Cost Estimates For Major Items Included In Proposed System Of Universal Voter Registration B-173959

Department of Commerce

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

NOV. 2, 1971

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-173959

Dear Senator Kennedy:

In your letter of August 17, 1971, you advised us of a bill (S. 2457) which you had recently introduced to establish a system of universal voter registration and requested us to prepare an estimate of the startup and ongoing costs of the system to the Federal Government. This letter transmits such cost estimates.

The bill would provide a simple post-card form by which any citizen could register to vote in Federal elections. The forms would be processed by a new agency--the Universal Voter Registration Administration--to be created in the Bureau of the Census, Department of Commerce. This Administration would compile registration lists by voting unit and would make the lists available to State and local officials at appropriate times before each election.

The estimated costs included in this letter are based largely on estimates for specific system components which officials of the Bureau of the Census developed at our request. We furnished the Bureau with the principal assumptions to be used for estimating purposes. (See p. 16.) Agreement was reached with your office concerning those principal assumptions. Other assumptions relating to the configurations of the system were made when necessary.

In view of the time constraints and because some basic factual information was simply not determinable--even given more time--many assumptions had to be made on the basis of personal judgment. Also our tight time schedule permitted us, for the most part, to concern ourselves only with the principal cost items. Numerous other details conceivably would have to be worked out before the system could be implemented effectively. The estimates therefore should not be considered to be precise.

The details of the system were drawn up to implement, as nearly as possible, the provisions of Senate bill 2457 as introduced. In some instances it was necessary, however, to introduce alternative methods for accomplishing specific tasks because of technical or practical limitations. For example, the state of the art is not sufficiently advanced to permit electronic scanning of hand-addressed registration cards. Similarly computerized geographical coding of the type used by the Bureau for tabulating the 1970 decennial census information for some areas has applicability only where house numbers and street names are used. At present a manual geographical-coding operation would be necessary for rural areas.

The following tables show the estimates in current dollars for the major costs associated with establishing and maintaining a system of

universal voter registration along the lines of Senate bill 2457, assuming a centralized operation and various levels of registration volume. For comparative purposes we have developed cost estimates for alternative methods of assigning registrants to voting units by means of geographical coding. Of the alternative methods, method I would place the geographical-coding responsibility with the Administration, as called for by the language of Senate bill 2457, whereas method II would place such responsibility at the local level--more specifically, with the registrants themselves, aided in some instances by Postal Service employees.

The cost estimates, assuming both centralized operation and decentralized operation carried out through 15 regional offices, are presented in greater detail in appendixes II and III.

Table I

Estimates of Startup Costs to Implement Universal Voter Registration System by Assumed Volumes of Registrations--Centralized Operation

Assumed volume	Estimated costs Method I	Method II
	(000,000 omitted)	
40	$275	$191
70	352	204
140	527	230

Table II

Estimates of Annual Ongoing Costs of Universal Voter Registration System to End of Fifth Year by Assumed Volumes of Registrations--Centralized Operation (note a)

Assumed volume	Estimated costs Method I	Method II
	(000,000 omitted)	
22	$ 99	$52
36	134	57

[a]Annual changes in the inventory during the second through fifth years (resulting from new registrations, name changes, deaths, and the like) are assumed to range from 22 million--based on an initial registration of 40 million--to 36 million--based on an initial registration of 70 million.

The startup cost estimates include a figure of $72 million and upward--depending on volume--for computer equipment purchases. These costs would be nonrecurring in subsequent years, except costs for equipment replacements. Purchasing rather than leasing the equipment would appear to be more economical over a period of years.

Bureau officials estimated that about 3 years would be required to implement the systems discussed in this report. The cost estimates were built on the assumption that 1 year, or 200 working days, would be required to construct the initial data base of voter registrations, assuming an even work flow, and the work load during the ongoing years would tend to be concentrated in a 4-month period each year.

We plan to make no further distribution of this report unless copies are specifically requested, and then we shall make distribution only after your agreement has been obtained or public announcement has been made by you concerning the contents of the report. We will be available to discuss the cost estimates with you if you desire.

