

Pilot U.S. Physical and Monetary Energy Flow Accounts

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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 sub-national 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

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1. Introduction

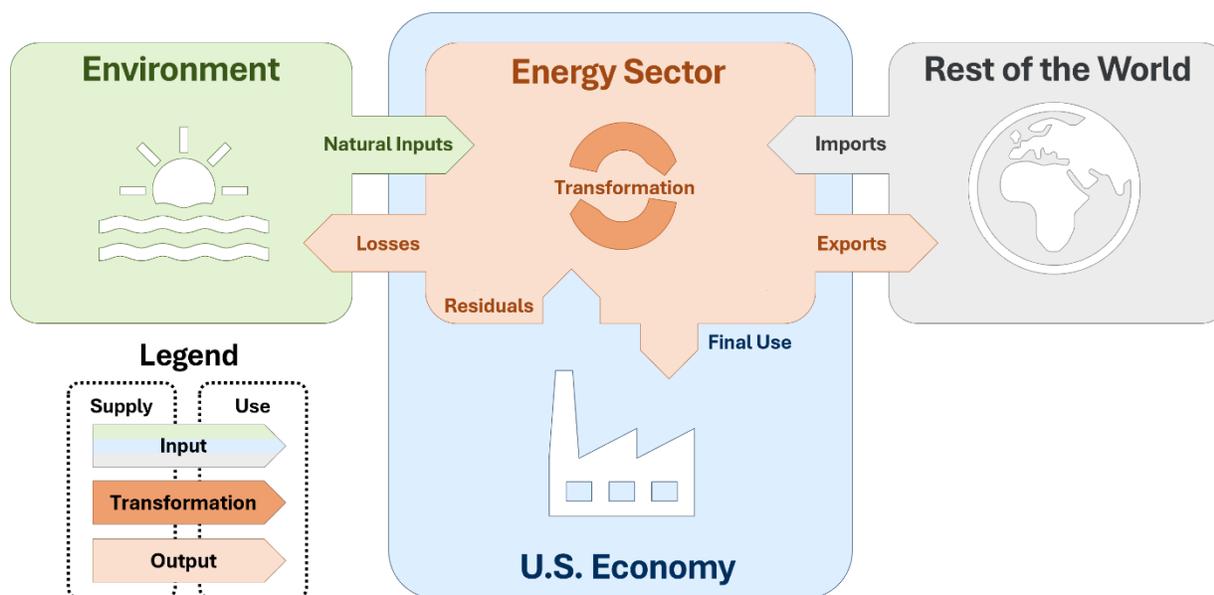
Energy, in its various forms, keeps the economy moving. All economic activity consumes energy; modern economic development has its roots in technological advances that greatly expanded humans' ability to capture, store, and utilize energy. In recent years, debates regarding fossil fuels, nuclear energy, 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 standards² 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.

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.

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.

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 car¹¹ 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		Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										806	806
Hydroelectric energy										917	917
Wind energy										1,563	1,563
Geothermal energy										125	125
<i>Other natural inputs</i>											
Liquid biofuels										1,786	1,786
Total energy from natural inputs										94,483	94,483
Energy products											
<i>Production of energy products</i>											
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			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
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.

