



Overview of the  
Remedial Action  
Cost Engineering  
Requirements  
RACER® Software

**AECOM**

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# RACER 2018 Training Policies

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## Introduction

RACER is a cost estimating software that was developed under the direction of the U.S. Air Force for estimating environmental investigation and cleanup costs for the annual budgeting and appropriations process. The software initially was released for government use in 1992, and many subsequent versions have been released since that time. The Air Force and Army currently use the software for developing major parts of their estimates and annual Cost to Complete (CTC) budgets. Other branches and offices within the Department of Defense and other Federal agencies also use RACER to prepare individual project cost estimates and to evaluate the reasonableness of cost estimates and proposals. In addition to users within the Federal government, RACER is used by a variety of state regulatory agencies, engineering consultants, facility owners and operators, financial institutions and law firms.

As indicated above, RACER currently addresses environmental investigations and cleanup projects. The parametric estimating methodology upon which RACER is based also can be applied to other environmental cost estimating needs. For example, a streamlined version of the system, called Tank RACER, was developed specifically for petroleum contamination. Over the last several years, RACER has been modified to include models for addressing munitions and explosives of concern (MEC). The software also has been modified to address remediation of radiological contamination.

AECOM uses RACER in a variety of capacities. A prime area where RACER is used within the firm is to develop cost estimates for cleanup scenarios on feasibility studies (FS) for hazardous waste sites, Corrective Measures studies under RCRA, etc. Given the limited data inputs required and the structured estimating process, RACER is an ideal tool for developing cost estimates for multiple cleanup approaches consistent with RCRA, CERCLA, UST and other environmental regulatory programs.

RACER also has been used within AECOM to value environmental liabilities in connection with corporate transactions. AECOM evaluates environmental liabilities at contaminated properties for numerous private sector clients who are engaged in or contemplating mergers, acquisitions, divestitures, restructurings, etc. AECOM's role involves identifying the nature and extent of contamination, typically via the Phase I and Phase II site assessment processes. Once the contamination and risks have been evaluated, AECOM uses RACER to quantify the financial liability associated with various cleanup scenarios. The RACER cost estimates we produce enable our clients to evaluate contractual structures, insurance, and other means of managing the financial risk associated with the pending transaction.

AECOM also uses RACER to support clients involved in legal disputes. An example involves quantifying future cleanup costs to facilitate cash outs and settlements at sites having multiple potentially responsible parties (PRPs). AECOM used RACER to value Kuwait's claim for legal damages against Iraq due to groundwater contamination resulting from the Gulf war. RACER also has been used to value legal claims in litigation involving insurance coverage, allocation among PRPs, etc.

## Overview of the RACER Software

The Remedial Action Cost Engineering and Requirements (RACER) software is a parametric, integrated cost estimating program that was developed specifically for estimating costs associated with environmental investigation and cleanup projects. The software provides the detail of a definitive engineers' estimate, but it also can be used at early order-of-magnitude stages of cost estimating. Using RACER to prepare cost estimates provides the detail and accuracy of manual estimates, but it is faster, less error prone, and more efficient in comparing engineering alternatives. RACER has been used to estimate over \$10 billion of environmental projects and is currently used by hundreds of users including DOD, DOE, DOI, engineering consultants, contractors, state regulatory agencies, and the private sector. The accuracy of the RACER software has been proven to be within 10% of actual completed project costs.

## Multi-Level Estimating Hierarchy

RACER was designed to support cost estimates for large complicated sites with work occurring in multiple phases. Due to the large size of many contaminated facilities, environmental remediation projects are commonly divided into a number of sub-sites called "Operable Units" or "Areas of Concern". Each of these sub-sites must progress through a series of phases dictated by the regulatory program to which the site is subject. In general, the phases include a series of investigations to define the nature and extent of contamination, an evaluation of engineering alternatives, construction of the selected alternative, and performance of operations and maintenance. The complexity of a cost estimate is directly related to the number and complexity of the sub-sites and the number and timing of the phases for each sub-site.

To address complex sites, RACER provides the user with the ability to divide cost estimates into a virtually unlimited number of projects, sites, and phases. RACER currently uses an estimating hierarchy that has five levels:

Level 0 – Folder (for storing estimates)

Level 1 – Project (contains project definitional data)

Level 2 – Site (contains definitional data for one or more sites that make up the overall project)

Level 3 – Phase (contains definitional data for each phase of work to be conducted for a site).

Level 4 – Technology (contains engineering data about the approach, configuration and materials of construction for a technology)