

US-EI SimaPro Database Update

provided by EarthShift

This dataset was created to bridge the current gap in the US LCI Database and to apply US electrical conditions to the ecoinvent database. The dataset includes modified processes for the 423 processes contained in the US LCI Database (version 1.6) and for the 3,974 unit processes contained in the ecoinvent database (version 2.2).

Specifically, for the US LCI Database 144 of the 178 dummy processes were replaced with ecoinvent proxies using US electricity (www.earthshift.com/USLCI_Dummy2Proxy_Details.xlsx). Some of the dummy processes were not replaced if they were not available in the ecoinvent dataset. For the ecoinvent dataset, all processes using electricity from Switzerland or one of the European regions (RER, UCTE, CENTREL or NORDEL) were indirectly adapted to instead use US electricity. This was done by rerouting electricity production/ distribution to US electricity production/ distribution in the following processes:

- Electricity, medium voltage, production UCTE, at grid/UCTE U
- Electricity, low voltage, at grid/CH U
- Electricity, low voltage, production UCTE, at grid/UCTE U
- Electricity, medium voltage, at grid/CH U
- Electricity, medium voltage, production NORDEL, at grid/NORDEL U
- Electricity, high voltage, production UCTE, at grid/UCTE U
- Electricity, production mix UCTE/UCTE U
- Electricity, low voltage, production RER, at grid/RER U
- Electricity, medium voltage, production CENTREL, at grid/CENTREL U
- Electricity, low voltage, production CH, at grid/CH U
- Electricity, medium voltage, production CH, at grid/CH U

No other modifications were made to adapt the ecoinvent database, and because of geographic differences other than used electricity, there is no guarantee that the resulting inventory is closer to the US conditions than the original ecoinvent dataset.

For additional information on the original processes, see the ecoinvent and the US LCI system descriptions.

This database was created on Nov, 2009 by Sylvatica on behalf of EarthShift, info@earthshift.com, (802) 434-3326.

The following two diagrams illustrate the ecoinvent modifications:

