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# Scenario analysis *in LEAP*

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- Basics
- Add Scenarios
- Insert scenario assumptions
  - Use of expressions
- Show Results
  - Eight (8) steps to view/edit/export



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# Basics

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Scenario analysis: a method for decision-making

## Scenarios

- are self-consistent story-lines of how an energy system might evolve over time in a particular socio-economic and policy setting.
- encompass any factor that can change over time, because of particular policy interventions and different socio-economic conditions.
- share a common set of *Current Accounts* data.
- run from the First Scenario Year to the End Year of the study.



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# Add scenarios (1/2)

The screenshot shows the LEAP: Freedonia software interface. The 'Scenarios' tab is active, displaying a table of scenarios. A red arrow points to the 'Scenarios' tab in the top menu bar.

Branch	Expression	Scale	Units
Household	8	Million	Household

Below the table, there is a bar chart titled 'Household: Activity Level (Thousand Household)'. The chart shows a single bar for the year 2010, with a value of approximately 8,000. The y-axis is labeled 'Thousand Household' and ranges from 0 to 8,000. The x-axis is labeled 'Household'.

The status bar at the bottom indicates: 2014.0.1.20 Area: Freedonia Analysis Registered to promitheas@kepa.uoa.gr until Οκτώβριος 21, 2016

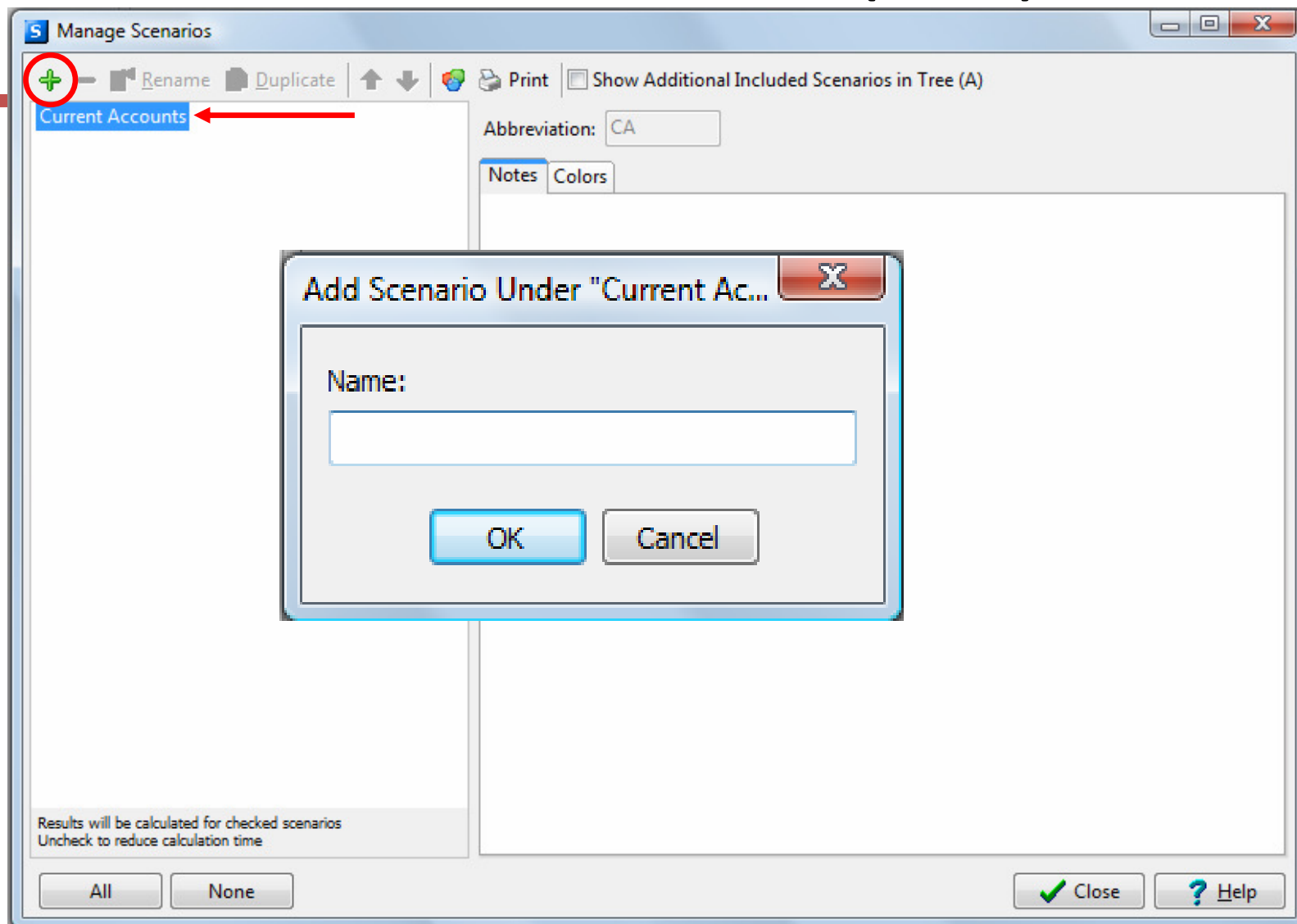


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# Add scenarios (2/2)



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# Insert assumptions

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- Use of **Expressions**: mathematical formulae used to specify how the values of a variable change from year to year
  - *In Current Accounts* an expression defines the historical values for a given variable at a branch
  - *In scenarios* an expression defines how a variable changes over time from the First Scenario Year to the End Year
- Inheritance
  - Combination of individual policy scenarios

