



# Multi-Function Device (MFD)

## *Buying Guide*

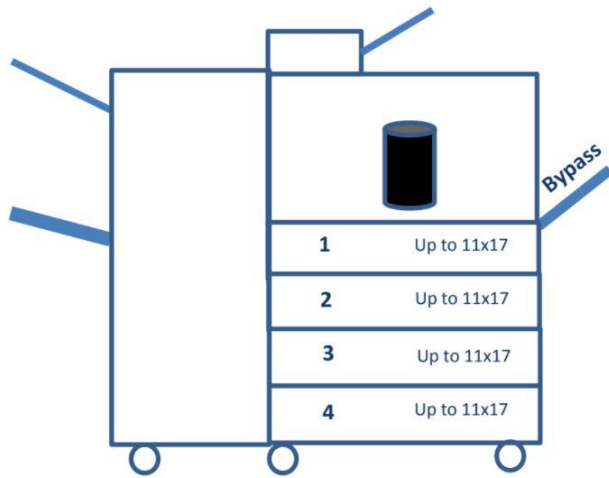
Acquiring multi-function devices is a necessity for normal business operations. These devices enable workers to produce, reproduce and distribute information that is mission-critical. However, the necessity and criticality of these devices should not translate into a complicated procurement process that introduces fear, uncertainty, doubt, which can result in additional costs to the government. This guide attempts to demystify the procurement process for multi-function devices and equip the Buyer with a step-by-step method for how to select the appropriate devices and support services to meet the agency's operational needs.

The guide is structured in seven steps that progressively take you to the completion of configuring and selecting the appropriate multi-function device(s). The following are the seven steps:

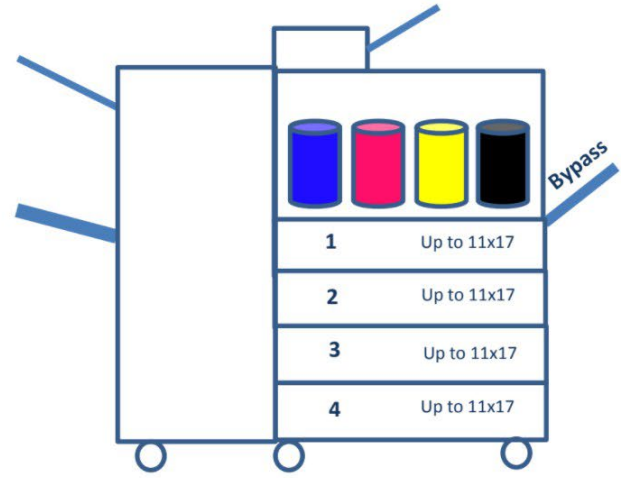
1. Select The Device
2. Select The Functions
3. Select The Print Engine
4. Select The Paper Capacity
5. Select The Finisher
6. Select The Maintenance Plan
7. Select The Financing Method

Once you complete the seven step process, you will be equipped to write a statement of work (SOW) with clear, concise and defensible specifications for your request for quote (RFQ) that incorporates the major elements of the Total Cost of Ownership (TCO). The guidance the GSA provides in this *MFD Buyers Guide* is not a prescription for source selection criteria. Its sole purpose is to provide you with a systematic approach to configuring and selecting multi-function devices.

# Select The Device



**MONOCHROME**

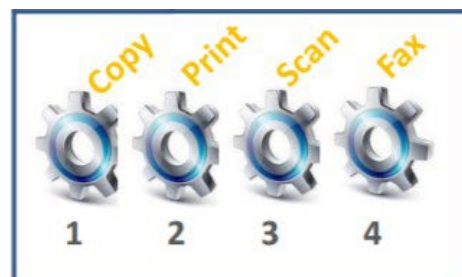


**COLOR**

**The first step and decision point is to determine whether there is a need for color output or just monochrome output. This decision point is critical because it has cost implications for the cost of the device and the costs of the accompanying maintenance plan, which will be selected in step 5.**

Generally, the cost of a color device versus a comparable monochrome device is higher in large part due to the added complexities of incorporating three additional physical color processing units and the color calibration management, which is not needed in monochrome devices. Also, color maintenance plans are generally more costly than those of comparable monochrome devices because of the additional consumable supplies, parts and technical service expertise needed to produce quality output consistently. Therefore, the GSA recommends that you determine whether color output is needed for missional operations and objectives and whether a homogeneous distribution of color devices is needed or if a mix of color and monochrome devices is optimal for operation productivity and financial efficiency.

