



*Corporation for National  
and Community Service*

**Assessment of the Service Award  
Liability Calculation**

**Final Report**

**December 10, 2001**

**Contract No. GS-23F-8126H  
Task Order No. CNSHQG01038**

**PRICEWATERHOUSECOOPERS** 

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## **1. Project Objectives**

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In its annual financial statements, the Corporation for National and Community Service (the Corporation) includes an estimate of the anticipated service awards to be paid by the National Service Trust. These awards are paid to educational and financial institutions on behalf of participants who complete terms of service in AmeriCorps programs. The Corporation received an unqualified opinion on its FY00 financial statements that included a liability estimate based on its Service Award Liability (SAL) model.

PricewaterhouseCoopers (PwC) was asked to review and assess the Corporation's methodology for determining and reporting on the financial results of the National Service Trust. Based on this review and assessment, we found the original SAL estimation and trust balances model produced reliable estimates.

After completing our review, we met with the Corporation on June 29, 2001, to present model enhancement recommendations. The final model enhancement recommendations flowing from that meeting are listed in Section II below and are intended to refine the procedures and approach for estimating the Corporation's liability and trust requirement estimates. Appendix A contains a glossary of key terms. Appendix B is a user's manual for the new, enhanced model that includes detailed information on model methodology and approach, assumptions, and operating procedures.

## 2. Model Enhancements

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The final recommendations are arranged in the following categories and reflect the enhancements that were made to the original SAL estimation and trust balances model: model methodology/approach, model design, and model functionality.

### 2.1 Enhancements to Model Methodology/Approach

#### A. Time value of money approach

1. Refine the use of discount rates in future funding requests
2. Compounding of investments in Treasury market-based specials consistent with the Corporation's investment strategy

#### B. Standardized discount and Treasury rate assumption procedures

The new model uses standardized procedures to form discount and Treasury rate assumptions. Current and forecasted discount and Treasury rates are consistent with President's Budget, and Office of Management and Budget (OMB) projections.

#### C. Fiscal versus program year approach

The original model uses program year as the basis for developing the SAL estimate and future funding requests. Upon assessing the model under a fiscal year approach it was decided to continue redesigning the new model under the program year basis because the impact on the liability was negligible.

#### D. Still active, to earn methodology

An active status member is an enrolled member for whom no end of term documentation has been received and, thus, that person has not formally earned an award. The *still active, to earn* field estimates the percentage of active members who will earn an award. The current models do not have a specific methodology for estimating the number of active members who will likely earn an award during the early period of a program year. To obtain an estimate, an assessment of past year SAL estimates was performed to identify historical trends. These trends were applied to the new, consolidated model.

#### E. Weighted average outlay distribution approach

The original models apply a single average to estimate the outlay distribution by year/age. The new model uses a weighted average approach that allows average outlays to reflect changes in program year award amount.

## **2.2 Enhancements to Model Design**

### **A. Model Consolidation**

The original service award liability and trust fund models were housed in separate Excel workbooks. Since the models shared nearly the same data to derive their estimates, we decided to consolidate both models into a single workbook to streamline the SAL estimation and budget forecasting process.

### **B. Centralized input worksheet**

The original model structure required inputs to be made on various worksheets. The new model incorporates a single input worksheet. This modification reduces the need for flipping between worksheets and should make the SAL estimation and budget process easier and less susceptible to keying errors.

### **C. Formula or reference driven non-input worksheets**

Ensuring non-input cells are formula or reference driven will result in a more tractable model and one that is less susceptible to keying errors. The new model is comprised of two input worksheets. All remaining worksheets are comprised of formula or reference driven cells.

### **D. Low-maintenance model**

The original models required annual revision to support the development of new SAL estimates and future funding requests. The redesigned model can support the development of SAL estimates and budget formulation through 2011 without updates to the non-input worksheets.

## **2.3 Enhancements to Model Functionality**

### **A. Quarterly-basis approach estimate capability**

In previous years, the SAL model was structured to accommodate yearly submission of SAL estimates. The Corporation has begun generating SAL estimates on a quarterly basis. The new consolidated model accommodates quarterly updates.

B. Scenario analysis functionality

Within the new model, we have developed a feature that allows the user to perform scenario analysis. The scenario analysis feature allows the user to assess the impact of changes to select inputs and assumptions on the SAL estimate and budget request. This should allow for more effective program management. The variables available for use in scenario analysis include:

1. Enrollment
2. Distribution of enrollment type
3. Earned award
4. Still active, to earn
5. Investment strategy
6. Interest rates
7. Award amount and award usage factors
8. Appropriations received

### 3. Model Structure

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The new service award liability and trust fund budget model consolidates the prior SAL Estimate model and Trust Balances model into a single Microsoft Excel workbook. The new model will provide SAL estimates, trust fund balance projections, and estimated budgetary needs of the Trust for each program year through 2011. Within the Excel workbook, nine worksheets are used.

1. The *Input\_Output* worksheet drives all SAL, balance, and budgetary projections for the Trust. The worksheet stores and accepts input assumptions and allows users to view summarized SAL, trust balances, and budgetary estimates at a glance.
2. The *Calculations* worksheet transforms the inputs and assumptions from the *Input\_Output* worksheet and estimates usage factors by age for the service award and interest forbearance components of the Trust. The usage factors are used to estimate the Trust's total liability through the current program year. The usage factors are also used in combination with investment strategy assumptions to forecast the Trust balance and ultimately provide an estimate of budget requirements needed to fund existing and projected service award, interest forbearance, and scholarship liabilities.
3. The *SAL Estimate* worksheet draws estimated service award and interest forbearance liability information, through the current program year, from the *Calculations* worksheet. Actual and expected scholarship liability information, through the current program year is drawn from the *Input\_Output* worksheet. The *SAL Estimate* worksheet allows for estimates to be performed through program year 2011 and is formatted for printing in support of formal submission of the Trust's estimated liability.
4. The *Future Funding* worksheet draws actual appropriation, interest, and outlays information to derive beginning and ending Trust balance by fiscal year. The *Future Funding* worksheet also projects beginning and ending Trust balances for the out-years using estimated total outlays, expected appropriation amounts, and projected investment strategy of the portfolio derived in the *Calculations* worksheet. Finally, the *Future Funding* worksheet estimates new outlays for the base year plus two (typically the budget formulation year), discounts according to assumptions in the *Input\_Output* worksheets, and estimates the future funding needs of the Trust.
5. The *S\_Input\_Output* worksheet allows the user to conduct scenario analysis on select base case inputs and assumptions found in the *Input\_Output* worksheet and computations used in the *Calculations* worksheet. The *S\_Input\_Output* worksheet also displays, in summarized form, the base case output found in the *SAL Estimate* and *Future Funding* worksheets and scenario case output from the *S\_SAL Estimate* and *S\_Future Funding* worksheet for comparison ease.

6. The *S\_Calculations* worksheet transforms the scenario inputs and assumptions from the *S\_Input\_Output* worksheet and estimates the service award, interest forbearance, and scholarship liabilities under user-specified scenarios.
7. The *S\_SAL Estimate* worksheet projects the total Trust liability estimate, including the service award, interest forbearance, and scholarship programs under user-defined scenarios.
8. The *S\_Future Funding* worksheet projects the trust balance, present value of the budget formulation year outlays, and resulting funding requirements necessary to meet the expected obligations of the Trust under user-defined scenarios.
9. The *Scenario Summary* worksheet summarizes input and assumption deviations from the base and scenario cases.

Detailed information on the spreadsheet model and the underlying methodology is included as Appendix B to this report.

## 4. Model Operation

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This section describes use of the model for the both SAL estimation and budget formulation purposes. Additional details on inputs and assumptions are documented in Appendix B.

### 4.1 Estimating the Corporation's Service Award Liability

Users will input data and assumptions as defined below to the *Input\_Output* worksheet to estimate the Corporation's liability from service awards, interest forbearance, and scholarship programs. All variables requiring input are denoted by a white input box. Input data is derived from various sources, including the Corporation's SPAN database, the Corporation's portfolio and scholarship program management, and OMB documentation.

The *Input\_Output* worksheet is composed of several input sections. The following provides a description of those sections and related input required to run the model.

#### Section 1. User input and assumptions

This section requires the user to input information on the following items:

**Key inputs.** These inputs are the principal drivers of the model and should be given consideration for each model use.

*Last period with actual data occurred in fiscal year:* This input should be the last year for which SPAN information is available.

*How many quarters of actual data for above year?* This input provides information on the quarter for which the service award liability is being estimated. An estimate performed for the end of the first quarter of a specific fiscal year would be entered as 1, an estimate performed for the end of the second quarter would be entered as 2, and so on.

*Enter enrollment estimate for base year:* This input provides information regarding the number of base year enrollment. Base year refers to the last year for which actual SPAN data (whether partial or full year) is observed.

*Enter enrollment for base year + 1:* This input provides information on expected enrollment for base year plus one. For example, if the base year were 2001, input for this variable would be the expected enrollment for program year 2002.

*Enter enrollment for base year + 2:* This input will typically be expected enrollment for the budget formulation year.

