Pilot U.S. Physical and Monetary Energy Flow Accounts

Authors Matthew Chambers, Tina Highfill, and Dirk van Duym, U.S. Bureau of Economic Analysis*

Contact Matthew.Chambers@bea.gov

Date February 2026

Abstract This paper presents pilot physical and monetary energy flow accounts (PEFA and MEFA, respectively) for the United States, covering 2012–2022/2023. These pilot accounts integrate existing economic and energy statistics to track energy flows through the economy in accordance with international accounting standards. The PEFA compiles physical flows using data from the U.S. Energy Information Administration (EIA), BEA, and the U.S. Bureau of Transportation Statistics (BTS), while the MEFA isolates energy-related transactions from BEA's detailed supply and use tables. We demonstrate methods for attributing energy use to industries and adjusting transportation source data from a territory basis to a residency basis. A key innovation of this paper is the development of state-level monetary energy supply estimates, allocating national production to all 50 states using BEA regional data and EIA electricity statistics. These experimental estimates represent an early step toward subnational natural resource accounts in the United States. While balanced and nearly comprehensive at the national scale, the accounts remain preliminary, with areas for future research and refinement including the residency adjustment for truck transportation (PEFA), greater industry detail (national MEFA), and both energy use and intra-state trade (state-level MEFA).

Keywords Energy, natural resource accounts, thematic accounts, regional accounts

JEL Code Q4, R1

* We are grateful for insightful comments from Sanjiv Mahajan and attendees at the 2024 IARIW General Conference and two internal BEA seminars. Any errors or omissions are our own.

Bureau of Economic Analysis
U.S. DEPARTMENT OF COMMERCE

1. Introduction

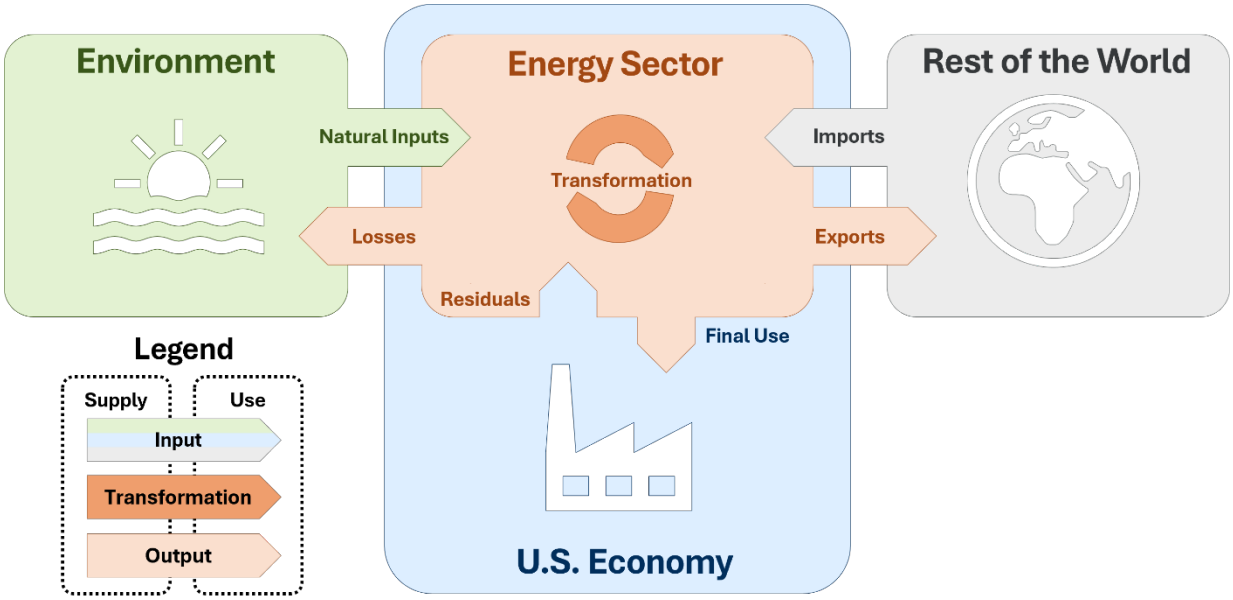
Energy, in its various forms, keeps the economy moving. All economic activity consumes energy; modern economic development has its roots in technological advances that greatly expanded humans' ability to capture, store, and utilize energy. In recent years, debates regarding fossil fuels, nuclear energy, and renewable energy have become central to public discourse and policymaking. Good decision-making hinges on both public and private stakeholders' understanding of how energy flows through the economy and how its use supports industries and households in their economic activity.

Natural resource accounting offers a framework to support this understanding, by placing economic activities in the context of their underlying physical processes such as energy use. In this paper we present pilots of a physical energy flow account (PEFA) and a monetary energy flow account (MEFA) for the United States, together with a supply-side pilot state-level MEFA. We discuss challenges encountered and solutions identified in compiling these pilot accounts. We present summary supply and use tables for national-level physical and monetary energy flows covering 2012–2022 (monetary flow series extends to 2023) and show analytical applications such as state-level decomposition of energy output.

Figure 1 is an abstract diagram showing the major categories of energy flows into, within, and out of the economy; these are the physical processes modeled by the PEFA tables. Energy may enter the economy from nature (renewable or mineral energy resources), the rest of the world (imports of energy products), or the rest of the domestic economy (waste to be used as fuel). Within the economy, energy is transformed, as in electricity generation or petroleum refining. Finally, energy is used by businesses and households in the domestic economy, exported to the rest of the world, and lost to nature (in the form of extraction, transmission and distribution losses). Products in the economy that embody these flows of energy are called **energy products**.[1] The PEFA tracks the energy embodied in these products, while the MEFA tracks them in monetary terms, just as the U.S. Bureau of Economic Analysis (BEA) does for other products in the economy.

1. The list of energy products used to define the monetary energy flow account is given in table A1.

Figure 1. Stylized Diagram of Energy Flows in the U.S. Economy



Following this introduction, section 2 discusses relevant literature and accounting standards as well as other countries' work on energy accounts. Sections 3–5 discuss the data sources and methods used in compiling the pilot national PEFA, national MEFA, and state-level supply-side MEFA, respectively. Section 6 concludes with a discussion of further work and recommended refinements to the accounts.

2. Literature and Standards Review

For this pilot energy account, stakeholders may come from a variety of backgrounds. To set the stage for the rest of this paper, we review the statistical standards relevant to this account, together with existing related U.S. statistics.

The goal of natural resource accounting is to analyze the economy and its use of natural resources together. For this purpose, **statistics** summarize large amounts of data into simpler models for understanding. Internationally accepted statistical **standards** constrain these models so that

statistics will be consistent and comparable across time and between countries. The standards[2] important to the compilation of this pilot energy flow account include the *System of National Accounts* (SNA; United Nations [UN] et al. 2009), for economic accounting; the *System of Environmental-Economic Accounting* (SEEA; UN et al. 2014), for natural resource accounting; and *International Recommendations for Energy Statistics* (IRES; United Nations Statistics Division [UNSD] 2018b), for energy balance statistics.

U.S Resident

An agent whose "[center] of predominant economic interest" is in the U.S. Includes **natural persons** who live within the U.S. (regardless of nationality), **U.S.-registered business entities** (including U.S. subsidiaries of foreign firms), and foreign-owned **quasi-corporations** (entities existing only for accounting purposes) that own or lease U.S. real estate to conduct business for more than one year (SNA 4.15c).

The SNA considers all real estate in a country to be owned by resident entities, whether natural persons, registered business entities, or quasi-corporations created for this purpose.

A. System of National Accounts (SNA)

The SNA is the internationally accepted standard for economic accounting, and underlies statistics such as GDP, output and gross value added. SNA defines the economy of a nation, the agents that make up the economy, and how the goods and services exchanged in the economy are to be valued. The U.S. implementation of SNA, compiled by BEA, includes the National Income and Product Accounts (NIPAs) as well as supply and use tables (SUTs) that are important sources of economic data for both the pilot PEFA and MEFA.

The SNA defines a nation's economy as consisting of all economic agents (households and business establishments) that are **residents** of the nation (SNA 4.1). This definition of the economy contrasts with definitions based on **territory** (physical location within the nation's borders) or **nationality** (the legal nationality of agents may differ from their residency). In practice, for a nation as large as the U.S., residency- and territory-based definitions are very similar. The main difference is in transportation industries, since these are industries which regularly engage in economic activity abroad without owning or leasing property.

2. All promulgated by the United Nations (U.N.). The U.N. *Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications* (UNSD 2018a) also discusses physical supply and use tables in the context of compiling SEEA accounts.

Individual establishments that are engaged in roughly the same type of productive activity are conceptually grouped together into **industries** (SNA 5.46).[3] A given good or service may be produced by many different industries. For example, electricity may be produced by a nuclear power plant or a widget factory with solar panels on the roof. As the widget factory illustrates, an establishment may produce multiple goods or services. Some of these goods and services may be produced for sale in markets, while others may be produced for the establishment's own use. For example, a wholesaler might own and operate a truck to transport goods to purchasers.

Goods and services in the economy are valued, whenever possible, at the price for which they (or similar goods and services) are traded in markets.[4] When such a market price is not available, goods and services are valued at their total cost of production (SNA 6.130). Since energy products are generally traded in markets, this account does not face the challenges in valuation that arise with some other natural resource accounts.

In addition to the primary series of economic accounts, SNA incorporates flexible thematic accounts (also called extended accounts) to allow analysis that would be impossible using only the standard accounts. Such accounts may include a subset of the transactions recorded in the main accounts or may adjust the standard SNA boundaries and definitions. Both theoretically and as implemented in this pilot, the MEFA is an SNA thematic account of the first type (a subset of transactions already in the economic accounts), akin to existing BEA-compiled thematic statistics.

B. System of Environmental-Economic Accounting (SEEA)

SEEA is a companion standard to the SNA, for natural resource and environmental accounting.[5] A primary purpose of SEEA is comparability with the economic accounts. As much as possible, SEEA uses the same boundaries and definitions as the SNA, including the residency-based definition of the economy and the valuation approaches discussed above.

3. In the U.S. these industries are classified according to the North American Industry Classification System (NAICS) and each establishment's primary industry is self-identified.

4. Even if the market price is not a competitive market price.

5. In addition to the primary SEEA manuals, the U.N. Statistics Division has published an application manual (*SEEA-Energy*) giving specific guidance on compiling SEEA-consistent energy accounts.

Unlike SNA accounts, SEEA accounts may measure things outside the economy (such as water, waste, or emissions) and often measure physical quantities in addition to or instead of monetary quantities. Importantly for this pilot energy account, they also treat intra-establishment flows and own-account production by businesses or households differently. The SNA only accounts for these flows under certain circumstances,[6] while SEEA recommends accounting for all intra-establishment and own-account production flows, including those by households. This pilot account, for example, records extensive own-account generation of electricity by both business establishments and households.

Three broad categories of accounts are included in SEEA: flow accounts (physical and monetary), environmental activity thematic accounts, and environmental asset accounts:

- Physical flow accounts measure the flows of materials or substances important to the relationship between the economy and the environment. Most of these flows cross the environmental-economic boundary,[7] but some environmentally important flows within the economy, such as energy products, are also included.
- Monetary flow accounts paralleling the physical flow accounts may be particularly useful when a large portion of the flows in the physical account occur within the economy, as is the case with energy flows.
- Environmental activity accounts measure the value of goods and services produced within the economy that have the purpose of resource management or environmental protection. Like the MEFA, environmental activity accounts are a strict subset of the SNA economic accounts and could be compiled and published as SNA thematic accounts.
- Environmental asset accounts are related to ecosystem accounts,[8] but measure individual environmental assets such as water or timber, rather than the network of relationships between such assets and the ecosystems in which they exist.

6. For example, own-account capital formation or flows related to ancillary activities.

7. Extracted minerals, solar or wind energy used to generate electricity, pollution, etc. Flows occurring fully within the environment are specifically excluded (SEEA 3.23).

8. Covered by *SEEA Ecosystem Accounts* (SEEA-EA), a companion to SEEA and the SNA. Chapters 1–7 of SEEA-EA (but not chapters 8–14) were adopted as a statistical standard by the UN Statistics Commission (United Nations Statistical Commission 2021).

C. International Recommendations for Energy Statistics (IRES)

The IRES are the international standard for energy balance statistics. There are two major differences between IRES-consistent energy balances and SEEA-consistent energy accounts. First, energy balances are based on territory, whereas SEEA energy accounts are based on residency. Second, energy balances are organized around types of energy use activities or purposes, while energy accounts are organized around the same industries that are found in the economic accounts. Additionally, there are differences in the definition of some terms and in the presentation of the compiled statistics. The U.S. does not currently publish IRES-consistent energy balances.

An important component of IRES is the *Standard International Energy Product Classification* (SIEC). This classification is also used in SEEA-Energy to classify energy products, which make up most flows in the energy account other than some inputs from nature (such as solar energy) or the rest of the economy (such as waste for incineration).

D. Existing U.S. Energy Statistics

The Energy Information Administration (EIA) conducts surveys and compiles statistics on energy production and use throughout the U.S. economy. These detailed statistics are the primary data source for the pilot PEFA. These diverge from SEEA energy accounting because they are territory rather than residency based and are **not** generally organized by industry.[9] Addressing these two points of departure is the primary task in compiling the pilot PEFA.

3. Physical Energy Flow Account

A. Data

The primary data sources for the pilot PEFA are from EIA: the *Monthly Energy Review* (MER; EIA 2025), *Petroleum Supply Annual* (PSA; EIA 2024b) and Form 923 survey data on electric generating units (EIA-923; EIA 2024a). Secondary data sources are needed to disaggregate energy flows reported only at an aggregate level in the primary data sources. These secondary data sources include BEA's published SUTs (BEA 2024c) and detailed stock estimates of fixed assets and

9. With a few exceptions; for instance, EIA publishes microdata on electric generating units that includes industry (NAICS) codes for the establishments where they are located.

consumer durable goods (BEA 2024b), and the Bureau of Transportation Statistics (BTS) *Transportation Satellite Accounts* (BTS 2024b) and *National Transportation Statistics* (BTS 2024a).

i. EIA Monthly Energy Review (MER)

The MER is one of EIA's flagship statistical products. It is published monthly, as the name suggests, and includes several tables with data on energy production, transformation, consumption and trade within U.S. territory. Source data are drawn from several EIA surveys and models. Historical data are re-estimated when methodological or data source changes are made, so the MER is an internally consistent time series of energy statistics.

MER data are organized by type of energy product (petroleum, electricity, renewable energy, etc.) and are most detailed for the initial stages of energy production: the extraction of petroleum/natural gas or the generation of electricity. For example, the final use of energy is divided into just four "sectors": **industrial**, **commercial**, **transportation**, and **residential**. Attributing the energy flows reported for these sectors to the industries they consist of is one of the major tasks in compiling the pilot PEFA.

Statistics in the MER are reported in a variety of different units, depending on the energy product in question. These may be units of mass (short tons of coal), volume (cubic feet of natural gas, barrels of petroleum, etc.), or energy/heat content (British thermal units or megawatt-hours).[10] For accounting purposes, a single energy unit must be used, to allow for summing across different types of energy products. For this pilot, that unit is petajoules (PJ). Whenever possible, MER data that are already in energy units are used, but when data are only provided in physical units, heat content factors from the MER appendix are used to convert them to energy units.

ii. EIA Petroleum Supply Annual (PSA)

EIA compiles the PSA using data from businesses operating extraction, refining, transportation, or storage establishments for petroleum and petroleum products, received through the Monthly Petroleum Supply Reporting System. The PSA includes detailed, balanced data by product type on

10. EIA uses the gross heat content, or higher heating value, as opposed to the net heat content or lower heating value (more commonly used in Europe) when expressing the energy content of fuels. This carries over into the pilot PEFA. The difference has to do with the water that forms during combustion (from the oxidation of hydrogen). The higher heating value includes the heat energy that vaporizes this water as part of the energy content of the fuel, while the lower heating value does not.

the supply and disposition/use of these products, from extraction all the way to final use by household and businesses. Changes to the classification of a few flows were made starting in 2020–2021, creating a (relatively small) time series break that should be addressed in future research.

iii. EIA Form 923

One of the surveys underlying the MER is EIA's Form 923 survey of electric generating units. EIA also publishes the microdata from this survey, which are used directly in compiling this pilot PEFA. The form 923 microdata are very useful for accounting, as they include every utility-scale generating unit in the U.S., providing NAICS code, type and quantity of fuel used, energy content of fuel used, and quantity of electricity generated each year. This enables relatively easy accounting for both primary electric generation from renewable sources (solar, wind, etc.) and secondary electric generation (using other energy products such as coal or petroleum to generate electricity).

iv. BEA Benchmark Use Table

BEA's benchmark use table provides data on expenditures for energy products used as intermediate inputs by industries, or by households. As discussed below, these data are used for attributing energy flows reported in the MER to the industries that make up the reported sector. This attribution relies on the assumption that different industries face similar prices for a given energy product (as otherwise arbitrage would result). BEA publishes a new benchmark use table every 5 years; this pilot PEFA uses the 2017 benchmark use table, denominated in 2017 dollars.

v. BEA Detailed Fixed Asset and Consumer Durable Goods Tables

BEA publishes detailed estimates of fixed asset stocks, by industry and asset type, together with detailed estimates of consumer durable goods stocks. These data are used for attributing energy flows reported in the MER when there is not a readily associated intermediate input, but there is a type of asset that is closely connected to the energy flow. For example, solar and wind energy generation in the industrial and commercial sectors is attributed using stocks of solar and wind structures from the detailed fixed asset table. Similarly, passenger car[11] and light truck stocks from

11. Unfortunately, at this time, we are not able to separate electric from internal-combustion cars in the fixed asset or consumer durable goods tables. We defer this question for future research.

the detailed consumer durable goods table and detailed fixed asset table are used to attribute energy use by light vehicles across industries and households. These data are available annually.

vi. BTS Transportation Satellite Accounts

Transportation activities are a major category of energy use in the economy. While most commercial transportation services are produced by the various transportation industries (air, water, road, rail, and pipeline), a significant percentage, especially in road transportation, are produced by businesses in other industries for their own use. The energy used in producing these "own account" transportation services should be attributed to the industry producing them, not to the transportation industry associated with the mode of transportation. Fortunately, the TSAs are produced annually by BTS specifically for the purpose of estimating the value of own account transportation services produced by industries. The TSAs are used in the pilot PEFA to attribute energy flows in the transportation sector to the industries that produce these flows, in proportion to their contribution to the total output of transportation services (transportation industry output plus the total value of own account transportation services produced).

vii. BTS National Transportation Statistics (NTS)

The NTS is one of BTS's flagship statistical reports, containing data on every aspect of the U.S. transportation system, from statistics on road networks, maintenance status, and safety record to environmental impacts and economic performance. For this pilot PEFA, it is the NTS statistics on energy use by mode of transportation that are most valuable. These statistics break down each of the main modes of transportation (air, water, road, etc.) to provide a detailed picture of transportation energy use. For example, air transportation is broken down into certificated air carriers, general aviation using jet fuel, and general aviation using aviation gasoline; and road transportation is broken down by size of vehicle (for highway travel) and fuel type (for mass transit). These data are published annually.

B. Methods

i. Industry Attribution

Many energy flows in the MER, especially final uses of energy, are attributed to one of a few sectors: industrial, commercial, residential, transportation, or electric power. While the residential and electric power sectors have a mostly straightforward correspondence with BEA industries and institutional sectors (households and the electric generation industry, respectively), the industrial and commercial sectors each consist of many industries, united more by their general energy use

profile than by anything else. Attributing these flows to the industries that make up the MER sectors is done proportionally, using other proxy measures of energy use, such as expenditures on energy products or stocks of related fixed assets. For example, electricity use by the "Commercial Sector" is attributed to the industries in that sector in proportion to their expenditures on electricity, as found in the BEA use table.[12] Identifying appropriate proxy measures is one of the primary tasks in compiling the PEFA and is an area for continued research and refinement.

ii. Residency Adjustments

The primary source data for the pilot PEFA are compiled on a territory basis, meaning that they include energy flows that occur within U.S. territory; the residency of the economic agents involved is not considered. The necessary conceptual adjustment from territory-based statistics to residency-based accounts includes three steps:

1. Reclassify the use of flows to nonresidents on U.S. soil from consumption by industry to exports.
2. Add flows to U.S. residents abroad to the account as a use by the appropriate industry.
3. Add the flows from step 2 into the account on the supply side as imports.

