

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

SCHEDULE 13G

Under the Securities Exchange Act of 1934

(Amendment No. )\*

Arch Coal, Inc.  
(Name of Issuer)

Common Stock  
(Title of Class of Securities)

039380100  
(CUSIP Number)

December 29, 2006  
(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)  
 Rule 13d-1(c)  
 Rule 13d-1(d)

\*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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1 NAMES OF REPORTING PERSONS  
I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)  
Capital Research and Management Company  
95-1411037

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS) (a)

3 SEC USE ONLY (b)

4 CITIZENSHIP OR PLACE OF ORGANIZATION

Delaware

5 SOLE VOTING POWER

3,000,000

6 SHARED VOTING POWER

NONE

NUMBER OF  
SHARES  
BENEFICIA  
L Y OWNED BY

7 SOLE DISPOSITIVE POWER

7,800,000

EACH  
REPORTING  
PERSON  
WITH:

8 SHARED DISPOSITIVE POWER

NONE

9 AGGREGATE AMOUNT BENEFICIA LLY OWNED BY EACH REPORTING PERSON

7,800,000 Beneficial ownership disclaimed pursuant to Rule 13d-4

10 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES  
(SEE INSTRUCTIONS)

11 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9

5.5%

12 TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)

IA

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SECURITIES AND EXCHANGE COMMISSION  
Washington, DC 20549

Schedule 13G  
Under the Securities Exchange Act of 1934

Amendment No.

Item 1(a) Name of Issuer:  
Arch Coal, Inc.

Item 1(b) Address of Issuer's Principal Executive Offices:  
One CityPlace Drive, Suite 300  
St Louis MO 63141

Item 2(a) Name of Person(s) Filing:  
Capital Research and Management Company

Item 2(b) Address of Principal Business Office or, if none,  
Residence:  
333 South Hope Street  
Los Angeles, CA 90071

Item 2(c) Citizenship: N/A

Item 2(d) Title of Class of Securities:  
Common Stock

Item 2(e) CUSIP Number:  
039380100

- Item 3 If this statement is filed pursuant to sections 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:
- (d)  Investment company registered under section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).
  - (e)  An investment adviser in accordance with section 240.13d-1(b)(1)(ii)(E).

Item 4 Ownership

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

See page 2

- (a) Amount beneficially owned:
- (b) Percent of class:
- (c) Number of shares as to which the person has:
- (i) Sole power to vote or to direct the vote:
- (ii) Shared power to vote or to direct the vote:
- (iii) Sole power to dispose or to direct the disposition of:
- (iv) Shared power to dispose or to direct the disposition of:

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Capital Research and Management Company, an investment adviser registered under Section 203 of the Investment Advisers Act of 1940 is deemed to be the beneficial owner of 7,800,000 shares or 5.5% of the 142,002,624 shares of Common Stock believed to be outstanding as a result of acting as investment adviser to various investment companies registered under Section 8 of the Investment Company Act of 1940.

- Item 5 Ownership of Five Percent or Less of a Class. If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following: [ ]

- Item 6 Ownership of More than Five Percent on Behalf of Another Person: N/A

- Item 7 Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company or Control Person.: N/A

- Item 8 Identification and Classification of Members of the Group: N/A

- Item 9 Notice of Dissolution of Group: N/A

- Item 10 Certification

By signing below, I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: February 6, 2007

Signature: \*Paul G. Haaga, Jr.  
Name/Title: Paul G. Haaga, Jr., Executive Vice

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\*By /s/ James P. Ryan  
James P. Ryan  
Attorney-in-fact

Signed pursuant to a Power of Attorney dated November 14, 2006 included as an Exhibit to Schedule 13F filed with the Securities and Exchange Commission by Capital Research and Management Company on November 14, 2006.

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