*Discount rate for weighted average portfolio maturity:* This input is the discount rate as documented by OMB corresponding to the weighted average maturity of the Corporation's portfolio. Calculations to determine the weighted average maturity (WAM) of the portfolio

can be done using summary information in monthly management reports entitled *Report of the National Service Trust Fund*. Detailed steps on how to calculate the Corporation's WAM are documented in Appendix B. Electronic copies of these monthly reports can be obtained by contacting the Corporation's Investment Portfolio Manager or the Director of the Trust. The user needs to match the Corporation's portfolio WAM to the corresponding maturity discount rate as listed in OMB Circular A-94. Current OMB discount rates, which are valid through January 2002, can be obtained in Appendix B of OMB Circular A-94. This circular can be found at the following web address:

<http://www.whitehouse.gov/omb/circulars/>

**Secondary inputs.** These inputs should be updated on an as-needed basis by the model user.

*Expected service award outlay for base year:* If the base year does not reflect a complete year of actual data or does not reflect the total anticipated enrollment, the user will need to input the expected service award outlay for the corresponding base year and age. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward. For example, the current model is populated with information through roughly 3 quarters of the 2001 base year. At present time, the model uses data through 2000 to estimate the service award outlay through age 6. Base year 2001 includes age 7 of the service award outlay. The model does not use 2001 actual data to estimate service award outlays in age 7. Base year 2001 data does not reflect a complete year of actual data nor does it reflect anticipated enrollment. Incorporating actual 2001 data would likely under estimate service award outlays for age 7. To reflect a more accurate service award outlay distribution, the user will need to input the expected percent of the total award amount that will be outlaid during age 7. This input field will typically remain zero for ages nine forward, but may be populated for authorized waivers.

*Expected service award outlay for base year + 1:* The user will need to provide an assumption on the expected percent of the total award amount that will be outlaid during base year +1 and age 8. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward, but may be populated for authorized waivers.

*Expected interest outlay for base year:* The user will need to provide information on expected interest outlays for the corresponding age and base year. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward.

*Expected interest outlay for base year +1:* The user will need to provide information on expected interest outlays for the corresponding age and base year +1. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward.

*Expected active to earn ratios:* The model is designed to estimate active to earn ratios based on SPAN information input in Section 2 of the *Input\_Output* worksheet. The model-derived active to earn ratios are found in Section 3 of the *Calculations* worksheet. The user has the option to override the estimates found in Section 3 of the *Calculations* worksheet. To override the estimates found in Section 3 of the *Calculations* worksheet, the user will need to input information on the expected number of actives who will earn by age. If the user chooses to use the estimates generated by the model, the cells should be set to zero.

*Usage factor for base year scholarships in dollars:* This field stores actual and/or estimated scholarship outlays.

*Usage factor for base year + 1 scholarships in dollars:* This field stores estimated scholarship outlays for base year plus one.

*Usage factor for base year + 2 scholarships in dollars:* This field stores estimated scholarship outlays for base year plus two.

*Use historical average member type distribution as per Calculations Section 16 – enter Y or N:* This field allows the user to direct whether to apply the historical average or user defined member type distribution to enrollment projections. If “Y” is input, the model will use average information stored in Section 16 of the *Calculations* worksheet and direct the user to continue to Section 2 of the *Input\_Output* worksheet. If “N” is input, the user will provide detailed member type distribution information in cells I44, I46 and I48 of the *Input\_Output* worksheet.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for full-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of full-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for part-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of part-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for reduced-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of reduced-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Enrollment check:* If cell I42 is populated with an “N”, the user will be prompted to populate the member type distribution cells and click the *Check Enrollment* button. This button verifies that the user selected member type distribution totals to 100 percent.

## **Section 2. SPAN Enrollment information (Report A)**

This section allows the user to input enrollment information from report A. The model should only be populated with data through the input base year (cell “G6”) of the *Input\_Output* worksheet.

## **Section 3. SPAN Education award balance information (Report B)**

This section allows the user to input education award outlays, by program and fiscal year, from report B. The model should only be populated with data through the input base year (cell “G6”) of the *Input\_Output* worksheet.

## **Section 4. SPAN Interest award balance information (Report C)**

This section allows the user to input interest forbearance outlays by program and fiscal year. This information is provided in report C. The model should only be populated with data through the input base year (cell “G6”) of the *Input\_Output* worksheet.

## **Section 5. SPAN Pending members (Report D)**

This section allows the user to input pending member count information. This information is provided in report D. The model should only be populated with data through the input base year (cell “G6”) of the *Input\_Output* worksheet.

## **Section 6. SPAN Ed enrollments who have not completed 15% of service (Report E)**

This section allows the user to input education enrollment count information on those enrollees who are not yet eligible to receive a service award. Data for this section is provided in report E. The model should only be populated with data through the input base year (cell “G6”) of the *Input\_Output* worksheet.

## **Section 7. Scholarships**

This section requires the user to input information regarding scholarships and actual outlays by program year. Expected outlays for the current base year should be reflected in Section 1, while actual outlays for the current base year should be reflected in Section 7. User input and assumptions under *Usage factor for base year scholarships in dollars*. Data for section 7 is provided by the Corporation’s Budget and Trust Offices.

## Section 8. Trust balance information

This section allows the user to input historical appropriation and interest earned information by fiscal year. Appropriation data can be obtained through the Corporation's Budget Office. Year-to-date interest earned information is available on monthly management reports entitled *Report of the National Service Trust Fund*. Electronic copies of these monthly reports can be obtained by contacting the Director of the Trust or the Investment Portfolio Manager.

## Section 9. Investment portfolio as of current year and quarter noted above

This section allows the user to input the composition of the Corporation's portfolio. Data regarding the portfolio is available on monthly management reports entitled *Report of the National Service Trust Fund*. The user needs to input the percent of the portfolio held in short-term zero coupon bills and medium/long-term notes and bonds from the *Report of the National Service Trust Funds* obtained from the Director of the Trust or the Investment Portfolio Manager. Detailed steps on how to calculate the distribution of the portfolio are available in Appendix B. The user also needs to input the current and projected Treasury rates for both 91-day Treasury bills and 10-year Treasury notes. The Treasury rates will act as proxy rates for the short-term and medium/long-term market based specials held in portfolio by the Corporation. Current and projected Treasury rates for 91-day Treasury bills and 10-year Treasury notes are available in the most recent President's Budget. The Budget can be obtained at the following web address:

<http://www.whitehouse.gov/omb/circulars/index-budget.html>

The Corporation's current investment strategy provides for 100 percent investment in short and medium-term market based specials. The interest rates on market-based specials are nearly equivalent to Treasury rates, but are made available only to agencies within the Federal Government.

## SAL Output

The SAL estimate is produced in the *SAL Estimate* worksheet.

## 4.2 Budget Formulation

The process required to estimate the Corporation's budget requires the user to input the same information required when calculating the SAL estimate.

The Corporation's budget year needs are documented in the *Future Funding* worksheet.

## **Appendix A: Glossary of Terms**

<b>Active member</b>	A member for whom no end of term documentation had been received and as a result, has not formally earned an award. These members are comprised of the earning and pending population, net of those members who have not yet completed 15% of their service.
<b>Actives who will earn</b>	Represents the percentage of the active population that is expected to earn an education award.
<b>BOY</b>	The acronym used to denote beginning of year.
<b>Did not earn</b>	An enrolled member who terminates service without successfully completing a term of service does not earn an education award and therefore is not eligible for an education award or forbearance award payment.
<b>Earned</b>	An enrolled member for whom a program has certified end of term documentation to confirm that they have successfully completed a term of service and thus earned an education award.
<b>Earning</b>	An enrolled member for whom no end of term documentation had been received.
<b>EOY</b>	The acronym used to denote end of year.
<b>Enrollments who have not completed 15% of service</b>	Members who have not served at least 15% of their service are not eligible to earn a service award. Members in this category at the time the SAL is performed are not included in the estimate.
<b>Fiscal Year (FY)</b>	The Federal Government's fiscal year – October 1 to September 30.
<b>Member type</b>	Members can serve in full-time, part-time or reduced-time terms of service. The amount of the education award and the percentage of interest accrued while loans are in forbearance varies according to the length of service.
<b>MOY</b>	The acronym used to denote middle of year.
<b>Pending</b>	Members for whom enrollment documentation was received but remains in suspense status due to incomplete documentation, a position not currently available in the particular program, or some other administrative matter.

These individuals may or may not later become enrolled.

**President's Student Service Scholarship** This program, in which scholarships are provided to high school students active in service work, is not part of AmeriCorps. It is administered through a private organization. Beginning in FY 1998, Congress, through appropriation language, has allowed the cost of those scholarships to be paid from the Trust. Congress has set the ceiling for this activity through the appropriation language. There are a small number of scholarship payments made from the Trust each year for this purpose. However, those payments are not part of the Trust database that is based on enrolled AmeriCorps members.

**Program type** See member type.

**Program Year** Each year Congress provides funding for AmeriCorps activity. In a minority of cases, the service performed by AmeriCorps members is in the same year as the year of the appropriation. However, in most cases, because of the grant issuance process and the manner in which the programs are administered, the service is performed in the year or years subsequent to the year of the appropriation. For purposes of the liability estimate, program year refers to the year in which the funds were appropriated, regardless of the time period in which a member actually serves.

**Service award liability (SAL)** The liability represents an estimate of the unpaid earned and expected to be earned education award and interest forbearance costs that are likely to be used by members who have already completed 15 percent of the minimum service requirement as of the date the liability is calculated.

