

DOE Releases Sector-Specific Appendices to the Quadrennial Energy Review

The U.S. Department of Energy (DOE) recently published four sector-specific appendices under the first installment of the Quadrennial Energy Review (QER). The QER, which was called for under the President's Climate Action Plan and administered by the DOE, examined how to modernize the nation's energy infrastructure to promote economic competitiveness, energy security and environmental responsibility. It focused on the networks of pipelines, wires, storage, waterways, railroads, and other facilities that form the backbone of the nation's energy system. The QER appendices provide more conventional analyses of the three infrastructures that represent key fuels/energy carriers—liquid fuels, natural gas, and electricity—and outline the Federal Government's specific energy emergency authorities. Below are more details on the appendices, which are available on the DOE QER website: www.energy.gov/qer.

Liquid Fuels (Appendix A)

The existing liquid fuel component of the energy transport, storage, and distribution infrastructure is enormously complex. This component of the QER provides an integrated assessment of the emerging threats, risks, and opportunities in liquid fuels infrastructure. It includes a characterization of the developmental history and current state of these systems, as well as a description of their vulnerabilities and limitations in terms of present and future liquid fuels supply and demand, age and condition, cost, and environmental and safety risks. It also describes some of the increasing interdependencies between the transport, storage, and distribution of liquid fuels and the infrastructure of other energy sectors, as well as emerging competitive forces for specific modes of liquids transport.

Natural Gas (Appendix B)

This appendix focuses on the transmission, storage, and distribution systems for natural gas, beginning with a description of the changing landscape of natural gas in the United States. This includes analysis of recent and projected increases in domestic gas production and the potential magnitude and unique attributes of sources of demand. From there, the infrastructure implications of changing supply and demand are analyzed and discussed by midstream project type: natural gas processing, transmission, storage, distribution, and export infrastructure. Following this system characterization are analyses and discussion of major attributes of the natural gas system as a whole, including natural gas and electricity interdependence, system resilience, pipeline safety, and emissions. (Analysis of natural gas liquids (NGL) is included in the liquid fuels chapter of the QER.)

Electricity (Appendix C)

The electricity appendix reflects the change and innovation underway in the electric power system. The focus is on the integration and deployment of all of the new and evolving technologies, products, and services into the grid and how all of these pieces fit together to become the *grid of the future*. Ongoing and future policy and investment decisions and

technology innovations will shape the shift to a more affordable and reliable system that can withstand physical and natural threats and simultaneously reduce greenhouse gas emissions. A clearer picture of ongoing trends and new dynamics in the electricity sector is essential to plan for the future.

Federal Emergency Authorities and Policy Directives (Appendix D)

This appendix outlines the range of emergency authorities and policy directives relevant to the energy sector that apply to the Federal Government. Federal statutes and executive branch actions are included.