi.gov/ppa/economic_analysis/upload/FY2012-DOI-Econ-Report-Final-2013-09-25.pdf>

Abandoned Mine Land Program: A Survey of Government Officials
Introduction and Instructions for the Survey

Investigator(s):
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Kendall Bilbrey, kendall@thealllianceforappalachia.org / (276) 620-9264

I. Purpose of this Research Project
This survey is part of a research project on the Abandoned Mine Land (AML) Program, which seeks to:
-- Understand how the AML program operates on both the federal and state/tribal level
-- Learn from survey participants what they understand to be important issues for the public to comprehend regarding the AML program
-- Take suggestions for further research and possible improvement of the AML program. We seek to learn about good models that state AML programs are using that can be shared with other states/tribes, as well as ways to positively impact local economic development.

We are consulting key federal and state/tribal AML decision makers for our research. As part of that process, we have developed this survey to be delivered to the 28 states and tribes with AML programs. The Interstate Mining Compact Commission is administering this survey, and Executive Director Greg Conrad has played an advisory role in this process, and convened forums to gather input from several states that reviewed an early draft of the survey.
Eric Dixon and Kendall Bilbrey, who are serving as Appalachian Transition Fellows under the auspices of the Appalachian Citizens' Law Center and The Alliance for Appalachia, are coordinating the overall research effort. Dr. Betsy Taylor (Senior Research Scientist, Appalachian Studies, Virginia Tech) is the principal investigator of this survey and a scholarly advisor on the project as a whole. Key questions in this survey were crowd sourced by the AML Policy Priorities Group, a network including participants from over two-dozen non-profits, think tanks, and several universities.

The data you share via this survey may be used in a Data Report published by Appalachian Studies, Virginia Tech, as well as in peer reviewed scholarly articles. This report will be disseminated to survey respondents, the general public, government officials, scholars, and civil society organizations. In addition, the AML Policy Priorities Group will disseminate its findings through webinars, white papers, and presentations in order to educate citizens about the AML program, with particular concern for ways to leverage reclamation for job creation and economic development.

II. Procedures:
The time required for the following survey will vary from state to state. It could take one or more hours. You will be led through this on-line survey. *If there are any questions for which you cannot provide answers, please so indicate.*

III. Risks:
We anticipate no risks to you in filling in this form. However, if you have any concerns, you can choose to answer anonymously.

IV. Benefits:
We anticipate that this project can educate the general public about the AML Program. No promise or guarantee of benefits has been made to encourage you to participate, other than the opportunity to serve the public through fostering fact-based, public dialogue.

V. Extent of Anonymity and Confidentiality:
For the purpose of our research, it would be *very useful* to mention the names of the people surveyed, but please let us know if you have any concerns, and see the anonymity policy below. We want you to feel comfortable sharing data anonymously for some or all questions if you feel that is most appropriate.

If there are questions that you would prefer to answer anonymously, you can indicate that in the survey by leading a particular response with the phrase "ANONYMOUS." If you indicate that you would like a particular response to be "ANONYMOUS," then we will not attach your name to the response but we reserve the right to attribute a direct quote of the response within context to an anonymous "state or tribal AML official" in future publications. If a question does not provide space for you to write text (i.e. if it is a multiple choice question for which you would like your response to be ANONYMOUS), then please specify the question number(s) for which response(s) you would like to be ANONYMOUS in the last "Comment/Feedback" box.
Data from this survey will be securely stored, seen, and analyzed only by investigators listed on top of this form. Data will only be used for this research and will be destroyed after analysis. This survey is covered by VT IRB-15-050. No one else will have access to the raw data, except that the Virginia Tech (VT) Institutional Review Board (IRB) may view the study's data for auditing purposes only. The IRB is responsible for the oversight of the protection of human subjects involved in research.

VI. Compensation:
You will receive no compensation for completing this survey. VII. Freedom to Withdraw:
It is important for you to know that you are free to withdraw from this study at any time without penalty. You are free not to answer any questions that you choose or respond to what is being asked of you without penalty.

VIII. Questions or Concerns:
Should you have any questions about this study, you may contact one of the research investigators whose contact information is included at the beginning of this document.
Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu or (540) 231-4991.

