

# Technical Aspects of the Two-Step Procurement of Light Rail Vehicles

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The two-step procurement process is described in general terms. In the first step of this process, the important elements are the request for technical proposals, submitted without cost data, and the conduct of technical negotiations based on the buyer's requirements and the car builder's proposals. This paper deals with how these elements can be carried out to ensure that the buyer's interests are properly served and, at the same time, deal with the legitimate concerns of several proposers with diverse products in an equitable manner.

In recent years, there has been a strong interest in improving methods of procuring rail cars for mass transit systems. In a 1980 Department of Transportation study of procurement processes,<sup>1</sup> it was recommended that UMTA grantees should be encouraged to utilize two-step formal advertising and that experienced procurement techniques, among them product standardization and life-cycle costing, should be used to strengthen the procurement process. The report further pointed out that the two-step procedure combines the best features of negotiation (competitive sealed proposals) and conventional formal advertising (competitive sealed bids).

The two-step procedure, or more accurately two-step formal advertising, was developed by the U.S. Department of Defense. It was first used in 1965 by the U.S. Navy for the acquisition of a quantity of Talos missiles. The federal government has issued directives consisting of formal guidelines, rules, and recommendations on when and how to use the procedure.<sup>2</sup> In 1979, the Niagara Frontier Transportation Authority (NFTA) of Buffalo, New York, reviewed these directives and decided to use the procedure in the procurement of light rail vehicles for its 6.4-mile system now under construction.

Briefly, the two-step procedure consists of

- Step 1—in which no-price technical proposals are solicited and evaluated for acceptability by the buyer (the word "authority" will be used hereafter). During step 1, the authority can conduct technical negotiations with each proposal respondent in order to arrive at a product definition that meets authority requirements with a minimum of modification to the products proposed by the respondents. The final product agreed on is defined by issuing addenda both to the technical proposals and to the authority's request for technical proposal (RFTP).
- Step 2—in which those respondents whose revised technical proposals were declared acceptable by the authority in step 1 are invited to submit sealed fixed-price bids. The lowest responsive and responsible bidder can then be awarded a contract.

## THE NFTA EXPERIENCE

The main feature of the two-step process that NFTA found attractive was the flexibility in offerings it permitted the rail car industry. The authority achieved this flexibility, in part, by writing an RFTP that was not a detailed performance and hardware requirements document. It was thought that such an RFTP would result in offerings for existing rail cars and carry with it the advantages of increased competitiveness and reduced cost. Accordingly, the NFTA established a plan to implement the two-step process.<sup>3,4</sup>

The major phases in step 1 of this plan were to

- Establish requirements and write and issue the RFTP,
- Evaluate the technical proposals,
- Conduct technical negotiation meetings, and
- Announce a closing date for final proposals and prepare for step 2—the solicitation of price bids.

## Request for Technical Proposals

NFTA based its RFTP on a previously written detailed technical specification, which was then condensed to only those performance and hardware requirements essential to the Buffalo system. The task was not an easy one. If too much detail were specified (i.e., if requirements were mandated rather than left open), car builders with proven products that deviated in too many respects from the requirements would be discouraged. If not enough details were given, the RFTP would result in widely disparate proposed car designs.

This level of detail is a matter that each authority must deal with in terms of its own needs. The UMTA Light Rail Transit Car Specification Guide<sup>5</sup> addresses indirectly the question of level of detail: It specifies a baseline vehicle, but allows the possibility of selecting options on requirements "to provide additional operational flexibility and capabilities . . ."