<b>Service Awards</b>	There are two types of service awards: education awards and interest forbearance awards. Members who successfully complete a term of service in AmeriCorps are entitled to an education award that can be used to pay the cost of attendance at a qualified educational institution, to repay qualified student loans, or to pay for participation in a school to work program. The funds are available for use for a period of seven years from the end of service and are paid by the Trust to the institution as directed by the member. In addition to the education award, the Trust will pay the interest that accumulated on qualified student loans that were placed in forbearance during the member's term of service. Those forbearance payments are awarded when they are paid on behalf of a member who successfully completes service and files the required documentation from their respective loan holder.
<b>SFY</b>	The acronym used to denote start of fiscal year.
<b>System for Programs, Agreements, and National Service Participants (SPAN)</b>	A computerized information system specially designed for the Corporation. The system maintains information about applicants, participants, programs, institutions, etc. in a database.
<b>Trust</b>	Refers to the Corporation's Trust Fund. Funds from the Corporation's Trust fund may be expended for the purpose of providing an educational or forbearance award and must always be paid directly to a qualified institution as designated by the member.
<b>Weighted Average Maturity (WAM)</b>	The maturity of the Corporation's portfolio weighted by the composition of short and medium/long-term to compute an average maturity for portfolio.

**Appendix B:  
Service Award Liability and  
Trust Fund Budget Model Users Manual**

## SERVICE AWARD LIABILITY AND TRUST FUND BUDGET MODEL USERS MANUAL

This guide describes the revised SAL Estimate and Budget model and provides operating instructions. The model is used to estimate the current and projected liability for the service award, interest forbearance and scholarship programs and estimate the funding needs of the Trust to meet current and future obligations. The model will support estimates for eight years beyond budget formulation year 2003. This guide is organized around four main areas:

- Model structure and methodology,
- Inputs and assumptions,
- SAL and future funding estimation, and
- Scenario analysis functionality.

### MODEL STRUCTURE AND METHODOLOGY

The SAL Estimate and Budget Model is a single Microsoft Excel<sup>1</sup> workbook and consists of nine worksheets:

- *Input\_Output*
- *Calculations*
- *SAL Estimate*
- *Future Funding*
- *S\_Input\_Output*
- *S\_Calculations*
- *S\_SAL Estimate*
- *S\_Future Funding, and*
- *S\_Scenario Summary.*

#### *Input\_Outputs worksheet*

The *Input\_Output* worksheet of the model drives all liability and future funding estimates for the Trust. The worksheet accepts and stores model input assumptions, when saved, and allows the user to view the summarized liability and future funding estimates. Model input assumptions are documented later in this guide.

Procedures for estimating the Trust's liability and projecting future funding needs are described in the section describing SAL and future funding estimation.

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<sup>1</sup> In order to properly run the model, the user must first enable the Microsoft Excel Add-Ins: Analysis Toolpak and Analysis Toolpak-VBA. To enable the Add-Ins, the user should go to the Tools menu, click Add-Ins and check the boxes for Analysis Toolpak and Analysis Toolpak-VBA.

### *Calculations worksheet*

The *Calculations* worksheet transforms inputs and assumptions from the *Input\_Output* worksheet and produces the underlying figures necessary to estimate the Trust's total liability and future funding needs. The worksheet is described below by each of its component sections.

#### **Section 1. Distribution of Service Award Outlays by Program Year & Age**

Section 1 uses service award outlay information from the *Input\_Output* worksheet to derive service award distributions by age. The service award distribution is calculated on a percentage basis and divides the program year outlay by fiscal year by the total program year outlay as identified in the *Input\_Output* worksheet. The calculation consists of deriving the age of each program year on a fiscal year basis by subtracting the fiscal year from the base year *Input\_Output* worksheet assumption. For example, a base year of 2001 and fiscal year of 2001 would have an age of 0. A base year of 2001 and fiscal year of 1999 would have an age of 2. Once the outlays are categorized by age, this section derives the weighted average outlay distribution using historical data and forecasts an additional two years by assuming the outlay distribution remains constant for those two additional years. The weighted average outlay distribution is also calculated to estimate the outlay distribution on a quarterly and cumulative basis. Because actual outlay numbers during a base year may not reflect a complete year of data, actual base year figures are eliminated in the outlay distribution.

#### **Section 2. Distribution of Interest Forbearance Outlays by Program Year & Age**

Section 2 uses interest forbearance outlay information from the *Input\_Output* worksheet to derive service award distributions by age. The interest forbearance distribution is calculated on a percentage basis and divides the program year outlay (by fiscal year) by the total program year outlay as identified in the *Input\_Output* worksheet. The calculation consists of deriving the age of each program year on a fiscal year basis by subtracting the fiscal year from the base year *Input\_Output* worksheet assumption. For example, a base year of 2001 and fiscal year of 2001 would have an age of 0. A base year of 2001 and fiscal year of 1999 would have an age of 2. Once the outlays are categorized by age, this section derives the weighted average outlay distribution using historical data and forecasts an additional two years by assuming the outlay distribution remains constant for those two additional years. The weighted average outlay distribution is also calculated to estimate the outlay distribution on a quarterly and cumulative basis. Because actual outlay numbers during a base year may not reflect a complete year of data, actual base year figures are eliminated in the outlay distribution.

**Section 3. Percent of Actives who will Earn Awards by Program Type**

To generate more accurate estimates of the Corporation’s liability, the expected number of active members who will earn awards needs to be considered. Section 3 estimates the percentage of actives that will earn an award by program type and age.

Active members consist of those who are earning an award, pending, or have not completed 15 percent of their service and are thus ineligible to receive an award. The active population is net of those members who are not yet eligible for an award because they have not completed the minimum service requirement necessary to earn an award. As a result, the earning population can be used as a reasonable proxy for active members.

Basically, we are interested in the disposition of earning through time. The ratio of earning through time represents the percent of actives that earn. Actives that earn are estimated as follows:

$$E_t = \frac{Earning_{py}}{Enrollment_{py}}; t=py-1994; \text{ if } t > 8 \text{ then } E_t = 0$$

Where *t* is age, *py* is program year, and if *t* > 8 then *E<sub>t</sub>* = 0.

During the early years of a program year there should be a greater propensity for actives to earn than in the later years of a program year. Intuitively, if an enrollee has not earned an award by the time program awards are expected to expire, then it is unlikely that the award will be used in the future. Graphically, the active to earn curve would be downward sloping as depicted in Figure 1.

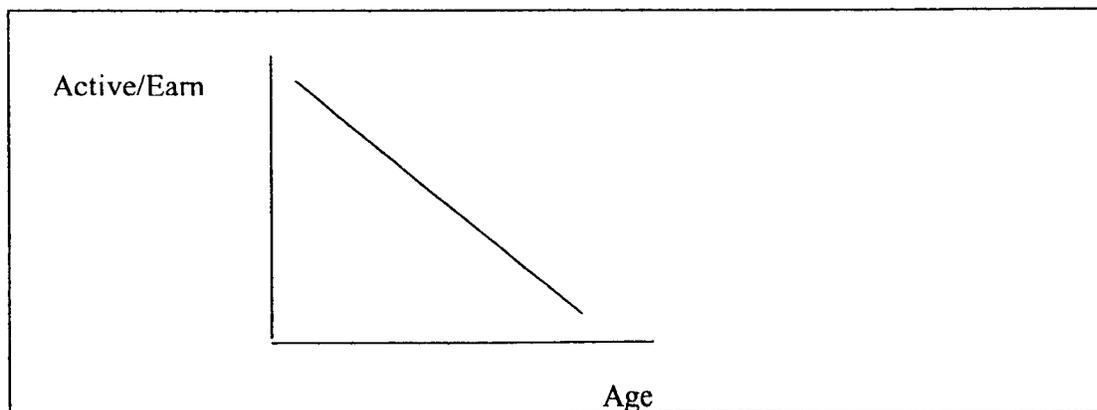


Figure 1. Active to Earn Curve

**Section 4. Percent of Enrollees who will Earn Awards by Program Type**

Section 4 provides historical information on the percentage of total enrollment that has earned an award by program year. The calculations are performed by program type to provide earning information specific to full, part and reduced time enrollees. The section also provides average earning information on the collective program years by type. Information provided in this section is used project base year SAL estimates and forecast budget needs of the Trust.

**Section 5. Estimated Liability for Actives Expected to Earn Awards**

Section 5 uses information from section 3, percent of actives that earn by program type, to estimate the projected liability of actives that are anticipated to earn. In this section, the award amount by program type and program year is estimated. This is done by taking the earned count by program year and type and dividing by the total outlayed amount by program year and type. Once the average award amounts are calculated, the product of that value—earned counts by program year listed in the *Input\_Output* worksheet—and percent of actives to earn by program year is calculated. This value is then used in sections 7 and 7a to estimate the future award outlays on a quarterly basis for the SAL estimate and on an annual basis for budget formulation.

**Section 6. Actual Award Outlays**

Section 6 translates the actual service award outlays by program year and age from section 3, SPAN Report B, of the *Input\_Output* worksheet.

