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SOME OPTIONS FOR MOTOR FREIGHT TRANSPORTATION IN A FUEL CONSTRAINED ENVIRONMENT

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The 1973-74 Arab oil embargo and the sudden jolt in the price of imported crude oil hit Americans like the onset of the flu. Wildly contagious, this acute disorder hampered the mobility of many and stirred up confusion and disbelief throughout the nation. Although many public officials advised that we were experiencing the beginning of a chronic affliction, a large proportion of the population did not share this diagnosis.

In the spring of 1979 a second blow to the gas tank rekindled national tensions, reduced output, increased unemployment, and led to justifiable panic cries for fuel. In such periods not only were truck movements curtailed, but a large portion of carrier productive resources were directed toward coping with the chaotic situation.

These recent episodes serve as lessons for policymakers. They clearly showed that a pressing public concern did exist. We didn't have the facts and in their absence suspicions filled the void. Most of us could accept shortages a lot better if we understood why.

The \$100 billion American trucking industry uses approximately 20 billion gallons of fuel annually. This paper seeks to clarify the motor freight industry's vulnerability to uncertain fuel supplies, and to examine several strategies for dealing with a smaller fuel supply and higher real prices for fuel.

Vulnerability to an Uncertain Fuel Supply and Rising Prices

The motor carrier is as vulnerable to fuel supply interruptions as the farmer is at planting or harvest time. The trucker and the farmer simply have no acceptable alternative to internal combustion engines. In order to meet the essential societal needs we have had to turn to hastily conceived fuel allocation plans drawn up by federal and state agencies.

An example of the misguided attempt to patch the fuel system can be seen in the May 1979 issuance of Special Rule No. 9.¹ Under this order, the Department of Energy allocated diesel fuel to agricultural production at 100 percent of current need. Production was not defined to include distribution. Farmers were allowed the diesel fuel they needed to produce food, while other essential fuel users, e.g., railroads and motor carriers, were completely ignored. Subsequently, the DOE amended the order to include the distribution of perishables by truck. But DOE so narrowly defined distribution as to be almost useless. Trucks had to have the cargo already loaded.

These same amendments expanded the 100 percent allocation level to other categories, including the exploration and production of oil and natural gas. Again DOE excluded distribution. Apparently, the rationale was that gasoline and fuel oil could be produced, but not distributed to the 216,000 service stations and other retail outlets. Neither federal nor state fuel allocation bodies have provided for the rational, systematic handling of fuel shortages.

One basic misrepresentation made by DOE is their data that trucks consume 24 percent of all petroleum.² All vehicles registered as trucks, ranging from farm pickups and recreational vehicles to tractor-trailer combinations were included in the definition. A more useful representation is to separate trucks used as passenger vehicles from those used to carry freight. Heavy duty freight-carrying combination vehicles use about 4 percent of all petroleum products.³

Another dilemma is the vulnerability to increases in fuel prices. The average truckstop price of 30 cents per gallon for diesel in 1973 doubled to 60 cents in 1978. As of July 1, 1980, the average price for this fuel, based on 407 reporting truckstops, was \$1.137 per gallon.⁴ Future increases will largely reflect OPEC pricing decisions and efforts by the federal government to bring the price of domestic crude oil up to world prices.

What is the impact of \$1.13 per gallon to a long-haul truck operator? Today, a typical two-man driving team, running 131,000 miles per year, will spend approximately \$33,400 for fuel. That's over one-fourth the estimated total costs, excluding drivers. A realistic total cost per mile, including 28.8 cents per mile for the drivers, is approximately \$1. In order to yield a year-end return on an investment of say, 18 percent, a charge of at least \$1.13 per loaded mile would be necessary. Certainly the percentage of fuel costs to revenue is not the same for all carriers.

¹DOE. "Special Rule No. 9 of Part 211. Petroleum Allocation Regulations." Adopted May 15, 1979.

²DOE. "End Use Energy Consumption Data Base Series/Tables." *Energy Information*, June 1978.

³DOE. Data derived from *Transportation Energy Conservation Data Book*. Oakridge National Laboratory. 1979, p. 215.