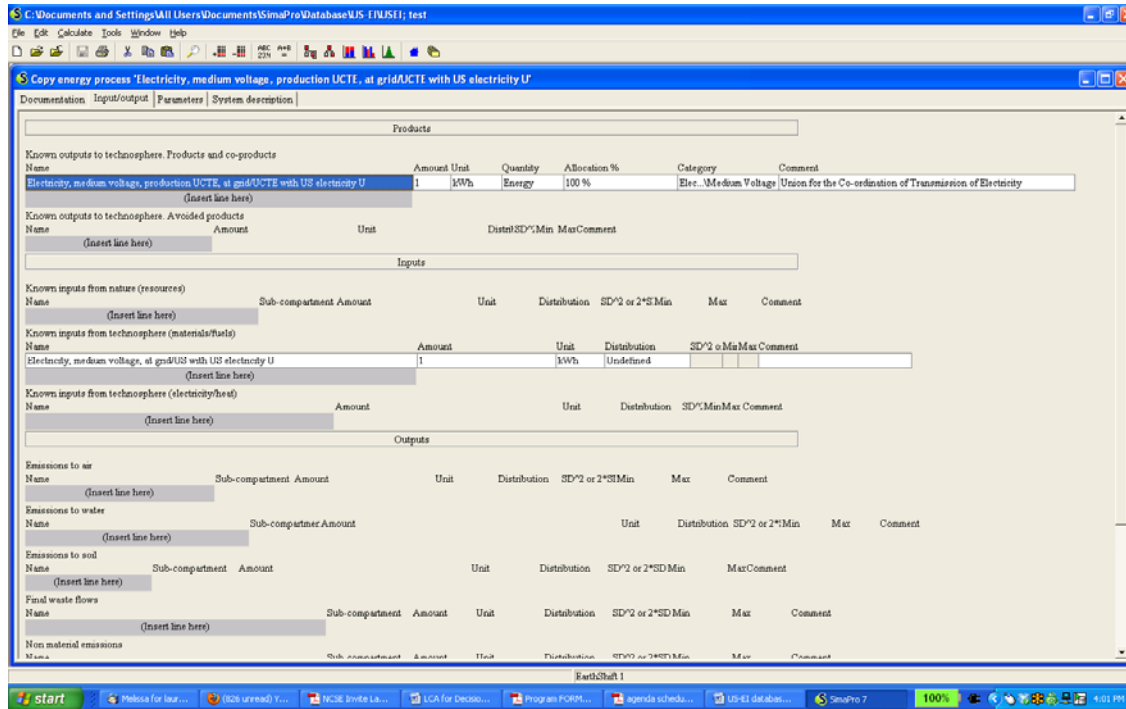


Figure 1: Ecoinvent unit processes have been modified, replacing UCTE electricity with US electricity as appropriate. See figure 2 for the original ecoinvent process.

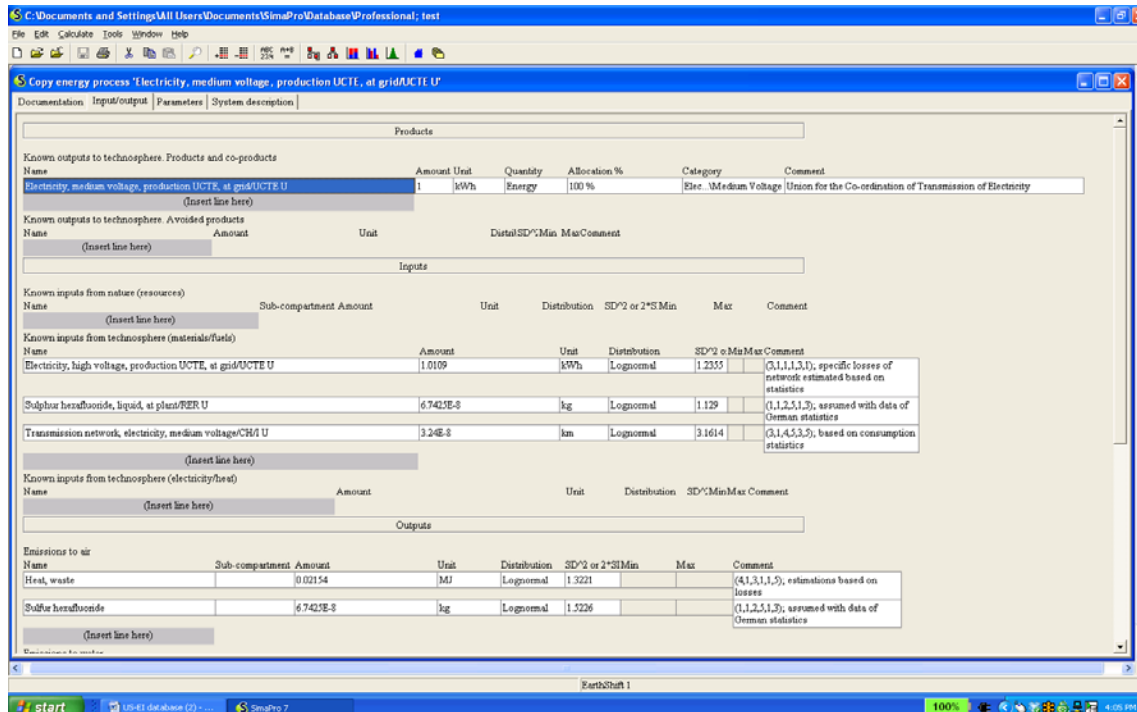


Figure 2: Ecoinvent unit processes which reflect European electrical conditions were modified in the US-EI database to utilize US electricity (see Figure 1).

Figure 3 shows how ecoinvent processes now refer to the modified electricity processes.

