Transit Fuel Supply During Oil Disruptions: Coping With Uncertainty

Arnold J. Bloch

At the root of current-day energy contingency planning is the question of what can be expected during an oil supply disruption under free-market conditions as opposed to a federally regulated environment. The focus of this paper is on one aspect of this question: What will happen to fuel supply for public transportation systems? The reason for this focus is obvious. In the past, and under any imaginable contingency scenario, public transportation services have been and will continue to be relied on to provide basic mobility in many of the urban areas in the nation.

The experience of past crises and simple common sense suggest that transit systems cannot absorb any significant amount of new partronage in a contingency situation due to service expansion limitations and a predominance of work trip patterns oriented from the central city. Nevertheless, transit does represent a suitable substitute for some tripmakers as well as a crucial means of achieving economic and health maintenance for a number of transit-captive groups, including low-income wage earners and the elderly. For these reasons, transit systems will be expected to maintain current services and possibly expand some operations in a contingency situation. Are these reasonable expectations under decontrol?

The following questions are addressed in this paper:

1. How has decontrol affected the ability of public transportation to operate in an emergency situation?
2. How are transit systems dealing with decontrol?
3. What options are available to resolve transit fuel supply problems raised by decontrol?

The discussion in this paper concentrates on diesel fuel supply, which represents 98 percent of transit bus fuel consumption (the remaining 2 percent represent gasoline and propane) as well as the source of power for some of the nation's commuter rail systems. All rapid transit services and some commuter rail services in the nation are electrified. Oil supply disruptions and electrified transit systems are an indirect issue involving residual oil supply to those electric utilities that use oil (versus coal, nuclear power, hydropower, etc.). This issue is left to another forum.

EFFECTS OF DECONTROL

Quite simply, decontrol has greatly increased uncertainty among transit systems concerned with diesel fuel supply during future oil supply disruptions versus prior contingencies. During the 1973-1974 crisis energy diesel fuel, along with all distillate products, was allocated to users by order of of the federal government. Priority users, including public transportation services, were guaranteed 100 percent of their current requirements.

In the later 1970s price and allocation controls over distillate products were lifted and, as a whole, were not reinstated during the 1979 Iranian crisis. However, by April 1979 the U.S. Department of Energy (DOE) was already asking suppliers to voluntarily serve priority diesel fuel needs. This request was eventually formalized into a regulation known as Special Rule 9. Special Rule 9 was revised often in a matter of only a few months, but public transportation remained a priority user and received all the diesel fuel required. This guarantee remained in effect until full deregulation occurred in 1981, well beyond the time that a contingency existed.

Uncertainty has also been increased by the termination of the federally mandated state set-aside program for distillate products. This program, administered by individual state governments, was operating in 1973-1974 and was resumed in January 1979. The set-aside program allowed state governments to allocate, as they saw fit, up to 4 percent of the monthly middle distillate products (including diesel fuel) being sold in the state. However, the uncertainty created by cessation of the set-aside program is somewhat muted by two factors. First, transit systems did not normally request or use set-aside diesel fuel supplies in 1979 primarily because Special Rule 9 met their needs. (Transit systems did, however, often request and receive gasoline supplies from the set-aside programs for service and administrative vehicles.) Second, a number of states (e.g., New York, California) have instituted set-aside programs on their own or have indicated a desire to do so in an emergency. These programs will include diesel fuel products.

Price decontrol has also increased uncertainty. Diesel fuel prices were unregulated throughout the 1979 crisis, but to a great extent prices were held in check by controls on domestic crude oil prices. With all price controls lifted, crude oil and petroleum product prices would rise to their market clearing levels during a supply disruption. Although diesel fuel prices represent only about 8 percent of transit system costs, the possible effects of major price increases would be significant. Some effects are described as follows.