## Select The Functions



Copy	Print	Scan	Fax
This function allows end-users to make “reproductions” of paper-based source documents using a platen glass and/or automatic document feeder. No networking is required for this function.	This function allows end-users to send electronic source documents for printing. Networking and print drivers are required for this function .	This function allows end-users to send paper-based source documents to a designated location electronically. The designated locations include: email, network folder, file servers and document management repositories. Networking and file-path routing is required for this function.	This function allows end-users to send both paper-based and electronic source documents to a designated receiver. Fax functionality requires a phone-line connection and/or a network connection for IP-based faxing.

The second step and decision point is to determine the required functions needed for producing document output: copy, print, scan and fax.

### Copy

The copy function allows end-users to “reproduce” paper-based source documents by utilizing a platen glass and/or an automatic document feeder. As a default, multi- function devices are equipped with copy, print and scan functions. However, if you only need the copy function, then you can request a “copier-only” device that is not enabled for networkability and therefore cannot be used for printing and/or scanning. It is important to note that due to the effectiveness and efficiency of multi-function devices “copier-only” devices are not as ubiquitous as they once were, so your selection options may be limited.

### Print

The print function allows end-users to send electronic source documents over the network for printing. The multi-function device must be networked and print drivers must be configured to enable end-users to print from a computing device. End-users are able to print simple one-page prints and also complex multi-page documents with various finishing options (when configured) like collating, stapling, hole-punching, folding, and booklet making.

## Scan

The scan function allows end-users to send paper-based source documents to a designated receiver/location electronically. The standard, designated locations include: email, network folder, file servers and electronic document/records management repositories. The great benefit of scanning is that organizations do not incur additional costs for scanned images because it does not require consumable supplies usage.

Additionally, scanning enables organizations to migrate and/or manage document workflow change initiatives from physical to electronic records management.


## Fax

The fax function allows end-users to send and receive both paper-based and electronic source documents via a facsimile transmission. Faxing is still a viable document distribution alternative for end-users for various reasons, chief among them is the legally binding nature of a fax document. A fax document:

Provides traceability: the fax protocol enables end-users to produce transmission confirmation reports when sending and receiving fax documents.

- Provides for signature capture: the fax protocol enables end-users to apply a written signature or digital signature to a document, thereby authenticating the sender.
- Provides custodianship: the fax protocol establishes a transmission connection between two remote points whereby the transmission cannot be intercepted.

The fax functionality works a phone-line connection and/or a network connection for IP-based faxing, which gives end-users options depending on the organization's infrastructure, compliance needs and document management workflow.



# Select The Print Engine

**The third step and decision point is to determine the print engine or “speed” of the device. There is a common misconception about selecting the “speed” of the device that causes buyers to select devices that are underutilized and which introduce a burden of increased cost without a concomitant benefit.**

Generally narratives the like following are used to justify selection decisions:

- *“I can’t wait for documents to print, so I need a high-speed device.”*
- *“My boss always has last minute requests that I need to copy fast, so I need a high-speed device.”*
- *“We have ten people in my department using the same device, so the faster the device the faster I get my output because I can’t afford to deliver a report late.”*

These narratives represent valid reasons and risks, but these are not necessarily resolved by correlating the mitigating solution to a high-speed device. The speed of the device does not correlate to the need to have your output fast, it is determined by “how much” output is consistently being produced in order to maximize the device availability, operational uptime; ultimately to maximize end-user productivity. This is generally determined using an average monthly page volume (AMPV) usage interval to determine the print engine speed, which is stated in page(s) per minute (ppm), that is needed for stated usage. Below are two tables showing the GSA recommendation for considering the AMPV usage interval and the correlating device speed for A3 (11x17 size paper) and A4 (8.5x14 size paper)<sup>1</sup> multifunction devices:

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<sup>1</sup> Step 4 below will provide information on the distinctions between A3 and A4 devices. A simplistic way of distinguishing these devices is that A3 is what was traditionally considered a copier and A4 devices is what was traditionally considered a network printer. Advancements in technology have blurred the lines of demarcation that once distinguished these two device platforms, which are now known as multi- function devices/printers. Though both device platforms may share the label of multi-function device/printer, they differ mainly based on the monthly usage. There are also differences in their supply and service delivery chains.