Appendix 3.1 Total Costs and Percentages, Completed and Remaining AML Problems, By State and Tribe

Figure 9.1 Total Costs and Percentages, Completed and Remaining AML Problem, By State and Tribe

	Unfunded Cost, All Priorities[439]	Unfunded GPRA, All Priorities[440]	Unfunded Cost Percentages (of National Total), All Priorities	Unfunded Cost, High Priorities[441]	Unfunded Costs Percentages (of National Total), High Priorities	Funded Cost, All priorities[442]	Funded GPRA, All Priorities[443]	Completed Cost, All Priorities[444]	Completed GPRA, All Priorities[445]
Alabama	439,214,696.74	72,401.90	4.56%	165,648,054.74	2.40%	299,719.00	93.84	84,765,874.59	27,370.15
Alaska	54,424,009.00	311.27	0.56%	52,571,509.00	0.76%	0	0	23,859,357.55	1,231.92
Arizona	0	0	0.00%	0	0.00%	0	0	0	0
Arkansas	20,703,293.00	3,186.02	0.21%	15,553,113.00	0.23%	1,963,262.00	32.87	35,317,760.00	5,266.06
Blackfeet	0	0	0.00%	0	0.00%	0	0	0	0
California	240,000.00	0.4	0.00%	240,000.00	0.00%	0	0	1,650,830.00	60.1
Cherokee	1,840,000.00	45.5	0.02%	1,840,000.00	0.03%	0	0	453,135.24	20.4
Cheyenne River	0	0	0.00%	0	0.00%	0.00	0	3,366,106.00	785.43
Colorado	75,993,254.00	2,265.78	0.79%	66,271,574.00	0.96%	4,846,956.00	130.6	58,477,663.54	4,101.35
Crow	0	0	0.00%	0	0.00%	0	6.5	9,619,158.00	55,478.84
Fort Berthold	500	1	0.00%	0	0.00%	0	0	55,902.00	11.86
Fort Peck	150,000.00	2	0.00%	150,000.00	0.00%	0	0	133,670.00	34.23
Georgia	223,000.00	31.29	0.00%	107,000.00	0.00%	0	0	5,745,710.00	564.25
Hopi	0	0	0.00%	0	0.00%	0	0	3,735,929.00	232.73
Idaho	0	0	0.00%	0	0.00%	0	0	0	0
Illinois	133,621,839.00	5,720.07	1.39%	107,487,982.00	1.56%	25,861,684.25	5,835.74	195,411,198.60	16,862.89
Indiana	98,933,813.25	2,160.55	1.03%	92,071,518.25	1.34%	5,981,060.00	36.2	147,872,786.76	14,634.36
Iowa	61,450,165.42	72,447.97	0.64%	47,802,944.42	0.69%	4,709,243.07	1,088.46	43,305,538.13	6,522.86
Jicarilla Apache	0	0	0.00%	0	0.00%	0	0	48,503.00	3.8
Kansas	358,662,355.00	18,141.70	3.72%	340,526,050.00	4.94%	3,287,525.00	227.8	35,014,215.00	4,258.07
Kentucky	**461,928,279.00**	**32,654.41**	**4.79%**	**358,108,558.00**	**5.19%**	**92,987,480.00**	**12,223.12**	**532,638,630.00**	**103,003.14**
Louisiana	14,078,338.00	2,290.85	0.15%	13,539,838.00	0.20%	0	0	182,115.94	0
Maryland	65,659,612.00	25,065.55	0.68%	34,208,814.00	0.50%	2,266,201.00	344.2	39,357,992.76	7,313.39
Massachusetts	5,000.00	0.1	0.00%	0	0.00%	0	0	0	0
Michigan	5,127,500.00	27.7	0.05%	4,875,000.00	0.07%	0	0	5,146,497.00	1,090.07
Mississippi	24,785.00	1.3	0.00%	24,785.00	0.00%	0	0	0	0
Missouri	118,288,532.00	13,621.53	1.23%	49,369,891.00	0.72%	606,570.00	114.5	57,415,022.68	6,819.49
Montana	224,316,863.00	1,820.42	2.33%	215,627,863.00	3.13%	3,722,870.00	32.71	92,851,011.86	7,774.66
Navajo Nation	1,956,281.00	42.5	0.02%	897,220.00	0.01%	51,895.00	9.87	28,267,178.00	3,392.86
New Mexico	21,628,056.00	687.7	0.22%	13,834,036.00	0.20%	3,855,904.00	163.1	25,357,883.00	894.98
North Carolina	0	0	0.00%	0	0.00%	0	0	163,252.00	0.5
North Dakota	39,198,612.00	4,250.41	0.41%	38,775,112.00	0.56%	1,153,100.00	42.9	47,279,417.50	4,039.29
Northern Cheyenne	0	0	0.00%	0	0.00%	0	0	220,942.00	81.23
Ohio	274,058,879.50	5,447,934.85	2.84%	181,448,482.50	2.63%	5,763,397.00	387.09	157,850,682.20	21,643.91
Oklahoma	141,823,918.00	28,165.20	1.47%	89,734,593.00	1.30%	1,329,002.00	421.84	38,871,364.00	6,364.87
Oregon	0	0	0.00%	0	0.00%	0	0	156,398.00	2.8

