



SUBSIDIZING BIG WIND: The Real Costs to Taxpayers

Robert Bryce, *Senior Fellow*

For two decades, the domestic wind-energy sector has enjoyed a lucrative subsidy known as the production tax credit (PTC). That tax treatment, which provides wind-energy producers with 2.2 cents for every kilowatt-hour of electricity produced, expires at the end of 2012.

But the production tax credit is only one of the subsidies given to the wind industry. In addition to direct subsidies, the industry is given a de facto subsidy at the state level in the form of mandates for renewable energy consumption. Another indirect subsidy: the exemption that the wind industry has been given with regard to enforcement of federal wildlife laws.

Proponents of wind energy claim that the subsidy is needed so that the wind industry has more time to mature. They also frequently cite the number of jobs that may be lost if the tax credit is terminated. Nevertheless, a look at the wind industry from four different angles—direct subsidies, mandates, cost of jobs produced, and ongoing exemptions from federal wildlife laws—shows that no other part of the energy industry receives such preferential treatment.

Findings:

- On a per-unit-of-energy-produced basis, the PTC provides a subsidy to the wind industry that is at least 12 times greater than that provided to the oil and gas sector and 6.5 times greater than that provided to the nuclear industry.
- More than two-thirds of the American population live in states that have mandated the use of renewable electricity, and those mandates are imposing significant costs on ratepayers.
- If viewed solely as a job-saving measure, a one-year extension of the PTC will cost about \$329,000 per job.
- Despite numerous violations, the Obama administration—like the Bush administration before it—has unofficially exempted the wind industry from prosecution under the Eagle Protection and Migratory Bird Treaty Acts. If Congress extends the PTC, federal taxpayers will, in effect, be subsidizing the killing of federally protected birds.

DIRECT SUBSIDIES

The tax preferences given to producers of wind energy are far larger than those given to traditional energy producers. While it's true that the fossil-fuel sector gets more in total tax preferences than its renewable-energy counterpart, the more valid comparison looks at the preferences on a per-BTU basis as well as on the total amount of energy produced.

In 2008, the Energy Information Administration attempted to produce an apples-to-apples comparison by estimating the amount of tax preference per BTU. The agency estimated subsidies to the oil and gas sector at \$1.9 billion per year, or about \$0.03 per million BTU of energy produced.¹

Recall that the PTC gives wind-energy producers 2.2 cents for each kilowatt-hour of electricity they produce. That sum amounts to \$6.44 per million

BTUs produced. (One kilowatt-hour of electricity contains 3,412 BTUs.) Therefore on a raw, per-unit-of-energy-produced basis, subsidies to the wind sector are more than 200 times greater than those given to the oil and gas sector.

We can also calculate wind-sector subsidies by using data from the BP Statistical Review of World Energy and the Congressional Budget Office (CBO). In 2011, according to BP, all non-hydro renewable-energy production in the U.S. averaged 909,000 barrels of oil equivalent per day. (BP uses a multiplier of about three to put renewables on par with fossil-fuel generation.) According to the CBO, tax preferences for renewable-electricity production totaled \$1.4 billion in 2011. The vast majority of that money went to the wind-energy sector, which in 2011 produced more than 60 times as much electricity as the solar-energy sector.² (Note that the \$1.4 billion does not include any of the \$3.25 billion in tax-free grants that were given to the wind-energy sector by the Treasury Department under section 1603 of the American Recovery and Reinvestment Act between 2009 and 2011.)

Using the BP and CBO data, we find that the tax preferences for wind energy total \$1,540 per barrel of oil equivalent per day.

At \$1,540 per barrel of oil equivalent per day, the wind sector is getting subsidies about 12 times greater than the amount of tax preferences provided to the oil and gas sector. In 2011, domestic oil and gas production totaled 19.736 million barrels of oil equivalent per day. (Oil accounted for 7.84 million barrels per day, and natural gas accounted for nearly 11.9 million barrels of oil equivalent per day.) Last year, according to the CBO, the tax preferences extended to the fossil-fuel sector totaled \$2.5 billion.³ Simple math shows that tax preferences for the oil and gas sector cost taxpayers about \$127 per barrel of oil equivalent per day.

How do wind subsidies compare with those provided to nuclear? Although opponents of nuclear energy

often contend that the sector receives lavish subsidies, it's clear from the BP and CBO data that the wind-energy sector receives far more in tax preferences than the nuclear sector.