**Table 1\_A3 Devices**

Volume Band	Avg Monthly Page Volume	Speed Segment
1	<5,000	Up to 20 ppm
2	5,001-10,000	20-29 ppm
3	10,001-25,000	30-39 ppm
4	25,001-40,000	40-49 ppm
5	40,001-55,000	50-59 ppm
6	55,001-70,000	60-69 ppm
7	70,001-90,000	70-79 ppm
8	90,001-109,000	80-89 ppm
9	110,000+	90-110 ppm

**Table 2\_A4 Devices**

Volume Band	Avg Monthly Page Volume	Speed Segment
1	<1,500	Up to 25 ppm
2	1,501-2,500	25-30 ppm
3	2,501-5,000	31-40 ppm
4	5,001-10,000	41-50 ppm

**Additionally, a distinction must be understood as it pertains to a perceived “wait time.”**

The initial time for one printed page to arrive in the output tray after pressing the “start” button is known as the first-page-out time. The first-page-out time does not depend on the print engine speed, but on the processing speed, and is therefore a static amount of time despite the rated print engine speed. The variability in the wait time is negligible and even inconsequential except when printing mid-high volume print jobs. Once the inertia is broken with the first-page-out, the print engine will begin to move at a steady rate. When working on low volume print jobs with a few pages, one can measure the time in seconds instead of minutes.

**Here is a simplistic example that may help with understanding the total wait time:**

**Job Scenario 1:** *“Every day, I need to print a two-page report, on demand, a few times a day. I can’t waste time waiting for this report. I need a 50 page per minute (ppm) device.”*

**Assumptions**

- There are 10 employees who use this device and print an average of 1,000 pages per month.
- All 10 employees print the same job output.

**Facts**

- The first-page-out time is 5 seconds.
- The calculated operating speed equals the quotient of the 60 seconds divided by the Rated Speed (60 seconds/PPM).
- The stated usage of the 10 employees results in an AMPV of 10,000 impressions per month. Based on the stated usage, the table recommends a 20-30 ppm device.
- The end-user requests a 50 ppm device rated to handle an AMPV of 40,000-50,000 impressions.

**Impact**

- The wait time for this job is the sum of the first-page-out time plus the operating speed time.

**50 ppm Device**

- The first-page-out time equals 5 seconds
- The operating speed time equals 1.2 seconds ( $60 \text{ seconds} / 50\text{ppm} = 1.2 \text{ seconds per page}$ )
- Total wait time equals 6.2 seconds
- The estimated device price is \$13,000

