Structuring an Energy Technology Revolution

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Preface

In this book, we argue that a major supply-side program to stimulate innovation in energy technology is needed to complement a demand-side carbon tax or cap-and-trade scheme. Such a program can be launched now while further political support is developing for demand-side measures. It should go well beyond research and development to include measures to encourage prototyping, demonstration, and deployment of a wide range of technology options faster than could be accomplished by market forces alone. It should replace the varied subsidies to specific existing technologies that are anticipated to be the beneficiaries of recent and pending Congressional legislation. This "no lobbyist left behind" approach is likely to cement in currently available technology at precisely the moment when we should be launching ambitious research programs to develop and deploy imaginative new ideas, and laying the policy framework for a more level playing field on which many alternative technologies compete on their merits.

The book formulates an integrated policy framework for advancing new energy technology, building on existing innovation theory. In a new, four-step analytic approach, we first assess numerous promising groups of energy technologies, classifying them according to the likely obstacles to their

launch. Second, for each of these launch classes, we develop technology-neutral packages of policies and incentives appropriate for their launch. This analysis leads to the third step, the identification of gaps in the existing U.S. framework for stimulating innovation. In the last step, we propose three institutional innovations to fill these gaps: a new translational research projects agency for energy to identify innovation challenges and nurture the breakthroughs needed to meet them; a government corporation for the financing of demonstration projects, manufacturing scale-up, and conservation investments; and a roadmapping think tank for technology assessment and policy research. All of these fit into a new innovation strategy for energy.

This book is thus different from other approaches to the nation's energy challenges. The authors study and teach in the relatively new field of science, technology, and innovation policy, drawing on their prior career experience working in this area at the World Bank and in the U.S. Senate, respectively. This book aims to bring a new approach to innovation theory to what the authors believe is the most important and complex innovation implementation challenge the United States has ever faced, the challenge of launching new energy technology. We do not promote particular technologies, but instead propose a template for a new energy technology strategy, against which technology proposals can be judged. The 2008 presidential campaign produced proposals for substantial increases in spending on energy technology and innovation, but with limited detail on how that effort was to be carried out. Such implementation mechanisms form the heart of this book. Our aim is to set forth a new integrated framework for the encouragement of innovation in energy technology. We do not pretend to offer definitive solutions but hope to stimulate further evaluations along the lines we set forth because we believe that without a sound policy framework in this area we

will not succeed. While the current economic decline will likely stall progress on clean energy technology in the private sector, the agenda proposed here of investment in energy research, demonstration, and implementation could be a Keynesian spur to the economy.

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