[439] E- AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[440] E- AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.
[441] E- AMLIS generated reports, "High Priority (Priority 1, 2 & Adjacent Priority 3) Cost Summary" for each state and tribe. Retrieved April 27, 2015. URL: <http://amlis.osmre.gov/Summaries.aspx>
[442] E- AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[443] E- AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.
[444] E- AMLIS generated report, "Cost PAD Summary By State & County." Includes all priorities (not just high priority; not just non-coal) and all problem types. Retrieved April 28, 2015.
[445] E- AMLIS generated report, "Problem Type Unit & Cost (State) w/ GPRA"; includes all priorities (not just high priority; not just non-coal) and all problem types; received May 5, 2015.

Pennsylvania	5,022,586,581.79	276,863.44	52.12%	3,908,952,600.80	56.68%	204,050,757.18	19,131.08	604,481,090.19	68,687.30
Rhode Island	0	0	0.00%	0	0.00%	0	0	556,228.00	6
Rocky Boys	0	0	0.00%	0	0.00%	0	0	51,828.00	2.9
San Carlos	5,000.00	0.2	0.00%	0	0.00%	0	0	0	0
South Dakota	0	0	0.00%	0	0.00%	0	0	36,926.00	3.53
Southern Ute	0	0	0.00%	0	0.00%	0	0	296,296.00	4.5
Tennessee	**42,622,803.00**	**10,608.14**	**0.44%**	**14,557,448.00**	**0.21%**	**1,721,504.00**	**317.82**	**43,932,395.09**	**6,603.57**
Texas	9,434,078.21	1,099.60	0.10%	7,639,626.19	0.11%	6,262,573.51	275.6	43,502,615.41	7,044.80
Uintah and Ouray	0	0	0.00%	0	0.00%	0	0	117,878.00	5.6
Utah	4,221,356.00	282.8	0.04%	4,774,528.00	0.07%	517,359.00	5.8	25,229,559.90	1,752.15
Ute Mountain Ute	0	0	0.00%	0	0.00%	0	0	14,300.00	0.8
Virginia	**422,841,982.32**	**57,140.32**	**4.39%**	**97,807,488.32**	**1.42%**	**17,239,706.10**	**4,287.42**	**123,043,113.04**	**22,385.07**
Washington	0	0	0.00%	0	0.00%	0	0	8,074,341.00	85.61
West Virginia	**1,332,648,210.87**	**132,630.67**	**13.83%**	**810,200,439.87**	**11.75%**	**61,492,379.92**	**28,551.82**	**622,835,873.27**	**353,364.61**
White Mountain	500	0.1	0.00%	0	0.00%	0	0	0	0
Wind River	0	0	0.00%	0	0.00%	0	0	105,825.00	9.8
Wyoming	188,530,017.00	4,871.72	1.96%	162,072,245.00	2.35%	68,660,792.00	736.19	2,566,960,226.00	37,175.63
National Total	**9,636,442,110.10**	**6,216,774.96**	**100.00%**	**6,896,718,314.09**	**100.00%**	**518,630,940.03**	**74,497.06**	**5,713,830,219.25**	**796,992.36**

