

Great Expectations: An Examination of Section 180c Funding Allocations

F.C. Dilger PhD
Black Mountain Research
Henderson, NV 81012
USA

R.J. Halstead
State of Nevada Agency for Nuclear Projects
Carson City, NV 89706
USA

ABSTRACT

As the U.S. Department of Energy (DOE) moves toward milestones in developing a plan to ship high-level radioactive waste to Yucca Mountain, an increasingly difficult issue is the distribution of Federal emergency management funds to mitigate costs of preparing for the shipments. DOE staff and contractors, and state transportation planning groups, have high expectations that some allocation formula based on technical factors can be used to distribute funds effectively and equitably. This paper examines the empirical results of a funding allocation formula proposed by the Western Governors Association among the eleven affected states which are members of the Western Interstate Energy Board. The amount of Federal funds allocated to Western states is also compared to the amount of revenue that would be generated by state-imposed fees on DOE shipments.

INTRODUCTION

Section 180c of the Nuclear Waste Policy Act of 1987 directs the Department of Energy (DOE) to provide transportation corridor states and Indian tribes with funding to defray the costs of preparing their emergency responders for shipments of high-level radioactive waste (HLW) and spent nuclear fuel (SNF) to the proposed repository at Yucca Mountain, Nevada. In order to implement this program, the DOE has stated that it will most likely apply to Congress for a fixed amount of funds, and then distribute funds to affected states.

WGA PROPOSAL FOR FUNDING ALLOCATION

The Western Governors' Association (WGA) adopted a formal position on Section 180c funding allocation in 1997. The WGA resolution called for DOE funding to be distributed to affected states based on a straight-forward, two-part formula: 75 percent of the funds would be distributed based on the projected shipment-miles through the affected state; the remaining 25 percent would be "allocated to ensure minimum funding levels and program capabilities among impacted states and tribes." A shipment mile is defined as the numbers of shipments that traverse a state multiplied by the distance the shipments traveled. The shipment mile is a useful measure of impact because it reflects distance of the road network that must be policed by the states as well as the intensity of the shipments that may take place on the roadway.

This approach is referred to as the original WGA allocation in this paper. In 2005, WGA revised its resolution on this matter, and deferred recommending a specific allocation formula until some future date, to reflect uncertainties in the DOE transportation program and uncertainties about state and tribe financial needs for emergency response.[1]

During 2005, other regional groups representing potentially affected states proposed alternative allocation approaches. The Midwestern Council of State Governments (MWCSG), supported by northeastern and southeastern groups, proposed an allocation formula in which 30 percent of funds would be distributed based on route miles, 30 percent on shipment numbers, 30 percent on population near routes, and 10 percent based on the number of shipment originating in each state. Other variations have been, and will likely be, proposed when DOE publishes a new program description later this year.

METHOD OF EVALUATION

This paper evaluates the original WGA allocation approach in relation to the mostly truck transportation scenario identified in the Department of Energy's final environmental impact statement for Yucca Mountain. [2] This scenario was selected because it is currently the only feasible alternative for HLW transportation to Yucca Mountain. Although the Department of Energy has expressed a preference for rail, has selected a preferred rail corridor, and begun assessing the impacts of actually constructing the new rail line to Yucca Mountain, as of today, the only feasible alternative for shipping SNF and HLW to Yucca Mountain is via legal weight truck. Even if DOE eventually constructs a new rail line to Yucca Mountain, all shipments might be made by LWT for the first six years or so of operation.

Moreover, the mostly truck scenario is less ambiguous than the mostly rail scenario because USDOT regulations designate use of the Interstate Highway System as the default route for the waste. Additionally, using the representative routes presented in the DOE FEIS, the 10-15 states that would be most heavily impacted under the mostly truck scenario would also be the most heavily impacted states under the mostly rail scenario. It's important to note that although the specific location of the impacts may change and vary from year to year, these estimates for the mostly truck scenario provide a very good basis for understanding the likely impact of this program.