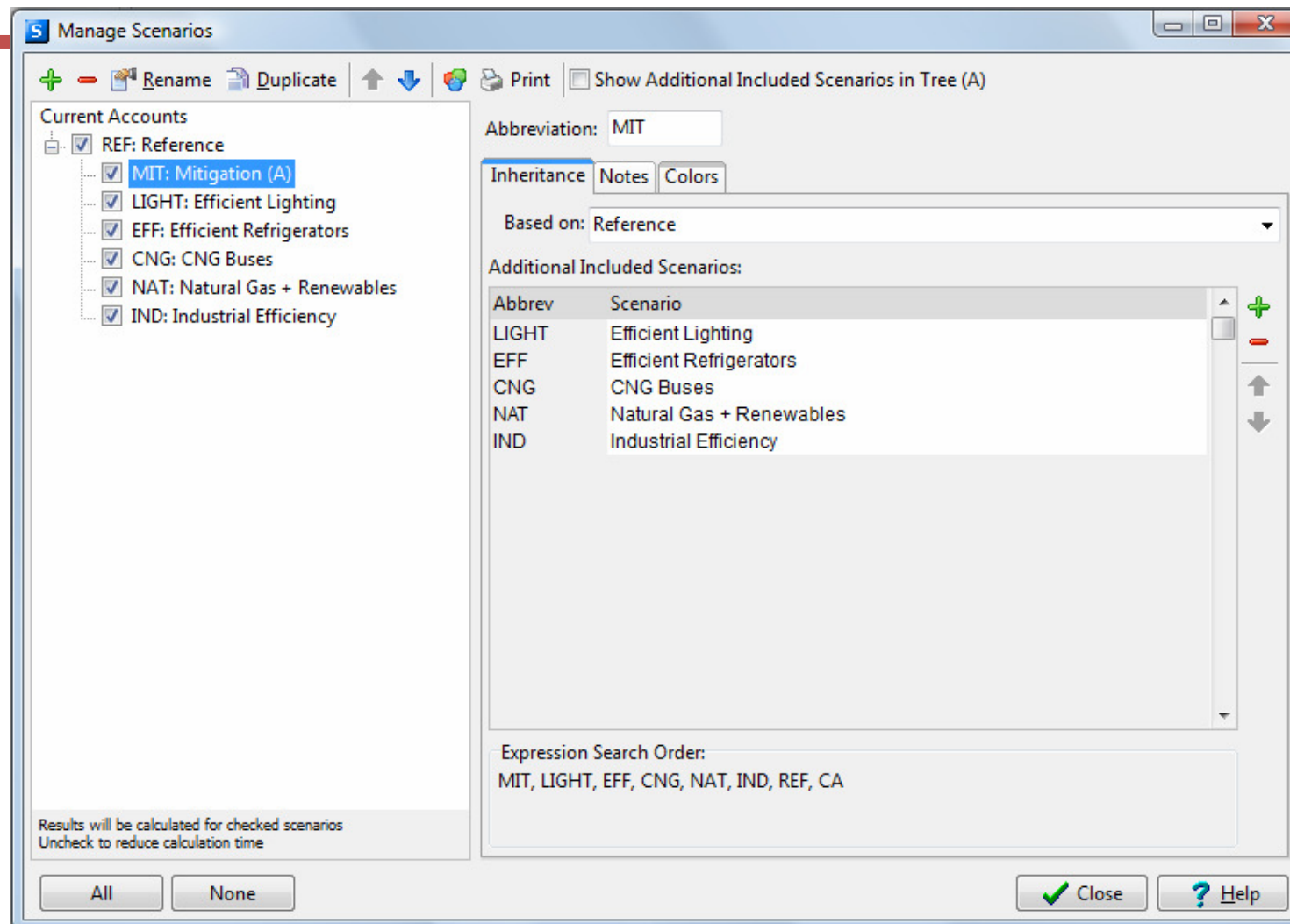


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# *Example:* scenario hierarchy with multiple inheritance




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# Insert/edit expressions

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- Type directly into the expression field in data entry table
- Use **Expression Builder tool** (Ctrl-B or 



# Expression Builder

LEAP: Freedonia

Area Edit View Analysis General Tree Chart Advanced Help

New Open Save Backup Email Find Basic Params Scenarios Fuels Effects Units Help What's This?

Views

Freedonia

- Key Assumptions
- Demand
  - Household
    - Urban
    - Rural
  - Transformation
  - Resources

Analysis

Results

Diagram

Energy Balance

Summaries

Overviews

Technology Database

Tags:

Branch: All Branches Variable: Activity Level Scenario: Current Accounts

Activity Level

Activity Level: A measure of the social or economic activity for which energy is consumed. [Default="0"]

Branch	Expression	Scale	Units	Per
Household	8	Million	Household	
Urban	30	Percent	Share	of Households
Rural		Percent	Share	of Households

☒ Ditto Ctrl+D  
☐ Remainder Ctrl+R  
☐ Branch/Variable Ctrl+B  
☐ Function Ctrl+F  
☐ Time Series Ctrl+T  
☒ Use Aliases

Household: Activity Level (% Share of Households)