1. A major price increase could result in a short-run policy of deferred purchases of other materials in order to remain within budget. Among the purchases deferred are likely to be parts necessary for preventive maintenance of vehicles and facilities.
2. If budget problems persist or if other purchases cannot be deferred, a transit system may be faced with postponing payments to fuel suppliers until adequate funds can be secured. This would result in a transit system forfeiting price discounts often built into supply contracts for payment within 10, 15, or 20 days. Also, a pattern of postponed payments would likely cause potential suppliers to withdraw from future fuel supply contract solicitations. This would leave a transit system in an extremely poor competitive standing, particularly if contract bidding occurred during a supply disruption. Finally, in the most extreme and harmful case, a pattern of postponed payments could result in the cancellation of the contract by the supplier.
3. Most transit systems add a 10 to 15 percent cushion to their diesel fuel budget to account for possible price increases. But in a supply disruption, prices would increase sharply and in rapid order. In a prolonged emergency, the cushion would

be rapidly used up while other options, such as deferred purchases and postponed payments, are limited options. Transit systems would be faced with either increasing fares during a time when consumers are burdened with increased fuel-related expenses or securing added subsidies at a time when state and local government expenses would be rising and revenues would likely be declining (e.g., lower sales tax collection as consumer purchasing power declines).

4. Finally, in extreme cases of major price increases and poor transit system fiscal health, fuel consumption might have to be reduced (as it would be for most other users of oil products), causing a likely reduction in service at probably the worst time in terms of maintenance of mobility.

REDUCING UNCERTAINTY AFTER DECONTROL

How are transit systems currently coping with the uncertainty of prices and the supply of diesel fuel? Some systems have taken direct measures or are investigating direct measures to reduce uncertainty, but these systems are a small minority of the nation's more than 300 transit systems. Seattle Metro has created a 90-day stockpile of diesel fuel and has taken the lead in developing assured fuel supply contracts. The Southern California Rapid Transit District has entered the heating oil (approximately equivalent to diesel fuel) commodity futures market as a means of price hedging against diesel fuel price increases. The Washington Metropolitan Area Transit Authority purchases diesel fuel for all government agencies in the area under a cooperative buying agreement. This allows the system to greatly expand the amount of diesel fuel it normally purchases, which improves its competitive standing during both a normal and a contingency environment.

It is difficult, however, to find more than a handful of other systems taking the same or similar actions. The reasons are threefold. First, the cost of some of these actions is perceived to be prohibitive. Stockpiling, for example, involves major capital costs for expanding storage facilities and opportunity costs for storing fuel at high interest rates. The futures market requires margin payments as well as unforeseen margin calls. Assured fuel supply contracts require small but regular fees to guarantee continuance. When viewed against a period of stable and then declining diesel fuel prices which has existed since 1981, the apparent costs of such insurance methods are amplified.

Second, transit fuel procurement officials have shown a basic reluctance to enter into insurance and other types of innovative agreements to reduce uncertainty. The deregulated environment is relatively new, especially when viewed against the long periods of low prices and stable supply in the 1950s, 1960s, and early 1970s followed by years of regulatory control. A new set of purchasing guidelines and priorities has been slow to take shape among many transit systems.

Third, the fairly pervasive impression that exists among transit officials (as well as among other persons and groups) is that if an oil supply disruption were to occur, the federal government would reinstate regulations which would, at a minimum, guarantee fuel supplies to priority users. This position only increases the reluctance among transit officials to explore and possibly implement measures for reducing supply or price uncertainty.

Uncertainty about fuel supply has not become a factor in transit system energy contingency planning for one basic reason: few systems have updated any contingency plans that they may have generated in 1979-1980 while regulations were still in effect. Obviously, the current fuel availability and price situation has helped to reduce the incentive for revision of contingency plans, but so has a real reluctance to commit to plans calling for possible expansion of service, running buses to garages with more plentiful fuel inventory, and so forth--steps that significantly increase operating expenses.

Transit systems, by and large, are taking one major action which they classify as helping to reduce uncertainty. They are keeping a close review over and maintaining a close association with their diesel fuel suppliers. Review begins at the time of fuel contract solicitation, with an inquiry as to the source of supplies of all bidders and an informal survey among area diesel consumers to check the reliability of new bidders' supply. (Fuel quality issues may also be checked.) Although a contract does not normally require that fuel supplies emanate either from domestic sources or from a major oil company, transit systems do at least attempt to define the supply chain and evaluate its reliability before awarding contracts.

