



AMERICAN INNOVATION:
MANUFACTURING LOW CARBON TECHNOLOGIES IN THE MIDWEST
EXECUTIVE SUMMARY

THE CLIMATE GROUP



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EXECUTIVE SUMMARY

For too long, the overwhelming body of research related to climate policy has focused exclusively on the costs associated with taking action. And when research has been conducted about the benefits, the findings have often been too vast to easily understand and deconstruct. This report therefore aims to answer the following question:

WHAT IS THE ECONOMIC OPPORTUNITY FOR MANUFACTURING SELECTED LOW-CARBON TECHNOLOGIES IN THE MIDWEST?

To answer this question, we estimate the economic benefits associated with growth in three low-carbon technology markets: wind turbine components, hybrid powertrains and advanced batteries.

We estimate these benefits in two different scenarios.

- The “policy scenario” assumes that three climate and energy policies are in place: a “green” stimulus program; a \$17 price on carbon, resulting from a cap on US emissions; and a national renewable electricity standard (RES) of 20% by 2020.

For wind turbine components, we consider a “high” and “low” policy scenario to account for differences in how policy might affect US wind capacity. For hybrid powertrains, we only consider one policy scenario, due to consistency in projections of the share of hybrids in total US vehicle sales. For advanced batteries, we consider a “high” and “low” policy scenario to account for differences in the share of the advanced battery market that will be supplied by US manufacturers.

- The “no policy” scenario assumes that these three climate and energy policies are not in place.

The findings in this report should be considered in light of its narrow scope.

This report does not measure the net economic impact of climate and energy policies, in that we do not look at the costs associated with these policies. The revenues and jobs we found in low-carbon sectors do not take into consideration revenues and jobs lost in other sectors. More research is therefore needed to ascertain a truly complete picture.

We also do not consider all of the economic benefits of climate and energy policies, which include substantial energy efficiency savings, new jobs created outside of the manufacturing sector, benefits from the manufacture of hundreds of additional low-carbon technologies not examined in this report, and opportunities to export these low carbon technologies to other countries.

Instead, we take a deep look into one part of the potential benefits: the increased manufacture of three low-carbon technologies in the Midwest.

Low Carbon Technologies in the Midwest

Primary Metals Energy-efficient appliances Energy-efficient HVAC and building systems Public transportation systems Wind turbine components	Chemicals Amines for carbon capture and storage (CCS) Electrolytes for advanced batteries Energy-efficient building insulation Enzymes for increasing the energy efficiency of industrial processes Photovoltaic (PV) solar cells
Machinery Production Biomass boilers Combined heat and power systems	Automotive Advanced batteries Diesel particulate filters Hybrid powertrains Lightweight vehicles

Of the 250 low-carbon technologies identified by McKinsey & Company, we look at 3 of the 15 in which the Midwest has a competitive advantage.

We estimate the benefits of manufacturing low-carbon technologies for only the Midwest region, defined as Illinois, Indiana, Michigan, Ohio, and Wisconsin, and we do so only until 2015.

Our limited scope enables us to take sector specific factors into consideration, and not to make too many assumptions about the future, which we feel leads to a more accurate estimate than would otherwise be possible.

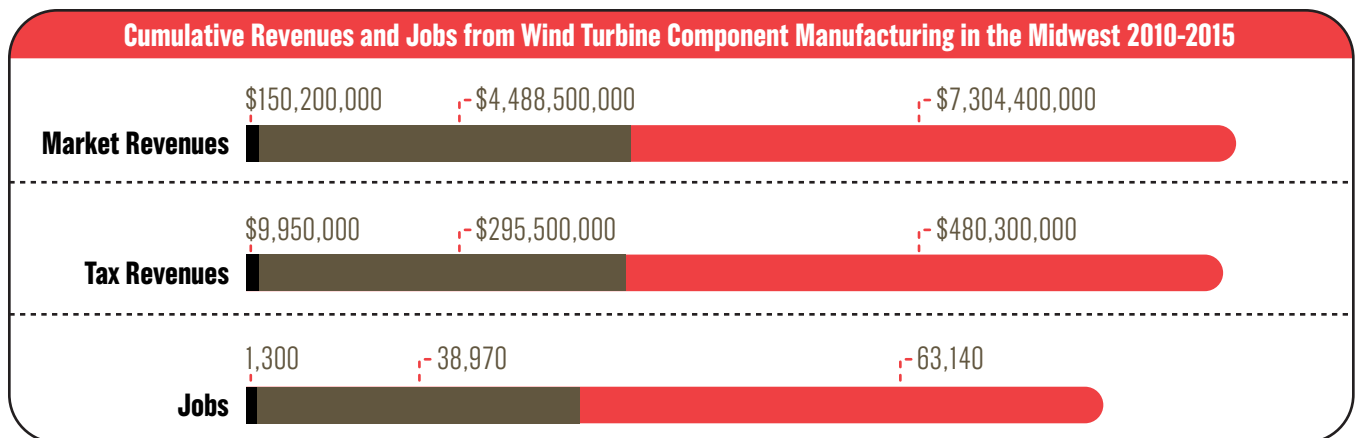
The end result provides a realistic answer to the question we set out to address.

