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INSTITUTIONAL ANALYSIS OF THE NATIONAL PARK
SERVICE: A PRELIMINARY EXPLORATION

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ABSTRACT

This paper is one of a series resulting from the institutional analysis of photovoltaic (PV) acceptance. It reports the results of an initial exploration of the federal non-defense arena. This exploration was undertaken in connection with a PV field test at the Natural Bridges National Monument in Utah. This field test is a collaborative venture of the Department of Energy (DOE) and the National Park Service (NPS). As the procuring agency, NPS is the focus for the paper, serving as an example of institutional action in the federal non-defense arena. Like others in this arena, NPS is involved in the legislative process, as well as program implementation. The primary mission of the National Park Service is to make federally-owned land available to the public in a manner which enhances the use and enjoyment of natural and historic resource. NPS has nearly 300 operating units. It is organized by regions, and has two service centers (the larger of which is in Denver) which provide a variety of technical and support services to the operating units. The most important operating units are national parks, monuments and historic sites. Procurements contributing to program activities are guided by federal and agency regulation. One regulation limits procurements to proven technologies, which constitutes a formal barrier to innovation acceptance.

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1. Organization of the Department of the Interior

This paper is one of a series resulting from institutional analysis of photovoltaic (PV) acceptance. These studies are undertaken with the sponsorship of the US Department of Energy (DOE) as part of its Photovoltaic Program. In addition to institutional questions, DOE is interested in economic, marketing, and technological issues, and is sponsoring a series of studies and field tests on these topics. Institutional analysis studies have typically been undertaken in relation to particular PV field tests, though in some cases studies have focused on comparable technologies and institutional forces influencing their acceptance.

This paper was prepared as the initial step in the institutional analysis of PV acceptance in the federal non-defense sector. This sector was selected as the consequence of a decision to undertake a PV field test: the powering of the facilities at the National Bridges National Monument in Utah. The selection of the test and site resulted from decisions by both DOE and the National Park Service. DOE had indentified the need to determine the large-scale, remote site power generation capabilities of PV. DOE also evidenced interest in understanding the involvement of federal agencies in the facilitation of PV acceptance. Concurrent with this interest on the part of DOE was a search by the NPS for ways to decrease its reliance on fossil fuel at its parks, almost all of which are remote. Park power is often provided by on-site generation, or by service lines strung solely to service the site. As a result of the energy crisis caused by the 1974 oil embargo, and in response to Executive Order 12003 on Energy Policy and Conservation issued in July of 1977, NPS was considering remote site power generation using renewable resources. Thus, the needs of the two agencies converged, with DOE (through its contractor,

MIT Lincoln Laboratory) and NPS collaborating to conduct the field test.

As a consequence of these determinations, the federal non-defense sector was selected for inclusion in institutional analysis studies, focusing on the National Park Service (NPS) as a case study of this sector. Certain activities of agencies in the federal non-defense sector (legislative process, procurement, budget, for example) are roughly comparable; it is therefore reasonable to make some generalizations from the present study. However, as noted in the basic statement of the theory of institutional analysis on which this study is based (Nutt-Powell, *et al.*, 1978), each institutional arena has unique resource configurations (both by type and time). Therefore, conclusions made here are generalizable to agencies other than the NPS only within these limitations.

This study is organized using the functions -- service, research, socialization, political, financial, production, regulation -- which characterize institutions. Each function is considered separate, with the exception of the regulatory function. Regulation is discussed in both the context of political and financial functions, because in the government sector these functions are closely intertwined, a consequence of the checks and balances inherent in the US system of government. Succeeding papers dealing with the National Bridges National Monument field test will report results of the remaining stages of this institutional analysis.

There are seven steps in conducting an institutional analysis:

- (1) Identify the sector (i.e., economic, geographic) to be studied; determine study objectives

- (2) Prepare a preliminary sector exploration -- an overview that could be applied to any such sector, as well as material that is location-specific
- (3) Construct an hypothesized institutional arena
- (4) Identify the "perturbation prompter"
- (5) Devise the specific research design
- (6) Monitor perturbations
- (7) Analyze the institutional arena.

In order to understand the nature of the results reported here, this paper first briefly presents the theory and methodology of institutional analysis. (For a detailed discussion of these topics, see Nutt-Powell *et al.*, 1978.) An "institution" is defined as a discernible entity that carries or is the repository for social meaning. Institutions are characterized by function (finance, regulation, research, and so on); activity (marketing, analyzing, legislating, enforcing, and so on); and role (vendor, linking-pin, translator and so on). There are six types of institutional entities: formal and informal organizations (the US Department of Labor; a pick-up touch football team); member (an ITT executive); persons (Sally Smith); collectivities, whether known or unknown to members (the Human Services lobby); and social orders (the importance of the Boston Common). Institutional entities combine and interact to form an institutional arena. Within the arena, exchanges occur between and among institutional entities; institutions are stability-seeking and routine-establishing. Exchanges between and among institutions that occur over time combine to create a resource configuration. Institutional analysis is the study of how and in what forms social meaning is created,

transmitted, maintained, and/or changed. The particular structure of a given institutional arena is simultaneously stable and changing, but it is identifiable. Information in exchanges is the key source of data for institutional analysis.

Innovation (such as the introduction of PV into the National Park Service) is a deliberate and substantive alteration in the institutional arena. Once again, information is vital, for it is the currency of innovation. It consists of two types: (1) technical -- what do you trust?; and (2) personal -- whom do you trust? Exchanges within the institutional arena exhibit either or both types of information. Because institutions are stability-seeking, and routine-establishing, they are considered to be "risk-averse". Innovation creates the condition for risk by disrupting social meaning. Rather than attempting to maximize benefits (which would promote rapid acceptance of innovation), the institutional arena tends to minimize risks (which leads to resistance to the quick adoption of innovation). Institutions are more likely to accept an innovation (i.e., institutionalize it) if their information about that innovation is personal, rather than technical, since such exchanges are more likely to link to routine, stable meaning, and to create some confidence that risk has been minimized.

THE SERVICE FUNCTION

The service function is defined as providing for the present and future use of desired and/or needed resources (Nutt-Powell *et al.*, 1978). In many respects, service is the defining function of government, especially its executive agencies. The mission of the National Park Service (NPS) is to manage conserved natural and historic areas, while at the same time providing for public use of these areas.