**Section 7. Estimated Quarterly Award Outlays using Historical Distribution**

Section 7 projects future award outlays by age using the quarterly historical award outlay distribution estimated in section 1 of the *Calculations* worksheet. This section only projects awards for existing program years. Estimated outlay projections in this section are used to produce the SAL estimate.

**Section 7a. Estimated Annual Award Outlays using Historical Distribution**

Section 7a projects future award outlays by age using the annual historical award outlay distribution estimated in section 1 of the *Calculations* worksheet. This section only projects award outlays if there are no existing actual award outlays. Projected award outlays are estimated through the base year plus one. For years where there is no or limited enrollment, section 7a pulls estimated enrollment information from the *Input\_Output* worksheet and section 4 of the *Calculations* worksheet, applies the program type (full, part, and reduced time) distribution, the annual estimated historical award outlay distribution in section 1, and the average award amounts by program type to estimate the liability in the out-years. Estimated outlay projections in this section are used in support of budget formulation.

**Section 8. Estimated Quarterly Service Award Liability**

This section combines actual education award outlays from section 6 and estimated quarterly education award outlays from section 7 to form actual and projected outlays by program year and age.

**Section 8a. Estimated Annual Service Award Liability**

This section combines actual education award outlays from section 6 and estimated annual education award from section 7a to form actual and projected outlays by program year and age.

**Section 8b. Annual Award Outlays by Program and Fiscal Year**

This section transforms section 8a into a table that details the actual and projected service award outlays by program and fiscal year.

**Section 9. Replica of Quarterly SAL**

This section replicates section 8.

**Section 10. Award Outlays on a Quarterly Basis by Program and Fiscal Year**

This section transforms section 9 into a table that details the actual and projected service award outlays on a Quarterly Basis by Program and Fiscal year.

**Section 11. Actual Interest Forbearance Outlays**

Translates the actual interest forbearance outlays by program year and age from section 4, SPAN Report C, from the *Input\_Output* worksheet.

**Section 12. Estimated Quarterly Interest Forbearance Outlays**

This section projects future interest forbearance outlays, by age, using the quarterly historical award outlay distribution estimated in section 2 of the *Calculations* worksheet. This section only projects forbearance outlays for existing program years. Estimated outlay projections in this section are used to produce the SAL estimate.

**Section 13. Estimated Annual Interest Forbearance Outlays**

This section projects future interest forbearance outlays, by age, using the annual historical award outlay distribution estimated in section 2 of the *Calculations* worksheet. This section projects interest forbearance outlays if there are no existing actual outlays. It also projects interest forbearance outlays by applying the annual weighted average distribution to the sum of the actual and estimated total award outlays by program year. Estimated outlay projections in this section are used to produce the SAL estimate.

**Section 13a. Estimated Annual Interest Forbearance Liability**

This section combines actual interest forbearance outlays from section 11 and estimated interest forbearance from section 13 to form actual and projected outlays by program year and age. This information is used to support budget formulation.

**Section 13b. Annual Interest Forbearance Outlays by Fiscal Year**

This section transforms section 13a into a table that details the actual and projected interest forbearance outlays by program and fiscal year. This information is used to support budget formulation.

**Section 14. Estimated Quarterly Interest Forbearance Liability**

This section combines actual interest forbearance outlays from section 11 and estimated quarterly interest forbearance from section 12 to form actual and projected outlays by program year and age. This information is used to estimate the Corporation's total liability.

**Section 14a. Quarterly Interest Forbearance Outlays by Fiscal Year**

This section transforms section 14 into a table that details the actual and projected interest forbearance outlays by program and fiscal year. This information is used to support budget formulation.

**Section 15. Trust Balances**

This section comprises of the beginning of year (BOY) trust balance, appropriation amounts, interest earned, total trust outlays (including service awards, interest forbearance and scholarships), and end of year (EOY) balances. Actual interest earned is taken as input from the *Input\_Output* worksheet. Interest earned projections are estimated as of middle of year (MOY) and based on the investment strategy details documented in section 9 of the *Input\_Output* worksheet. Total outlays are the sum of annual actual and projected education, interest forbearance, and scholarship award outlays.

**Section 16. Average program type split**

This section estimates the average distribution of total enrollees by program type. The estimated averages are used in the *Calculations* worksheet to calculate projected education outlays.

### *SAL Estimate Worksheet*

This worksheet details the total liability of the Corporation's trust. It pulls information from the *Calculations* worksheet and documents the forecast liability, actual amount paid (outlays), and outstanding liability for the service award, interest forbearance and scholarship programs.

### *Future Funding worksheet*

The *Future Funding* worksheet details the Corporation's funding needs for the current budget year (base year plus 2). This worksheet pulls trust balance information from the *Calculations* worksheet, projects the total service award and interest forbearance outlays for the budget year using projected enrollment from the *Input\_Output* worksheet, and estimates the present value of the total outlay. The trust balance in section 1 of this worksheet minus the present value of the total outlays estimates the Corporation's trust requirement.

## INPUTS AND ASSUMPTIONS

The *Input\_Output* worksheet is composed of several input sections. The following provides a description of those sections and related input required to run the model<sup>2</sup>.

### Section 1. User input and assumptions

This section requires the user to input information on the following items:

#### Key inputs.

These inputs are the principal parameters of the model and should be given consideration for each model use.

*Last period with actual data occurred in fiscal year:* This input should be the last year for which SPAN information is available.

*How many quarters of actual data for above year?* This input provides information on the quarter for which the service award liability is being estimated. An estimate performed for the end of the first quarter of a specific fiscal year would be entered as 1, an estimate performed for the end of the second quarter would be entered as 2, and so on.

*Enter enrollment estimate for base year:* This input provides information regarding the number of base year enrollment. Base year refers to the last year for which actual SPAN data is observed.

*Enter enrollment for base year + 1:* This input provides information on expected enrollment for base year plus one. For example, if the base year were 2001, input for this variable would be the expected enrollment for program year 2002.

*Enter enrollment for base year + 2:* This input will typically be expected enrollment for the budget formulation year.

*Discount rate for weighted average portfolio maturity:* This input is the discount rate as documented by OMB corresponding to the weighted average maturity of the Corporation's portfolio. Calculations to determine the weighted average maturity (WAM) of the portfolio can be done using summary information in monthly management reports entitled *Report of the National Service Trust Fund*. Electronic copies of these monthly reports can be obtained by contacting the Corporation's Investment Portfolio Manager or the Director of the Trust.

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<sup>2</sup> Upon opening the Service Award Liability & Trust Fund Budget model, the user must enable the macros embedded within the model. Microsoft Excel will prompt the user with a window requiring guidance on whether to enable or disable the macros contained in the model. The user should choose to enable the macros.

The steps for calculating the Corporation's portfolio WAM are as follows:

1. Obtain current *Report of the National Service Trust Fund* from the Corporation's Investment Portfolio Manager or the Director of the Trust.
2. Open the workbook and go to the *Annual Yield & YTM* worksheet. Create a copy of the *Annual Yield & YTM* worksheet for the purposes of generating the WAM necessary to identify the OMB discount rate. The new worksheet should look similar to Figure 2 below.