**30 ppm Device**

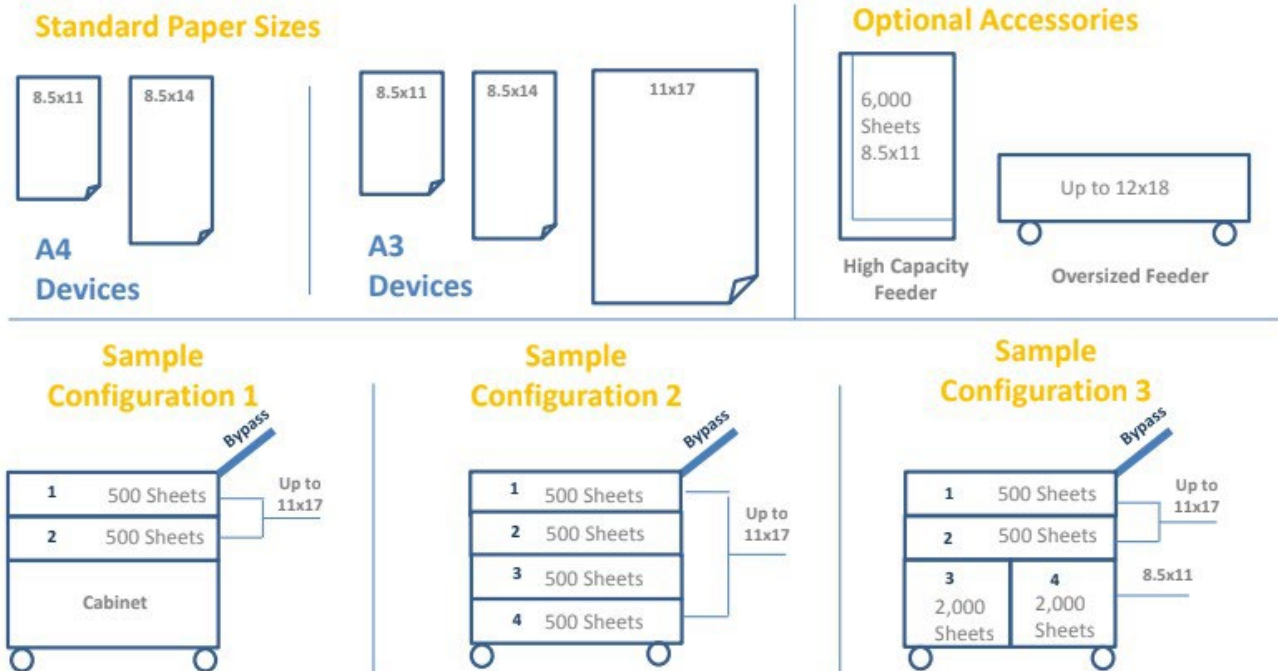
- The first-page-out time equals 5 seconds
- The operating speed time equals 2 seconds ( $60\text{seconds} / 30\text{ppm} = 2 \text{ seconds per page}$ )
- Total wait time equals 7 seconds
- The estimated device price is \$6,000

**Recommendation:** Based on the calculations, the print job wait time difference for the between the 30ppm device and the 50ppm devices is 1 second ( $7 - 6.2 = 0.8$ ) By the selecting the 30ppm device instead of the 50 ppm device, you save \$7,000 in costs and you maximize the device utilization. Ultimately, you avoid both higher costs and under-utilization.

**Corollary:** Selecting a device is not a matter of perceived wait times and the existence and persistence of “rush” print jobs. Selecting the proper device in an operationally and financially informed manner requires the knowledge of the average monthly page volume usage for the workgroup of employees using the device. Note: There are other factors that must be considered when selecting the appropriate device that may be particular to specific circumstances, situations, applications and needs. Ultimately, the better you understand the end-user needs and requirements, the better informed will be your selection decision.