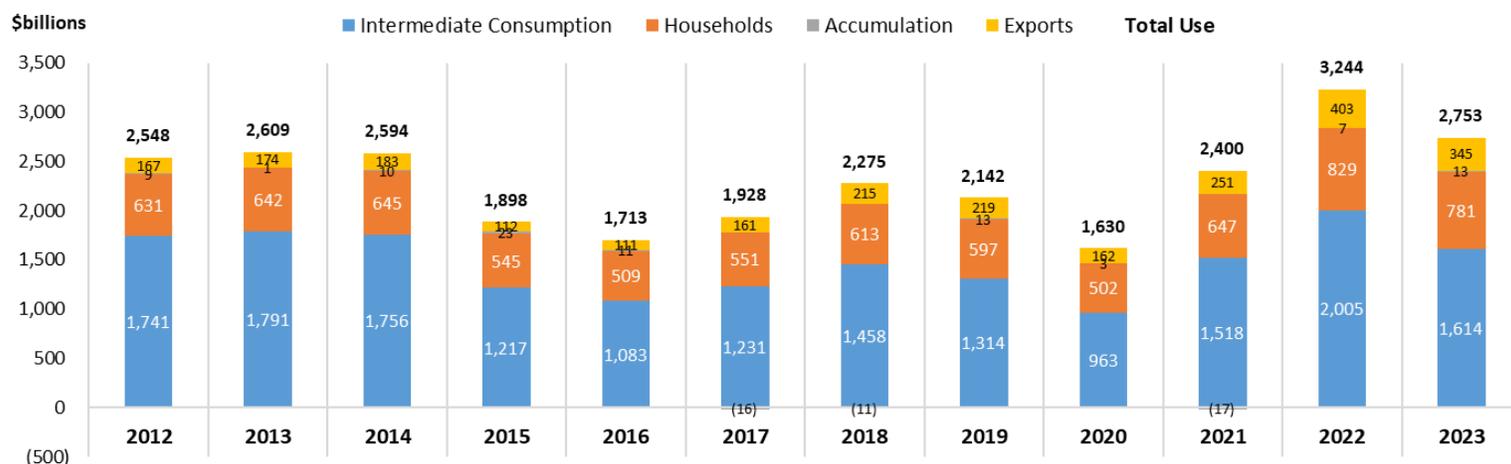
The products included in the MEFA are listed by SEEA category in Appendix Table 1. We also indicate in the table whether the product is considered an energy product. We used the SEEA Energy manual (UNSD 2019) as a guide to decide which product categories to include. The only notable divergence relates 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

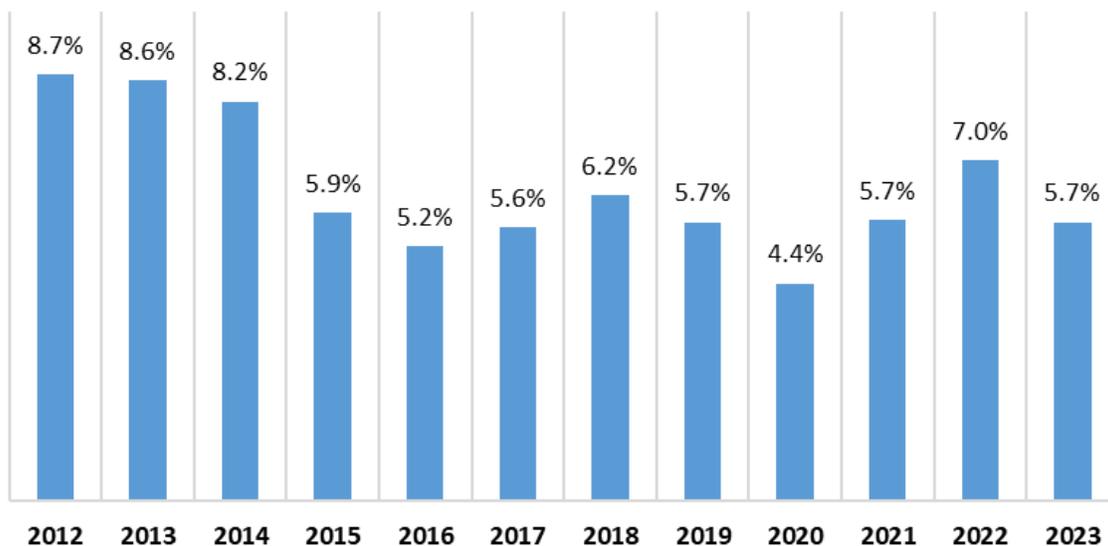


were mostly consistent each year). Electricity represented the second largest SEEA category over the study period, averaging 22.2 percent of total supply and use between 2012 and 2023, followed closely by the oil extracted category (18.6 percent). The oil products, electricity, and oil extracted categories 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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 consumption	Households	Accumulation	Rest of the world Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 PEFA 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 PEFA. 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 (%)