System Organization

Through 1977 the National Park System contained 294 units, which are divided into a large number of different categories. Some distinctions are substantive, as between a national park, national monument, and national historic site. For the balance there is little difference, other than an attempt to make a facility appear unique by virtue of nomenclature. The 294 sites include:

- 37 National Parks
- 16 National Historic Parks
- 81 National Monuments
- 11 National Military Parks
- 7 National Battlefields
- 1 National Battlefield Monument
- 3 National Battlefield Parks
- 2 National Battlefield Sites
- 52 National Historic Sites

22 National Memorials
14 National Cemeteries (four within other areas)
10 National Seashores
4 National Parkways
1 National Capital Parks
1 White House
16 National Recreation areas
4 National Lakeshores
4 National Rivers, Scenic Rivers, and Scenic Riverways
1 National Scenic Trail
2 National Reserves
1 National Mall
1 National Visitor Center
1 National Memorial Park
9 other parks

The best-known unit in the Park System is the National Park. (Yellowstone, Grand Canyon and Yosemite are among the most famous.) National parks contain about one-half of the Park System's acreage. There are eighty-four National Monuments in the Park System. Monuments are intended to preserve unusual and unique natural features and not just scenic lands. Examples are: Natural Bridges National Monument, Great Sands Dunes National Monument, and Death Valley National Monument. They also differ from Parks in that a Monument can be established by executive order, while the creation of a National Park requires an act of Congress.

A recent and important aspect of the National Park Service's activities involves historic preservation. The NPS is the only federal agency that manages historic sites (many others manage land). Interestingly, the NPS employ more historians and archeologists than naturalists. At its various units, the NPS operates visitor centers, ranger stations, residences for park personnel, maintenance complexes, museums, comfort stations, and pumps water and sewage. Concessions are operated as regulated monopolies by private contractors. The concession buildings and land are owned by the NPS, and all plans, designs, and materials require NPS approval.

Administrative Structure: Department of the Interior

To facilitate the management of the National Park System, a large administrative structure has developed, with several layers of decision-making authority. Furthermore, the NPS is only one of many bureaus within the large Department of the Interior (DOI). Following is a brief description of DOI, sketching the administrative structure within which the NPS is located.

DOI is a cabinet agency in the executive department. It manages most federally-owned land, and promotes programs to manage land and water resources, fish, and wildlife. DOI also promotes recreational uses of land, along with land preservation for scientific, aesthetic, and historic reasons. Other DOI responsibilities include the protection of American Indian communities and US-administered islands.

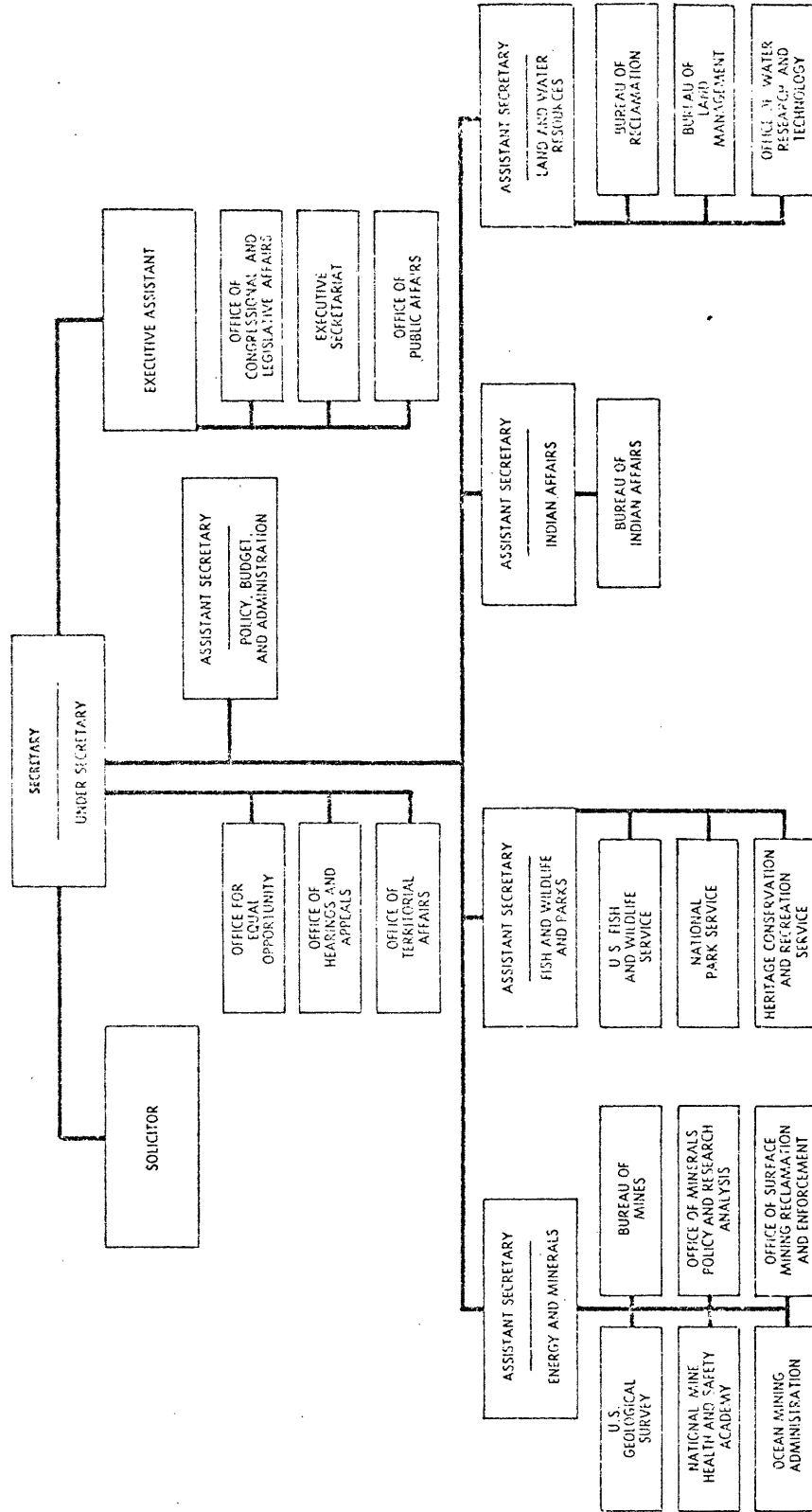
The Secretary of DOI has supervisory authority over the entire department. A variety of offices support the administrative functions of the agency, including the Offices of Equal Opportunity, Public Affairs, Hearings and Appeals,

Congressional and Legislative Affairs, and Territorial Affairs. The Department's legal work is handled by the Office of the Solicitor. The Policy, Budget, and Administration Office handles the budget process and analysis, personnel, property, technical information systems, procurement, audit, and other administrative functions. The rest of the DOI is grouped under four headings: (1) Fish and Wildlife and Parks; (2) Land and Water Resources; (3) Indian Affairs; and (4) Energy and Minerals. Each division has an Assistant Secretary, who exercises the authority of the DOI's Secretary over all the bureaus in his division. (Figure 1 summarizes the organizational structure of DOI.)