2010 = 0,0

Urban 30%

Rural 70%

Urban

Rural

2014.0.1.20 Area: Freedonia Analysis Registered to promitheas@kepa.uoa.gr until Οκτώβριος 21, 2016



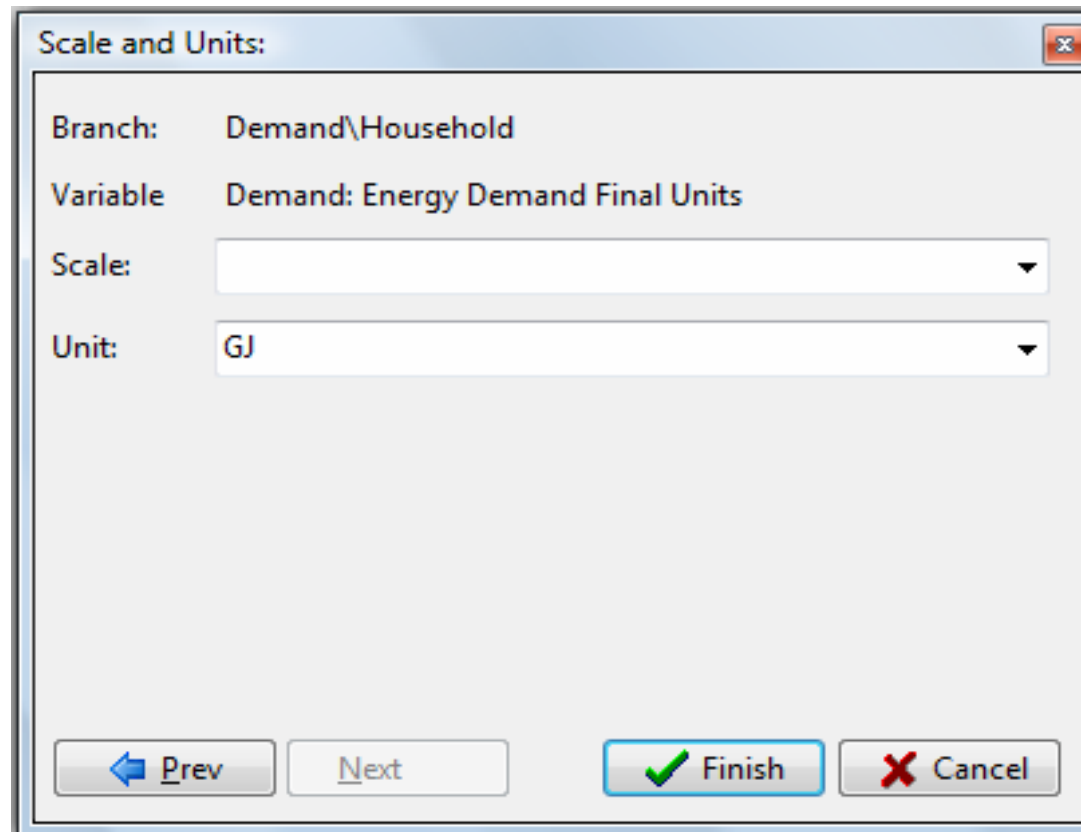
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# Branch/Variable Wizard

Pop-up window used to select a specific variable at particular branch



The screenshot shows a dialog box titled "Scale and Units:". It contains four labeled fields: "Branch:" with the value "Demand\Household", "Variable:" with the value "Demand: Energy Demand Final Units", "Scale:" with an empty dropdown menu, and "Unit:" with the value "GJ" in a dropdown menu. At the bottom, there are four buttons: "Prev" (with a left arrow), "Next" (with a right arrow), "Finish" (with a green checkmark), and "Cancel" (with a red X).



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# Function Wizard

Function Wizard

Preview  
Interp(2030,45) = 0.00 in 2030

Function Type: All

Function: All  
Modeling  
Mathematical  
Logical  
Statistical  
Financial  
Time-Series  
Fuel Properties

Description:

Parameters  
Parameter 1: 2030,45

All required parameters OK.

Time Series Wizard  
LEAP Branch/Variable  
Excel Sheet/Range

OK Cancel Help More




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# Time-series Wizard

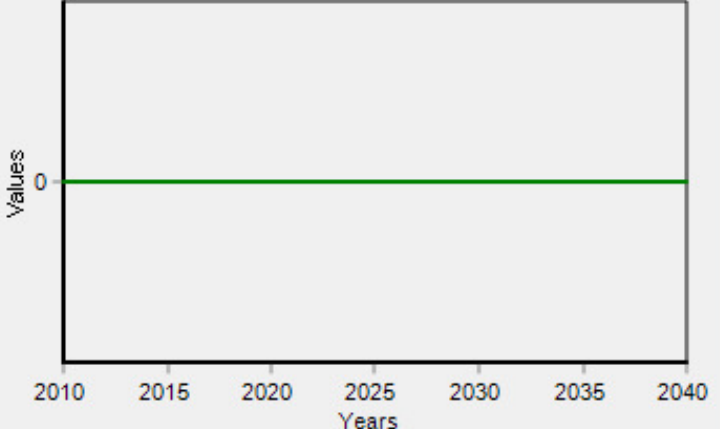
Time-Series Wizard: Step 3/3: Enter Data

Sheet:  ... 

Range(s):  ▼ 

Year	Value
------	-------

Preview



Expression

Growth after last year:  %

Create Expression as:

☒ Excel Link ☐ Data



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# Show Results

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Step 1: Press *Results View*

Step 2: Press Yes in *Confirm* pop-up window

Step 3: Go to *Result selection box* to pick category of results

Step 4: Go to *Tree* to pick branches for which you wish to see results

Step 5: Click on *Selection boxes* attached to the chart's *X Axis* and *Legend* to pick the dimensions you want to see in the chart or table.