INVESTMENT NUMBER	INTEREST RATE	ISSUE DATE	SETTLEMENT DATE	MATURITY DATE	PAR VALUE	PREMIUM/ DISCOUNT	ACCRUED INTEREST	TOTAL COST	INTEREST PAYMENTS	CURRENT YIELD	YEARS TO MATURITY	
2	SHORT 66235	6-Apr-01	6-Apr-01	12-Jul-01	1,000,000	(10,382.10)		329,617.30		0.00%	0.21	
3	SHORT 65601	2-Apr-01	2-Apr-01	15-Jul-01	2,004,000	(24,984.68)		1,839,635.58		0.00%	0.30	
4	SHORT 65602	2-Apr-01	2-Apr-01	25-Jul-01	1,519,000	(15,821.90)		1,459,178.30		0.00%	0.32	
5	SHORT 65374	3-Mar-01	3-Mar-01	3-Jul-01	1,859,000	(26,458.45)		1,569,541.55		0.00%	0.32	
6	SHORT 65329	16-Mar-01	16-Mar-01	12-Jul-01	1,400,000	(18,563.62)		1,289,436.38		0.00%	0.32	
7	SHORT 66088	27-Apr-01	27-Apr-01	23-Aug-01	1,245,000	(15,282.72)		1,129,717.28		0.00%	0.32	
8	SHORT 66223	2-Apr-01	2-Apr-01	30-Aug-01	1,448,000	(18,343.20)		1,329,656.80		0.00%	0.32	
9	SHORT 65804	2-Apr-01	2-Apr-01	2-Aug-01	1,531,000	(14,471.64)		1,379,528.36		0.00%	0.33	
10	SHORT 66236	6-Apr-01	6-Apr-01	3-Aug-01	1,804,000	(24,181.25)		1,779,818.75		0.00%	0.34	
11	SHORT 65906	4-Mar-01	4-Mar-01	15-Sep-01	1,993,000	(25,985.21)		1,829,014.79		0.00%	0.36	
12	SHORT 65150	11-Mar-01	11-Mar-01	28-Sep-01	1,509,000	(19,855.43)		1,489,144.57		0.00%	0.36	
13	SHORT 10630	18-Mar-01	18-Mar-01	27-Sep-01	2,530,000	(32,772.57)		2,459,227.43		0.00%	0.36	
14	SHORT 72700	8-Jun-01	8-Jun-01	10-Oct-01	2,401,000	(32,523.55)		2,368,476.45		0.00%	0.36	
15	SHORT 73264	15-Jun-01	15-Jun-01	25-Oct-01	1,315,000	(19,876.10)		1,295,123.90		0.00%	0.36	
16	SHORT 66300	16-Jun-01	16-Jun-01	30-Nov-01	1,350,000	(20,163.31)		1,229,836.69		0.00%	0.37	
17	SHORT 67400	29-Jun-01	29-Jun-01	4-Sep-01	1,333,000	(18,940.45)		1,214,059.55		0.00%	0.38	
18	SHORT 10636	18-Mar-01	18-Mar-01	4-Oct-01	2,354,000	(34,680.16)		2,439,128.84		0.00%	0.38	
19	SHORT 66425	15-Jun-01	15-Jun-01	1-Nov-01	1,060,000	(16,701.21)		1,043,298.79		0.00%	0.38	
20	SHORT 70637	18-Mar-01	18-Mar-01	11-Oct-01	2,336,000	(35,665.63)		2,439,934.37		0.00%	0.40	
21	SHORT 10638	18-Mar-01	18-Mar-01	16-Oct-01	2,358,000	(39,561.74)		2,439,438.26		0.00%	0.41	
22	SHORT 10639	18-Mar-01	18-Mar-01	25-Oct-01	1,843,000	(29,378.56)		1,819,621.44		0.00%	0.44	
23	SHORT 10241	23-Jun-01	23-Jun-01	1-Mar-01	1,244,000	(19,193.42)		1,224,806.58		0.00%	0.44	
24	SHORT 10201	1-Jun-01	1-Jun-01	2-Nov-01	1,084,000	(18,183.60)		1,065,816.40		0.00%	0.44	
25	SHORT 13883	22-Jun-01	22-Jun-01	23-Nov-01	1,676,000	(24,884.80)		1,651,115.20		0.00%	0.44	
26	SHORT 56210	19-Aug-01	19-Aug-01	2-Feb-01	1,764,000	(38,424.53)		1,725,575.47		0.00%	0.45	
27	100-11-6391	6.250%	31-Oct-96	27-Oct-00	31-Oct-01	19,901,000	0.00	32,730.52	19,901,000.00	1244.18150	4.25%	1.01
28	100-11-6398	6.250%	31-Jan-97	27-Nov-00	31-Jan-02	3,192,000	3,192.00	191,902.07	3,801,190.00	612,000.00	6.24%	1.18
29	100-01-5190	5.812%	30-Sep-97	15-May-00	30-Sep-02	27,311,000	(587,538.28)	201,654.56	27,319,401.72	1640,123.75	6.00%	2.38
30	100-11-6393	7.250%	15-Aug-94	27-Nov-00	15-Aug-04	3,351,000	457,322.34	191,593.86	3,808,322.34	617,341.50	6.31%	3.12
31	100-11-6093	5.500%	31-Mar-98	24-Nov-98	15-Mar-03	10,821,000	517,687.50	156,444.02	13,342,687.50	1,035,315.00	5.35%	4.35
32	100-12-5932	7.875%	15-Aug-91	19-Oct-96	15-Aug-01	10,034,000	634,540.94	270,549.90	10,729,540.94	790,071.50	7.37%	4.66
33	100-12-5911	7.500%	15-Mar-91	19-Oct-96	15-Mar-01	10,346,000	580,345.94	18,819.28	10,926,345.94	776,950.00	7.10%	4.37
34	1-90-12-5936	14.250%	6-Jun-82	15-Dec-96	15-Feb-82	2,840,000	2,771,075.00	382,510.57	10,617,075.00	1,111,290.00	10.52%	5.16
35	100-11-5274	6.250%	16-Feb-93	10-Mar-97	15-Feb-03	18,000,000	292,500.00	265,566.67	18,292,500.00	1,125,000.00	6.83%	5.21
36	100-12-5935	7.500%	15-Mar-92	19-Oct-96	15-Mar-02	17,704,000	1,070,538.75	84,120.50	18,774,538.75	1,221,800.00	7.07%	5.41
37	100-11-5300	5.750%	16-Aug-93	10-Mar-97	15-Aug-03	14,969,000	(311,817.58)	202,663.22	14,797,882.50	871,267.50	5.78%	5.76
38	100-11-5301	5.880%	15-Feb-94	10-Mar-97	15-Feb-04	14,812,000	(29,151.56)	205,191.26	14,793,048.44	871,239.50	5.83%	6.21
39	100-10-5756	5.625%	15-Feb-95	15-Oct-99	15-Feb-06	4,200,000	(58,375.88)	38,228.60	3,961,625.00	230,625.00	5.82%	6.34
40	1-90-09-6374	5.625%	15-Feb-96	30-Sep-99	15-Feb-96	10,555,000	(221,549.86)	14,200.18	10,333,450.84	533,686.25	5.15%	6.30
41	100-12-5967	7.250%	16-Mar-94	19-Dec-97	15-Mar-04	14,750,000	1,152,343.75	37,484.46	15,902,243.75	1,068,315.00	6.72%	6.41
42	100-12-5968	7.250%	15-Aug-94	19-Dec-97	15-Aug-04	14,484,000	1,567,720.00	336,688.10	15,642,720.00	1,050,000.00	6.71%	6.66
43	100-12-5969	7.500%	15-Feb-95	19-Dec-97	15-Feb-05	11,804,000	1,744,537.75	433,266.38	13,545,453.75	1,335,200.00	6.83%	7.10
44	100-08-5762	5.625%	15-Feb-96	17-Aug-96	15-Feb-06	4,447,000	51,818.44	1,359.48	4,498,418.44	250,143.75	5.56%	7.50
45	1-90-01-9541	10.750%	2-Jul-83	17-Jan-90	12-Aug-92	7,322,000	2,343,300.30	327,251.62	9,671,904.30	787,185.00	8.14%	7.59
46	100-12-5970	6.500%	15-Aug-95	19-Dec-97	15-Aug-05	10,814,000	770,158.13	45,330.63	10,584,198.13	1,222,310.00	6.24%	7.66
47	TOTAL				312,703,000	11,946,267	6,129,654	324,649,367	18,613,453	5.73%	114.38	

DEBITES BILLS	
DEBITES BONDS	
Total Cost reflect premium and discount amounts only and does not reflect accrued interest, this will differ from the actual voucher sales price.	

Yield to Maturity	
(1) Par Value - Total Cost	(111,365,361)
(2) (1) / (2) Number of years to Maturity	(103,856)
(3) (1) / (2) - Total Annual Interest Payments	18,389,537
(4) (Par Value - Total Cost) / (2)	318,676,104
(5) (3) / (4)	5.81%

Medal Calculations	
percent portfolio in bills:	12.45%
percent in notes & bonds:	87.55%
avg maturity bills:	0.31
avg maturity bonds & notes:	5.29
average maturity:	5

Figure 2. Input into SAL\_Trust Bal Model

- Sort the investments by the *Number of Years to Maturity* column. This is done by highlighting the investment table, clicking on data, then sort and selecting the *Number of Years to Maturity* column. Figures 3, 4 and 5 illustrate the sorting process.

Microsoft Excel - Management Report - June, 2001

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Sort...