Fish and Wildlife and Parks: The first grouping, Fish and Wildlife and Parks, contains three bureaus: the Heritage Conservation and Recreation Service; the US Fish and Wildlife Service, and the National Park Service. The US Fish and Wildlife Service administers about as much land as the National Park Service (approximately 30 million acres). It conducts wildlife research at thirty-five fish and wildlife research stations and labs, as well as through cooperative research units at forty-five universities. A major goal of this bureau is to help develop an environmental stewardship ethic in the US. The Heritage Conservation and Recreation Service (HCRS) handles the new Urban Parks program, the land and water conservation funds, and historic preservation programs of DOI.

Land and Water Resources: This second group contains three bureaus: the Bureau of Reclamation, the Office of Water Research and Technology, and the Bureau of Land Management. The Bureau of Land Management (BLM) has responsibility for about two-thirds of the non-military federally-owned

FIGURE 1 Organization of the Department of the Interior



lands (approximately 472 million acres, mostly in the far west and Alaska). BLM also manages the federal government's mineral rights in non-federal land. This bureau's mission differs from the NPS, as it seeks to make use of the land's natural resources, rather than preserve them. The BLM follows a sustained yield policy in terms of timber, while trying to protect the wildlife and the environment. In fiscal 1976, the BLM generated \$3.2 billion in receipts.

The Bureau of Reclamation's primary mission is the development of water resources to reclaim the arid lands in the western US. Their activities include developing municipal and industrial water supplies; providing irrigation, hydro-electric power, water quality improvement, and outdoor recreation; and improving the fish and wildlife stock.

The Bureau of Reclamation's water development policy at times has brought them into direct conflict with the NPS. Many rivers flow through National Parks, and damming may change water flow and drastically alter the park environment. Some notable battles were fought over proposals to dam the Colorado River in Grand Canyon, and to dam a river flowing into Dinosaur National Monument (Everhart, 19 , p. 153).

Indian Affairs: The third group consists of the Bureau of Indian Affairs. This bureau has trusteeship over Indian lands. Its mission is to mobilize private and public aid to Native Americans, and to assist and encourage them in managing their own affairs.

Energy and Minerals: The fourth group contains the Bureau of Mines, Geologic Survey, Ocean Mining Administration, Mining Enforcement and Safety Administration, and the Office of Minerals Policy and Research Administration.

A number of bureaus formerly in this group were transferred to the Department of Energy when that agency was created. Geologic Survey investigates and researches topography, geology, minerals, and water resources. It is also responsible for enforcing regulations on oil, gas and mining leases, and development contracts. The Bureau of Mines is a factfinding and research agency. Its purpose is to develop better technology to extract, process, use, and recycle minerals. It also conducts research on mine health and safety issues, and serves as an information clearinghouse on mine technology. The Ocean Mining Administration deals with the jurisdictional and environmental issues of ocean mining. It also serves to promote the development of domestic ocean mining capabilities and to supervise such mining. The Mining Enforcement and Safety Administration enforces and administers the provisions of various federal mine safety laws.

Clearly, the bureaus within DOI have many different goals and constituencies, which often can be in conflict. Both the Energy and Minerals group and the Land and Water Resources group contain bureaus interested in development and commercial use of resources. The Fish and Wildlife and Parks group concentrates on conservation, though within this group there are conflicts between conservation and recreation interests. DOI is not a single-purposed organization, but rather reflects the various attitudes Americans have toward the use of natural resources.

Administrative Structure: National Park Service

Central Office: The Director of the NPS handles relations with Congress, key legislative matters, budget, fiscal allocations, public and ceremonial

appearances, and makes the important personnel choices. NPS deputy directors, who are involved in the day-to-day operations of the parks, include:

(1) Deputy Director for Legislation -- liaison between NPS and Capital Hill. The NPS Office of Information is responsible to him.

(2) Deputy Director for Professional Services -- handles all the creative, scientific, and historic preservation activities of NPS.

(3) Deputy Director for Operations -- concerned with the day-to-day operation of the Parks. All regional directors report to him, as do the two associate directors (for Service Center Operations and for Park Management). Almost all park matters pertaining to operations pass through this office.

Also in Washington is the Office of Programming and Budget which develops the budget. It is this office that reports to the Secretary. The Office of Personnel handles training, recruiting, and selection for transfer or promotion. This office has close ties with the Director and Regional Offices.

Regional Office: The next level of authority below Washington is the regional office. There are six regional offices; a region may be responsible for up to fifty units. Regional offices maintain close ties with individual units; the regional director has sole approval authority in his district for development and purchasing. Also, a regional director must approve all planning and design documents generated by the Denver Service Center concerning units in his jurisdiction. The regional offices provide technical expertise to procure equipment and handle some maintenance problems for units in their area. Increasingly, regional offices are contracting directly for architectural

and engineering (A & E) services, though the Denver Service Center usually provides such services. The regions also have public relations offices which work closely with the parks. They handle press releases, both local and state-wide, and occasionally feed the national wire services. The regions also maintain close relations with state and local governments and interest groups as described later in this paper. Natural Bridges National Monument is part of the Rocky Mountain Region (which contains the states of Utah, Colorado, Wyoming, Montana, North Dakota, and South Dakota): this regional office is located in Denver.

Individual Operating Units: The next level of authority is the individual unit or unit cluster. Large units have a supervisor who is the highest authority. Smaller and geographically close units are often put into clusters under one supervisor. In that case, a manager under the supervisor manages each individual unit. The unit manager is comparable to a head ranger. Natural Bridges National Monument is part of a cluster which includes Arches National Park and Canyonlands National Park. The Superintendent runs Canyonlands directly and has a large staff which supports the operations of all three parks. Arches and Natural Bridges each have unit managers. The parks have a number of other employees, including: rangers (historians, archeologists, or naturalists); guides (who provide information and interpretation); administrative officers (who handle fiscal and personnel matters); and maintenance staff. There is also a great deal of seasonal and volunteer help. A larger park has a somewhat different structure. Often they are divided into districts: each district has a manager with a number of guides,

rangers and maintenance men. All the districts are under one superintendent and administrative staff.