Appendix 5.1 History of Fee Collections in Central Appalachian States

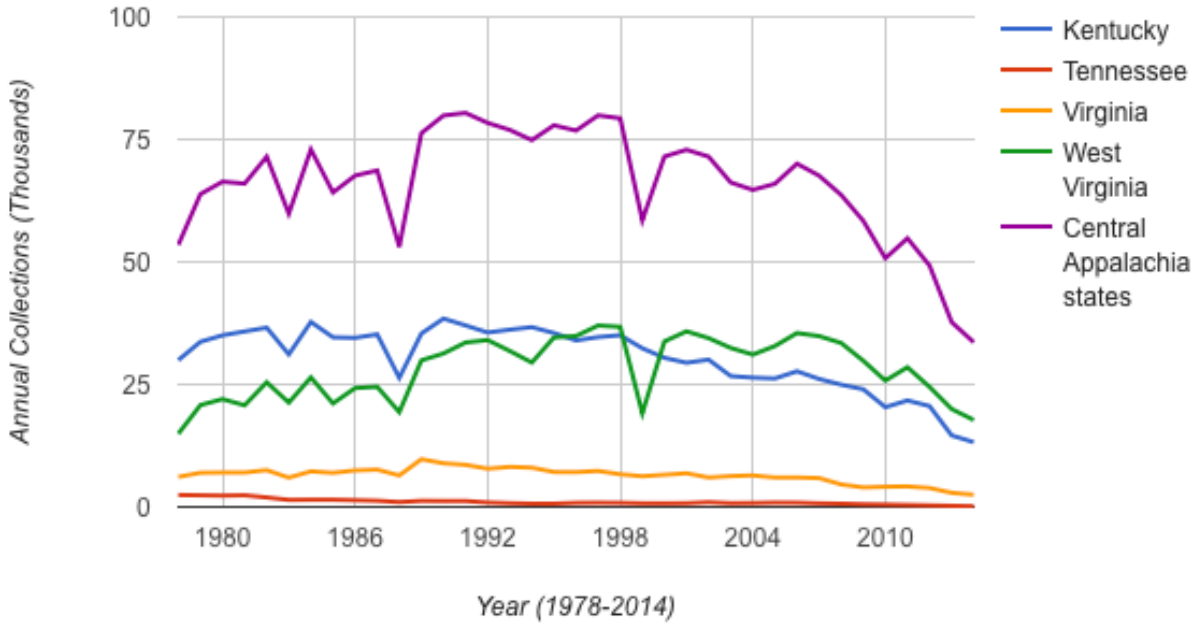
Over the lifetime of the program, the Central Appalachian states, which include Kentucky, Tennessee, Virginia, and West Virginia, have contributed almost $2.5 billion in fees (roughly 27%) to the program, as of FY2014.[446] This represents roughly 27% of total fee collections. At $1.12 billion, Kentucky has contributed the most of the Central Appalachian states, though West Virginia isn't far behind at $1.04 billion.[447] Table 9.2 displays the cumulative collections in Central Appalachian states and the US in total, through FY2014. Kentucky and West Virginia represent the vast majority of the total Central Appalachian collections, with Virginia and Tennessee contributing only small portions. Outside Central Appalachia, Wyoming has contributed *over one-third* (36%; $3.3 billion) of the total fee collections in the US through FY2014.[448] Pennsylvania and Montana have also made noticeable contributions, at $554 million (6%) and $405 million (4%), respectively.[449]

Table 9.2[450]	Cumulative fee collections, 1978-2014, nominal	Percentage of US total fee collection, 1978-2014
Kentucky	1,124,100,661.74	12.44
Tennessee	38,710,921.69	0.43
Virginia	238,470,066.54	2.64
West Virginia	1,044,066,994.42	11.55
Central Appalachian states, total	2,445,348,644.39	27.06
US, total	9,037,736,607.66	100.00

[446] "AML Fee Collections," FOIA claim with OSMRE, November 2014; These fee collection values include collections that were made outside the official Central Appalachian region as designated by the Appalachian Regional Commission in the states Tennessee, Kentucky, and Virginia. For example, these values include collections that were made in Western Kentucky, which falls outside of Central Appalachia. Hence, these collections are those from "Central Appalachian states" not strictly "Central Appalachia."
[447] "AML Fee Collections," FOIA claim with OSMRE, November 2014
[448] Ibid.
[449] Ibid.
[450] Ibid.

