

PART II - FLEET PLANNING

SELECTION AND ACQUISITION OF EQUIPMENT

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The primary function of equipment managers is to provide the organization with the proper equipment, at the right time and at the lowest overall cost. A major task in accomplishing this function is fleet planning, which involves identifying the requirements of equipment users, developing strategies to meet those needs optimally, and putting the plan into action. Economic replacement is a complex portion of this process and will be discussed separately. Equipment replacement includes developing procedures to assure that each unit is replaced or remanufactured at its optimal economic life point, and developing effective specifications and procurement procedures.

Fleet Planning

There are eight basic steps in the fleet planning process: (1) establish assignment and utilization policies and procedures, (2) define individual user needs, (3) develop total equipment requirements, (4) define and analyze alternatives, (5) develop comprehensive fleet plan, (6) incorporate fleet plan into overall fleet budget, (7) obtain plan/budget approval, and (8) put the plan into action.

Step 1 - Establish Assignment and Utilization Policies and Procedures.

A number of factors affect fleet size, some of which are policy-level decisions that may require the approval of top level administrators. These factors need to be defined and appropriate policies established as an essential first step in the fleet planning process. The factors may vary between agencies but, generally, the following should be addressed:

(a) Full-time Assignments to Individuals. The assignment of a vehicle to an individual on a 24 hour basis is strictly a policy decision made at a high management level. This decision should be based on true need within job requirements. Generally, such assignments are made to top administrators, safety or law enforcement personnel, or managers subject to 24 hour call such as maintenance foremen. The policy should be formalized and included in the organization's policy manual.

(b) Pooling. Another factor that may affect fleet size is the amount of pooling that is done. Many agencies maintain sedan motor pools for agency-wide use. Some maintain heavy equipment pools for high cost units such as crawler tractors and cranes. Both practices are sound, recommended methods for minimizing fleet size, but both must be effectively administered. The amount of pooling done will be affected by user requirements. Pools are usually more effective if administered at some level central to the users.

(c) Temporary Transfers. Many departments within an organization experience peak seasonal equipment demands during different seasons, such as parks maintenance and snow removal. This creates the potential for temporary transfers of equipment so that total fleet size can be minimized. As in pooling, the amount of temporary transfers will depend on specific user

requirements. Clear written policy concerning service, repair and transport responsibilities will help promote the cooperation between departments that is essential for such a program to work.

The way rental rates are structured can provide an inducement for managers to transfer equipment when it is not being used. A two-part rate, where the user is charged an "ownership" or "assignment" fee that recovers the depreciation regardless of use, encourages the user to transfer idle equipment.

(d) Leasing/Renting. Another policy area that must be addressed is leasing or renting. Renting is an effective means of meeting a peak seasonal need for a particular unit, or a few more units, such as mowers or snowplows. Leasing is a viable alternative for meeting longer term needs such as equipment for a onetime project (like a special drill unit) or specialized, high cost equipment with low utilization (like a large crane).

(e) Utilization Objectives. Utilization is an effective measure to assess equipment assignments, pooling and transfers. Low utilization may indicate that a vehicle should be pooled or disposed of altogether.

It is difficult to set universal standards for utilization, even within one's own agency, due to the varying nature of the work. Exceptions to standards always occur, but this is no reason for not having them. General standards, can be used until an agency has accumulated enough historical data to develop its own. Even then, standards should be reviewed and updated (if necessary) periodically to be truly effective.

(f) Downtime Objectives. Downtime is the time that equipment is unavailable for work during normal working hours. It includes time out for preventive maintenance as well as repair. The amount of downtime experienced in a fleet will depend on a number of factors: (i) age of the equipment, (ii) operator training and attitude, (iii) parts availability, (iv) mechanic skill level, (v) shop facilities and tools, and (vi) shop efficiency. An agency's equipment management program should aim to improve performance in all these areas. The agency should assess overall goals and set downtime objectives to meet the organization's needs.

Step 2 - Define Individual User Needs.

Each department must define its specific equipment needs, assisted by the fleet manager. Since the annual fleet planning process takes some months to accomplish (it is actually a continual process), the fleet manager should ask the users to submit their needs well in advance of the budgeting process so there is time to develop a well-conceived, comprehensive plan.