Denver Service Center (DSC): DSC has a staff of several hundred, including architects, landscape architects, electrical and sanitary engineers, planners, historians, archeologists, ecologists, historical architects, appraisors, land and water rights specialists, and construction supervisors. DSC designs almost all park facilities and procures the services needed for their construction. It also procures the services of architectural and engineering firms needed to design complicated facilities. DSC has played a strong role promoting the use of solar energy in the Park Service, especially the PV array at Natural Bridges. DSC is looked upon by people who operate the parks (rangers, superintendents, etc.) as a consultant group, which is in some sense not really part of NPS. A second service center, the Harper's Ferry Center in West Virginia, has about one hundred staff persons; this center handles design and production of audiovisual programs, graphics, publications, and museum exhibits. There are three training centers, each of which offers a variety of courses. They are: Albright Training Center at Grand Canyon; Mather Training Center at Harpers Ferry, West Virginia; and the National Capital Training Center at Washington, DC. A park employee selects and applies for courses, which he can take with the consent of management.

THE PRODUCTION FUNCTION

The production function is defined as the creation of resources (Nutt-Powell *et al.*, 1978). In the context of this paper, a resource is a national park unit, including national parks, monuments, battlefields, seashores, historic sites, and so on. This section considers how parkland is set aside, and how a park's physical facilities are developed. In particular, the federal procurement process is discussed relative to the production function. The service function (providing for the use of desired resources) is very similar. Service, however, includes all the activities that keep the park in operation and make it enjoyable to use (e.g., administration, education and interpretation, and concessions operations), while production focuses on creation of the resource for use.

Creating a National Park

An act of Congress is usually required to establish a National Park unit. The exception is the Antiquities Act, which allows the President to establish a National Monument by executive order, with no Congressional assent necessary. The President rarely uses this authority, however, because of Congressional sensitivities.

A bill to establish a new park may originate within DOI, with citizens acting through their local Congressman, or with the personal interest of a Congressman. Once introduced, the bill must follow the legislative process described in this paper's political section.

NPS plays a consultant role in this process. It identifies likely areas,

and prepares studies and evaluations. NPS also prepares a report for DOI concerning the proposed park, which is used as the basis for DOI's report to the Congress. DOI, however, is not obligated to accept the recommendations of NPS.

The subcommittees that oversee DOI hold hearings both in Washington and in the vicinity of the proposed park, where local residents can testify. NPS does not have the power of eminent domain.

Generally, not all the land contained within a park is owned by the federal government. Only seven of the thirty-six National Parks are all public land; most have pockets or even whole communities of privately-owned land. Some of the land is used by lumber companies or other commercial firms. NPS has no authority over use of these private lands; it is NPS policy not to acquire land against the owner's will.

Park production creates many conflicts between NPS and the Forest Service, a bureau within the US Department of Agriculture. By the Forest Reserve Act of 1891, the President was empowered to set aside National Forests by executive action. Four Presidents set aside 175 million acres (Theodore Roosevelt alone set aside 150 million acres), compared to NPS's thirty million acres. Congress reclaimed this power in 1907, and the Forest Service was created to administer these lands. This land makes up a large portion of the federal land in the continental U.S. In many cases, NPS units are bordered or surrounded by National Forests. These lands become the natural basis from which to extend National Parks, or establish new ones.

The Forest Service has a completely different mission and constituency than the NPS. The Forest Service, which operates on a policy of sustained

yield, allows logging and other economic uses of forests, and receives strong support from business interests and local residents who are employed at saw-mills. NPS, on the other hand, is geared toward conservation, and has environmental groups supporting it. Because of this difference in mission, proposals to turn National Forests into National Parks have precipitated tremendous battles. People fear the loss of jobs and industries; the Forest Service fights the loss of productive forests.

Procurement Porcess

Production in the government falls under the general rubric of "procurement". The federal government follows a very complicated process for buying goods and services. The purpose is to allow maximum competition among firms, and to have checks and balances so that public money is spent fairly. What follows is a description of the government procurement process, which sets NPS production process in a more general context.

The Federal Property and Administrative Services Act of 1949 empowered the head of the General Services Administration (GSA) to develop policies and methods for government agencies to buy property and services. With this authorization, the GSA and the heads of various federal agencies developed the Federal Procurement Regulations (FPR). These regulations apply to all federal agencies except the Department of Defense. Some special purchases are exempt for the regulations, such as in cases where security is involved.

Federal agencies are allowed to publish their own regulations to implement GSA's rules. They are also allowed to deviate from the GSA code, or add their own special rules. However, each agency must design a process to review

proposed deviations from the FPR, and present it to GSA. Agency heads may authorize deviations in individual cases.

An Interagency Procurement Policy Committee, chaired by the GSA, and including representatives of procuring agencies, was established to advise the GSA on its program to develop procurement policies. One of this committee's recommendations lead to the establishment of the Office of Federal Procurement Policy.

DOI's procurement regulations (IPR) are published as Title 41, ch. 14 in the code of Federal Regulations. A basic policy of DOI is to follow the Federal Procurement Regulations; most of DOI's code refers back to the FPR. DOI's regulations apply to all bureaus and offices in the agency. However, regulations may be issued by the individual bureaus. These must be consistent with both the IPR and FPR, and clearly spell out where any differences occur. The National Park Service has not chosen this option, and operates fully under DOI rules.

There are two basic processes whereby the federal government procures goods and services: (1) formal advertising and open competition; and (2) negotiation between the agency and an individual or select group of contractors.

Formal advertising and open competition: The first step in this process is for a bureau officer to draw up an "invitation to bid". This document describes what the government wants to buy, and what specifications the contractor must meet. There are a great many regulations on the form and content of this bid notice. It is reviewed to be sure that it is unambiguous and meets agency requirements.

The next step is to advertise the bid notice. A list is kept of all companies who have responded to notices before, and of companies who have expressed interest in providing various services. The bid notice is sent to the companies on this list.

Both the NPS regional offices and each Park Superintendent maintain bidders lists. A Park Superintendent's list typically contains a large proportion of local suppliers. This list is developed mostly by the park's administrative officer, who has contact with local contractors. The Regional Offices maintain extensive lists of potential suppliers, which supplement the Park Superintendent's list. Many suppliers write to the regional offices telling what kind of work they would like to do, and in which geographic area they would like to work. The NPS Washington Office and DOI hold symposia for the purpose of informing and attracting more contractors, and expanding the bidders list. (Some of these symposia are directed at minority businessmen.)