We assume that the residency adjustment is trivial for the household sector due to the size of the U.S. economy relative to the number of non-resident households. We likewise assume that the residency adjustment is negligible for non-transportation industries due to the way that foreign holdings of real property such as land or factories are accounted for under the SNA. For transportation industries, however, the residency adjustment may be substantial. We outline this pilot's approach to adjusting different transportation industries from territory basis to residency basis. Currently, we have identified strategies for adjusting air and water transportation energy use from territory to residency basis, and we consider an adjustment unnecessary for rail and pipeline transportation, but we have not identified appropriate data to adjust truck transportation.

Air Transportation: BTS collects and publishes data specifically on fuel consumption by large U.S. carriers for both domestic and international operations. The data on international operations

12. This attribution implicitly assumes that all industries face the same price for electricity.

include fuel loaded on U.S. planes in the U.S. for use on flights to foreign destinations, as well as fuel loaded onto U.S. planes abroad.

To avoid double counting, since the fuel loaded within the United States is already included in MER data, we assume that, since what flies out must fly back, one half of the fuel used by U.S. planes in international operations is fuel loaded in the United States and the other half is fuel loaded abroad. So, one half of the fuel BTS reports U.S. carriers using for international flights is added to both supply (imports; step 3, above) and use (air transportation industry, assuming that international flights are by certificated carriers; step 2, above).

For step 1 (reassigning fuel loaded on foreign planes in the United States from industry use to exports), we observe from the BTS *Transportation Statistical Annual Report 2024*, table 1-3, that enplanements on international flights by U.S. carriers are similar in number to enplanements on international flights by international carriers (BTS 2024). We therefore assume that, on average, foreign planes load the same amount of fuel in the United States as U.S. planes load before departing for international flights. So, one half of the fuel BTS reports U.S. carriers using for international flights is subtracted from use by the air transportation industry and added to exports.

Water Transportation: For water transportation, the residency adjustment is most relevant in the case of marine shipping. Lacking data on fuel **consumption** by U.S. marine carriers (like BTS publishes for air carriers), we use unpublished BEA data on fuel **expenditures** by foreign carriers in the U.S. and U.S. carriers abroad. We divide these expenditures by the world average price of bunker fuel (Ship & Bunker 2024) to obtain an estimate of the flows of energy to foreign residents (exports, step 1) and to U.S. residents (use by industries, step 2, and supply via imports, step 3) needed for the residency adjustment.

Truck Transportation: We have not been able to identify and acquire data on fuel consumption, fuel expenditures, or vehicle use for U.S. trucks operating abroad (Canada and Mexico) or foreign (Canadian or Mexican) trucks operating in the U.S. Consequently, we do not make a residency adjustment in the pilot PEFA for truck transportation, leaving it as an important area for future research.

Rail and Pipeline Transportation: Because rail and pipeline operators own (or have long-term leases) on the land and fixed assets that make up the railroad or pipeline,[13] we consider all operations in the rest of the world to be conducted by foreign residents and all operations in U.S. territory to be conducted by U.S. residents (U.S. businesses, U.S. subsidiaries of foreign multinational enterprises, or U.S. quasi-corporations). Therefore, no residency adjustment is needed for these industries.

C. Results

Aggregated PEFA supply and use tables for 2022 are given in tables 1 and 2, respectively, with more detailed tables covering 2012–2022 in the appendix. Supply tables like table 1 show how much of each commodity-like item (represented as rows in the table; in this case, these items are energy inputs and energy products) is produced or extracted by industries and households (represented by columns in the table). The PEFA measures these flows in energy units (petajoules) while the MEFA measures their monetary value in dollars. The use table shows how much of these items are used by industries and households. The PEFA use table differentiates between end consumption by industries (energy used up in the production of non-energy processes) and transformation use, in which an industry takes in an energy product and transforms it into other energy products (for example, crude oil being transformed into kerosene, gasoline, diesel, asphalt, and so on). An important accounting identity is that for each item, total quantity supplied must equal total quantity demanded, whether in dollar terms or energy terms.

Special categories of flows in the supply and use tables include **transformation losses**, **distribution losses**, and **accumulation**. Transformation losses arise from inefficiencies in energy transformation processes. For example, the energy content of fuel consumed to generate electricity is significantly greater than the energy content of the generated electricity. Similarly, inefficiencies in distributing energy products result in distribution losses. Stored energy products are accumulations, as are waste products (waste coal or municipal solid waste) that are used as energy sources. These flows are reflected in both the supply and use tables.

13. See section 2.A for a discussion of the relevant SNA principles.

Table 1. National physical supply of energy in petajoules (PJ), 2022.

Physical supply of energy Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										12,600	**12,600**
Natural gas										39,628	**39,628**
Crude oil										26,995	**26,995**
Natural gas liquids										676	**676**
Oil products										6,937	**6,937**
Solid biofuels										2,399	**2,399**
Nuclear										50	**50**
Renewable energy inputs											
Solar energy										806	**806**
Hydroelectric energy										917	**917**
Wind energy										1,563	**1,563**
Geothermal energy										125	**125**
Other natural inputs											
Liquid biofuels										1,786	**1,786**
Total energy from natural inputs										*94,483*	***94,483***
Energy products											
Production of energy products											
Coal		12,706							143		**12,849**
Natural gas		39,628	80						3,270		**42,978**
Crude oil		27,549							15,913		**43,462**
Natural gas liquids		676	382						23		**1,081**
Oil products		6,937	39,394						3,590		**49,922**
Liquid biofuels			1,786						77		**1,863**
Solid biofuels	2,399		2,399								**4,797**
Electricity	317	10	139	14,680	15	147	142		205		**15,656**
Heat	708	22	310	223	5	140					**1,409**
Nuclear		50	8,505						8,455		**17,010**
Total energy products	*3,424*	*87,579*	*52,995*	*14,903*	*20*	*287*	*142*		*31,677*		***191,028***
Energy residuals											
Distribution losses	25	63	250	390	148	363	367				**1,605**
Transformation losses	857	27	376	20,045	27	306					**21,639**
Total energy residuals	*882*	*90*	*626*	*20,435*	*176*	*669*	*367*				***23,244***
Other residual flows											
Residuals from non-energy uses	241	177	752		137	635					**1,941**
Coal								106			**106**
Municipal waste								870			**870**
Total other residual flows	*241*	*177*	*752*		*137*	*635*		*976*			***2,917***
Total supply	**4,546**	**87,846**	**54,372**	**35,339**	**333**	**1,591**	**509**	**976**	**31,677**	**94,483**	**311,672**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table 2. National physical use of energy in petajoules (PJ), 2022.

Physical use of energy Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		39,628									**39,628**
Natural gas liquids		676									**676**
Solid biofuels	2,399										**2,399**
Renewable energy inputs											
Hydroelectric energy				917							**917**
Geothermal energy	1	1	13	58	1	25	26				**125**
Liquid biofuels			1,786								**1,786**
Transformation of energy products											
Natural gas				13,373							**13,373**
Natural gas liquids			349								**349**
Liquid biofuels			1,346								**1,346**
Nuclear			8,505	8,505							**17,010**
Total transformation use			*50,521*	*31,894*							***82,415***
End-use of energy products											
Coal	40	277	784		0	16		-25	2,208		**3,300**
Natural gas	1,282	422	9,639		1,920	3,779	5,517	-306	7,352		**29,605**
Crude oil								-1,270	8,484		**7,214**
Natural gas liquids		6	399			0		21	306		**733**
Oil products	449	595	5,589	35	10,077	10,160	8,284	-10	10,488		**45,667**
Liquid biofuels	6	4	17	7	45	93	140	12	194		**517**
Solid biofuels			1,493		2	75	474		146		**2,190**
Electricity	172	345	2,963	48	146	5,866	6,057		60		**15,656**
Heat	839	27	368	4	6	166					**1,409**
End-use for non-energy purposes	241	177	752		137	635		14	367		**2,323**
Total end use	*3,028*	*1,853*	*22,003*	*94*	*12,332*	*20,790*	*20,473*	*-1,564*	*29,605*		***108,613***
Energy residuals											
Distribution losses										1,605	**1,605**
Transformation losses										21,639	**21,639**
Total energy residual use										*23,244*	***23,244***
Residual inputs											
Residuals from non-energy uses										1,941	**1,941**
Coal		106									**106**
Municipal waste	45	33	141	373	37	240					**870**
Total residual input energy use	*45*	*139*	*141*	*373*	*37*	*240*					***2,917***
Total use	**5,487**	**88,881**	**74,464**	**35,421**	**12,377**	**21,106**	**20,709**	**-1,564**	**29,605**	**25,185**	**311,672**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

4. Monetary Energy Flow Account

A. Data

The primary data source for the pilot MEFA is detailed unpublished data from BEA's SUTs for 2012–2023. These SUTs data decompose industry output for the entire U.S. economy into more than 5,300 distinct product categories. The fine product-level detail of these data provide insight into the internal workings of the U.S. economy by detailing the contribution of specific industries and commodities to gross output and value added.

B. Methods

To construct the pilot MEFA, we identify and isolate the production of, and spending on, energy products that are already present in the SUTs. These pilot estimates are akin to existing BEA thematic statistics that isolate production of a specialized area of the economy, such as the digital economy, the outdoor recreation economy, and the space economy. Thematic accounts are particularly useful to understand economic activity that is not easily identifiable under the standard NAICS industry classification or for activity that is spread across multiple NAICS industries. BEA's thematic statistics typically do not include full SUTs, however, so these pilot energy account estimates go a step further by showing this additional detail. While a common thematic account will often consist of estimates of gross output and value added by industry, the MEFA provides these estimates plus additional detail on intermediate inputs, exports, imports, and taxes.

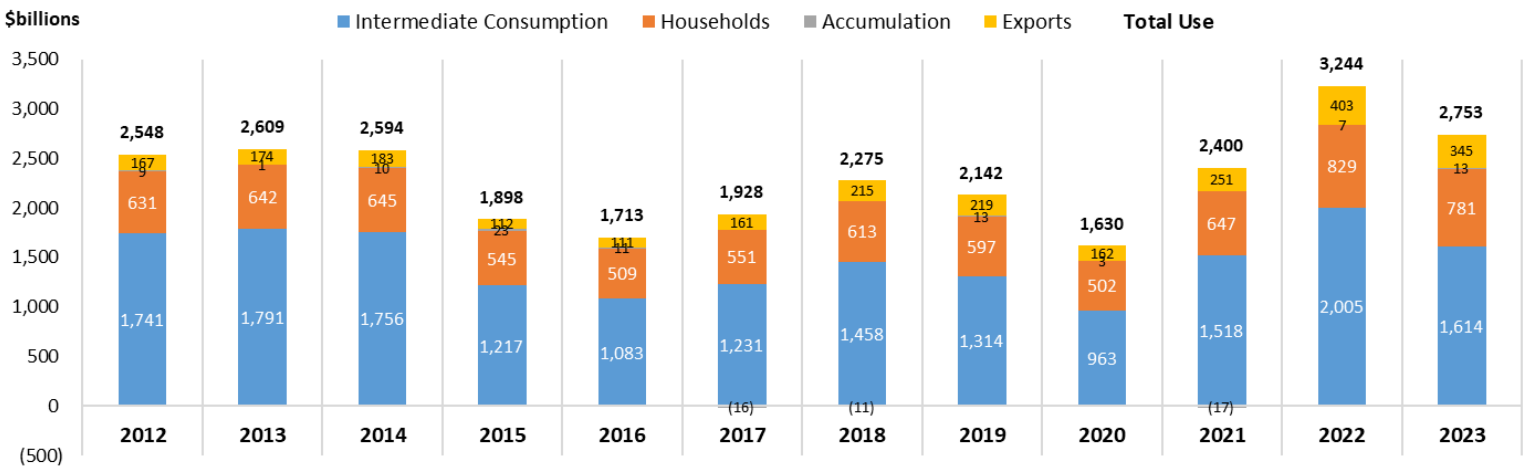
The products included in the MEFA are listed by SEEA category in Appendix Table 1. We also indicate in the table whether the product is considered an energy product. We used the SEEA Energy manual (UNSD 2019) as a guide to decide which product categories to include. The only notable divergence relates to the "accumulations" category, which SEEA defines as only changes in inventories because the use of energy products is not considered capital formation. However, in BEA's SUTs, the product category "Uranium-Radium-Vanadium Ore" is considered investment because it fits the defining characteristic of being an asset. Specifically, this type of ore is used repeatedly or continuously in the production of other goods and services for more than 1 year (BEA 2024a). Therefore, the accumulations column in our MEFA represents changes in inventories plus investment.

Product categories that included both energy and non-energy products were excluded from the pilot estimates. These categories included sewage treatment facilities and government sewerage systems that produce biogas (partial overlap with SIEC waste category), and manufacturing of wood chips and reconstituted wood products used for energy (partial overlap with SIEC biofuels category). Excluding these categories means we are undercounting the supply and use of energy products, though we do not believe these products represent a significant portion of the total. For example, the consulting firm Maximize Market Research (2024) estimated the total **global** revenue for wood chips was $8.2 billion in 2023 across all uses, including mulch and barbecue products. This suggests the U.S. revenue for wood chips used for electricity is at most in the low billions of dollars, equating to less than 1 percent of total energy use.

C. Results

Figure 2 shows total use (and supply) of energy products grew from $2.6 trillion in 2012 to $2.8 trillion in 2023 in nominal terms, representing 5.7 percent of total U.S. output in 2023. Output did not grow consistently over the 12-year time series, instead fluctuating from a low of $1.6 trillion in 2020 to a high of $3.2 trillion in 2022. Figure 3 shows the share of total U.S. output attributable to energy products declined on average over the period, ranging from a high of 8.7 percent in 2012 to a low of 4.4 percent in 2020. Tables 3 and 4 show total supply and use of energy products for 2022; full MEFA tables for 2012–2023 are in the appendix. Oil products represented the largest SEEA category for all 12 years, averaging 42.6 percent of total supply and use over the period (shares

Figure 2. Use of Energy Products by Consumption Category

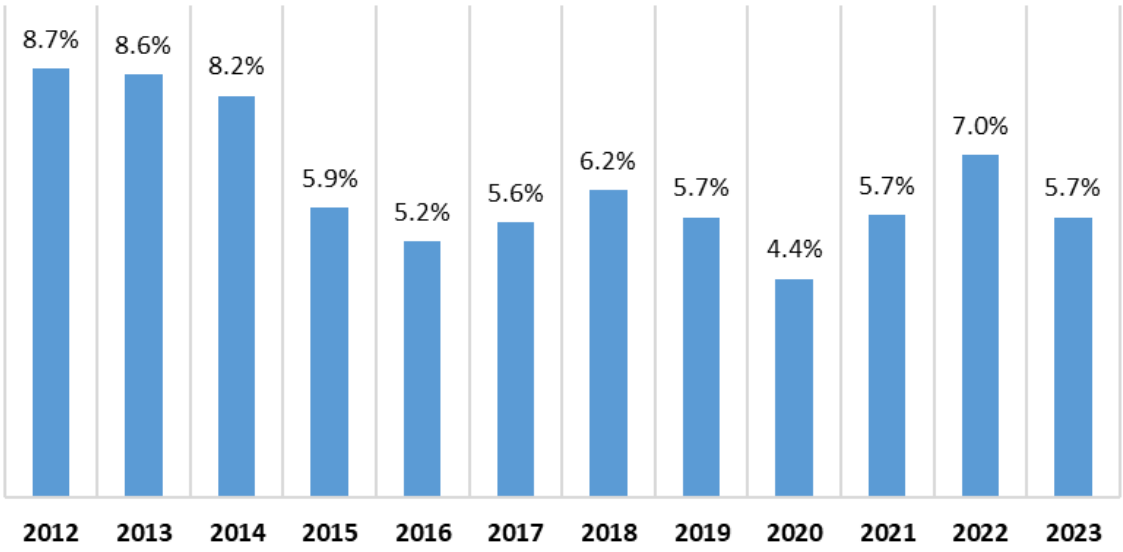


were mostly consistent each year). Electricity represented the second largest SEEA category over the study period, averaging 22.2 percent of total supply and use between 2012 and 2023, followed closely by the oil extracted category (18.6 percent). The oil products, electricity, and oil extracted categories combined represented 83.9 percent of the total supply and use of energy products in 2023.

In 2023, domestic supply represented 70.5 percent of total supply, followed by trade and transport margins (17.6 percent), imports (9.8 percent), and commodity taxes (2.0 percent). In terms of use, intermediate consumption represented the largest share among consumption categories at 58.6 percent in 2023, lower than the 12-year average of 63.7 percent. Households consumed 28.4 percent of energy products in 2023, followed by exports (12.5 percent) and accumulation (0.5 percent). The U.S. became a net exporter of energy products for the first time during the 12-year study period in 2019 when exports exceeded imports by $2.8 billion—this value grew to $74.9 billion by 2023.

The full MEFA tables in the appendix show that almost all the domestic supply of energy products in 2023 were produced by three industry categories: manufacturing (40.8 percent); electricity, gas, steam, and AC supply (35.3 percent); and mining and quarrying (23.8 percent). Oil (oil products) represented 88.4 percent of supply within the manufacturing industry. Electricity was the largest contributor within the electricity, gas, steam, and AC supply industries category, representing 81.4 percent of the total. Production within the mining and quarrying industries category was somewhat

Figure 3. Supply of Energy Products as a Share of Total U.S. Output



Monetary supply of energy products 2023 Millions of $	Production and distribution						Rest of the world	Total	Commodity	Trade and transport	Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports	(basic prices)	taxes	margins	(purchaser's prices)
Energy products											
Coal		$ 32,846					$ 467	**$ 33,313**	$ 1,658	$ 14,712	**$ 49,682**
Coal products			$ 3,650				$ 103	**$ 3,752**		$ 313	**$ 4,065**
Natural gas (distributed)				$ 126,350	$ 232			**$ 126,582**	$ 7,416		**$ 133,997**
Natural gas (extracted)		$ 73,741	$ 1			$ 326	$ 9,195	**$ 83,263**		$ 43,618	**$ 126,881**
Crude oil		$ 311,974		$ 133			$ 166,667	**$ 478,773**	$ 18,956	$ 51,527	**$ 549,256**
Oil products		$ 43,263	$ 701,369				$ 78,647	**$ 823,280**	$ 318	$ 347,937	**$ 1,171,535**
Biofuels			$ 18,670				$ 788	**$ 19,458**		$ 3,390	**$ 22,848**
Electricity		$ 19		$ 558,180			$ 3,768	**$ 561,967**	$ 27,698	$ 66	**$ 589,731**
Heat				$ 1,069				**$ 1,069**	$ 30		**$ 1,099**
Energy products for non-energy uses		$ 1	$ 69,580				$ 10,429	**$ 80,010**		$ 23,103	**$ 103,113**
Pipeline transportation**					$ 578			**$ 578**	$ 81		**$ 659**
Total supply		**$ 461,843**	**$ 793,269**	**$ 685,732**	**$ 810**	**$ 326**	**$ 270,065**	**$ 2,212,045**	**$ 56,156**	**$ 484,665**	**$ 2,752,867**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table 4. National monetary use of energy in millions of $ (purchaser's prices), 2023.