The users may define their needs in a number of ways. A detailed review of the workplan, with particular attention to the types, quantity and time frame of work to be done, will help operating departments determine their equipment needs. For example, maintenance supervisors in Arkansas set the complement of needed equipment from the annual Maintenance Management System workplan. Administrative departments can use standard assignment criteria and utilization objectives, as previously described, to help define needs.

Step 3 - Develop Total Equipment Requirements.

Once each user's requirements have been defined, the fleet manager must analyze them separately and in total to identify how to optimize the fleet size. The requirements should be summarized by equipment class.

Step 4 - Define and Analyze Alternatives.

After the requirements have been summarized, individual department and total fleet needs become highly visible. The fleet manager must then analyze the specific requirements and determine alternatives for meeting the users' needs. There are four possible alternatives to meet peak user needs: (a) fleet pooling, (b) temporary transfers, (c) leasing or renting, and (d) buying new equipment/expanding the fleet. One point should be kept in mind: the effects of the various alternatives on operational effectiveness must be evaluated when making fleet size decisions. Such decisions cannot be made on economics alone. Cold, hard facts on paper do not always translate to maximum operational efficiency in the field.

Step 5 - Develop Comprehensive Fleet Plan.

Once fleet size has been determined for major equipment classes, equipment replacement considerations must be included in the plan. Determining replacement requirements is one of the more complex aspects of equipment management and will be discussed at the end of the fleet planning section.

The fleet plan consists of the following sections: summary, assignment policies, definition of user needs, fleet expansions, pooling and transfer, rent/leasing programs, equipment replacement, and small equipment purchases. The summary should be a short narrative with a chart of proposed actions for the coming year. It will provide top management with a quick, yet thorough overview of the equipment program. Subsequent sections of the plan should provide documented detail of how the total fleet plan was developed. This documentation requires considerable effort, but will provide essential information during the budgetary process.

Step 6 - Incorporate Plan in Overall Budgeting Process.

Developing the plan simply takes a lot of time; selling the plan is the real challenge. A well established planning process and a well documented fleet plan will greatly increase the chances for gaining approval of the plan.

It is important to prepare a time schedule for developing the fleet plan. Depending on the agency's size, the plan will take weeks or even months to prepare. And this must be done prior to formal budget submission. The time it will take to accomplish each event should be estimated (and adjusted according to experience). Actual dates can then be set for starting and completing each step of the process. The schedule should be closely followed so all tasks are completed on time.

Step 7 - Obtain Plan/Budget Approval.

The next step in the fleet planning process is to gain approval. Generally, this part of the process must fit the agency's predetermined budget process.

Disapproval of any part of the plan will force the user to reexamine needs. Time should be allowed to give this reexamination the management effort it deserves.

Step 8 - Put the Plan in Action.

After the fleet plan has received final approval, it must be put into action. Agreements must be developed and finalized for any equipment to be leased or rented. Equipment reassignments must be made as required. Specifications must be developed, procurement procedures put into effect to acquire new units, and old units disposed of; these activities will be discussed in the next section on replacement.

Equipment Replacement

Equipment replacement planning is one of the most complex aspects of equipment management and, as such, usually receives far less attention than is needed. Replacement planning is a continuing process. Prospective replacement candidates can be determined at least one year, and ideally from three to five years, in advance by projecting average monthly utilization for each unit. Those that project to reach replacement targets by key replacement cycle dates can then be monitored closely to avoid unnecessary spending on them. Periodic updating of the projections can help narrow the list to the most likely replacement candidates as decision deadlines approach.

Long range replacement planning allows the fleet manager to coordinate the replacement process with budget cycles. Advance planning also allows the fleet manager to spread purchase of like vehicles over several replacement cycles to minimize the impact of a short term replacement funds shortfall.

Replacement or remanufacturing decisions should be based on sound economic analysis, which requires the accumulation of accurate cost history data. A good replacement method includes the following steps: (1) identify units targeted for replacement, (2) obtain replacement requests from users, (3) perform a detailed physical inspection, (4) apply an economic analysis model (for automated systems), (5) evaluate alternatives, (6) prioritize replacement units, (7) develop a total capital replacement plan, (8) develop new equipment specifications, (9) acquire new equipment, and (10) dispose of old equipment.

Step 1 - Identify units targeted for replacement.

Age or usage of an equipment unit should be targets for replacement. In the absence of historical data for a particular fleet, targets established by industry or other government agencies can be adopted or modified to fit the agency's specific situation.

