

Regional Research Institute West Virginia University

Resource Document Series



ECIO Model Operators Guide

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Table of Contents

| | |
|----------------------------------|----|
| Acronyms and Abbreviations | iv |
| Introduction | 1 |
| System Requirements | 1 |
| Model Execution | 1 |
| Model Results | 4 |

Exhibits

| | |
|---|---|
| Exhibit 1 ecio_fair_16q4 file structure..... | 2 |
| Exhibit 2 ECIO National Model Window..... | 2 |
| Exhibit 3 ECIO National Model Progress Bars | 3 |
| Exhibit 4 Results folder (sample)..... | 4 |
| Exhibit 5 Results Folder file structure | 4 |
| Exhibit 6 US_National Impact Excel file (unpopulated) | 5 |
| Exhibit 7 US_National Impact Excel file (populated) | 5 |

Acronyms and Abbreviations

| | | | |
|------|--|------|--------------------------|
| ECIO | Econometric input-output | PC | Personal computer |
| IO | Input-output | U.S. | United States |
| NETL | National Energy Technology Laboratory | WVU | West Virginia University |

Introduction

The National Energy Technology Laboratory (NETL)/ West Virginia University (WVU) Econometric Input-Output (ECIO) model is a time-series enabled hybrid econometric input-output (IO) model that combines the capabilities of econometric modeling with the strengths of IO modeling. The model was developed and designed specifically for estimating the income and employment impacts of the development and deployment of new energy technologies over a given forecast period. The ECIO model consists of a macroeconomic econometric model of the United States (U.S.) national economy and an inter-industry model that reflects the interdependence of all the industries in the economy. These two components have three modules and several sub-modules of interrelated equations for the U.S. economy, with employment and income detail for 32 industrial sectors.

This document is designed to escort a user with little computing or programming experience through the processes of setting up the ECIO model application to run on a personal computer (PC). The document will guide user through the various stages of the ECIO model with screenshots and instructions. Using this guide and standardized input data files (in .csv format) that are generated by the NETL NEMS-ECIO Translation Tool, users should be able run the model to generate estimates of deployment scenario impacts.

System Requirements

Microsoft® Excel is the only necessary third-party application used in support of the March 2018 version of the ECIO model, and this is required only for extracting and compiling results for graphical and tabular presentation. The ECIO model application has been tested on PC platforms running Windows 7 and Windows 10.

Model Execution

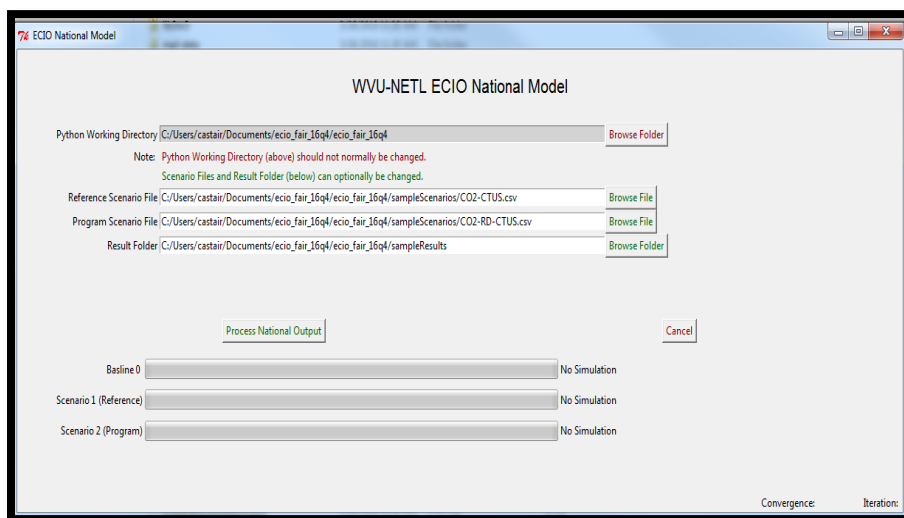
1. Obtain a Reference Scenario (base) and Program Scenario (shock) .csv files from the NETL NEMS-ECIO Translation Tool and save them in a known location.
2. Download the zip file (currently called ecio_fair_16q4).
3. Extract all files in ecio_fair_16qr.zip to a known location.
4. Open the extracted file to display the ecio_fair_16q4 file structure.

Exhibit 1 ecio_fair_16q4 file structure

| Name | Date modified | Type | Size |
|-----------------|--------------------|-------------|------------|
| coeffs | 3/27/2018 10:38 AM | File folder | |
| data | 3/27/2018 10:38 AM | File folder | |
| resources | 3/27/2018 10:40 AM | File folder | |
| sampleResults | 3/27/2018 11:17 AM | File folder | |
| sampleScenarios | 3/27/2018 10:38 AM | File folder | |
| ecio_fair_16q4 | 3/27/2018 10:26 AM | Application | 191,180 KB |

5. Locate the executable file called ecio_fair_16q4 (file type is Application). The executable file can be located in any folder, but by default will be in the folder created when the distribution file is unzipped.
6. Double click the application ecio_fair_16q4 to open the executable window shown below in Exhibit 3.¹ Be patient, the program takes about 10 seconds to launch.