In 2011, the U.S. obtained nearly 3.8 million barrels of oil equivalent per day from nuclear reactors.⁴ (Note that BP treats nuclear in the same way that it treats renewables, by nearly tripling the amount of energy delivered so as to put the source on par with fossil-fuel generation.) According to the CBO, the nuclear sector was subsidized at \$900 million in 2011, which works out to about \$238 per barrel of oil equivalent per day. At that level, the wind-energy sector is getting about 6.5 times as much in subsidies as the nuclear sector.

The CBO estimates of subsidies for nuclear only include the special tax rate that nuclear utilities get for decommissioning their reactors.⁵ The estimates do not include the cost of insurance for nuclear reactors, which was limited under the Price-Anderson Act of 1957. Under that law, owners of nuclear plants pay \$375 million in private insurance for each reactor unit. If an accident occurs and the costs exceed \$375 million, other nuclear operators in the country are assessed a prorated share of those costs.⁶ While this is an indirect subsidy to the nuclear sector, it does reduce the sector's overall costs.

Many states are offering tax incentives, rebates, and other enticements to renewable-energy producers. This report will not attempt to look at all the various state-level measures. But if those measures are included, the overall subsidies discussed above will also be increased.

SUBSIDIES IN THE FORM OF MANDATES

Twenty-nine states and the District of Columbia are subject to mandates for renewable-electricity production, which is affecting the cost of electricity for about 220 million Americans. While those mandates may be politically popular, they are imposing real costs on consumers. As Suedeen Kelly, a former member of the

Federal Energy Regulatory Commission, put it, the mandates for renewable energy are a “back-end way to put a price on carbon.”⁷

This back-end carbon tax can be seen by looking at the cost of new transmission lines required by renewable-energy projects. According to the Edison Electric Institute (EEI), a trade group that represents shareholder-owned electric companies, EEI member companies spent over \$55 billion on transmission projects between 2001 and 2009. Another \$61 billion will likely be spent on transmission projects from 2010 through 2021.⁸ A majority of that money is being spent to accommodate renewables. EEI says that about \$39.5 billion in new transmission investment is being spent on “projects addressing the integration of renewable resources, and where needed, to accommodate the expected off-peak production.” EEI adds that the needs of the new renewable generation that is coming online will require “the addition or upgrade of 11,400 miles of transmission” lines.⁹ Put another way, the cost of the new transmission lines for renewable-energy projects will be about \$126 for each American.¹⁰

The cost of the transmission lines needed to accommodate renewables will be borne by consumers. That can readily be seen by looking at what's happening in Texas, which has more wind-generation capacity (over 10,000 megawatts) than any other state.¹¹ In August 2011, the Texas Public Utility Commission estimated the cost of the transmission capacity needed to bring wind-generated electricity from rural areas to the cities at \$6.79 billion, an increase of 38 percent over estimates made in 2008. The result: higher electricity bills for consumers. Early estimates show that the cost of the transmission capacity alone will be about \$270 for every Texan. The new transmission capacity will result in charges of \$4–\$5 per month per electric customer.¹²

Advocates of renewable energy often claim that traditional energy producers receive favorable tax treatment. While that may be true, there are no re-

quirements at the federal level or the state level for consumers to use coal, oil, or natural gas. There is no reason that the wind-energy sector should be entitled to both direct subsidies and the indirect subsidies that come in the form of mandates.

SUBSIDIZING WIND-ENERGY JOBS

As it fights to retain the PTC, the American Wind Energy Association (AWEA) has repeatedly claimed that if the tax credit is not extended, 37,000 wind-related jobs will be lost.¹³ That figure may, or may not, be accurate. But the evidence shows that whatever jobs are created by the wind sector come at a significant cost to taxpayers, and those costs are, again, an indirect subsidy.

In August 2012, the Senate Finance Committee approved a plan to extend the PTC for one year.¹⁴ About the same time as the committee approved the proposal, the Joint Committee on Taxation, the non-partisan congressional entity established in 1926 that assists legislators on tax-related matters, released its estimate of the cost of the extension. The committee put the cost of extending the subsidy at \$12.18 billion from 2013 to 2022.¹⁵ Therefore, if you use the wind industry's subsidy of \$12.18 billion and divide it by the 37,000 jobs that AWEA claims are at risk, you get \$329,000 per job.

A wind-energy supporter might claim that \$329,000 is too much—that it should be spread out over a decade, just as the costs calculated by the tax committee are. If we take that approach, each wind-energy job costs \$32,900 per year. But even with that more conservative methodology, wind-energy employment is still expensive. In fact, these numbers may be too low.