Sincerely yours,

Deputy Comptroller General
of the United States

The Honorable Edward M. Kennedy
United States Senate

GENERAL ACCOUNTING OFFICE COST ESTIMATES FOR MAJOR ITEMS INCLUDED IN PROPOSED SYSTEM OF UNIVERSAL VOTER REGISTRATION

The proposed system of universal voter registration would provide a simple post-card form by which any citizen could register to vote in Federal elections. The form would be processed by a new agency--the Universal Voter Registration Administration--to be created in the Bureau of the Census, Department of Commerce. This Administration would compile registration lists by voting units and would make the lists available to State and local officials at appropriate times before each election.

For comparative purposes the cost estimates of the voter registration system were developed assuming two locational bases--centralized and regional (comprising 15 regional offices)--and alternative methods for satisfying the requirement of assigning registrants to appropriate voting units. Of these alternative methods, method I would place the responsibility for geographical coding with the Administration whereas method II would place such responsibility at the local level--more specifically, with the registrants themselves, aided in some instances by Postal Service employees.

As shown by the cost estimates included in appendixes II and III, the principal cost variance between methods I and II is clearly identifiable as that involving the geographical coding of registration cards by voting unit. The reasons for this variance are discussed in subsequent sections of this report.

A centralized system might cost less than is now indicated by the cost tables; however, we were not able to support this contention within the time available. For example, the number of administrative and support employees required for a centralized operation probably would be less than the total number of administrative and support employees for the 15 regional offices.

The number of regional office locations used for estimating purposes is based on Bureau proposals for regional census operations--recognizing regional work loads. The assumption is that the geographical distribution of the work load for voter registration would approximate that of census operations. This might not be so, however, and fewer locations conceivably could be used, which would result in savings in construction and administrative costs.

GEOGRAPHICAL CODING

Both methods I and II would require the development of area maps delineating the boundaries of an estimated 170,000 voting units throughout the country. The basic information required for this task would come from local governments. A similar procedure was used in developing a geocoding system for the 1970 decennial census.

Also, under both methods, the computerized address coding guides developed to date for 233 standard metropolitan statistical areas (SMSAs)--covering about 65 percent of the population--would be updated to include all available street names and house numbers as well as the numbers of all voting units within those areas. Most of these addresses already are contained in computerized address coding guides developed for the 1970 decennial census. Bureau officials estimated that updating these coding guides would cost $6 million.

Beyond this point methods I and II vary as outlined below.

Method I

Under method I the computerized address coding guides would be used to assign the voting-unit number to registrants having addresses covered by the guides.

The geographical coding of registrants having addresses not included in the guides would have to be done manually by the Administration by consulting maps or perhaps even by visiting local areas. Under either a centralized or a regional operation, this procedure becomes extremely expensive and time consuming--it is estimated by Bureau officials to cost an average $3.75 for each registration.

Method II

Under method II the computerized address coding guides would be printed and copies would be distributed by the Administration to post offices within SMSAs covered by the guides. Area maps delineating voting-unit boundaries and containing a unique numerical code for each voting unit also would be prepared and distributed to post offices. Persons

wishing to register could be made aware of their voting-unit code either by an educational program or by an inspection of the maps displayed at their post offices. The estimated initial cost of the maps and guides is $9 million. We have not included an estimate of the cost of an educational program.

Those registrants who do not wish to visit their local post office and who do not know their voting-unit code would deposit registration cards in the mail--complete except for the voting-unit code numbers--and the appropriate code numbers would be placed on the cards by Postal Service employees. We assumed that the Postal Service would have to assign the code numbers for 25 percent of the registrations. We assumed also that, because of their familiarity with a given area, Postal Service employees would be able to assign the voting-unit codes in less time than would employees working at a centralized or regional location, which would reduce the costs of this operation. The estimated cost of services performed by Postal Service employees is included in the item "geographical coding and entering data on magnetic tape" for method II shown on pages 14 and 15.

To permit verification of the accuracy of the coding, the registration card could be divided in two parts, perforated for ease of separation; one part would be forwarded by the local post office directly to the Administration and the second part to officials of the local voting unit. The part forwarded to the local voting unit would contain only the registrant's name, address, social security number, and voting unit code. Local officials would be responsible for verifying the accuracy of the coding for the address indicated and for notifying the Administration of necessary coding changes.