In addition, transit systems for the most part have foregone pursuing various cost saving opportunities available to them in the current oil-glut environment. Instead they are maintaining good, longstanding relationships with regular suppliers. Most systems, for example, have not switched from an annual to a monthly supply contract, which would open up the bidding process to suppliers dealing on the lower priced spot market in addition to those already bidding who generally have longer term, higher price supply agreements. Also, most transit systems have not sought lower price alternative sources of diesel fuel during the course of a given contract notwithstanding that many contracts often permit the transit system to request as little as 50 percent of the agreed-on volume and to make up the balance elsewhere.

There are exceptions, of course. The Regional Transit Authority in Chicago has combined both options, by switching from a semiannual to a monthly fuel supply contract and, within a given month, purchasing fuel from a cheaper alternative source rather than from its contracted source. But most systems have not employed such methods for two reasons: (a) by maintaining a long-term, high-volume arrangement, transit systems expect greater responsiveness on the part of the supplier to problems that might arise, whether related to supply, product quality, payment schedules, and the like; (b) in case of an emergency, transit systems want to maintain a long-term, high-volume relationship with a supplier in the event that government or supplier-imposed allocation procedures are reinstated. Such allocation systems are typically based on the historical volume of business between suppliers and consumers.

These measures, which are intended to reduce uncertaintly through better relationships between the transit system and the supplier, have one particular imperfection. They have not yet been tested under the strain of an oil supply disruption within a free-market setting.

OPTIONS FOR FURTHER REDUCING UNCERTAINTY

Five alternative types of measures can be pursued by government or transit systems for further reducing the uncertainty about fuel supply and prices created by decontrol.

1. Reinstate federal priority user allocation.
2. Use of Strategic Petroleum Reserve (SPR) supplies for transit needs.

3. Use of state set-aside supplies.
4. Transit system self-insurance.
5. Free-market adjustments.

Each of these alternatives is briefly described in the following sections.

Reinstatement of Federal Priority User Allocation

Reinstatement of a regulation providing transit systems with guaranteed allotments of fuel during an emergency already has widespread appeal and support among transit systems. This alternative may also attract support from another less obvious source--major oil companies. Many oil companies have stated publicly that in the beginning stages of an oil supply disruption, when demand is likely to exceed supply, they will be required by the Uniform Commercial Code to allocate scarce fuel supplies equitably among all their regular customers. Priority users will not be able to obtain a higher share. As a result, some companies support state set-aside programs as an appropriate conduit through which to give priority users added supplies.

Most companies further support a federal regulation standardizing set-aside programs so that the same criteria and procedures are followed in all states. Under the same reasoning, major oil companies could quite possibly support a federal regulation which bypassed set-aside programs altogether and which simply specified priority users who are to receive higher allocations. However, the support of these companies would be dependent on at least one factor: that priority users and uses are strictly defined and limited to a small number of services.

A federal priority user allocation regulation is likely to gain widespread political support throughout the nation, but only as a direct function of increasing the list of priority users and uses. When that occurs, oil company support will likely evaporate. Furthermore, the current Administration, which opposes such a regulation simply because it represents a deviation from free-market philosophy, would only increase its opposition as soon as the concept grew in scope to include many types of so-called priority users.

Use of SPR Suppliers For Transit Needs

The Strategic Petroleum Reserve currently contains approximately 300 million barrels of oil and is planned to contain approximately 500 million barrels by the mid-1980s. The SPR is the one major difference between the state of contingency preparations in the United States now and in the 1970s. In the event of an oil supply disruption that is considered serious enough by the President to warrant SPR drawdown, an auction will be held to sell off available supplies to the highest bidders. According to the most recent DOE plan, "the universe of eligible buyers will not be restricted, except insofar as necessary to assure performance and payment" (1, p. 13).