The calculation of shipment miles was accomplished by using the Black Mountain Research network model to duplicate the routes described in the FEIS.[3] This was performed by a network assignment model that calculates the minimum impedance between the shipping origins (the power plants and sties) and the destination (Yucca Mountain). Several links in the network had to be avoided in order to replicate the FEIS routes (notably I 70 west of Denver Colorado). Once the FEIS network was constructed, then the shipments were assigned to the network. This means that the number of shipments from each reactor was assigned to the route with the least impedance in the network. Then the numbers of shipments in the network was summed to calculate the total number of shipments that traversed each link. This was a necessary step in order to calculate the shipment miles that traversed each state. Once the numbers of shipments were calculated for each link in each state, the length of the links was multiplied by the numbers of shipments. This yielded the number of shipment miles traversing the state without adding duplicate miles or shipments. This created a basis for understanding changes in shipment miles. A scaled symbol map depicting the modified routes is in Fig. 1.



Fig. 1. Shipments to Yucca Mountain over 24 years, mostly truck scenario, using representative routes identified in the DOE FEIS

ALLOCATION UNDER THE ORIGINAL WGA FORMULA

This evaluation of the original WGA funding formula assumes DOE distributes \$10,000,000 annually to 45 affected states, with 25 percent distributed equally (about \$55,000 per year to each affected state), and 75 percent allocated on projected shipment miles through each state. It evaluates the DOE mostly truck scenario, representative routes, and 53,000 shipments over 24 years, per Yucca Mountain Final EIS. The \$10 million figure is an arbitrary amount selected to facilitate analysis and should not be interpreted as the amount of funding actually needed by the states.

Table I reports the results for the eleven affected states which are members of the Western Interstate Energy Board (WIEB). No effort is made to assess potential allocations to other affected states, affected Indian tribes, or pass-through allocations to affected local governments. The shipment-miles per state represent cumulative shipments over 24 years; shipment-miles for any state for a particular year could vary significantly. These results are rounded preliminary estimates and subject to change.

Table I. Average Annual Sec180c Allocations Using Original WGA formula

State	Shipment Miles	Shipment Miles Dollar Allocation	Base \$ Allocation	Total \$ Allocation
Arizona	2,928,818	\$188,000	\$55,000	\$243,000
California	2,241,534	\$144,000	\$55,000	\$199,000
Colorado	128,220	\$8,000	\$55,000	\$63,000
Idaho	1,058,744	\$68,000	\$55,000	\$123,000
Nebraska	18,732,037	\$1,200,000	\$55,000	\$1,255,000
New Mexico	1,380,747	\$88,000	\$55,000	\$143,000
Nevada	9,111,794	\$583,000	\$55,000	\$638,000
Oregon	689,841	\$44,000	\$55,000	\$99,000
Utah	17,667,507	\$1,131,000	\$55,000	\$1,186,000
Washington	183,804	\$12,000	\$55,000	\$67,000
Wyoming	16,664,574	\$1,067,000	\$55,000	\$1,122,000
WIEB Subtotal	70,787,620	\$4,533,000	\$605,000	\$5,138,000
National Total	117,139,830	\$7,500,000	\$2,500,000	\$10,000,000

STATE-IMPOSED SHIPMENT FEES

At least 8 states currently impose some type of per cask or per shipment fees, sometimes coupled with mileage surcharges, on SNF and HLW shipments, in order to recover the cost of inspections, escorts, and other safety-related activities. Select state cask fees are shown in Table II. The fees range from \$1,000 per cask to \$4,500 per cask. Several other states impose smaller shipment fees coupled with annual shipper license fees. Another approach has been adopted by Nevada, which bills nuclear waste shippers for the actual costs incurred in inspecting and escorting shipments.