This proposed alternative would solve some of the problems that might be encountered if the Administration were to assign each registrant to a voting unit and would drastically reduce the costs of the system. The Bureau's preliminary evaluation of the accuracy of computerized coding operations for the 1970 census in the large metropolitan areas showed that the coding error rate for census tracts before correction was 2.7 percent on the average and as high as 3.2 percent for some areas. A Bureau official informed us

that the error rate which would result from matching addresses to voting units on a centralized or regional basis probably would be slightly higher than that for coding census tracts.

HANDLING AND DATA ENTRY OF REGISTRATIONS

Registration cards received by the Administration would be sorted manually in the mailroom by county, SMSA, or similar divisions to facilitate data entry into the computer. Assuming an initial volume of 40 million registrations, the cost for this operation would be about $200,000 and proportionately higher for larger volumes.

The cost estimates were based on the assumption that keyboard-to-disk equipment would be used to enter the registration data into the computerized system. Bureau officials informed us that the cost to lease this equipment on an as-needed basis would be less than the cost to purchase it. The estimates were based on the rental cost of $150 a month for each key station.

COMPUTER REQUIREMENTS

The computer equipment estimates were based on the assumption that the equipment, except the data entry equipment, would be purchased. The costs of the computer equipment were based generally on IBM system 370 technology. Bureau officials have justified using this equipment for estimating purposes because (1) it has high-performance peripheral equipment, (2) it has 12 high-speed input-output channels, and (3) documentation was readily available on price, performance, and other technical factors. Bureau officials informed us that the central processing unit on the computer system was capable of handling up to 200 million registrations with only slight modifications and some additional peripheral equipment. Actual procurement of the hardware more than likely would involve consideration of equipment available from all qualified vendors.

It is assumed that registration data for each voting unit would be sequentially organized and that the system would provide random access to the data for the respective voting units. Lifetime voter registration cards, reissued only when changes in the registration record were necessary, would be prepared on conventional impact printers. Voter registration lists would be prepared on 16-millimeter microfilm and would be sent directly to the appropriate voting units. Bureau officials informed us that present technology would not permit quick or economical impact printing of registration lists in the allowed time frame.

The local units would be responsible for printing the microfilmed information, if necessary, for use on voting days. It appears that this would not be expensive for the local units since microfilm readers and printers should be readily accessible at the local level--for example, in banks, utility companies, etc.--to permit contracting for those services. Local units not requiring printed (hard-copy) listings could purchase simple readers at a cost of about $100 a unit. A sophisticated reader and printer which would produce hard-copy listings could cost up to $4,000.

The cost estimates did not provide for a telecommunications system to allow regional installations to exchange

data on registrants entering regional jurisdictions other than those in which they were registered previously. The desirability of such a system, in this instance, would depend on the degree of sophistication required in the file maintenance program. Assuming that rapid transmission of "update" data would not be necessary, it is likely that slower modes of data exchange, such as mailing, could be used.

Bureau officials estimated that the costs of teleprocessing equipment, which would link each regional installation to the 14 other installations by leased wide-band telecommunications channels, would be $5 million initially for nonrecurring equipment purchases and installation costs and $9 million annually for leasing the lines.

Bureau officials estimated also that maintaining a quality control check would cost $63 million more annually--assuming a volume of 140 million registrations--to ensure that the registration records would be properly entered into and maintained in the Administration's files. We were not able to verify or accept as a reasonable figure the estimate of $63 million because of the lack of actual cost data for a system which is as large as that proposed and which requires error-free data outputs. We did not include, therefore, this cost estimate in our summary of costs. Some costs for quality control, however, were included in the estimates for entering the data on magnetic tape.

OTHER COST FACTORS

Construction of buildings

Construction costs of buildings to house computers, tape and disk libraries, operating and maintenance employees, etc., were estimated at roughly $40 a square foot, not including land. Approximately 30,000 square feet for each regional installation would be required; 35 percent of this space would be devoted to premium computer space. Computer installation sites of a type which would guard against destruction from civil disorders were estimated to cost $5 more a square foot on the basis of information furnished by the Department of Defense.

