



# EXECUTIVE SUMMARY: ASSESSING WIND POWER COST ESTIMATES

MICHAEL GIBERSON, PhD  
CENTER FOR ENERGY COMMERCE  
TEXAS TECH UNIVERSITY  
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## About the Author

Dr. Michael Giberson is assistant professor of practice with the Area of Energy, Economics, and Law in the Rawls College of Business at Texas Tech University. Giberson teaches U.S. Energy Policy and Regulation, Energy Economics, and other energy-related courses.

Prior to joining Texas Tech in 2008, Giberson was an economist with Potomac Economics, Ltd., the leading provider of independent market monitoring and economic analysis to the electric power industry. Giberson worked five years as an independent energy industry analyst, and previously worked for the Critical Infrastructure Protection Project and the Interdisciplinary Center for Economic Science at George Mason University, the Center for the Advancement of Energy Markets, and Argonne National Lab.

Giberson has been published in Regulation magazine, the Electricity Journal, the Journal of Regulatory Economics, and the Pacific and Asian Journal of Energy, and has written on U.S. energy policies and federal electric power issues for trade publications. He received a BA in Economics from Texas Tech University, and an MA and PhD in Economics at George Mason University.

## Executive Summary

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This study examines estimates of the cost of wind power capacity produced by the U.S. government and provides additional context in order to better guide policy decisions concerning wind power. The federal government has devoted substantial resources to estimate the costs of wind power capacity and the associated costs of integrating wind power into transmission grids, but the complexity of the power grid and the technical nature of most research studies make it difficult for policymakers and non-specialist interested citizens to understand just what these studies mean. Numerous reports produced by the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory reveal a great deal about wind power costs. However, the most frequently cited numbers, concerning estimated Levelized Cost of Energy (LCOE) of wind power, do not capture all of the costs of wind power.

The federal government devotes substantially more financial resources to subsidize the production of wind power than it does to study wind power. The GAO counted over 80 separate federal programs offering economic support to wind power producers, though the largest program by a wide margin is the Production Tax Credit. State and local governments offer additional support. Government subsidies for wind power naturally raise questions concerning costs and benefits associated with the policy. Indeed, a complete policy analysis would assess both costs and benefits in a complete and consistent manner. Perhaps surprisingly given the extent of federal policy

support for wind power, no systematic effort has been made to calculate the overall net benefit (or cost) of public policies supporting wind power. Given the importance of understanding the costs associated with wind power policies, this paper examines and assesses the most significant of the wind power cost estimates produced by the federal government.

In brief, the primary focus of the National Renewable Energy Laboratory report, the *2011 Cost of Wind Energy Review*, is to provide an estimate of the cost *to the developer* of installing wind power capacity. The Lawrence Berkeley Laboratory's *Wind Technologies Market Report* series seeks to provide an overview and details on trends affecting the wind power industry, including cost and performance trends. The Berkeley Lab report, like the NREL report, focuses primarily on the cost of wind power to the wind project developer. While expenses faced by wind project developers are an important element of the overall cost of wind power, addition of wind power to the power grid involves a number of other costs. If a more reasonable estimate of the installed cost of capital is \$88 per MWh and operating costs are \$21 per MWh, we can estimate a reasonable LCOE for wind power near \$109 per MWh rather than NREL's estimate of \$72 — a more than 50 percent increase.

Such costs include the expense of transmission expansions needed to develop wind power, other grid integration expenses, and added grid reliability expenses. Both the costs to the developer and the other costs are examined in this study.



Institute for Energy Research  
1155 15th Street NW, Suite 900  
Washington, DC 20005  
Phone: 202.621.2950 | Email: [info@ierdc.org](mailto:info@ierdc.org)  
[www.instituteforenergyresearch.org](http://www.instituteforenergyresearch.org)