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## Coal Slurry Pipelines Are Ready, Willing, and Unable to Get There Student Symposium - Selected Issues Concerning Increased Coal Use.

William F. Webber

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## COAL SLURRY PIPELINES ARE READY, WILLING, AND UNABLE TO GET THERE

WILLIAM F. WEBBER

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### I. INTRODUCTION

The rapidly escalating cost of coal transportation presents a major impediment to conversion from petroleum as the nation's primary energy source.<sup>1</sup> Railroads carry two-thirds of the coal produced in the United States, and five times more than any other transportation mode.<sup>2</sup> According to the National Coal Association, 85 percent of the coal shipped by rail cannot be transported practicably by any other means.<sup>3</sup> Rail costs running

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1. See generally Powerplant and Industrial Fuel Use Act of 1978, Pub. L. No. 95-620, 92 Stat. 3289, 42 U.S.C.A. §§ 8301-8483 (West Supp. 1979) (Fuel Use Act). The Fuel Use Act forbids the use of natural gas or petroleum as a primary fuel in new electric powerplants and mandates that all existing powerplants convert to coal or other alternative energy sources by 1990. Fuel Use Act, §§ 201, 301, 42 U.S.C.A. §§ 8311, 8341 (West Supp. 1979). Coal conversion has been described as the keystone of the entire National Energy Act. See 124 CONG. REC. H6911 (daily ed. July 18, 1978) (remarks of Rep. Krueger).

2. See *Providing Certain Authorities for the Secretary of the Interior to Permit Rights-of-Way for Purposes of Certain Pipeline Transportation Systems: Hearings on H.R. 4370 Before the House Comm. on Interior and Insular Affairs, 96th Cong., 1st Sess. (1979)* (statement of Mr. Bagge, President, National Coal Association) [hereinafter cited as *1979 Coal Pipeline Hearings*].

3. NATIONAL COAL ASSOCIATION, SURVEY OF CAPTIVE COAL SHIPMENTS BY RAIL FOR 1977, at 1 (1979), reprinted in *1979 Coal Pipeline Hearings*, supra note 2. The survey defines "captivity" as the presence of two conditions:

- (1) a single rail carrier represents the only present transportation alternative for the entire shipment, or a substantial share of the route, for the shipment in question; and
- (2) the "next best" future transportation alternative (other rail carrier, motor or

over twice the cost of the coal itself<sup>4</sup> are contributing to a retreat from conversion plans in both government<sup>5</sup> and private sectors.<sup>6</sup> Although the thrust of national policy is towards energy self-sufficiency,<sup>7</sup> coal burning utilities are exploring the feasibility of importing coal from Africa and Australia.<sup>8</sup> Transporting domestic coal by pipeline can provide a more sensible alternative than shipping imported coal by ocean freighter.

The first coal pipeline was built in response to high railroad rates but ceased operation six years later when the railroad reduced rates by 45 percent.<sup>9</sup> Only one pipeline is presently in operation—a 273 mile line from Arizona to Nevada.<sup>10</sup> At least seven coal slurry pipelines are in varying stages of planning and development,<sup>11</sup> but all await water allocation, ease-

water carrier) is one which would cause injury to the shipper's competitive position if forced to adopt that alternative.

*Id.* at 3. Over 98 percent of rail shipments of coal mined west of the Mississippi River are captive. *Id.* at 5.

4. See 1979 *Coal Pipeline Hearings*, *supra* note 2 (statement of Dr. Lay, Chairman of the Board, Slurry Transport Association); *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 163 (1978).

5. In recognition of escalating gas prices and in anticipation of national legislation, Texas began a program designed to eliminate the use of natural gas as a boiler fuel by Texas utilities. See Tex. R.R. Comm'n, Rule 051.04.03.018 (1975) (repealed 1979). Because of the high rail tariffs being exacted from Texas coal shippers, the Railroad Commission recently abandoned the program. See 4 Tex. Reg. 1667 (1979). The Railroad Commission stated it "intended by this repeal that Texas energy users be allowed to make decisions on the use of energy without having sacrifices imposed upon them that are greater than those imposed upon energy users outside of Texas." *Id.* at 1667.

6. See HOUSE COMM. ON INTERIOR AND INSULAR AFFAIRS, COAL PIPELINE ACT OF 1979, H.R. REP. NO. 96-692 Part 1, 96th Cong., 1st Sess. 15 (1979) [hereinafter cited as H.R. REP. NO. 96-962]. The Celanese Chemical Company converted its Kings Mill, Texas plant at a \$70 million cost, but has suspended plans to convert three other facilities because of high rail tariffs. H.R. REP. NO. 96-692 *supra*, at 15.

7. See Address by President Carter to the Nation (July 15, 1979), 14 WEEKLY COMP. OF PRES. DOC. 1235, 1239 (July 20, 1979).

8. See generally H.R. REP. NO. 96-692, *supra* note 6, at 15.

9. GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 81 (1977). In 1957 the first coal slurry pipeline was completed from Cadiz, Ohio to Cleveland after the railroad announced a rate increase from \$2.63 to \$3.47 per ton. The pipeline was deactivated in 1963 when the railroad developed unit train operations and reduced coal rates to \$1.88 per ton. See generally *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 505-08 (1978).

10. See UNITED STATES DEPARTMENT OF TRANSPORTATION, A PROSPECTUS FOR CHANGE IN THE FREIGHT RAILROAD INDUSTRY 108 (1978). See generally *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 152-53 (1978).

11. See H.R. REP. NO. 96-692, *supra* note 6, at 16. For a recent summary of the status of each proposed pipeline, see Sumpter, *Outlook Improving for U.S. Coal Slurry Lines*, OIL & GAS J., Sept. 10, 1979, at 91-95.

ments, or both before construction can begin. Because conventional coal pipelines are highly water consumptive, requiring a ton of water to transport a ton of coal,<sup>12</sup> extensive opposition to their development has arisen in coal producing, arid western states.<sup>13</sup> Proposed slurry pipelines are being hindered also by the railroads, who, fearing loss of coal traffic,<sup>14</sup> refuse to grant rights-of-way across railroad lands.<sup>15</sup>

Federal legislation that would have granted coal pipelines eminent domain powers was defeated in 1978.<sup>16</sup> Although the bill was designed only to provide pipelines with the means of obtaining easements, opponents contended federal determination that a coal pipeline is in the public interest could be used to force the states to supply water, thus compromising the power of states to regulate water resources.<sup>17</sup> Further, it was argued coal pipelines could undermine the national railroad revitalization effort.<sup>18</sup> In 1977 Congress ordered the Office of Technology Assessment (OTA)<sup>19</sup> to prepare a report on coal slurry pipelines.<sup>20</sup> This report is relied upon extensively by both sides of the slurry issue<sup>21</sup> and contributed to the defeat of

12. See GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 99 (1977).

13. See generally *Water Availability for Energy Development in the West: Hearings Before the Subcomm. on Energy Production and Supply of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 44-50 (1978).

14. See *Coal Pipeline Act of 1978: Hearings on H.R. 1609 Before the Subcomm. on Surface Transportation of the House Comm. on Public Works and Transportation*, 95th Cong., 2d Sess. 115-16 (1978) (remarks of Mr. Dempsey, President, Association of American Railroads) (loss of business to slurry lines would be "catastrophic" for all rail industry).

15. The proposed coal pipeline from Gillette, Wyoming to Arkansas, for example, will cross under the tracks of nine railroads at forty-eight crossings; only one railroad has been willing to grant right-of-way to the pipeline. See 122 CONG. REC. 22455 (1976) (remarks of Rep. Baucus).