⁴Household Goods Carriers' Bureau. *Comparative Fuel Price Report*, July 1, 1980.

Voluntary Conservation

As fuel prices rise and supplies tighten, the incentive to act is increased. Our industry has become a firm believer in voluntary conservation methods. Since 1976, the Voluntary Truck and Bus Fuel Economy Program, a cooperative effort of truck builders, users, and government, has achieved impressive fuel savings amounting to more than four billion gallons. That's enough to heat all the homes in Boston, Pittsburgh, Minneapolis, and Columbus, Ohio for one year. Presently, the voluntary approach is believed to be responsible for saving some 4.2 million gallons of fuel a day.

These impressive savings stem largely from the rapid adoption of more efficient diesel engines, radial tires, and various aerodynamic devices to reduce drag. Additional common sense practices designed to conserve fuel are: reducing road speeds, teaching fuel conserving driving skills, improving maintenance procedures, better routing and scheduling, and adding new fuel-saving devices on older trucks. Whether these conservation efforts will be sufficient to assure an adequate supply of fuel for motor carriers is debatable.

At the present time, the fuel situation is like taking your hand out of a vise: the pressure is off, but you are still hurting. Supplies appear quite adequate but prices keep hurting us in the pocketbook. The DOT reported that during the first five months of 1980 gasoline usage in the U.S. has declined to its lowest level since 1971. That is the good news! The bad news is our oil bill is still equivalent to sending \$10.6 million abroad every hour. Currently, the OPEC cartel appears to be adjusting oil output to market demand so that prices can be increased automatically under some sort of inflation index.

The Motor Carrier Act of 1980

Someone said an adequate set of tensions will bring forth intelligent responses and lead to the achievement of progress. It is fair to say a superabundance of tensions confronted the ATA and our industry leadership on the issue of continued economic regulation of interstate motor carriers.

Some other time I would like to expand on the tensions, the responses, and the resources that were directed to the first comprehensive legislation dealing with the motor carrier industry since its economic regulation by the Interstate Commerce Commission in 1935. Time will tell whether or not progress was achieved by the enactment of the Motor Carrier Regulatory Reform Act of 1980, signed July 1, by President Carter.

The Congressional intent was to reduce governmental interference with the business decisions of trucking companies. Easier entry, rate flexibility, and several provisions designed to partially correct specific energy problems were major regulatory reforms incorporated in the new law.

Several sections of the act attempt to reduce the number of empty backhauls by owner-operators who transport exempt agricultural commodities. To avoid empty return mileages, these truck operators typically lease their equipment and themselves to regulated carriers with operating authority to transport regulated products such as processed foods back to the farming area. Other options include hauling exempt commodities in both directions, and acquiring ICC operating authority to haul freight that is regulated.

The new law expands the list of exempt agricultural commodities and establishes a procedure whereby an owner-operator can obtain, upon a showing of fitness and ability to comply with the law and the ICC's regulations, a permit to haul processed food, agricultural limestone, and fertilizer. Such persons operating under the new permit need only certify annually to the commission that such transportation does not exceed, by tonnage, the transportation of exempt commodities. These provisions are supposed to reduce empty miles and produce fuel efficiencies within the motor carrier industry.

Private carriers have also been granted new opportunities to reduce their empty miles. The federal regulations had prohibited intercorporate hauling, that is, the transportation for compensation, by one member of a corporate family for another member in the absence of ICC authority. Now, compensated intercorporate trucking is permitted so long as the parent company owns 100 percent interest in the companies for which the transportation is performed. In theory, fuel savings are to result by allowing company trucks to return home with freight instead of empty.

Will important fuel savings be realized within the motor carrier system as a direct result of the new backhaul allowances? In my opinion, as new entrants and existing motor carriers strive to balance their freight flows, the available traffic will be redistributed among more trucks, travelling more total miles. Effectively, greater fuel savings will not be achieved within the total system.