Monetary use of energy products 2023 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate			Rest of the world	
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	consumption	Households	Accumulation	Exports	Total use
Energy products											
Coal	$ 372	$ 1,789	$ 8,523	$ 8,386	$ 2	$ 15,037	**$ 34,109**	$ 94	$ 333	$ 15,146	**$ 49,682**
Coal products		$ 335	$ 1,902			$ 1,238	**$ 3,475**		$ 11	$ 579	**$ 4,065**
Natural gas (distributed)	$ 1,933	$ 947	$ 15,445	$ 724	$ 4,909	$ 41,087	**$ 65,045**	$ 68,368		$ 585	**$ 133,997**
Natural gas (extracted)		$ 19,918	$ 13,947	$ 29,600	$ 1	$ 21,145	**$ 84,612**		$ 2,121	$ 40,148	**$ 126,881**
Crude oil		$ 11,294	$ 422,996	$ 8	$ 535	$ 3,245	**$ 438,078**		$ 1,619	$ 109,560	**$ 549,256**
Oil products	$ 10,376	$ 10,779	$ 86,147	$ 24,409	$ 129,704	$ 273,569	**$ 534,983**	$ 459,103	$ 8,623	$ 168,825	**$ 1,171,535**
Biofuels		$ 2	$ 8,235	$ 252	$ 18	$ 13,324	**$ 21,831**	$ 349	$ 13	$ 654	**$ 22,848**
Electricity	$ 3,007	$ 10,849	$ 59,295	$ 32,123	$ 9,707	$ 231,469	**$ 346,451**	$ 239,400	$ 170	$ 3,710	**$ 589,731**
Heat			$ 71	$ 86	$ 10	$ 916	**$ 1,084**	$ 16			**$ 1,099**
Non-energy uses of energy products	$ 103	$ 7,442	$ 52,328	$ 6	$ 328	$ 23,483	**$ 83,691**	$ 13,325	$ 585	$ 5,512	**$ 103,113**
Pipeline transportation**		$ 392					**$ 392**			$ 267	**$ 659**
Total supply	**$ 15,792**	**$ 63,747**	**$ 668,889**	**$ 95,594**	**$ 145,215**	**$ 624,513**	**$ 1,613,750**	**$ 780,654**	**$ 13,475**	**$ 344,987**	**$ 2,752,867**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

less concentrated, with 67.5 percent attributable to oil extracted, 16.0 percent to natural gas (extracted), and 9.4 percent to oil (oil products).

Manufacturing was the biggest industry user of energy, representing 41.4 percent of intermediate consumption in 2023. Almost two-thirds (63.2 percent) of the energy used by the manufacturing industry was attributable to oil extracted. The "other industries" category represented the second largest industry user of energy at 38.7 percent of intermediate consumption, dominated by use of oil products and electricity.

A natural extension of the MEFA and PEFAs is to determine an average price per energy unit by dividing the monetary values by the physical values. Table 5 shows the average price of natural gas in basic prices and producer prices for 2017 through 2023 using the MEFA and PEFAs. The average purchaser price ranged from $2.3 million/PJ in 2020 to $5.0 million/PJ in 2022. As a validation check, we also include average prices from EIA covering the electric power sector and citygate (the price at which gas is transferred from producers/long-distance transmission pipelines to distributors). Average prices for MEFA/PEFA in purchaser prices are mostly very close to the EIA electric power sector data over the period. Figure 4 shows the annual change in prices for the four data series, illustrating that growth rates are also similar across the different sources.

Figure 4. Change in Average Price for Natural Gas (%)

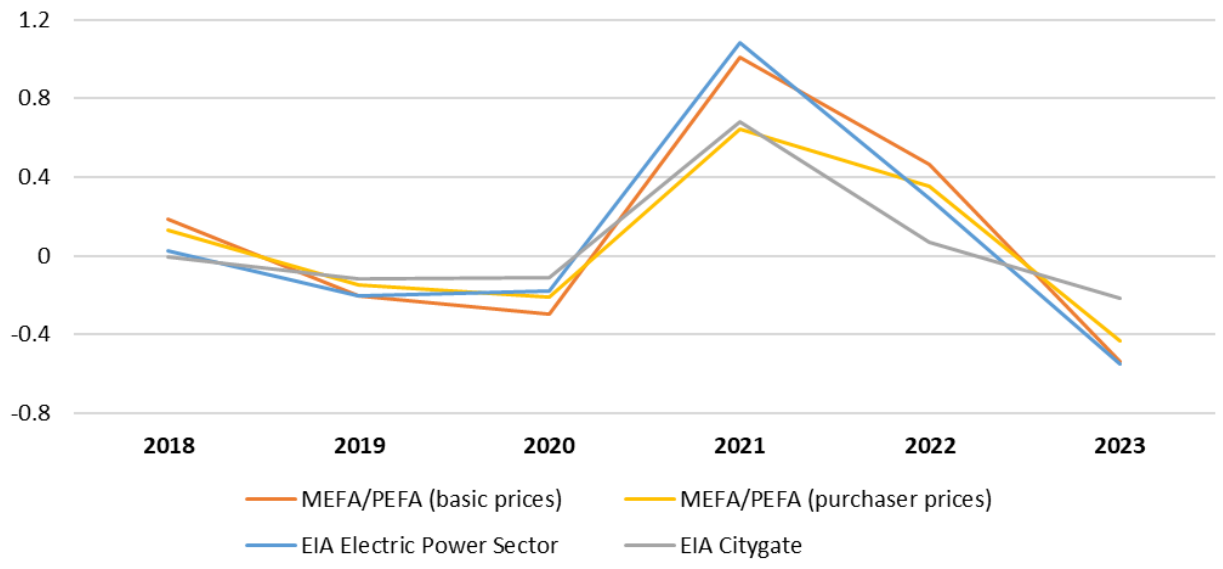


Table 5. Average Prices ($ million/PJ) for Natural Gas Using Different Sources

Year	MEFA/PEFA (basic prices)	MEFA/PEFA (purchaser prices)	EIA electric power sector	EIA citygate
2017	2.1	3.0	3.2	3.8
2018	2.5	3.4	3.3	3.8
2019	2.0	2.9	2.6	3.3
2020	1.4	2.3	2.2	3.0
2021	2.8	3.7	4.5	5.0
2022	4.0	5.0	5.8	5.3
2023	1.9	2.8	2.6	4.2

5. State-Level Monetary Energy Flow Account

In this section, we present a state-level version of the monetary energy flows account. There are many challenges to doing this work at a regional level. After discussing some of these issues and outlining the methodology, pilot results are presented and compared to each state's overall economy, as measured by state GDP.

The methodology for the national-level monetary energy flows account, discussed in detail above, relies on BEA's full input-output accounts. For a complete state-level monetary energy flows account, state-level input-output accounts are required. While BEA is undertaking research in this direction, these accounts are currently not available.

This pilot attempts to estimate the domestic supply of energy by state. Domestic use by state will be left for the future, as the source data and assumptions required make it more of a challenge.

A. Data and Methods

We start from the detailed national-level industry-by-commodity level data from the database underlying BEA's input-output accounts. We exclude imports since they are not produced in a state. Thus, the state-level results will sum to "Total supply at purchaser's prices," (the right-most column in the national supply table) less the imports column. We do include taxes and margins, as they can reasonably be attributed to particular states.

Now that we have defined the scope of what we are measuring at the state level, the rest of the methodology section details how the national values are allocated to states.

In general, there is better state data available about by-industry totals rather than by-commodity totals. The backbone of BEA's Regional Economic Accounts is source data from the quinquennial Economic Census (EC), interpolated and extrapolated with the Quarterly Census of Employment and Wages (QCEW), at the level of 6-digit NAICS industries. To use that data for the purposes of distributing industry-level energy-specific national values, the implicit assumption is that the revenues from the industry's energy production have the same state-by-state distribution as the industry's total revenues. This may not always be true, but it is often the best option.

In other cases, source data might be available with commodity detail, with or without industry detail as well. This is the case specifically for electricity, for which the Energy Information Administration publishes many different data series. In general, the approach of the pilot state monetary supply estimates is to use the commodity-level state allocator data whenever possible, and the EC/QCEW data in all other cases.

One commodity of particular interest in this work is electricity. At the national level, there is underlying detail for electricity generation, electricity distribution, electricity transmission, and electricity marketing and power brokering. To allocate the electricity commodity total to states, we consider the source data available for each constituent piece. Electricity distribution is quite well measured on an annual basis by EIA. Data are available by state on electricity distribution to each EIA-defined end-use sector: residential, commercial, industrial, and transportation. Importantly, these data are in dollars, not just in energy terms, and include both public and private providers. We assume all four of these end-use sectors are supplied by the electricity distribution system and thus use the EIA total by state. The input-output accounts also include detail on the split between public and private provision of electricity generation. We allocate the public total with data from the Census Bureau's Annual Survey of Government Finances on revenues from the provision of electricity distribution. We then allocate the private sector total as the residual between the EIA state total electricity distribution revenues and the Census Bureau state public electricity distribution revenues.

There are also excellent data from EIA on electricity generation. Microdata on net energy production from all utility-scale generators are aggregated to the state level to create a state allocator series. An important issue, however, is that these data are measured in terms of units of energy not in dollars. The wide variation in wholesale electricity prices across the country leads us

to instead use our EC/QCEW data series for electricity generation. We have explored various sources for wholesale electricity prices that could be used to transform the EIA data into revenues, and we hope to include that in future versions. The challenge is obtaining data for states outside of the regional markets known as ISOs or RTOs.

There is little source data available on electricity transmission and power marketing by state. Economic Census data are hard to use here, because the industries that produce these commodities tend to also be major producers of electricity generation and/or distribution as well. So, to construct an allocator series, we take a simple approach of averaging a state's share of electricity generation and its share of electricity distribution (both from EIA). The rationale is that the role of transmission and power marketing is functionally to serve the needs of the users on either end of the lines—no ongoing value is provided to a state through which a transmission line travels.

The EIA generator-level microdata from form 923 is used to allocate the generation activity from federal enterprises, such as the Tennessee Valley Authority and various regional power authorities to particular states.

Commodity taxes are distributed to states in the same proportion as the rest of the activity.

Table 6. Margin Type to NAICS Concordance

Type of margin	NAICS	NAICS description
Retail (gasoline)	4471	Gasoline stations
Retail (non-gasoline)	454310	Fuel dealers
Pipeline (crude)	4861	Pipeline transportation of crude oil
Pipeline (natural gas)	4862	Pipeline transportation of natural gas
Pipeline (other)	486910	Pipeline transportation of refined petroleum products
Wholesale	4247	Petroleum and petroleum products merchant wholesalers
Trucking	484230	Specialized freight (except used goods) trucking, long-distance

Transportation margins and trade margins (both wholesale and retail) are included in the Margins column of the national monetary energy supply table. These items reflect the economic activity of for example, the pipeline transportation of crude oil, followed by the wholesaling and retailing of motor gasoline. Since each of these processes can take place in a different geography, it doesn't work to use the same approach as taxes above where the activity is allocated along with the production itself.

Instead, we develop a concordance between the margin items and NAICS industries. For example, retail margins on motor gasoline are allocated using the EC/QCEW distribution for NAICS 4471 (gasoline stations). The concordance is shown below in Table 6. There are two special cases: air transportation margins (quite small overall) are distributed to Alaska, the only state where energy products are flown, while rail transportation margins are allocated to states using BEA's published data on the rail transportation industry's GDP by state, since the Economic Census does not cover the rail transportation industry.

B. Results

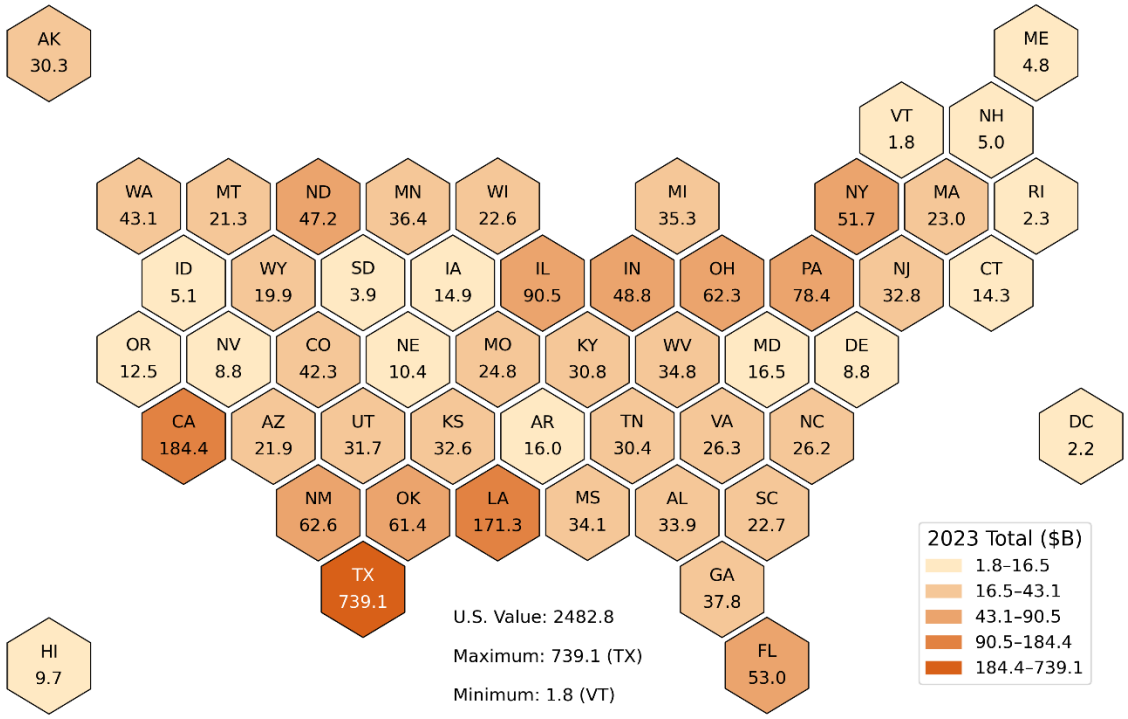
This section includes a selection of experimental state-level results. The figures show the states clustered into five color bins using Jenks natural breaks optimization. All values are in current dollars.

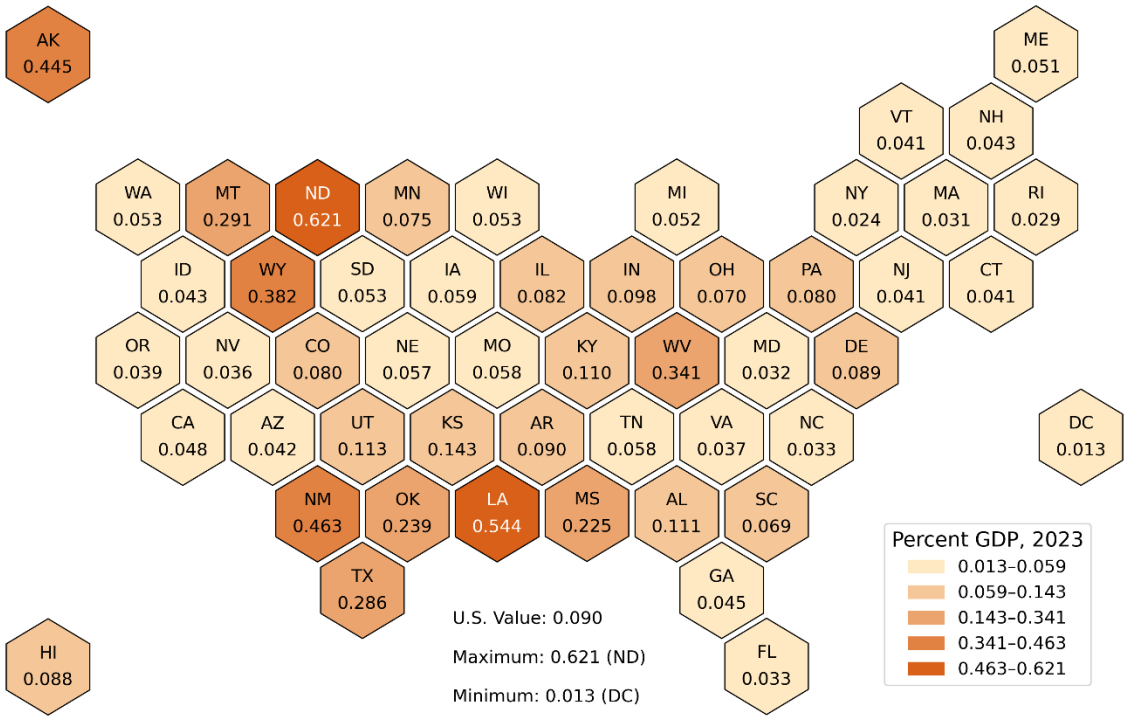
Figure 5 shows domestic supply of energy by state in 2023, the most recent year available. Values reflect the sum across all energy commodities. The results show that energy supply is quite concentrated—Texas is by far the largest state, followed by California and Louisiana in the second highest group.

Figure 5 generally shows states with larger economies having larger energy supply. Normalizing by dividing by state GDP, as shown in Figure 6, shows a different pattern. Note that these results should *not* be interpreted as "energy percent of economy" since energy output is a gross measure and GDP is not. It would be more suitable to divide by state gross output, which is currently not available.

North Dakota stands out by this metric, along with Louisiana (unsurprisingly based on Louisiana being on par with California in Figure 9). New Mexico, Alaska, and Wyoming round out the top five, and Texas drops into the third cluster. More than half of states are in the lowest cluster, indicating a low reliance on in-state energy production. Recall that the economic activity associated with

electricity and natural gas *distribution* is measured based on location of the consumers, which explains why no states (nor DC) are near 0.