16. 124 CONG. REC. H6971-72 (daily ed. July 19, 1978). A number of states already have passed statutes granting eminent domain power to coal pipelines. See 1979 Fla. Sess. Law Serv. ch. 79-236; LA. REV. STAT. ANN. §§ 30:721-723 (West Supp. 1980); MONT. REV. CODES ANN. § 8-203 (1968); N.C. GEN. STAT. 62-190 (1975); N.D. CENT. CODE § 49-19-12 (1978); OHIO REV. CODE ANN. § 1723.01 (Baldwin 1971); OKLA. STAT. ANN. tit. 27, § 7.2 (West Supp. 1979); TEX. NAT. RES. CODE ANN. §§ 111.301-305 (Vernon 1978); UTAH CODE ANN. § 78-34-1 (1977); W. VA. CODE § 54-1-2 (West Supp. 1979).

17. Virtually the entire debate on the day of the full House vote on H.R. 1609 centered on the issue of loss of state control of water. See generally 124 CONG. REC. H6951-71 (daily ed. July 19, 1978).

18. See Lorentzen, *Coal Slurry Pipelines: a Railroad Perspective*, 10 TRANSP. L.J. 153, 159, 169 (1978).

19. The Office of Technology Assessment was created by Congress to provide unbiased information to be used, when appropriate, in legislative consideration of matters before Congress. See Technology Assessment Act of 1972, 2 U.S.C. §§ 471-481 (1976).

20. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES, at iii, v (1978).

21. See, e.g., 1979 *Coal Pipeline Hearings*, *supra* note 2 (statement of Mr. Cribben, Director of Research and Legislation, United Ass'n of Journeymen and Apprentices of the

the Coal Pipeline Act of 1978. Similar legislation, H.R. 4370,<sup>22</sup> is now under consideration by the 96th Congress. Despite alterations in technical, economic, and legal premises, the OTA report continues to be cited in the coal pipeline debate.<sup>23</sup>

## II. THE COAL SLURRY PIPELINE VERSUS THE UNIT TRAIN

Proposed coal pipelines would compete primarily in the high volume, long-distance coal transportation market now dominated by the unit train.<sup>24</sup> More a system than a technology, the typical unit train, consisting of six locomotives pulling approximately 100 permanently-coupled hopper cars,<sup>25</sup> shuttles continuously between the coal producing area and the ship-

Plumbing and Pipefitting Industry of the United States and Canada) (OTA study cited for finding that added pipeline construction would offset rail labor loss if coal pipeline implemented); *1979 Coal Pipeline Hearings*, *supra* note 2 (statement of Mr. Dempsey, President, Association of American Railroads) (OTA study cited for finding that railroads can handle added traffic from coal conversion); *1979 Coal Pipeline Hearings*, *supra* note 2 (statement of Dr. Lay, Chairman of the Board, Slurry Transport Association) (OTA study cited for finding that slurry cheaper than rail for Tennessee to Florida route).

22. Coal Pipeline Act of 1979, H.R. 4370, 96th Cong., 1st Sess. (1979) (Eckhardt-Wright-Udall-Johnson-Kazan bill); *cf.* H.R. REP. NO. 96-692, *supra* note 6, at 1-11 (amended text of Act). As amended, H.R. 4370 empowers the Secretary of the Interior to grant rights-of-way across most federal lands. *See* H.R. 4370 § 102, 96th Cong., 1st Sess. (1979) *in* H.R. REP. NO. 96-692, *supra* note 6, at 2. Additionally, the Secretary may issue a certificate of public convenience and necessity for a coal pipeline if he determines that the pipeline is in the national interest and will serve as a common carrier. *Id.* § 202(a) *in* H.R. REP. NO. 96-692, *supra* note 6, at 3-4. In determining if an applicant for a certificate is qualified, the Secretary must make findings on the impact of the pipeline on national coal conversion, the financial integrity of competing railroads, and the availability of water resources. *Id.* § 202(b) *in* H.R. REP. NO. 96-692, *supra* note 6, at 4. Certificate holders may acquire rights-of-way across private lands by exercising eminent domain power if they are unable to obtain such rights-of-way through private negotiation. *See id.* § 208 *in* H.R. REP. NO. 96-692, *supra* note 6, at 8. Certified pipelines are subject to rate regulation by the Interstate Commerce Commission. *Id.* §§ 204, 305 *in* H.R. REP. NO. 96-692, *supra* note 6, at 11. H.R. 4370 includes extensive provisions for the protection of state water laws and specifically denies certificate holders the use of eminent domain power to acquire water rights. *See id.* §§ 208(d), 302(d)(2) *in* H.R. REP. NO. 96-692, *supra* note 6, at 8, 9.

23. The OTA cost comparison of unit trains and coal pipelines, for example, assumes a \$0.35 per gallon cost for locomotive diesel fuel. *See* OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 50 (1978). The cost of diesel fuel as of September 1979 was \$0.69 per gallon. *See* UNITED STATES DEP'T OF ENERGY, MONTHLY ENERGY REVIEW 85 (Dec. 1979).

24. *See* H.R. REP. NO. 96-692, *supra* note 6, at 15.

25. Unit train hopper cars are 30 percent larger than average conventional rail cars. D. WHITE, AN ANALYSIS OF TRANSPORTATION ALTERNATIVES FOR MEETING TEXAS' INDUSTRIAL DEMAND FOR WATERN COAL THROUGH THE YEAR 2000, at 46 (1978) (Public Information Report No. 4) (Center for Energy Studies, University of Texas at Austin) [hereinafter cited as TEXAS COAL TRANSPORTATION ALTERNATIVES]. The hopper cars are equipped with rotary couplers which permit emptying without uncoupling. *See* TEXAS COAL TRANSPORTATION ALTERNATIVES *supra*, at 45 (Fig. 4.1).

pers' coal-burning facilities.<sup>26</sup> This dedicated service system, while reducing equipment assignment and switching costs of conventional rail movement, actually increases equipment utilization rates.<sup>27</sup> A unit train making weekly round-trips delivers 500,000 tons of coal per year.<sup>28</sup> Special unloading facilities are required to avoid the necessity of uncoupling hopper cars at the shipment destination,<sup>29</sup> and increased equipment utilization results in higher maintenance costs for both cars and track.<sup>30</sup> Nevertheless, the unit train can haul coal for 40 percent less than conventional rail carriage.<sup>31</sup>

Realizing these operating efficiencies, the railroad industry introduced the unit train system to compete with the first coal slurry pipeline in the United States.<sup>32</sup> Coal transportation by pipeline involves a three-step process: slurry preparation, transmission through the pipeline, and "dewatering" at the terminus.<sup>33</sup> Coal slurry is an equal measure by weight of ground coal<sup>34</sup> and water.<sup>35</sup> This mixture is held in storage tanks equipped with agitators to prevent settling, until introduced into the pipeline by displacement pumps.<sup>36</sup> Intermediate pump stations located at 50 to 150 mile intervals propel the slurry at a constant velocity of about four miles

26. For a general technical description of unit trains see OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 29-33 (1978); TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 43-48.

27. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 43.

28. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 29 (1978).

29. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 45 (Fig. 4.1); *cf.* OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 54 (Table 8) (1978) (projected capital and operational costs of hypothetical unit train loading and unloading facilities).

30. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 44.

31. TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 44.

32. See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 138 (1978) (remarks of Mr. Jennings, President, Slurry Transport Association).