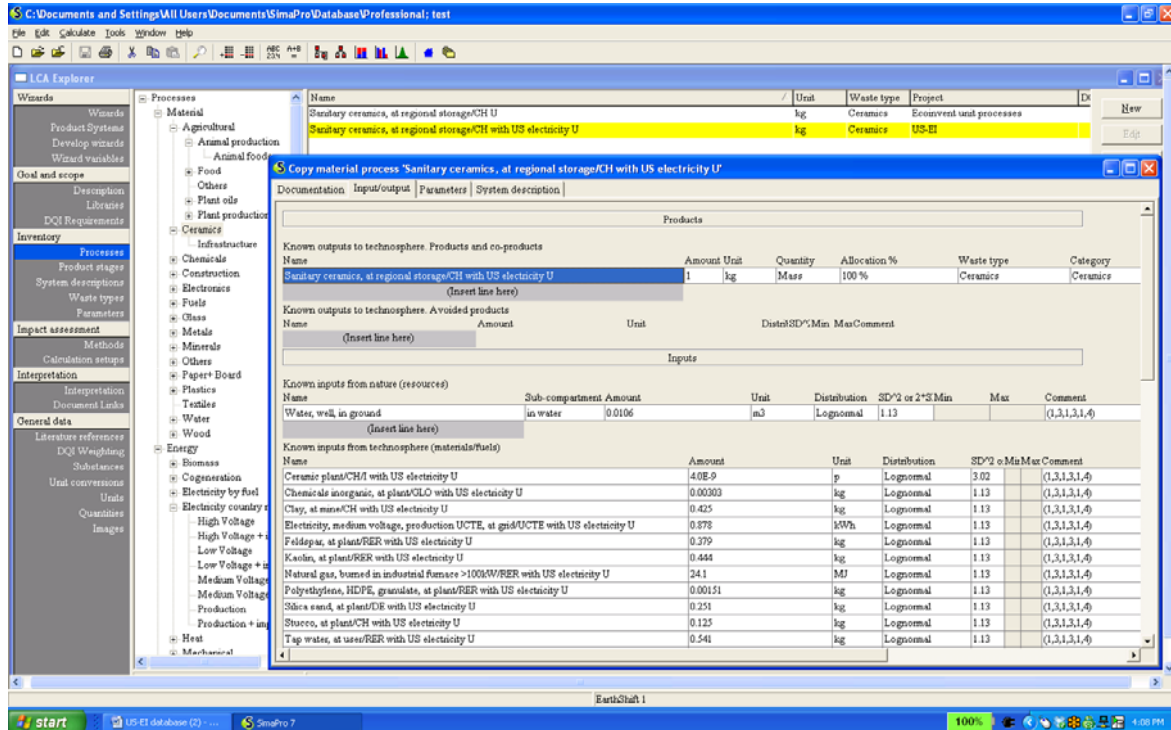


Figure 3: Processes such as sanitary ceramics now refer to the modified UCTE electricity process, in essence changing the European electricity to US electricity. Subprocesses also refer to US electricity.

The following three diagrams illustrate the US LCI modifications:

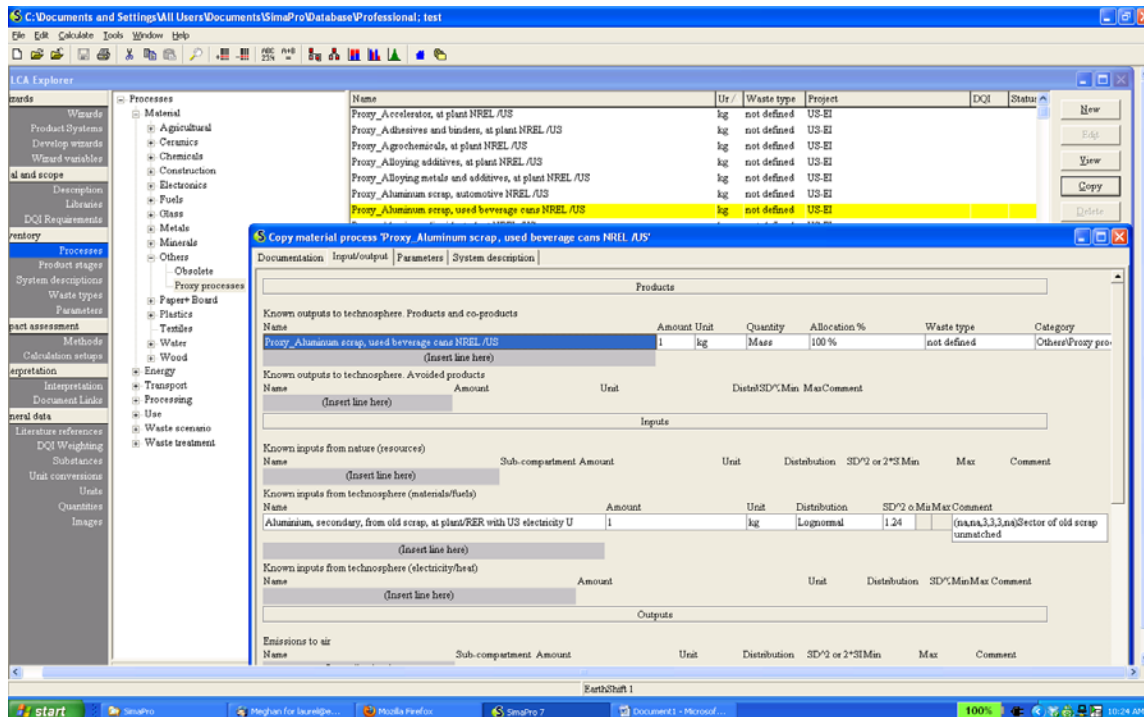


Figure 4: Proxy processes for each dummy processes in the US LCI database were created using relevant ecoinvent processes adapted to the US electrical condition.