The bid notice is advertised in different newspapers and trade journals. A synopsis of the bid is also printed in the Department of Commerce's *Commerce Business Daily*, the US government's official procurement advertising journal. Bidders are generally given 30 days to prepare their bids. They may be given 45 days when the bid is complex, or less time if the bureau's need is urgent. When the bids come in, they are kept sealed and locked. An agency official is appointed the "bid opening official". He opens the bids publicly; the lowest bidder is generally awarded the contract.

In NPS, each bidder submits a bid bond at 20 percent of the bid. If the builder is awarded the contract and subsequently backs out, the NPS uses as much of the 20 percent as is necessary to cover the difference between

this bid and the next highest bid. After the low bidder is determined, the region gives the NPS Washington office seven days' notice before awarding the contract. This is mainly to enable the area's Congressional delegation know an award is being given in its district. All contracts are officially awarded by the Washington office. The procuring group in NPS does not have to accept the bids if they are too high. The NPS may throw out all the bids, redesign the advertisement, and send it out again at a later date. Sometimes prices are better in mid-winter, when the construction industry is in a slack period. Otherwise, the procuring agency may have to request additional funds from the central office.

Procurement by Negotiation: This process is supposed to be used only in those special circumstances when open competition would not produce an acceptable result. The IPR spells out instances when negotiated purchases are warranted:

- (1) In the case of a national emergency.
- (2) For purchases of less than \$10,000.
- (3) For experimental, developmental, or research work. The agency head must approve this for contracts greater than \$25,000.
- (4) For confidential or classified purchases.
- (5) For equipment requiring standardization and interchangeability of parts.
- (6) When the open competition has produced unreasonable prices.

In the last case, the bureau negotiates with each dealer for the best price, and goes with the lowest offer. In all cases, justification for using negotiation must be made. A number of findings are necessary, and a "memo of

negotiation" must be prepared. This documents the negotiation process, and includes technical and financial analysis, showing the bases for all decisions. The justification prepared must be approved by the Bureau or office head for purchases greater than \$200,000, and by the contract officer for purchases below that.

The Two-Step Bidding Process: In some cases, government specifications are not sufficiently definite to permit a formal advertising procedure. When this happens, a two-step process may be used. For step one, the agency advertises for technical proposals, with no prices attached. The contracting officer works with the company's technical staff to examine the proposal, and to clear up any difficulties. In step two, the actual bidding begins. Participation is limited, however, to those who submitted technical proposals. The the lowest price wins.

A process similar to this is used by DSC in contracting for architectural and engineering (A & E) services. First, the DSC defines as accurately as possible what work needs to be done, and draws up a scope-of-work document. DSC then advertises for A & E firms from their bidders list, and places an ad in the Commerce Business Daily. DSC also publishes the criteria by which the bids will be evaluated. The firms who respond must show a detailed plan of how they intend to accomplish the owrk, and how their solution fits into NPS's budget. After the bid deadline, a panel from DSC evaluates and ranks the bids. This panel usually has a representative from Quality Control, The Contracts Office, and one or two designers. After the bids are ranked, the DSC negotiates a price with the first ranked firm. If an agreement is reached, that firm is awarded the contract. If an agreement cannot be

reached, the DSC negotiates with the next ranked bidder.

After the contractor is selected, he is required to submit a performance bond for 100 percent of the contract. A payment bond (50 percent of the contract and over and above the performance bond) is also required. This bond serves as protection for people who supply the main contractor with equipment and services, and would cover any unpaid wages.

Both the request for construction and procurement process can be speeded up in an emergency. One such case occurred when a damaged sewage facility threatened to contaminate the Yellowstone River. Advertising time for bidders was cut to a minimum, and other restrictions were waived.

Agencies Involved in Procurement

General Services Administration (GSA): GSA, an independent office within the executive branch, plays a major role in the procurement process. GSA has responsibility for the federal government's system of in-house management, and for taking care of procurement and distribution of supplies to government agencies. It also handles construction and operation of government buildings, manages the government's computer system, and performs other similar activities. GSA procures everything from pencils to small airplanes, and operates a supply distribution facilities system, with wholesale depots and 71 self-service locations. In all, GSA procures approximately \$3 billion worth of supplies and services yearly. More importantly, GSA has authority over most federal buildings in the country. The Public Building Service, with approximately 25,000 employees, designs, builds, operates, and maintains the buildings. GSA controls more than 10,000 buildings, with 235 million square feet; 1700 construction projects are underway.

Office of Federal Procurement Policy: This is an office within the Office of Management and Budget whose function is to improve the efficiency of the government's procurement process by insuring uniformity of forms, regulations, and policies. This office has authority over the procurement practices of executive agencies, and over those who are recipients of certain federal grants (primarily in the construction field).

Small Business Administration: Another government agency with an interest in procurement is the Small Business Administration (SBA), located in the Department of Commerce. The SBA works with executive agencies to encourage a greater share for small companies in government purchasing. This activity is authorized by the Federal Property and Administrative Services Act, which states in part: "... a fair proportion of the total purchases and contracts for property and services for the government shall be placed with small business concerns." Many agencies designate one person in their procurement offices to act as a small business liaison, and to encourage small business participation in government procurement.

THE POLITICAL FUNCTION

The political function is defined as the formal determination of structures and modes of behavior (Nutt-Powell, *et al.*, 1978). There are a variety of groups and individuals that perform this function with respect to the operation of the National Park Service.

Of these, the US Congress and the Executive Office are the most important. Through the legislative process, they: created the National Park Service and all the parks; determined its organizational structure and limits of authority; and set policy to guide its operations.

However, the legislative process is not isolated and is subject to a great many influences. Environmental groups, business interests, state and local governments, and even NPS itself exert influence in the legislative process by lobbying and educating Congress, and applying pressure, public or otherwise.

Much of the Park Service's formal modes of behavior are determined by administrative and not executive action. Congress sets broad policy, and NPS has responsibility within these broad guidelines to develop more specific policies and regulations by which to administer the parks and park programs. Again, lobby groups and special interests play a role in developing administrative policies.

Realizing the effect that various interest groups have on the legislative process (and therefore on NPS operations), the Park Service has developed relations with these groups. NPS keeps groups informed of new decisions and policies, hoping to defuse adverse reactions. In effect, NPS lobbies the lobby groups.