Bureau officials estimated that, if the system were centralized, construction costs would be reduced approximately 15 percent.

Personnel and training

Bureau officials estimated that the employees directly associated with each regional installation would number about 193, excluding keyboard operators and mailroom clerks who probably would be employed on a temporary basis as determined by the work load. The costs for keyboard operators and mailroom clerks are included in the item "geographical coding and entering data on magnetic tape" in appendixes II and III.

A detailed listing of the 193 employees by grade and function follows.

Function	Grade	Number of employees
Site manager	16	1
Assistant site manager	15	1
Shift supervisor	15	3
Assistant shift supervisor	14	3
Computer specialist	15	1
Do.	14	1
Do.	13	1
Scheduler	13	3
Do.	12	3
Do.	9	12
Work stager/dispatcher	9	3
Do.	7	3
Do.	4	33
Tape/disk librarian	9	3
Do.	7	3
Do.	4	36
Lead operator	9	3
Console operator	7	6
Peripheral equipment operator	3	15
Printer operator	3	18
Stripper	2	6
Administrative and support employee	(a)	35

[a]General Schedule (GS) grade ranges from GS-12 through GS-3; average grade approximately GS-8.

Salaries for the permanent computer installation employees (excluding keyboard operators and mailroom clerks) were computed at step 4 on the basis of the Civil Service Commission's Salary Table dated January 1971. The initial costs were increased appropriately to recognize the employee requirements, prior to the start of registration processing, for setting up the system and for working with it to correct any computer program or equipment problems that might arise. Most of the employees would be employed 6 months before the start of processing the registrations. Some of the top computer employees would be employed as early as 2 years before the start of processing. The cost estimates also include employee costs for recording the initial data base.

The system costs were estimated on the assumption that the system would be used solely for voter registration purposes. Bureau officials estimated that the work load during the ongoing years would tend to be concentrated in a 4-month period each year so that the computer employees would have little to do the rest of each year. We have included full-year salaries for the 193 employees at each installation in our cost estimates for future years. If the Administration's computer installations were permitted to handle "service bureau" work for others on a reimbursable basis, however, ongoing operational costs of the system could be reduced.

Information furnished to us by the Civil Service Commission indicated that the Commission's computer specialist registers presently contain the names of large numbers of computer employees classified as eligible for high-level positions. It might be possible, therefore, to fill many, if not all, of the high-level positions listed above from this register. Consequently we did not include a cost for recruiting in the cost estimates.

We have included in the estimates the cost of 1 week of orientation training for all employees, at $350 a week in excess of salaries. This assumes that the proposed system would be organized quickly and that only experienced persons would be hired.

We estimated that 80 persons, in addition to the operating employees discussed above, would comprise the "software" development group responsible for developing procedures and computer instructions. Their salaries and related benefits--adjusted for the period of employment--make up the costs for the item "computer program" in appendixes II and III.

PRINTING OF REGISTRATION CARDS AND MAILING

The cost of printing registration cards was estimated to be $2.90 for each thousand cards. This could change, however, depending on a number of factors, such as the volume to be printed, the size of the cards, and the printing detail required.

Mailing cost estimates were based on the number of mailings required to forward the registration cards to the

Administration and to notify the registrants of their registration under the system. For method II cost estimates, we also have estimated the cost of forwarding the second part of the registration card to the local voting units. Mailing cost estimates for notifying registrants of the removal of their names from the registration files were not included.

METHOD I

STARTUP COST ESTIMATES FOR

MAJOR ITEMS INCLUDED IN PROPOSED SYSTEM

OF UNIVERSAL VOTER REGISTRATION

Cost item	Centralized			Regional (note a)		
	(assumed volume in millions)					
	40	70	140	40	70	140
	(000,000 omitted)					
Construction of buildings (excluding land)	$ 15	$ 15	$ 15	$ 18	$ 18	$ 18
Transportation of office furnishings, equipment, etc.	3	3	3	3	3	3
Computer equipment (including maintenance)	75	78	80	76	88	90
Computer program	4	4	4	4	4	4
Geography mapping and updating address coding guides	7	7	7	7	7	7
Geographical coding and entering data on magnetic tape	94	164	329	94	164	329
Personnel and training	72	72	72	72	72	72
Mailing costs and printing registration cards	5	9	17	5	9	17
Total	$275	$352	$527	$279	$365	$540

[a]15 regional offices.