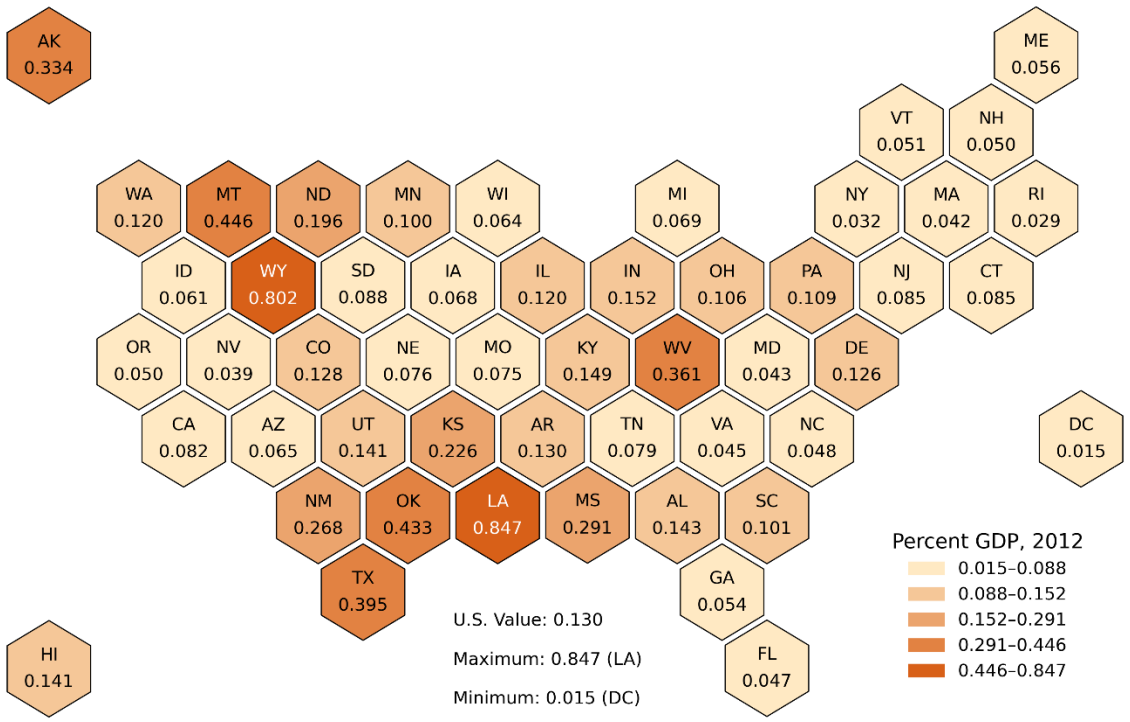
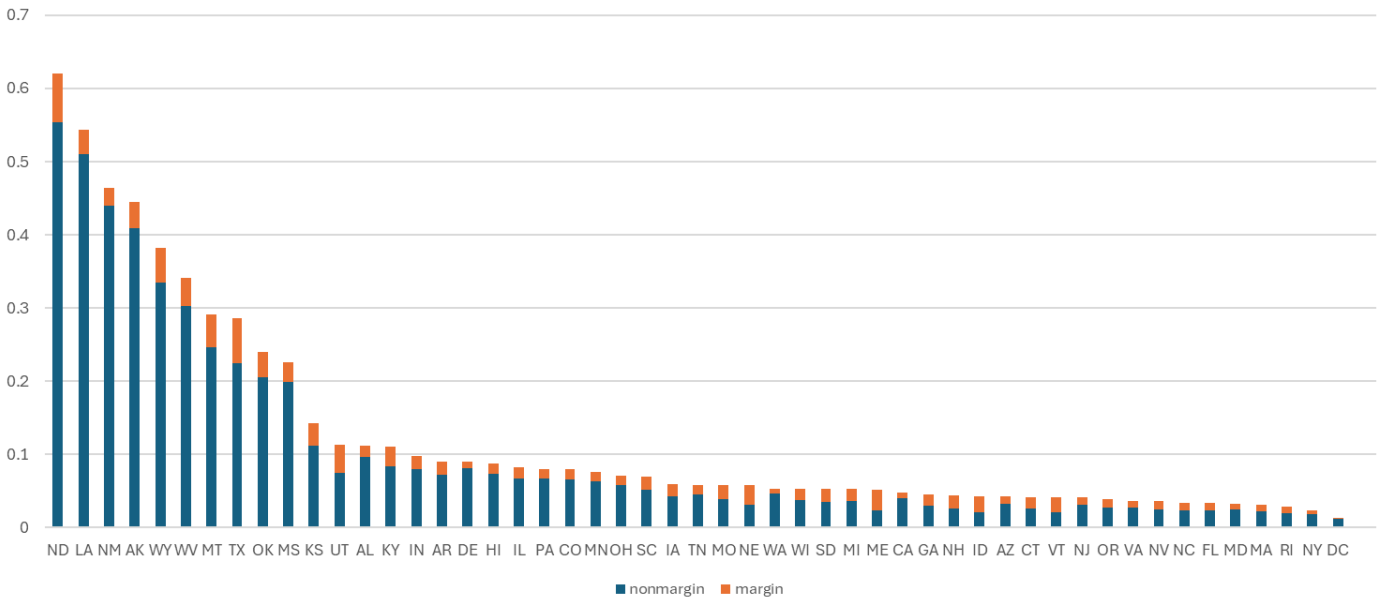


Figure 7 shows the same data as Figure 6, but for the earliest year in our time series, 2012. Note that the U.S. value is much higher earlier on. This is also reflected in most states. The color patterns are quite similar between the two years, as well as the intervening years (not shown). One

Figure 8. Supply of Energy by State as Share of State GDP, 2023, with Impact of Margins



striking difference is how Wyoming and North Dakota have changed places, reflecting the coal-to-gas transition that happened over this period.

Recall that part of the total monetary energy supply are margins associated with wholesale trade, retail trade, and transportation. Figure 8 breaks out the data by showing the importance of the margins by state. The sum of the two bars is the same data shown in Figure 5 and is used to sort the states in this figure. The relative size of the orange bars varies by state—note how margins account for disproportionately more of the state's production in Maine, Idaho, and Utah, while New Mexico, Louisiana, and DC are at the opposite end.

6. Conclusion and Future Work

These pilot physical and monetary flow accounts for the U.S. demonstrate how existing data sources can be used together to develop thematic accounts that integrate economic data with data on the natural resources that support the economy. This integration is enabled by the close relationship between SEEA (which guides the compilation of physical and monetary flow thematic accounts) and SNA (which guides the compilation of the national economic accounts). This relationship is reflected in our results showing that implicit prices calculated from the PEFA and MEFA closely parallel market prices directly observed by EIA.

As far as we are aware, this is one of the first U.S. pilot natural resource accounts to provide state level data across all 50 states. Currently, this is limited to the supply of energy by state in monetary terms due to constraints including a lack of data on interstate trade in energy products. Expanding the regional section of the account to include physical state-level flows and the use of energy by state is left as an area for future research.

The national-level MEFA tables in this pilot are well developed, using established thematic account methods and data. A potential refinement in future estimates would be to provide more detailed industry breakdowns in both the supply and use tables. While these additions are outside the scope of this pilot, they are technically feasible with additional time and resources.

The PEFA tables in this pilot are balanced and nearly complete in their coverage of the U.S. economy. Important remaining gaps for future research to close include the residency adjustment for truck transportation and differentiating internal combustion cars from electric ones.

Works Cited

Maximize Market Research. 2024. *Wood Chips Market: Global Industry Analysis and Forecast 2023-2030*.

Ship & Bunker. 2024. “Custom Tabulation.” shipandbunker.com.

United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, and World Bank. 2009. *System of National Accounts 2008*. United Nations. https://doi.org/10.5089/9789211615227.071.

United Nations, European Union, Food and Agriculture Organization of the United Nations, International Monetary Fund, Organisation for Economic Co-operation and Development, and The World Bank. 2014. *System of Environmental-Economic Accounting 2012: Central Framework*. United Nations. https://doi.org/10.5089/9789211615630.069.

United Nations Statistical Commission. 2021. *Report on the Fifty-Second Session*. New York.

United Nations Statistics Division. 2018a. *Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications*. New York.

United Nations Statistics Division. 2018b. *International Recommendations for Energy Statistics (IRES)*. United Nations.

United Nations Statistics Division. 2019. *System of Environmental-Economic Accounting for Energy: SEEA-Energy*. United Nations.

U.S. Bureau of Economic Analysis. 2024a. *Concepts and Methods of the U.S. National Income and Product Accounts*. Suitland, MD. https://www.bea.gov/resources/methodologies/nipa-handbook.

U.S. Bureau of Economic Analysis. 2024b. *Detailed Fixed Assets and Consumer Durable Goods*. Suitland, MD. https://www.bea.gov/itable/fixed-assets.

U.S. Bureau of Economic Analysis. 2024c. *Input-Output Accounts*. Suitland, MD. https://www.bea.gov/data/industries/input-output-accounts-data.

U.S. Bureau of Transportation Statistics. 2024a. *National Transportation Statistics*. Washington, D.C. https://www.bts.gov/topics/national-transportation-statistics.

U.S. Bureau of Transportation Statistics. 2024b. *Transportation Satellite Accounts*. Washington, D.C. https://www.bts.gov/satellite-accounts.

U.S. Energy Information Administration. 2024a. *EIA Form 923: Power Plant Operations Report*. Washington, D.C. https://www.eia.gov/electricity/data/eia923/.

U.S. Energy Information Administration. 2024b. *Petroleum Supply Annual*. Washington, D.C. https://www.eia.gov/petroleum/supply/annual/volume1/.

U.S. Energy Information Administration. 2025. *Monthly Energy Review*. DOE/EIA-0035. Washington, D.C. https://www.eia.gov/totalenergy/data/monthly/.

Appendix

Table A1. Products included in the Monetary Energy Flow Account (MEFA)

Product Description
Biofuels
Fuel ethanol (fuel-grade ethyl alcohol), ethyl alcohol, manufactured by the wet mill process
Hardwood charcoal and charcoal briquets, including blends with lignite or other materials
Fatty acids (produced for sale as such)
Coal
Anthracite mining inventory change
Anthracite
Bituminous coal and lignite mining other miscellaneous receipts
Bituminous coal and lignite mining inventory change
Bituminous coal and lignite
Coal products
Coke oven products, coke (excluding screenings and breeze)
Coke oven products, screenings and breeze
Coke oven products, other (including tar derivatives, ammonia, light oil derivations, and coke oven gas)
Coke oven and blast furnace products, not made in steel mills, nsk
Electricity
Uranium-radium-vanadium ore mining inventory change
Uranium-radium-vanadium ore
Electric power generation
Electric bulk power transmission and control
Electric power distribution
Bonneville power administration
Southeastern power administration
Southwestern power administration
Tennessee valley authority
Western area power administration
Electricity distribution
Electricity power marketing and brokering
Heat
Steam and air-conditioning supply
Natural gas (distributed)
Natural gas distribution
Natural gas power marketing and brokering
Natural gas (extracted)
Natural gas
Natural gas extraction other miscellaneous receipts
Natural gas, nsk

Non-energy uses of energy products
Asphalt
Petroleum waxes
Lubricating oils and greases, nsk
Lubricating oils (including hydraulic fluids, quenching & cutting oils, etc.)
Lubricating greases, not made in a refinery
Petroleum lubricating oil and grease manufacturing other miscellaneous receipts
Petroleum lubricating oil and grease manufacturing inventory change
Aromatics (benzene, toluene, xylene, etc.), for use as a chemical raw material, made in petrochemical plants
Aromatics (benzene, toluene, xylene, etc.), for other uses, made in petrochemical plants
Aromatics (benzene, toluene, xylene, etc.), for use as a chemical raw material, made in petrochemical plants, nsk
Oil (oil products)
Aviation gasoline (except jet fuel), including finished base stocks & blending agents
Motor gasoline, including finished base stocks & blending agents
Gasoline, including finished base stocks & blending agents
Jet fuel
Kerosene, except jet fuel
Light fuel oils
Petroleum refineries other miscellaneous receipts
Heavy fuel oils, including grades no. 5,6, heavy diesel-type
Petroleum refineries inventory change
Unfinished oils and lubricating oil base stock
Liquefied refinery gases, for uses other than chemical raw material
Petrolatum
Petroleum coke
Road oil
Still gas
Special petroleum naphtha
Other finished petroleum products, made in a refinery
Other finished petroleum products, including waxes, nsk
Refined petroleum products, nsk
Coke oven products, crude tar
Coke oven products, crude light oil
Calcined petroleum coke, not made in a refinery
All other petroleum and coal products, including packaged fuel & fuel briquettes
All other petroleum & coal products, except coke oven products, nsk
All other petroleum and coal products manufacturing other miscellaneous receipts
All other petroleum and coal products manufacturing inventory change
All other petroleum & coal products manufacturing, nsk
Liquefied refinery gases (aliphatics), for use as a chemical raw material, made in petrochemical plants
Petrochemical manufacturing other miscellaneous receipts
Petrochemical manufacturing inventory change
Petrochemical manufacturing, nsk, total

Oil extracted (e.g., conventional crude oil)
Crude petroleum, including lease condens. (vols. corrected to 60 deg. F) shipped
Crude petroleum other miscellaneous receipts
Crude petroleum and natural gas extraction inventory change
Crude petroleum, nsk
Natural gas liquids
Natural gas liquid extraction inventory change
Drilling, spudding, or tailing oil, gas, dry, or service wells - construction
Drilling oil and gas other miscellaneous receipts
Drilling oil and gas wells inventory change
Pipeline transportation (non-margin and int'l freight)
Crude petroleum pipelines-non-margin
International freight, crude petroleum pipeline
Natural gas pipelines - non-margin
International freight, natural gas pipeline
International freight, refined petroleum pipeline

Table A2-1. 2012 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2012					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										21,679	**21,679**
Natural gas										25,965	**25,965**
Crude oil										14,831	**14,831**
Natural gas liquids										568	**568**
Oil products										2,768	**2,768**
Solid biofuels										2,270	**2,270**
Nuclear										585	**585**
Renewable energy inputs											
Solar energy										99	**99**
Hydroelectric energy										994	**994**
Wind energy										507	**507**
Geothermal energy										123	**123**
Other natural inputs											
Liquid biofuels										1,306	**1,306**
Total energy from natural inputs										*71,695*	***71,695***
Energy products											
Production of energy products											
Coal		21,815							223		**22,039**
Natural gas		25,965	66						3,393		**29,425**
Crude oil		14,831							21,580		**36,410**
Natural gas liquids		568	404						110		**1,082**
Oil products		2,768	37,996						3,222		**43,987**
Liquid biofuels			1,306						53		**1,358**
Solid biofuels	2,270		2,270								**4,539**
Electricity	218	16	174	14,016	6	154	7		213		**14,806**
Heat	382	29	305	178	4	221					**1,118**
Nuclear		585	8,506						7,921		**17,011**
Total energy products	*2,871*	*66,577*	*51,027*	*14,194*	*10*	*375*	*7*		*36,715*		***171,776***
Energy residuals											
Distribution losses	11	68	166	303	26	405	383				**1,362**
Transformation losses	802	60	640	26,132	20	545					**28,198**
Total energy residuals	*813*	*128*	*805*	*26,435*	*46*	*950*	*383*				***29,561***
Other residual flows											
Residuals from non-energy uses	265	194	825		143	697					**2,124**
Coal								136			**136**
Municipal waste								985			**985**
Total other residual flows	*265*	*194*	*825*		*143*	*697*		*1,121*			***3,245***
Total supply	**3,948**	**66,899**	**52,658**	**40,629**	**199**	**2,022**	**390**	**1,121**	**36,715**	**71,695**	**276,276**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A2-2. 2012 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2012					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		25,965									**25,965**
Natural gas liquids		568									**568**
Solid biofuels	2,270										**2,270**
Renewable energy inputs											
Hydroelectric energy				994							**994**
Geothermal energy	1	2	13	56	1	26	25				**123**
Liquid biofuels			1,306								**1,306**
Transformation of energy products											
Natural gas				9,858							**9,858**
Natural gas liquids			343								**343**
Liquid biofuels			1,195								**1,195**
Nuclear			8,506	8,506							**17,011**
Total transformation use			*49,703*	*35,726*							***85,428***
End-use of energy products											
Coal	61	408	1,198		0	47		133	3,257		**5,104**
Natural gas	1,037	341	7,797		1,111	3,044	4,503	9	1,723		**19,566**
Crude oil								204	151		**356**
Natural gas liquids		8	543			0		-25	211		**738**
Oil products	480	657	4,314	26	8,199	8,470	10,837	58	6,870		**39,910**
Liquid biofuels	1	1	3	1	9	19	28	8	92		**163**
Solid biofuels			1,543		1	63	462		0		**2,069**
Electricity	157	337	2,893	46	141	5,671	5,515		46		**14,806**
Heat	454	34	362	2	4	262					**1,118**
End-use for non-energy purposes	265	194	825		143	697		21	372		**2,517**
Total end use	*2,455*	*1,981*	*19,478*	*74*	*9,609*	*18,272*	*21,346*	*409*	*12,723*		***86,347***
Energy residuals											
Distribution losses										1,362	**1,362**
Transformation losses										28,198	**28,198**
Total energy residual use										*29,561*	***29,561***
Residual inputs											
Residuals from non-energy uses										2,124	**2,124**
Coal		136									**136**
Municipal waste	45	33	140	554	23	190					**985**
Total residual input energy use	*45*	*169*	*140*	*554*	*23*	*190*					***3,245***
Total use	**4,772**	**68,547**	**70,639**	**37,928**	**9,633**	**18,498**	**21,441**	**409**	**12,723**	**31,685**	**276,276**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A2-3. 2012 Monetary Energy Supply and Use

Monetary supply of energy products 2012 Millions of $	Production and distribution						Rest of the world	Total	Commodity	Trade and transport	Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports	(basic prices)	taxes	margins	(purchaser s prices)
Energy products											
Coal		$ 42,064					$ 787	**$ 42,850**	$ 1,906	$ 20,089	**$ 64,845**
Coal products		$ 2	$ 4,700				$ 204	**$ 4,906**		$ 312	**$ 5,218**
Natural gas (distributed)				$ 90,764	$ 117			**$ 90,881**	$ 3,171		**$ 94,052**
Natural gas (extracted)		$ 79,149	$ 1,486			$ 76	$ 8,401	**$ 89,113**		$ 25,479	**$ 114,592**
Crude oil		$ 195,156	$ 105	$ 84			$ 326,709	**$ 522,054**	$ 13,807	$ 33,991	**$ 569,852**
Oil products		$ 24,682	$ 784,943				$ 101,166	**$ 910,790**	$ 36	$ 233,205	**$ 1,144,031**
Biofuels			$ 16,256				$ 418	**$ 16,674**		$ 2,173	**$ 18,847**
Electricity		$ 202		$ 401,439			$ 2,595	**$ 404,236**	$ 27,491	$ 108	**$ 431,835**
Heat				$ 2,029				**$ 2,029**	$ 55		**$ 2,083**
Energy products for non-energy uses			$ 78,604				$ 8,972	**$ 87,575**		$ 14,529	**$ 102,104**
Pipeline transportation**					$ 461			**$ 461**	$ 65		**$ 526**
Total supply		**$ 341,254**	**$ 886,094**	**$ 494,316**	**$ 577**	**$ 76**	**$ 449,252**	**$ 2,171,570**	**$ 46,530**	**$ 329,886**	**$ 2,547,985**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2012 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate			Rest of the world	
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	consumption	Households	Accumulation	Exports	Total use
Energy products											
Coal	$ 821	$ 6,111	$ 14,935	$ 14,807	$ 4	$ 12,765	**$ 49,443**	$ 141	$ 595	$ 14,667	**$ 64,845**
Coal products		$ 535	$ 3,176			$ 1,377	**$ 5,087**		$ 34	$ 97	**$ 5,218**
Natural gas (distributed)	$ 1,373	$ 732	$ 16,319	$ 195	$ 1,200	$ 29,457	**$ 49,276**	$ 44,286		$ 490	**$ 94,052**
Natural gas (extracted)		$ 24,772	$ 25,236	$ 32,021	$ 11	$ 25,179	**$ 107,219**		$ 2,526	$ 4,847	**$ 114,592**
Crude oil		$ 8,885	$ 553,374	$ 10	$ 65	$ 1,379	**$ 563,713**		$ 583	$ 5,556	**$ 569,852**
Oil products	$ 12,174	$ 20,420	$ 124,105	$ 27,935	$ 153,961	$ 259,500	**$ 598,095**	$ 411,609	$ 4,823	$ 129,504	**$ 1,144,031**
Biofuels		$ 12	$ 7,108	$ 316	$ 19	$ 9,770	**$ 17,224**	$ 940	$ 94	$ 589	**$ 18,847**
Electricity	$ 1,695	$ 6,609	$ 58,362	$ 15,125	$ 15,150	$ 168,811	**$ 265,753**	$ 163,246	$ 461	$ 2,375	**$ 431,835**
Heat			$ 281	$ 839	$ 162	$ 715	**$ 1,996**	$ 87			**$ 2,083**
Non-energy uses of energy products	$ 145	$ 5,019	$ 61,453	$ 13	$ 270	$ 15,711	**$ 82,611**	$ 10,234	$ 319	$ 8,940	**$ 102,104**
Pipeline transportation**		$ 275					**$ 275**			$ 251	**$ 526**
Total supply	**$ 16,208**	**$ 73,369**	**$ 864,348**	**$ 91,262**	**$ 170,841**	**$ 524,664**	**$ 1,740,692**	**$ 630,542**	**$ 9,433**	**$ 167,318**	**$ 2,547,986**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A3-1. 2013 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals								Rest of the world		
2013					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										20,970	**20,970**
Natural gas										26,228	**26,228**
Crude oil										17,182	**17,182**
Natural gas liquids										621	**621**
Oil products										3,021	**3,021**
Solid biofuels										2,467	**2,467**
Nuclear										654	**654**
Renewable energy inputs											
Solar energy										126	**126**
Hydroelectric energy										967	**967**
Wind energy										604	**604**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,356	**1,356**
Total energy from natural inputs										*74,320*	***74,320***
Energy products											
Production of energy products											
Coal		21,102							210		**21,313**
Natural gas		26,228	59						3,118		**29,405**
Crude oil		17,182							19,345		**36,528**
Natural gas liquids		621	402						105		**1,127**
Oil products		3,021	38,629						3,586		**45,235**
Liquid biofuels			1,356						108		**1,465**
Solid biofuels	2,467		2,467								**4,934**
Electricity	230	18	179	14,069	7	152	12		249		**14,916**
Heat	419	32	325	159	4	214					**1,154**
Nuclear		654	8,698						8,044		**17,397**
Total energy products	*3,117*	*68,857*	*52,116*	*14,229*	*11*	*366*	*12*		*34,766*		***173,473***
Energy residuals											
Distribution losses	6	15	114	29	14	381	354				**912**
Transformation losses	825	63	640	26,300	22	514					**28,364**
Total energy residuals	*831*	*78*	*754*	*26,329*	*36*	*895*	*354*				***29,276***
Other residual flows											
Residuals from non-energy uses	273	200	852		151	719					**2,196**
Coal								132			**132**
Municipal waste								1,048			**1,048**
Total other residual flows	*273*	*200*	*852*		*151*	*719*		*1,180*			***3,375***
Total supply	**4,221**	**69,136**	**53,721**	**40,557**	**199**	**1,980**	**365**	**1,180**	**34,766**	**74,320**	**280,445**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A3-2. 2013 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2013 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		26,228									**26,228**
Natural gas liquids		621									**621**
Solid biofuels	2,467										**2,467**
Renewable energy inputs											
Hydroelectric energy				967							**967**
Geothermal energy	1	2	13	57	1	26	25				**124**
Liquid biofuels			1,356								**1,356**
Transformation of energy products											
Natural gas				8,852							**8,852**
Natural gas liquids			328								**328**
Liquid biofuels			1,279								**1,279**
Nuclear			8,698	8,698							**17,397**
Total transformation use			*50,484*	*35,404*							***85,888***
End-use of energy products											
Coal	62	365	1,207		0	44		-784	3,054		**3,948**
Natural gas	1,070	352	8,046		1,252	3,441	5,308	-592	1,674		**20,553**
Crude oil								-88	549		**461**
Natural gas liquids		8	537			0		9	244		**799**
Oil products	480	671	4,568	27	8,509	8,801	10,673	-146	7,296		**40,879**
Liquid biofuels	2	1	5	2	13	27	41	-1	95		**185**
Solid biofuels			1,571		1	73	603		0		**2,248**
Electricity	158	337	2,891	46	144	5,706	5,591		44		**14,916**
Heat	486	37	377	2	4	248					**1,154**
End-use for non-energy purposes	273	200	852		151	719		-3	250		**2,443**
Total end use	*2,530*	*1,972*	*20,055*	*77*	*10,075*	*19,060*	*22,217*	*-1,606*	*13,206*		***87,585***
Energy residuals											
Distribution losses										912	**912**
Transformation losses										28,364	**28,364**
Total energy residual use										*29,276*	***29,276***
Residual inputs											
Residuals from non-energy uses										2,196	**2,196**
Coal		132									**132**
Municipal waste	53	39	165	554	23	214					**1,048**
Total residual input energy use	*53*	*171*	*165*	*554*	*23*	*214*					***3,375***
Total use	**5,053**	**70,820**	**72,073**	**37,696**	**10,102**	**19,313**	**22,317**	**-1,606**	**13,206**	**31,472**	**280,445**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A3-3. 2013 Monetary Energy Supply and Use