In December 2010, Susan Combs, the Texas state comptroller, reported that each wind-related job in Texas costs the state's taxpayers \$1.6 million.¹⁶

Consider the most egregious case of wind-energy corporate welfare: the Shepherds Flat wind project in

Oregon, which is getting a \$490 million cash grant from the federal government. The project, backed by General Electric, Google, and other companies, will create just 35 permanent jobs.¹⁷ If we use that figure as our basis, each job at Shepherds Flat will cost taxpayers some \$14 million. During the construction phase of the project, some 400 jobs were created; but even if we count those 400 jobs as permanent and add the 35 jobs previously cited, taxpayers are still spending about \$1.1 million per wind-related job.

When it comes to jobs, it's instructive to compare the parallel tactics of the corn-ethanol industry and the wind industry. About a year ago, as Congress was debating an extension of the tax credit for corn-ethanol production, the Renewable Fuels Association (RFA) began running ads touting the "70,000 quality jobs" that rely on ethanol production. The ethanol industry, according to the RFA's CEO Bob Dinneen, was a "job-creating engine fueled by innovation." Implicit in Dinneen's message was that the industry only needs subsidies for a little while longer. That's awfully similar to a statement made by Denise Bode, AWEA's top executive, who says that the PTC is an "effective, job-creating tax policy." Letting it expire, she claims, will put "good American jobs" in peril.¹⁸

The "our industry creates jobs" argument is the last refuge of a subsidy seeker. The data show that wind-related jobs are simply too expensive to be sustainable.

SUBSIDIZING WIND COMPANIES BY EXEMPTING THEM FROM PROSECUTION

Last year, the *Los Angeles Times* reported that about 70 golden eagles per year are being killed by wind turbines at Altamont Pass in central California.¹⁹ That finding follows a 2008 study funded by the Alameda County Community Development Agency, which estimated that about 2,400 raptors, including burrowing owls, American kestrels, and red-tailed hawks—as well as about 7,500 other birds—are being killed every year by the wind turbines at Altamont.²⁰

In all, according to the U.S. Fish and Wildlife Service, some 440,000 birds per year are being killed by wind turbines.²¹ Nearly all those birds are protected by two of America's oldest wildlife-protection laws: the Migratory Bird Treaty Act and the Eagle Protection Act.

But the Obama administration—like the Bush administration before it—has never prosecuted the wind industry for violating those laws, despite myriad examples of widespread, unpermitted bird kills by turbines. A violation of either law can result in a fine of \$250,000 and/or imprisonment for two years.²²

By exempting the wind industry from prosecution under the Migratory Bird Treaty Act or the Eagle Protection Act, the federal government is providing another indirect subsidy to the sector. Other energy companies have been required to pay hefty fines and perform mitigation work to reduce the risk that their facilities pose to birds. For instance, in 2009, Exxon-Mobil pleaded guilty in federal court to charges that it killed 85 birds—all of which were protected under the Migratory Bird Treaty Act. The company agreed to pay \$600,000 in fines and fees for the bird kills, which occurred after the animals came into contact with hydrocarbons in uncovered tanks and wastewater facilities on company properties located in five western states.²³

Oregon-based PacifiCorp has also faced steep fines for killing birds. In 2009, the utility agreed to pay \$1.4 million in fines and restitution for killing 232 eagles in Wyoming. The birds were electrocuted by the company's poorly designed power lines.²⁴

Despite numerous cases of bird deaths at wind-energy projects, the industry has not been prosecuted a single time by federal authorities. There is a pernicious double standard here. Over the past two decades or so, the Interior Department has brought hundreds of cases against the oil and gas industry and the electricity-generation sector for violations of the Migratory Bird Treaty Act and the Eagle Protection Act.²⁵ Meanwhile, that same agency has given the wind industry a de facto exemption from prosecution.

Despite the obvious violations, Eric Glitzenstein, a Washington, D.C.-based lawyer who represents several environmental groups on the bird-kill issue, said: "It's absolutely clear that there's been a mandate from the top" echelons of the federal government not to prosecute the wind industry for violating wildlife laws.