Drawdown of SPR stocks will likely dampen a reduction in the normal supply sources. But there are also likely to be disruptive effects among links in the supply chain, although these may be short-lived if and when SPR stocks eventually enter the normal distribution system. Diesel fuel supplies to transit systems could be affected by short-term dislocations, so that SPR drawdown as an overall strategy may not reduce uncertainty about transit fuel supply. But transit systems, like any other consumer of oil products, can directly use the benefits of the SPR rather than wait for the benefits to filter through the U.S. oil supply and consumption network. Transit systems can bid for SPR supplies, along with refineries, jobbers, truckers, utilities, and the like; virtually any reliable person or organization is included in the universe of eligible bidders.

How likely an option is it for transit systems to directly obtain SPR supplies? At the present, not very likely. Two main obstacles exist. First, SPR supplies consist of crude oil only, not diesel fuel. Thus, various arrangements would have to be made, whether they be transportation, refining and distribution agreements, or crude-for-diesel exchanges. Such arrangements are beyond the level of sophistication of virtually all transit systems at this time.

Second, the auction process is likely to require as reliability qualifications such measures as performance bonds or letters of credit. Furthermore, the auction will probably generate rather high bids. These two factors will make it difficult for transit systems, most of which have fragile financial backing, to enter into, let alone compete in an SPR auction.

There is an alternative to the auction process that transit systems may be able to pursue, however. Currently, up to 10 percent of SPR oil sold in a given month can be directed to particular buyers at the discretion of the DOE Secretary. Although regular prices will be synonymous with auction prices, having an assured supply may make it easier for transit systems to make necessary arrangements with the oil industry and to obtain proper financial support. Still there is no guarantee that the Secretary will invoke the 10 percent discretionary allowance. Even if the Secretary does invoke the 10 percent discretionary allowance, transit systems will have to compete in the political auction for the 10 percent of SPR oil along with other priority users such as small independent refineries.

Use of State Set-Aside Supplies

The set-aside programs that individual states have or may create for diesel and other fuel products are a likely source for reducing uncertainty about the transit system fuel supply. However, a key factor must be considered. In the past transit systems made little use of set-aside diesel reserves because of other means of guaranteeing supplies (e.g., Special Rule 9 in 1979). Without these means, transit systems may have to rely heavily on set-aside supplies. Conversely, state energy offices may receive a large proportion of requests from transit systems for set-aside supplies.

A somewhat simply constructed example shows what could happen in New York State, a state that already has on its books a set-aside program specifying that no more than 3 percent per month of various petroleum products sold by prime suppliers can be distributed at the state's discretion.

In 1981 nearly 900,000 barrels of diesel fuel were delivered for various purposes in New York State during an average month (2). Of this amount, only about 665,000 barrels are relevant to this discussion because the quality of the remaining diesel fuel (used by railroads, vessels, military, and for off-road purposes) is not appropriate for transit purposes (2). During fiscal year 1981 (the closest year for comparing data) 31 transit systems in New York State used an average of 104,000 barrels of diesel fuel per month (3). If a supply reduction of a magnitude of 5, 10, or 20 percent occurred, it could be assumed that all consumers in the state, including transit systems, were allocated 95, 90, or 80 percent of their normal diesel deliveries by their suppliers.

The data in Table 1 indicate what would happen if

Table 1. Impact on New York State set-aside supplies of fuel requests by transit systems.

	Monthly Volume Diesel Fuel (000s barrels)			
	Normally Delivered	Delivered, if Supplies Reduced by		
		5%	10%	20%
Total relevant diesel users[a]	665	632	599	532
Total 31 transit systems[b]	104	99	94	83
Total available in set-aside[c]	-	19	18	16
Total set-aside requests by transit systems[d]	-	5	10	21
Percent set-aside volume requested by transit systems	-	26	56	131

[a]Relevant users are highway and farm users, 1981 data.
[b]Fiscal year 1981 data.
[c]Assumes maximum 3 percent of total deliveries available that month.
[d]Assumes transit systems request from set-aside the full difference between what is normally delivered and what is being allocated.

all 31 transit systems then went to the state set-aside reserve to make up the difference. Under a 5 percent shortage, transit systems would request more than one-fourth of all set-aside supplies. Under a 10 percent shortage, they would request nearly three-fifths of the set-aside supplies available. Under a 20 percent shortage, the amount requested by transit systems would exceed the volume available in the set-aside program. Obviously set-aside has its limitations under extreme shortage conditions. But even during a smaller shortage, the competition for set-aside supplies will be greatly increased because of the added presence of transit companies.