Table II. Selected State Shipment Fees for SNF & HLW.[4, 5]

State	Truck Shipment Fee (per cask)	Rail Shipment Fee (per cask)
Illinois	\$2,500	\$4,500 (first cask) \$3,000 (additional)
Indiana	\$1,000	\$1,000
Iowa	\$1,800	\$1,300 (first cask) \$125 (additional)
Minnesota	\$1,000	\$1,000
Nebraska	\$2,000	\$2,000

As DOE moves forward with repository transportation plans, western states may well consider the adoption of shipment fees as an alternative, or as a supplement to, reliance on Section 180c funds. Table III shows the average amount of annual revenue (over 24 years) that various western states might raise from DOE shipments to Yucca Mountain, assuming the mostly truck scenario, if each state adopted a \$2,000 per cask shipment fee. These calculations assume the same representative routes used in the DOE FEIS, as shown in Fig. 1, and used for the state allocation calculations in Table I.

Table III. Average Annual Collections from State Shipment Fees

State	Average annual truck shipments to Yucca Mountain (Casks)	Average annual fees collected on truck shipments to Yucca Mountain (Dollars)
AZ	2,126	4,252,000
CA	286	572,000
CO	29	58,000
ID	183	366,000
NE	1,699	3,398,000
NV	2,199	4,398,000
NM	166	332,000
OR	138	276,000
UT	1,913	3,826,000
WA	138	276,000
WY	1,729	3,458,000

Table IV compares the average annual revenues that would be generated by DOE shipments to Yucca Mountain, as calculated in Table III, with the average annual Section 180c allocations under the WGA formula. All western states, with the exception of Colorado, would receive larger annual revenues from a \$2,000 per cask fee than from the Section 180c allocation. In many cases, the average annual revenues under the mostly truck scenario would be 5-10 times greater, if each state adopted a \$2,000 per cask-shipment fee.

Table IV. Cask Fee Collections and Section 180 c Allocations

State	Cask Fees (\$2,000 per cask) Dollars	Original WGA "75-25" Position Dollars
Arizona	4,252,000	243,000
California	572,000	199,000
Colorado	58,000	63,000
Idaho	366,000	123,000
Nebraska	3,398,000	1,255,000
Nevada	4,398,000	638,000
New Mexico	332,000	143,000
Oregon	276,000	99,000
Utah	3,826,000	1,186,000
Washington	276,000	67,000
Wyoming	3,458,000	1,122,000
WIEB Subtotal	21,212,000	5,138,000

CONCLUSION

The original WGA formula for Section 180c called for DOE funding to be distributed to affected states based on a straight-forward, two-part formula: 75 percent of the funds would be distributed based on the projected shipment-miles through the affected state; the remaining 25 percent would be allocated to

ensure minimum funding levels and program capabilities among impacted states and tribes. When this formula is applied to the DOE mostly truck scenario for Yucca Mountain shipments, about 51 percent of the total Section 180c allocation is distributed to 11 Western states. Assuming a total Section 180c annual allocation of \$10 million, distributions among the 11 states vary considerably, ranging from \$63,000 to \$1,255,000. All western states, with the exception of Colorado, would receive larger annual revenues from a \$2,000 per cask fee than from the Section 180c allocation under the mostly truck scenario. In many cases, the average annual revenues would be 5-10 times greater.

REFERENCES

- 1 WESTERN GOVERNORS ASSOCIATION, "Transportation of Spent Nuclear Fuel and High-Level Radioactive Waste," Policy Resolution 05-15 (June 14, 2005).
- 2 DOE, "Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada," DOE/EIS-0250 (February 2002). (Available on the web at http://www.ymp.gov/documents/feis_a/index.htm).
- 3 F. DILGER, R. HALSTEAD, "Many Roads to Travel: Alternative Approaches to Route Selection for Yucca Mountain Shipments," WM'03, Conference Proceedings, February 23-27, 2003, Tucson, AZ.
- 4 "Radioactive Materials (RAM) Transportation Fees charged by Western States," <http://www.westgov.org/wieb/radioact/transportfees.htm>, 1/25/2006.
- 5 "State Fees," <http://www.csgmidwest.org/Fees.htm>, 1/25/2006.