Monetary supply of energy products 2013 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 37,841					$ 646	**$ 38,487**	$ 1,675	$ 19,398	**$ 59,560**
Coal products		$ 2	$ 4,564				$ 31	**$ 4,597**		$ 305	**$ 4,902**
Natural gas (distributed)				$ 98,919	$ 125			**$ 99,044**	$ 6,230		**$ 105,273**
Natural gas (extracted)		$ 92,908	$ 66			$ 103	$ 9,859	**$ 102,936**		$ 26,685	**$ 129,622**
Crude oil		$ 225,196	$ 7	$ 92			$ 279,146	**$ 504,442**	$ 14,857	$ 38,536	**$ 557,834**
Oil products		$ 26,634	$ 802,683				$ 106,980	**$ 936,298**	$ 211	$ 250,302	**$ 1,186,811**
Biofuels			$ 16,928				$ 432	**$ 17,361**		$ 2,378	**$ 19,738**
Electricity		$ 214		$ 417,476			$ 3,057	**$ 420,747**	$ 24,404	$ 98	**$ 445,249**
Heat				$ 2,024				**$ 2,024**	$ 53		**$ 2,077**
Energy products for non-energy uses			$ 72,999				$ 9,593	**$ 82,593**		$ 15,044	**$ 97,637**
Pipeline transportation**					$ 428			**$ 428**	$ 58		**$ 487**
Total supply		**$ 382,796**	**$ 897,247**	**$ 518,511**	**$ 553**	**$ 103**	**$ 409,744**	**$ 2,208,955**	**$ 47,488**	**$ 352,747**	**$ 2,609,190**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2013 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 848	$ 5,134	$ 14,896	$ 13,595	$ 4	$ 14,226	**$ 48,702**	$ 365	(376)	$ 10,868	**$ 59,560**
Coal products		$ 531	$ 2,814			$ 1,356	**$ 4,702**		$ 9	$ 191	**$ 4,902**
Natural gas (distributed)	$ 1,406	$ 940	$ 18,144	$ 264	$ 1,735	$ 31,619	**$ 54,109**	$ 50,634		$ 530	**$ 105,273**
Natural gas (extracted)		$ 31,890	$ 31,097	$ 33,887	$ 10	$ 26,875	**$ 123,759**		$ -87	$ 5,950	**$ 129,622**
Crude oil		$ 5,044	$ 539,994	$ 7	$ 52	$ 1,150	**$ 546,248**		$ 934	$ 10,653	**$ 557,834**
Oil products	$ 13,938	$ 21,231	$ 142,164	$ 32,718	$ 162,754	$ 271,285	**$ 644,090**	$ 410,720	(70)	$ 132,072	**$ 1,186,811**
Biofuels		$ 10	$ 8,496	$ 310	$ 16	$ 9,243	**$ 18,075**	$ 1,033	$ 28	$ 602	**$ 19,738**
Electricity	$ 1,922	$ 7,504	$ 60,058	$ 15,295	$ 14,071	$ 174,328	**$ 273,177**	$ 169,103	$ 379	$ 2,591	**$ 445,249**
Heat			$ 295	$ 826	$ 149	$ 716	**$ 1,986**	$ 92			**$ 2,077**
Non-energy uses of energy products	$ 133	$ 4,995	$ 56,655	$ 13	$ 240	$ 14,156	**$ 76,193**	$ 10,385	$ 478	$ 10,582	**$ 97,637**
Pipeline transportation**		$ 273					**$ 273**			$ 214	**$ 487**
Total supply	**$ 18,247**	**$ 77,553**	**$ 874,613**	**$ 96,915**	**$ 179,032**	**$ 544,955**	**$ 1,791,314**	**$ 642,331**	**$ 1,293**	**$ 174,252**	**$ 2,609,190**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A4-1. 2014 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2014					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										21,256	**21,256**
Natural gas										28,189	**28,189**
Crude oil										19,961	**19,961**
Natural gas liquids										704	**704**
Oil products										3,521	**3,521**
Solid biofuels										2,530	**2,530**
Nuclear										678	**678**
Renewable energy inputs											
Solar energy										170	**170**
Hydroelectric energy										934	**934**
Wind energy										654	**654**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,441	**1,441**
Total energy from natural inputs										*80,162*	***80,162***
Energy products											
Production of energy products											
Coal		21,403							266		**21,668**
Natural gas		28,189	65						2,915		**31,169**
Crude oil		19,961							18,381		**38,342**
Natural gas liquids		704	404						63		**1,171**
Oil products		3,521	39,382						3,784		**46,687**
Liquid biofuels			1,441						49		**1,490**
Solid biofuels	2,530		2,530								**5,060**
Electricity	236	18	176	14,182	9	139	18		239		**15,017**
Heat	435	33	324	165	4	186					**1,146**
Nuclear		678	8,797						8,119		**17,593**
Total energy products	*3,202*	*74,505*	*53,119*	*14,347*	*12*	*325*	*18*		*33,816*		***179,344***
Energy residuals											
Distribution losses	19	40	212	253	45	405	401				**1,374**
Transformation losses	863	64	642	26,465	23	459					**28,517**
Total energy residuals	*881*	*104*	*854*	*26,718*	*68*	*864*	*401*				***29,891***
Other residual flows											
Residuals from non-energy uses	270	198	843		158	712					**2,180**
Coal								146			**146**
Municipal waste								1,089			**1,089**
Total other residual flows	*270*	*198*	*843*		*158*	*712*		*1,235*			***3,415***
Total supply	**4,353**	**74,808**	**54,815**	**41,065**	**238**	**1,900**	**418**	**1,235**	**33,816**	**80,162**	**292,811**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A4-2. 2014 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2014 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		28,189									**28,189**
Natural gas liquids		704									**704**
Solid biofuels	2,530										**2,530**
Renewable energy inputs											
Hydroelectric energy				934							**934**
Geothermal energy	1	2	13	57	1	26	25				**124**
Liquid biofuels			1,441								**1,441**
Transformation of energy products											
Natural gas				8,940							**8,940**
Natural gas liquids			309								**309**
Liquid biofuels			1,305								**1,305**
Nuclear			8,797	8,797							**17,593**
Total transformation use			*51,852*	*35,778*							***87,630***
End-use of energy products											
Coal	62	382	1,203		0	43		-55	2,569		**4,203**
Natural gas	1,119	368	8,407		1,168	3,675	5,605	276	1,612		**22,229**
Crude oil								181	1,184		**1,365**
Natural gas liquids		8	527			0		30	296		**862**
Oil products	482	681	4,498	28	8,751	9,176	10,475	260	7,672		**42,023**
Liquid biofuels	1	1	5	2	12	25	37	3	99		**185**
Solid biofuels			1,577		2	76	610		0		**2,265**
Electricity	160	340	2,917	45	145	5,741	5,618		51		**15,017**
Heat	508	38	378	2	5	216					**1,146**
End-use for non-energy purposes	270	198	843		158	712		8	230		**2,418**
Total end use	*2,601*	*2,016*	*20,354*	*78*	*10,239*	*19,664*	*22,346*	*704*	*13,712*		***91,714***
Energy residuals											
Distribution losses										1,374	**1,374**
Transformation losses										28,517	**28,517**
Total energy residual use										*29,891*	***29,891***
Residual inputs											
Residuals from non-energy uses										2,180	**2,180**
Coal		146									**146**
Municipal waste	54	39	167	589	23	216					**1,089**
Total residual input energy use	*54*	*186*	*167*	*589*	*23*	*216*					***3,415***
Total use	**5,188**	**76,512**	**73,827**	**38,155**	**10,266**	**19,921**	**22,455**	**704**	**13,712**	**32,071**	**292,811**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A4-3. 2014 Monetary Energy Supply and Use

Monetary supply of energy products 2014 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 36,016					$ 802	**$ 36,818**	$ 1,599	$ 19,707	**$ 58,125**
Coal products		$ 2	$ 4,492				$ 11	**$ 4,505**		$ 309	**$ 4,814**
Natural gas (distributed)				$ 107,516	$ 136			**$ 107,652**	$ 6,338		**$ 113,989**
Natural gas (extracted)		$ 102,818	$ 43			$ 132	$ 13,772	**$ 116,765**		$ 28,460	**$ 145,225**
Crude oil		$ 246,211	$ 5	$ 101			$ 262,585	**$ 508,902**	$ 13,911	$ 41,882	**$ 564,694**
Oil products		$ 31,285	$ 731,555				$ 93,674	**$ 856,514**	$ 176	$ 261,367	**$ 1,118,056**
Biofuels			$ 17,081				$ 530	**$ 17,611**		$ 2,679	**$ 20,290**
Electricity		$ 204		$ 446,378			$ 3,515	**$ 450,098**	$ 24,275	$ 114	**$ 474,487**
Heat				$ 2,065				**$ 2,065**	$ 52		**$ 2,117**
Energy products for non-energy uses			$ 67,649				$ 8,594	**$ 76,244**		$ 15,893	**$ 92,137**
Pipeline transportation**					$ 441			**$ 441**	$ 66		**$ 508**
Total supply		**$ 416,536**	**$ 820,825**	**$ 556,060**	**$ 577**	**$ 132**	**$ 383,484**	**$ 2,177,614**	**$ 46,418**	**$ 370,410**	**$ 2,594,442**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2014 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 1,124	$ 5,648	$ 14,764	$ 13,119	$ 5	$ 14,092	**$ 48,752**	$ 898	$ 277	$ 8,197	**$ 58,125**
Coal products		$ 540	$ 2,566			$ 1,443	**$ 4,549**		$ 23	$ 242	**$ 4,814**
Natural gas (distributed)	$ 1,921	$ 1,108	$ 17,944	$ 304	$ 2,216	$ 34,064	**$ 57,556**	$ 55,899		$ 534	**$ 113,989**
Natural gas (extracted)		$ 41,694	$ 17,050	$ 43,170	$ 26	$ 31,212	**$ 133,151**		$ 2,306	$ 9,767	**$ 145,225**
Crude oil		$ 8,915	$ 536,172	$ 9	$ 65	$ 912	**$ 546,074**		$ 797	$ 17,823	**$ 564,694**
Oil products	$ 13,571	$ 20,259	$ 119,196	$ 28,083	$ 158,833	$ 238,730	**$ 578,672**	$ 400,619	$ 5,543	$ 133,223	**$ 1,118,056**
Biofuels		$ 18	$ 6,513	$ 518	$ 23	$ 11,548	**$ 18,621**	$ 959	$ 65	$ 644	**$ 20,290**
Electricity	$ 3,071	$ 8,933	$ 60,949	$ 17,319	$ 13,367	$ 191,407	**$ 295,047**	$ 176,141	$ 458	$ 2,841	**$ 474,487**
Heat			$ 299	$ 927	$ 128	$ 673	**$ 2,027**	$ 91			**$ 2,117**
Non-energy uses of energy products	$ 155	$ 4,994	$ 50,056	$ 12	$ 259	$ 15,681	**$ 71,157**	$ 10,785	$ 303	$ 9,892	**$ 92,137**
Pipeline transportation**		$ 288					**$ 288**			$ 219	**$ 508**
Total supply	**$ 19,843**	**$ 92,397**	**$ 825,511**	**$ 103,460**	**$ 174,921**	**$ 539,760**	**$ 1,755,892**	**$ 645,393**	**$ 9,773**	**$ 183,384**	**$ 2,594,442**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A5-1. 2015 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2015 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										18,813	**18,813**
Natural gas										29,612	**29,612**
Crude oil										21,018	**21,018**
Natural gas liquids										775	**775**
Oil products										3,947	**3,947**
Solid biofuels										2,432	**2,432**
Nuclear										436	**436**
Renewable energy inputs											
Solar energy										207	**207**
Hydroelectric energy										897	**897**
Wind energy										687	**687**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,470	**1,470**
Total energy from natural inputs										*80,418*	***80,418***
Energy products											
Production of energy products											
Coal		18,934							270		**19,204**
Natural gas		29,612	64						2,939		**32,616**
Crude oil		21,018							18,442		**39,460**
Natural gas liquids		775	391						55		**1,221**
Oil products		3,947	40,108						4,020		**48,075**
Liquid biofuels			1,470						84		**1,554**
Solid biofuels	2,432		2,432								**4,865**
Electricity	251	17	173	14,123	9	136	25		273		**15,007**
Heat	484	32	335	165	4	184					**1,205**
Nuclear		436	8,796						8,360		**17,592**
Total energy products	*3,168*	*74,770*	*53,770*	*14,289*	*13*	*320*	*25*		*34,443*		***180,798***
Energy residuals											
Distribution losses	17	20	197	151	45	401	393				**1,224**
Transformation losses	873	58	603	25,695	22	419					**27,671**
Total energy residuals	*890*	*78*	*800*	*25,846*	*67*	*820*	*393*				***28,895***
Other residual flows											
Residuals from non-energy uses	272	200	849		172	717					**2,210**
Coal								121			**121**
Municipal waste								1,094			**1,094**
Total other residual flows	*272*	*200*	*849*		*172*	*717*		*1,215*			***3,425***
Total supply	**4,330**	**75,048**	**55,419**	**40,135**	**252**	**1,857**	**418**	**1,215**	**34,443**	**80,418**	**293,535**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A5-2. 2015 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2015 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		29,612									**29,612**
Natural gas liquids		775									**775**
Solid biofuels	2,432										**2,432**
Renewable energy inputs											
Hydroelectric energy				897							**897**
Geothermal energy	1	2	13	58	1	26	25				**124**
Liquid biofuels			1,470								**1,470**
Transformation of energy products											
Natural gas				10,601							**10,601**
Natural gas liquids			299								**299**
Liquid biofuels			1,344								**1,344**
Nuclear			8,796	8,796							**17,592**
Total transformation use			*52,087*	*34,885*							***86,973***
End-use of energy products											
Coal	55	328	1,078		0	33		816	1,954		**4,265**
Natural gas	1,115	367	8,384		1,128	3,421	5,102	598	1,899		**22,014**
Crude oil								601	1,584		**2,185**
Natural gas liquids		9	587			0		-1	326		**922**
Oil products	461	682	4,628	31	9,079	9,657	10,069	280	8,482		**43,370**
Liquid biofuels	2	1	5	2	13	28	42	17	99		**210**
Solid biofuels			1,557		2	75	541		0		**2,175**
Electricity	159	336	2,889	46	146	5,775	5,620		36		**15,007**
Heat	560	37	387	2	5	213					**1,205**
End-use for non-energy purposes	272	200	849		172	717		36	228		**2,473**
Total end use	*2,625*	*1,960*	*20,364*	*82*	*10,544*	*19,920*	*21,374*	*2,348*	*14,608*		***93,825***
Energy residuals											
Distribution losses										1,224	**1,224**
Transformation losses										27,671	**27,671**
Total energy residual use										*28,895*	***28,895***
Residual inputs											
Residuals from non-energy uses										2,210	**2,210**
Coal		121									**121**
Municipal waste	54	39	167	594	23	217					**1,094**
Total residual input energy use	*54*	*161*	*167*	*594*	*23*	*217*					***3,425***
Total use	**5,116**	**76,723**	**74,102**	**37,293**	**10,571**	**20,179**	**21,490**	**2,348**	**14,608**	**31,104**	**293,535**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A5-3. 2015 Monetary Energy Supply and Use