Transit System Self-Insurance

The fuel supply uncertainty created by decontrol and not particularly reduced by the SPR or set-aside programs, which are likely to be employed during a disruption, can be decreased if transit systems take the type of self-insurance steps that they are not currently taking. Obviously stockpiling of fuel is an option and it may become more attractive if the price of fuel begins to rise and interest rates fall. Assured supply contracts are another option that may be further pursued. Both options may be used by more systems as various planning documents describing these options receive wider distribution (4,5).

Economists state, however, that if a supply reduction occurs within a free-market environment, those consumers who need supplies will be able to find them, but only at a higher price. Thus, such options as set-aside and assured supply agreements, which address supply only and not price, may be poor alternatives. The real self-insurance is for a transit system to be prepared as well as it can be for the extreme sellers market. It must improve its competitive standing as much as it can. This it can do through various educational means. A transit system can also improve its competitive standing through greater use of cooperative buying agreements with other transit systems and government agencies. Such agreements afford two major benefits. The greater volume of fuel to be purchased through such agreements increases the likelihood of receiving a lower per gallon price, particularly during normal supply periods. Even during emergency situations, however, price differentials exist and a larger consumer is more likely to obtain and retain lower-priced supply contracts, especially as suppliers would want to maintain their relationship once the emergency ends.

Cooperative buying agreements offer a second benefit. When such an agreement has been made, it represents a departure from past procurement methods and a step toward more innovative purchasing methods. Furthermore, it combines the financial backing of a number of systems or agencies, and this may afford a greater sense of financial stability. (It may not, however, depending on the financial status of individual entrants into the agreement.)

This combined movement toward innovation and financial security may allow for additional self-insurance steps that an individual system may not be willing to pursue and that are far less costly than fuel stockpiling. The cooperative may be better prepared for and more willing to participate in an auction of SPR supplies. If, as some proponents support, the SPR auction is converted into an auction of SPR futures options during normal supply periods, the cooperative would be in a better financial position to compete in this arena also. Likewise, a cooperative might be better positioned and more willing to hedge in the heating oil commodity futures market than most individual transit systems are today. The cooperative could protect against future price increases, possibly accept delivery of futures contracts in an emergency, and be able to withstand costly margin calls at other times.

Thus, the cooperative buying arrangement is one of the best options for reducing uncertainty because (a) it addresses the price issue as well as supply; (b) it works within the current free-market and SPR-use policies of the federal government, not depending on other possible actions by federal or state government; (c) it does not hurt the cooperative members if federal regulations are reimposed; (d) it presents possibilities of fuel trading or lending among cooperative members if spot shortages occur; and (e) it has important price benefits even during normal supply periods.

Free-Market Adjustment

Whether or not any of the transit systems use the options previously described, they will still be faced with the price uncertainty created by oil supply disruptions. Even if insulated somewhat from experiencing the most extreme price increase by such methods as futures hedging, direct SPR purchases, and joint buying, the magnitude of free-market price jumps caused by supply reductions is likely to quickly exhaust the normal and contingency fuel budgets of even the most farsighted and innovative transit systems. If fuel prices double within a month, transit costs would increase by approximately $34 million nationwide during that period (3). If transit systems were to follow their traditional means of generating revenue to make up the added costs, it would mean a cumulative fare increase of more than $12 million per month and additional government subsidies of $22 million per month (7). Fare increases would place a further strain on the economy and on lower income persons in particular. At the same time, normal government deficit support could become more difficult as (a) other government fuel-related costs will have risen, (b) other support priorities could emerge (e.g., heating oil or electricity payment subsidies for low-income persons support of a fully operational state energy office), and (c) government revenues from sales tax and other sources could decrease.

