

## INTRODUCTION: NORTH DAKOTA'S ENERGY LANDSCAPE

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Shortly after the discovery of oil in North Dakota at the Clarence Iverson No. 1 well in Williams County in April of 1951,<sup>1</sup> a commemorative unofficial license plate was issued by an unknown oil-boom booster.<sup>2</sup> This plate shows the outline of two oil rigs, one in the foreground and one in the distant background. The text of the plate proudly proclaims: “NORTH DAKOTA *The New Oil State.*”



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1. ELWYN B. ROBINSON, HISTORY OF NORTH DAKOTA 458-59 (1966).

2. Neither the State Historical Society of North Dakota nor the *Williston Herald* were able to determine the origins of this plate. Telephone and E-mail Inquiries by Owen L. Anderson, Eugene Kuntz Chair in Oil, Gas & Natural Resources, University of Oklahoma College of Law, (Mar.-Apr. 2010).

A similar plate issued in 2010 might proclaim: “North Dakota: *The New Old Energy State.*” Thus, the NORTH DAKOTA LAW REVIEW, which has previously published symposia on legal topics of particular significance to North Dakota, including Indian law<sup>3</sup> and agricultural law<sup>4</sup> when I served on its board of editors, publishes its first energy law symposium<sup>5</sup> focusing on the importance of energy to the State of North Dakota, to the nation, and to the world.

In North Dakota, we observe and appreciate the landscape. Indeed, North Dakota’s wide-open space is perhaps the defining characteristic of this most rural and agricultural state, but in certain locations, energy is also a defining characteristic. Along the Missouri River, dividing the state more than just physically, we can appreciate the importance of energy to the state, both past and present. John Steinbeck is only one of several writers who noted the vast differences between east and west at the Missouri River separating Bismarck and Mandan. Steinbeck wrote: “Here is where the map should fold. Here is the boundary between east and west. On the Bismarck side it is eastern landscape, eastern grass, with the look and smell of eastern America. Across the Missouri on the Mandan side it is pure west, with brown grass and water scorings and small outcrops. The two sides of the river might well be a thousand miles apart.”<sup>6</sup>

A few miles east of the river near Wilton, where lignite coal was commercially exploited by means of underground mining before statehood, large potholes and depressions indicate subsurface subsidence.<sup>7</sup> Just north of the Missouri River’s great bend, which now lies beneath Lake Sakakawea, spoil piles are evidence of early efforts at coal strip mining and the lack of reclamation. Among these two locations, the current Falkirk Mine near Underwood, illustrates surface mining on a massive scale, and also provides an example of modern surface-mine reclamation.

North Dakota has the largest lignite reserves in the world, but due to relatively low Btu and high water content, lignite cannot be economically shipped long distances. Thus, coal from the Falkirk Mine is used to generate electricity at the nearby Coal Creek Station, and the electricity is then transported out of state to the East and South via transmission power lines that cross North Dakota.

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3. *See generally* 49 N.D. L. REV. 227 (1973).

4. *See generally* 50 N.D. L. REV. 247 (1974).

5. The North Dakota Law Review published a symposium on oil and gas law in 1982. *See generally* 58 N.D. L. REV. 423 (1982).

6. JOHN STEINBECK, TRAVELS WITH CHARLEY IN SEARCH OF AMERICA 118 (Steinbeck Centennial ed. 2002).

7. ROBINSON, *supra* note 1, at 160.

Lignite exploitation is in sharp contrast to the exploitation of sub-bituminous coal in Montana and Wyoming. Much Montana sub-bituminous coal, which has a higher Btu and lower water content than lignite, is shipped in Burlington Northern Santa Fe Railway unit trains that cross the Missouri River from Mandan to Bismarck many times each day on their journey east. Most of this coal is destined for power plants well beyond North Dakota's borders. These trains return empty to be filled again with Montana coal, and then repeat the journey east, only to return west again.