33. See generally OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 27-29 (1978).

34. See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 137 (1978) (remarks of Mr. Jennings, President, Slurry Transport Association) (coal pulverized to "consistency of sugar"); OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 27 (1978) (coal ground to "maximum particle size of one-eighth inch").

35. Coal slurry can utilize non-water vehicles such as liquified carbon dioxide or methanol, but the costs of the pipeline system are considerably greater. See generally Snoek, Gandhi, & Weston, *Alternatives Are Studied for Moving Coal by Pipeline*, OIL & GAS J., Aug. 27, 1979, at 95-100. The high ash content of lignite makes it unsuitable for slurry transport. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 60.

36. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 27 (1978).

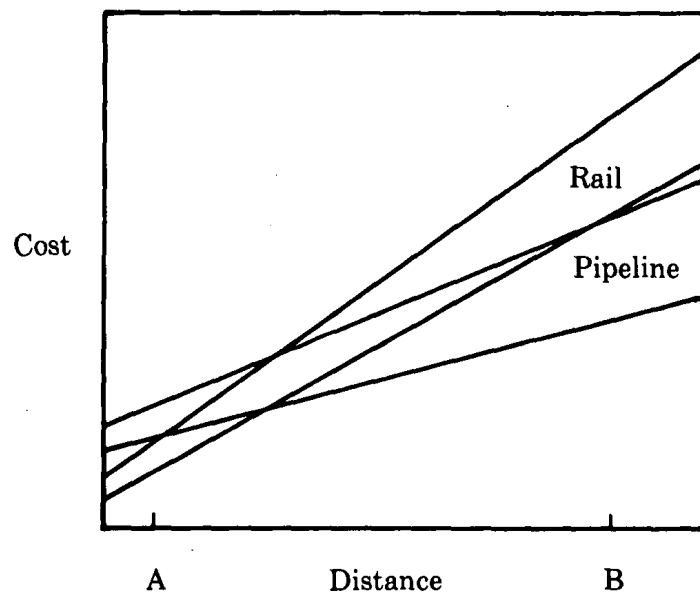
per hour.<sup>37</sup> At the terminus the slurry is again held in agitating tanks until it is centrifuged to separate the coal and water.<sup>38</sup> Once dried the coal is ready for boiler preparation.<sup>39</sup>

### III. THE ECONOMIC IMPACT OF COAL PIPELINES

#### A. Basic Economic Models of Unit Trains and Coal Pipelines

Generally the cost per ton-mile of hauling coal by unit train is constant over distance; the length of the route affects the rail cost proportionately.<sup>40</sup> Conversely, the longer a coal pipeline is, the less the transportation cost per ton-mile.<sup>41</sup> A comparative cost-effectiveness analysis, based on these functions, furnishes the finding illustrated in figure one.

Figure 1—Form of Typical Rail and Pipeline Cost Ranges for a Given Annual Tonnage<sup>42</sup>



37. *Id.* at 27. Each pump station is equipped with a dump pond in case an emergency should demand emptying a portion of the pipeline. TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 62.

38. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 28 (1978).

39. *Id.* at 28. For a discussion of the coal combustion cycle see Truitt & Abeles, *Coal-Fired Electric Generating Facilities: Impediments Under Federal Environmental Legislation*, 11 ST. MARY'S L.J. 609, 613-14 (1980).

40. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 48-49.

41. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 67. Coal pipelines also become more economical as volume increases because doubling pipeline capacity does not double cost. See GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 86 (1977).

42. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 55 (Fig. 15) (1978).

At distances less than A, the railroad provides a more economical coal transportation mode than coal pipelines; beyond distance B, coal pipelines are cheaper than unit trains.<sup>43</sup> The ton-mile cost of slurring coal decreases as distance increases because the fixed costs of slurry preparation and dewatering facilities are independent of pipeline distance.<sup>44</sup> Additionally, a major operational cost component, water, is the same regardless of the pipeline's length since the amount of water consumed is determined by the quantity of coal rather than the distance over which it is transmitted.<sup>45</sup>

The distance at which coal pipelines become cost-preferable to unit trains depends on a number of factors varying with the route.<sup>46</sup> The cost of obtaining water for slurry, for example, can be several times greater in the West than in the East.<sup>47</sup> Despite these factors, certain proposed pipelines are clearly less costly than the unit trains now delivering coal.<sup>48</sup>

### B. Coal Pipeline Impact on Railroad Revitalization

For the coal consumer the choice between coal pipelines and unit trains

43. *Id.* at 55.

44. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 67.

45. For any distance a ton of water is required to slurry a ton of coal through a conventional coal pipeline. See UNITED STATES DEPARTMENT OF TRANSPORTATION, A PROSPECTUS FOR CHANGE IN THE FREIGHT RAILROAD INDUSTRY 49 (1978). Because a coal pipeline is capital-intensive, it is relatively immune from inflation. See 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Dr. Lay, Chairman of the Board, Slurry Transport Association). While 70 percent of a coal pipeline's overall cost is capital investment, only 20 percent of a railroad's costs can be so characterized. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 70.

46. The OTA study lists the following factors as affecting the relative costs of coal pipelines and unit trains:

1. Annual volume of coal.
2. Distance to be traversed.
3. Expected rate of inflation.
4. Real interest rate.
5. Size and spacing of mines.
6. Presence of general large customers to receive coal.
7. Terrain and excavation difficulty.
8. Water availability and cost.
9. Relative costs of diesel fuel and electricity.
10. Railroad track circuitry and condition.
11. Length and speed of trains.

OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 55 (1978).

47. The OTA study projected the cost of water for a hypothetical Wyoming to Texas pipeline to be \$922 per acre-foot. Projected cost of water for a hypothetical Tennessee pipeline was only \$184 per acre-foot. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 53 (Table 8) (1978).

48. See *id.* at 15.



is based upon freight tariff rather than actual operating cost. Under the Railroad Revitalization and Regulatory Reform Act of 1976 (4-R Act),<sup>49</sup> coal-hauling rates are not necessarily correlative with actual costs.<sup>50</sup> The Interstate Commerce Commission (ICC), which regulates rail tariffs,<sup>51</sup> may set rates in a highly competitive market at little above variable costs to avoid losing traffic to competing carriers.<sup>52</sup> To guarantee the entire rail system an adequate return on investment, rates in noncompetitive markets may be set far above variable costs.<sup>53</sup> Coal is the largest single commodity carried by the railroads;<sup>54</sup> the bulk of this coal moves in noncompetitive markets.<sup>55</sup> As a result, the coal consumer has to bear the brunt of railroad revitalization through utility rates based on rail tariffs.

The railroads contend that implementing coal slurry pipelines would cripple the revitalization effort and could even cause the bankruptcy of weaker rail companies.<sup>56</sup> Domestic coal production for 1977 amounted to 690 million tons.<sup>57</sup> The Department of Energy (DOE) projects domestic coal consumption in 1990 will be between 1.3 and 1.6 billion tons.<sup>58</sup> If all proposed coal pipelines are operating at that time, they will carry less than 150 million tons of coal<sup>59</sup> or about ten per cent of the nation's requirements. In light of this relatively small market share and the rapid expansion of the overall market, coal pipelines should not seriously impair revenues of the railroad industry.<sup>60</sup>

49. The Railroad Revitalization and Regulatory Reform Act of 1976, Pub. L. No. 94-210, 90 Stat. 31 (codified in scattered sections of 45, 49 U.S.C.) (the 4-R Act).

50. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 50. Although the cost per ton-mile of hauling coal by unit train is constant over distance, actual unit tariffs can be greater for longer distances because of reduced competition from other shipping modes. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 50.

51. For a detailed analysis of railroad rate-structuring, see Student Symposium, *Singing the Coal-Train Blues—The ICC, Railroad Coal Hauling Rates, and National Energy Policy*, 11 ST. MARY'S L.J. 734, 753-59 (1980).

52. See 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Mr. Dempsey, President, Association of American Railroads).

53. See 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Mr. Dempsey, President, Association of American Railroads).

54. See UNITED STATES DEP'T OF TRANSPORTATION, A PROSPECTUS FOR CHANGE IN THE FREIGHT RAILROAD INDUSTRY 110 (1978). In 1975 coal accounted for almost 30 percent of volume and over 13 percent of the revenues of Class I railroads. *Id.* at 110.

55. See NATIONAL COAL ASSOCIATION, SURVEY OF CAPTIVE COAL SHIPMENTS BY RAIL FOR 1977, at 5, 7 (1979), reprinted in 1979 Coal Pipeline Hearings, *supra* note 2.

56. See Lorentzen, *Coal Slurry Pipelines: a Railroad Perspective*, 10 TRANSP. L.J. 153, 165-66, 169 (1978).

57. NATIONAL COAL ASSOCIATION, SURVEY OF CAPTIVE COAL SHIPMENTS BY RAIL FOR 1977, at 2 (1979), reprinted in 1979 Coal Pipeline Hearings, *supra* note 2.

58. See 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Mr. O'Leary, Deputy Secretary, Department of Energy).

59. See H.R. REP. NO. 96-692, *supra* note 6, at 16 (Fig. 1).

60. See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on*

The railroads stand to lose a portion of the long-distance market whether coal pipelines are available or not. When City Public Service Board of San Antonio, Texas was planning its first coal-fired units in 1973, Burlington Northern Railroad quoted a shipping tariff of \$7.90 per ton.<sup>61</sup> By early 1980 the San Antonio utility was paying \$19.25 per ton, or a 140 percent increase over the original quotation.<sup>62</sup> If City Public Service cannot receive competitive delivery through coal pipelines, they may begin purchasing coal from Australia.<sup>63</sup> Presently, other utilities are buying coal from Poland, South Africa, and Australia at rates competitive with domestic coal.<sup>64</sup> Excessive coal transportation costs are discouraging others from contracting for construction of coal-fired facilities and causing cancellation of coal conversion projects.<sup>65</sup>

#### IV. THE ENVIRONMENTAL IMPACT OF COAL PIPELINES

The effects of coal pipelines on the environment are quite different from those of unit train operations.<sup>66</sup> The primary impacts of unit trains include locomotive air pollution,<sup>67</sup> coal dust emissions from open hopper cars,<sup>68</sup> dislocation of wildlife,<sup>69</sup> and community disturbances in terms of visual and noise pollution as well as traffic disruptions and accidents.<sup>70</sup> Although these repercussions have been described as merely a "disturbance" rather than a "problem,"<sup>71</sup> they are minimized or eliminated by coal pipelines. Almost completely underground, coal pipelines are quiet, clean, and invisible.<sup>72</sup>

On the other hand, the coal pipeline is a water intensive technology.<sup>73</sup> A

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*Public Lands and Resources of the Comm. on Energy and Natural Resources, 95th Cong., 2d Sess. 171 (1978). But see H.R. REP. No. 96-692, supra note 6, at 38-39 (dissenting views of Rep. Marlenee).*

61. See H.R. REP. No. 96-692, *supra* note 6, at 14.

62. See San Antonio Express-News, Jan. 19, 1980, at 1, col. 3.

63. See *id.* at 1, col. 6.

64. See H.R. REP. No. 96-692, *supra* note 6, at 15.

65. 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Mr. O'Leary, Deputy Secretary of Department of Energy).

66. TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 107.

67. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 114-16 (1978).

68. See *id.* at 116-17.

69. See *id.* at 117-19.

70. See *id.* at 106-09.

71. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 107.

72. The Coal Pipeline Act of 1979 requires certified pipelines to be underground to the extent practicable. See H.R. 4370 § 304, 96th Cong., 1st Sess. (1979) in H.R. REP. No. 96-692, *supra* note 6, at 11. Additionally, the Secretary of Interior may place a variety of environmental conditions upon the issuance of a certificate of public convenience and necessity. See *id.* § 303 in H.R. REP. No. 96-692, *supra* note 6, at 10.

73. See generally Coal Pipeline Act of 1977: Hearings on H.R. 1609 Before the Subcomm.

slurry line transporting sufficient coal for a city of two million persons would require about 15,000 acre-feet of water per year.<sup>74</sup> By comparison, little more than twice that amount of water was consumed by municipal uses in the entire state of Wyoming in 1974.<sup>75</sup> The effect of allocating water for a coal pipeline varies dramatically depending on its source. For example, a planned Florida pipeline, with over twice the annual capacity of any other planned or existing pipeline,<sup>76</sup> will have little impact on abundant eastern water resources.<sup>77</sup> In the arid West, however, the prospect of pumping such vast amounts of water out of the coal-producing state is a sensitive issue.<sup>78</sup> Unfortunately, the development of energy resources in general is extremely water intensive,<sup>79</sup> a problem compounded by the location of the bulk of our domestic energy resources in water scarce areas of the West.<sup>80</sup>

The OTA report on coal slurry pipelines concluded that, although water is physically available for western pipelines, slurry water does "compete directly with other possible future uses."<sup>81</sup> The impact on non-industrial users can be lessened through the use of deep groundwater unsuitable for municipal or agricultural uses.<sup>82</sup> Although slurry water is lost to its source,

*on Mines and Mining and the Subcomm. on Indian Affairs and Public Lands of the House Comm. on Interior and Insular Affairs, 95th Cong., 1st Sess. 333-37 (1977).*

74. See GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 99 (1977).

75. Wyoming municipalities diverted 68,000 acre-feet of water in 1974 but consumed only 34,000 acre-feet. *Id.* at 211. On the other hand, during the same year Wyoming consumed over 2.3 million acre-feet of water for irrigation and stockwatering purposes. *Id.* at 211.

76. The Florida pipeline will have an annual capacity of approximately 53 million tons of coal. The two largest western pipelines, both from Wyoming, will have a combined annual capacity of about 51 million tons. See H.R. REP. NO. 96-692, *supra* note 6, at 16 (Fig. 1).

77. Cf. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 90 (1978) (legally available supply of water in Tennessee not less than projected demand for 1985-2000).

78. See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources, 95th Cong., 2d Sess. 40 (1978)* (remarks of Sen. McClure of Idaho). Senator McClure stated:

We have a saying out in the West, "Don't pet my dog or my wife." But there's something that comes ahead of that in our concerns, and that is "Don't mess around with our water because water is our life." And if anybody thinks they're going to steal our water, they'd better get their guns out because its going to be that kind of a battle.

*Id.* at 40.

79. See generally *Water Availability for Energy Development in the West: Hearings Before the Subcomm. on Energy Production and Supply of the Senate Comm. on Energy and Natural Resources, 95th Cong., 2d Sess. (1978)*; Abbey, *Energy Production and Water Resources in the Colorado River Basin*, 19 NAT. RESOURCES J. 275 (1979).

80. Fully half of the proven coal reserves in the United States are in the West. See GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 28 (1977).

81. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 19 (1978).

