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The U.S. Energy Outlook

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Increasing levels of energy efficiency will combine with the shale gas boom and growing oil production to bring the United States energy sector slow growth in energy demand and fast growth in energy production over the next twenty-five years, said Energy Information Administrator Adam Sieminski in a presentation to the Energy Policy Seminar at HKS on Monday, March 10.

Growth in crude oil and natural gas production continue to be a big part of the energy picture—just in the last year, Sieminski noted, access to more current data has caused the Energy Information Administration (the EIA) to revise its projections for oil production significantly upward. Oil production is now projected to reach 10 million barrels per day, versus the previous year’s projection of peak production at 8 million barrels per day. This growth is projected to take place in an economy in which increased transportation fuel efficiency means that the use of oil in the transportation sector is not projected to increase, allowing the U.S. to “maintain its status as a net exporter of petroleum products.”



Increases in oil and gas production have a number of strategic implications for the United States, Sieminski said, including a possible need to adapt the oil refining infrastructure to the type of crude oil now being produced, questions about whether the U.S. should encourage the export of LNG and begin allowing the export of crude oil, and the future of the Strategic Petroleum Reserve.

Turning to the prospects for the electricity sector, Sieminski showed base case predictions of slow growth in electricity demand, met by relatively small increases in natural gas and renewable resources, with coal and nuclear power retaining somewhat reduced but still significant positions in the 2040 market. This baseline case forecasts U.S. energy-related CO2 emissions holding fairly steady at current levels through 2040, remaining below 2005 levels. This projection changes significantly in scenarios in which a \$10 carbon fee and \$25 carbon fee (increasing by 5% per year) are included, with a \$25 carbon fee resulted in the near-elimination of coal from the generation mix by 2040. Even in the high carbon fee case, however, the projection for renewables topped out at only 27% of the energy mix by 2040, with nuclear power and natural gas making up the rest of the electricity generation portfolio.

Sieminski noted, however, some wild cards not included in EIA forecasts that might change outcomes significantly—for example, the development of cost-effective utility-scale energy storage, which would contribute significantly to the feasibility of a larger share of renewable energy in electricity generation. These kinds of possible technological breakthroughs, Sieminski said, are very hard to factor in to the EIA’s long-term energy projections.

Sieminski spoke as part of the Kennedy School’s Energy Policy Seminar Series, which is jointly sponsored by the Energy Technology Innovation Policy research group of the Belfer Center on Science and International Affairs and by the Consortium for Energy Policy Research of the Mossavar-Rahmani Center on Business and Government.