State Highway 200A crosses the Missouri River at Washburn. Along this spur highway, which parallels the Missouri River, the Leland Olds Station near historic Fort Clark generates electricity by burning lignite from the Freedom Mine. The Freedom Mine, located further northwest, also provides lignite to the nation's first and only commercial coal gasification plant. Both the mine and the Great Plains Synfuels Plant are located just south of Lake Sakakawea, near Beulah. Since 1984, this plant has converted lignite into synthetic natural gas (SNG).<sup>8</sup> The *Petroleum Economist* recently noted the increasing attraction of converting low-quality coal into SNG and synthetic gasoline.<sup>9</sup>

More recently, the Great Plains Synfuels Plant began capturing some of the carbon dioxide emitted in the gasification process, and ships it by pipeline to Saskatchewan, where the carbon dioxide is used for enhanced-oil recovery in the Weyburn oilfield.<sup>10</sup> This enhanced-oil recovery operation is being monitored to study the utility of geologic carbon sequestration as a means of reducing greenhouse-gas emissions and lessening climate change.

Northeast of the gasification plant, one of the world's largest earthen dams holds back the waters of Lake Sakakawea, covering the Missouri River until it again becomes visible far upstream, near Williston. The Garrison dam was constructed between 1947 and 1954, as part of the Pick-Sloan Plan, a chief purpose of which was to provide flood control to the Missouri and Mississippi Valleys.<sup>11</sup> Due to varying water levels of Lake Sakakawea, the associated hydroelectric plant generates only about half of its electrical capacity, evidence of a familiar drawback of "renewables"—as hydropower generates electricity only when water flows through the

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8. See generally Dakota Gasification Co., Great Plains Synfuels Plant, <http://www.dakotagas.com/> (last visited Mar. 19, 2010) (providing further information about the Great Plains Synfuels Plant).

9. Harriet Crawley, *Coal Gasification: Unlocking the Potential of Low-Quality Coal Reserves*, PETROLEUM ECONOMIST, Mar. 2010, at 25.

10. See Dakota Gasification Co., CO<sub>2</sub> Capture and Storage, [http://www.dakotagas.com/CO2\\_Capture\\_and\\_Storage/index.html](http://www.dakotagas.com/CO2_Capture_and_Storage/index.html) (last visited Mar. 19, 2010).

11. See U.S. Army Corps of Eng'rs, Omaha Dist., Garrison Project Home Page, [https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/welcome.html](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/welcome.html) (last visited Mar. 17, 2010).

turbines, wind power generates electricity only when the wind blows, and solar power generates electricity only when the sun shines. Another purpose of the Garrison Dam—irrigation to grow more human fuel—never materialized. Further, Lake Sakakawea and its sister reservoir, Lake Oahe, south of Bismarck, now cover some 550,000 acres<sup>12</sup> of fertile Missouri River bottomlands, depriving the state and nation of the human fuel previously raised on those acres. Moreover, Lake Sakakawea divided the Fort Berthold Indian Reservation in half and deprived the reservation of fertile river bottom lands.<sup>13</sup> While the Garrison Dam has helped reduce flooding along the Lower Missouri and Mississippi Rivers, the Dam has provided little benefit to North Dakota other than recreational opportunities which are probably less satisfying than the recreational opportunities previously available along the much more scenic, free-flowing Missouri River.

At Wilton, a sixty-six turbine wind farm recently began operating and is to double in size. Unlike the state's other energy resources, which are confined to the western half of the state, wind farms can be found in most parts of North Dakota. North Dakota has been called "the Saudi Arabia of wind,"<sup>14</sup> a misleading statement. Saudi Arabia has the world's largest proven oil reserves, but most of the reserves are largely confined to the portion of the country along the Persian Gulf. In North Dakota, wind is everywhere—with large areas west of the Red River Valley regarded as highly suitable for wind farming on a commercial scale.<sup>15</sup>

Throughout North Dakota, and all along the Missouri River, farmers grow corn. Much of the corn is destined for ethanol plants, currently located far to the east or west of the river. Whether and to what extent ethanol will prove to be a major source of renewable energy in the United States, is debatable. Currently, ethanol cannot compete with gasoline without massive federal tax subsidies. Moreover, growing corn for fuel rather than for food and fiber is morally questionable. Finally, corn, which is not efficiently converted to fuel, is not likely to remain the crop of choice for ethanol production. Presently, ethanol seems more politically expedient than economically sound.

The oil industry is evident throughout much of western North Dakota. The town of Parshall, just east of the Van Hook Arm of Lake Sakakawea, is

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12. ROBINSON, *supra* note 1, at 465.

13. Lake Oahe flooded the bottom lands of the Standing Rock Indian Reservation, south of Bismarck.

14. *See, e.g.*, N.D. Farmers Union, North Dakota: The Saudi Arabia of Wind, <http://www.ndfu.org/newsroom/viewNews.asp?ID=151> (last visited Mar. 16, 2010).