Monetary supply of energy products 2015 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 29,461					$ 715	**$ 30,176**	$ 1,105	$ 17,283	**$ 48,564**
Coal products		$ 1	$ 3,820				$ 23	**$ 3,845**		$ 288	**$ 4,133**
Natural gas (distributed)				$ 80,832	$ 141			**$ 80,973**	$ 5,602		**$ 86,575**
Natural gas (extracted)		$ 57,664	$ 23			$ 152	$ 7,752	**$ 65,591**		$ 27,891	**$ 93,481**
Crude oil		$ 136,300	$ 3	$ 74			$ 135,552	**$ 271,929**	$ 7,977	$ 36,394	**$ 316,301**
Oil products		$ 15,172	$ 464,840				$ 60,100	**$ 540,112**	$ 166	$ 245,377	**$ 785,655**
Biofuels			$ 13,487				$ 535	**$ 14,022**		$ 2,665	**$ 16,687**
Electricity		$ 137		$ 445,140			$ 3,098	**$ 448,375**	$ 23,646	$ 101	**$ 472,122**
Heat				$ 1,893				**$ 1,893**	$ 47		**$ 1,940**
Energy products for non-energy uses			$ 50,136				$ 6,003	**$ 56,140**		$ 15,624	**$ 71,764**
Pipeline transportation**					$ 463			**$ 463**	$ 72		**$ 535**
Total supply		**$ 238,735**	**$ 532,309**	**$ 527,939**	**$ 603**	**$ 152**	**$ 213,779**	**$ 1,513,517**	**$ 38,616**	**$ 345,622**	**$ 1,897,755**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2015 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 913	$ 4,442	$ 12,902	$ 9,711	$ 5	$ 14,024	**$ 41,997**	$ 556	$ 723	$ 5,288	**$ 48,564**
Coal products		$ 392	$ 2,234			$ 1,300	**$ 3,925**		$ 5	$ 202	**$ 4,133**
Natural gas (distributed)	$ 1,258	$ 474	$ 11,359	$ 167	$ 1,808	$ 23,071	**$ 38,136**	$ 47,909		$ 529	**$ 86,575**
Natural gas (extracted)		$ 15,625	$ 12,431	$ 23,662	$ 5	$ 27,768	**$ 79,492**		$ 7,511	$ 6,479	**$ 93,481**
Crude oil		$ 2,029	$ 300,982	$ 3	$ 17	$ 417	**$ 303,448**		$ 1,312	$ 11,541	**$ 316,301**
Oil products	$ 9,021	$ 9,885	$ 78,566	$ 17,367	$ 103,855	$ 167,807	**$ 386,502**	$ 308,030	$ 12,392	$ 78,730	**$ 785,655**
Biofuels		$ 12	$ 5,356	$ 420	$ 19	$ 9,099	**$ 14,906**	$ 1,022	$ 171	$ 589	**$ 16,687**
Electricity	$ 3,179	$ 7,444	$ 54,974	$ 16,546	$ 11,026	$ 198,496	**$ 291,665**	$ 177,579	$ 334	$ 2,544	**$ 472,122**
Heat			$ 274	$ 816	$ 94	$ 649	**$ 1,833**	$ 107			**$ 1,940**
Non-energy uses of energy products	$ 124	$ 2,604	$ 38,181	$ 21	$ 199	$ 13,446	**$ 54,576**	$ 9,990	$ 1,021	$ 6,176	**$ 71,764**
Pipeline transportation**		$ 293					**$ 293**			$ 241	**$ 535**
Total supply	**$ 14,495**	**$ 43,201**	**$ 517,259**	**$ 68,713**	**$ 117,028**	**$ 456,077**	**$ 1,216,773**	**$ 545,193**	**$ 23,470**	**$ 112,319**	**$ 1,897,755**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A6-1. 2016 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2016					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										15,352	**15,352**
Natural gas										29,094	**29,094**
Crude oil										19,950	**19,950**
Natural gas liquids										777	**777**
Oil products										4,145	**4,145**
Solid biofuels										2,416	**2,416**
Nuclear										484	**484**
Renewable energy inputs											
Solar energy										265	**265**
Hydroelectric energy										964	**964**
Wind energy										817	**817**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,562	**1,562**
Total energy from natural inputs										*75,949*	***75,949***
Energy products											
Production of energy products											
Coal		15,475							232		**15,707**
Natural gas		29,094	63						3,251		**32,408**
Crude oil		19,950							19,702		**39,652**
Natural gas liquids		777	415						63		**1,255**
Oil products		4,145	40,809						3,947		**48,901**
Liquid biofuels			1,562						129		**1,692**
Solid biofuels	2,416		2,416								**4,831**
Electricity	269	15	168	14,118	9	130	38		262		**15,009**
Heat	632	35	396	226	7	220					**1,516**
Nuclear		484	8,891						8,407		**17,781**
Total energy products	*3,317*	*69,974*	*54,719*	*14,343*	*16*	*350*	*38*		*35,993*		***178,750***
Energy residuals											
Distribution losses	15	16	180	113	44	389	376				**1,134**
Transformation losses	762	42	477	25,472	21	339					**27,113**
Total energy residuals	*777*	*58*	*657*	*25,585*	*65*	*729*	*376*				***28,247***
Other residual flows											
Residuals from non-energy uses	272	199	848		163	716					**2,198**
Coal								123			**123**
Municipal waste								1,062			**1,062**
Total other residual flows	*272*	*199*	*848*		*163*	*716*		*1,185*			***3,383***
Total supply	**4,365**	**70,231**	**56,224**	**39,928**	**244**	**1,795**	**415**	**1,185**	**35,993**	**75,949**	**286,329**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A6-2. 2016 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2016 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		29,094									**29,094**
Natural gas liquids		777									**777**
Solid biofuels	2,416										**2,416**
Renewable energy inputs											
Hydroelectric energy				964							**964**
Geothermal energy	1	1	13	57	1	26	25				**124**
Liquid biofuels			1,562								**1,562**
Transformation of energy products											
Natural gas				10,981							**10,981**
Natural gas liquids			299								**299**
Liquid biofuels			1,390								**1,390**
Nuclear			8,891	8,891							**17,781**
Total transformation use			*52,603*	*34,079*							***86,681***
End-use of energy products											
Coal	48	283	940		0	25		-935	1,631		**1,994**
Natural gas	1,136	374	8,539		1,131	3,329	4,803	-372	2,486		**21,427**
Crude oil								204	1,769		**1,973**
Natural gas liquids		9	554			0		32	361		**955**
Oil products	474	705	4,712	32	9,376	9,948	9,806	24	9,217		**44,294**
Liquid biofuels	3	2	8	3	22	45	69	11	138		**302**
Solid biofuels			1,555		2	76	470		77		**2,179**
Electricity	159	333	2,860	46	145	5,788	5,651		25		**15,009**
Heat	741	41	464	4	8	258					**1,516**
End-use for non-energy purposes	272	199	848		163	716		-20	244		**2,421**
Total end use	*2,833*	*1,946*	*20,480*	*86*	*10,847*	*20,187*	*20,799*	*-1,057*	*15,948*		***92,069***
Energy residuals											
Distribution losses										1,134	**1,134**
Transformation losses										27,113	**27,113**
Total energy residual use										*28,247*	***28,247***
Residual inputs											
Residuals from non-energy uses										2,198	**2,198**
Coal		123									**123**
Municipal waste	49	36	153	593	24	207					**1,062**
Total residual input energy use	*49*	*159*	*153*	*593*	*24*	*207*					***3,383***
Total use	**5,305**	**71,908**	**74,811**	**36,727**	**10,875**	**20,438**	**20,929**	**-1,057**	**15,948**	**30,445**	**286,329**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A6-3. 2016 Monetary Energy Supply and Use

Monetary supply of energy products 2016 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 22,897					$ 535	**$ 23,432**	$ 892	$ 13,324	**$ 37,648**
Coal products		$ 1	$ 3,345				$ 3	**$ 3,349**		$ 260	**$ 3,609**
Natural gas (distributed)				$ 75,204	$ 147			**$ 75,351**	$ 5,583		**$ 80,935**
Natural gas (extracted)		$ 48,159	$ 11			$ 183	$ 6,151	**$ 54,504**		$ 28,236	**$ 82,740**
Crude oil		$ 112,928	$ 2	$ 69			$ 109,535	**$ 222,534**	$ 6,171	$ 32,996	**$ 261,700**
Oil products		$ 15,830	$ 401,895				$ 47,428	**$ 465,152**	$ 88	$ 244,425	**$ 709,665**
Biofuels			$ 12,617				$ 523	**$ 13,140**		$ 2,527	**$ 15,667**
Electricity		$ 122		$ 427,629			$ 2,776	**$ 430,526**	$ 23,541	$ 90	**$ 454,157**
Heat				$ 1,599				**$ 1,599**	$ 43		**$ 1,643**
Energy products for non-energy uses			$ 44,643				$ 5,195	**$ 49,839**		$ 15,225	**$ 65,064**
Pipeline transportation**					$ 458			**$ 458**	$ 73		**$ 530**
Total supply		**$ 199,936**	**$ 462,512**	**$ 504,501**	**$ 605**	**$ 183**	**$ 172,147**	**$ 1,339,884**	**$ 36,392**	**$ 337,084**	**$ 1,713,360**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2016 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 514	$ 3,111	$ 10,451	$ 5,560	$ 5	$ 12,943	**$ 32,584**	$ 681	$ 318	$ 4,066	**$ 37,648**
Coal products		$ 272	$ 1,916			$ 1,222	**$ 3,411**		$ 2	$ 197	**$ 3,609**
Natural gas (distributed)	$ 1,301	$ 344	$ 10,594	$ 122	$ 2,219	$ 22,116	**$ 36,696**	$ 43,707		$ 532	**$ 80,935**
Natural gas (extracted)		$ 9,942	$ 26,062	$ 12,772	$ 1	$ 22,221	**$ 70,999**		$ 4,157	$ 7,585	**$ 82,740**
Crude oil		$ 1,063	$ 246,062	$ 1	$ 85	$ 799	**$ 248,009**		$ 439	$ 13,253	**$ 261,700**
Oil products	$ 9,154	$ 6,107	$ 77,663	$ 13,019	$ 88,121	$ 157,721	**$ 351,786**	$ 276,576	$ 5,113	$ 76,191	**$ 709,665**
Biofuels		$ 2	$ 6,760	$ 242	$ 12	$ 7,273	**$ 14,289**	$ 777	$ 32	$ 569	**$ 15,667**
Electricity	$ 3,207	$ 6,279	$ 55,899	$ 12,215	$ 9,310	$ 187,455	**$ 274,365**	$ 177,025	$ 242	$ 2,526	**$ 454,158**
Heat			$ 218	$ 570	$ 79	$ 695	**$ 1,562**	$ 81			**$ 1,643**
Non-energy uses of energy products	$ 114	$ 1,596	$ 34,596	$ 17	$ 246	$ 12,324	**$ 48,893**	$ 10,085	$ 431	$ 5,655	**$ 65,064**
Pipeline transportation**		$ 278					**$ 278**			$ 253	**$ 530**
Total supply	**$ 14,291**	**$ 28,995**	**$ 470,220**	**$ 44,519**	**$ 100,077**	**$ 424,769**	**$ 1,082,871**	**$ 508,931**	**$ 10,733**	**$ 110,825**	**$ 1,713,360**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A7-1. 2017 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2017 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										16,366	**16,366**
Natural gas										29,884	**29,884**
Crude oil										20,985	**20,985**
Natural gas liquids										809	**809**
Oil products										4,453	**4,453**
Solid biofuels										2,378	**2,378**
Nuclear										487	**487**
Renewable energy inputs											
Solar energy										347	**347**
Hydroelectric energy										1,081	**1,081**
Wind energy										915	**915**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,601	**1,601**
Total energy from natural inputs										*79,431*	***79,431***
Energy products											
Production of energy products											
Coal		16,486							177		**16,663**
Natural gas		29,884	72						3,280		**33,236**
Crude oil		20,985							19,908		**40,893**
Natural gas liquids		809	412						59		**1,280**
Oil products		4,453	41,535						3,463		**49,451**
Liquid biofuels			1,601						86		**1,687**
Solid biofuels	2,378		2,378								**4,757**
Electricity	278	13	163	13,974	10	126	50		236		**14,850**
Heat	649	30	382	205	8	203					**1,478**
Nuclear		487	8,882						8,396		**17,765**
Total energy products	*3,305*	*73,147*	*55,426*	*14,179*	*18*	*329*	*50*		*35,606*		***182,060***
Energy residuals											
Distribution losses	23	29	238	226	82	391	390				**1,379**
Transformation losses	791	37	466	25,159	23	327					**26,804**
Total energy residuals	*814*	*66*	*704*	*25,384*	*105*	*718*	*390*				***28,182***
Other residual flows											
Residuals from non-energy uses	279	205	871		150	736					**2,241**
Coal								120			**120**
Municipal waste								1,045			**1,045**
Total other residual flows	*279*	*205*	*871*		*150*	*736*		*1,165*			***3,407***
Total supply	**4,399**	**73,418**	**57,002**	**39,563**	**273**	**1,783**	**440**	**1,165**	**35,606**	**79,431**	**293,080**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A7-2. 2017 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2017 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		29,884									**29,884**
Natural gas liquids		809									**809**
Solid biofuels	2,378										**2,378**
Renewable energy inputs											
Hydroelectric energy				1,081							**1,081**
Geothermal energy	1	2	13	58	1	26	25				**124**
Liquid biofuels			1,601								**1,601**
Transformation of energy products											
Natural gas				10,259							**10,259**
Natural gas liquids			354								**354**
Liquid biofuels			1,385								**1,385**
Nuclear			8,882	8,882							**17,765**
Total transformation use			*52,974*	*32,982*							***85,957***
End-use of energy products											
Coal	48	292	936		0	22		-523	2,519		**3,293**
Natural gas	1,173	386	8,814		1,218	3,407	4,901	-278	3,357		**22,977**
Crude oil								-554	3,068		**2,514**
Natural gas liquids		10	636			1		-31	309		**925**
Oil products	474	712	4,737	32	9,752	10,123	9,520	-222	9,977		**45,104**
Liquid biofuels	3	2	8	3	21	44	66	-3	158		**302**
Solid biofuels			1,522		2	76	454		83		**2,136**
Electricity	161	335	2,874	45	144	5,725	5,528		37		**14,850**
Heat	751	35	442	5	9	235					**1,478**
End-use for non-energy purposes	279	205	871		150	736		-12	294		**2,524**
Total end use	*2,889*	*1,976*	*20,840*	*86*	*11,296*	*20,368*	*20,469*	*-1,623*	*19,802*		***96,104***
Energy residuals											
Distribution losses										1,379	**1,379**
Transformation losses										26,804	**26,804**
Total energy residual use										*28,182*	***28,182***
Residual inputs											
Residuals from non-energy uses										2,241	**2,241**
Coal		120									**120**
Municipal waste	47	35	147	592	24	200					**1,045**
Total residual input energy use	*47*	*155*	*147*	*592*	*24*	*200*					***3,407***
Total use	**5,322**	**75,116**	**75,576**	**35,908**	**11,325**	**20,617**	**20,613**	**-1,623**	**19,802**	**30,424**	**293,080**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A7-3. 2017 Monetary Energy Supply and Use

Monetary supply of energy products 2017 Millions of $	Production and distribution						Rest of the world	Total	Commodity	Trade and transport	Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports	(basic prices)	taxes	margins	(purchaser s prices)
Energy products											
Coal		$ 26,775					$ 575	**$ 27,350**	$ 1,026	$ 14,240	**$ 42,616**
Coal products			$ 3,407				$ 12	**$ 3,418**		$ 254	**$ 3,672**
Natural gas (distributed)				$ 74,475	$ 162			**$ 74,637**	$ 5,577		**$ 80,214**
Natural gas (extracted)		$ 61,278	$ 3			$ 227	$ 7,409	**$ 68,917**		$ 30,028	**$ 98,944**
Crude oil		$ 143,172		$ 76			$ 139,337	**$ 282,586**	$ 8,164	$ 33,934	**$ 324,684**
Oil products		$ 25,388	$ 490,311				$ 52,374	**$ 568,073**	$ 193	$ 258,736	**$ 827,001**
Biofuels			$ 14,997				$ 632	**$ 15,629**		$ 2,702	**$ 18,331**
Electricity		$ 38		$ 432,319			$ 2,607	**$ 434,964**	$ 23,445	$ 46	**$ 458,455**
Heat				$ 1,468				**$ 1,468**	$ 41		**$ 1,509**
Energy products for non-energy uses		$ 1	$ 50,135				$ 6,244	**$ 56,380**		$ 15,593	**$ 71,972**
Pipeline transportation**					$ 459			**$ 459**	$ 77		**$ 536**
Total supply		**$ 256,652**	**$ 558,853**	**$ 508,339**	**$ 621**	**$ 227**	**$ 209,190**	**$ 1,533,882**	**$ 38,523**	**$ 355,531**	**$ 1,927,935**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2017 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate			Rest of the world	
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	consumption	Households	Accumulation	Exports	Total use
Energy products											
Coal	$ 597	$ 3,505	$ 11,641	$ 3,973	$ 4	$ 14,251	**$ 33,971**	$ 221	(1,172)	$ 9,597	**$ 42,616**
Coal products		$ 329	$ 1,857			$ 1,199	**$ 3,385**		$ 15	$ 272	**$ 3,672**
Natural gas (distributed)	$ 1,170	$ 386	$ 8,798	$ 89	$ 2,405	$ 18,655	**$ 31,503**	$ 48,152		$ 559	**$ 80,214**
Natural gas (extracted)		$ 18,965	$ 35,127	$ 12,413	$ 1	$ 25,294	**$ 91,800**		$ -7,288	$ 14,432	**$ 98,944**
Crude oil		$ 2,820	$ 294,075		$ 87	$ 295	**$ 297,277**		(71)	$ 27,478	**$ 324,684**
Oil products	$ 12,232	$ 9,034	$ 79,126	$ 15,940	$ 99,330	$ 205,252	**$ 420,914**	$ 313,328	(7,164)	$ 99,926	**$ 827,004**
Biofuels		$ 4	$ 7,446	$ 244	$ 11	$ 9,481	**$ 17,187**	$ 522	$ 23	$ 599	**$ 18,332**
Electricity	$ 3,154	$ 6,836	$ 58,924	$ 9,870	$ 8,087	$ 191,122	**$ 277,992**	$ 177,661	$ 56	$ 2,745	**$ 458,455**
Heat			$ 200	$ 466	$ 50	$ 702	**$ 1,418**	$ 92			**$ 1,509**
Non-energy uses of energy products	$ 144	$ 2,604	$ 38,473	$ 7	$ 259	$ 14,189	**$ 55,676**	$ 10,860	(107)	$ 5,545	**$ 71,973**
Pipeline transportation**		$ 280					**$ 280**			$ 256	**$ 536**
Total supply	**$ 17,296**	**$ 44,763**	**$ 535,668**	**$ 43,003**	**$ 110,234**	**$ 480,439**	**$ 1,231,403**	**$ 550,835**	**(15,707)**	**$ 161,409**	**$ 1,927,940**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A8-1. 2018 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2018					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										16,084	**16,084**
Natural gas										33,637	**33,637**
Crude oil										24,781	**24,781**
Natural gas liquids										900	**900**
Oil products										5,143	**5,143**
Solid biofuels										2,477	**2,477**
Nuclear										301	**301**
Renewable energy inputs											
Solar energy										405	**405**
Hydroelectric energy										1,053	**1,053**
Wind energy										982	**982**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,659	**1,659**
Total energy from natural inputs										*87,545*	***87,545***
Energy products											
Production of energy products											
Coal		16,209							128		**16,338**
Natural gas		33,637	76						3,124		**36,837**
Crude oil		24,781							19,476		**44,257**
Natural gas liquids		900	436						36		**1,372**
Oil products		5,143	42,389						3,510		**51,042**
Liquid biofuels			1,659						51		**1,711**
Solid biofuels	2,477		2,477								**4,954**
Electricity	292	13	164	14,486	11	131	62		210		**15,368**
Heat	681	30	384	214	7	192					**1,507**
Nuclear		301	8,903						8,602		**17,805**
Total energy products	*3,450*	*81,013*	*56,487*	*14,700*	*18*	*322*	*62*		*35,138*		***191,190***
Energy residuals											
Distribution losses	18	39	204	231	67	372	367				**1,300**
Transformation losses	837	37	471	25,674	21	312					**27,353**
Total energy residuals	*856*	*76*	*675*	*25,905*	*88*	*684*	*367*				***28,652***
Other residual flows											
Residuals from non-energy uses	268	197	837		145	707					**2,153**
Coal								126			**126**
Municipal waste								1,028			**1,028**
Total other residual flows	*268*	*197*	*837*		*145*	*707*		*1,154*			***3,307***
Total supply	**4,574**	**81,286**	**57,999**	**40,605**	**251**	**1,713**	**429**	**1,154**	**35,138**	**87,545**	**310,694**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A8-2. 2018 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2018 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		33,637									**33,637**
Natural gas liquids		900									**900**
Solid biofuels	2,477										**2,477**
Renewable energy inputs											
Hydroelectric energy				1,053							**1,053**
Geothermal energy	1	1	13	58	1	26	26				**124**
Liquid biofuels			1,659								**1,659**
Transformation of energy products											
Natural gas				11,671							**11,671**
Natural gas liquids			333								**333**
Liquid biofuels			1,379								**1,379**
Nuclear			8,903	8,903							**17,805**
Total transformation use			*53,834*	*33,888*							***87,723***
End-use of energy products											
Coal	47	300	927		0	20		-744	2,980		**3,530**
Natural gas	1,240	408	9,322		1,411	3,759	5,529	-344	3,841		**25,167**
Crude oil								42	5,103		**5,145**
Natural gas liquids		11	699			1		3	326		**1,039**
Oil products	481	774	5,112	31	10,053	10,525	9,326	3	10,303		**46,609**
Liquid biofuels	2	2	8	3	20	41	61	9	186		**332**
Solid biofuels			1,511		2	77	555		99		**2,244**
Electricity	165	340	2,918	46	148	5,836	5,862		53		**15,368**
Heat	791	35	446	5	8	223					**1,507**
End-use for non-energy purposes	268	197	837		145	707		53	322		**2,528**
Total end use	*2,996*	*2,067*	*21,778*	*85*	*11,785*	*21,187*	*21,334*	*-977*	*23,212*		***103,467***
Energy residuals											
Distribution losses										1,300	**1,300**
Transformation losses										27,353	**27,353**
Total energy residual use										*28,652*	***28,652***
Residual inputs											
Residuals from non-energy uses										2,153	**2,153**
Coal		126									**126**
Municipal waste	47	34	145	581	23	198					**1,028**
Total residual input energy use	*47*	*160*	*145*	*581*	*23*	*198*					***3,307***
Total use	**5,528**	**83,073**	**77,430**	**36,879**	**11,815**	**21,439**	**21,490**	**-977**	**23,212**	**30,805**	**310,694**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A8-3. 2018 Monetary Energy Supply and Use