Price Controls, Allocations, and Conservation Plans

Unlike the successful voluntary actions previously discussed, gasoline prices and allocation regulations represent energy policy nightmares for the motor carrier industry. Price controls on gasoline distort the market mechanism by limiting the price that end users pay for fuel. Since motor carriers buy gasoline and diesel fuel through one or more supply channels, e.g., bulk, retail, spot market, there is more than one selling price. These price differentials and the resultant cost changes of carriers engaged in different types of business artificially impact on competition and the market shares held by carrier firms. If prices are binding, they favor purchases through channels that are not price constrained.

The other side of the regulatory pincers — allocation — provide each end user with access to each allocated product in proportion to its historical use. The first test of allocation, during the Arab embargo, forced gasoline suppliers in 1974 to supply their 1972 customers at prices based on those charged in 1973. Equitable allocation to end users was impossible and bringing order to a chaotic market was not achieved — only enormous confusion.

Subsequent governmental “quick fixes” to gasoline allocations in 1979 resulted in too much fuel being supplied to slow-growing regions while too little was made available to rapidly growing areas. By holding prices below market clearing levels, price controls made gas lines inevitable and effectively drove many marketers out of business to more enjoyable jobs. What’s more, the interstate movements of perishables were substantially slowed down, the movement of household goods practically stopped, meat packing plants shut down, and some milk was dumped. The consequences of rigid controls point up the fragile balance of the logistical system in the United States.

Regulations of diesel fuel present a special problem since middle distillates can be used to power trucks, locomotives, stationary engines, and oil burners in the home, factory or university. The major unresolved issue is how to apportion an interchangeable fuel among transport and non-transport users. Without the development of a national furnace registration file and a diesel truck file, and countless other files it is doubtful that diesel fuel regulations will ever be developed.

The Emergency Energy Conservation Act of 1979 calls for the development of a standby gasoline rationing plan and a standby federal emergency conservation plan. While the trucking industry would not receive all the gasoline needed in a declared national emergency, two mechanisms would allow carriers to secure additional gasoline supplies.

First, supplemental allotments are obtainable on the basis of historical consumption, rather than gross vehicle weight. Each business firm is required to register and identify its historical usage to DOE during a pre-implementation period. The second part provides for ration coupons that could be freely bought and sold, i.e., a white market for coupons. The standby gasoline rationing plan, effective July 30, 1980, is now in the pre-implementation stage and will remain in standby status until a determination of need is made by the President.

The Emergency Energy Conservation Act also called for the development of a standby conservation plan. The federal plan requires each state to draw up an acceptable emergency strategy. Among the options under consideration are:

1. Odd-even motor fuel purchases;
2. Employer programs — to reduce work-related commuter travel of employees;
3. Speed limit enforcement;
4. Compressed workweek; and
5. Vehicle use stickers — to forego the use of all vehicles between one and three days with specific exemptions.

In each instance, the proposed rules will place an undue burden on interstate commerce in contravention of the expressed provision of the EECA of 1979.

Less Restrictive Vehicle Size and Weight Regulations

There is at least one more significant industry concern that directly affects efficiency, productivity, and savings in fuel. Although the Federal-Aid Highway Act of 1974 specifies axle and gross weight limits for trucks using the Interstate Highway system, each state retains authority to adopt weight and length limits independently.

The present hodge-podge of non-uniform state regulations has handicapped the industry especially with the recent upward ratcheting of fuel prices. As of July 1980, six remaining states have not authorized the less restrictive federal weight levels on the Interstate System.

Recognizing the importance of these factors, the Congress is presently considering legislation to mandate uniform standards of weight and length for these roads. Cargo handling costs and circuitous routings could be reduced markedly for cross-country haulers if the industry were able to operate with at least the 80,000 pound limits and 60 feet for tractor semitrailers in all states.

In testimony submitted before the Connecticut legislature last year, a major paper company said that 80,000 pounds gross weight would translate into 512 fewer trucks on the highways of that state and the company would realize fuel savings of 64,737 gallons as compared to the 73,280 pound limit. As a matter of public record, the interstate system has been designed and built to engineering standards above 80,000 pounds.