15. *See* U.S. Dep't of Energy, North Dakota Wind Resource Map, [http://www.windpoweringamerica.gov/images/windmaps/nd\\_50m\\_800.jpg](http://www.windpoweringamerica.gov/images/windmaps/nd_50m_800.jpg) (last visited Mar. 16, 2010).

one of several communities where the Bakken oil play, which is also becoming a natural gas play, can be viewed in an around-the-clock performance of seismic surveying, drilling, hydraulic fracturing, and production. The Marcellus natural-gas play in Pennsylvania may get more press because of its proximity to mass media centered in the Northeast, but the Bakken oil play, which also includes natural gas reserves, is equally important and ranks with the new deepwater oil discoveries in the Gulf of Mexico and offshore Brazil. Although North Dakota is the world's largest producer of lignite and the among the world's most promising sources of wind energy, oil will keep North Dakota in the energy spotlight for the foreseeable future. In March 2010, over 100 oil rigs were operating in North Dakota, and about 150 are expected to be operating by the summer of 2010. Notwithstanding concerns about greenhouse-gas emissions, by 2035, the fossil-fuel share of energy consumption is expected to decline by only 6%, from 84% to 78%.<sup>16</sup> Due in part to the Bakken oil play and to increased oil-use efficiency, the United States is expected to import 45% of its oil in 2035, compared to a recent high of about 60%.<sup>17</sup>

The United States Geological Survey has raised its initial estimate of technically recoverable oil from the Bakken Formation from 151 million barrels in 1995 to as much as 4.3 billion barrels in 2008, an increase of 25%. This new figure is estimated to be only about 1% of the total oil in play. We can only speculate about the effects of improved technology and higher oil prices on future recovery rates. Production from the Bakken currently supplies about 2% of U.S. oil demand, and this number is steadily increasing. Indeed, daily production is projected to increase to between 300,000 and 400,000 barrels per day by mid-2011<sup>18</sup>—representing about 6 to 7% of total U.S. production, including U.S. offshore production.<sup>19</sup> In addition, the Three Forks-Sanish Formation, beneath the Bakken Formation, may hold oil reserves comparable to, or even greater than, the Bakken.

Further west, Williston, North Dakota's oil city, and Tioga, North Dakota's oil town,<sup>20</sup> have experienced the boom and bust phenomenon of oil plays. Unfortunately, North Dakota can do little to prevent future oil

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16. U.S. Energy Info. Admin., Annual Energy Outlook Early Release Overview, <http://www.eia.doe.gov/oiaf/aeo/overview.html> (last visited Mar. 16, 2010).

17. *Id.*

18. Jim Polson, *North Dakota Raises Oil Forecast on Advances by Shale Explorers*, BUS. WK., Jan. 22, 2010, <http://www.businessweek.com/news/2010-01-22/north-dakota-raises-oil-forecast-on-advances-by-shale-explorers.html>.

19. U.S. Energy Info. Admin., Crude Oil Production, [http://tonto.eia.doe.gov/dnav/pet/pet\\_crd\\_crpdn\\_adc\\_mbbldpd\\_a.htm](http://tonto.eia.doe.gov/dnav/pet/pet_crd_crpdn_adc_mbbldpd_a.htm) (last visited Mar. 16, 2010).

20. I will conveniently avoid the debate as to which of these towns is North Dakota's Oil Capital.

busts, as the macroeconomic and geopolitical factors that cause the busts are beyond the state's control; however, careful long-term fiscal planning at all levels of government can minimize the adverse effects of both boom and busts. Busts are nothing new to this region. Fort Clark and Fort Union, located along the Missouri River, are remnants of a brief but booming fur industry, which came to a crashing end when both the demand for and supply of beaver pelts declined in the mid-19th century.