The Legislative Process

Congress is the nation's lawmaking body. Each proposed law is contained in a bill, introduced in either the House or the Senate, which is then assigned to a particular *committee*, and then to one of its *subcommittees*. Public hearings are held, where testimony is heard on the bill's merits. When the hearing closes, the main working sessions, called *markups*, begin. In these sessions, senators or representatives go over the particulars of the bill, debating, compromising, and jockeying for position. These markups have only recently been made public, and they are watched closely by lobbying groups interested in the bill. After the subcommittee's work is done, the bill goes to the full committee, and then to the House or Senate floor.

Each subcommittee has a staff, as do individual senators and representatives. Most likely a Congressman will have at least one staff person dealing with each subcommittee. These staffs, along with the three to five senators or representatives in the subcommittees really interested in the bill, basically make decisions for the entire Congress.

This system is based on full committees trusting the judgment and abilities of the subcommittee. (An excellent description of this system is found in Asbell, 1978.) Subcommittee staff people review a bill in detail and gain expertise on its technical elements. Most Congresspeople have a more general knowledge of a bill's particulars, though for any given bill a few (notably the subcommittee chair) often have considerable knowledge. (The level of knowledge on the part of any given Congressperson will be a function of the importance of the bill, his or her years of service in the committee and subcommittee, and the importance of the issue personally and politically.)

Because of the detailed attention given legislation at this stage, subcommittee actively constitutes a major portion of the legislative process.

Most bills reported favorably by a subcommittee receive full committee approval, though there may be amendments. Following committee approval, the bill goes to the Senate or House floor. If the committee report is favorable, most likely the bill passes. However, controversial issues may face stiff floor challenges or delaying actions.

If the bill passes, it then goes to the other legislative house, where the identical (and typically independent) process of hearings, subcommittee examination, and so on, takes place. Though both houses may work on similar bills at the same time, there is often little communication between them. The major communications link is provided by the lobbyists (including representatives of both public and special interest groups, as well as the Executive branch) who must watch both sides, and consequently serve as carriers of information on content, status, and likely disposition.

If any differences are present when both houses have acted on a bill, or if they have produced by parallel tracks two similar but not identical bills, the final legislation is worked out in a *joint conference committee*. In conference, everything that is in one bill but not in the other becomes negotiable. Conferees from each house try to influence the outcome, attempting to stay as close to their original bill as possible. When a compromise is worked out, conferees return to their respective houses, which must accept the conference report, or send it back to conference. Following final approval of both houses, the President must sign the bill for it to become law. He has the option of vetoing the bill, in which case a two-thirds vote of each house is necessary to override and make the bill a statute.

Committee and subcommittee chairpersons have a great deal of knowledge about and connections within the agencies that are affected by legislation in their area. Most cabinet officers (agency heads) serve three to four years, while leading senators and representatives work their way up the committee ladders over many years. Thus many know more about the agency than does the Secretary; often a congressperson (or staff) knows where to get information before the Secretary does.

Agency Administration of Legislation

An approved bill and the record established in achieving its passage sets broad policy guidelines for an agency's actions and operations. It is then up to the specific department and agency, here DOI/NPS, to develop policies and regulations to implement the Congressional policy. Title 16, Section 3 of the US Code states, "The Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the NPS..." Congress does not have to approve these regulations, unless Congress specifically legislates such an action.

DOI and NPS have developed a number of administrative policies designed to implement the wishes of Congress, and to provide a framework within which to develop specific regulations. Administrative policies concern such matters as land and water rights acquisition, resource management, master plans, visitor use, and physical development. Such policies may vary from year to year, and Secretary to Secretary, or may remain constant. For example, the resource management policy, set by DOI's Secretary in 1918,

remains largely unchanged. Other policies have developed from recommendations made by boards appointed by the NPS. Leaders from conservation groups and others interested in Park Service affairs are often asked to sit on such boards.

By comparison, administrative regulations published in the Code of Federal Regulations are reached through a formal procedure, and tend to be more stable. They are specific rules implementing Congressional and Agency policy, and have the force of law. NPS regulations concern such matters as hunting, water sports, use of vehicles, concession operations, and development standards in certain parks.

Interest Groups

A variety of special interests monitor NPS operations and seek to influence the legislative and administrative policies that govern the Park Service. Legally, any organization that lobbies cannot remain tax-exempt. Loss of tax-exempt status would be fatal to many types of interest groups. Therefore, interest groups "educate" rather than lobby Congress; this distinction is rarely challenged (Everhart, p. 196).

Conservation groups are one such interest. They are generally concerned with the preservation of existing National Parks (i.e., little or no new development, recreation, and road building) and the establishment of new ones. Conflicts result because NPS tries to make parks more available for public use. For example, extensive battles have been fought over the building of roads through scenic areas.

There are a number of influential conservation groups. One, the National Park and Conservation Association, was founded in 1919. Its purpose is to protect and guide the National Park System; it is the only group that has the NPS as its sole focus. Another of the nation's foremost conservation groups is the Sierra Club, founded in 1872 to promote Yosemite National Park. (The Sierra Club lost its tax-exempt status by publishing a full-page newspaper ad protesting the damming of the Colorado at the Grand Canyon, and encouraging people to write their Congressperson.) A third major conservation organization is the National Audubon Society. It is one of the few interest groups that also manages land, with over one million acres set aside as bird reserves. Other groups that monitor National Park policies are the Izaak Walton League, the National Resource Council (an affiliation of sixty individual groups), and the Conservation Foundation.

Other major lobbying forces are state and local governments, and businesses in the area of existing or proposed National Park units. These groups have a great deal of influence with senators and representatives, who in turn exert substantial influence on park matters in their state. While the federal government has authority over national parks, local opposition can defeat proposed programs, especially ones aimed at a particular state (for example, the establishment of a new park).

State and local groups mainly concern themselves with the administration of parks in their areas. Although they have no official authority, they have great influence with local congresspersons, and this often constitutes a formidable tool.

THE FINANCIAL FUNCTION

The financial function is the establishment of standards of exchange for scarce resources (Nutt-Powell, *et al.*, 1978). There is a certain irony in this function, in that NPS deals very explicitly in resources which, because of the success of their efforts, are becoming increasingly scarce. The traditional economic problem -- establishing a "price" for merit goods -- is seen in its stark reality in this context. To understand properly the nature of the financial function, it is useful to begin with a brief historical review.

History

The first National Park, Yellowstone, was created in 1872 in what today is the corner of Wyoming, Idaho and Montana. At the time, it was assumed that the park would be self-financing, with money from concessioners supporting all of the necessary administrative functions. Revenues, however, turned out to be smaller than expected, and Congress was forced to appropriate funds to operate the park.