The only time the wind industry has faced legal action for killing birds without a permit occurred in 2010, when California reached a \$2.5 million settlement with NextEra Energy Resources for bird kills at Altamont.²⁶ The prosecutor on that case: the state's former attorney general and current governor, Jerry Brown, who's now pushing the Golden State to get 33 percent of its electricity from renewables by 2020.²⁷ Bats are getting killed, too: the Pennsylvania Game Commission estimates that wind turbines killed more than 10,000 bats in the state in 2010. That's an average of 25 bats per turbine per year.²⁸

At the same time that the wind industry is getting a free pass, under the Migratory Bird Treaty Act and Eagle Protection Act, federal prosecutors continue bringing cases against the oil industry under those same laws. In 2011, the U.S. Fish and Wildlife Service filed criminal indictments against three drillers who were operating in North Dakota's Bakken field. One of those companies, Continental Resources, was indicted for killing a single bird, a Say's phoebe. Brigham Oil & Gas was charged with killing two mallards, and Newfield Production was indicted for the deaths of two mallards, one northern pintail, and one red-necked duck. (In January, a federal judge in North Dakota dismissed the charges against the companies, ruling that the case against the companies was too vague.)²⁹

Environmental groups are beginning to understand the threat to wildlife posed by wind-energy projects and are taking legal action. The Center for Biological Diversity, Sierra Club, and Defenders of Wildlife have filed a lawsuit against officials in Kern County, California, in an effort to block the construction of two proposed wind projects—North Sky River and Jawbone—because of their impact on local bird popu-

lations.³⁰ The groups oppose the projects because of their proximity to the deadly Pine Tree facility, which the Fish and Wildlife Service believes is killing 1,595 birds, or about 12 birds per megawatt of installed capacity, per year.³¹ At least six golden eagles have been killed by turbines at the Pine Tree wind project.³²

In 2011, a coalition of environmental groups, led by the American Bird Conservancy, submitted a petition to the U.S. Fish and Wildlife Service that asked the agency to create regulations that would better protect migratory birds.³³ Some 91 groups have signed the petition, including such entities as the Cornell Laboratory of Ornithology, Endangered Species Coalition, and numerous chapters of the Audubon Society.³⁴ (See Appendix A.)

Despite pressure from environmental groups, the Interior Department has indicated that it may issue permits to the wind industry that will guarantee that certain wind projects are exempt from the Migratory Bird Treaty Act and the Eagle Protection Act for up to 30 years. The Obama administration has delayed taking any final action on the permits until

after the November 6 election, but it appears that several environmental groups will file lawsuits if the Interior Department issues permits that allow wind projects to kill birds with impunity over a three-decade period.

As long as the PTC remains in place, federal taxpayers will be, in effect, subsidizing the killing of federal wildlife. That may be the worst form of subsidy of all.

CONCLUSION

No other segment of the energy sector gets as much preferential treatment as the wind-energy industry. Up until last year, the corn-ethanol industry enjoyed both a mandate and a subsidy. Congress ended the corn-ethanol subsidy, but the industry still enjoys a mandate. The wind-energy sector is lobbying hard in Congress to retain the production tax credit even though more than 220 million people live in states with mandates on renewable-electricity production. The wind industry has had 20 years of subsidies. If it cannot manage to stay in business without subsidies, it doesn't deserve to be in business.

APPENDIX A

Environmental Groups Seeking Tougher Siting Guidelines for Wind-Energy Projects

1. Aldo Leopold Audubon Society
2. Allegheny Front Alliance
3. American Bird Conservancy
4. Arctic Audubon Society
5. Arkansas Audubon Society
6. Audubon Dallas, Dallas
7. Audubon Outdoor Club of Corpus Christi
8. Audubon Society of Corvallis, Corvallis
9. Audubon Society of Greater Denver
10. Audubon Society of New Hampshire
11. Bartramian Audubon Society
12. Bergen County Audubon Society
13. Bexar Audubon Society
14. Bird Conservation Network
15. Chesapeake Audubon Society
16. Chesapeake Wildlife Heritage
17. Citizens Committee to Complete the Refuge
18. Civitas
19. Clearwater Audubon Society, Inc.
20. Coastal Bend Audubon Society
21. Connecticut Audubon Society
22. Conservation Congress
23. Conservation Council for Hawai'i
24. Cornell Laboratory of Ornithology
25. Delaware Valley Ornithological Club
26. Delmarva Ornithological Society
27. Desert Protection Society
28. Detroit Audubon SocietyEast
29. Cascades Audubon Society
30. Eastern Long Island Audubon Society
31. Eastern Sierra Audubon Society
32. Endangered Habitats League
33. Endangered Species Coalition
34. Environmental Protection Information Center
35. Flathead Audubon Society
36. Foothills Audubon Club
37. Fort Collins Audubon Society
38. Friends of Blackwater
39. Friends of the Boundary Mountains
40. Friends of Dyke Marsh
41. Friends of Lana i
42. Friends of Loxahatchee
43. Golden Eagle Audubon Society
44. Juneau Audubon Society