METHOD I

ONGOING COST ESTIMATES FOR MAJOR ITEMS INCLUDED IN

PROPOSED SYSTEM OF UNIVERSAL VOTER REGISTRATION

Cost item	Centralized		Regional (note a)	
	(assumed volume in millions)			
	22	36	22	36
	(000,000 omitted)			
Computer equipment (including maintenance)	$ 2	$ 3	$ 3	$ 3
Computer program	2	2	2	2
Geography mapping and updating address coding guide	1	1	1	1
Geographical coding and entering data on magnetic tape	52	85	52	85
Personnel and training	39	39	39	39
Mailing costs and printing registration cards	3	4	3	4
Total	$99	$134	$100	$134

[a]15 regional offices.

METHOD II

STARTUP COST ESTIMATES FOR MAJOR ITEMS INCLUDED IN

PROPOSED SYSTEM OF UNIVERSAL VOTER REGISTRATION

Cost item	Centralized			Regional (note a)		
	(assumed volume in millions)					
	40	70	140	40	70	140
	(000,000 omitted)					
Construction of buildings (excluding land)	$ 15	$ 15	$ 15	$ 18	$ 18	$ 18
Transportation of office furnishings, equipment, etc.	3	3	3	3	3	3
Computer equipment (including maintenance)	75	78	80	76	88	90
Computer program	4	4	4	4	4	4
Geography mapping and updating address coding guides	9	9	9	9	9	9
Geographical coding and entering data on magnetic tape	8	14	29	8	14	29
Personnel and training	72	72	72	72	72	72
Mailing costs and printing registration cards	5	9	18	5	9	18
Total	$191	$204	$230	$195	$217	$243

[a]15 regional offices.

METHOD II

ONGOING COST ESTIMATES FOR MAJOR ITEMS INCLUDED IN

PROPOSED SYSTEM OF UNIVERSAL VOTER REGISTRATION

Cost item	Centralized		Regional (note a)	
	(assumed volume in millions)			
	22	36	22	36
	(000,000 omitted)			
Computer equipment (including maintenance)	$ 2	$ 3	$ 3	$ 3
Computer program	2	2	2	2
Geography mapping and updating address coding guide	1	1	1	1
Geographical coding and entering data on magnetic tape	5	7	5	7
Personnel and training	39	39	39	39
Mailing costs and printing registration cards	3	5	3	5
Total	$52	$57	$53	$57

[a]15 regional offices.

MAJOR ASSUMPTIONS MADE FOR ESTIMATING COSTS OF UNIVERSAL VOTER REGISTRATION SYSTEM

1. Assume that the initial registration work load would total:

   --40 million.
   --70 million.
   --140 million.

2. Assume that changes in the Administration's registration files during the second through fifth years of operation would range from 22 million--based on an initial registration of 40 million--to 36 million--based on an initial registration of 70 million. This assumption is based on the following considerations:

   --Assume that the system will provide lifetime registration unless changes in record information are necessary.

   --Assume that the data base will change 20 percent annually as a result of mobility, voting-unit boundary changes, deaths, and persons declared ineligible because of criminal convictions or mental incompetence. Assume that updates in the record information necessitated by name changes after marriage or divorce would be covered by the mobility adjustments.

   --Assume that 4 million residents would become of age each year and that all would register under the system.

   --Assume that 10 million residents would elect to register under the system each year (for 40 and 70 million levels), in addition to those becoming eligible for the first time.

3. Assume that data processing installation(s) would be:

   --Regionalized.
   --Centralized.

4. Assume that the assignment of registrants to the appropriate voting units would be made by:

   --The Administration.

   --Individual registrants aided, in some instances, by Postal Service employees.

5. Assume that the registration record would contain, among other things, a social security number.