



# An Overview of the Outyear Liability Model (OLM)

Office of Emergency and Remedial Response  
Office of Program Management 5201G

Quick Reference Fact Sheet

In 1980, Congress passed a law called the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly called Superfund. The Superfund Amendments and Reauthorization Act (SARA) was passed by Congress in 1986 to update and improve the Superfund law. In 1991, Congress extended Superfund's authority through 1994. The law authorizes the Federal government to respond directly to releases, or threatened releases, of hazardous substances that may endanger public health, welfare or the environment. Legal actions can be taken to force parties responsible for causing the contamination to clean up those sites or reimburse the Superfund Program for the costs of cleanup. If those responsible for site contamination cannot be found or are unwilling to clean up a site, EPA can use monies from the Superfund Program for clean-up activity.

The name "Superfund" refers to the trust fund that was set up under CERCLA to finance these clean up actions. CERCLA established a \$1.6 billion fund which would be collected from taxes on crude oil and commercial chemicals. When Superfund was reauthorized by Congress in 1986, the fund was increased by \$8.5 billion through FY 1991. These monies are made available to the Superfund directly from excise taxes on petroleum and feedstock chemicals, a tax on certain imported chemical derivatives, an environmental tax on corporations, appropriations made by Congress from general tax revenues, and any monies recovered or collected from parties responsible for site contamination. Reauthorization of the Superfund was incorporated into the 1991 Budget legislation passed by Congress and signed by the President on November 5, 1990. This authority continues funding under the existing Program structure through September 30, 1994.

EPA has placed 1,177 non-federal facility sites on the National Priority List (NPL). These NPL sites are targeted for cleanup under the Superfund. However, this is not a complete list. Site discoveries continue, and EPA estimates that, while some sites will be deleted after lengthy cleanups, the NPL will continue to grow. The average Remedial Action (RA) cost is \$12.2 million per operable unit and the average number of operable units per site is 1.8. The lead distribution for non-federal facility Remedial Investigation/Feasibility Studies (RI/FSs) is 65% for Responsible Party (RP) leads and 35% for Fund-leads. The lead distribution for non-federal facility RAs is 70% for RP-leads and 30% for Fund-leads. The average cost for adding a Fund-lead site to the NPL is \$25 million.

## INTRODUCTION

The Outyear Liability Model (OLM) was developed to assist the Environmental Protection Agency (EPA) Office of Emergency and Remedial Response (OERR) in projecting activity levels, costs, and resource needs associated with the Superfund Program. Developed for an IBM PC or PC-compatible computer using Lotus 1-2-3, Version 3.1, the model is a sophisticated management tool which interfaces with other EPA planning systems to project these costs and resources. Designed with a high degree of flexibility, the OLM permits the user to vary assumptions and assess the impact of policy changes on total Program obligations and resource needs.

The OLM combines historical trends and Program activity levels with expected Program conditions to develop a comprehensive analysis of Superfund Program resource and funding needs. Superfund events currently planned are incorporated into the model through its interface with the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), the planning and tracking system for the Superfund Program. Other events not yet planned are projected, using planning assumptions about the NPL size and the rate at which RI/FS projects will be initiated.

The OLM incorporates the major factors affecting site-level NPL response costs, based on modeled sequences of events related to NPL sites and assumptions for



approximately 100 variables (e.g., activity costs, activity durations, etc.) for which default values are supplied. The model allows users to modify these assumptions, either individually or in combination, to see how such changes may affect NPL costs and accomplishments. Thus, while the OLM does not estimate all costs automatically, the many variables give the user considerable flexibility to explore a number of possible funding scenarios.

Using the model's default variables produces a "baseline" liability estimate. In general, this baseline estimate reflects the estimated cost of implementing Superfund Comprehensive Accomplishment Plan (SCAP) planning guidelines and past RA cost behavior. After creating this baseline estimate, the user can modify selected variables to approximate general programmatic changes to see how they may affect outyear liabilities. For example, the user can use the OLM to change:

- Overall planned Superfund budget amounts;
- The number of planned activities;
- Program policies (e.g., more treatment, more enforcement, etc.).

On the other hand, the OLM cannot estimate directly or adjust for NPL site-level activities or changes in public attitudes or concerns. To approximate factors such as these within the realm of the model, the user must modify related variables that are contained within the model.

The OLM system concept is illustrated in Exhibit 1. As can be seen in the exhibit, the concept discusses three components: inputs to the Model, the Model's computational logic, and outputs from the Model. These components are briefly discussed below.

## INPUTS TO THE MODEL

The inputs that provide the basic foundation of the Model are: CERCLIS, Superfund Budget Projections, SCAP, and user input variables.

