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A Note Concerning Equipment Fabrication

A principal investigator (PI) will often require specialized pieces of equipment to conduct research supported by a grant award from an external sponsor. In most cases, if the equipment is not available at the university, it can be purchased from a vendor, received and recorded in the university inventory control and financial systems, and installed in the PI's lab or field location. Occasionally the equipment does not exist in the market and must be constructed (fabricated) by the PI. This note is written to clarify the UMass Boston procedures concerning property and financial accounting for equipment that is fabricated from component parts purchased through a sponsored program.

What is equipment?

The federal government¹ defines *equipment* as “an article of nonexpendable, tangible personal property having a useful life of more than one year and an acquisition cost which equals or exceeds the lesser of the capitalization level established by the organization for financial statement purposes, or \$5,000.” The federal definition goes on to distinguish between *special purpose equipment*, which is “used only for research, medical, scientific, or other technical activities,” and *general purpose equipment*, which is not limited to research, medical, scientific, or other technical uses (e.g., office equipment, photocopiers, motor vehicles, desktop computer systems).

At UMass Boston, two types of equipment are defined by university policy²; namely, *capital equipment*, which is any tangible piece of property with a depreciable life of two years or more and a unit net cost (the cost after any discounts are applied) of \$1,000 or more, and *non-capital equipment*, which is any tangible piece of property with a depreciable life of two years or more and a unit net cost of at least \$100 but less than \$1,000.

Taking together the federal and UMass Boston definitions, the definition to be used for the purposes of sponsored programs is as follows:

Equipment is an article of nonexpendable, tangible personal property having a useful life of more than one year and a value that equals or exceeds \$1,000.

¹ U.S. Office of Management and Budget Circular A-21: *Cost Principles for Educational Institutions*.

² Please refer to the *University of Massachusetts Purchasing Policy*, Board of Trustees Document T92-031, as revised August 7, 2002.

Tangible personal property having a useful life of one year or less or a value of less than \$1,000 is referred to as *supplies* for the purposes of sponsored programs.

How are equipment purchases handled in a sponsored program?

In preparing the budget for a proposed sponsored program, the PI specifies the direct costs to carry out the project and then the professional staff of the Office of Research and Sponsored Programs (ORSP) uses this budget to calculate the recovery of facilities and administrative (F&A) costs³. UMass Boston is approved by the federal government to use the modified total direct cost (MTDC) method for F&A cost recovery. The MTDC base of a proposed sponsored program includes all salaries and wages, fringe benefits, materials, supplies, communications, services, travel, and subgrants or subcontracts up to \$25,000 each. Proposed expenditures for general or special purpose research equipment are excluded from the MTDC base, as are construction costs, tuition remission, rental costs of off-site facilities, scholarships, and fellowships, as well as the portion of each subgrant and subcontract in excess of \$25,000. The MTDC base is determined and then multiplied by UMass Boston's approved F&A rate to determine the F&A cost recovery for the proposed sponsored program. The MTDC base, the F&A cost recovery, and the cost of the budget items excluded from the MTDC base are added together to determine the total cost of the sponsored program to be charged to the sponsor.

The purchase of all equipment with funds from a sponsored program awarded to the university must be approved by ORSP and is governed by the university's purchasing policy. The professional staff of the Procurement Office then assists the PI to obtain the required equipment. All equipment must be tracked through the university's property accounting and financial systems on PeopleSoft. The PI and the appropriate administrative personnel in the department, college, or research institute are responsible for maintaining and updating records of equipment that are required for inventory control and audit purposes.

What if the equipment will be fabricated rather than purchased?

In some cases, the special purpose scientific equipment required by a PI to undertake a sponsored program does not exist in the market and cannot be purchased directly from a vendor. Rather, the PI must purchase multiple component items and then engage in physical activity to fabricate the necessary piece of equipment. The definition of *fabricated equipment* for purposes of sponsored programs is:

Fabricated equipment is a unit of equipment having a useful life of more than one year and a total value that equals or exceeds \$1,000, and: (a) requires creative effort to design and construct, (b) meets unique research specifications, (c) is a freestanding and complete functional entity, and (d) does not lose its identity when affixed to or installed in other property.

The value assigned to a piece of fabricated equipment is the total of the costs of the component items, supplies and hardware (e.g., nuts and bolts, sheet metal, caulk, electrical wire, paint),

³ Refer to *A Note Concerning the Recovery of Facilities and Administrative Costs of Sponsored Programs* available from ORSP or from the ORSP web page.

shipping or transportation of the component items to the fabrication site, equipment tool rentals, and costs of any services from outside vendors required to complete the fabrication (e.g., technician time and travel costs). Costs of authorized university recharge activities (e.g., labor, fringe benefits, and shop costs for electronics assembly, sheet metal cabinet making, glass blowing) required for the fabrication are included⁴, but the costs of indirect department labor (e.g., clerical support), travel, and communications are not.