45. Kalmiopsis Audubon Society
46. Kern Audubon Society
47. Kiesha's Preserve
48. Lake Maxinkuckee Environmental Council
49. Lane County Audubon Society
50. Laramie Audubon Society
51. Maryland Conservation Council
52. Maryland Ornithological Society
53. Maui Tomorrow Foundation, Inc.
54. Michigan Audubon
55. Monmouth County Audubon Society
56. North American Grouse Partnership
57. Northwest Arkansas Audubon Society
58. Oakland Audubon Society
59. Ohlone Audubon Society
60. Olympic Forest Coalition
61. Palouse Audubon Society
62. Prescott Audubon Society
63. Quad City Audubon Society
64. Red Rock Audubon Society
65. Ripley Hawk Watch
66. Roanoke Valley Bird Club
67. Sacramento Audubon Society
68. Salem Audubon Society
69. Saving Birds Thru Habitat
70. Sierra Foothills Audubon Society
71. Sky Hunters Raptor Rehabilitation and Education
72. South Bend-Elkhart Audubon Society
73. Southeast Volusia Audubon Society
74. St. Louis Audubon Society
75. St. Paul Audubon Society
76. Taku Conservation Society
77. Tarrant Coalition for Environmental Awareness
78. Tennessee Ornithological Society
79. Tippecanoe Audubon Society
80. Tortoise Reserve, Inc.
81. Travis Audubon
82. The Union Beach Environmental Trust
83. The Urban Wildlands Group
84. Vermont Center for Ecostudies
85. Victor Emanuel Nature Tours
86. Virginia Society of Ornithology
87. Waccamaw Audubon Society
88. West Pasco Audubon Society
89. Western Nebraska Resources Council
90. Western Watersheds Project
91. Wildlife Information Center