Step 6: Choose *format* in chart, table or both

Step 7: Click on *More* button

Step 8: Export to *PowerPoint/Word/JPEG* and *Excel*

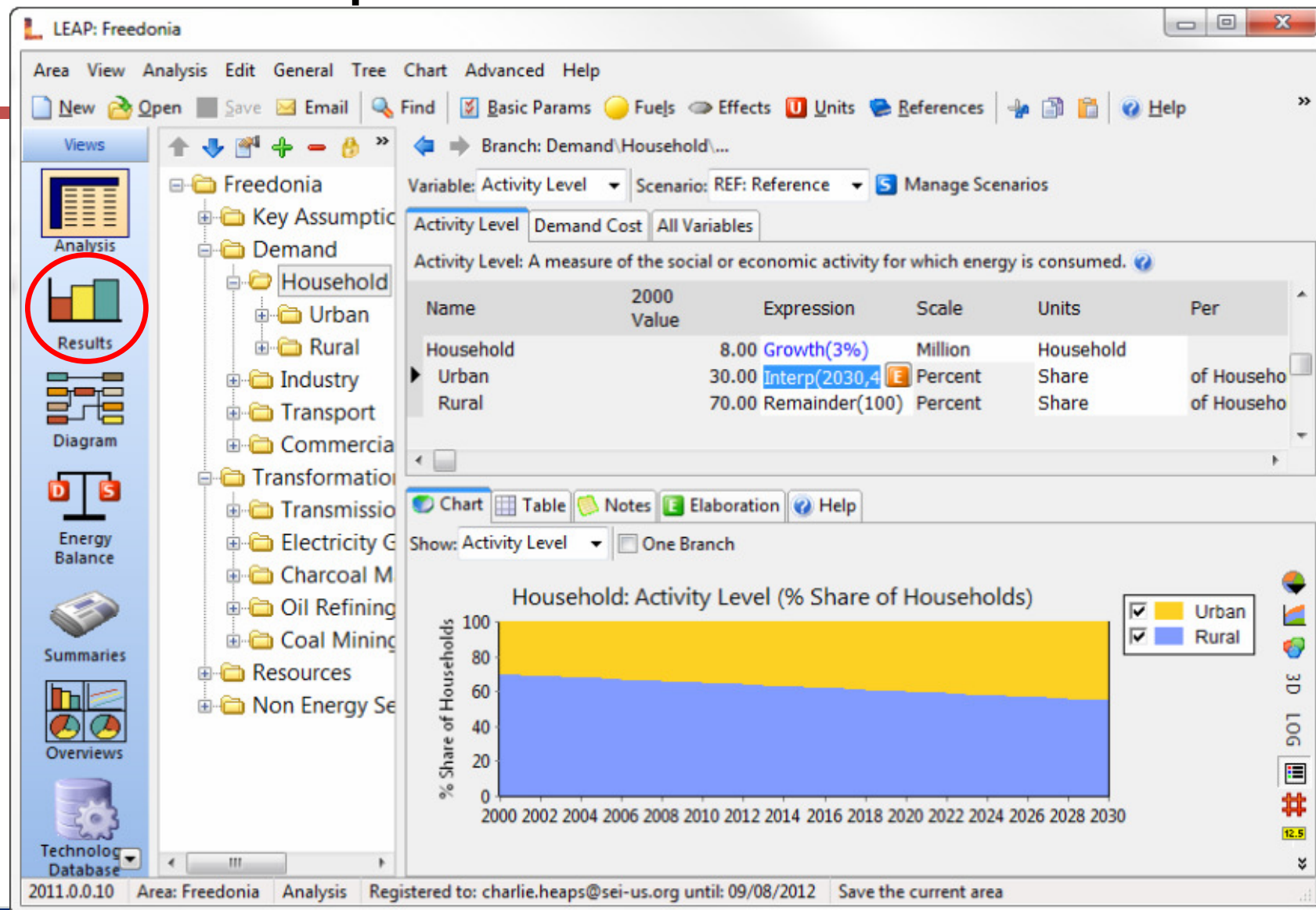


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# Step 1: Press Results View



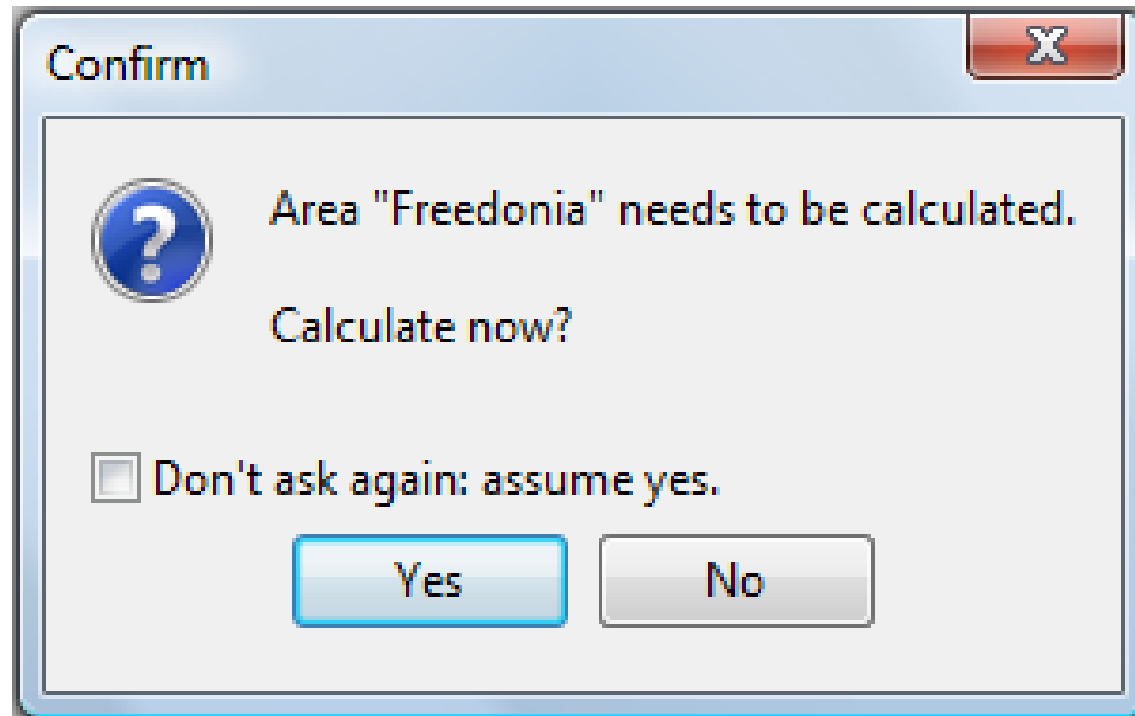
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# Step 2: Confirm