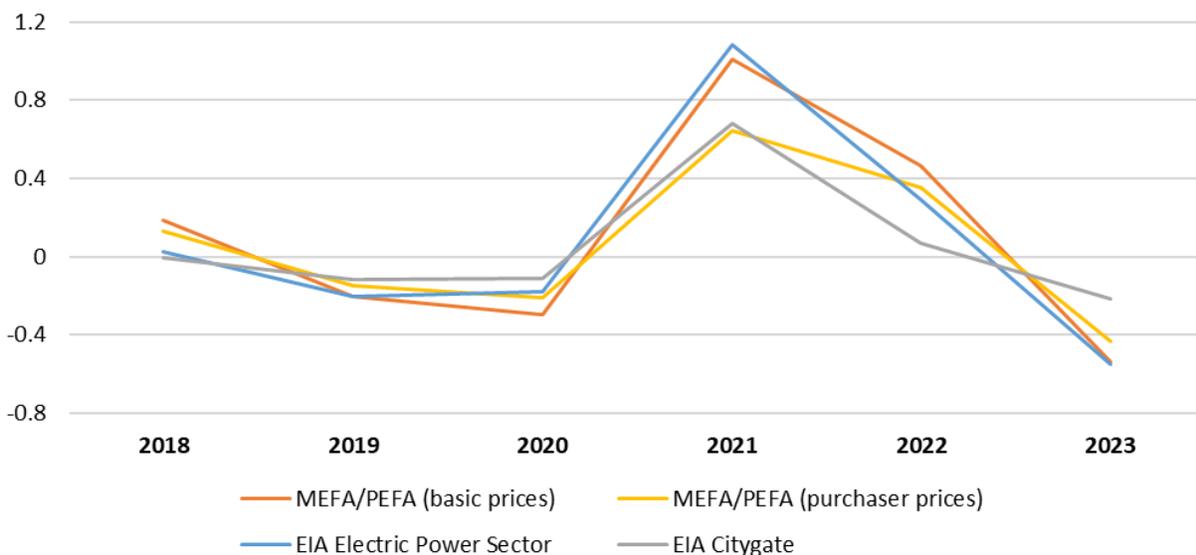


Table 5. Average Prices (\$ million/PJ) for Natural Gas Using Different Sources

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 5. Supply of Energy by State, 2023 (billions of \$)

