Instituto de Estadísticas de Puerto Rico
Estado Libre Asociado de Puerto Rico

Survey of State Government R&D

Supporting Document

What is Research and Development (R&D)?

Research and development (R&D) is creative work conducted systematically to extend scientific knowledge, or devise new applications, which may include materials, products, devices, processes, systems, methods, or services.

- R&D is aimed at new findings
  - It has not been done before
  - It may produce findings that could be published in academic journals
  - It includes ideas that could be patented
- R&D increases our knowledge of the subject
  - Helps create new products or applications
- R&D creates solutions that others may find useful
  - Findings can be generalized to other situations and locations
- R&D outcomes are uncertain (because it has never been done before)
  - Solutions are not always obvious or expected

What is NOT R&D?

- Construction and acquisition of land and facilities used primarily for R&D (this is reported separately in Question 11)
- Fixed equipment used primarily for R&D (this is reported separately in Question 11)
- Program planning and evaluation
- Business development services for new companies
- Commercialization (includes promoting/producing the products/services from R&D projects)
- Economic/policy/feasibility studies
- General patient services
- Information systems
- Management studies
- Marketing of products/services
- Market research or analysis

- Routine data collection/dissemination
- Routine monitoring/testing
- Strategic planning
- Technology transfer

Examples of R&D

What makes it R&D	When it is R&D	When it is not R&D
R&D is novel. • It increases our knowledge of the subject. • It has not been done before.	You are testing blood samples as part of a research project to find out the side effects of a new cancer treatment.	You are collecting information from samples of patients to estimate the incidence of chicken pox in the state's population. (You are using a standard approach to estimate the spread of chicken pox.)
R&D creates solutions useful to others. • Others might benefit from the findings. • The findings can be generalized to other situations and locations.	You are testing a pavement on your highways that is currently used only at airports. Other states will want the results.	You are testing pavement on your state's highways to estimate how much you need to Budget for pavement replacement over the next five years. (Other states will not benefit from your specific state information.)
The outcome of R&D is uncertain. • The solution is not obvious to an expert in that field.	Your research involves monitoring steams to determine whether a new program is increasing the population of a particular type of fish.	You are monitoring streams as part of plan to implement long-term monitoring for a particular type of fish. (The monitoring plan has already been tested and you are certain of the quality of the plan.)

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Reporting Unit

The reporting unit is your department, agency, commission, public authority (herein referred to as agency) including all divisions and offices regardless of location that either perform or fund R&D.

Estimates are acceptable
Please report all items to the best of your ability.

Examples of classifying R&D from four activities

Activity	It is R&D	It is not R&D
Technical Assistance	You hire a technical consultant to test the disease resistance for the new fish species you are developing. (The assistance addresses the uncertainty of the science/technology aspects of the product or service.)	You hire a technical consultant to help you design the graphic design for the package to ship your new fish species when you begin offering it for sale to other states. (The assistance addresses the uncertainty of the marketing/production aspects of the product or service.)
Help for new businesses	You provide funding to new businesses to help them with the costs of building prototypes of products they are developing.	You provide funding for new technology companies to help them acquire basic skills to market their new products.
Consulting	You use a consultant to plan testing of a highway pavement material that your transportation research center is trying to develop.	You use a consultant to help you secure health and safety approval for your new pavement material.

Developing a product from your research	You hire a university research center to test a new type of grass you developed to test whether it will survive actual conditions along the coastline.	You hire a law firm to help you with the process for patenting the new grass that you developed.

Examples

Basic Research	Applied Research	Experimental Development
You are studying the properties of blood to determine what affects coagulation.	You are conducting research on how a new chicken pox vaccine affects blood coagulation.	You are testing a newly developed chicken pox vaccine with various ages of school children before implementing it statewide.
You are studying the properties of molecules under various heat and cold conditions.	You are conducting research on the properties of particular substances under various heat and cold conditions with the objective of finding longer lasting components for pavement.	You are testing a newly developed pavement under various types of heat and cold conditions prior to using it on your state's highways.
You are studying the heart chambers of various fish species.	You are examining various levels of a toxic substance to determine the maximum safe level for fish in a stream.	You are designing a new system for monitoring a stream that will try out the results of your recent research in a real world situation.
You are studying the effects of various strategies for teaching math in order to understand which is the most effective.	You are studying the implementation of a specific math curriculum to determine what factors lead to successful implementation by teachers.	You are using research in the field to develop education software and support tools for math curriculum.

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Expenditures for internal and external R&D performance from federal funds, state funds, and other funds

Include

Types of activities

- R&D performed by your agency's employees
- Services performed by others in support of an agency R&D project (e.g., lab testing)
- Administration and management of R&D performed external to your agency (e.g., administration of R&D-related contracts)

Types of costs

- Salaries
- Benefits
- Supplies and movable equipment for R&D
- Travel
- Indirect costs
- Purchased services

Exclude

- R&D performed by higher education institutions
- R&D performed by businesses and individuals
- R&D performed by non-profit organizations
- R&D performed by other governments
- Construction and acquisition of land or facilities used primarily for R&D
- Fixed equipment used primarily for R&D

Federal Funds used for R&D (internal or external)

For example:

- Grants
- Awards
- Contracts
- Appropriations from the United States Government

State Funds used for internal R&D (internal or external)

For example:

- Appropriations from the state legislature
- Bond Funds
- General funds
- Restricted funds
- Revenue funds
- State grants
- Tobacco settlement funds
- Lottery proceeds
- Funds from other agencies within your state

Other Sources used for internal R&D (internal or external)

For example:

- Funding from other state governments
- Funding from state/regional partnership agreements
- Funding from local or tribal governments
- Funding from nonprofit organizations

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R&D Expenditures for Land and Facilities

During FY 2014 and FY 2015, what were your agency's R&D expenditures for construction and acquisition of land and facilities (including fixed equipment) used primarily for R&D?

This question asks about R&D land and facilities (including fixed equipment, such as reactors, wind tunnels, and particle accelerators) used primarily for R&D. It includes the acquisition of, construction of, and major repairs or alterations to structures, works, equipment, facilities, or land for use in R&D activities. Construction and acquisition of land and facilities used primarily for R&D includes major costs for construction and purchase of buildings to be primarily used as R&D facilities.

Include:

- Only expenditures related to the R&D activities of your agency.

Exclude:

- Expendable or movable equipment (e.g., spectrometers, microscopes).
- Office furniture and equipment.
- Costs of pre-design studies (e.g., those undertaken before commitment to a specific facility).

NOTE: The expenditures reported on this question are separate from the R&D expenditures asked throughout the rest of the survey, and should not be included in the expenditures on any other question in the survey.