Monetary supply of energy products 2018 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 28,298					$ 426	**$ 28,724**	$ 1,254	$ 15,449	**$ 45,428**
Coal products			$ 3,715				$ 33	**$ 3,748**		$ 309	**$ 4,058**
Natural gas (distributed)				$ 83,408	$ 182			**$ 83,590**	$ 5,860		**$ 89,451**
Natural gas (extracted)		$ 83,140	$ 4			$ 311	$ 7,140	**$ 90,594**		$ 33,664	**$ 124,259**
Crude oil		$ 197,907	$ 1	$ 193			$ 161,805	**$ 359,906**	$ 12,295	$ 42,420	**$ 414,621**
Oil products		$ 33,723	$ 608,584				$ 68,079	**$ 710,386**	$ 181	$ 288,826	**$ 999,393**
Biofuels			$ 13,497				$ 625	**$ 14,123**		$ 2,311	**$ 16,434**
Electricity		$ 69		$ 468,391			$ 2,523	**$ 470,983**	$ 24,219	$ 31	**$ 495,232**
Heat				$ 1,357				**$ 1,357**	$ 37		**$ 1,394**
Energy products for non-energy uses		$ 1	$ 60,569				$ 6,942	**$ 67,512**		$ 16,827	**$ 84,339**
Pipeline transportation**					$ 573			**$ 573**	$ 80		**$ 653**
Total supply		**$ 343,137**	**$ 686,370**	**$ 553,349**	**$ 756**	**$ 311**	**$ 247,573**	**$ 1,831,496**	**$ 43,926**	**$ 399,837**	**$ 2,275,259**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2018 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 517	$ 3,427	$ 10,839	$ 6,168	$ 3	$ 12,823	**$ 33,777**	$ 288	(387)	$ 11,749	**$ 45,428**
Coal products		$ 431	$ 2,024			$ 1,288	**$ 3,743**		$ 24	$ 291	**$ 4,058**
Natural gas (distributed)	$ 1,205	$ 592	$ 9,395	$ 180	$ 3,068	$ 19,859	**$ 34,298**	$ 54,599		$ 553	**$ 89,451**
Natural gas (extracted)		$ 30,696	$ 44,043	$ 20,245	$ 1	$ 24,887	**$ 119,873**		$ -5,850	$ 10,236	**$ 124,259**
Crude oil		$ 3,897	$ 351,409		$ 37	$ 120	**$ 355,463**		(1,248)	$ 60,406	**$ 414,621**
Oil products	$ 14,102	$ 13,972	$ 87,090	$ 25,056	$ 122,737	$ 263,755	**$ 526,712**	$ 355,223	(4,005)	$ 121,463	**$ 999,393**
Biofuels		$ 4	$ 7,535	$ 203	$ 9	$ 7,735	**$ 15,487**	$ 329	(10)	$ 627	**$ 16,434**
Electricity	$ 3,003	$ 9,554	$ 60,083	$ 20,871	$ 8,475	$ 199,438	**$ 301,423**	$ 190,685	$ 70	$ 3,053	**$ 495,232**
Heat			$ 166	$ 403	$ 41	$ 704	**$ 1,314**	$ 81			**$ 1,394**
Non-energy uses of energy products	$ 121	$ 4,449	$ 43,990	$ 7	$ 296	$ 16,470	**$ 65,334**	$ 12,070	$ 353	$ 6,582	**$ 84,339**
Pipeline transportation**		$ 337					**$ 337**			$ 316	**$ 653**
Total supply	**$ 18,947**	**$ 67,359**	**$ 616,574**	**$ 73,133**	**$ 134,667**	**$ 547,080**	**$ 1,457,761**	**$ 613,275**	**(11,053)**	**$ 215,277**	**$ 2,275,259**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A9-1. 2019 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2019 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										14,943	**14,943**
Natural gas										37,124	**37,124**
Crude oil										27,840	**27,840**
Natural gas liquids										995	**995**
Oil products										5,707	**5,707**
Solid biofuels										2,461	**2,461**
Nuclear										35	**35**
Renewable energy inputs											
Solar energy										453	**453**
Hydroelectric energy										1,036	**1,036**
Wind energy										1,065	**1,065**
Geothermal energy										123	**123**
Other natural inputs											
Liquid biofuels										1,606	**1,606**
Total energy from natural inputs										*93,391*	***93,391***
Energy products											
Production of energy products											
Coal		15,041							145		**15,186**
Natural gas		37,124	67						2,965		**40,156**
Crude oil		27,840							17,178		**45,019**
Natural gas liquids		995	409						33		**1,436**
Oil products		5,707	41,516						4,094		**51,318**
Liquid biofuels			1,606						76		**1,682**
Solid biofuels	2,461		2,461								**4,922**
Electricity	311	12	157	14,297	11	132	75		213		**15,208**
Heat	665	25	334	207	6	169					**1,406**
Nuclear		35	8,917						8,882		**17,834**
Total energy products	*3,438*	*86,779*	*55,467*	*14,504*	*17*	*302*	*75*		*33,586*		***194,168***
Energy residuals											
Distribution losses	23	34	236	262	104	375	378				**1,412**
Transformation losses	879	33	442	24,673	20	299					**26,346**
Total energy residuals	*902*	*67*	*678*	*24,935*	*124*	*674*	*378*				***27,758***
Other residual flows											
Residuals from non-energy uses	265	194	826		139	697					**2,121**
Coal								97			**97**
Municipal waste								934			**934**
Total other residual flows	*265*	*194*	*826*		*139*	*697*		*1,031*			***3,152***
Total supply	**4,605**	**87,040**	**56,970**	**39,439**	**280**	**1,673**	**453**	**1,031**	**33,586**	**93,391**	**318,469**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A9-2. 2019 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2019 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		37,124									**37,124**
Natural gas liquids		995									**995**
Solid biofuels	2,461										**2,461**
Renewable energy inputs											
Hydroelectric energy				1,036							**1,036**
Geothermal energy	1	2	13	56	1	25	26				**123**
Liquid biofuels			1,606								**1,606**
Transformation of energy products											
Natural gas				12,499							**12,499**
Natural gas liquids			336								**336**
Liquid biofuels			1,383								**1,383**
Nuclear			8,917	8,917							**17,834**
Total transformation use			*53,247*	*32,637*							***85,884***
End-use of energy products											
Coal	45	280	877		0	18		724	2,432		**4,376**
Natural gas	1,263	416	9,493		1,609	3,783	5,584	551	4,958		**27,657**
Crude oil								-123	7,041		**6,918**
Natural gas liquids		12	781			1		0	306		**1,100**
Oil products	459	778	5,131	39	10,265	10,688	8,859	165	10,285		**46,669**
Liquid biofuels	3	2	8	3	20	42	64	-10	167		**299**
Solid biofuels			1,484		2	77	578		109		**2,250**
Electricity	166	340	2,920	46	146	5,754	5,761		75		**15,208**
Heat	777	29	391	5	7	198					**1,406**
End-use for non-energy purposes	265	194	826		139	697		-38	318		**2,401**
Total end use	*2,977*	*2,051*	*21,910*	*92*	*12,188*	*21,259*	*20,846*	*1,270*	*25,691*		***108,284***
Energy residuals											
Distribution losses										1,412	**1,412**
Transformation losses										26,346	**26,346**
Total energy residual use										*27,758*	***27,758***
Residual inputs											
Residuals from non-energy uses										2,121	**2,121**
Coal		97									**97**
Municipal waste	44	32	137	523	19	178					**934**
Total residual input energy use	*44*	*129*	*137*	*523*	*19*	*178*					***3,152***
Total use	**5,493**	**88,827**	**76,914**	**35,671**	**12,214**	**21,494**	**21,015**	**1,270**	**25,691**	**29,879**	**318,469**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A9-3. 2019 Monetary Energy Supply and Use

Monetary supply of energy products 2019 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 26,415					$ 439	**$ 26,854**	$ 1,047	$ 13,847	**$ 41,748**
Coal products			$ 3,273				$ 37	**$ 3,310**		$ 280	**$ 3,591**
Natural gas (distributed)				$ 84,650	$ 201			**$ 84,851**	$ 6,012		**$ 90,863**
Natural gas (extracted)		$ 72,080	$ 1			$ 254	$ 6,463	**$ 78,798**		$ 36,944	**$ 115,741**
Crude oil		$ 183,169		$ 87			$ 131,549	**$ 314,805**	$ 11,030	$ 43,405	**$ 369,239**
Oil products		$ 29,209	$ 538,172				$ 67,818	**$ 635,199**	$ 153	$ 291,405	**$ 926,757**
Biofuels			$ 13,125				$ 567	**$ 13,693**		$ 2,528	**$ 16,221**
Electricity		$ 9		$ 468,925			$ 2,162	**$ 471,095**	$ 24,493	$ 19	**$ 495,607**
Heat				$ 1,138				**$ 1,138**	$ 33		**$ 1,171**
Energy products for non-energy uses		$ 1	$ 56,383				$ 6,984	**$ 63,367**		$ 17,410	**$ 80,777**
Pipeline transportation**					$ 596			**$ 596**	$ 84		**$ 680**
Total supply		**$ 310,883**	**$ 610,954**	**$ 554,800**	**$ 797**	**$ 254**	**$ 216,018**	**$ 1,693,705**	**$ 42,852**	**$ 405,839**	**$ 2,142,396**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2019 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 341	$ 2,602	$ 9,085	$ 7,149	$ 2	$ 11,959	**$ 31,140**	$ 268	$ 876	$ 9,464	**$ 41,748**
Coal products		$ 374	$ 1,781			$ 1,164	**$ 3,319**		$ 13	$ 259	**$ 3,591**
Natural gas (distributed)	$ 1,298	$ 524	$ 10,058	$ 279	$ 3,861	$ 20,217	**$ 36,237**	$ 54,042		$ 583	**$ 90,863**
Natural gas (extracted)		$ 18,042	$ 35,139	$ 20,965	$ 1	$ 20,218	**$ 94,365**		$ 6,474	$ 14,903	**$ 115,741**
Crude oil		$ 2,590	$ 292,480	$ 1	$ 87	$ 376	**$ 295,534**		$ 315	$ 73,390	**$ 369,239**
Oil products	$ 13,929	$ 12,522	$ 76,613	$ 24,033	$ 110,736	$ 229,614	**$ 467,447**	$ 343,684	$ 4,986	$ 110,640	**$ 926,758**
Biofuels		$ 4	$ 7,830	$ 163	$ 8	$ 6,962	**$ 14,966**	$ 616	$ 52	$ 587	**$ 16,221**
Electricity	$ 3,549	$ 9,729	$ 59,956	$ 28,272	$ 9,227	$ 194,475	**$ 305,208**	$ 187,309	$ 42	$ 3,049	**$ 495,607**
Heat			$ 90	$ 214	$ 22	$ 802	**$ 1,128**	$ 43			**$ 1,171**
Non-energy uses of energy products	$ 101	$ 4,614	$ 43,578	$ 6	$ 282	$ 15,697	**$ 64,278**	$ 10,645	$ 237	$ 5,617	**$ 80,777**
Pipeline transportation**		$ 369					**$ 369**			$ 311	**$ 680**
Total supply	**$ 19,218**	**$ 51,370**	**$ 536,611**	**$ 81,080**	**$ 124,227**	**$ 501,485**	**$ 1,313,992**	**$ 596,607**	**$ 12,995**	**$ 218,803**	**$ 2,142,396**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A10-1. 2020 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2020					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										11,211	**11,211**
Natural gas										36,993	**36,993**
Crude oil										25,723	**25,723**
Natural gas liquids										1,045	**1,045**
Oil products										6,134	**6,134**
Solid biofuels										2,179	**2,179**
Nuclear										21	**21**
Renewable energy inputs											
Solar energy										539	**539**
Hydroelectric energy										1,027	**1,027**
Wind energy										1,217	**1,217**
Geothermal energy										124	**124**
Other natural inputs											
Liquid biofuels										1,459	**1,459**
Total energy from natural inputs										*87,671*	***87,671***
Energy products											
Production of energy products											
Coal		11,292							110		**11,403**
Natural gas		36,993	69						2,759		**39,821**
Crude oil		25,723							14,777		**40,500**
Natural gas liquids		1,045	379						24		**1,448**
Oil products		6,134	35,543						3,463		**45,140**
Liquid biofuels			1,459						79		**1,538**
Solid biofuels	2,179		2,179								**4,359**
Electricity	307	11	148	13,887	12	130	91		221		**14,806**
Heat	666	23	321	206	5	158					**1,380**
Nuclear		21	8,705						8,685		**17,411**
Total energy products	*3,152*	*81,242*	*48,804*	*14,093*	*17*	*288*	*91*		*30,117*		***177,804***
Energy residuals											
Distribution losses	21	20	214	201	106	345	348				**1,255**
Transformation losses	922	32	444	23,564	19	289					**25,270**
Total energy residuals	*943*	*52*	*659*	*23,765*	*125*	*634*	*348*				***26,525***
Other residual flows											
Residuals from non-energy uses	251	184	783		122	661					**2,001**
Coal								82			**82**
Municipal waste								928			**928**
Total other residual flows	*251*	*184*	*783*		*122*	*661*		*1,010*			***3,011***
Total supply	**4,346**	**81,478**	**50,246**	**37,858**	**264**	**1,583**	**438**	**1,010**	**30,117**	**87,671**	**295,011**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A10-2. 2020 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2020 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		36,993									**36,993**
Natural gas liquids		1,045									**1,045**
Solid biofuels	2,179										**2,179**
Renewable energy inputs											
Hydroelectric energy				1,027							**1,027**
Geothermal energy	1	1	13	57	1	25	27				**124**
Liquid biofuels			1,459								**1,459**
Transformation of energy products											
Natural gas				12,856							**12,856**
Natural gas liquids			271								**271**
Liquid biofuels			1,219								**1,219**
Nuclear			8,705	8,705							**17,411**
Total transformation use			*46,695*	*30,649*							***77,344***
End-use of energy products											
Coal	38	224	733		0	15		-124	1,819		**2,705**
Natural gas	1,239	408	9,313		1,574	3,417	5,191	197	5,626		**26,965**
Crude oil								269	7,643		**7,912**
Natural gas liquids		12	766			1		54	344		**1,177**
Oil products	415	615	4,966	31	8,368	9,422	7,603	57	9,465		**40,943**
Liquid biofuels	3	2	9	3	22	46	69	6	159		**319**
Solid biofuels			1,431		2	75	364		112		**1,984**
Electricity	161	325	2,792	45	137	5,456	5,838		54		**14,806**
Heat	781	28	376	5	6	185					**1,380**
End-use for non-energy purposes	251	184	783		122	661		-25	294		**2,270**
Total end use	*2,887*	*1,797*	*21,170*	*84*	*10,231*	*19,278*	*19,065*	*434*	*25,515*		***100,460***
Energy residuals											
Distribution losses										1,255	**1,255**
Transformation losses										25,270	**25,270**
Total energy residual use										*26,525*	***26,525***
Residual inputs											
Residuals from non-energy uses										2,001	**2,001**
Coal		82									**82**
Municipal waste	45	33	140	511	19	179					**928**
Total residual input energy use	*45*	*115*	*140*	*511*	*19*	*179*					***3,011***
Total use	**5,124**	**83,040**	**69,477**	**33,868**	**10,257**	**19,519**	**19,250**	**434**	**25,515**	**28,526**	**295,011**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A10-1. 2020 Monetary Energy Supply and Use