# 4 Select The Paper Capacity

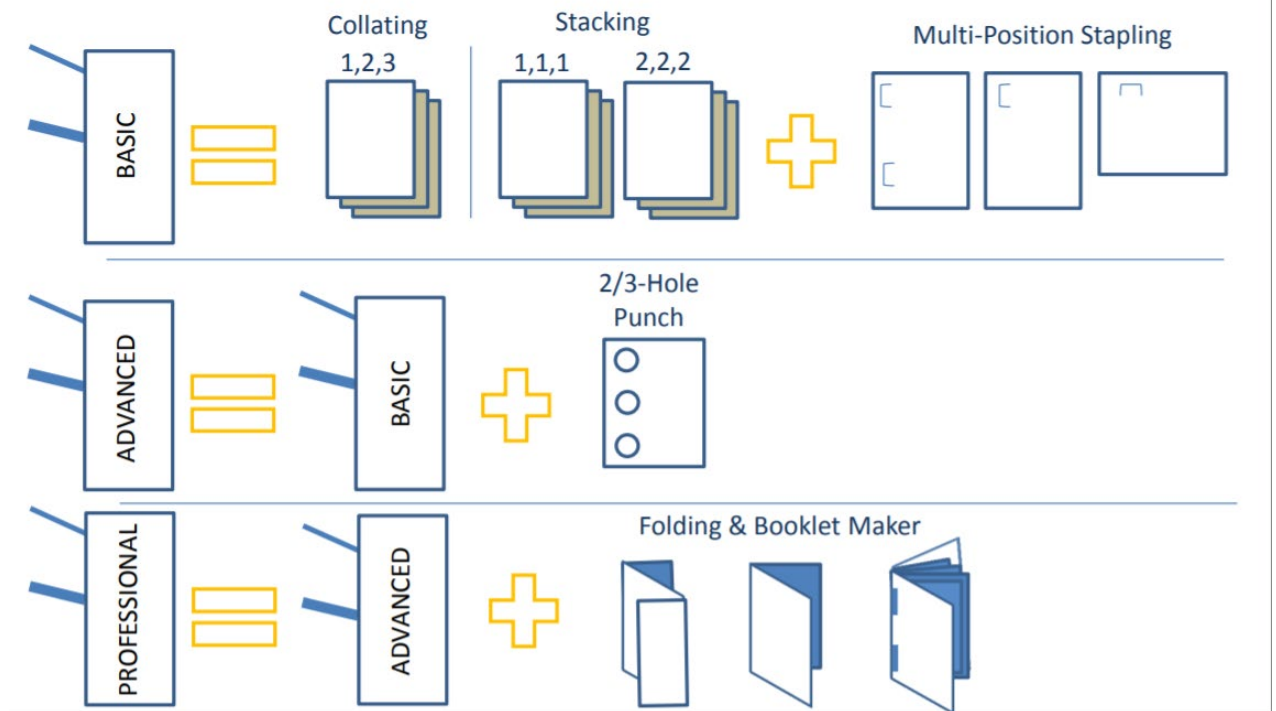


**The fourth step and decision point is to determine your paper capacity needs. This is an important step that can reduce the device cost by approximately 30%.** Historically, most copiers were engineered to handle paper sizes from #10 envelopes to 11x17 (typically referred to as A3) while printer-based devices handle paper sizes from #10 envelopes to 8.5x14 (typically referred to as A4). However, studies in copying and printing trends reveal that only about 30-35% of all printing is done on 11x17. The need for and the use of 11x17 paper has decreased to such an extent that we must account for it in our buying behaviors. This information leads to the understanding and practice of mixing the printing fleet with A3 and A4 devices according to the stated need in a manner that maximizes operational and financial efficiencies.

Once the determination is made as to whether there is a need for 11x17 paper capacity, you can move to deciding what paper tray configurations and the quantity of paper trays needed. As with selecting the print engine, the AMPV should be taken into account, particularly with the higher volume devices. Selecting the right paper tray configuration will limit the amount of time and frequency paper must be loaded into the device. Generally, paper trays on A3 devices hold approximately 500 sheets of paper, which are fully adjustable up to 11x17 size paper. Of course, the adjustment guides will only go up to 8.5x14 on A4 devices. For devices that need more paper capacity to sustain longer, uninterrupted print jobs, devices can be configured with high-capacity tandem trays that hold up to 2,500 sheets each, which handle only 8.5x11 size paper. Additional paper capacity feeders are available like an external high capacity feeder that can hold up to 6,000 sheets of 8.5x11 size paper and an oversized feeder that can handle up to 1,000 sheets of up to 12x18 size paper (Note: these measurements are generalizations and may differ by original equipment manufacturer).



# 5 Select The Finisher



**The fifth step and decision point is to determine what type of finishing and finisher is needed.** There are generally three finisher types available and we've categorized them as "Basic," "Advanced," and "Professional." The "Basic" finisher provides collating, stacking and multi-position stapling features. The "Advanced" finisher provides the "Basic" finisher features and adds 3-hole or multi-hole punching. Finally, the "Professional" finisher offers the "Advanced" finisher features plus folding and booklet maker features. Finisher selection should be done by understanding the type of print output that is regularly performed by the employee(s) utilizing the device(s).



