

Promoting Renewable Energy Development on Reclaimed Mine Lands: State Implementation of the Surface Mining Control and Reclamation Act



Located near Garrett, Pennsylvania, the 10.4-megawatt Green Mountain Wind Farm is owned and operated by National Wind Power. “Green Mountain Energy company purchases the output to serve its retail customers in the competitive deregulated electric markets of Pennsylvania and New Jersey. The land on which the turbines sit was previously strip-mined for coal and has been reclaimed and is now farmed” ([Green Mountain Energy Company/NREL 09698](#)).

Enacted in 1977, [Title V of the Surface Mining Control and Reclamation Act \(SMCRA\)](#) authorized the development of reclamation requirements, including land and water restoration requirements, for coal mining operations initiated after 1977.¹ The Act applies to the surface impacts of both surface and underground mining operations, prohibits mining prior to obtaining a permit, and sets out the requirements of that permit, which include the creation of a reclamation plan (Larson 2020).² [SMCRA Section 1258](#) establishes reclamation plan requirements and authorizes the implementing authority (a state or the Office of Surface Mining Reclamation and Enforcement) to set “the level of detail of information needed to meet the reclamation plan requirements” (Larson 2020, p. 9). In general, reclamation plans must detail how the land within the permit area “will be returned to a land use capable of supporting the uses that it was capable of supporting prior to [the onset of] any mining operations” (Larson 2020, p. i). More specifically, Section 1258 requires that reclamation plans describe the condition of the land prior to the commencement of any mining (including historical mining operations) and the capability of the land to “support a variety of uses;” the proposed use of the land following reclamation, which should include a discussion of the capability of the land to support a variety of alternative uses;³ and the relationship of the proposed use “to existing land use policies and plans.”

SMCRA authorizes separate standards, or variances, when returning land to its pre-mining use is not technically possible, as is often the case for mountaintop removal or steep slope mining operations (Larson 2020). Specifically,

¹ The Abandoned Mine Lands program is authorized by Title IV of SMCRA to reclaim lands impacted by mining operations undertaken prior to 1977, when no federal or state reclamation requirements existed (Larson 2020).

² Larson, L.N. 2020. Reclamation of Coal Mining Operations: Select Issues and Legislation. Congressional Research Service: R46610. Available: <https://www.everycrsreport.com/reports/R46610.html>

³ The different types of land uses are outlined here: <https://www.osmre.gov/resources/glossary.shtm#l>

[Sections 1265c and d](#) allow exceptions to the original contour restoration requirements when an operator requests a variance and when reclamation will render the land “suitable for an industrial, commercial, residential, or public use (including recreational facilities)” and “the potential use of the affected land is deemed to constitute an equal or better economic or public use.” All other environmental requirements must be met by reclamation plans receiving a variance.

[SMCRA Section 1301](#) authorizes experimental mining and reclamation practices “in order to encourage advances in mining and reclamation practices or to allow post-mining land use for industrial, commercial, residential, or public use (including recreational facilities).” State and federal authorities can authorize “departures in individual cases on an experimental basis from the environmental protection performance standards ... if (i) the experimental practices are potentially more or at least as environmentally protective, during and after mining operations, as those required by promulgated standards; (ii) the mining operations approved for particular land-use or other purposes are not larger or more numerous than necessary to determine the effectiveness and economic feasibility of the experimental practices; and (iii) the experimental practices do not reduce the protection afforded public health and safety below that provided by promulgated standards.”

[SMCRA Section 1253](#) allows states to seek primacy under which a state will be the lead authority in issuing and enforcing coal mine permits, including reclamation requirements, in its jurisdiction (Larson 2020). For a state to obtain primacy, it must demonstrate that its laws and regulations are at least as stringent as the federal standards and that it has the resources necessary to enforce those requirements.⁴ [SMCRA Section 1255](#) authorizes states to promulgate regulations that are more stringent than the federal requirements (Larson 2020).

State Implementation of SMCRA

CNEE evaluated SMCRA implementing statute and administrative code in the 23 states with primacy and active coal mining.⁵ We found that most states’ statutes adopt the federal language nearly verbatim, while a few states adopt the federal language by reference and direct the implementing state agency to develop regulations that comply with SMCRA’s requirements.⁶ In evaluating and comparing state implementation of SMCRA (through statute and administrative code), we found four areas where implementing language might be amended to encourage the development of renewable energy resources and associated transmission infrastructure on reclaimed coal mine lands.⁷

1. Amend land use definitions to include renewable energy and transmission.

When state statute and/or code defines post-mining land uses, include “renewable energy and transmission” as an industrial land use. This, as discussed below, will also promote the development of these resources on mine lands receiving a variance from original contour requirements.