As time went on, more National Parks were created and more federal money was appropriated, particularly for the construction of roads. It was still felt that when this initial investment was completed, the parks could become self-supporting.

At the turn of the century, some parks met this expectation. Yosemite, in fact, turned a profit in 1907. In Congress, the feeling was that since parks were so remote and visited so infrequently, park visitors should bear the expense of their operation, rather than the federal government.

In the 1920's, however, the gap between revenues and expenses widened, and Congressional appropriations financed the bulk of park expenses. This was most apparent throughout the Depression, with the large amount of federal work relief projects. After the Depression, members of Congress became concerned about the large park deficits, and moves were made to increase the proportion of revenues to costs. In 1947, revenues were about one-ninth of appropriations; Congressional action brought that ratio up to one-third by the next year. By 1959, however, receipts made up an even smaller proportion, about one-fourteenth of appropriations.

One reason for the growing deficit was that auto fees have been cut (in absolute terms) since the early years of the century. Also, many new areas were added to the park system, with little or no admission charge. Park services have also expanded greatly, as the NPS now provides museums, sanitation, and fire protection, and conducts studies and surveys of historic sites. Furthermore, many parks require the purchase of private land, always an expensive matter.

By a long standing tradition, no government agency can keep the money collected in the course of its operations. Therefore, all NPS receipts go into the US Treasury general fund. This practice makes agencies dependent on the President and Congress for funds. This situation results in significant Presidential and Congressional influence on agency operations.

The Federal Budget Process

The annual federal budget process begins in May, when the Office of Management and Budget (OMB), working with the agencies in the executive

department, establishes goals and guidelines for the upcoming Presidential budget request. OMB advises the President on agency plans, and OMB works with the President to develop overall budget policies. These policies are sent to the agencies to guide them in the development of their budget requests.

Through July, August, and September the agencies draft their funding requests. Each agency has an in-house review system, with internal drafts and discussions. Bureaus in agencies typically attempt to expand (or at least preserve) their programs and staff, while the agency heads try to put together a program acceptable to the President and in line with their own priorities. The agency is in contact with OMB, and gets hints and suggestions on what it can reasonably expect to get.

OMB review, which begins approximately in October, attempts to synthesize the agency requests for the President's annual budget message to Congress in the third week of January. Hearings are held, which include testimony from the agency directors and the individual bureaus within the agency. Each defends his budget request, while the OMB attempts to pare off waste and shape the budget to Administration priorities. Also taken into account are the fiscal uses of the budget. For example, a policy decision must be made on whether a deficit is in order; and if so, how much, and what the possible economic impact would be.

The President's budget request is submitted to Congress in January. It is then subjected to extensive congressional review before the fiscal year begins the following October. Congress reviews the budget on a three-phase system. The first phase goes from January to May 15, when Congress must adopt its first concurrent resolution.

In this phase, the House and Senate Budget Committees (CBC's) are especially active.² They try to set an overall target for government spending, as well as specific targets by appropriation categories. They do not examine individual agencies and programs, but try instead to set goals for such broad areas as defense spending.

The various standing committees of Congress must submit spending estimates to their respective CBC's by March 15. They must also give the CBC's estimates of all new expenditures to be made in that fiscal year. The CBC's can then include these new programs in their budget targets. Also, the Congressional Budget Office (CBO) submits a fiscal policy report to the CBC's by April 1, which forms the basis of the CBC's work. Each budget committee comes up with spending targets; all differences must be reconciled in conference before May 15. The agreement that is reached is called the *first concurrent resolution*.

During this phase, the Appropriations Committee in each House works on the bills, amending and reaching an agreement. Next, the full Appropriations Committee acts on the bills. The House Committee must complete its recommendations by June, while the Senate has three to four weeks longer. Each Committee is still required to present the CBC's with estimates by May 15. After May 15, Congress acts on all congressional authorizations, appropriations and spending bills. They are all considered in light of the first budget resolution.

All spending bills must be acted on by early September. By September 15, Congress must pass the *second budget resolution*. This resolution sets a ceiling on spending, whereas the first resolution set a "target". There may also be directives for committees to change their spending figures on some

bills. By September 25, the two houses must reconcile in conference any differences in the ceilings in the actual budget bill. It is signed by the President and becomes law; and the fiscal year begins on October 1.³

Execution of the Budget

After an appropriations bill is enacted, the US Treasury draws up an appropriations warrant. This is signed by the General Accounting Office, and is sent to the agency that has received the appropriation. The agency may then have to revise its budget in light of the appropriations bill.

The agency must then send OMB a request for apportionment, or the rate at which the agency can spend money. The money usually is given out quarterly.

Each agency must "incur obligation" with the money before the next fiscal year. That is, they must spend the money or enter into contracts for the money. For some obligations (such as employee services), money is spent right away. For construction services or equipment, however, payment can be held up until the work is completed or the equipment delivered. In many cases, several years may pass between appropriation and actual payment.

THE SOCIALIZATION FUNCTION

Socialization is defined as the transmittal of norms through formal and informal mechanisms (Nutt-Powell, *et al.*, 1978). Within the NPS, socialization takes on two forms. First, a number of activities serve to transmit agency norms among NPS employees. Second, some Park Service activities are intended to develop a conservation ethic among the general public.

The Park Practice Program is an example of employee socialization. The program is a joint venture among NPS, the National Conference of State Parks, and the National Recreation and Park Association. Information is gathered and published on various matters, including park planning, development, and administration. The editorial offices are located in NPS headquarters. There are four publications related to the program: *Guidelines*, *Grist*, *Trends*, and *Design*. (*Trends* is very popular and is widely read by NPS administrators.) These magazines contain information important to Park Service personnel, and also serve to establish managerial attitudes and behavior.

NPS also tries to socialize the outside public with environmental programs. One is the National Environmental Study Area (NESA) program, designed to help teachers and students use park lands for environmental studies. The National Environmental Education Development (NEED) program is aimed at school children (K-8); the NPS provides written material for the program. The purpose is to develop an environmental consciousness among school children.

THE RESEARCH FUNCTION

Research is defined as consideration of what is and/or what might be (Nutt-Powell, *et al.*, 1978). This function consumes billions of federal dollars yearly, and is carried on by almost every federal agency on almost every conceivable topic. This section looks generally at the way the US government conducts research and specifically at the National Park Service's role. There is a brief section on the federal agencies that encompass, coordinate, and analyze government research or develop research policy.