Figure 9.3 shows annual nominal fee collections in Central Appalachian states over time.[451] In less than a decade, from FY2006 through FY2014, nominal collections in Central Appalachian states fell by 52%.[452] FY2014 collections in Central Appalachian states were only 42% of their nominal $80.4 million peak in FY1991.[453]

Figure 9.3 AML Fee Collections, Central Appalachian states, nominal



[451] "AML Fee Collections," FOIA claim with OSMRE, November 2014
[452] Ibid.; (70047.99904-33604.9902)/70047.99904= 0.52
[453] Ibid.; (33604.9902/80405.3797)= 0.4179

Appendix 5.2 History of Total (Nominal) AML grants to States and Tribes

States and tribes began receiving AML grants in 1979, a couple years after the program was established by Congress. Figure 9.4 shows the total AML grants to states and tribes across the nation from 1979 through 2015.[454] For the first 17 years of the program, there were only a couple sub-funds. Starting in 1996 eligible states and tribes began receiving Historic Coal grants, and 2008 was the first year that eligible programs began receiving Prior Balance Replacement grants and Certified In Lieu grants. Though the amount of funds ensured through the Minimum Program Make-Up Funds has changed over the years, the sub-fund has been in existence throughout the entire life of the AML program. During the first few years of the program's existence, payments to states and tribes gradually gained speed as AML programs were established across the country. Some programs received very little in AML funding in the beginning, in part because federal OSMRE assumed responsibility for much reclamation during that period.

Figure 9.4 demonstrates the relative peak of nominal AML funding in FY1984-85. Because the creation of Historic Coal grants only modified the distribution of AML funding and did not increase the total pie of AML funding, distributions were stable from the mid-1980s through the mid-2000s, when they grew sharply because of the influx of general treasury funds to finance Certified In Lieu grants and Prior Balance Replacement funds.

Total nominal AML funding has fallen since a FY2012 apex of $485 million due to a number of factors, including a fall in payments to Certified programs and effects from federal sequestration and declining coal production (and thus fewer AML fees).[455] FY2015 nominal funding is approximately what it was during the relative peak of the mid-1980s, however, we can see a clear downward trend of the past few years that we expect to continue into the future.

[454] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; NOTE: funding data on all historical distributions of AML funding does not exist, according to officials at OSMRE. Thus, *the funding data used in this essay—especially data from older years—and referred to as AML "distributions" may actually be "net obligations"* of AML funding to states and tribes for a given year, because historic data on net obligations of AML funding has been archived at OSMRE. The difference in a state's distribution and net obligation may vary. It is rare for the difference between the two figures to be more than marginal, though it is possible.

[455] Ibid.

