

Scenario Based Technology R&D Strategic Planning & Wild Card Analysis***Dr. Robert B. Schainker****Electric Power Research Institute, Palo Alto, California, USA***Abstract**

In the last several years, the United States Electric Power Research Institute (EPRI) has led a broad-based industry endeavor to develop and publish the Electricity Technology Roadmap, a high level document that provides guidance on strategic technology planning over the next 40-50 years for the electricity industry. However, critical uncertainties over this timeframe – such as fuel prices, the economy, the environment, technology advances, and regulatory policies – complicate effective identification and development of technology based R&D funding priorities. To address these uncertainties and to develop a nearer-term technology oriented action plan, EPRI undertook an Electric Power Industry Technology Scenarios Project that uses scenario planning to explicitly incorporate uncertainty and focuses on a 20-year planning horizon. The scenario analysis covered four alternative futures which electric utility R&D planning must address; namely, high and low prices for carbon dioxide emissions from fossil based power plants, and high and low prices for gas and liquid fuels used by fossil based power plants. These “what-if” scenarios have a significant impact on the amount and priority of the R&D resources allocated to such technological topics as renewable energy, nuclear power, and carbon dioxide capture and storage. An EPRI report documenting the results of the scenario-based R&D planning analysis was published in December 2006. The purpose of this presentation is to provide results of this EPRI report as background information and discussion points for the IERE Round Table Debate. Other information provided to the Round Table Debate is results from the on-going “wild card” analysis EPRI is performing to augment the scenario-based R&D planning analysis performed in 2006. Examples of such wild cards are potential future wide-spread regional blackout events, potential future nuclear power plant outages/accidents that could anywhere in the world and potential major technological advances in electric vehicle battery performance. As such, an effective R&D portfolio needs to properly account for not only “what-if” fuel and carbon dioxide price scenarios, but the R&D portfolio must also address “what-if” wild card events that could also have dramatic impacts on the R&D portfolio for the electric utility industry.