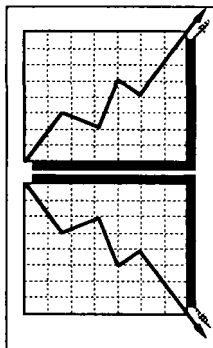
- **CERCLIS:** CERCLIS is a major source of data for the OLM. It provides information about planned and actual activities at hazardous substance release sites, including lead for each activity and planned starts, completions, and obligations for RI/FSSs, Remedial Designs (RDs), and RAs.
- **Superfund Budget Projections:** As part of the annual EPA budget process, the Agency estimates its overall expected costs and Full-Time Equivalent (FTEs) for the Superfund Program for the budget year. The OLM uses certain planning assumptions from the budget process, including expected activity outputs (e.g., number of RA starts), pricing factors, and FTE pricing factors. The Superfund budget projections also include planned funding for other EPA offices

(such as the Office for Research and Development) and other Federal agencies and departments (such as the Coast Guard) that provide assistance to the Superfund Program.

- **SCAP:** The Superfund Comprehensive Accomplishments Plan (SCAP) contains the basic planning assumptions for coming fiscal year activities, including project durations and costs. It is a central planning tool used by EPA's Headquarters and Regional offices to schedule and estimate NPL site events. Given that these factors represent EPA's best estimates for Superfund events, they also have been incorporated into the OLM to provide a baseline estimate for the Program.
- **User Inputs:** These site condition variables provide the flexibility in the OLM that allows the user to model possible Program scenarios. These variables include:
  - Activity Durations and Pricing Factors (Exhibit 2);
  - NPL Additions and Activity Start Ceilings;
  - Distribution of Activity (Exhibit 3).

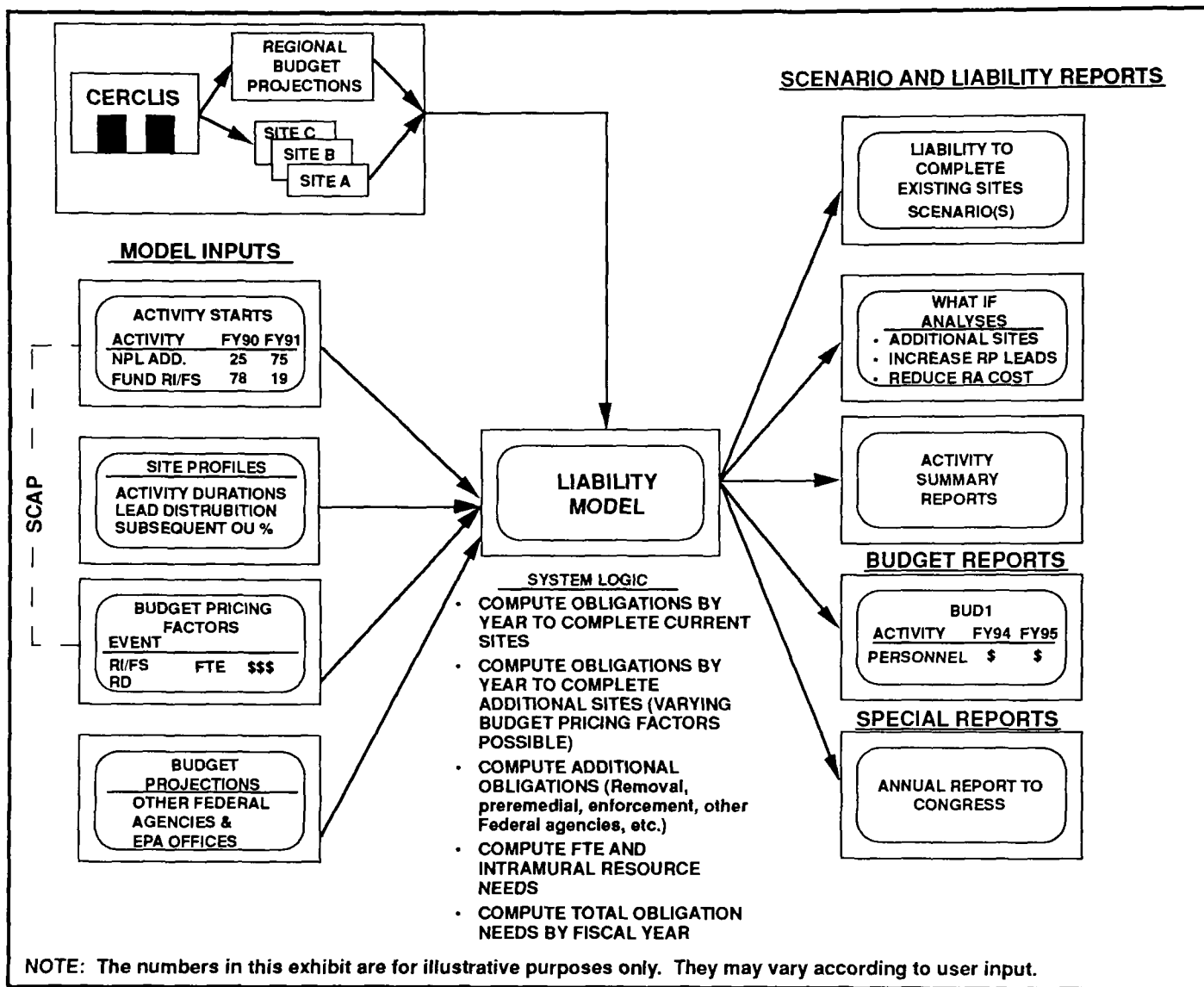
## MODEL LOGIC

Using these data inputs, the OLM reflects the chain of events that occur during the course of a site's evaluation and cleanup under the Superfund Program. To accomplish this, the Model was designed with two primary components: activity flows and unit activity costs. Working with these components, the user can apply different cost, FTE, and policy assumptions to see how such changes affect Superfund costs. The activity flows and unit activity costs are outlined below.