Wind Turbine Components

Our case study on wind turbine components found that the three climate and energy policies would lead to significant new market revenues, state and local tax revenues and jobs.

In the “policy-low capacity” scenario, where policies would increase US wind capacity to 65.7 GW, we estimate \$4.3 billion in additional market revenues, \$286 million in additional tax revenues and more than 37,600 new jobs in the Midwest by 2015. (“Additional” revenues and jobs are in comparison to the “no policy” scenario.)

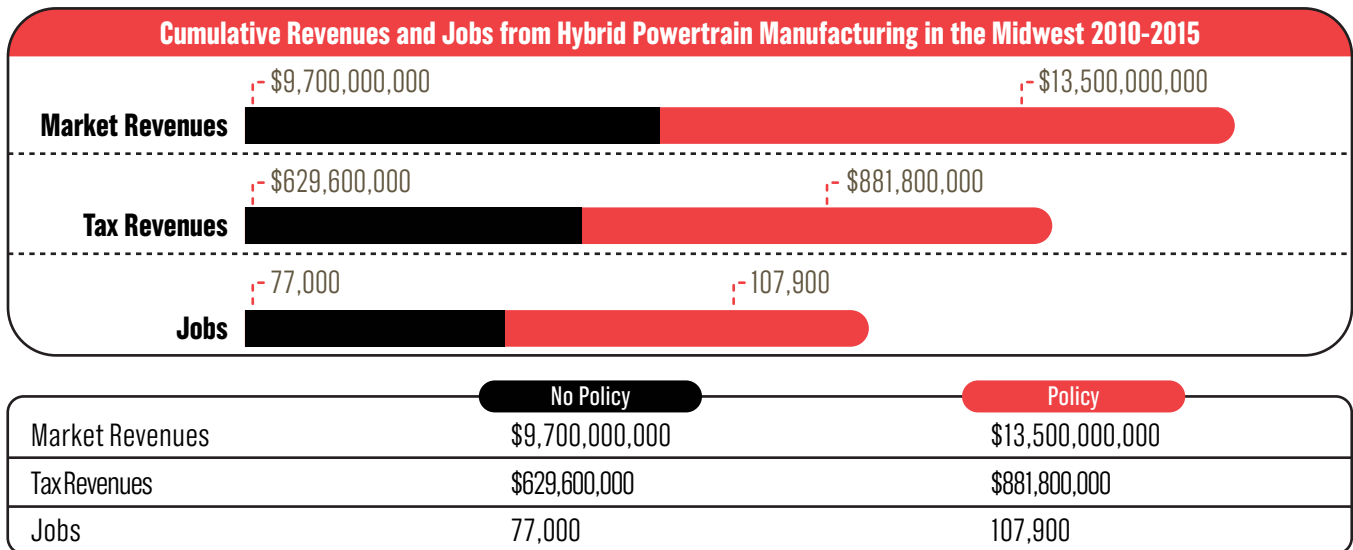
In the “policy-high capacity” scenario, where policies would increase US wind capacity to 90 GW, we estimate \$7.1 billion in additional market revenues, \$470 million in additional tax revenues and more than 61,800 new jobs in the Midwest by 2015.



	No Policy (28.6 GW)	Policy-Low (65.7 GW)	Policy-High (90 GW)
Market Revenues	\$150,200,000	\$4,488,500,000	\$7,304,400,000
Tax Revenues	\$9,950,000	\$295,500,000	\$480,300,000
Jobs	1,300	38,970	63,140

Hybrid Powertrains

Our case study on hybrid powertrains found that the three climate and energy policies would lead to \$3.8 billion in additional market revenues, \$252 million in additional tax revenues and 30,900 new jobs in the Midwest by 2015.