Several points should be considered when preparing an RFTP:

- The RFTP is the beginning of a series of events and, therefore, should be structured to be consistent with the proposal evaluation process, the technical negotiations, and the declarations of acceptability that will follow. Thus, the preparers should have some idea of the evaluation criteria and how the technical negotiation sessions are going to be run. For example, subsections of the Portland RFTP<sup>6</sup> contained lists of questions to give potential respondents an indication of areas that would be of particular interest to the authority in the technical negotiation sessions.
- The specification of such detail as number of seats in a car, standee floor area, train makeup, or car length (or range of length allowed) should be considered carefully. The sensitivity of fleet size is greater to some of these parameters than others. The aim of the RFTP should be to specify them in such a way as to satisfy the operational requirements of the authority while minimizing any advantage that one car builder might have over another.
- If alternative subsystems may be proposed, the RFTP should make it clear to what depth each alternative (for any one subsystem) must be described and documented and to what extent interfacing and integration problems should be treated in the proposal
- It is now common practice to require the offering of service-proven major subsystems in step 1 proposals. If this is to be done, the RFTP should make it clear that service histories, including data on reliability and maintainability, must be included in the initial proposal submitted; other-

wise, this information must be discussed in the technical negotiation meetings and documented in addenda to the car builder's proposals.

- The RFTP should require that all proposals be organized in the same way—down to the last ranking subparagraph. If this is done, comparisons between proposals can be made quickly.

### Proposal Evaluation

In this phase of the step 1 process, all proposals received in response to the authority's RFTP are evaluated for acceptability. Except for blatant violations of RFTP requirements, it is rare that a proposal is declared unacceptable—the whole point of step 1 is to negotiate differences (which is the next phase). On the other hand, it is equally rare that a proposal is declared entirely acceptable at this point, that it is so well matched to the requirements that no technical negotiations are needed. Incidentally, if at any time a proposal is declared unacceptable, the two-step guidelines indicate that the RFTP respondent must be given an explanation.<sup>2</sup>

The manner in which technical proposals are evaluated depends on the evaluation staff's concept of the process. If the process is to be in the best interest of both the respondent and the purchasing authority, it must be well organized.

NFTA divided the evaluation process into two parts. The first part consisted of an evaluation of general acceptability in which such factors were considered as experience and background of the offerer firm, its organization and plan to carry out a procurement program, and the ability of its proposed vehicle to meet the broadest general requirements. If the respondent passed this first test, the second part, the technical evaluation, was to be carried out.

NFTA received nine proposals in response to the RFTP; all passed the first test. Invitations were sent to the respondents for technical discussions.

The details of the technical evaluation procedure depend on the evaluation staff—primarily its experience with rail car procurement. In the NFTA case, a simple check-off list was prepared, and the paragraphs in the proposal (which had been numbered to correspond to the paragraphs in the RFTP) were checked off under the following column headings:

- Information not provided
- Meets requirements
- Deviations indicated
- Remarks
- Reviewer identification

All of the nine proposals received by NFTA were given checks in the "discussion needed" column. Hence, a schedule was set up, and invitations were sent out to all respondents to meet with NFTA and its consultants to carry out technical discussions. Each invitation also contained a brief discussion of NFTA's concern over the most important technical issues needing resolution in each proposal. By the time this phase ended (or, in two cases, shortly after) and the next phase began, there remained six proposers with whom detailed technical negotiations had to be carried out.

### Technical Negotiation Meetings

This phase of step 1 is the most important and the most difficult to carry out in a way that meets the theoretical ideal for the process—namely, to arrive at a final set of proposed vehicles that meet the needs of the purchasing authority and to do so in a way that puts the proposed suppliers on an equal "selling" basis.

Two factors make the ideal hard to achieve: (a) the proposed rail cars are different products, and too much effort to make them technically equal violates the most

important tenet in the two-step process—i.e., to require minimum modifications to existing rail cars so that, other things being equal, costs are minimized; and (b) differences among vehicles make proper specification of parameters that influence the required fleet size difficult.

The NFTA experience with technical negotiations provides insight into ways this phase can be carried out expeditiously.

### Agenda

A detailed agenda should be prepared before each meeting at the conference table; if possible, the agenda should be given to the RFTP respondent before the scheduled meeting.

### Policy Statements

Authority policy should be established early in the negotiations; this will involve clarification or, if necessary, repetition of policy positions made in the RFTP but perhaps "missed" by some respondents. Policy statements may include methods of incorporating agreements reached during meetings into the procurement documents (the best way is by addenda to the technical proposals and to the RFTP), methods of handling subsystem suppliers (especially treatment of alternative subsystem listings), and life-cycle costing considerations, and, most importantly, the way the "size" of the intended purchase will be determined. In principal, all of these policy matters are made clear in the RFTP but, inevitably, issues will be raised with each respondent that may make it necessary to modify earlier positions.