- **Activity Flows:** Superfund activities have been broken down into basic chronologies called "activity flows," which track all remedial, enforcement, and removal activities that can occur at a site. The distribution of these activity flows is dependent on the lead distribution variables. The Model assumes, at the beginning of the Superfund pipeline, that RI/FSSs are conducted with a 35% Fund and 65% PRP lead division; meanwhile, at the end of the pipeline, RAs are conducted with a 30% Fund and 70% PRP lead distribution. These flows result in project counts for each quarter tracked by the Model.

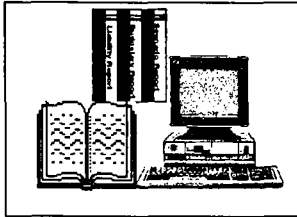
# EXHIBIT 1 Outyear Liability Model System Concept



- **Unit Activity Costs:** The Model calculates total cost estimates by applying pricing and FTE factors to all removal, pre-remedial, remedial, and enforcement project counts that stem from the activity flows. The only exception is for RAs, where pricing factors are applied separately.

The sources of the pricing and FTE factors include empirical analyses of cost data and SCAP guidelines outlined in the current Program Management Manual. These factors are applied to each project quarterly and by stage (i.e., start, on-going, or complete).

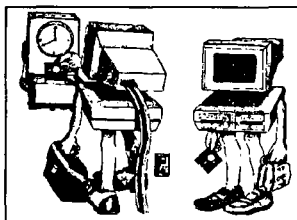
## MODEL OUTPUTS



The Model's output reports consist of Liability, Budgetary and Scenario Reports. These reports are generated in both graphical and tabular forms.

- **Liability Reports:** These reports contain the OLM's estimates of the Superfund Program's costs (e.g., annual costs, total costs to complete existing NPL), duration (e.g., how long to complete existing NPL), and number of site activities (e.g., site cleanups by year or funding level).
- **Budgetary Reports:** These reports contain the OLM's estimates of costs in the format of the annual Superfund budget (e.g., BUD reports) and provide support for development of OERR's "Annual Report to Congress on Implementation of the Superfund Program."
- **Scenario Reports:** These reports contain the OLM's analyses of "What If?" alternative budget, liability, and policy scenarios, such as estimating the Superfund costs if additional sites are added to the NPL, or if the Program benefits from more effective enforcement measures.

## ONGOING ACTIVITIES



Maintaining the OLM as a reliable and consistent estimating tool requires a continuous program of updating and documenting the system to respond to the dynamic and changing Superfund Program. Some

of these steps include:

- **Model Data Analyses:** As activity levels in CERCLIS change, these changes are reflected periodically in the OLM. These updates are necessary to ensure that the model is accurately

reflecting the Program over the short term. In addition, while the model allows for user-inputs on almost all Program conditions, Model users often rely on default values for these inputs. These default values, such as the value for RA costs, are continuously analyzed and updated where necessary to improve the Model's predictive capabilities.

- **System Logic Enhancements:** Changes in Model user's needs can sometimes result in needed enhancements in system logic. Recent enhancements have included variable activity durations and more extensive activity level capping capabilities. Future enhancements might include customized reporting capabilities, increased graphical user interface capabilities, and other enhancements that continue to increase Model flexibility and user-friendliness.

This overview of the Outyear Liability Model (OLM) is provided by the Office of Program Management (OPM). If you have any questions on the enclosed information, please feel free to contact the Program Development & Budget Staff at (703) 603-8750.

**EXHIBIT 2**  
**Activity Durations & Pricing Factors Default Values**

<b>ACTIVITY</b>	<b>DURATION (quarters)</b>	<b>COST (\$000)</b>
PA	4	7
SI	4	25
ESI	4	75
NPL Proposed	4	
NPL Final	4	100
REMOVAL	6	600
RI/FS	11	750
RD	8	700
RA	10	12200
REMOVAL PRP SEARCH	1	15
REMOVAL NEGOTIATIONS	1	17
REMOVAL OVERSIGHT	6	89
PRP SEARCH (NPL) – start	3	25
PRP SEARCH (NPL) – ongoing		72
RI/FS NEGOTIATION	3	30
RP RI/FS OVERSIGHT – start	13	194
RP RI/FS OVERSIGHT – ongoing		275
RD/RA NEGOTIATIONS	3	24
RP RD OVERSIGHT	8	200
RP RA OVERSIGHT	8	200

**NOTE:** The numbers in this exhibit are for illustrative purposes only. They may vary according to user input.

### EXHIBIT 3 Distribution of Activity