Figure 9.4 Total AML Distribution to States and Tribes, nominal

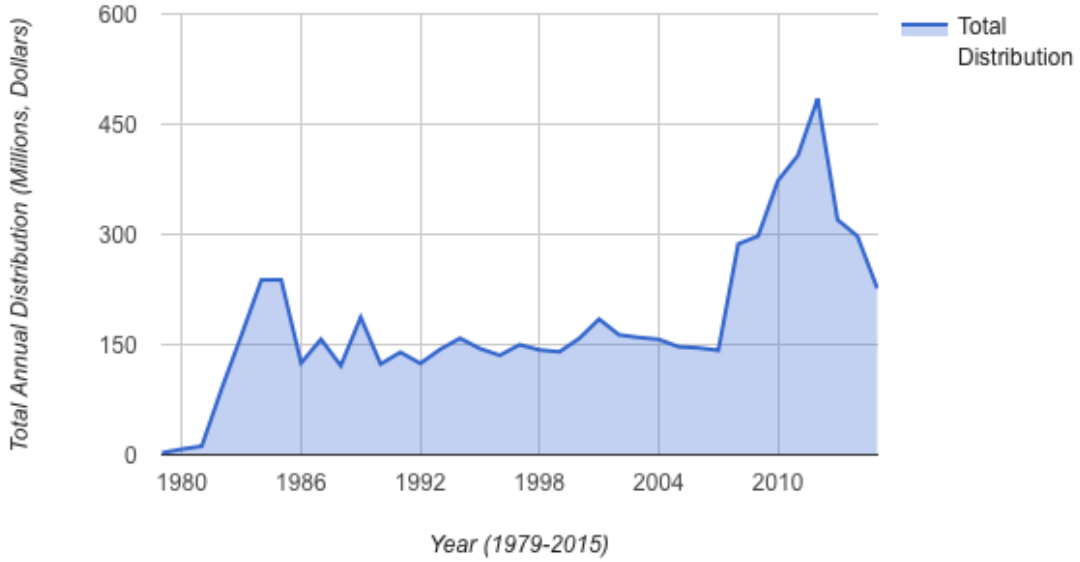


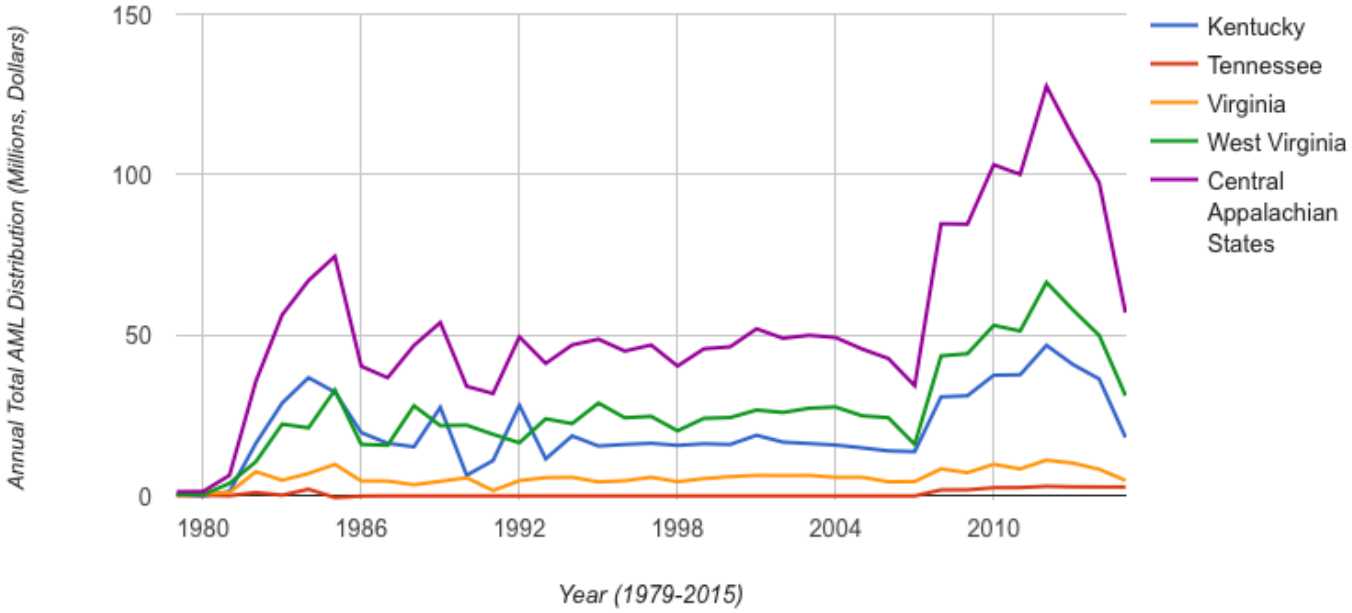
Figure 9.5 shows that the total nominal AML distribution to Central Appalachian states peaked in 2012 but has since sharply declined.[456] AML grants to West Virginia were relatively stable around $24 million until 2008 when they shot up significantly. Kentucky's AML grants were fairly volatile until the early 1990s when they became more stable at around $16 million. Prior to the 1990s, Kentucky and West Virginia often traded places from year to year in terms of which state received the larger AML grant.

Virginia's AML funding has been relatively stable throughout the entirety of the program at around $5 million in AML funds, increasing to around $10 million dollars for the few years surrounding 2010. Tennessee's funding has been lower—at or around zero. Context is important here though. Tennessee did not receive any AML funding starting in 1987 when the state lost primacy with OSMRE.[457] This continued for twenty years—until 2008—when Tennessee and Missouri acquired statutory exemptions in the AML reauthorization. Tennessee's AML program gained approval from OSMRE, and they began receiving AML funding. Unlike the other Central Appalachian states, the state of Tennessee still does not have primacy over its SMCRA regulatory, though it does have an approved AML program.

In FY2015, Central Appalachian states received $57 million in AML funding, though that value is on a downward trend.

[456] Ibid.
[457] Under the SMCRA, a state or tribe can gain "primacy," or bureaucratic authority, to administer SMCRA programs from OSMRE.

