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# SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

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POST-EFFECTIVE AMENDMENT NO. 1 TO FORM S-8 REGISTRATION STATEMENT NO. 333-190861  
POST-EFFECTIVE AMENDMENT NO. 1 TO FORM S-8 REGISTRATION STATEMENT NO. 333-156593  
POST-EFFECTIVE AMENDMENT NO. 1 TO FORM S-8 REGISTRATION STATEMENT NO. 333-32777

## UNDER THE SECURITIES ACT OF 1933

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### ARCH COAL, INC.

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction  
of incorporation or organization)

**43-0921172**  
(I.R.S. Employer  
Identification No.)

**One CityPlace Drive, Suite 300  
St. Louis, Missouri 63141**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Arch Coal, Inc. and Subsidiaries Employee Thrift Plan**  
(Full title of the plan)

**Robert G. Jones**  
**Senior Vice President—Law, General Counsel and Secretary**  
**Arch Coal, Inc.**

**One CityPlace Drive, Ste. 300  
St. Louis, Missouri 63141**  
(Name and address of agent for service)

**(314) 994-2700**  
(Telephone number, including area code, of agent for service)

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer  Accelerated filer  Non-accelerated filer  Smaller reporting company   
(Do not check if a smaller reporting company)

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### EXPLANATORY NOTE DEREGISTRATION OF SECURITIES

These Post-Effective Amendments (these "Post-Effective Amendments"), filed by Arch Coal, Inc. (the "Registrant"), deregister certain shares of the Registrant's common stock, par value \$0.01 per share (the "Common Stock"), and remaining unissued and other obligations and interests, originally registered under the following Registration Statements on Form S-8 (each, a "Registration Statement", and collectively, the "Registration Statements") filed by the Registrant with the U.S. Securities and Exchange Commission (the "Commission"):

- Registration Statement on Form S-8 (No. 333-190861), pertaining to the registration of 3,000,000 shares of Common Stock, and an indeterminate amount of plan interests, to be offered and sold pursuant to the Arch Coal, Inc. and Subsidiaries Employee Thrift Plan (the "Thrift Plan"), which was filed with the Commission on August 28, 2013.
- Registration Statement on Form S-8 (No. 333-156593), pertaining to the registration of 1,000,000 shares of Common Stock, and an indeterminate amount of plan interests, to be offered and sold pursuant to the Thrift Plan, which was filed with the Commission on January 6, 2009.
- Registration Statement on Form S-8 (No. 333-32777), pertaining to the registration of 500,000 shares of Common Stock, and additional shares of Common Stock as may be issuable pursuant to antidilution provisions, to be offered and sold pursuant to the Thrift Plan, which was filed with the Commission on August 4, 1997.

The Thrift Plan no longer offers Common Stock as an investment option. Accordingly, the Registrant hereby terminates the effectiveness of the Registration Statements and, pursuant to the undertakings contained in the Registration Statements to remove from registration by means of a post-effective amendment any of the securities that had been registered for issuance but remain unsold at the termination of the offering, the Registrant hereby removes from registration any remaining shares of Common Stock and all plan interests that were registered for issuance pursuant to the Registration Statements and that remain unsold as of the date hereof. The Registration Statements are hereby amended, as appropriate, to reflect the deregistration of such Common Stock and plan interests.

#### SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, Registrant certifies that it has reasonable grounds to believe that it meets all the requirements for filing on Form S-8 and has duly caused these Post-Effective Amendments to be signed on its behalf by the undersigned, thereunto duly authorized, in the County of St. Louis, State of Missouri, on March 9, 2016.

#### ARCH COAL, INC.

By: /s/ Robert G. Jones  
Robert G. Jones  
Senior Vice President — Law, General Counsel and Secretary

Note: No other person is required to sign these Post-Effective Amendments in reliance upon Rule 478 under the Securities Act of 1933, as amended.