- **Examples:** Colorado and a handful of other states define “industrial or commercial” land use as including land used for petroleum refining. New Mexico defines “heavy industry” as a land use that includes powerplants and defines a “public service” land use as including “major transmission lines, major pipelines, ...underground and surface utilities and other servicing structures and appurtenances” ([New Mexico Administrative Code 19.8.36.C](#)).⁸ West Virginia also includes power plants in its definition of a heavy industry land use, and allows “homesteading” as a postmining land use which includes the

⁴ Section 705 of SMCRA authorizes the Office of Surface Mining Reclamation and Enforcement to issue regulatory grants to assist primacy states in meeting their regulatory requirements.

⁵ This excluded Iowa, which has primacy but does not have active coal mining operations.

⁶ States adopting by reference are noted in table 2 below.

⁷ Table 2 below provides links and citations to the areas of state code and statute where these changes might be made in the 23 primacy states CNEE evaluated.

⁸ Other states simply define industrial land use as land used for “the extraction or transformation of materials for fabrication of products, wholesaling of products or for long-term storage of products” (see: [Code of Colorado Regulations 407-2.71\(f\)](#)).

development of electric service to serve a residential community built on the site ([West Virginia Administrative Code 38-2-7-7.2.a and 7.5](#)).

2. *Amend reclamation plan requirements to include renewable energy and transmission.*

Reclamation plans are required by state and federal authorities to include a “a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses.” In general, these alternative uses are defined as agricultural, industrial/commercial, recreational, and residential uses. Adding renewable energy and transmission facilities to this list might encourage their development on reclaimed mine lands.

- Examples: Pennsylvania promotes the use of bioenergy crops for revegetation at reclaimed mine lands: “To the extent consistent with this act, the department shall encourage and promote the use of switchgrass, camelina, canola and other bioenergy crops for the revegetation of lands affected by surface mining activities and the land so used shall be considered to be cropland for post-mining land use purposes” ([Pennsylvania Statutes §52-1396.4\(a\)\(2\)\(c\)](#)). West Virginia encourages the development of renewable and alternative energy on reclaimed mine sites by explicitly including these as post-mining land uses in statute. Reclamation plans must include “a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, including, but not limited to, renewable and alternative energy uses ...” ([West Virginia Code §22-3-10\(a\)\(3\)](#)).

3. *Authorize renewable energy and transmission development as an experimental practice.*

Experimental mining and reclamation practices are authorized by SMCRA and state implementing statutes and codes to “encourage advances in mining and reclamation practices or to allow post-mining land use for industrial, commercial, residential, or public use (including recreational facilities)” ([Title 30 U.S. Code Chapter 25\(VII\) §1301](#)). State and federal authorities can authorize variances in reclamation requirements if “the experimental practices are potentially more or at least as environmentally protective, during and after mining operations, as those required by promulgated standards” ([Title 30 U.S. Code Chapter 25\(VII\) §1301](#)). States might explicitly include renewable energy development and transmission as an approved experimental reclamation practice, or as discussed above, amend their definition of industrial land use to include renewable energy and transmission.

- Example: While not explicitly defined as an experimental reclamation practice, Kentucky provides an exemption from the requirement that the reclamation plan include a plan to “permanently remove” everything (poles, wires, etc.) related to electric distribution in the permit area when: “(a) The electrical distribution installations are being used or will be used by a local distribution entity to provide electrical service to persons other than the permittee at the permit area; or (b) The cabinet specifically has approved the retention of the electrical distribution installations to facilitate the approved post-mining land use for the permit in the reclamation plan.” ([Kentucky Revised Statutes §350.090](#)).

4. *Authorize renewable energy and transmission development as a proposed use that can qualify operators for receiving a variance under original contour requirements for mountaintop removal and steep slope mining operations.*

SMCRA and state implementing authorities authorize variances from the requirement to return lands to their original contour if the reclamation will render the land “suitable for an industrial, commercial, residential, or public use (including recreational facilities)” and “the potential use of the affected land is deemed to constitute an equal or better economic or public use.” Here again, states might amend their definition of industrial land use to include renewable energy and transmission. States might also add renewable energy and transmission development to the definition of “better economic or public use” or “higher and better public use.”

- **Example:** West Virginia authorizes variances from the requirement to return lands to the original contour if the reclamation will render the land capable of supporting alternative uses including industrial and commercial uses, forestry, and “homesteading,” which includes the development of electric service to serve a residential community built on the site ([West Virginia Administrative Code 38-2-7-7.5](#)). Bio-fuel cropland is also an approved postmining land use if there is a reasonable likelihood of crop production and the use of the land for such production does not threaten the environment or public health ([West Virginia Administrative Code 38-2-7-7.8](#)).