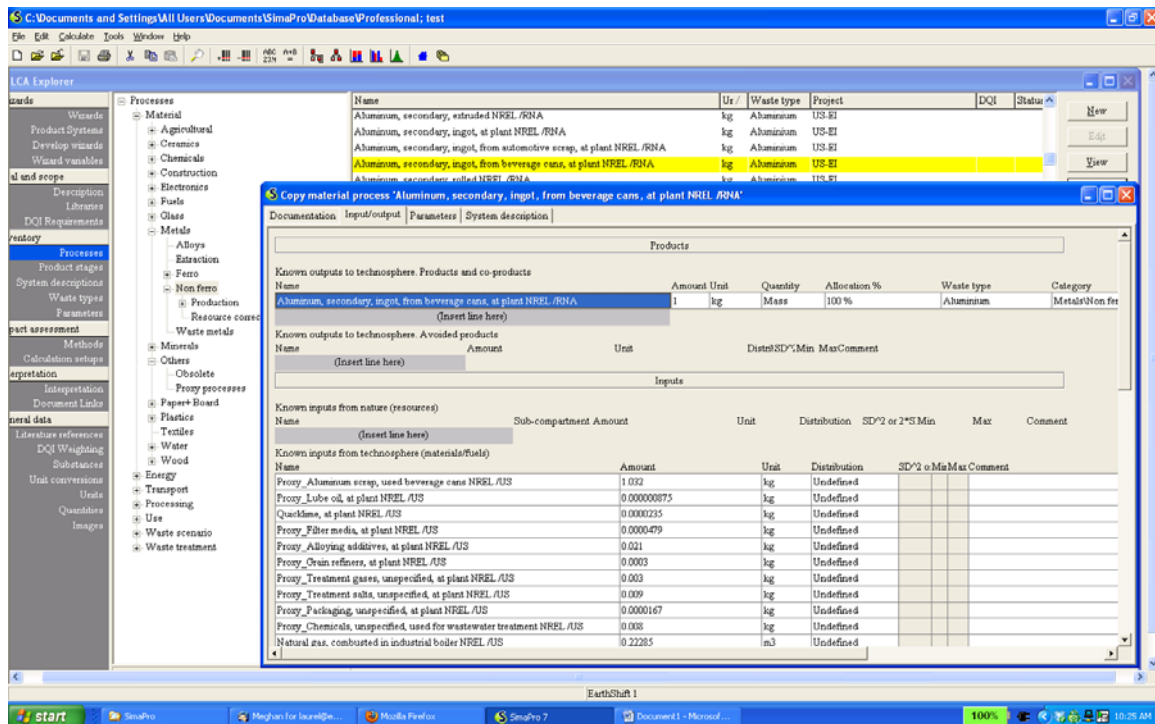


Figure 5: All US LCI processes in the US-EI database will refer to proxy processes rather than empty dummy processes (see Figure 6).

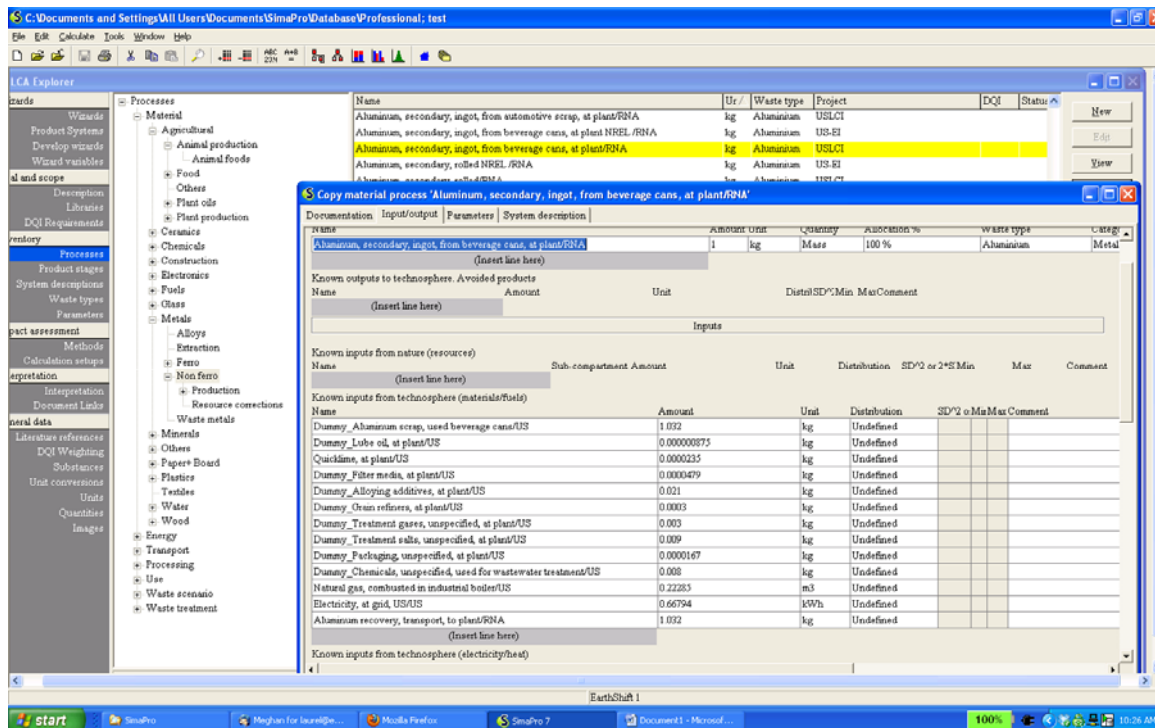


Figure 6: Original US LCI processes referred to dummy processes. These have been changed to proxy processes (see Figure 5).