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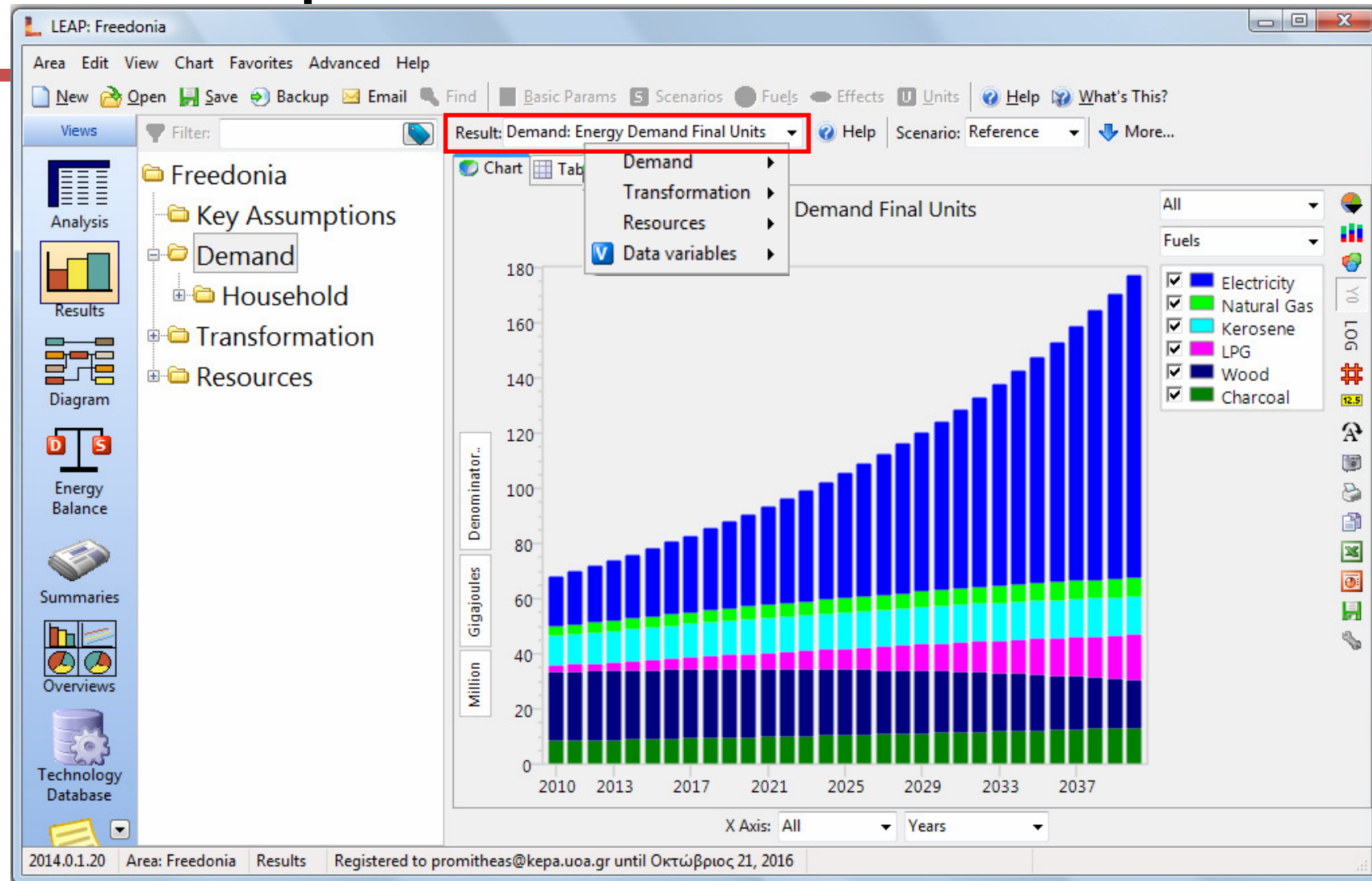


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# Step 3: Result selection box



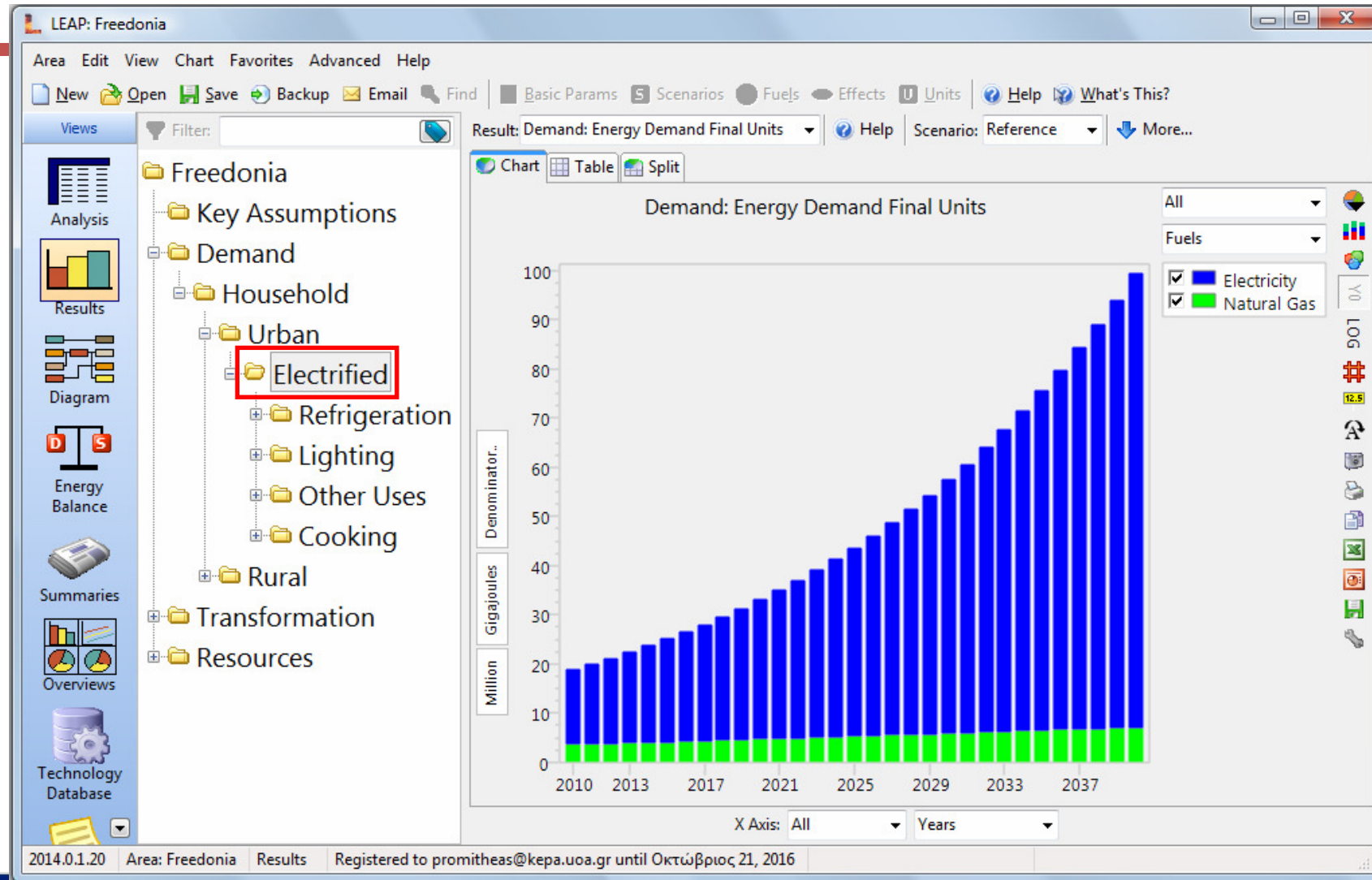
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# Step 4: Pick Tree branch