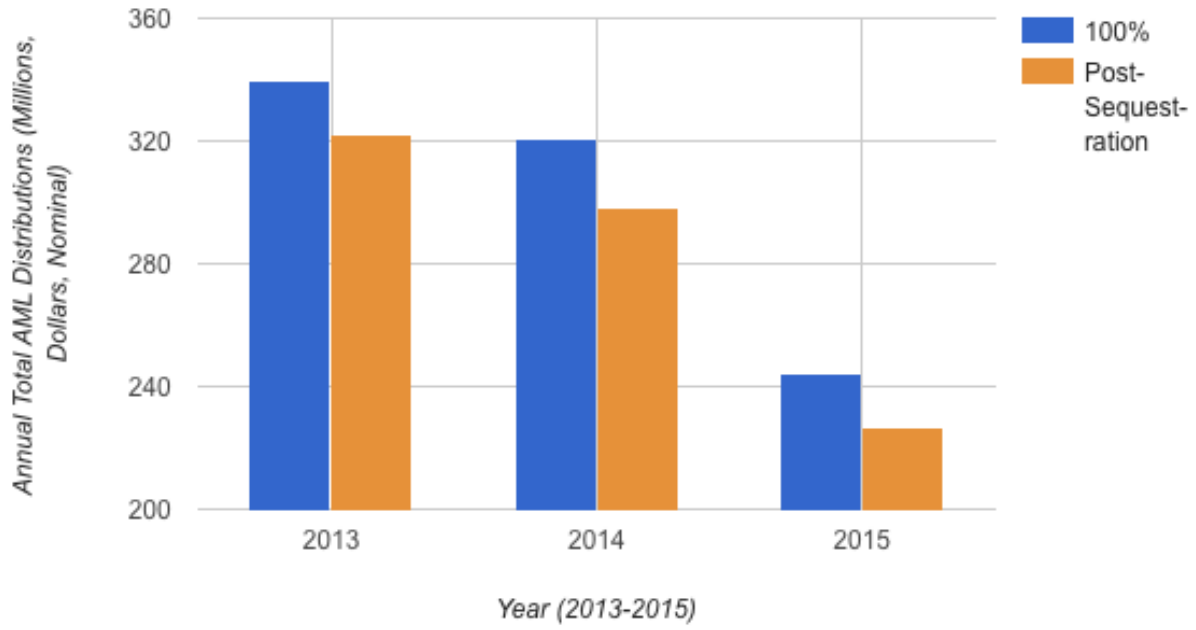
Figure 9.5 Total AML Distribution to Central Appalachian States, nominal



Appendix 5.3 Annual AML Distributions Pre- and Post-Sequestration

This figure is based on the same data cited in section 5.3.B of this paper.

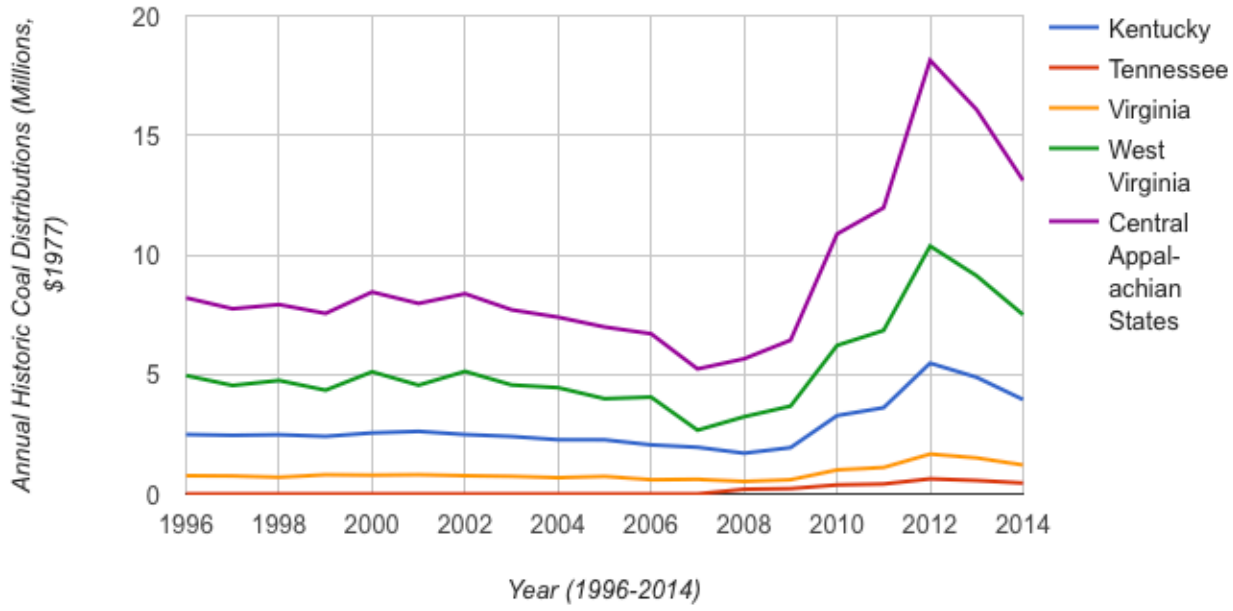
Figure 9.6 Annual AML Distributions Pre- and Post-Sequestration