The adoption of federal regulations permitting the nationwide use of 65 feet for other combinations would generate productivity improvements through better utilization of modern freight carrying equipment. At present, 18 states do not permit twin trailers. In many instances, additional transportation flexibility could be made available to farmers by dispatching a 27-foot trailer to the farm and then connecting it with a unit of similar size at an appropriate site near a major highway. As a practical matter, many more rural roads, bridges, and farm lanes can accommodate a 27-foot vehicle configuration as opposed to the largest size tractor semitrailer unit.

Full implementation of 65-foot twin trailer operations on the interstate and the federal-aid primary system would also improve fuel efficiency of the vast number of carriers who haul cargo of low density. We estimate that about 20 percent less diesel fuel and 30 percent fewer truck trips would be needed as compared to the same freight carried by conventional methods. Consolidated Freightways, for example, has estimated that the use of doubles nationwide would save about 3.6 million gallons of fuel for its company alone.

The American Trucking Association, plus farm and industry organizations, have been pressing for greater uniformity in highway regulations related to vehicular use as well as those related to the highway system itself. Essential segments of the highway system have reached their designed service life.

Capital investments are needed to reconstruct or rehabilitate those segments although maintenance projects are also languishing for a variety of reasons. Runaway inflation makes it almost impossible to project the costs of potential improvements. Jurisdictional hassles and other national priorities compound the problem. The result of deferred highway programs, i.e., less mobility and more circuitry, adversely affects farm and recreational income. More research is needed on the federal role in financing highways, the determination of user costs, and how these costs should then be recovered.

My final comment concerns the matter of relative fuel efficiency among competing modes of transport. It is true that barges are more fuel efficient than railroads or that rails are more fuel efficient than motor carriers? While simplistic ratio comparisons make for great advertisements, the facts do not support the assertions.

The claim of modal fuel economy superiority, based on the simple BTU per ton-mile calculation, is meaningless because energy use varies greatly among circumstances and any particular mode is rarely more energy efficient in all cases. Many service factors such as shipment size, speed and shipper/receiver convenience must be recognized when evaluating relative fuel efficiency of the various modes.

In my view, operating cost increases may eventually redeploy equipment to areas where the cost increase will be less strongly felt. In the case of rising fuel costs, the expected response by some motor carriers will be to decrease truck usage on very long hauls and redeploy the available capacity to shorter movements. Since short hauls can be completed more promptly than long ones a truck fleet reassigned to serve short hauls could carry more tons than before. The likely reaction by the railroads would be the opposite, i.e., a gain in some very long traffic and a further loss of short haul revenue traffic.

Admittedly, this scenario is a long term, evolutionary possibility. In the short run a major intermodal shift of traffic is not likely. The point is, all transportation modes have a big job to do and claims of which mode is more fuel efficient are, in my view, counter-productive.

Summary and Conclusions

The trucking industry has survived the present energy dilemma although perceptions of insecurity are higher and more disturbing than ever. With fuel costs continuing to rise at a rate faster than other costs it is clear that business decisions will be more and more energy related.

Most carriers believe they can handle long-term gradual reductions in fuel supplies through conservation. They also believe they can adjust to increasing fuel prices. What they cannot handle are the irrational actions of governmental "quick fixes." No petroleum product can be controlled for one group of end users and decontrolled for another.

Productivity improvement projects are receiving greater emphasis as motor carriers struggle to mitigate the adverse effects of inflation and a sluggish economy. We should not assume that motor carriers will continue to satisfy all of the changing demands placed upon them in the absence of rational, equitable energy policies.

The most valuable potential improvement in motor freight productivity is for the remaining states to modernize their truck size and weight standards and to permit the use of twin trailers. Furthermore, such permissible standards should in no way limit the states that have historically allowed higher limits.

Twenty years from today, transportation people still will be struggling with the availability and affordability of energy. Since we can't pull rabbits out of a hat as a magician does, or feed the multitude with a few loaves of bread and fishes as the Master did, we are forced to think a lot harder, manage our businesses more carefully than ever, and probably incur greater risks.