A	B	C	D	E	F	G	H	I	J	K	L	M	N
INVESTMENT NUMBER	INTEREST RATE	ISSUE DATE	Filter	PREMIUM/TOTAL COST	ACCRUED INTEREST	TOTAL COST	INTEREST PAYMENTS	CURRENT YIELD	YEARS TO MATURITY				
1	SHORT 64235	6-Apr-97	Form...	(10,392.16)		333,617.50		6.60%	6.21				
2	SHORT 65681	2-Apr-01	Subtotals...	(24,384.48)		639,685.52		6.60%	6.30				
3	SHORT 65683	2-Apr-01	Validation...	(19,821.90)		433,170.90		6.60%	6.30				
4	SHORT 65274	2-Apr-01	Table...	(28,458.45)		389,541.55		6.60%	6.30				
5	SHORT 65293	16-Mar-01	Text to Columns...	(8,343.43)		230,438.57		6.60%	6.30				
6	SHORT 60000	17-Apr-01	Consolidate...	(5,882.12)		1,223,711.20		6.60%	6.30				
7	SHORT 64823	2-Apr-01	Group and Outline	(8,143.20)		638,878.80		6.60%	6.30				
8	SHORT 65824	2-Apr-01	PivotTable and PivotChart Report...	(11,471.44)		1,323,181.56		6.60%	6.30				
9	SHORT 64236	6-Apr-01	Get External Data	(24,141.23)		1,173,852.11		6.60%	6.30				
10	SHORT 61900	6-Apr-01	Refresh Data	(25,993.23)		1,620,814.10		6.60%	6.30				
11	SHORT 61720	11-Mar-01	MS Access Form...	(15,863.47)		1,245,124.53		6.60%	6.30				
12	SHORT 61620	11-Mar-01	MS Access Report...	(32,772.57)		1,245,124.53		6.60%	6.30				
13	SHORT 61620	11-Mar-01	Convert to MS Access...	(13,322.57)		1,245,124.53		6.60%	6.30				
14	SHORT 61620	11-Mar-01		(19,076.10)		1,245,124.53		6.60%	6.30				
15	SHORT 61620	11-Mar-01		(28,143.51)		1,245,124.53		6.60%	6.30				
16	SHORT 61620	11-Mar-01		(10,346.83)		1,245,124.53		6.60%	6.30				
17	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
18	SHORT 61620	11-Mar-01		(16,101.27)		1,245,124.53		6.60%	6.30				
19	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
20	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
21	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
22	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
23	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
24	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
25	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
26	SHORT 61620	11-Mar-01		(13,448.16)		1,245,124.53		6.60%	6.30				
27	1-00-11-6397	6.250%	31-Dec-96	0.00	32,788.52	15,307,000.00	1,244,187.50	6.25%	1.01				
28	1-00-11-6394	6.250%	31-Jan-97	3,800.00	191,302.17	3,601,180.00	618,000.00	6.24%	1.16				
29	1-00-05-5198	5.875%	30-Sep-97	(597,598.28)	201,654.56	21,395,401.12	1,640,123.15	6.00%	2.38				
30	1-00-11-6393	7.250%	05-Aug-94	457,322.34	191,593.86	3,808,322.34	617,247.50	6.30%	3.12				
31	1-00-11-6092	5.500%	21-Mar-98	16,825,000	517,687.50	15,444,000	19,342,697.50	1,035,375.00	5.95%	4.25			
32	1-06-10-5332	7.875%	15-Aug-91	10,054,000	694,540.94	270,549.94	10,748,540.94	790,071.50	7.37%	4.66			
33	1-06-10-5371	7.500%	15-Nov-91	10,346,000	590,345.34	78,073.28	10,966,345.34	775,950.00	7.10%	4.31			
34	1-31-11-5274	6.250%	16-Feb-93	10,000,000	292,500.00	265,964.67	18,292,500.00	1,125,000.00	6.15%	5.27			
35	1-31-10-5335	7.500%	15-Mar-92	17,704,000	1,070,538.75	824,710.58	18,714,538.75	1,287,880.00	7.07%	5.41			
36	1-31-11-5200	5.150%	16-Aug-93	14,983,000	(111,817.58)	282,863.22	14,710,182.50	857,267.50	5.79%	5.76			
37	1-31-11-5201	5.800%	15-Feb-94	14,807,000	(23,151.56)	205,121.26	14,759,848.44	871,233.60	5.89%	6.21			
38	1-31-10-5796	5.625%	15-Feb-94	4,300,000	(158,375.06)	39,229.68	3,961,625.00	290,625.00	5.82%	6.34			
39	1-31-09-6574	5.625%	15-Feb-96	10,359,800	(227,543.86)	14,890.78	10,329,456.94	599,696.25	5.77%	6.38			
40	1-31-10-3861	7.250%	16-Mar-94	14,750,000	1,052,343.75	97,684.46	15,902,343.75	1,069,375.00	6.72%	6.41			
41	1-31-10-3863	7.250%	15-Aug-94	14,484,000	1,050,720.00	356,688.16	15,642,720.00	1,050,000.00	6.71%	6.66			
42	1-31-10-3963	7.000%	15-Feb-95	17,084,000	1,141,633.75	653,266.24	19,345,633.75	1,371,300.00	6.82%	7.11			
43	1-31-10-3762	5.625%	15-Feb-96	4,441,000	(5,418.44)	1,353.48	4,436,481.44	290,143.75	5.36%	7.50			
44	1-31-12-5070	6.500%	15-Aug-95	10,814,000	710,198.13	45,350.63	19,584,198.13	1,222,210.00	6.24%	7.66			
45		7.113%			312,782,000	11,346,367	6,122,654	284,648,367	10,618,633	5.13%	114.39		

DENOTES BILLS  
 DENOTES BONDS  
 Total Cost reflect premium and discount amounts only and does not reflect accrued interest, this will differ from the actual voucher sales price.

Yield to Maturity	
(1) Par Value - Total Cost	(111,346,261)
(2) TDY Number of years to Maturity	(103,836)
(3) (2) * Total Annual Interest Payments	10,589,531
(4) (Par Value - Total Cost) / 2	318,616,184
(5) (3) / (4)	5.81%

Model Calculations	
percent portfolio in bills:	12.45%
percent in notes & bonds:	87.55%
avg. maturity bills:	0.31
avg. maturity bonds & notes:	5.29
average maturity:	5

Operations Report Annual Yield & YTM Input into SAL Trust Bal model Sheet13 Sheet14

Figure 3. Figure 3. Step One in Sorting Number of Years to Maturity

Microsoft Excel - Management Report

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A2 = SHORT 66235

A	B	C	D	E	F	G	H	I	J	K	L	M	N
INVESTMENT NUMBER	INTEREST RATE	ISSUE DATE	SETTLEMENT DATE	MATURITY DATE	PAR VALUE	PREMIUM (DISCOUNT)	ACCRUED INTEREST	TOTAL COST	INTEREST PAYMENTS	CURRENT YIELD	YEARS TO MATURITY		
1	SHORT 64235	6-Apr-01	6-Apr-01	12-Jul-01	1,010,000	(10,342.10)		999,657.90		6.00%	6.21		
2	SHORT 64601	2-Apr-01	2-Apr-01	19-Jul-01	2,024,000	(24,304.44)		1,999,695.56		6.00%	6.20		
3	SHORT 64603	2-Apr-01	2-Apr-01	26-Jul-01	1,510,000	(19,262.90)		1,490,737.10		6.00%	6.22		
4	SHORT 64974	2-Mar-01	2-Mar-01	5-Jul-01	1,830,000	(28,438.47)		1,801,561.53		6.00%	6.23		
5	SHORT 64980	6-Mar-01	6-Mar-01	12-Jul-01	600,000	(6,359.42)		593,640.58		6.00%	6.20		
6	SHORT 64989	27-Apr-01	27-Apr-01	23-Aug-01	1,245,000	(15,262.72)		1,229,737.28		6.00%	6.22		
7	SHORT 64989	27-Apr-01	27-Apr-01	30-Aug-01	840,000	(10,143.20)		829,856.80		6.00%	6.23		
8	SHORT 64984	2-Apr-01	2-Apr-01	2-Aug-01	1,531,000	(14,671.44)		1,516,328.56		6.00%	6.20		
9	SHORT 64984	2-Apr-01	2-Apr-01	3-Aug-01	1,004,000	(14,141.20)		989,858.80		6.00%	6.24		
10	SHORT 64980	6-Mar-01	6-Mar-01	13-Sep-01	1,951,000	(25,365.83)		1,925,634.17		6.00%	6.26		
11	SHORT 64979	11-Mar-01	11-Mar-01	28-Sep-01	1,900,000	(19,063.47)		1,880,936.53		6.00%	6.26		
12	SHORT 64979	11-Mar-01	11-Mar-01	28-Sep-01	1,530,000	(19,772.50)		1,510,227.50		6.00%	6.26		
13	SHORT 64984	6-Mar-01	6-Mar-01	10-Oct-01	2,601,000	(33,322.95)		2,567,677.05		6.00%	6.26		
14	SHORT 64984	6-Mar-01	6-Mar-01	15-Oct-01	1,510,000	(19,076.10)		1,490,923.90		6.00%	6.26		
15	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
16	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
17	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
18	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
19	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
20	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
21	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
22	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
23	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
24	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
25	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,530,000	(19,013.37)		1,510,986.63		6.00%	6.27		
26	SHORT 64980	14-Apr-01	14-Apr-01	30-Aug-01	1,950,000	(26,949.43)		1,923,050.57		6.00%	6.26		
27	100-11-1371	6.250%	31-Oct-96	27-Oct-00	31-Oct-01	10,000,000	0.00	92,198.52	10,000,000.00	1244,97.50	6.25%	1.01	
28	100-11-1372	6.250%	31-Jan-97	27-Nov-00	31-Jan-02	9,750,000	9,880.00	91,302.17	9,801,880.00	612,000.00	6.24%	1.18	
29	100-05-1190	5.875%	30-Sep-91	5-Mar-00	30-Sep-02	21,017,000	(537,538.20)	20,479,461.80	21,310,401.72	1640,023.75	6.90%	2.38	
30	100-11-1355	7.250%	15-Aug-94	21-Nov-00	15-Aug-04	9,951,000	497,322.34	10,448,322.34	9,900,322.34	617,341.50	6.90%	3.12	
31	100-11-1029	5.500%	31-Mar-98	24-Nov-98	31-Mar-03	10,825,000	517,687.50	11,342,687.50	10,342,687.50	1035,315.00	5.50%	4.35	
32	106-12-3333	7.875%	15-Aug-91	15-Dec-96	15-Aug-01	10,024,000	634,540.34	10,658,540.34	10,728,540.34	750,877.50	7.37%	4.66	
33	106-12-3311	7.500%	15-Nov-91	15-Dec-96	15-Nov-01	10,346,000	500,345.34	10,846,345.34	10,728,540.34	750,877.50	7.37%	4.66	
34													
35	101-11-3274	6.250%	15-Feb-93	10-Nov-91	15-Feb-03	10,000,000	292,500.00	10,292,500.00	10,000,000.00	625,000.00	6.25%	1.01	
36	106-12-3335	7.500%	15-Mar-92	15-Dec-96	15-Mar-02	17,704,000	1,070,538.75	18,774,538.75	17,704,000.00	1,070,538.75	7.50%	4.66	
37	101-11-5000	5.750%	15-Aug-93	10-Nov-91	15-Aug-03	14,909,000	(111,017.50)	14,797,982.50	14,909,000.00	202,663.22	5.75%	1.01	
38	101-11-5001	5.880%	15-Feb-94	10-Nov-91	15-Feb-04	14,017,000	(23,151.54)	13,993,848.46	14,017,000.00	205,151.26	5.88%	1.01	
39	101-11-5076	5.625%	15-Feb-96	10-Nov-91	15-Feb-06	4,900,000	(59,375.00)	4,840,625.00	4,900,000.00	38,228.60	5.62%	1.01	
40	101-11-5074	5.625%	15-Feb-96	30-Sep-99	15-Feb-06	10,553,000	(227,543.86)	10,325,456.14	10,553,000.00	74,200.78	5.62%	1.01	
41	101-12-3867	1.250%	15-Mar-94	15-Dec-91	15-Mar-04	14,750,000	1,52,343.75	14,892,343.75	14,750,000.00	97,684.46	1.25%	1.01	
42	101-12-3868	1.250%	15-Aug-94	15-Dec-91	15-Aug-04	14,444,000	1,54,720.00	14,598,720.00	14,444,000.00	97,684.46	1.25%	1.01	
43	101-12-3869	1.250%	15-Feb-95	15-Dec-91	15-Feb-05	11,984,000	1,14,153.75	12,128,153.75	11,984,000.00	97,684.46	1.25%	1.01	
44	101-12-3762	5.625%	15-Feb-98	11-Aug-98	15-Feb-08	4,417,000	3,418.44	4,420,418.44	4,417,000.00	1,953.48	5.62%	1.01	
45	101-12-3747	5.625%	15-Feb-98	11-Aug-98	15-Feb-08	4,417,000	3,418.44	4,420,418.44	4,417,000.00	1,953.48	5.62%	1.01	
46	101-12-3870	6.500%	15-Aug-95	15-Dec-91	15-Aug-05	10,814,000	170,198.13	10,984,198.13	10,814,000.00	170,198.13	6.50%	1.01	
47													
48													
49													
50													
51													
52													
53													
54													
55													
56													
57													
58													
59													
60													