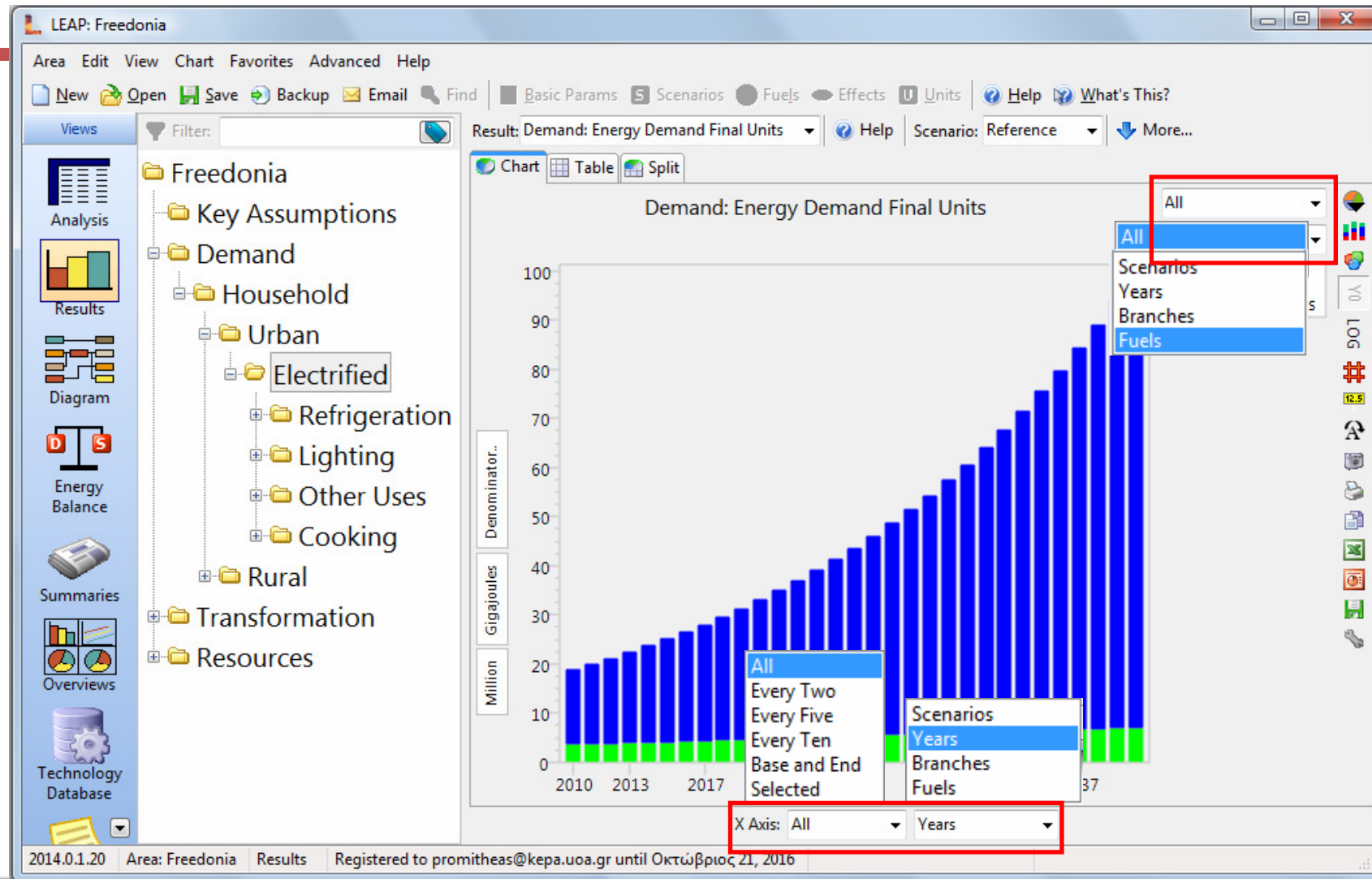


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# Step 5: Selection boxes