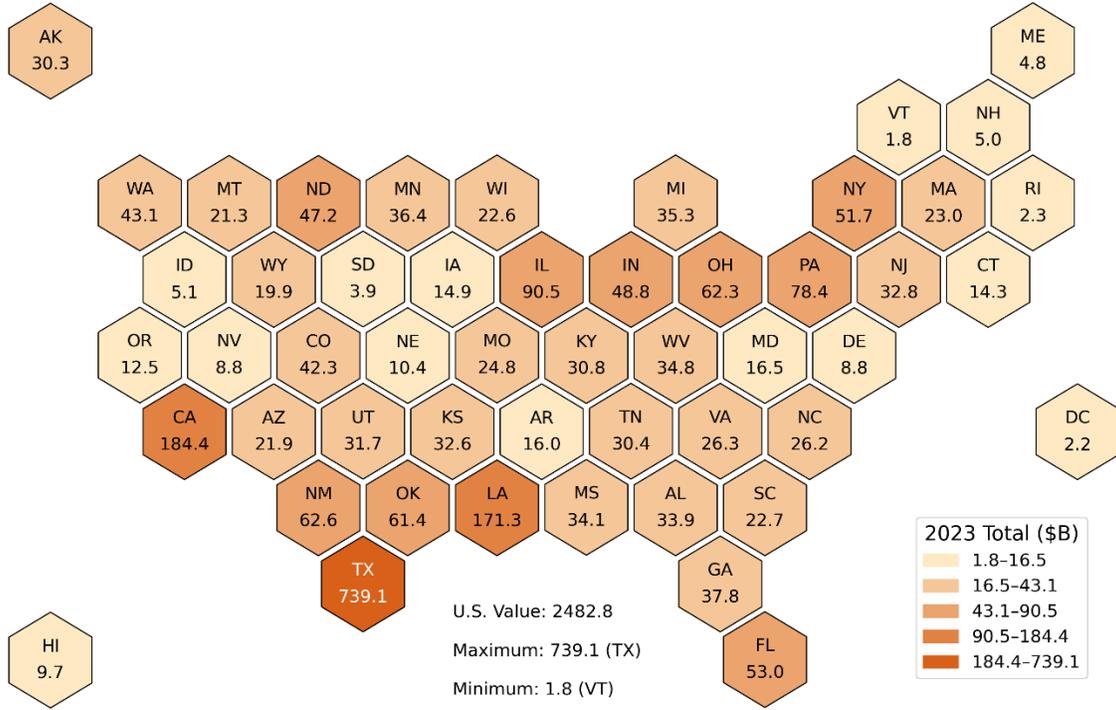
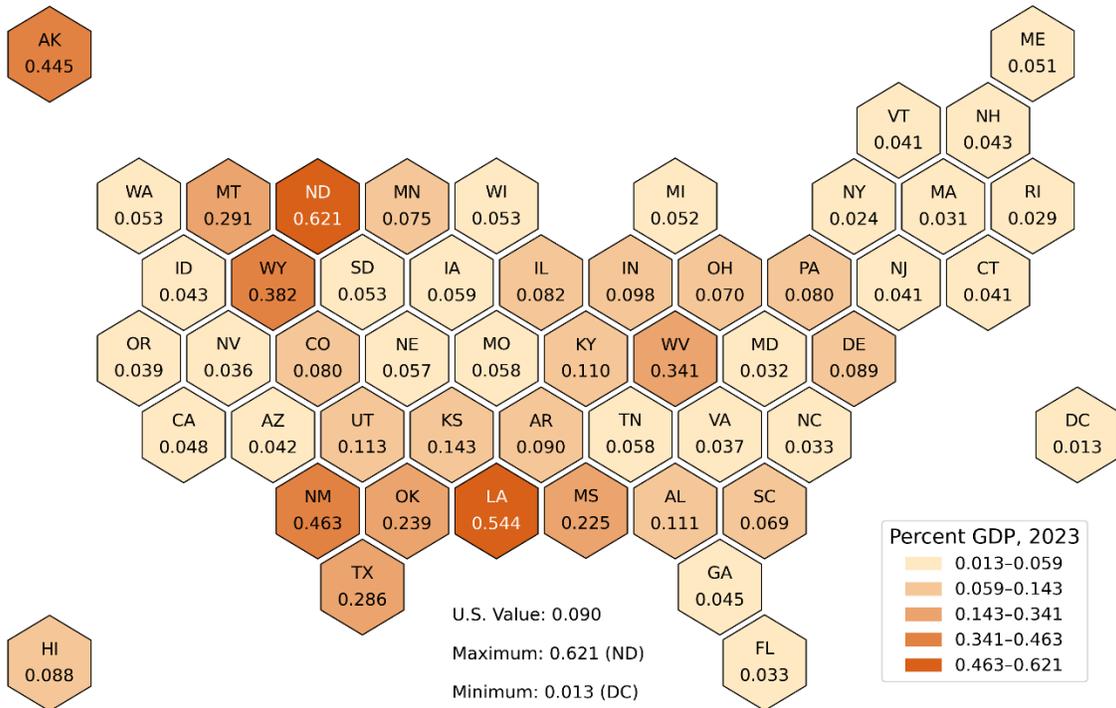


Figure 6. Supply of Energy by State as Share of State GDP, 2023



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.