Sort by: YEARS TO MATURITY

Then by: Ascending

My list has: Header row

Options... OK Cancel

DEMOTES BILLS  
DEMOTES BONDS

Total Cost reflect premium and discount amounts only and does not reflect accrued interest, they will differ

Yield to Maturity	
(1) Par Value - Total Cost	(11) 346,367
(2) (1) / Number of years to Maturity	(10) 696
(3) (2) * Total Annual Interest Payments	10,589,537
(4) (Par Value * Total Cost) / 2	310,616,184
(5) (3) / (4)	3.41%

Operations Report / Annual Yield & YTM / Input into SAL Trust Bal model / Sheet13 / Sheet14

Figure 4. Step two in Sorting Number of Years to Maturity

- Using an empty cell, calculate the percent of the portfolio held in short-term bills and in medium/long-term notes and bonds. As noted in the worksheet, bills are highlighted in yellow, bonds in gray and notes white. To calculate the percentage of the portfolio held in bills, the user will need to embed a formula within the worksheet. The formula will look similar to the following formula:

$$= \text{sum}(\text{beginning total cost cell for bills} : \text{ending total cost cell for bills}) / \text{Total Cost}$$

- 5. For example, in Figure 5, the formula used to calculate the percentage of bills held in portfolio was = SUM(I2:I26)/I47.

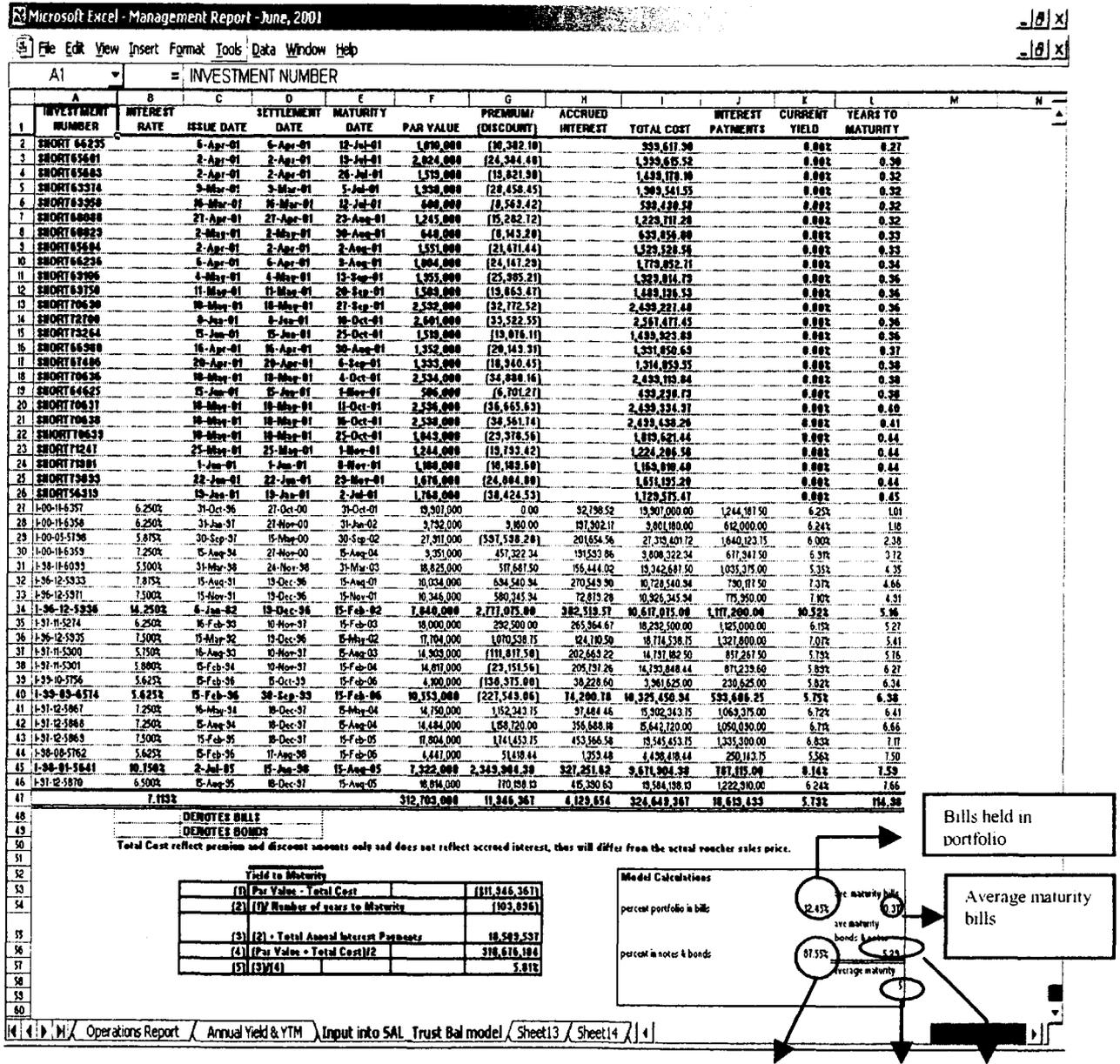


Figure 5. Short vs. Medium/Long-term Portfolio Distribution

6. One minus the percentage of bills held in portfolio calculates the percentage of notes and bonds held in portfolio. Using Figure 5, the formula used to calculate the percentage of notes and bonds held in portfolio was =1-K54.
7. Calculate the average maturity of short-term bills and medium/long-term notes and bonds. Using an empty cell, calculate the average maturity of bills using the *Number of Years to Maturity* column. To calculate the average maturity of bills, the user will need to embed a formula within the worksheet. Bills are highlighted in yellow. The formula will look similar to the formula below:

=Average(beginning bill maturity cell:ending bill maturity cell)

Using Figure 5 as an example, the formula is written as =Average(L2:L26).

Notes and bonds are highlighted in gray and white. The calculations for determining the average maturity of notes and bonds is as follows:

=Average(beginning note & bond maturity cell:ending note & bond maturity cell)

Using Figure 5 as an example, the formula is written as =Average(L27:L46).

8. Calculate the WAM. The WAM is calculated by applying weights to the simple average calculations conducted in item 5 and rounding. Using an empty cell, the formula should be as follows:

=Round((percent of bills in portfolio\*simple average bill maturity)+(percent of notes and bonds in portfolio\*simple average note & bond maturity), 0)

Using Figure 5 as an example, the formula is =Round((K54\*L54)+(K56\*L56), 0).

9. This number should be recorded and matched to OMB maturity discount rates listed in OMB Circular A-94.

The OMB discount rates can be obtained through Appendix B of OMB Circular A-94. This circular can be found at the following web address:

<http://www.whitehouse.gov/omb/circulars/html>.