82. See *id.* at 103. The Energy Transportation Systems, Inc. (ETSI) pipeline has secured

the water is available for use at the terminal facility.<sup>83</sup> Furthermore, coal pipelines are relatively water-efficient when compared with other coal uses.<sup>84</sup> Coal-fired electrical generation requires up to seven times the water required by a slurry line.<sup>85</sup> Nevertheless, implementation of coal slurry pipelines requires institutional tradeoffs both within the energy development field and among all water users. Some irrigation water in marginal agricultural areas might better serve local landowners if allocated to energy development.<sup>86</sup> Similarly, overuse of water by agriculture in the West can be reduced by more efficient irrigation techniques.<sup>87</sup> Effective water management within the context of an aggressive coal conversion policy dictates

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the requisite 15,000 acre-feet of water through deep wells into the Madison Aquifer underlying Wyoming. See Sumpter, *Outlook Improving For U.S. Coal Slurry Lines*, OIL & GAS J., Sept. 10, 1979, at 93. For a general discussion of water for the ETSI pipeline, see *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 259-61 (1978) (statement of Mr. Odasz, Vice President, ETSI). The OTA study mentions irrigation return flows and sewage effluent as two other promising water sources unsuitable for non-industrial uses. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 19 (1978).

83. Water from the Black Mesa Pipeline in Arizona provides about 15 percent of the cooling water required by the powerplant. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 64.

84. H.R. REP. NO. 96-692, *supra* note 6, at 17. See generally TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 36-37; Comment, *An Analysis of Technical and Legal Issues Raised by the Development of Coal Slurry Pipelines*, 13 HOUS. L. REV. 528, 546 (1976).

85. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 91 (1978). The water requirements of a coal-fired powerplant can vary considerably with the cooling method used. See generally Abbey, *Energy Production and Water Resources in the Colorado River Basin*, 19 NAT. RESOURCES J. 275, 285-88 (1979) (water requirements of hypothetical 1,000 megawatt coal-fired powerplants).

86. See *id.* at 299. Abbey quotes two Utah farmers who urge local energy development: "[T]he transfer of 50,000 [acre-feet] of water from agriculture to a power plant would furnish employment for us and our children and stabilize the decline and lack of opportunity that is characteristic of rural agricultural areas." *Id.* at 299, quoting letter from A.S. Neilson and Phill C. Neilson to State Senator Ivan Matheson, Salt Lake City, Utah (Oct. 15, 1977). Irrigation accounts for the greatest share of water consumption in the West. Projected irrigation requirements for Wyoming in 1980 amount to 2.5 million acre-feet of water; by comparison, only 132,000 acre-feet of water are expected to be consumed by the Wyoming coal industry. See GOVERNOR'S ENERGY ADVISORY COUNCIL, STATE OF TEXAS, COAL AND LIGNITE: MINING, TRANSPORTATION, AND UTILIZATION NEEDS FOR TEXAS, REP. NO. 77-003, at 211 (1977).

87. "Drip" and "trickle" irrigation methods require only half of the water required by conventional irrigation systems. See TEXAS WATER DEVELOPMENT BOARD, CONTINUING WATER RESOURCES PLANNING AND DEVELOPMENT FOR TEXAS II-75 (1977). The potential water savings through efficient irrigation is massive considering that 90 percent of the water presently consumed in the Colorado River Basin is for irrigation. See Abbey, *Energy Production and Water Resources in the Colorado River Basin*, 19 NAT. RESOURCES J. 275, 298 (1979). See generally Student Symposium, *The Impact of Limited Water Availability on National Coal Policy*, 11 ST. MARY'S L.J. 709, 714-17 (1980).

that western coal not be processed at the production site.<sup>88</sup> When the alternative to transmitting coal by pipeline is mine-mouth generation of electricity or coal gasification, allocating water to coal pipelines is preferable to allocating the far greater amounts of water required for conversion at the production area.<sup>89</sup>

High coal-hauling rates may permit implementation of coal pipelines requiring far less water than those presently contemplated.<sup>90</sup> One alternative pipeline system involves placing a water recycle line parallel to the coal pipeline.<sup>91</sup> Powerplant effluent could supply all but a fraction of the water necessary for the slurry.<sup>92</sup> Loop lines would add about 35 percent to the transportation cost of a conventional coal pipeline;<sup>93</sup> however, in view of coal tariffs rising as much as 50 percent in little over a year,<sup>94</sup> slurry lines using recycled water may soon be economically viable.<sup>95</sup>

#### V. LEGAL AND REGULATORY CONTROL OVER WATER FOR COAL PIPELINES

Western opponents of coal slurry pipelines fear less the loss of water, perhaps, than loss of control over that water.<sup>96</sup> The issue of state water law integrity has two aspects. First, slurry foes argue that legislative proposals granting coal pipelines federal condemnation powers could be used to force states to supply the requisite water.<sup>97</sup> Second, pipeline opponents contend that once water is dedicated to an interstate coal pipeline the commerce

88. Many westerners advocate a "strip and ship" coal development policy which avoids, for the production area, the impacts associated with coal processing. See TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 82.

89. Mine-mouth generation requires eight times the water used by a coal pipeline, while synfuel production requires over twice the water needed to slurry coal. See H.R. REP. No. 96-692, *supra* note 6, at 17. See generally TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 82-84.

90. See generally Snoek, Gandhi, & Weston, *Alternatives Are Studied for Moving Coal by Pipeline*, OIL & GAS J., Aug. 27, 1979, at 95-100.

91. See *id.* at 98.

92. See *id.* at 98.

93. TEXAS COAL TRANSPORTATION ALTERNATIVES, *supra* note 25, at 66.

94. Tariffs charged City Public Service Board of San Antonio, Texas have risen from \$12.42 per ton in December 1978 to \$19.25 in January 1980. See San Antonio Express-News, Jan. 19, 1980, at 1, col. 6.

95. Future coal pipelines may abandon water altogether as a transport vehicle in favor of such mediums as methanol or crude oil. See generally Snoek, Gandhi, & Weston, *Alternatives Are Studied for Moving Coal by Pipeline*, OIL & GAS J., Aug. 27, 1979, at 97.

96. Some pipeline opponents would prefer building mine-mouth generating plants to laying coal pipelines even though the plants would require seven to eight times as much water as the pipelines. *Prospects Brighten for Coal Slurry Pipelines*, CHEMICAL & ENGINEERING NEWS, May 21, 1979, at 19.

97. See 1979 Coal Pipeline Hearings, *supra* note 2 (statement of Mr. Dempsey, President, American Association of Railroads.)

clause could preclude subsequent withdrawal, even for purposes consistent with state law.<sup>98</sup>

*A. Coal Pipeline Legislation: Saving the Savings Provision*

Proposed coal pipeline legislation only affords slurry lines the means of obtaining their routes, not of obtaining their water.<sup>99</sup> Despite language clearly expressing congressional intent that state water laws be complied with and in no way be affected by the proposed Act,<sup>100</sup> opponents contend courts will not give effect to these provisions.<sup>101</sup> Past judicial disregard of similar provisions in the Federal Power Act<sup>102</sup> and the Reclamation Act<sup>103</sup> led the Office of Technology Assessment to advise Congress that slurry legislation "may leave little [room] for State regulation of water for a coal slurry pipeline."<sup>104</sup>

In *First Iowa Hydro-Electric Cooperative v. Federal Power Commission*,<sup>105</sup> the Supreme Court addressed the issue whether a diversion from a navigable stream could be licensed pursuant to the Federal Power Act without first obtaining a state water permit.<sup>106</sup> Applicants for federal licenses are required by section nine of the Act to provide satisfactory

98. See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 42 (1978) (statement of Gov. Herschler of Wyoming).

99. H.R. 4370 § 208, 96th Cong., 1st Sess. (1979) in H.R. REP. NO. 96-692, *supra* note 6, at 8 (eminent domain power not applicable to water); see *Coal Pipeline Act of 1977: Hearings on H.R. 1609 Before the Subcomm. on Mines and Mining and the Subcomm. on Indian Affairs and Public Lands of the House Comm. on Interior and Insular Affairs*, 95th Cong., 1st Sess. 19 (remarks of Rep. Eckhardt).