Monetary supply of energy products 2020 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 17,287					$ 279	**$ 17,567**	$ 833	$ 9,797	**$ 28,197**
Coal products			$ 2,486				$ 46	**$ 2,532**		$ 222	**$ 2,754**
Natural gas (distributed)				$ 82,536	$ 193			**$ 82,729**	$ 6,011		**$ 88,740**
Natural gas (extracted)		$ 49,830				$ 257	$ 4,829	**$ 54,918**		$ 35,505	**$ 90,423**
Crude oil		$ 120,182		$ 85			$ 80,171	**$ 200,437**	$ 7,581	$ 36,604	**$ 244,622**
Oil products		$ 20,636	$ 309,220				$ 38,153	**$ 368,009**	$ 118	$ 260,190	**$ 628,316**
Biofuels			$ 11,422				$ 629	**$ 12,051**		$ 2,435	**$ 14,485**
Electricity		$ 8		$ 442,406			$ 2,110	**$ 444,523**	$ 24,490	$ 9	**$ 469,022**
Heat				$ 1,072				**$ 1,072**	$ 33		**$ 1,104**
Energy products for non-energy uses		$ 1	$ 39,981				$ 5,323	**$ 45,305**		$ 16,567	**$ 61,872**
Pipeline transportation**					$ 571			**$ 571**	$ 82		**$ 653**
Total supply		**$ 207,944**	**$ 363,109**	**$ 526,098**	**$ 764**	**$ 257**	**$ 131,540**	**$ 1,229,712**	**$ 39,148**	**$ 361,328**	**$ 1,630,189**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2020 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 236	$ 1,124	$ 6,472	$ 5,346	$ 2	$ 8,917	**$ 22,098**	$ 88	$ 206	$ 5,805	**$ 28,196**
Coal products		$ 224	$ 1,381			$ 976	**$ 2,581**		$ 2	$ 171	**$ 2,754**
Natural gas (distributed)	$ 1,717	$ 362	$ 9,764	$ 337	$ 3,229	$ 22,529	**$ 37,937**	$ 50,449		$ 354	**$ 88,740**
Natural gas (extracted)		$ 14,110	$ 16,341	$ 20,816	$ 1	$ 18,915	**$ 70,182**		$ 2,318	$ 17,923	**$ 90,423**
Crude oil		$ 2,100	$ 190,328	$ 1	$ 43	$ 232	**$ 192,703**		(424)	$ 52,344	**$ 244,622**
Oil products	$ 11,306	$ 4,625	$ 50,908	$ 14,523	$ 69,394	$ 147,145	**$ 297,902**	$ 251,073	$ 1,111	$ 78,231	**$ 628,316**
Biofuels		$ 2	$ 5,226	$ 100	$ 10	$ 8,073	**$ 13,411**	$ 481	$ 37	$ 556	**$ 14,485**
Electricity	$ 4,418	$ 6,854	$ 53,899	$ 26,116	$ 8,568	$ 175,408	**$ 275,263**	$ 191,586	$ 20	$ 2,153	**$ 469,022**
Heat			$ 72	$ 100	$ 20	$ 879	**$ 1,072**	$ 32			**$ 1,104**
Non-energy uses of energy products	$ 88	$ 3,043	$ 31,891	$ 3	$ 227	$ 14,375	**$ 49,626**	$ 8,258	$ 42	$ 3,946	**$ 61,872**
Pipeline transportation**		$ 345					**$ 345**			$ 309	**$ 653**
Total supply	**$ 17,765**	**$ 32,788**	**$ 366,284**	**$ 67,342**	**$ 81,494**	**$ 397,448**	**$ 963,120**	**$ 501,966**	**$ 3,311**	**$ 161,791**	**$ 1,630,189**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A11-1. 2021 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2021					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										12,144	**12,144**
Natural gas										37,778	**37,778**
Crude oil										25,654	**25,654**
Natural gas liquids										1,088	**1,088**
Oil products										6,402	**6,402**
Solid biofuels										2,228	**2,228**
Nuclear										4	**4**
Renewable energy inputs											
Solar energy										660	**660**
Hydroelectric energy										906	**906**
Wind energy										1,362	**1,362**
Geothermal energy										125	**125**
Other natural inputs											
Liquid biofuels										1,662	**1,662**
Total energy from natural inputs										*90,012*	***90,012***
Energy products											
Production of energy products											
Coal		12,235							115		**12,350**
Natural gas		37,778	72						3,037		**40,887**
Crude oil		25,654							15,485		**41,140**
Natural gas liquids		1,088	421						25		**1,534**
Oil products		6,402	37,666						4,143		**48,211**
Liquid biofuels			1,662						88		**1,750**
Solid biofuels	2,228		2,228								**4,456**
Electricity	309	10	142	14,258	12	131	109		191		**15,163**
Heat	700	23	321	199	5	148					**1,397**
Nuclear		4	8,579						8,574		**17,157**
Total energy products	*3,238*	*83,195*	*51,091*	*14,458*	*17*	*279*	*109*		*31,659*		***184,046***
Energy residuals											
Distribution losses	16	4	174	84	90	337	331				**1,036**
Transformation losses	892	29	409	24,352	18	265					**25,966**
Total energy residuals	*908*	*33*	*583*	*24,436*	*108*	*602*	*331*				***27,002***
Other residual flows											
Residuals from non-energy uses	260	191	810		130	684					**2,074**
Coal								91			**91**
Municipal waste								908			**908**
Total other residual flows	*260*	*191*	*810*		*130*	*684*		*999*			***3,073***
Total supply	**4,405**	**83,418**	**52,484**	**38,894**	**256**	**1,566**	**440**	**999**	**31,659**	**90,012**	**304,134**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A11-2. 2021 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2021					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		37,778									**37,778**
Natural gas liquids		1,088									**1,088**
Solid biofuels	2,228										**2,228**
Renewable energy inputs											
Hydroelectric energy				906							**906**
Geothermal energy	1	2	13	58	1	25	26				**125**
Liquid biofuels			1,662								**1,662**
Transformation of energy products											
Natural gas				12,359							**12,359**
Natural gas liquids			336								**336**
Liquid biofuels			1,337								**1,337**
Nuclear			8,579	8,579							**17,157**
Total transformation use			*48,947*	*31,336*							***80,283***
End-use of energy products											
Coal	41	233	805		0	16		-894	2,175		**2,375**
Natural gas	1,254	413	9,423		1,698	3,533	5,216	-91	7,082		**28,529**
Crude oil								-657	7,323		**6,666**
Natural gas liquids		14	892			1		-59	351		**1,198**
Oil products	449	598	5,362	34	9,458	10,266	8,306	-405	9,530		**43,598**
Liquid biofuels	4	3	13	6	35	73	110	0	171		**414**
Solid biofuels			1,441		1	75	376		126		**2,021**
Electricity	168	339	2,908	46	140	5,628	5,882		53		**15,163**
Heat	814	27	374	4	6	173					**1,397**
End-use for non-energy purposes	260	191	810		130	684		28	300		**2,402**
Total end use	*2,990*	*1,816*	*22,027*	*90*	*11,468*	*20,449*	*19,891*	*-2,078*	*27,110*		***103,762***
Energy residuals											
Distribution losses										1,036	**1,036**
Transformation losses										25,966	**25,966**
Total energy residual use										*27,002*	***27,002***
Residual inputs											
Residuals from non-energy uses										2,074	**2,074**
Coal		91									**91**
Municipal waste	45	33	142	485	20	183					**908**
Total residual input energy use	*45*	*124*	*142*	*485*	*20*	*183*					***3,073***
Total use	**5,278**	**85,013**	**72,791**	**34,655**	**11,495**	**20,700**	**20,093**	**-2,078**	**27,110**	**29,076**	**304,134**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A11-3. 2021 Monetary Energy Supply and Use

Monetary supply of energy products 2021 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 21,579					$ 413	**$ 21,993**	$ 1,390	$ 10,901	**$ 34,283**
Coal products			$ 2,823				$ 37	**$ 2,860**		$ 228	**$ 3,088**
Natural gas (distributed)				$ 101,396	$ 213			**$ 101,609**	$ 6,547		**$ 108,156**
Natural gas (extracted)		$ 103,014	$ 1			$ 292	$ 9,749	**$ 113,056**		$ 39,476	**$ 152,532**
Crude oil		$ 235,805		$ 105			$ 135,355	**$ 371,265**	$ 14,851	$ 46,709	**$ 432,825**
Oil products		$ 43,908	$ 553,912				$ 69,144	**$ 666,963**	$ 197	$ 326,740	**$ 993,900**
Biofuels			$ 17,220				$ 804	**$ 18,024**		$ 3,043	**$ 21,067**
Electricity		$ 5		$ 533,904			$ 2,898	**$ 536,807**	$ 25,147	$ 9	**$ 561,963**
Heat				$ 1,070				**$ 1,070**	$ 33		**$ 1,102**
Energy products for non-energy uses		$ 1	$ 62,732				$ 8,106	**$ 70,839**		$ 20,013	**$ 90,853**
Pipeline transportation**					$ 573			**$ 573**	$ 85		**$ 658**
Total supply		**$ 404,312**	**$ 636,687**	**$ 636,475**	**$ 786**	**$ 292**	**$ 226,506**	**$ 1,905,059**	**$ 48,249**	**$ 447,120**	**$ 2,400,428**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2021 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 251	$ 1,245	$ 6,836	$ 6,388	$ 2	$ 10,849	**$ 25,570**	$ 59	(739)	$ 9,393	**$ 34,283**
Coal products		$ 272	$ 1,380			$ 933	**$ 2,584**			$ 504	**$ 3,088**
Natural gas (distributed)	$ 1,636	$ 733	$ 12,223	$ 416	$ 4,459	$ 28,890	**$ 48,356**	$ 59,418		$ 382	**$ 108,156**
Natural gas (extracted)		$ 35,920	$ 20,279	$ 37,766	$ 1	$ 29,100	**$ 123,066**		$ -9,133	$ 38,599	**$ 152,532**
Crude oil		$ 15,105	$ 350,980	$ 3	$ 561	$ 2,093	**$ 368,742**		(320)	$ 64,403	**$ 432,825**
Oil products	$ 13,573	$ 9,521	$ 86,204	$ 23,424	$ 102,767	$ 259,531	**$ 495,021**	$ 375,828	(6,061)	$ 129,113	**$ 993,900**
Biofuels		$ 3	$ 7,179	$ 240	$ 23	$ 12,606	**$ 20,050**	$ 309	$ 1	$ 706	**$ 21,067**
Electricity	$ 3,835	$ 11,651	$ 59,210	$ 38,832	$ 10,141	$ 234,926	**$ 358,594**	$ 200,699	$ 27	$ 2,643	**$ 561,963**
Heat			$ 83	$ 99	$ 18	$ 878	**$ 1,079**	$ 24			**$ 1,102**
Non-energy uses of energy products	$ 125	$ 5,958	$ 49,154	$ 4	$ 293	$ 19,495	**$ 75,028**	$ 10,792	(386)	$ 5,419	**$ 90,853**
Pipeline transportation**		$ 355					**$ 355**			$ 304	**$ 658**
Total supply	**$ 19,419**	**$ 80,762**	**$ 593,527**	**$ 107,172**	**$ 118,263**	**$ 599,301**	**$ 1,518,445**	**$ 647,128**	**(16,612)**	**$ 251,467**	**$ 2,400,428**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A12-1. 2022 Physical Energy Supply

Physical supply of energy	Production (including households on own account); generation of residuals							Rest of the world			
2022					Transportation	Other					
Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	and storage	industries	Households	Accumulation	Imports	Environment	**Total**
Energy from natural inputs											
Natural resource inputs											
Coal										12,600	**12,600**
Natural gas										39,628	**39,628**
Crude oil										26,995	**26,995**
Natural gas liquids										676	**676**
Oil products										6,937	**6,937**
Solid biofuels										2,399	**2,399**
Nuclear										50	**50**
Renewable energy inputs											
Solar energy										806	**806**
Hydroelectric energy										917	**917**
Wind energy										1,563	**1,563**
Geothermal energy										125	**125**
Other natural inputs											
Liquid biofuels										1,786	**1,786**
Total energy from natural inputs										*94,483*	***94,483***
Energy products											
Production of energy products											
Coal		12,706							143		**12,849**
Natural gas		39,628	80						3,270		**42,978**
Crude oil		27,549							15,913		**43,462**
Natural gas liquids		676	382						23		**1,081**
Oil products		6,937	39,394						3,590		**49,922**
Liquid biofuels			1,786						77		**1,863**
Solid biofuels	2,399		2,399								**4,797**
Electricity	317	10	139	14,680	15	147	142		205		**15,656**
Heat	708	22	310	223	5	140					**1,409**
Nuclear		50	8,505						8,455		**17,010**
Total energy products	*3,424*	*87,579*	*52,995*	*14,903*	*20*	*287*	*142*		*31,677*		***191,028***
Energy residuals											
Distribution losses	25	63	250	390	148	363	367				**1,605**
Transformation losses	857	27	376	20,045	27	306					**21,639**
Total energy residuals	*882*	*90*	*626*	*20,435*	*176*	*669*	*367*				***23,244***
Other residual flows											
Residuals from non-energy uses	241	177	752		137	635					**1,941**
Coal								106			**106**
Municipal waste								870			**870**
Total other residual flows	*241*	*177*	*752*		*137*	*635*		*976*			***2,917***
Total supply	**4,546**	**87,846**	**54,372**	**35,339**	**333**	**1,591**	**509**	**976**	**31,677**	**94,483**	**311,672**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A12-2. 2022 Physical Energy Use

Physical use of energy	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			
2022 Petajoules (PJ)	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	**Total**
Natural resource inputs											
Natural gas		39,628									**39,628**
Natural gas liquids		676									**676**
Solid biofuels	2,399										**2,399**
Renewable energy inputs											
Hydroelectric energy				917							**917**
Geothermal energy	1	1	13	58	1	25	26				**125**
Liquid biofuels			1,786								**1,786**
Transformation of energy products											
Natural gas				13,373							**13,373**
Natural gas liquids			349								**349**
Liquid biofuels			1,346								**1,346**
Nuclear			8,505	8,505							**17,010**
Total transformation use			*50,521*	*31,894*							***82,415***
End-use of energy products											
Coal	40	277	784		0	16		-25	2,208		**3,300**
Natural gas	1,282	422	9,639		1,920	3,779	5,517	-306	7,352		**29,605**
Crude oil								-1,270	8,484		**7,214**
Natural gas liquids		6	399			0		21	306		**733**
Oil products	449	595	5,589	35	10,077	10,160	8,284	-10	10,488		**45,667**
Liquid biofuels	6	4	17	7	45	93	140	12	194		**517**
Solid biofuels			1,493		2	75	474		146		**2,190**
Electricity	172	345	2,963	48	146	5,866	6,057		60		**15,656**
Heat	839	27	368	4	6	166					**1,409**
End-use for non-energy purposes	241	177	752		137	635		14	367		**2,323**
Total end use	*3,028*	*1,853*	*22,003*	*94*	*12,332*	*20,790*	*20,473*	*-1,564*	*29,605*		***108,613***
Energy residuals											
Distribution losses										1,605	**1,605**
Transformation losses										21,639	**21,639**
Total energy residual use										*23,244*	***23,244***
Residual inputs											
Residuals from non-energy uses										1,941	**1,941**
Coal		106									**106**
Municipal waste	45	33	141	373	37	240					**870**
Total residual input energy use	*45*	*139*	*141*	*373*	*37*	*240*					***2,917***
Total use	**5,487**	**88,881**	**74,464**	**35,421**	**12,377**	**21,106**	**20,709**	**-1,564**	**29,605**	**25,185**	**311,672**

Grey shaded cells are zero by definition. *Agriculture, forestry, and fishing

Table A12-3. 2022 Monetary Energy Supply and Use

Monetary supply of energy products 2022 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 33,375					$ 620	**$ 33,995**	$ 2,083	$ 15,131	**$ 51,209**
Coal products			$ 3,364				$ 38	**$ 3,402**		$ 286	**$ 3,688**
Natural gas (distributed)				$ 135,560	$ 226			**$ 135,787**	$ 7,462		**$ 143,249**
Natural gas (extracted)		$ 155,655	$ 1			$ 310	$ 17,588	**$ 173,553**		$ 43,024	**$ 216,577**
Crude oil		$ 369,329		$ 140			$ 201,564	**$ 571,034**	$ 25,433	$ 56,039	**$ 652,506**
Oil products		$ 65,411	$ 853,619				$ 91,923	**$ 1,010,953**	$ 341	$ 378,045	**$ 1,389,339**
Biofuels			$ 18,905				$ 1,147	**$ 20,053**		$ 3,436	**$ 23,489**
Electricity		$ 51		$ 618,485			$ 4,864	**$ 623,400**	$ 27,240	$ 48	**$ 650,688**
Heat				$ 1,069				**$ 1,069**	$ 29		**$ 1,099**
Energy products for non-energy uses		$ 1	$ 76,705				$ 11,711	**$ 88,417**		$ 22,875	**$ 111,292**
Pipeline transportation**					$ 585			**$ 585**	$ 95		**$ 680**
Total supply		**$ 623,822**	**$ 952,594**	**$ 755,255**	**$ 811**	**$ 310**	**$ 329,456**	**$ 2,662,247**	**$ 62,685**	**$ 518,884**	**$ 3,243,816**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2022 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 382	$ 1,892	$ 7,675	$ 10,740	$ 2	$ 12,980	**$ 33,671**	$ 118	$ 33	$ 17,387	**$ 51,209**
Coal products		$ 393	$ 1,501			$ 1,010	**$ 2,905**		$ 12	$ 771	**$ 3,688**
Natural gas (distributed)	$ 1,830	$ 1,609	$ 15,873	$ 744	$ 5,101	$ 38,438	**$ 63,595**	$ 79,132		$ 522	**$ 143,249**
Natural gas (extracted)		$ 47,942	$ 31,859	$ 51,897	$ 1	$ 27,131	**$ 158,830**		$ -3,757	$ 61,504	**$ 216,577**
Crude oil		$ 20,273	$ 515,606	$ 8	$ 518	$ 2,947	**$ 539,352**		$ 2,742	$ 110,412	**$ 652,506**
Oil products	$ 11,267	$ 18,069	$ 102,411	$ 34,805	$ 158,778	$ 353,797	**$ 679,127**	$ 502,327	$ 6,243	$ 201,642	**$ 1,389,339**
Biofuels		$ 2	$ 9,883	$ 284	$ 18	$ 11,973	**$ 22,160**	$ 451	$ 49	$ 829	**$ 23,489**
Electricity	$ 3,316	$ 18,540	$ 66,703	$ 47,494	$ 11,657	$ 264,676	**$ 412,387**	$ 234,797	$ 117	$ 3,387	**$ 650,688**
Heat			$ 72	$ 126	$ 12	$ 868	**$ 1,079**	$ 20			**$ 1,099**
Non-energy uses of energy products	$ 93	$ 10,047	$ 56,686	$ 7	$ 354	$ 24,011	**$ 91,197**	$ 12,552	$ 1,344	$ 6,199	**$ 111,292**
Pipeline transportation**		$ 394					**$ 394**			$ 286	**$ 680**
Total supply	**$ 16,887**	**$ 119,161**	**$ 808,271**	**$ 146,105**	**$ 176,441**	**$ 737,832**	**$ 2,004,696**	**$ 829,397**	**$ 6,782**	**$ 402,940**	**$ 3,243,816**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Table A13. 2023 Monetary Energy Supply and Use

Monetary supply of energy products 2023 Millions of $	Production and distribution						Rest of the world	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser s prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Imports				
Energy products											
Coal		$ 32,846					$ 467	**$ 33,313**	$ 1,658	$ 14,712	**$ 49,682**
Coal products			$ 3,650				$ 103	**$ 3,752**		$ 313	**$ 4,065**
Natural gas (distributed)				$ 126,350	$ 232			**$ 126,582**	$ 7,416		**$ 133,997**
Natural gas (extracted)		$ 73,741	$ 1			$ 326	$ 9,195	**$ 83,263**		$ 43,618	**$ 126,881**
Crude oil		$ 311,974		$ 133			$ 166,667	**$ 478,773**	$ 18,956	$ 51,527	**$ 549,256**
Oil products		$ 43,263	$ 701,369				$ 78,647	**$ 823,280**	$ 318	$ 347,937	**$ 1,171,535**
Biofuels			$ 18,670				$ 788	**$ 19,458**		$ 3,390	**$ 22,848**
Electricity		$ 19		$ 558,180			$ 3,768	**$ 561,967**	$ 27,698	$ 66	**$ 589,731**
Heat				$ 1,069				**$ 1,069**	$ 30		**$ 1,099**
Energy products for non-energy uses		$ 1	$ 69,580				$ 10,429	**$ 80,010**		$ 23,103	**$ 103,113**
Pipeline transportation**					$ 578			**$ 578**	$ 81		**$ 659**
Total supply		**$ 461,843**	**$ 793,269**	**$ 685,732**	**$ 810**	**$ 326**	**$ 270,065**	**$ 2,212,045**	**$ 56,156**	**$ 484,665**	**$ 2,752,867**

*Agriculture, forestry, and fishing. **Non-margin and international freight.

Monetary use of energy products 2023 Millions of $ (purchaser's prices)	Intermediate consumption						Total intermediate consumption	Households	Accumulation	Rest of the world	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries				Exports	
Energy products											
Coal	$ 372	$ 1,789	$ 8,523	$ 8,386	$ 2	$ 15,037	**$ 34,109**	$ 94	$ 333	$ 15,146	**$ 49,682**
Coal products		$ 335	$ 1,902			$ 1,238	**$ 3,475**		$ 11	$ 579	**$ 4,065**
Natural gas (distributed)	$ 1,933	$ 947	$ 15,445	$ 724	$ 4,909	$ 41,087	**$ 65,045**	$ 68,368		$ 585	**$ 133,997**
Natural gas (extracted)		$ 19,918	$ 13,947	$ 29,600	$ 1	$ 21,145	**$ 84,612**		$ 2,121	$ 40,148	**$ 126,881**
Crude oil		$ 11,294	$ 422,996	$ 8	$ 535	$ 3,245	**$ 438,078**		$ 1,619	$ 109,560	**$ 549,256**
Oil products	$ 10,376	$ 10,779	$ 86,147	$ 24,409	$ 129,704	$ 273,569	**$ 534,983**	$ 459,103	$ 8,623	$ 168,825	**$ 1,171,535**
Biofuels		$ 2	$ 8,235	$ 252	$ 18	$ 13,324	**$ 21,831**	$ 349	$ 13	$ 654	**$ 22,848**
Electricity	$ 3,007	$ 10,849	$ 59,295	$ 32,123	$ 9,707	$ 231,469	**$ 346,451**	$ 239,400	$ 170	$ 3,710	**$ 589,731**
Heat			$ 71	$ 86	$ 10	$ 916	**$ 1,084**	$ 16			**$ 1,099**
Non-energy uses of energy products	$ 103	$ 7,442	$ 52,328	$ 6	$ 328	$ 23,483	**$ 83,691**	$ 13,325	$ 585	$ 5,512	**$ 103,113**
Pipeline transportation**		$ 392					**$ 392**			$ 267	**$ 659**
Total supply	**$ 15,792**	**$ 63,747**	**$ 668,889**	**$ 95,594**	**$ 145,215**	**$ 624,513**	**$ 1,613,750**	**$ 780,654**	**$ 13,475**	**$ 344,987**	**$ 2,752,867**

*Agriculture, forestry, and fishing. **Non-margin and international freight.