

Global and U.S. Energy Outlook

Energy production and consumption patterns in the United States are closely linked to global energy markets and trends, as well as to North American energy resources, energy production, transportation and storage systems. Equally important are broad macro economic conditions, consumer behavior, and deployment of technological advances. Globally, the aspirations for improved living standards in developing countries will significantly impact overall patterns.

The U.S. Energy Information Administration¹ projects the following trends during the next two decades:

By 2020, world oil demand is projected to increase by nearly 36 million barrels per day and of this increased demand:

- Almost 60 percent of the incremental demand will be in developing countries;
- 60 percent of the new demand will be in the transportation sector;
- 63 percent of the new demand will be supplied by OPEC members;
- 44 percent of the new demand is set to come from the Persian Gulf region.

All of these trends have enormous implications for global and U.S. energy policymakers.

By 2020, U.S. energy patterns are projected to shift dramatically:

- Total U.S. primary energy consumption is projected to grow from 97.3 quadrillion Btu's in 2001 to 130.1 quadrillion Btu's in 2020—an increase of about one-third.
- The transportation sector (96 percent supplied by oil) is expected to grow more rapidly than any other, increasing from about 13 million barrels per day in 2001 to about 21 million barrels per day in 2020.
- Natural gas consumption is projected to grow from 22.7 trillion cubic feet in 2001 to 32.1 trillion cubic feet in 2020, primarily as a result of electricity generation; domestic natural gas production is projected to increase from 19.5 trillion cubic feet to 25.1 trillion cubic feet. Net imports of natural gas, primarily from Canada, are projected to increase from 3.5 Trillion cubic feet in 2000 to 5.5 trillion cubic feet in 2020.
- Coal consumption is projected to increase from 1.051 billion tons in 2001 to 1.444 billion tons in 2025. Coal for electricity generation constitutes about 90 percent of the total coal demand; coal production will grow in line with demand requirements.

- Petroleum is expected to remain the dominant fuel in U.S. markets maintaining about 40 percent market share; domestic crude oil production remains relatively stable in the projection.
- Renewable energy production is projected to increase from 5.5 quadrillion Btu's in 2001 to 8.7 quadrillion Btu's in 2020; renewable energy's market share is projected to remain stable.
- Total U.S. electricity demand is expected to increase at an average annual rate of 1.9 percent through 2020, while natural gas-fired generation is projected to increase at an average annual rate of 5.2 percent and coal-fired is projected to increase at a 1.1 percent annual rate.
- EIA projects that approximately 428,000 megawatts of new generating capacity will be installed by 2025. The United States currently has over 800,000 megawatts of capacity, hence this additional capacity is very significant.
- Energy intensity (thousands of Btu per dollar of GDP) is projected to fall 1.5 percent per year from 2001 to 2020.

Exciting new technological developments, such as advanced oil extraction technology; carbon sequestration; advanced nuclear designs; highly efficient gas turbines; green building technologies; renewable resources development; hydrogen fuel cells and sophisticated information technology and automatic controls all have the potential to have major impacts on energy production and utilization trends. All of these technological developments coupled with expanding energy resource development will be needed to meet the economic, social and security needs of all the globe's cities in the twenty first century.

¹ The DOE/EIA projections are not statements of what will happen but of what might happen, given the assumptions and methodologies used. The projections are business-as-usual trend forecasts, given known technology, technological and demographic trends, and current laws and regulations. Thus, they provide a policy-neutral reference case that can be used to analyze policy initiatives.

Source: DOE/EIA Annual Energy Outlook 2003 and International Energy Outlook 2002.

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