100. See H.R. 4370 § 302, 96th Cong., 1st Sess. (1979) in H.R. REP. NO. 96-692, *supra* note 6, at 9-10. Section 302(a) forbids the use of federal water rights, including those accrued under the reserved rights doctrine, to acquire water for a certified coal pipeline unless state water laws are complied with. Section 302(b) provides that certification under the Act is not to be construed as granting water rights for a coal pipeline, or as excusing any state water law requirements. The state is authorized, by section 302(c), to attach any conditions on water permits for coal pipelines which are to effectuate a legitimate state public interest. These limitations are not to be deemed as unreasonably discriminating against interstate commerce. Section 302(d) forbids construction of the Act in a manner which affects any water law or water right, grants water rights to a certificate holder, or expands or diminishes federal or state jurisdiction in water resources development.

101. See, e.g., *Coal Pipeline Act of 1978: Hearings on H.R. 1609 Before the House Comm. on Public Works and Transportation*, 95th Cong., 2d Sess. 118 (1978) (statement of Rep. Roncalio of Wyoming); *id.* at 417-18 (statement of Sen. Burdick of North Dakota); *id.* at 462 (statement of Mr. Mullins, National Farmers Union).

102. Federal Power Act of 1920, ch. 285, § 9(b), 41 Stat. 1068, 16 U.S.C. § 802(b) (1976).

103. Reclamation Act of 1902, ch. 1093, § 8, 32 Stat. 390, 43 U.S.C. § 383 (1976).

104. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS. A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 132 (1978).

105. 328 U.S. 152 (1946).

106. See *id.* at 163-64.

evidence of compliance with state law.<sup>107</sup> The Court held the Federal Power Act overrides conflicting state law<sup>108</sup> and that compliance with state law is only one factor to be considered in acting upon license applications.<sup>109</sup> The savings clause of the Reclamation Act of 1902 provides that the Act not be construed in any fashion that would affect or interfere with state water laws.<sup>110</sup> Notwithstanding section eight, the Supreme Court held in *Arizona v. California*<sup>111</sup> that the federal government is not bound to distribute reclamation water according to state use preferences.<sup>112</sup>

*First Iowa* and *Arizona v. California* have led some Westerners to conclude state water law savings provisions drafted for coal pipeline legislation will prove ineffective in the courts.<sup>113</sup> Those decisions, however, involved

107. Federal Power Act of 1920, ch. 285, § 9(b), 41 Stat. 1068, 16 U.S.C. § 802(b) (1976). The Act also contains a savings clause that provides nothing contained therein be construed to affect state water laws in any way. See *id.* § 27, 16 U.S.C. § 821 (1976).

108. See *First Iowa Hydro-Electric Corp. v. FPC*, 328 U.S. 152, 181 (1946).

109. *Id.* at 178; *accord*, *FPC v. Oregon*, 349 U.S. 435, 452 (1955) (federal licensee need not obtain state permit to construct dam across nonnavigable waters on federal land). See also *Munro, The Pelton Case—Sixteen Years Later*, 50 OR. L. REV. 322 (1971).

110. See 43 U.S.C. § 383 (1976).

111. 373 U.S. 546 (1963).

112. The Court concluded that "where the Secretary's contracts . . . carry out a congressional plan for the complete distribution of water to users, state law has no place." *Id.* at 588. Mr. Justice Douglas predicted, in dissent, that the case would be "marked as the baldest attempt by judges in modern times to spin their own philosophy into the fabric of the law, in derogation of the will of the legislature." *Id.* at 628 (Douglas, J., dissenting).

Western states assign a statutory scheme of priority to different water users so that during times of water shortage, or when applicants compete for unappropriated water insufficient for all, the water is devoted to "preferred" uses. See generally *Trelease, Preference to the Use of Water*, 27 ROCKY MTN. MIN. L. INST. 133, 133-34 (1955). Unlike the Reclamation Act's generally stated preference for irrigation as the paramount use, California assigns highest preference to domestic and municipal uses. Compare 43 U.S.C. § 485h(c) (1976) ("No contract relating to municipal water supply . . . shall be made unless . . . it will not impair the efficiency of the project for irrigation purposes") with CAL. WATER CODE ANN. § 1460 (Deering 1977) ("The application for a permit by a municipality for the use of water . . . shall be considered first in right, irrespective of whether it is first in time"). State preference statutes typically favor domestic and municipal uses over all others. See, e.g., ARIZ. REV. STAT. ANN. § 45-147 (West Supp. 1980); KAN. STAT. ANN. § 82a-707(b) (1977); TEX. WATER CODE ANN. § 5.024 (Vernon 1972).

113. During hearings on H.R. 1609, the coal pipeline legislation defeated in 1978, Wyoming Governor Herschler testified that while he appreciated congressional attempts to protect state water law, "in light of various court decisions, I doubt that there is any language that could guarantee the retention of State authority." *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 42 (1978). While federal power over water resources is almost without limit, Congress has regularly incorporated state water law savings clauses in federal legislation affecting water resources. See PUBLIC LAND LAW REVIEW COMMISSION, ONE THIRD OF THE NATION'S LAND, A REPORT TO THE PRESIDENT AND TO THE CONGRESS 141 (1970) (federal constitutional power over water described as "plenary"); *Water Rights Settlement Act: Hearings on S. 653 Before the Subcomm. on Irrigation and Reclamation of the*

direct confrontations between state laws and express congressional directives to regulate water.<sup>114</sup> No federal water regulatory scheme exists in coal pipeline legislation with which state law can conflict.<sup>115</sup> Further, the recent cases of *California v. United States*<sup>116</sup> and *United States v. New Mexico*<sup>117</sup> indicate state water law savings provisions, like section 302 of the Coal Pipeline Act,<sup>118</sup> will be given effect by the courts.<sup>119</sup>

In *California v. United States* the Supreme Court held the federal Bureau of Reclamation, when impounding water for a project, is bound by any state-imposed conditions not inconsistent with specific congressional directives.<sup>120</sup> In drawing this conclusion, the Court conducted a thorough

*Senate Comm. on Interior and Insular Affairs*, 84th Cong., 2d Sess. 59 (1956) (state control of water the intent of successive Congresses for almost 100 years). Ironically, the very consistency Congress has demonstrated in deferring to state water law has led some to question the legitimacy of savings clauses as expressions of true congressional intent. See Haber, *Arizona v. California—A Brief Review*, 4 NAT. RESOURCES J. 17, 24 (1964) (state water law savings clauses referred to as "usual boilerplate"); Sax, *Problems of Federalism in Reclamation Law*, 37 U. COL. L. REV. 49, 80 (1964) (state water law savings clauses incorporated as "standard political ritual"). Cynical disregard of congressional deference to state water law poses a legislative drafting dilemma. Congressman Udall, a cosponsor of the defeated Coal Pipeline Act of 1978, describing the attempt to write a savings clause that would satisfy western legislators and the courts, stated: "We wrote and rewrote a guaranteed absolutely-to-God-we-really-do-mean-it, you can't take a drop without Wyoming's consent, and it was never enough." See *Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 2d Sess. 95 (1978).