**Secondary inputs.** These inputs should be updated on an as-needed basis by the model user.

*Expected service award outlay for base year:* If the base year does not reflect a complete year of actual data or does not reflect the total anticipated enrollment, the user will need to input the expected service award outlay for the corresponding base year and age. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward. For example, the current model is populated with information through roughly 3 quarters of the 2001 base year. At present time, the model uses data through 2000 to estimate the service award outlay through age 6. Base year 2001 includes age 7 of the service award outlay. The model does not use 2001 actual data to estimate service award outlays in age 7. Base year 2001 data does not reflect a complete year of actual data nor does it reflect anticipated enrollment. Incorporating actual 2001 data would likely under estimate service award outlays for age 7. To reflect a more accurate service award outlay distribution, the user will need to input the expected percent of the total award amount that will be outlayed during age 7.

*Expected service award outlay for base year + 1:* The user will need to provide an assumption on the expected percent of the total award amount that will be outlayed during base year +1 and age 8. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward, but may be populated for authorized waivers.

*Expected interest outlay for base year:* The user will need to provide information on expected interest outlays for the corresponding age and base year. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward.

*Expected interest outlay for base year + 1:* The user will need to provide information on expected interest outlays for the corresponding age and base year +1. Program details specify that service awards will likely expire at year eight of a program. This input field will typically remain zero for ages nine forward.

*Expected active to earn ratios:* The model is designed to estimate active to earn ratios based on SPAN information input in Section 2 of the *Input\_Output* worksheet. The model-derived active to earn ratios are found in Section 3 of the *Calculations* worksheet. The user has the option to override the estimates found in Section 3 of the *Calculations* worksheet. To override the estimates found in Section 3 of the *Calculations* worksheet, the user will need to input information on the expected number of actives who will earn by age. If the user chooses to use the estimates generated by the model, the cells should be set to zero.

*Usage factor for base year scholarships in dollars:* This field stores actual and/or estimated scholarship outlays.

*Usage factor for base year + 1 scholarships in dollars:* This field stores estimated scholarship outlays for base year plus one.

*Usage factor for base year + 2 scholarships in dollars:* This field stores estimated scholarship outlays for base year plus two.

*Use historical average member type distribution as per Calculations Section 16 – enter Y or N:* This field allows the user to direct whether to apply the historical average or user defined member type distribution to enrollment projections. If “Y” is input, the model will use average information stored in Section 16 of the *Calculations* worksheet and direct the user to continue to Section 2 of the *Input\_Output* worksheet. If “N” is input, the user will provide detailed member type distribution information in cells I44, I46 and I48 of the *Input\_Output* worksheet.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for full-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of full-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for part-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of part-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Expected outyear (base year, base year+1 and base year+2) enrollment percentage for reduced-time member:* If the user chooses to select the member type distribution and cell I42 on the *Input\_Output* worksheet is set to “N”, the user will input information on the expected percentage of reduced-time enrollment for the base year, base year+1 and base year+2. If cell I42 on the *Input\_Output* worksheet is set to “Y”, no input is required.

*Enrollment check:* If cell I42 is populated with an “N”, the user will be prompted to populate the member type distribution cells and click the *Check Enrollment* button. This button verifies that the user selected member type distribution totals to 100 percent.

## **Section 2. SPAN Enrollment information (Report A)**

This section allows the user to input enrollment information from report A.

**Section 3. SPAN Education award balance information (Report B)**

This section allows the user to input education award outlays, by program and fiscal year, from report B.

**Section 4. SPAN Interest award balance information (Report C)**

This section allows the user to input interest forbearance outlays by program and fiscal year. This information is provided in report C.

**Section 5. SPAN Pending members (Report D)**

This section allows the user to input pending member count information. This information is provided in report D.

**Section 6. SPAN Ed enrollments who have not completed 15% of service (Report E)**

This section allows the user to input education enrollment count information on those enrollees who are not yet eligible to receive a service award. Data for this section is provided in report E.

**Section 7. Scholarships**

This section requires the user to input information regarding scholarships and actual outlays by program year. Expected outlays for the current base year should be reflected in Section 1, while actual outlays for the current base year should be reflected in Section 7. User input and assumptions under *Usage factor for base year scholarships in dollars*. Data for section 7 is provided by the Corporation's Budget and Trust Offices.

**Section 8. Trust balance information**

This section allows the user to input historical appropriation and interest earned information by fiscal year. Appropriation data can be obtained through the Corporation's Budget Office. Year-to-date interest earned information is available on monthly management reports entitled *Report of the National Service Trust Fund*. Electronic copies of these monthly reports can be obtained by contacting the Director of the Trust or the Investment Portfolio Manager.

**Section 9. Investment portfolio as of current year and quarter noted above**

This section allows the user to input the composition of the Corporation's portfolio. Data regarding the portfolio is available on monthly management reports entitled *Report of the National Service Trust Fund*. The user needs to input the percent of the portfolio held in short-term zero coupon bills and medium/long-term notes and bonds from the *Report of the National Service Trust Funds* obtained from the Director of the Trust or the Investment Portfolio Manager. To calculate the distribution of the portfolio in short-term

bills and medium/long-term notes and bonds follows steps 1-5 as detailed in *Discount rate for weighted average portfolio maturity* under *Section 1 of Inputs and Assumptions*.

The user also needs to input the current and project rates for both 91-day Treasury bills and 10-year Treasury notes. The rates will act as proxy rates for the short-term and medium/ long-term market based specials held in portfolio by the Corporation. Current and projected rates for 91-day Treasury bills and 10-year Treasury notes are available in the most recent President's Budget. The Budget can be obtained at the following web address:

<http://www.whitehouse.gov/omb/budget/>

The Corporation's current investment strategy provides for 100 percent investment in short and medium-term market based specials. The interest rates on market-based specials are nearly equivalent to Treasury rates, but are made available only to agencies within the Federal Government.

#### **SAL AND FUTURE FUNDING ESTIMATION**

To generate SAL and future funding estimates, the user is required to input each of the assumptions listed on the *Input\_Output* worksheet. The assumptions are described in greater detail in the *Inputs and Assumptions* section above.

The underlying liability estimate calculations are performed in the *Calculations* worksheet and liability output and detail is captured in the *SAL Estimate* worksheet.

Trust needs for the current budget year are detailed in the *Future Funding* worksheet. The worksheet projects the total service award and interest forbearance outlays for the budget year. The trust balance in section I of this worksheet minus the present value of the total outlays, estimates the Corporation's trust requirement.

#### **SCENARIO ANALYSIS FUNCTIONALITY**

The scenario analysis of the SAL Estimate and Budget model is comprised of five worksheets:

*S\_Input\_Output*  
*S\_Calculations*  
*S\_SAL Estimate*  
*S\_Future Funding*  
*Scenario Summary.*

The scenario analysis functionality applies new assumptions to the base case worksheets: *Input\_Output*, *Calculations*, *SAL Estimate*, and *Future\_Funding*.

The following lists the input variables available on the *S\_Input\_Output* worksheet. Details specific to the scenario input variables can be found above under the Inputs and Assumptions section. All scenario variables must be made in the corresponding white input areas.

1. Enrollment estimate for base year
2. Enrollment for base year + 1
3. Enrollment for base year + 2
4. Discount rate for weighted average portfolio maturity
5. Expected service award outlay for base year
6. Expected service award outlay for base year + 1
7. Expected interest outlay for base year
8. Expected interest outlay for base year +1
9. Expected active to earn ratios
10. Usage factor for base year scholarships in dollar
11. Usage factor for base year + 1 scholarships in dollars
12. Usage factor for base year + 2 scholarships in dollars
13. Use historical average member type distribution as per *Calculations* Section 16-- enter Y or N
14. Expected outyear (base year+1 and base year+2) enrollment percentage for full-time member
15. Expected outyear (base year+1 and base year+2) enrollment percentage for part-time member
16. Expected outyear (base year+1 and base year+2) enrollment percentage for reduced-time member
17. Scenario enrollment check button
18. Enrollment scenario factors – Enrollment factor input areas are specific to the *S\_Input\_Output* worksheet. The factors apply a percentage to the base case enrollment data in sections two, five, and six of the *Input\_Output* worksheet. Figure

6, below provides input guidance for various scenario cases. For example, to increase base case enrollment by 25 percent, the user would need to input 125 in the appropriate enrollment factor area. To reduce, base case enrollment by 25 percent, the user would input 75.

Scenario Analysis Input Guide	
Scenario Case	Input
+25	125
+50	150
+75	175
+100	200
BASE - NO CHANGE	100
-25	75
-50	50
-75	25
-100	0

Figure 6. Scenario Analysis Input Guide

- 19. Appropriation received, net of rescissions
- 20. Percent of zero coupon bills
- 21. Percent of notes and bonds
- 22. Interest rates

The *S\_Input\_Output* worksheet also contains summary liability and trust needs information for the base scenario and scenario case, which will allow the user to view the results of the scenario case and difference with the base scenario at-a-glance. Input and assumption descriptions for the above variables are consistent with the base case input and assumptions descriptions. For details on scenario input and assumptions, refer to the Input and Assumptions section found in this guide.

The mechanics of the *S\_Calculations*, *S\_SAL Estimate* and *S\_Future Funding* worksheets are identical to those worksheets that support base estimates. For specific details, reference guide information that discusses the *Calculations*, *SAL Estimate* and *Future Funding* worksheets.

The *Scenario Summary* worksheet summarizes input and assumption deviations from the base and scenario cases.