Federal Research and Development (R & D) Process

Federal agencies conduct a great deal of in-house research. The US government also buys billions of dollars of research and development services yearly. Most of this is purchased from private companies, though a fair proportion goes to non-profit corporations and universities.

The US government has a formal procedure for buying research. This process was developed to insure maximum competition among business, and provide an objective evaluation of proposals. One of the key features is a review on different levels by independent boards within the procuring agency.

Most federal agencies basically follow the process spelled out in the Armed Services Procurement Regulations. First, an official files a procurement request for research and development services. This request includes specifications as to the research need. The official, called the "technical initiator," also includes a list of companies deemed capable to meet the procurement request.

The request then goes through various approval stages, including financial, contracting, legal, and central administration. If it obtains all necessary approvals, the next step is carried out by the facilities service center. This group adds the names of other potential contractors to the list submitted by the technical initiator.

Next, evaluation teams are appointed, who develop the criteria by which the proposals will be evaluated. Requests for proposals (RFP's) are sent to all the companies on the government list, and the RFP is published in the Commerce Business Daily.

Interested contractors then submit proposals to do the research and development work. These proposals are examined by the evaluation team, who award a point total on the basis of each proposal's technical worth. Tentative recommendations are developed, and oral presentations by the contractors may be arranged. The team's recommendations then go to the agency leaders, who make the final selection. (This process may be somewhat abbreviated for small contracts.)

The National Park Service sponsors a number of research and development activities, both within the department and with outside contractors. NPS also conducts joint projects with outside sources, such as other federal and state agencies, historical societies, and universities.

The two major types of research conducted by NPS are in the natural sciences and in archeology. In the natural sciences, the geological processes occurring in park territory are examined regarding the probable consequences of these changes. Field investigations of parklands are conducted to determine the best long-range use of these areas.

A great deal of investigation is also performed concerning ecosystems -- the climate, geology, life forms, and their interrelations -- to learn ways to compensate for human intrusions into these systems. Studies are conducted on wildlife, aquatic biology, climate, soil and botany.

NPS is very active in preserving prehistoric and archeologically significant sites. A great many historians and archeologists work for NPS. They identify, preserve, exhibit, and interpret historic sites. Many of the National Monuments (such as Natural Bridges) are the sites of prehistoric and historic remains.

NPS, however, does not research or develop new technology; it acts entirely as a consumer. Traditionally, NPS has been conservative about installing new devices in its facilities. Designers at the Denver Service Center, who design most of the major new park construction, are supposed to deal only with proven technology, and are not permitted to conduct research and development.

Regional offices operate on a tight budget, and are concerned about unknown maintenance costs for innovative equipment and costs for specialized help that must be hired. They try to discourage complicated or innovative requests from rangers (who generally are scientists, not managers). The regional offices tend to act conservatively, being aware of financial constraints.

While most of all government agencies are involved in research and development, some departments almost exclusively support research. Some of these groups play a major role in evaluating new scientific developments and formulating government policy in response to them. Following is a description of the major agencies.

National Science Foundation (NSF): This is an independent agency within the executive branch, established in 1950. Its powers changed in 1973 when the NSF director absorbed the function of the Office of Science and Technology, which was thereby abolished. The NSF initiates and supports basic and applied research in all scientific fields. It provides grants, contracts, and cooperative agreements with universities, non-profit groups, and other research organizations. Some of NSF's major interests are in computers, alternative energy sources, social issues, environmental quality, stimulating the economy, and anticipating technological impacts. NSF also tries to help the diffusion of innovation and to increase the non-federal involvement in research and development. Another major goal of NSF is to help train more scientists by providing fellowships to science students. NSF also develops and disseminates scientific information. The director of NSF acts as the Science Advisor to the President. His role is to help coordinate federal policies in the promotion of scientific research, development and education. He also assists the OMB, the Domestic Council, and other executive offices on scientific issues.

Office of Technology Assessment (OTA): This office, which is within the legislative branch of the government, was created in 1972 to help Congress plan for the consequences of using technology. The office is designed to be an independent and objective information source for Congress on technological impacts. It provides committees with studies and assessments of the impacts of various technological policy choices, and has done work on solar energy. An Energy Advisory Commission has been formed with representatives from various corporations, universities, and research institutions. Within this commission

is a Solar Advisory Panel, with people from conservation groups, universities, business, and politics sitting in. Connected with these groups is an energy staff and a solar energy project leader and staff. The OTA is not intended to be a research center; it is specifically prohibited from operating labs, pilot plants, or test facilities. However, OTA can get information from any government agency and request help from agency experts.

Department of Commerce (DOC): This executive agency runs the National Technical Information Service (NTIS), which was designed to improve the public's access to government science and technology reports. NTIS is the central point for the public sale of government-funded research and development reports, which are prepared by the federal agencies or their contractors. The collection exceeds 850,000 titles. An on-line computer search service (NTISearch) is provided to help people locate material on a specific topic, and current abstracts of research reports are published. This service is the major outlet for government research. It plays a vital role in diffusing the vast amount of research work sponsored by the federal government, and is probably the world's largest source of public-available research information.

National Academy of Science (NAS): This is an organization of scientists and engineers who work for the advancement of science. Though not a government agency, it has long had close ties with the federal government. No federal funds are directly allotted to this office, though it does receive contracts to do work for government agencies. Closely tied to NAS is the National Academy of Engineering. This agency is made up of some of the nation's top engineers, and advises the government on engineering problems. It also

encourages engineering research. Allies with the preceding two groups is the National Research Council (NRC). Organized by the NAS, it stimulates scientific research, and helps apply research findings to needs in engineering, agriculture, medicine, and so on. NRC has no labs of its own, but tries to encourage and coordinate research. It sponsors conferences, collects and collates scientific data, and sponsors technical publications. The NRC administers approximately \$50 million in funds provided by contracts, contributions and foundations.

NOTES

1. Historic sites pose a difficult problem for the incorporation of structurally-related innovations, such as PV. Historians are very sensitive about change in historic buildings. When installing modern heating systems in old buildings, the NPS has had to be extremely resourceful in hiding air ducts and leaving walls, roofs and other features in historically accurate condition.
2. The 1974 Budget Reform Act established the Congressional Budget Office (CBO) and the House and Senate Budget Committees. For a detailed discussion of this process see minor, 1978.
3. An added complication is the process of authorizing bills. Congressional spending is a two-tier system. First a program must be authorized, with specific legislation. Then it is funded for actual operation by the appropriations bill process described in the text. Many programs must be authorized annually to continue.

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