## Select The Maintenance Plan

### Cost per Click

- Customers pay for every click/impression
- Monthly invoices may vary based on actual usage

### Allowance + Overage

- Customers pay for a monthly allowance of clicks/impression plus an overage click/impressions charge above the allowance, if applicable
- Allowances generally provide monthly invoice consistency and will vary only when overage occurs
- *Disadvantage:* Customers pay for the allowance clicks/impressions whether utilized or not

### Flat Rate

- Customers pay a monthly flat rate for unlimited click/impressions
- Monthly invoice amounts never change
- *Disadvantage:* Customers pay a premium for the benefit of unlimited usage and stable billing

**The sixth step and decision point is to determine what type of maintenance plan is needed. There is a condition when you don't have to select a maintenance plan.**

When the government “purchases” the equipment versus leasing the equipment, it then has the option of purchasing a maintenance plan because as the equipment owner, it can choose to bear any and all operational and financial risks. We have encountered buyers who make the determination to not select a maintenance plan because the equipment is new and generally does not “break-down” in the first year or two of operation. This is a risk the GSA does not recommend due to the high cost of time and materials pricing for these types of services. However, if you chose to pursue this course of action, then we recommend you perform a cost-benefit and risk analysis to justify the decision. When the government “leases” equipment, whether it is under an operating lease plan or a least to ownership plan, the government SHALL select a maintenance plan. This is a non-negotiable condition because the Lessor retains ownership of the device for the term of the lease and is therefore entitled to ensure that the device is properly maintained, serviced and supplied in order to honor any warranty guarantees and assure the device's residual value. The GSA recommends three types of maintenance plans that include service/maintenance labor, parts and consumable supplies:

- Cost per Click Plan
- Allowance plus Overage Click Plan
- Flat Rate Plan

The maintenance plans and their value to the buyer differ based on the end-users particular financial needs and requirements. There is no universal application of maintenance plans as they all have risks for which the buyer must account. Please note that when discussing maintenance plans, “clicks” are the same as “impressions.” The main reason for the term is that the usage charges are billed according to a meter reading. The meter read captures “clicks,” which generally count 8.5x11 size paper as one “click.” Therefore, you must be mindful that some maintenance plans will charge two “clicks” for 11x17 size paper though one impression is made on the sheet of paper. This applies to all maintenance plans.

### **Cost per Click (CPC) Plan**

The CPC plan provides service, maintenance and consumable supplies (SMC), excluding paper, at a fixed-charge rate for every click. The rates differ for monochrome clicks and color clicks, with color clicks being more expensive. The major benefit of the CPC plan is that the end-user pays only for what’s used, nothing more, nothing less. This plan accounts for “actual” costs based on usage. The challenge with the CPC plan is that the billing invoice amounts will vary, so managing a budget for the usage charges can be difficult.

### **Allowance plus Overage Click Plan**

The Allowance plus Overage Click plan provides service, maintenance and consumable supplies (SMC), excluding paper, at a fixed-charge rate for every click, but offers a method for mitigating the billing invoice amount variations that occur with the CPC plan. This plan offers a fixed monthly allowance of clicks at a fixed monthly charge. For example, your monthly payment will include 10,000 clicks per month for \$100/per month and \$.01 per click for any click above the 10,000 click allowance thereafter. The benefit of this plan is that you have the ability to establish a budget for your maintenance charges. In order to attempt a fixed-budget amount, the buyer will generally calculate the AMPV and add some percentage uplift to that amount to account for an anomalous increase. The challenge with this plan is that the end-users pay the fixed allowance charge whether they make 100 clicks or 10,000 clicks, so the government bears all the risk.

### **Flat Rate Plan**

The Flat Rate plan provides service, maintenance and consumable supplies (SMC), excluding paper, as do the other maintenance plan. The only difference with this plan and these others is that there is no need to account for usage. This plan is an “all you can eat,” unlimited clicks plan. The benefit of this popular plan in the government is that it provides a fixed monthly invoice that will not change for the term of the plan. This plan also removes the burden of collecting meter readings for billing purposes. However the challenge with this plan is that the government pays a premium, in excess of the CPC and the Allowance plus Overage plans for this flexibility because of the risk exposure to the contractor.