Are there other means by which transit systems could meet rapid fuel price increases without raising fares or tapping traditional subsidy sources? There are at least two possible sources, both dependent on federal action. First, the federal government is currently exploring economic measures to alleviate the hardships caused by quickly rising oil prices. One possible measure is to quickly reduce federal income taxes by lowering withholding rates. Another is to provide the states with block grants for use as they see fit. Transit systems could be a likely recipient of this block grant support. Funding for these actions would come from the existing oil windfall profits tax. The second source could come from the sale of SPR stocks, which could be returned to individuals or states in the same manner as the revenues from the oil windfall profits tax.

REFERENCES

1. A Report to the Congress: Strategic Petroleum Reserve Drawdown Plan. Ammendment 4. U.S. Department of Energy, Dec. 1, 1982.
2. Petroleum Supply Annual: 1981. Energy Information Administration, U.S. Department of Energy, Vol. 1, July 1982, pp. 169-172.
3. National Urban Mass Transportation Statistics: 1981 Section 15 Report. UMTA, U.S. Department of Transportation, Nov. 1982, pp. 2-155--2-126.
4. Cabot Consulting Group. Transportation Energy Contingency Planning: Transit Fuel Supplies Under Decontrol. Washington, D.C., May 1982.
5. Emergency Fuel Reserve Storage Planning: A Guide for Transit Managers. Municipality of Metropolitan Seattle. Seattle, Wash., Jan. 1983.

Transportation Energy Contingency Planning: An Update

Edward L. Davis

Transportation energy contingency planning, whether local, state, regional, or federal, is implemented from a short-range, quick-response point of view. The measures or strategies used are designed to mitigate the adverse effects of abrupt energy shortages on the mobility of persons or goods. The short duration of previous energy shortages suggests that energy contingency plans must be constantly updated to provide "shelf ready" responses that can be implemented in a relatively short time. For example, during the 1979 energy shortfall much of the crisis had eased before transit authorities and local governments could implement their plans.

Transit authorities have taken the lead in providing coordinated responses to petroleum shortages caused by supply interruptions. The U.S. Department of Transportation (DOT) and the U.S. Department of Energy (DOE) have supported these initiatives by providing funding to various transit agencies and local metropolitan planning organizations to do detailed contingency planning.

Since the 1973 Arab oil embargo, the United States has found itself vulnerable to the whims of unstable governments who at any moment might suddenly cut back petroleum exports. This dependence on oil from unstable sources could place the United States in great jeopardy if it is not prepared to respond. Although about 95 percent of all urban areas had initiated transportation energy contingency plans by 1982 (1), it has been concluded in several independent evaluations (2,3) that few of these areas have prepared plans that would be helpful in an energy emergency. An update of transportation contingency planning in the 3 years since the last crisis is provided in this paper.

ENERGY LEGISLATION

The Federal Energy Office was created by President Nixon to rid the nation of its reliance on oil imports. In 1975 Congress, through the Energy Policy and Conservation Act (EPCA), required the President to submit an energy conservation contingency plan that would apply to all states. Rationing, petroleum price regulation, and tax credit deductions were specifically forbidden by the act. The EPCA was followed in 1976 by the Federal Energy Administration's fuel rationing plan. The Power Plants and Industrial Fuel Act passed by Congress in 1978 was highlighted by an executive order to promote conservation among federal agencies and their respective federal aid programs.

The President received emergency allocation power, the most far reaching of which was gasoline rationing, with the passage by Congress of the Emergency Energy Conservation Act of 1979 (EECA). Under EECA (a) the President was required to establish energy conservation targets for federal and state governments, (b) state governors were required to submit emergency conservation plans within 45 days of the publication of conservation targets, and (c) the President was directed to prepare a standby Federal Energy Conservation Plan for states whose plans failed to meet conservation targets.

Many of the policies and actions of these acts were modified by President Reagan's executive order 12287 (January 1981) which removed price and allocation controls on United States crude oil and refined petroleum products. This present federal approach to fuel emergency preparedness is embodied in the National Energy Policy Plan of July 1981 subtitled