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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 2012 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										99	99
Hydroelectric energy										994	994
Wind energy										507	507
Geothermal energy										123	123
<i>Other natural inputs</i>											
Liquid biofuels										1,306	1,306
Total energy from natural inputs										71,695	71,695
Energy products											
<i>Production of energy products</i>											
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 2012 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		25,965									25,965
Natural gas liquids		568									568
Solid biofuels	2,270										2,270
<i>Renewable energy inputs</i>											
Hydroelectric energy				994							994
Geothermal energy	1	2	13	56	1	26	25				123
Liquid biofuels			1,306								1,306
<i>Transformation of energy products</i>											
Natural gas				9,858							9,858
Natural gas liquids			343								343
Liquid biofuels			1,195								1,195
Nuclear			8,506	8,506							17,011
<i>Total transformation use</i>			49,703	35,726							85,428
<i>End-use of energy products</i>											
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
<i>Total end use</i>	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
<i>Total energy residual use</i>										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
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 consumption	Households	Accumulation	Rest of the world Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2013 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										126	126
Hydroelectric energy										967	967
Wind energy										604	604
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,356	1,356
Total energy from natural inputs										74,320	74,320
Energy products											
<i>Production of energy products</i>											
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 2013 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2014 Petajoules (PJ)	Production (including households on own account): generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										170	170
Hydroelectric energy										934	934
Wind energy										654	654
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,441	1,441
Total energy from natural inputs										80,162	80,162
Energy products											
<i>Production of energy products</i>											
Coal		21,403									21,668
Natural gas		28,189	65						266	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 2014 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		28,189									28,189
Natural gas liquids		704									704
Solid biofuels	2,530										2,530
<i>Renewable energy inputs</i>											
Hydroelectric energy				934							934
Geothermal energy	1	2	13	57	1	26	25				124
Liquid biofuels			1,441								1,441
<i>Transformation of energy products</i>											
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
<i>End-use of energy products</i>											
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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2015 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										207	207
Hydroelectric energy										897	897
Wind energy										687	687
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,470	1,470
Total energy from natural inputs										80,418	80,418
Energy products											
<i>Production of energy products</i>											
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 2015 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		29,612									29,612
Natural gas liquids		775									775
Solid biofuels	2,432										2,432
<i>Renewable energy inputs</i>											
Hydroelectric energy				897							897
Geothermal energy	1	2	13	58	1	26	25				124
Liquid biofuels			1,470								1,470
<i>Transformation of energy products</i>											
Natural gas				10,601							10,601
Natural gas liquids			299								299
Liquid biofuels			1,344								1,344
Nuclear			8,796	8,796							17,592
<i>Total transformation use</i>			52,087	34,885							86,973
<i>End-use of energy products</i>											
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
<i>Total end use</i>	2,625	1,960	20,364	82	10,544	19,920	21,374	2,348	14,608		93,825
<i>Energy residuals</i>											
Distribution losses										1,224	1,224
Transformation losses										27,671	27,671
<i>Total energy residual use</i>										28,895	28,895
<i>Residual inputs</i>											
Residuals from non-energy uses										2,210	2,210
Coal		121									121
Municipal waste	54	39	167	594	23	217					1,094
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2016 Petajoules (PJ)	Production (including households on own account): generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										265	265
Hydroelectric energy										964	964
Wind energy										817	817
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,562	1,562
Total energy from natural inputs										75,949	75,949
Energy products											
<i>Production of energy products</i>											
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 2016 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		29,094									29,094
Natural gas liquids		777									777
Solid biofuels	2,416										2,416
<i>Renewable energy inputs</i>											