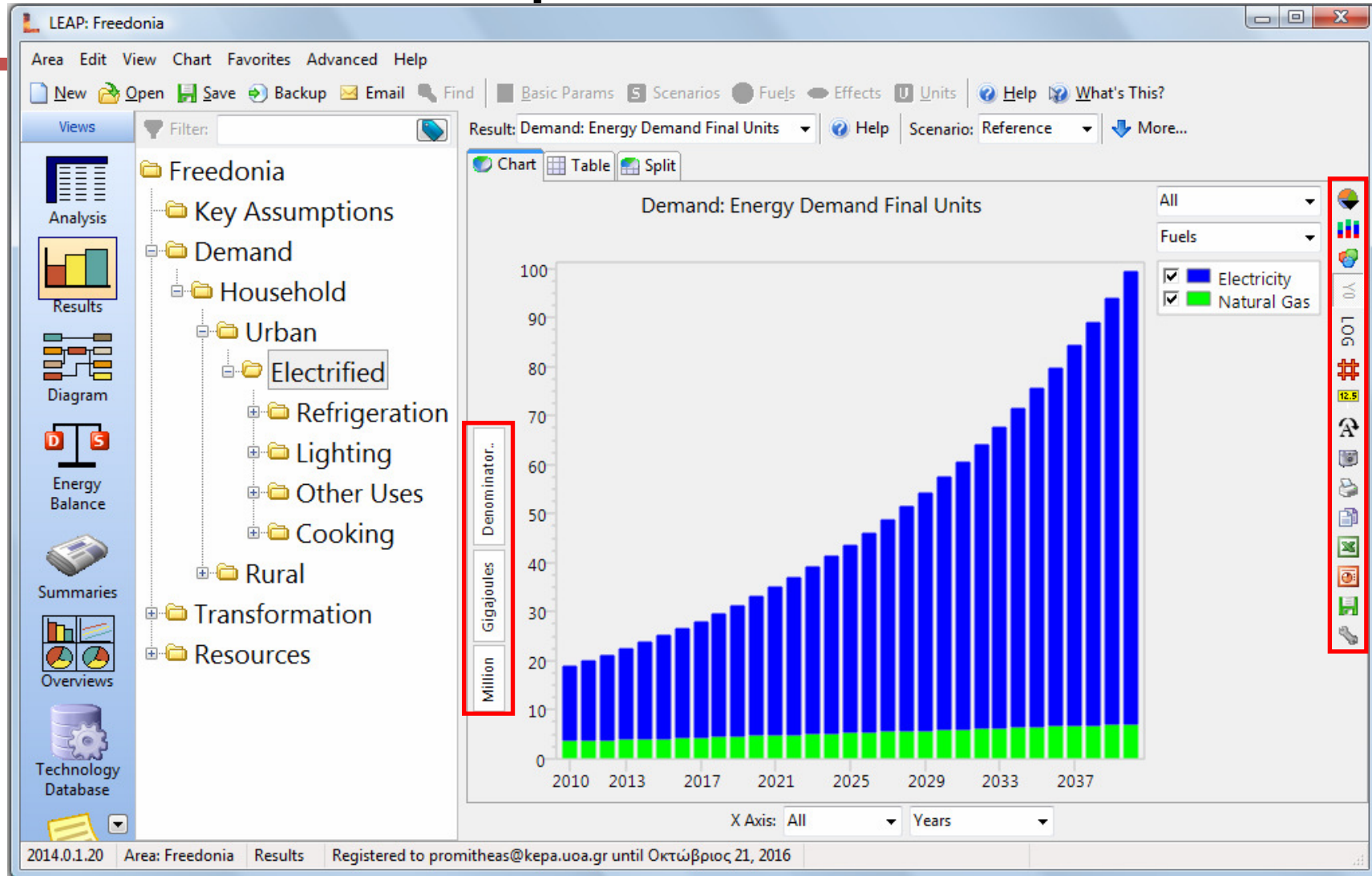


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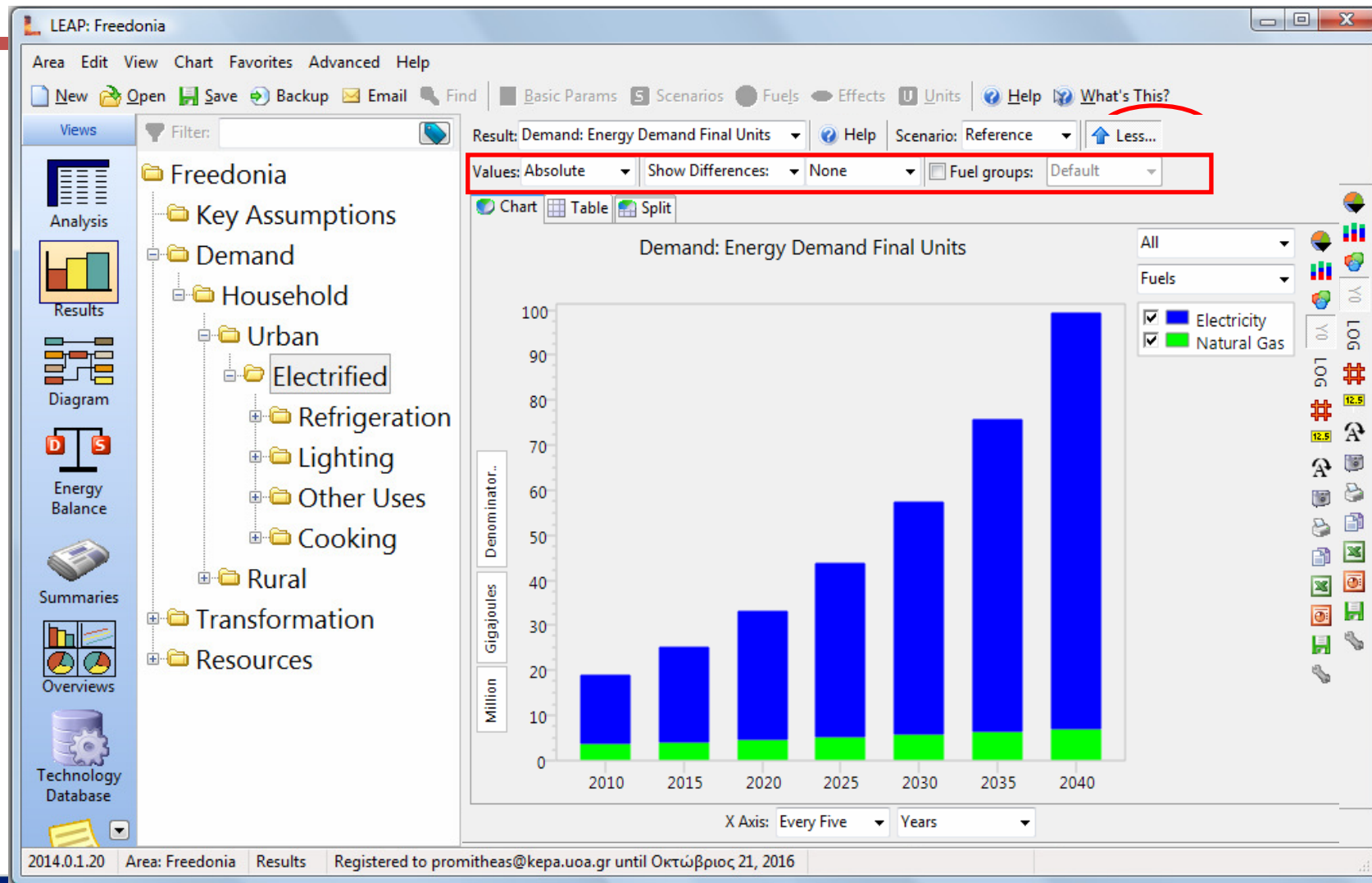
## Step 6: Format