Exhibit 2 ECIO National Model Window^{2,3}



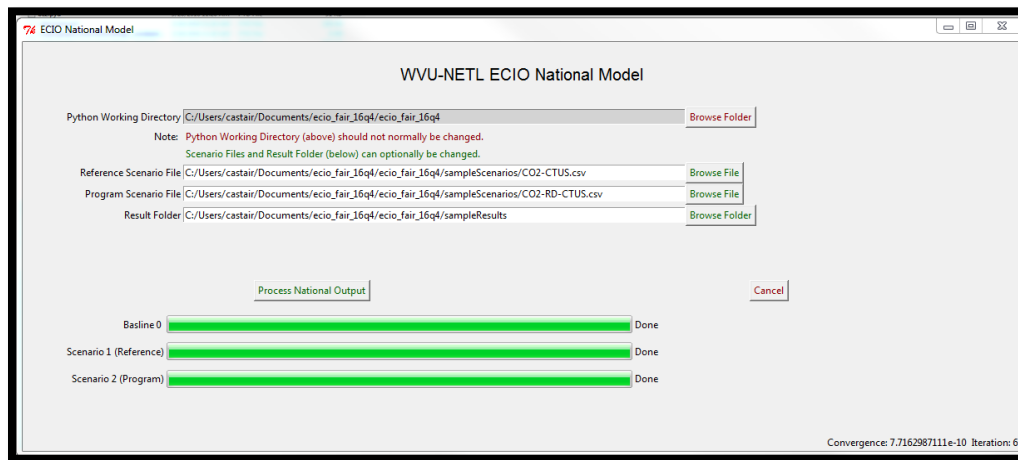
¹ Because the executable file is unknown to the operating system, some users might have to select “Run” if and when a warning window displays.

² All file locations shown here are for the example data.

³The first line “Python Working Directory” should only be changed by advanced users. For this reason, it IS NOT normally changed.

7. In the Reference Scenario File line click browse file. Locate the Reference (base) csv file from NETL for the run and select it. The application loads with a sample file already identified.
8. In the Program Scenario File line click browse file. Locate the Program (shock) csv file from NETL for the run and select it. The application loads with a sample file already identified.
9. In the Result Folder line click browse folder. Locate the folder where you want results to be stored and select it. The application loads with a sample results folder already identified.
10. After the files and folder have been selected click Process National Output. As the program runs the progress bars will fill. The program is complete when all three progress bars are filled and say 'Done.' This is shown below in Exhibit 4.⁴

Exhibit 3 ECIO National Model Progress Bars

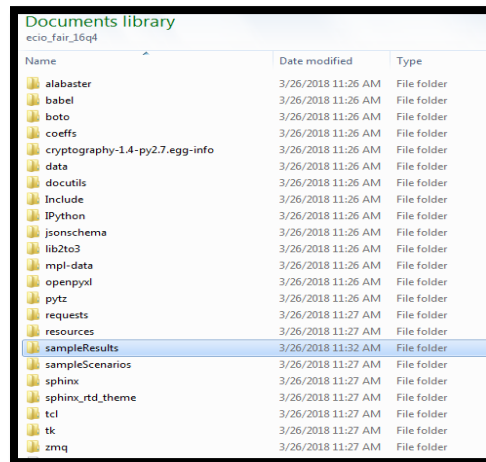


⁴ This process can take up to thirty minutes.

Model Results

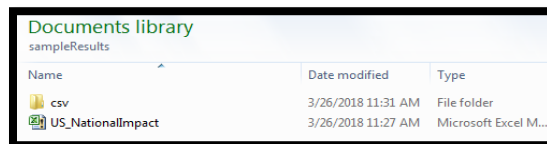
11. Once the program is completed go back to the main file structure and select the results folder shown below in Exhibit 5.⁵

Exhibit 4 Results folder (sample)



12. Once the results folder is open select the US_NationalImpact Excel file shown below in Exhibit 6.

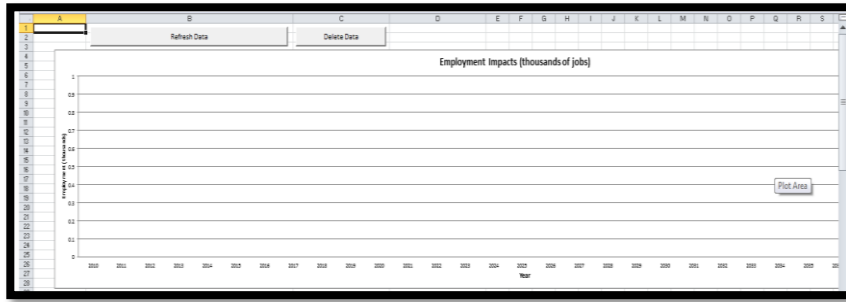
Exhibit 5 Results Folder file structure



13. This Excel file will automatically generate the relevant graphs and tables that form a typical ECIO report. When opening this file, the user might need to enable editing and content (shown in yellow bars at the top of the window).
14. Once editing and content have been enabled, select the “Delete Data” button in the upper left of the window.
15. Then select the “Refresh Data” button located in the upper left of the window. This loads the new results from the model and generates the graphs and tables.

⁵ This is the sample results folder in the example run. A user may create their own results folder and select in during step 7.

Exhibit 6 US_National Impact Excel file (unpopulated)



16. This completes the model run.

Exhibit 7 US_National Impact Excel file (populated)