Table 1. Recent Legislation Promoting Renewable Energy Siting on Reclaimed Mine Lands and Brownfields – Not SMCRA Implementing Statute

State	Bill Number	Summary
Illinois	SB 21-2408	Omnibus bill. Declares redevelopment of the sites of former coal-fired electric generating units with renewable energy generation and energy storage is in the public interest. Directs the Illinois Power Agency to procure at least 3% of the 45 million RECs it is required to procure by 2030 from brownfield site PV projects, include PV projects located on reclaimed mine lands.
Maryland	SB 20-281	Waives certain application fees for the Voluntary Cleanup Program if the eligible property will be used to generate clean or renewable energy and creates a tax credit to incentivize public-private partnerships that develop clean and renewable energy projects on certain locations including rooftops, reclaimed mines, and superfund sites.
Virginia	HB 20-1133	Declares that the construction or purchase by a public utility prior to January 1, 2024, of one or more solar or wind generation facilities located on a previously developed project site (including brownfields, parcels previously used for R/C/I purpose, parking lots, mines/quarries) in the Commonwealth having in the aggregate a rated capacity that does not exceed 200 megawatts, or the purchase by a public utility of energy, capacity, and environmental attributes from such solar facilities owned by persons other than a public utility, is in the public interest.
West Virginia	SB 20-583	Allows utilities to construct or purchase and sell the output of renewable energy and energy storage facilities built at “eligible sites” to residential, commercial, or industrial customers through a renewable energy contract or tariff. Defines “eligible site” as a site that has previously been used for “electric generation, industrial, manufacturing or mining operations, including, but not limited to, brownfields, closed landfills, hazardous waste sites, former industrial sites, and former mining sites.”

Table 2. State SMCRA Implementing Authorities: Definitions, Postmining Land Uses, Experimental Practices and Variances from Original Contour Requirements

SMCRA Primacy State ⁹	Definitions: Land Uses	Reclamation Plans: Postmining Land Uses	Experimental Mining and Reclamation	Mountaintop Removal – Variances from Original Contour	Steep Slope Mining – Variances from Original Contour
Alabama	Code: 880-X-2A-06 Statute: n/a	Code: 880-X-8F-10 Statute: 9-16-84	Code: 880-X-8J-04 Statute: 9-16-98	Code: 880-X-8J-05 Statute: 9-16-90(c)	Code: 880-X-8J-06 Statute: 9-16-90(c)
Alaska	Code: 11 AAC 90.911 Statute directs the Department of Natural Resources to develop regulations consistent with federal SMCRA requirements.	Code: 11 AAC 90.087	Code: 11 AAC 90.153	Code: 11 AAC 90.141	Code: 11 AAC 90.145
Arkansas	Code: n/a Statute directs the DEQ to develop regulations consistent with federal SMCRA requirements.	Code: R20 - 780.23	Code: R20 - 785.13	Code: R20 - 785.14	Code: R20 - 785.16
Colorado	Code: 2 CCR 407-2.1.04(71) Statute: n/a	Code: 2 CCR 407-2.05.5 Statute: 34-33-111(1)(c)	Code: 2 CCR 407-2.06.2 Statute: 34-33-134	Code: 2 CCR 407-2.06.3 Statute: 34-33-120(3)	Code: 2 CCR 407-2.06.4 Statute: 34-33-120(4)
Illinois	Code: 62-1701 Statute: n/a	Code: 62-1780.23(b) Statute: 225 ILCS 715/5(e)(14)	Code: 1785.13 Statute: n/a	Code: 1785.14(c) Statute: n/a	Code: 1785.16 Statute: n/a
Indiana	Code: 312 IAC 25-1 Statute: n/a	Code: 312 IAC 25-4-48 Statute: 14-34-3-12	Code: 312 IAC 25-4-99 Statute: 14-34-3-13	Code: n/a Statute: 14-34-10-5	Code: 312 IAC 25-4-101 Statute: 14-34-10-5
Kansas	Code adopts federal rules by reference. Statute directs the Department of Health and Environment to draft regulations consistent with federal SMCRA requirements.				
Kentucky ¹⁰	Code: 405 KAR 8.001 Statute: n/a	Code: 405 KAR 16.210 Statute: KRS 350.405	Code: 405 KAR 7.060 Statute: n/a	Code: 405 KAR 20.050 Statute: KRS 350.450	Code: 405 KAR 20.060 Statute: n/a
Louisiana	Code: 43-105 Statute: n/a	Code: 43-2723 Statute: 908(A)(3)	Code: 43-2901 Statute: 929	Code: n/a Statute: 915(C)	Code: 43-2905 Statute: 915(C)
Maryland	Code: 26.20.01.02 Statute: n/a	Code: 26.20.30.01 Statute: Env. 15-822	Code: 26.20.03.02 Statute: n/a	Code: 26.20.03.03 Statute: n/a	Code: n/a Statute: n/a
Mississippi	Code: 11-8-2.105 Statute: n/a	Code: 11-8-2.2723 Statute: 53-7-31	Code: 11-8-2.2901 Statute: n/a	Code: 11-8-2.5391(k) Statute: n/a	Code: 11-8-2.2905 Statute: n/a
Missouri	Code: 10 CSR 40-8.100 Statute: n/a	Code: 10 CSR 40-3.130 Statute: XXIX-444.825	Code adopts federal rules by reference. Statute: n/a		

⁹ State names are linked to the state agency responsible for implementing SMCRA.