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# Step 7: “More” button

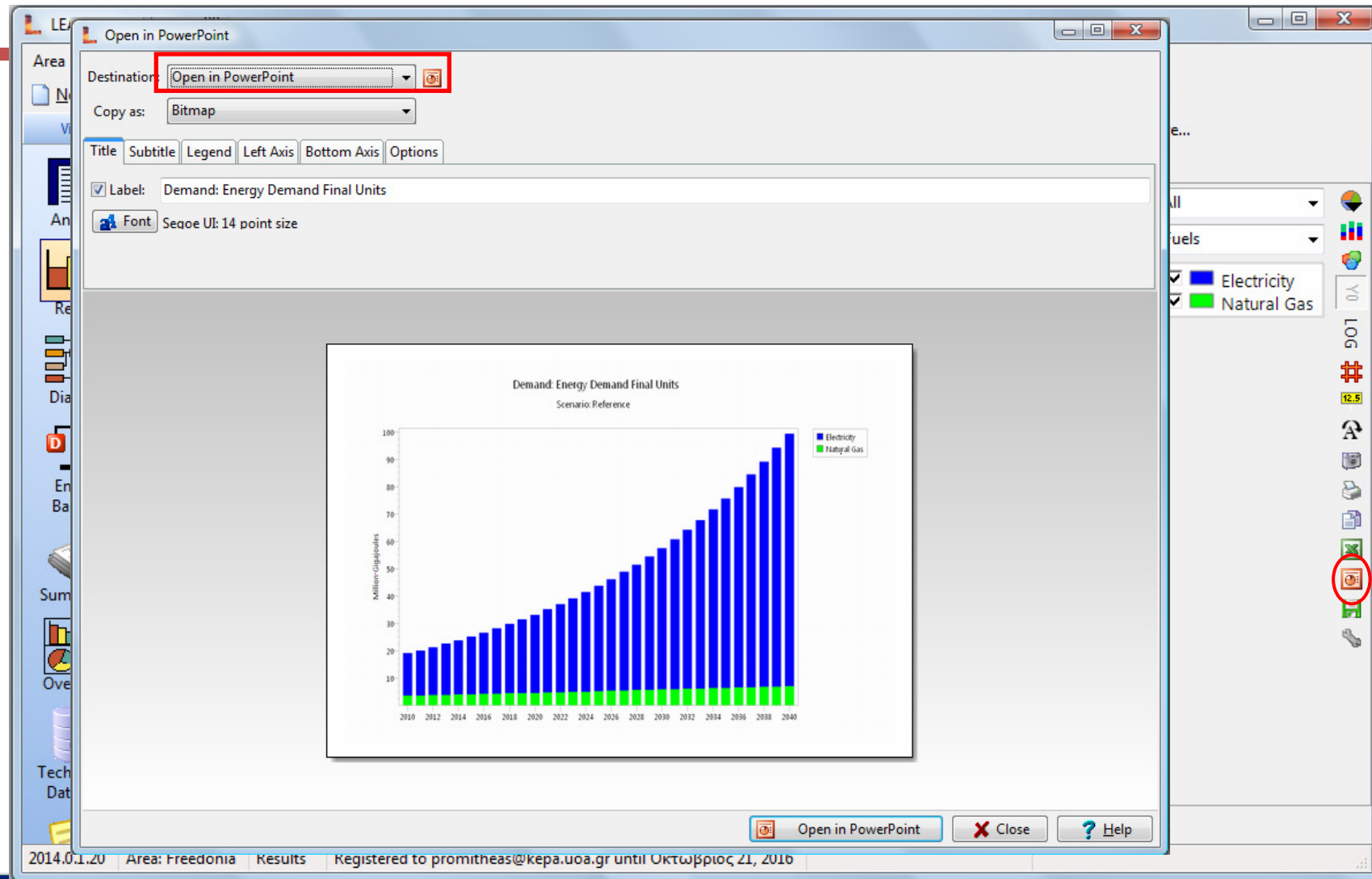


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# Step 8: Export Charts



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# Step 8: Export Tables

LEAP: Freedonia

Microsoft Excel - Φύλλο1

Area Edit View C

Δρχειο Επεξεργασία Προβολή Εισαγωγή Μορφή Εργαλεία Δεδομένα Παράθυρο Βοήθεια

Views

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2014.0.1.20 Area: Fr

Ετοιμο

	2010	2015	2020	2025	2030	2035	2040
1 Demand: Energy Demand Final Units							
2 Scenario: Reference							
3 Branch: Demand\Household\Urban\Electrified							
4 Units: Million Gigajoules							
5							
6 Fuels							
7 Electricity	15,5	21,1	28,6	38,5	51,7	69,2	92,4
8 Natural Gas	3,4	4,0	4,5	5,1	5,7	6,3	6,9
9 Total	19,0	25,1	33,1	43,6	57,4	75,5	99,3
10							
11							
12							
13							
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17							
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20							
21							
22							
23							
24							
25							
26							
27							
28							

What's This?

More...

All

Fuels

2035 2040

69,2 92,4

6,3 6,9

75,5 99,3

Export icon (red circle)



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# Let's practice!

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