## Select The Financing

Purchase	<ul style="list-style-type: none"><li>• Purchase is the preferable method of financing if the capital funds are available</li></ul>
Operating Lease	<ul style="list-style-type: none"><li>• Operating leases are beneficial when capital funds are not available</li><li>• Note: Termination charges apply when leases are not fulfilled for their entire term.</li><li>• For example: if customers receives 60-month pricing, then the term is 60-months</li><li>• Contractor retains ownership of equipment</li></ul>
Lease to Own	<ul style="list-style-type: none"><li>• Same terms as the <i>Operation Lease</i> except that the customer has the right to purchase the equipment at the end of the lease term</li></ul>
Rental	<ul style="list-style-type: none"><li>• Rentals are useful for short-term needs</li></ul>

**The seventh step and decision point is to determine the most advantageous manner of financing the procurement.** There are three financing options available:

- Purchase
- Lease
  - Operating Lease
  - Least to Own
- Rental

As is the case with the maintenance plans, there is no universal application of financing method as they all have risks for which the buyer must account.

### Purchase

The purchase option is generally the preferable method of financing the procurement. It generally affords the government the flexibility to determine how it manages its equipment and to determine the length of the device's operational life. The challenge with the purchase option is that capital funds must be available. If capital funds are not available to issue a purchase order, then the government must seek an alternative, like leasing.

## Lease

The lease method is an alternative to not having capital funds availability. The government chooses to pay interest on the device purchase price in exchange for a monthly payment plan, which is paid utilizing the operations fund. There are two types of available lease plans:

- Operating Lease
- Lease to Own

The operating lease is for an established term during which the Lessor remains and keeps title and ownership of the device. At the end of the lease term, the Lessor removes the device, unconditionally, and the government has no asset.

The Lease to own plan is similar to the operating lease, except that at the end of the lease term the government has an option to purchase the device for a predetermined amount or can opt to waive its right to purchase and have the Lessor remove the device. The challenge with leasing is that the government must be responsible for termination charges on the cost of the device (not service/maintenance and consumable supplies) should it fail to fulfill the entirety of the lease term. For example, if the end-user receives 60-month pricing, then the term is 60 months and should the government not fulfill the entire 60-month term, then it must remunerate the Lessor for the unrecovered cost of the device. In either lease method, the Contracting Officer is required by FAR 7.4 to perform a “lease versus buy” analysis.

Visit [buy.gsa.gov](https://buy.gsa.gov) Office Management Document Library to download the Multiple Award Schedule (MAS) Office Management Category Leasing Requirements and our detailed guide on how to execute a copier lease under GSA Schedule.

## Rental

The rental method is useful for short-term projects similar to a FEMA emergency response situation. There is a premium charged for this finance method since the contractor bears most of the risk since they cannot recover the entire cost of the device during the short-term period.

### Need More Help Deciding Whether to Purchase, Rent, or Lease?

When you are deciding to lease or buy equipment for your organization, you will mostly likely consult FAR 7.401 which will instruct you to consider comparative costs and other factors. Ultimately, the decision to lease or buy depends on an agency's plans for the items to be acquired along with the agency's budgetary situation. Unfortunately, comparative costs and other factors vary from industry-to-industry, which can complicate the decision-making process. Comparing the purchase price to the sum of the lease payments is also one of the key steps in your decision to lease or buy.

Visit [buy.gsa.gov](https://buy.gsa.gov) to download our “**Deciding to Lease or Buy Office Management Products and Furniture**” and the accompanying “**Calculating Lease and Cost Payments**.”

# *Conclusion*

This buying guide has presented a systematic, seven-step process for selecting and procuring a multi-function device by incorporating the major elements that comprise the Total Cost of Ownership (TCO). This is descriptive guidance to help guide you through the process and is no way prescriptive, as needs and requirements vary by location, situation, circumstance and need.

We encourage you to gather as much information as possible and to consider needs assessment services and/or integrated [managed print services](#) in order to make a fact-based, data-informed decision that meets the end-users needs and responsibly stewards the American tax-payer monies. Visit [buy.gsa.gov](http://buy.gsa.gov) to find additional guidance, calculators and sample acquisition documents or contact [ncscustomer.service@gsa.gov](mailto:ncscustomer.service@gsa.gov).