The cost of any fabricated equipment must be treated carefully in the development of the budget for a proposed sponsored program. The university's federal rate agreement exempts purchases of equipment from F&A cost recovery, but not component parts required for a fabrication. That is, most component parts in and of themselves do not meet the dollar and useful life elements of the definition of equipment and, therefore, are budgeted as supplies and materials and subject to F&A cost recovery.

If a proposed sponsored program will include fabricated equipment, then the PI is responsible for preparing and submitting to ORSP during the proposal approval process a *Fabricated Equipment Request Form* that provides, in addition to information about the PI, the following information:

- Short, descriptive name for the fabrication;
- Justification for undertaking the fabrication;
- Brief description of the purpose or use of the fabricated equipment;
- Sponsor and grant, contract, or cooperative agreement to be charged for the fabrication;
- Estimate of the total cost of the fabrication, including a complete listing and associated cost of each of the component materials and supplies, as well the costs of each external service or internal recharge required to complete the fabrication;
- Estimated placed-in-service date of the fabricated equipment (i.e., point in time at which the fabricated equipment will become operational); and
- Estimated useful life of the fabricated equipment.

ORSP will review the form and notify the PI if the item meets the fabricated equipment definition or if additional information is necessary. ORSP will also determine if the fabrication is allowable by the sponsor. A copy of this form, which will be retained in the sponsored program file in ORSP for audit purposes, will be forwarded to the Procurement Office. During the development of the budget for the proposed sponsored program, the information on this form will be used to exclude certain costs from the MTDC base against which F&A cost recovery is calculated. The cost of the components and of the services necessary to complete the fabrication must be reasonable and supported by adequate documentation, which will be subject to review by the Procurement Office. Expenditures that are clearly for supply items or for supporting equipment that does not exceed the capitalization threshold should be classified appropriately according to their cost and useful life.

⁴ The terms and conditions of a specific award may further restrict allowable fabrication costs.

If the proposal is selected for an award, then the budget will be established in two separate but linked project grants. One project grant will be used solely to accumulate the costs associated with the fabricated equipment – the *fabrication project grant* – and the other project grant will be used for all remaining costs of the sponsored program – the *sponsored program project grant*. All requisition documents related to the fabrication that are prepared by the PI must clearly indicate the fabrication project grant so that the costs can be accounted for as equipment and not as supplies. In addition, any service contracts or cost recharges that involve fabrication expenditures must also clearly refer to the appropriate fabrication project grant. In this way, the F&A recovery formula will not be applied automatically by the PeopleSoft accounting system. Fabrication expenditures that are processed without reference to the fabrication project grant and that meet the definition of supplies will be subject to F&A cost recovery.

The PI must notify ORSP when the fabrication is completed, and no later than 30 days after the estimated placed-in-service date, so that the fabrication project grant can be validated and the fabricated equipment can be physically tagged with the university asset number by the property accounting staff.

The PI should carefully note the following conditions and special circumstances:

- If the fabrication will not be completed at least 30 days prior to the end date of the project grant, then the PI must notify ORSP to request a no-cost extension from the sponsor.
- If the total cost of the fabrication exceed the PI's estimate, then, with sponsor approval, the excess must be charged to the fabrication project grant and sufficient budget reallocated from the sponsored program project grant. On the other hand, if the total cost of the fabrication are less than the PI's estimate, then, with sponsor approval, the fabrication project grant balance will be reallocated to the sponsored program project grant.
- If during the project grant closeout any costs included in the fabrication are determined to be inappropriate, then these costs will be transferred from the fabrication project grant to the sponsored program project grant.
- If there is excess material left over from the fabrication and it is in returnable quantities, then the excess material will be returned to suppliers for full credit less any costs of restocking and the cost of handling and transportation. The appropriate adjustments will be made in the final financial report submitted to the sponsor.
- If the PI fails to fully account for the costs of the fabricated equipment prior to the closeout of the sponsored program, then the amount of any F&A cost recovery foregone by excluding the fabrication costs from the MTDC base will be recovered from the funds to be distributed to the college, department, and the PI at the close of the fiscal year.
- If the fabricated equipment becomes obsolete, or is no longer being used, and the department wishes to breakdown or dispose of the equipment, then the property office must be notified using the surplus state property form available from that office.

There are two circumstances where the business process explicated in this *Note* does not apply:

- When the sponsored program itself is a contract for the construction of a piece of experimental scientific equipment (i.e., the fabricated equipment is the contract deliverable), the ownership of which will be transferred to the sponsor or another organization outside the university upon completion; or
- When the sponsored program involves the upgrading of the constituent parts or components of an existing piece of equipment.

In these two cases, the costs of materials, supplies, and labor involved in the fabrication or upgrade must be budgeted under the appropriate sponsored program account codes, and the F&A cost recovery rate applied.

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