### Recordkeeping

The choice of a recordkeeping method should be up to the authority negotiation team. In the NFTA case, recording meetings on tape was considered but, for several reasons, not used. The sheer volume of tape expected was prohibitive—not in terms of cost but in terms of usefulness. As it turned out, more than 150 hours of meetings were held with six respondents. In addition, tape transcriptions of meetings with a number of people are often unintelligible.

It was finally decided that all the authority's negotiation team members (which ranged from four to six people at any given meeting) would take notes. The proposer's teams also took notes.

### Changes in RFTP Requirements

This is the most vexing of the issues that can come up during the technical negotiations—especially if, as in the NFTA case, there was no formal industry review phase before the RFTP was issued (the schedule did not permit it) and both four-axle and six-axle articulated cars were allowed.

Some of the decisions facing any authority negotiation team are as follows:

- Which performance and hardware requirements are necessary and should be held firm—even at the risk of having an otherwise attractive proposal withdrawn.
- Which requirements are worth relaxing in order to keep as many of the respondents in the competition. Obviously, the relaxation of a requirement has to be weighed against its impact on meeting the operational needs of the system. The less detail in the RFTP, the more likely issues like this will arise.
- Which proposed features are desirable but not necessary. These are usually features that are not spelled out in detail in the RFTP and are associated with existing proposed vehicles. After

Table 1. NFTA light rail bid price comparison.

Bidder	Fleet Size, Cars	Car Type	Percent Deviation From Low Bid <sup>a</sup>
A	33	4-axle	0
B	33	4-axle	+4%
C	27	6-axle	+16%
D	25	6-axle	+21%
E	25	6-axle	+38%

<sup>a</sup>Based on railcar costs, not including spares, software, and cost offsets (travel and maintenance costs) used as the basis for award.

the authority negotiating team has made it clear that a feature is desirable but not necessary, it is up to the respondent to decide whether he will keep it or remove it.

#### Clarifications and Additional Data

Given that proposals are responsive, the need for clarification and additional data from respondents will be in inverse proportion to the amount of detail in the RFTP. During the course of technical negotiations, it may become evident that more information is needed from some respondents. The obligation of the negotiation team is to make every effort to equalize the resulting effort required. Someone should keep careful track of who has been asked to do what. In the end, all respondents should have been asked to respond in essentially the same depth, with their proposals and additional data, on all issues.

#### Proposal Closing Date

During the course of the technical discussion meetings, agreements are reached and addenda issued, both to each respondent's proposal and to the authority's RFTP. At the end of the sessions, the authority's final addendum is issued (NFTA issued five addenda), and a closing date is announced for the receipt of all final proposals.

The essence of the step 1 negotiation process is reflected in the final RFTP; it will probably have been changed from its original version, though in no major respects, to encompass a number of different rail cars—all of which meet the needs of the purchasing authority. In the NFTA case, the proposed vehicles, of which there were six, ranged from a 67-foot, 4-axle car to a 98-foot, 6-axle articulated car.

Five of the proposal respondents submitted price bids in step 2. As shown in Table 1, the total spread in the bid price per car compared favorably with recent similar procurements.<sup>4</sup> Thus, two of the aims of the two-step procedure—to attract a good number of bidders and to receive reasonably competitive price bids—were accomplished.

#### REFERENCES

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## A Study of Transit Rail Car Guarantee Warranty and Reliability Contractual Provisions

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Purchasers of light rail vehicles, concerned with the risks of developing new technology, have applied contractual remedies independently of one another. Members of the manufacturing and supply industry have complained that standardized guarantee/warranty/reliability (GWR) pro-

visions in contracts for the procurement of transit rail cars were becoming too restrictive and could have adverse financial effects on the industry.

Analysis of recent rail car contracts and discussions with transit operators and equipment suppliers support this