114. See *Arizona v. California*, 373 U.S. 546, 588 (1963) (congressional directive to distribute project water); *First Iowa Hydro-Electric Coop. v. FPC*, 328 U.S. 152, 180 n.23 (1946) (federal directive to develop water power).

115. See *Coal Pipeline Act of 1978: Hearings on H.R. 1609 Before the Subcomm. on Surface Transportation of the House Comm. on Public Works and Transportation*, 95th Cong., 2d Sess. 188-89 (1978). On the contrary, the regulation of water through exercise of the power of eminent domain granted in the Coal Pipeline Act is expressly prohibited. See H.R. 4370 § 208(d), 96th Cong., 1st Sess. (1979) in H.R. REP. NO. 96-962, *supra* note 6, at 8.

116. 438 U.S. 645 (1978).

117. 438 U.S. 696 (1978).

118. H.R. 4370 § 302, 96th Cong., 1st Sess. (1979) in H.R. REP. NO. 96-692, *supra* note 6, at 9.

119. The OTA study, which warned of a possible loss of state regulatory control over coal pipeline water, was published four months before the Supreme Court rendered *California v. United States*. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 132 (1978). The task report, upon which this finding was based, noted that the case was of potentially great significance for federal-state water relationships and legislative draftsmanship, and that a finding in favor of state law could represent an important departure from the history of narrow construction of savings clauses. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, THE LEGAL AND REGULATORY ISSUES OF TRANSPORTING COAL BY SLURRY PIPELINE, TASK REPORT IV, at W-118 (1978) (prepared by the National Energy Law and Policy Institute, University of Tulsa College of Law).

120. See *California v. United States*, 438 U.S. 645, 672 (1978). In this case the State of California sought reversal of a declaratory judgment giving the United States Bureau of



investigation of the Reclamation Act and found it to embody a spirit of cooperation between state and federal governments.<sup>121</sup> Specifically, section eight of the Reclamation Act, the savings clause, was found to constitute a clear expression of congressional intent "to defer to the substance, as well as the form, of state water law."<sup>122</sup> Although *California v. United States* expressly addresses only reclamation cases, it indicates a newly found respect for all water savings clauses.<sup>123</sup>

The companion case of *United States v. New Mexico* further demonstrates the Supreme Court will generally recognize congressional deference to state water law.<sup>124</sup> In the stream adjudication<sup>125</sup> of a river originating in a national forest, the state engineer rejected federal claims for sufficient water for recreation and stockwatering purposes.<sup>126</sup> The Supreme Court held that under the reserved rights doctrine<sup>127</sup> the federal government is entitled to only water necessary to the purposes for which the land was

Reclamation the right to impound whatever unappropriated water it found necessary for a reclamation project, without regard to state law. *See id.* at 647. The state had issued the desired permits, but with twenty-five attached conditions, including one which required a showing of specific plans for the beneficial use of the water. *See id.* at 652-53. In western states beneficial use is often described as "the basis, the measure, and the limit" of the right to use water; statutes generally list approved uses according to preference. Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, 12 WYO. L.J. 1, 6-7 (1957). Applicants for state water permits are usually required to submit plans for the water's beneficial use. The resulting water right may be forfeited if the water is not applied to the beneficial use with due diligence. *See generally* 5 WATER AND WATER RIGHTS 71 (R. Clark ed. 1972). Montana specifically excepts water for coal slurry pipelines from the definition of beneficial use. *See* MONT. REV. CODES ANN. § 89-867 (Supp. 1977); *cf.* OKLA. STAT. ANN. tit. 27, § 7.76 (West Supp. 1979) (forbids use of Oklahoma water in coal slurry pipelines).

121. *See California v. United States*, 438 U.S. 645, 650 (1978). *See generally* Walston, *Reborn Federalism in Western Water Law: The New Melones Dam Decision*, 30 HASTINGS L.J. 1645, 1669-73, 1680-82 (1979).

122. *California v. United States*, 438 U.S. 645, 675 (1978).

123. *Compare* Reclamation Act of 1902, ch. 1093, § 8, 32 Stat. 390, 43 U.S.C. § 383 (1976) with H.R. 4370 § 302, 96th Cong., 1st Sess. (1979) in H.R. REP. No. 96-692, *supra* note 6, at 9-10.

124. *See United States v. New Mexico*, 438 U.S. 696, 718 (1978); *cf.* *Andrus v. Charleston Stone Prod. Co.*, 436 U.S. 604, 614 (1978) (water held not a locatable mineral for purposes of federal mining law).

125. Most western states authorize an official to bring a general stream adjudication suit on behalf of the state to determine conflicting water rights. *See, e.g.*, ARIZ. REV. STAT. ANN. §§ 45-251 to -260 (West Supp. 1980); TEX. WATER CODE ANN. §§ 5.301-5.357 (Vernon 1972 & Supp. 1980); WYO. STAT. §§ 41-4-301 to -317 (1977). Final judgment, based upon a hydrographic survey of the entire stream in question, declares the amount, purpose, place, and priority of each user's right. *See generally* 5 WATER AND WATER RIGHTS 212 (R. Clark ed. 1972).

126. *See United States v. New Mexico*, 438 U.S. 696, 698 (1978).

127. The reserved rights doctrine states that when the United States reserves land, it implicitly reserves sufficient water for the purposes for which the reservation was made. *See generally* Muys, *Comments on "Federal Reserved Water Rights,"* 54 DEN. L.J. 493, 493-98 (1977); Trelease, *Federal Reserved Rights Since PLLRC*, 54 DEN. L.J. 473, 475-78 (1977).

originally taken.<sup>128</sup> Although Congress originally established the national forests only to secure favorable water flow and to preserve timber,<sup>129</sup> subsequent legislation has expressly directed that national forests be administered for recreational and wildlife purposes.<sup>130</sup> Consequently, the Court found that in the absence of a positive indication that additional water be reserved, state law controls.<sup>131</sup> This narrow limitation on the amount of water reserved was based on "Congress' principled deference to state water law."<sup>132</sup>

The contention state water law savings provisions in federal coal pipeline legislation will be disregarded by the courts is undermined by *California v. United States* and *United States v. New Mexico*. *California v. United States* demonstrates savings provisions will be given full effect in the absence of directly conflicting congressional directives.<sup>133</sup> Coal pipeline legislation only directs a holder of a federal certificate of public convenience and necessity be allowed to condemn rights-of-way for its pipeline.<sup>134</sup> The OTA study advised that a certificate holder might successfully argue federal determination that its pipeline is in the public interest entitles it to water regardless of state objections.<sup>135</sup> The Supreme Court in *United States v. New Mexico* rejected similar arguments that since Congress directed the national forests be administered for recreational and wildlife purposes, it also mandated water be acquired for these purposes.<sup>136</sup> Congress can approve of a purpose requiring water and yet require that the water be obtained, if at all, under state law.<sup>137</sup>

128. See *United States v. New Mexico*, 438 U.S. 696, 702 (1978).

129. See *id.* at 718; Organic Administration Act of 1897, ch. 2, § 1, 30 Stat. 34, 16 U.S.C. § 475 (1976) (purposes for which national forests may be established and administered).

130. See Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517, § 1, 74 Stat. 215, 16 U.S.C. § 528 (1976). Section one of the Act provides in part that "[i]t is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes." *Id.* § 1, 16 U.S.C. § 528 (1976).

