Appendix A
Installing and Using REAP

Installation Instructions for Base REAP

REAP is written in the GAMS language. The installation instructions are written with the assumption that GAMS-IDE has been installed and a nonlinear solver (e.g., CONOPT or MINOS) has been selected as the default solver.

The files necessary to run REAP are contained in REAPv1.ZIP. This file contains several control files and three folders: A1A0, A1A0LIB, and AREPORT. A1A0 contains the main model files and consists of several subdirectories that contain files for running different versions of the model. A1AOLIB contains the report writing files as well as supporting data files, such as crop and livestock data baseline files. AREPORT contains files for generating summary reports of results.

All files in REAPv1.ZIP need to be extracted into a directory called REAPv1 retaining the directory structure.

REAP is driven by a series of control files and a master program. The master program is called REAPDRIVER.GMS. The control files are PARAMDEFAULT.INC, PARAMUSER.INC, PARAMS.INC, and OPTIONS.INC. The file REAPDRIVER.GMS calls in all the component files automatically. To run REAPDRIVER, open a GAMS-IDE project in the same directory (REAPv1) as the control files. A new project is created from the GAMS-IDE by selecting File -> Project -> New Project and specifying the name of the project. Open REAPDRIVER.GMS (File -> Open) into the GAMS-IDE.

Calibrating to a Baseline Year

To calibrate to a year in the USDA baseline, first open the file PARAMDEFAULT.INC. Change the name of parameter “run_name” (“test_run2” in the example) to a name that reflects the nature of the run (for example “Cal2010”). This name will become the name of a new directory in the REAPv1 folder. All the REAP output will be saved in this new directory. If the directory already exists, files contained within it will be overwritten. You may also give the run a title. Parameter runyear must be specified. Be sure to save the file.

```
* The run_name is the name of a directory where results
* are written. The results include key listing files and
* GDX files with result data.
$setglobal run_name test_run2

* Goes to the $title of the input file
$setglobal run_title This is a test run

*
* runyear
*

$setglobal runyear 2010    {calibration year}
$setglobal rym1    2009    {runyear minus 1}
$setglobal ryp1    2011    {runyear plus 1}
```

Excerpt from PARAMDEFAULT.INC

To run the calibration, make sure REAPDRIVER.GMS is active in the project window. Press the Run GAMS toolbar button (or select File -> Run from the menu). A new window will open in the project that

will display the progress of REAP. When the runs are complete, the output (LST and GDX files) is in the directory specified by the run_name parameter.

There are four steps or jobs submitted through the REAPDRIVER.GMS to obtain a base solution off of which scenarios can be run. The purpose of these steps are described below, followed by the steps needed for submitting a scenario run and generating summary reports.

Step 1: The file A1A0A.GMS in the A1A0 directory is called "REAPDRIVER.GMS" to calibrate rotation acreage based on NRI data to individual crop acreage from the selected base year as reported in the baseline data. This file also updates cost of production estimates to the latest data contained in the selected year from the baseline data.

Step 2: The file ALF4N00.GMS in the ALF subdirectory of A1A0 is called "REAPDRIVER.GMS" work files. The main purpose of this run is to find shadow values for calibrating the CET parameters.

Step 3: The file CET4N00.GMS in the CET subdirectory of A1A0 is called "REAPDRIVER.GMS" to derive the parameters for the CET functions. The file contains two sequential solves. The first solve specifies the parameters for the CET functions for tillage practices. The second solve specifies the parameters for the rotations.

Step 4: A1A0VC.GMS in the A1A0 directory is called "REAPDRIVER" to specify the PMP functions for crop and livestock production. Step 4 represents the full verify or base run from which all the shocks will be run. At this stage, all calibration bounds have been removed.