¹⁰ [KRS Chapter 350.097](#) directs the Energy and Environment Cabinet “to develop a plan in conjunction with the Division of Conservation to encourage coal licensees to locate and protect pollinator sites on reclamation sites and to use high-value trees and shrubs to aid in pollen transfer.”

SMCRA Primacy State⁹	Definitions: Land Uses	Reclamation Plans: Postmining Land Uses	Experimental Mining and Reclamation	Mountaintop Removal – Variances from Original Contour	Steep Slope Mining – Variances from Original Contour
Montana	Code: 17.24.301	Code: 17.24.762	Code: 17.24.821	Code: n/a	Code: n/a
	Statute: 82-4-203	Statute: n/a	Statute: 82-4-232.8	Statute: n/a	Statute: n/a
New Mexico	Code: 19.8.36.24	Code: 19.8.20.2075	Code: 19.8.10.1000	Code: 19.8.25.2500	Code: 19.8.26.2601
	Statute: n/a	Statute: 69-25A-12	Statute: 69-25A-33	Statute: n/a	Statute: n/a
North Dakota	Code: 69-05.2-01-02	Code: 69-05.2-23	Code: 69-05.2-27-02	Code: n/a	Code: n/a
	Statute: n/a	Statute: 38-14.1-14(2)(b)	Statute: n/a	Statute: n/a	Statute: n/a
Ohio	Code: 1501:13-1-02	Code: 1501:13-9-17	Code: 1501:13-4-12(B)	Code: 1501:13-4-12(C)	Code: 1501:13-4-12(D)
	Statute: 1513.01(P)	Statute: 1513.07	Statute: 1513.36	Statute: 1513.16(B)	Statute: 1513.16(C)
Oklahoma	Code: 460:20-3-5	Code: 460:20-27-13	Code: 460:20-33-3	Code: 460:20-33-4	Code: 460:20-33-5
	Statute: n/a	Statute: 45-745.5	Statute: 45-756	Statute: 45-756	Statute: 45-755
Pennsylvania	Code: 25.87.1	Code: 25.87.75	Code: n/a	Code: 25.87.175	Code: 25.87.175
	Statute: n/a	Statute: 52.1396.4(a)(2)(f)	Statute: n/a	Statute: 52.1396.4(a)(2)(E)	Statute: 52.1396.4(a)(2)(E)
Texas	Code: 16.1.12.3(99)	Code: 16.1.12.399	Code: 16.1.12.200	Code: n/a	Code: n/a
	Statute: n/a	Statute: 4.134.041	Statute: 4.134.024	Statute: 4.134.107	Statute: 4.134.109
Utah	Code: R645-100-200	Code: R645-301-412	Code: R645-302-210	Code: R645-302-220	Code: R645-302-230
	Statute: n/a	Statute: (see: 40-10-11) ¹¹	Statute: n/a	Statute: 40-10-17.3	Statute: 40-10-17.3
Virginia ¹²	Code: 4VAC25-130-700.5	Code: 4VAC25-130-780.23	Code: 4VAC25-130-785.13	Code: 4VAC25-130-785.14	Code: 4VAC25-130-785.15
	Statute directs the Division of Mined Land Reclamation to draft regulations consistent with federal SMCRA requirements.				
West Virginia	Code: 38-2-7-7.2	Code: 38-2-7	Code: 38-2-3-3.10	Code: 38-2-3-3.30	Code: 38-2-3-3.30
	Statute: n/a	Statute: 22-3-10	Statute: 22-3-29	Statute: 22-3-13(c)(1)	Statute: 22-3-13(c)(1)
Wyoming	Code: 020-1 Wyo. Code R.1-2(ca)	Code: 020-2 Wyo. Code R.2-6	Code: 020-9 Wyo. Code R.9-1	Code: 020-9 Wyo. Code R.9-1	Code: 020-9 Wyo. Code R.9-1
	Statute directs the DEQ to develop regulations consistent with federal SMCRA requirements.				

¹¹ The Utah Code is rather vague as to reclamation plan requirements.

¹² Enacted March 2021, [Senate Bill 1453](#) will reorganize Virginia's code and move provisions of Chapter 19, the Virginia Coal Surface Mining Control and Reclamation Act of 1979. The bill does not repeal any language related to surface mining control and reclamation.