Hydroelectric energy				964							964
Geothermal energy	1	1	13	57	1	26	25				124
Liquid biofuels			1,562								1,562
<i>Transformation of energy products</i>											
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
<i>End-use of energy products</i>											
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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 2017 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										347	347
Hydroelectric energy										1,081	1,081
Wind energy										915	915
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,601	1,601
Total energy from natural inputs										79,431	79,431
Energy products											
<i>Production of energy products</i>											
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 2017 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		29,884									29,884
Natural gas liquids		809									809
Solid biofuels	2,378										2,378
<i>Renewable energy inputs</i>											
Hydroelectric energy				1,081							1,081
Geothermal energy	1	2	13	58	1	26	25				124
Liquid biofuels			1,601								1,601
<i>Transformation of energy products</i>											
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
<i>End-use of energy products</i>											
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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 consumption	Households	Accumulation	Rest of the world Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 2018 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										405	405
Hydroelectric energy										1,053	1,053
Wind energy										982	982
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,659	1,659
Total energy from natural inputs										87,545	87,545
Energy products											
<i>Production of energy products</i>											
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 2018 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		33,637									33,637
Natural gas liquids		900									900
Solid biofuels	2,477										2,477
<i>Renewable energy inputs</i>											
Hydroelectric energy				1,053							1,053
Geothermal energy	1	1	13	58	1	26	26				124
Liquid biofuels			1,659								1,659
<i>Transformation of energy products</i>											
Natural gas				11,671							11,671
Natural gas liquids			333								333
Liquid biofuels			1,379								1,379
Nuclear			8,903	8,903							17,805
<i>Total transformation use</i>			53,834	33,888							87,723
<i>End-use of energy products</i>											
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
<i>Total end use</i>	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
<i>Total energy residual use</i>										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
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2019 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										453	453
Hydroelectric energy										1,036	1,036
Wind energy										1,065	1,065
Geothermal energy										123	123
<i>Other natural inputs</i>											
Liquid biofuels										1,606	1,606
Total energy from natural inputs										93,391	93,391
Energy products											
<i>Production of energy products</i>											
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 2019 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		37,124									37,124
Natural gas liquids		995									995
Solid biofuels	2,461										2,461
<i>Renewable energy inputs</i>											
Hydroelectric energy				1,036							1,036
Geothermal energy	1	2	13	56	1	25	26				123
Liquid biofuels			1,606								1,606
<i>Transformation of energy products</i>											
Natural gas				12,499							12,499
Natural gas liquids			336								336
Liquid biofuels			1,383								1,383
Nuclear			8,917	8,917							17,834
<i>Total transformation use</i>			53,247	32,637							85,884
<i>End-use of energy products</i>											
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
<i>Total end use</i>	2,977	2,051	21,910	92	12,188	21,259	20,846	1,270	25,691		108,284
<i>Energy residuals</i>											
Distribution losses										1,412	1,412
Transformation losses										26,346	26,346
<i>Total energy residual use</i>										27,758	27,758
<i>Residual inputs</i>											
Residuals from non-energy uses										2,121	2,121
Coal		97									97
Municipal waste	44	32	137	523	19	178					934
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 2020 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										539	539
Hydroelectric energy										1,027	1,027
Wind energy										1,217	1,217
Geothermal energy										124	124
<i>Other natural inputs</i>											
Liquid biofuels										1,459	1,459
Total energy from natural inputs										87,671	87,671
Energy products											
<i>Production of energy products</i>											
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 2020 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		36,993									36,993
Natural gas liquids		1,045									1,045
Solid biofuels	2,179										2,179
<i>Renewable energy inputs</i>											
Hydroelectric energy				1,027							1,027
Geothermal energy	1	1	13	57	1	25	27				124
Liquid biofuels			1,459								1,459
<i>Transformation of energy products</i>											
Natural gas				12,856							12,856
Natural gas liquids			271								271
Liquid biofuels			1,219								1,219
Nuclear			8,705	8,705							17,411
