August 2012

CURC-EPRI Technology Roadmap

Executive Summary

Coal Technology Advancements

The collaboration between DOE and the private sector over the last three decades to advance coal technologies has proven results. Today, three out of every four coal plants in the U.S. are equipped with technologies that trace their origins to DOE's program. In part, other technologies have allowed coal use to increase by more than 63% in the U.S. over the last 30 years while the emissions of SO_2 and NOx have decreased on the order of 70%. In addition to developing commercial technologies to control criteria pollutants for NOx, SO_2, particulate matter and mercury, this public/private partnership is also responsible for the commercial deployment of pressurized fluidized bed combustion systems, new coal-based IGCC systems, advanced turbines, and development of materials for highly efficient advanced coal combustion power plants. The key to ensure continued success is (1) adequate public support, (2) enhanced levels of funding targeted to specific technology areas, and (3) a regulatory and public policy framework that supports coal use.

The CURC/EPRI Technology Roadmap

The Roadmap represents a plan for developing technologies that convert coal to electricity and other useful forms of energy and manufacturing feedstocks. The Roadmap describes several coal technology advancements that, if developed, will achieve specific cost, performance and environmental goals thereby benefiting the nation's environment, economy, and energy security. By combining the technology advances identified in the Roadmap with opportunities for beneficial uses of captured CO_2, such as enhanced oil recovery, the Roadmap concludes that tomorrow's coal-based power plants equipped with CO_2 capture technology will generate electricity while capturing CO_2 at costs equal to, or less than, today's power generation plants that use fossil fuels. Other additional benefits of successfully implementing the Roadmap include (1) aggressive reduction of water use/discharge, (2) significant additional reduction of traditional air pollutants and CO_2, (3) enhanced energy and economic security via production of low cost power using the largest U.S. domestic energy resource while using captured CO_2 as a commodity to recover crude oil, and (4) deploying coal-based technologies for the production of liquid fuels and other marketable products.

Roadmap costs

Government partnership support and funding commitments are critical to ensure the goals of the Roadmap are accomplished. At current funding (FY 2012) levels, the DOE's coal R&D budget is nearly sufficient to reach the goals of the Roadmap. These funds, however, must be redirected and focused upon Roadmap identified programs. CURC recognizes that current DOE budgets do not include funding for demonstrations and are unlikely to receive annual appropriations, so an alternative mechanism to support the large demonstrations described in the Roadmap is proposed and described in the CURC accelerated CO_2-EOR Initiative.

Funding		2013-2018	2019-2025	2026-2035
R&D	Total ($M/year)	465	363	189
	Federal (80% share)	372	291	151
Demos	Total ($M/year)	$120M for pilot demos	6,100	3,500
	Federal (50% share)	Current planned demos	3,050	1,750
Total Number of Demos		~5 to 8 currently in planning stages	2-4	2-3

Full Roadmap Report at:
http://www.coal.org/roadmap/index.asp