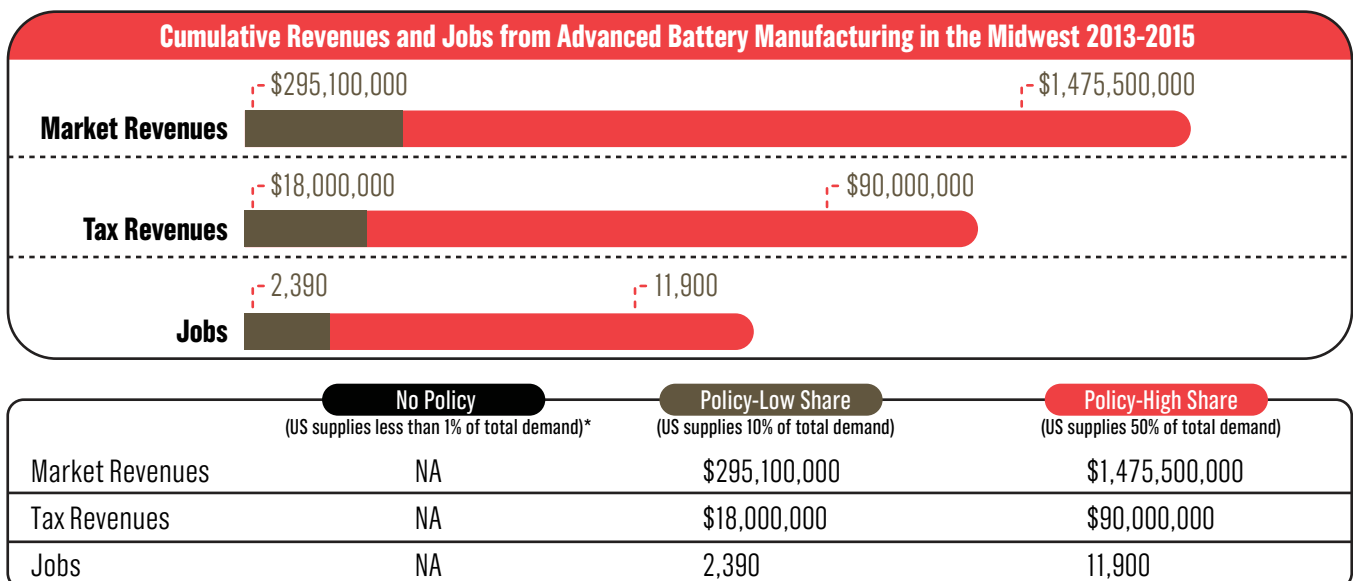


Advanced Batteries

Our case study on advanced batteries found that the three climate and energy policies would lead to modest new market revenues, state and local tax revenues and jobs.

In the “policy-low share” scenario, where the US supplies 10% of the domestic advanced battery market, we estimate \$295 million in additional market revenues, \$18 million in additional tax revenues and more than 2,300 new jobs in the Midwest by 2015.

In the “policy-high share” scenario, where the US supplies 50% of the domestic advanced battery market, we estimate \$1.4 billion in additional market revenues, \$90 million in additional tax revenues and 11,900 new jobs in the Midwest by 2015.



* Because the US currently supplies less than one percent of the global advanced battery market, the size of the domestic advanced battery market in the “no policy” scenario is assumed to be zero.

In total, the three climate and energy policies would lead to additional market revenues of up to \$12.3 billion, additional tax revenues of up to \$812 million and up to 104,640 new jobs from the wind turbine component, hybrid powertrain and advanced battery manufacturing sectors in the Midwest by 2015.

For access to the full report, including state by state estimates, please visit: <http://www.theclimategroup.org/our-news/events/2010/1/21/american-innovation-report/>

“The climate and our economy need help urgently. This timely report documents the huge boost we can give our economy if we adopt strategies to accelerate investment in the low-carbon technologies that will rejuvenate the industrial Midwest, put our people back to work and ensure the Midwest remains globally competitive.”

Pat Quinn, Governor of Illinois

“The Climate Group’s latest publication, American Innovation: Manufacturing Low Carbon Technologies in the Midwest provides clear, solid job and revenue numbers for low carbon manufacturing in the Midwest. The report is a validation that in reducing greenhouse gas emissions, the opportunities are commensurate with the challenges.”

Stanley “Skip” Pruss,
Michigan’s Chief Energy Officer and Director of the Department of Energy, Labor & Economic Growth

“20th century innovations gave America a standard of living unimaginable a century before. In this new century, the industries that will thrive are those that are able to make that standard of living sustainable - by using renewable resources, and ones that do not contaminate our air, water and threaten our climate. As demand shifts from oil-burning cars to ones powered by renewably-generated electricity, the American Midwest can develop the components for that supply chain, the turbines to capture the wind electricity for those cars, and the batteries to store that electricity. The findings in this report show that this kind of Midwest leadership is indeed possible. Just as the region thrived in the 20th century, with a proper adjustment to orient in line with global trends, it will thrive again in this century.”

Mike Granoff, Head of Oil Independence Policies, Better Place

“With debate over the implications of prospective climate change regulation hotter than ever in the U.S., American Innovation: Manufacturing Low Carbon Technologies in the Midwest US offers timely insight into some of the ways well-crafted policy responses can spur greentech innovation and generate economic opportunity.”

William L. Thomas, Counsel, Skadden, Arps, Slate, Meagher & Flom LLP