<i>Total transformation use</i>			46,695	30,649							77,344
<i>End-use of energy products</i>											
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
<i>Total end use</i>	2,887	1,797	21,170	84	10,231	19,278	19,065	434	25,515		100,460
<i>Energy residuals</i>											
Distribution losses										1,255	1,255
Transformation losses										25,270	25,270
<i>Total energy residual use</i>										26,525	26,525
<i>Residual inputs</i>											
Residuals from non-energy uses										2,001	2,001
Coal		82									82
Municipal waste	45	33	140	511	19	179					928
<i>Total residual input energy use</i>	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							Commodity taxes	Trade and transport margins	Total (purchaser's prices)	
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Rest of the world Imports				Total (basic prices)
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Total intermediate consumption					
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 2021	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Petajoules (PJ)											
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										660	660
Hydroelectric energy										906	906
Wind energy										1,362	1,362
Geothermal energy										125	125
<i>Other natural inputs</i>											
Liquid biofuels										1,662	1,662
<i>Total energy from natural inputs</i>										90,012	90,012
Energy products											
<i>Production of energy products</i>											
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
<i>Total energy products</i>	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
<i>Total energy residuals</i>	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
<i>Total other residual flows</i>	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 2021 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		37,778									37,778
Natural gas liquids		1,088									1,088
Solid biofuels	2,228										2,228
<i>Renewable energy inputs</i>											
Hydroelectric energy				906							906
Geothermal energy	1	2	13	58	1	25	26				125
Liquid biofuels			1,662								1,662
<i>Transformation of energy products</i>											
Natural gas				12,359							12,359
Natural gas liquids			336								336
Liquid biofuels			1,337								1,337
Nuclear			8,579	8,579							17,157
<i>Total transformation use</i>			48,947	31,336							80,283
<i>End-use of energy products</i>											
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
<i>Total end use</i>	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
<i>Total energy residual use</i>										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
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 2022 Petajoules (PJ)	Production (including households on own account); generation of residuals							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Imports	Environment	
Energy from natural inputs											
<i>Natural resource inputs</i>											
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
<i>Renewable energy inputs</i>											
Solar energy										806	806
Hydroelectric energy										917	917
Wind energy										1,563	1,563
Geothermal energy										125	125
<i>Other natural inputs</i>											
Liquid biofuels										1,786	1,786
Total energy from natural inputs										94,483	94,483
Energy products											
<i>Production of energy products</i>											
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 2022 Petajoules (PJ)	Use of energy resources; intermediate consumption; end use of energy products							Rest of the world			Total
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries	Households	Accumulation	Exports	Environment	
<i>Natural resource inputs</i>											
Natural gas		39,628									39,628
Natural gas liquids		676									676
Solid biofuels	2,399										2,399
<i>Renewable energy inputs</i>											
Hydroelectric energy				917							917
Geothermal energy	1	1	13	58	1	25	26				125
Liquid biofuels			1,786								1,786
<i>Transformation of energy products</i>											
Natural gas				13,373							13,373
Natural gas liquids			349								349
Liquid biofuels			1,346								1,346
Nuclear			8,505	8,505							17,010
<i>Total transformation use</i>			50,521	31,894							82,415
<i>End-use of energy products</i>											
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
<i>Total end use</i>	3,028	1,853	22,003	94	12,332	20,790	20,473	-1,564	29,605		108,613
<i>Energy residuals</i>											
Distribution losses										1,605	1,605
Transformation losses										21,639	21,639
<i>Total energy residual use</i>										23,244	23,244
<i>Residual inputs</i>											
Residuals from non-energy uses										1,941	1,941
Coal		106									106
Municipal waste	45	33	141	373	37	240					870
<i>Total residual input energy use</i>	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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries						
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 Imports	Total (basic prices)	Commodity taxes	Trade and transport margins	Total (purchaser's prices)
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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 Exports	Total use
	AFF*	Mining	Manufacturing	Utilities	Transportation and storage	Other industries					
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.