131. See *United States v. New Mexico*, 438 U.S. 696, 717 (1978).

132. *Id.* at 718. Over 60 percent of the water flow in the western states either originates on or flows through federally reserved lands. C. WHEATLEY, *STUDY OF THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES ON THE PUBLIC LANDS* 211 (1969). The Coal Pipeline Act prohibits the use of federally reserved water for a pipeline unless specifically granted by Congress. See H.R. 4370 § 302(a), 96th Cong., 1st Sess. (1979) in H.R. REP. No. 96-692, *supra* note 6, at 9.

133. See *California v. United States*, 438 U.S. 645, 674 (1978).

134. See H.R. 4370 § 208, 96th Cong., 1st Sess. (1979) in H.R. REP. No. 96-692, *supra* note 6, at 8; cf. H.R. REP. No. 96-692, *supra* note 6, at 24 ("[a] state must be able to say 'no' to coal pipelines").

135. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, *A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES* 20 (1978).

136. See *United States v. New Mexico*, 438 U.S. 696, 716 (1978).

137. Compare *id.* at 717 (state water law well suited for allocating water for stockwatering on national forests) with Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517,

### B. *The Commerce Clause Objection to Coal Pipelines*

Coal pipeline opponents have expressed that state attempts to limit or forbid the use of water for coal pipelines are subject to attack as unconstitutional burdens on interstate commerce.<sup>138</sup> The concern is based on the decision in *Altus v. Carr*,<sup>139</sup> which invalidated a Texas statute forbidding exportation of Texas groundwater without legislative consent.<sup>140</sup> Finding water to be an article of commerce, the court held the Texas law discriminated against interstate commerce.<sup>141</sup> Because the Supreme Court affirmed *Altus* without opinion, the constitutionality of state statutes limiting the exportation of water remains unresolved.<sup>142</sup> The Supreme Court in 1911 upheld New Jersey's right to forbid delivery of surface water to New York.<sup>143</sup> The unique nature of water resources, further, has been recognized by a recent Supreme Court case holding that water does not constitute a "mineral" for purposes of federal mining law.<sup>144</sup> The Office of Technology Assessment advised Congress that water exportation restrictions would probably withstand constitutional attack unless they severely discrimi-

§ 1, 74 Stat. 215, 16 U.S.C. § 528 (1976) (directing that national forests be administered for stockwatering purposes). The Court notes in *United States v. New Mexico* that if stockwatering did not occur on the national forest, the original purposes for "reserving the land would not be defeated." *United States v. New Mexico*, 438 U.S. 696, 716 (1978). Coal pipelines do not technically require water as a transport vehicle. See generally Snoek, Gandhi, & Weston, *Alternatives Are Studied for Moving Coal by Pipeline*, OIL & GAS J., Aug. 27, 1979, at 97.

138. STAFF OF THE SUBCOMM. ON TRANSPORTATION AND COMMERCE, HOUSE COMM. ON INTERSTATE AND FOREIGN COMMERCE, 95TH CONG., 2D SESS., REPORT ON COAL SLURRY PIPELINES AND H.R. 1609, THE COAL PIPELINE ACT OF 1978, at 40 (Comm. Print 1978) (prepared for use of the House Committee on Interstate and Foreign Commerce). See generally U.S. CONST. art. 1, § 8, cl. 3.

139. 255 F. Supp. 823, 828 (W.D. Tex.), *aff'd per curiam*, 385 U.S. 35 (1966).

140. See *id.* at 823, 840.

141. See *id.* at 840. The city of Altus, Oklahoma, situated fourteen miles from the Texas border, executed an option to purchase groundwater from a Wilbarger County, Texas landowner in November 1964. A Texas state legislator, representing Wilbarger County, introduced legislation limiting exportation of Texas groundwater in January 1965. See *id.* at 828.

142. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, THE LEGAL AND REGULATORY ISSUES OF TRANSPORTING COAL BY SLURRY PIPELINE, TASK REPORT IV, at W-66 (1978) (prepared by The National Energy Law and Policy Institute, University of Tulsa College of Law).

143. See *Hudson County Water Co. v. McCarter*, 209 U.S. 349, 353, 357 (1911). The *Altus* court denied the applicability of *McCarter* and relied instead upon cases invalidating attempts to limit the interstate movement of natural gas. See *Altus v. Carr*, 255 F. Supp. 828, 839 (W.D. Tex.), *aff'd per curiam*, 385 U.S. 35 (1966). See generally *Pennsylvania v. West Virginia*, 262 U.S. 553, 596-97 (1923); *West v. Kansas Nat. Gas Co.*, 221 U.S. 229, 262 (1910). The validity of natural gas cases in a case concerning water is questionable inasmuch as the Supreme Court has never ruled that water is an article of commerce. See Martz & Grazis, *Interstate Transfers of Water and Water Rights—The Slurry Issue*, 23 ROCKY MTN. MIN. L. INST. 33, 61 (1977). See also Barnett, *The Constitution and State Powers of Export Limitation*, 13 TULSA L.J. 229, 244-48 (1977).

144. See *Andrus v. Charlestone Stone Prod. Inc.*, 436 U.S. 604, 617 (1978).

nated against interstate coal movement.<sup>145</sup>

Continued uncertainty surrounding the commerce clause issue, however, led coal pipeline proponents to incorporate provisions approving any state-imposed conditions or limitations to the use of water for slurry.<sup>146</sup> Additional language specifically directs that restrictive state water laws not be found to violate the commerce clause.<sup>147</sup> While constitutional interpretation by Congress is not binding, these provisions should operate as an effective delegation to the states of congressional power to regulate interstate commerce.<sup>148</sup>

## VI. CONCLUSION

The high cost of coal transportation is an obstacle to effective coal conversion in the United States. In a long-distance, high volume market, coal slurry pipelines can provide a more economical means of shipping coal than unit trains. The economic impact of coal pipelines on the railroad industry is minimal when compared to the rail tariffs suffered by shippers that coal pipelines could serve. If all proposed pipelines were operational by 1990, the railroads would nevertheless carry far more coal at that time than they presently do. Allocating water for coal pipelines in the West is preferable to allocating the far greater amounts of water required for conversion at or near the mine site. Proposed legislation granting federal condemnation powers to coal pipelines pertains only to obtaining rights-of-way, not to acquiring water. Recent judicial decisions indicate that language in the 1979 coal pipeline bill deferring to state water laws will be respected by the courts. Consequently, as the economic and regulatory climate becomes more favorable, coal slurry pipelines soon should be able to get there.

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145. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, A TECHNOLOGY ASSESSMENT OF COAL SLURRY PIPELINES 131 (1978); cf. *Pike v. Bruce Church*, 397 U.S. 137, 142 (1970) ("where the [state] statute regulates evenhandedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits").

146. See H.R. 4370 § 302(c)(1), 96th Cong., 1st Sess. (1979) in H.R. REP. No. 96-692, *supra* note 6, at 9-10.

147. See *id.* § 302(c)(2). Section 302(c)(2) provides in part:

The establishment of terms or conditions to effectuate a legitimate State public interest pursuant to State law . . . shall not be deemed to prevent, unreasonably burden, discriminate against, or directly negate interstate commerce even though in the absence of this Act, such State law or laws or the establishment, exercise or enforcement of such terms and conditions may be deemed violative of the commerce clause of the United States Constitution.

*Id.* § 302(c)(2).

148. See H.R. REP. No. 96-692, *supra* note 6, at 28.