Appendix 5.4 Historic Coal Share Distributions, Central Appalachian States, real

Figure 9.7 shows the real distributions to Central Appalachian states through the Historic Coal sub-fund.[458] Total Historic Coal distributions to Central Appalachian states in FY2014 were about 60% larger than at the inception of the program in FY1996.[459] These distributions were relatively stable until FY2006 when they underwent a slight decline before rising to a FY2012 peak that was over double the FY1996 value. Because the historic coal percentages are (relatively) static from year to year, West Virginia always receives the largest distribution among Central Appalachian states, with Kentucky receiving approximately half of West Virginia's allocation. The regional fall in Historic Coal grants reflects the recent national trend. As of FY2015, Central Appalachian states have received a cumulative total of $502,310,922 in Historic Coal funding.[460] The region received $40,296,386 in FY2015.[461]

Figure 9.7 Historic Coal Share Distributions, Central Appalachian States, real



[458] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014
[459] 13,111,794.36-8,202,693.59)/8,202,693.59
[460] Ibid.; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.
[461] United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. Fiscal Year 2015 Grant Distribution. US Department of the Interior, Web. 7 July 2015.

Appendix 5.5 History of Federal Expenditure Share Distributions

Figure 9.8 shows the history of Federal Expenditure Share distributions to states and tribes, in both nominal and real terms.[462] It's important to be clear that the 20% Federal Expenditure Share includes a variety of programs financed by OSMRE. Of that 20%, *a portion is distributed to states ands tribes*, which are called the "Federal Expenditure Share distributions." Note then that a portion of the Federal Expenditure Share is *not* disbursed to states and tribes and is instead utilized by OSMRE to finance various activities such as administrative costs. Over the years, the programs and activities financed through Federal Expenditure distributions has varied with changes to the AML program. The primary distribution that is currently financed by the Federal Expenditure Share is the Minimum Make-Up sub-fund. In the past, emergency AML funding was distributed to state and tribal programs through the Federal Expenditure share, as was funding for the Appalachian Clean Streams Initiative.

As Figure 9.8 illustrates, in FY1996 Historic Coal grants were introduced and were funded with fee collections that had been distributed through the Federal Expenditure Share.[463] The precipitous drop from FY1995 to FY1996 reflects this statutory change. Some older AML documents refer to the "Federal Share" as the Historic Coal distributions plus the Federal Expenditure distributions.[464] Figure 9.8 does not include Historic Coal distributions. It only represents annual payments made to states and tribes through the Federal Expenditure Share of AML funding, used to finance a variety of initiatives and activities. The volatility through 1995 can perhaps be explained by the annual fluctuations in the need for emergency AML funding or Minimum Program need. While Federal Expenditure distributions are only a fraction of what they once were in the early 1980s, this is explained by a statutory shift in these moneys to other sub-funds under the AML program. As of FY2015, a cumulative total of $1,158,590,375 have been distributed to states and tribes through Federal Expenditure Distributions, and the FY2015 Federal Expenditure payments equaled $17,909,574.[465]

[462] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[463] "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[464] See, for example: "Annual Allocations and Appropriations," FOIA claim with OSMRE, November 2014; United States. Department of the Interior. Office of Surface Mining Reclamation and Enforcement. *Fiscal Year 2015 Grant Distribution*. US Department of the Interior, Web. 7 July 2015.
[465] Ibid.

Figure 9.8 National Federal Expenditure Share Distribution, Nominal and Real