In addition to target life, exceptionally high cost units should also be targeted. This is done by establishing an exception threshold so that units that exceed the class average maintenance and repair costs can be identified. For example, if a unit experiences maintenance and repair costs that are 50% higher than other units in the same class and age group, it should come under replacement review.

Step 2 - Obtain replacement requests from users.

Equipment users should submit their replacement requests after being supplied with lists of equipment which has reached the replacement targets. Equipment not on the targeted list can be requested for replacement with adequate explanations from users. Users usually have good insight into problem equipment, and their input can be valuable in making good replacement decisions. Equipment should be listed in priority order. Then, if replacement funding is changed, equipment can be purchased in the order of need.

Step 3 - Perform a detailed physical inspection.

Once a vehicle has been targeted, a thorough physical inspection should be performed by a competent and experienced technician to determine whether the unit can remain in service without major repair or overhaul, or whether it should be replaced.

Step 4 - Apply an economic analysis model (for automated systems).

Step 5 - Evaluate alternatives.

At this point in the replacement process, there are three alternatives for handling a targeted equipment unit: (a) leave the unit in the fleet as it is, (b) remanufacture or overhaul the unit, or (c) replace the unit.

Units that have reached or will soon reach their targeted replacement life should be carefully evaluated before overhauling. When overhaul is justified economically, the agency can accrue substantial savings over replacing the unit.

The U.S. Navy has developed guidelines to aid in making replacement/overhaul decisions. They show the maximum percentage of replacement cost that can economically be spent for a major one time repair.

Overhauls appear to offer significant savings for heavy, highly specialized or very expensive equipment, but can approach replacement cost for light equipment. Therefore, actual case-by-case analysis, using information like the Navy guidelines, is the only logical approach to evaluating an overhaul vs. replace situation.

Step 6 - Prioritize replacement units.

Agencies whose capital replacement budgets are fixed or subject to approval by legislative bodies generally do not have funds for all needed replacements. Although this is not sound economically, it is a real world situation. After the disposition of each targeted unit is decided, the replacement units should be prioritized. This way, if the budget does not permit replacement of all needed units, the top priority units can be chosen. A prioritized list will also make the effects of inadequate funding highly visible.

Step 7 - Develop total capital replacement plan.

As mentioned earlier, equipment replacement should be incorporated in the overall annual fleet plan to assure that the replacements meet the users'

needs. Naturally, the capital replacement budget should be integrated into the fleet budget and the organization's overall budget.

Step 8 - Develop replacement equipment specifications.

Once an equipment unit has been chosen to be replaced the next step is determining what requirements will have to be met by the replacing unit. With the help of user-defined needs, information from manufacturers and input from the agency's equipment personnel, the spec writer can prepare specifications to meet all requirements. Users should review the specifications prior to bid submission to make sure all their requirements are included.

In public works fleets, some equipment can often be used for more than one activity. A good example is the highway maintenance dump truck that hauls asphalt in the summer and spreads deicing chemicals in the winter. The spec. writer must consider all intended uses and select the best multipurpose unit. The spec. writer should include the following steps in the specification development process: (1) understand job requirements, (2) determine what is most important, (3) evaluate equipment on the job, (4) clearly state what is required, and (5) establish award criteria.

Step 9 - Acquire new equipment.

The most common way fleets acquire new equipment is by calling for bids based on the specifications. There are several types of bids: (a) low bid, (b) low qualified bid, (c) open end bid, (d) total cost bid, (e) sale/buy-back and (f) rent-with-option-to buy bid.

All bids should be carefully checked to make sure they meet the written specifications. When equipment is delivered, it should be inspected and checked item by item to assure compliance with specifications.

Although government agencies normally purchase new equipment, used equipment is sometimes a wise investment. Buying a used piece of specialized equipment with a projected long life for occasional use can save the agency as much as half the cost of a new unit.

Step 10 - Dispose of old equipment.

Vehicle disposal can dramatically affect total equipment cost. Each of several disposal methods has its own particular advantages, depending on a number of considerations.

The most common disposal methods are (a) auctions, (b) sale to new equipment dealers, (c) sale to used equipment dealers, (d) sale to fleet operator's employees, (e) sale at retail to the public, (f) sealed bids, and (g) salvage.

Regardless of which method is chosen, equipment should be properly prepared for disposal. A good rule for selling used equipment is to be honest, do not try to conceal damage, and give a fair appraisal of the condition of the equipment.

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NOTE: A copy of the full paper, of which this is an abridgment, can be obtained from the author.

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