ENDNOTES

- ¹ See <http://www.eia.doe.gov/oiaf/servicerpt/subsidy2/pdf/execsum.pdf>, xviii.
- ² EIA data, http://www.eia.gov/totalenergy/data/monthly/pdf/sec7_5.pdf.
- ³ Congressional Budget Office (CBO) data, http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-06-FuelsandEnergy_Brief.pdf.
- ⁴ BP Statistical Review of World Energy, 2011.
- ⁵ CBO data, 3.
- ⁶ Nuclear Regulatory Commission, "Fact Sheet on Nuclear Insurance and Disaster Relief Funds," undated, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/funds-fs.html>.
- ⁷ Speech by Suede Kelly at Tufts University energy conference, Boston, April 16, 2011. Quotation transcribed by the author.
- ⁸ Edison Electric Institute, "Transmission Projects: At a Glance," March 2011, http://www.eei.org/ourissues/ElectricityTransmission/Documents/Trans_Project_lowres.pdf, iii.
- ⁹ *Ibid.*, iv.
- ¹⁰ According to the Census Bureau, the current population of the U.S. is about 312 million.
- ¹¹ American Wind Energy Association data, http://www.awea.org/learnabout/industry_stats/index.cfm.
- ¹² Kate Galbraith, "Cost of Texas Wind Transmission Lines Nears \$7 Billion," *Texas Tribune*, August 24, 2011, <http://www.texastribune.org/texas-energy/energy/cost-texas-wind-transmission-lines-nears-7-billion>.
- ¹³ James Murray, "Mitt Romney Confirms He Would End US Wind Power Subsidies," *Guardian*, August 2, 2012, <http://www.guardian.co.uk/environment/2012/aug/02/mitt-romney-end-us-wind-subsidies>.
- ¹⁴ Richard Rubin, "U.S. Senate Finance Committee Passes PTC Extension Plan," Bloomberg, August 2, 2012, *Renewable Energy World*, <http://www.renewableenergyworld.com/rea/news/article/2012/08/u-s-senate-finance-committee-passes-tax-break-extension-plan>.
- ¹⁵ Joint Committee on Taxation data, <https://www.jct.gov/publications.html?func=startdown&id=1174>.
- ¹⁶ Laylan Copelin, "Combs Report Says Texas Overpays in Tax Breaks to Wind Farms Based on Job Creation," *Dallas Morning News*, December 20, 2010, <http://www.dallasnews.com/news/state/headlines/20101220-comb-report-says-texas-overpays-in-tax-breaks-to-wind-farms-based-on-job-creation.ece>.
- ¹⁷ Hibah Yousuf, "GE to Supply World's Largest Wind Farm," CNN.com, December 20, 2009, http://money.cnn.com/2009/12/10/news/companies/GE_wind_farm/index.htm?cnn=yes, Renewable Fuels Association data, http://ethanolrfa.org/page/-/images/RFA_Letter_to_Obama_TH%2BPOL15.pdf?nocdn=1.
- ¹⁸ Quoted in Murray, "Mitt Romney Confirms He Would End US Wind Power Subsidies."
- ¹⁹ Louis Sahagun, "Wind Power Turbines in Altamont Pass Threaten Protected Birds," *Los Angeles Times*, June 6, 2011, <http://articles.latimes.com/2011/jun/06/local/la-me-adv-wind-eagles-20110606>.
- ²⁰ Alameda County Community Development Agency, "Altamont Pass Wind Resource Area Bird Fatality Study," June 2008, http://www.altamontsrc.org/alt_doc/m30_apwra_monitoring_report_exec_sum.pdf.
- ²¹ Albert M. Manville II, "Towers, Turbines, Power Lines, and Buildings—Steps Being Taken by the U.S. Fish and Wildlife Service to Avoid or Minimize Take of Migratory Birds at These Structures," Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics 262–272, undated (approximately 2009), http://www.partnersinflight.org/pubs/mcallenproc/articles/pif09_anthropogenic%20impacts/manville_pif09.pdf, 268.
- ²² U.S. Fish and Wildlife Service data, undated, <http://www.fws.gov/midwest/eagle/protect/laws.html>.
- ²³ Amy Littlefield, "ExxonMobil Pleads Guilty to Killing Protected Birds," *Los Angeles Times*, August 14, 2009, <http://www.latimes.com/news/nationworld/nation/la-na-exxon-birds14-2009aug14,0,626783.story>.
- ²⁴ Fish and Wildlife Service data, <http://www.fws.gov/news/newsreleases/showNews.cfm?newsId=750629CF-E286-4B51-379292C1D9377C411>.

- ²⁵ See <http://online.wsj.com/article/SB10001424052970204781804577267114294838328.html>.
- ²⁶ Associated Press, "Wind Turbines to Be Upgraded in Altamont Pass," December 6, 2010, <http://sanfrancisco.cbslocal.com/2010/12/06/wind-turbines-to-be-upgraded-in-altamont-pass>.
- ²⁷ Herman K. Trabish, "California's Grid System Operator Confronts the Prospect of 33 Percent Renewables by 2020," Greentech Media, February 3, 2012, <http://www.greentechmedia.com/articles/read/Californias-Grid-System-Operator-Confronts-33-Percent-Renewables-by-2020>.
- ²⁸ Eric Schwartzel, "Pa. Wind Turbines Deadly to Bats, Costly to Farmers," *Pittsburgh Post-Gazette*, March 30, 2012, <http://www.post-gazette.com/pg/11198/1160977-28.stm>.
- ²⁹ Christopher Helman, "Judge Throws Out Criminal Case Against Oil Companies for Killing Birds at Drilling Sites," *Forbes*, January 18, 2012, <http://www.forbes.com/sites/christopherhelman/2012/01/18/judge-throws-out-criminal-case-against-oil-companies-for-killing-birds-at-drilling-sites>.
- ³⁰ Louis Sahagun, "U.S. Probes Golden Eagles' Deaths at DWP Wind Farm," *Los Angeles Times*, February 16, 2012, <http://articles.latimes.com/2012/feb/16/local/la-me-eagles-20120216>.
- ³¹ Center for Biological Diversity press release, http://www.biologicaldiversity.org/news/press_releases/2011/wind-energy-project-10-20-2011.html.
- ³² Sahagun, "U.S. Probes Golden Eagles' Deaths."
- ³³ American Bird Conservancy data, http://www.abcbirds.org/abcprograms/policy/collisions/pdf/wind_rulemaking_petition.pdf.
- ³⁴ American Bird Conservancy data, http://www.abcbirds.org/abcprograms/policy/collisions/pdf/petition_endorsements.pdf.