

# California Energy Balance Database

## Fact Sheet

### The Issue

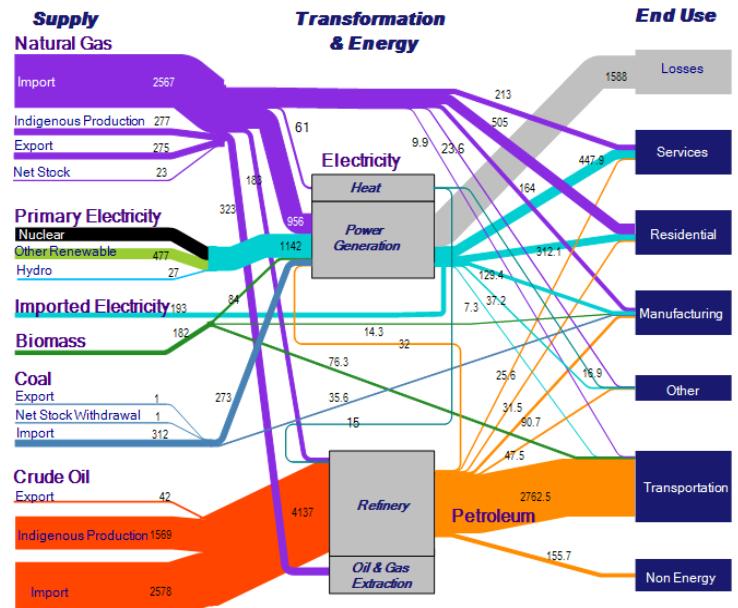
Comprehensive and reliable energy statistics are essential for good policy analysis and for future projections of energy supply and demand. In 2005, Lawrence Berkeley National Lab produced an energy balance for California with a database called California Energy Balance (CALEB). CALEB manages data collected from 1990 to 2003 on energy supply, transformation, and end-use consumption for about 25 energy products.

Due to inconsistencies between the total data and sector-specific data, the CALEB database needed refinement and expansion to improve energy flow estimation. The collected data needed to be analyzed to determine the factors influencing supply and consumption patterns—factors such as fuel prices, changes in type of industries located in California, and increased energy efficiency.

### Project Description

This research project created an updated version of the CALEB database with better coverage of sub-sectoral energy use per commodity. The project's goals were to:

- Produce the most complete and current picture of California energy supply and demand in the greatest detail possible.
- Report energy flows using the new North American Industrial Classification System for the industrial sector.



2008 California Energy Flow Chart (in trillion British thermal units of energy)

Source: de la Rue du Can, S., A. Hasanbeigi, J. Sathaye (Lawrence Berkeley National Laboratory). 2011. California Energy Balance Update and Decomposition Analysis for the Industry and Building Sectors. California Energy Commission Agreement # MRA-02-79.

- Provide more detailed information on fuel consumption in combined heat and power plants.
- Construct energy indicators in the industry, residential, and service sectors by combining energy consumption with their driving factors to determine the reasons for the observed changes.

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## **PIER Program Objectives and Anticipated Benefits for California**

This research provides improved knowledge of how structural changes and energy efficiency have affected energy use over the past 10 years. All of this information translates into improved knowledge on energy use, energy supply and demand, and air quality emissions. This information can be used to improve energy sourcing to California residents, including more environmentally sustainable sources, lower costs to consumers, and lower air pollution emissions.

This information will help determine the potential of, and appropriate design for, greenhouse gas trading markets in California. Because of the inclusiveness and reliability of this database, the California Energy Commission and the California Air Resources Board have used the CALEB data to estimate carbon dioxide emissions in California.

The development of an energy balance is an ongoing quest for the highest-quality data at the most disaggregated level. Many countries use indices of energy efficiency performance for monitoring purposes, and, increasingly, as a basis for policy making. These indices are based on energy intensity effects calculated at a disaggregated level but that summarize results at more aggregate levels.

The indices provide policy makers with a quick assessment tool based on meaningful analysis. This study's research can serve as the starting point in developing a similar index for California. Ultimately, this index could be used as a performance index to measure progress in overall energy efficiency.

## **Research Results**

This updated version of the database, CALEB v2, provides the most current and complete picture of California energy supply and demand in the greatest detail possible. CALEB v2 manages data from 1990 to 2008 on energy supply, transformation, and end-use consumption for about 40 energy commodities—an increase of about 15 commodities from the previous database. The new version of CALEB v2 contains new products that improve the database's energy accounting accuracy. The research also increased the level of information related to electricity imported to California.

## **Project Specifics**

Agreement Number: MRA-02-79

Recipient: Lawrence Berkeley National Lab

City/County: Berkeley, Alameda County

Application: Statewide

Amount: \$250,000

Term: April 2009 to December 2010

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