This symposium issue addresses several matters of importance to North Dakota. The article written by Colleen Rice is fascinating. The terms of wind leases are protected by confidentiality provisions throughout the country, not just in North Dakota. Making provocative and sometimes humorous comparisons, she argues for transparency. While the terms of oil and gas leases are generally fully recorded and otherwise well publicized, the terms of many other oil and gas deals are not. A lack of transparency leads not only to one-sided deals, but also inefficient deals. Economists generally agree that full information leads to efficient transactions. Rice argues for further legislation, which may yet prove to be necessary. Of course, landowners might also discipline themselves to just say "no" to confidentiality provisions, though I doubt these provisions are effective anyway. One of my fellow editors of the Texas Title Standards often regales the board with stories that fall under the category of what he calls the "Beer Joint Rule"—referring to a place where both libations and information often flow uninhibited by discretion. I fully agree with Rice that transparency in wind leasing is highly desirable. Her comparison of a generic wind lease form to a more landowner-oriented Texas wind lease form is also fascinating. I suspect that Texan landowners, who may own large tracts of land and may be more likely to seek legal counsel to assist them in their business dealings, have learned many lessons, some first-hand, and others second- or third-hand, about the drawbacks to signing the oil and gas or wind lease form pitched to them by a landman. In contrast to typical North Dakotans, who are often too trusting, Texans have learned to not be so trustful.

My friend and colleague, Professor David Pierce makes a convincing argument that the Texas Supreme Court missed a step in its *Garza* decision when it failed to fundamentally ground its decision on the doctrine of correlative rights, rather than the rule of capture. *Garza* addresses whether fluids and proppants injected as part of a hydraulic fracturing operation can give rise to an action in trespass if they cross into the subsurface of neighboring parcels. Hydraulic fracturing is a completion technique making possible the production from tight reservoirs, such as the Barnett Shale in Texas, the Marcellus Shale in Pennsylvania, and the Bakken Formation in

North Dakota. While the vertical intrusion of proppants and fluids is controlled by the geology of impermeable formations above and below the targeted reservoir, the lateral extent of the fractures cannot be fully controlled. Accordingly, some fluids and proppants may extend beyond the unit boundaries of a fraced well. Indeed, because the operator would want to maximize the effectiveness of the frac throughout the unit, some intrusion beyond unit lines can be assumed. In *Garza*, the Texas Supreme Court held that hydraulic fracturing across unit lines was not an actionable trespass because the resulting recovery of hydrocarbons, including hydrocarbons drained from neighboring tracts, was protected by the rule of capture. Professor Pierce argues the court should have first addressed whether engaging in hydraulic fracturing was within the correlative rights of those having development rights in the common reservoir. If so, then no trespass claim could arise. Any resulting production would be governed by the rule of capture, just as in any other primary production. He also persuasively argues for more conservation regulation to maximize recovery and minimize costs.

Professor Ronald Rosenberg discusses efforts to promote energy conservation and green energy—especially wind—to meet future energy demand—especially increasing demand for electricity. During the next twenty-five years, hydrocarbon imports are expected to decline because of greater energy efficiency and increased use of natural gas and renewable energy—especially wind. Professor Rosenberg indicates how states have led the federal government in promoting green energy and identifies governmental policies and regulatory practices that have been the most effective in promoting wind energy. He also addresses what governments at all levels must do to help make wind energy a major and sustainable source of electric power—especially the development of policies that will facilitate the construction of an expanded electric transmission capacity.

The articles by Tony Clark and Jason Schaefer offer contrasting views of cap and trade regulation. Schaefer convincingly argues that cap and trade offers the best hope of addressing greenhouse gas emissions. Clark convincingly argues that cap and trade nevertheless has drawbacks that will make the passage of a federal cap and trade law very difficult. Without entering into their debate, I submit that the American people do not know whether to be optimistic or pessimistic about the effects of climate change and also do not know the details or facts of climate change about which to be optimistic or pessimistic. The most optimistic view would be that the effects of climate change are not going to be as bad as worried scientists suggest, so there is no need to address it. The most pessimistic view would be that the effects are a serious problem, but not something that people or

their governments can meaningfully address. While most people may have somewhat more moderate views, the debate may well continue with no clear resolution, perhaps to the ultimate pessimistic view that climate change is a real problem that could have been meaningfully addressed if action had been taken in time.

Professor Joshua Fershee discusses the potential for Enhanced Geothermal Systems (EGS), both as a by-product of oil and gas drilling and as stand-alone energy projects. This exciting possibility is a current focus of energy research projects at the University of North Dakota. If proven to be economically viable, EGS has the potential of lessening the need for coal as a power-generation fuel, which in turn would lessen greenhouse-gas emissions.

The transcript of Christopher Schindler's remarks addresses energy derivatives and the effort to identify and regulate over-the-counter trades and make them more transparent. While such transactions are often viewed with great suspicion by consumer groups and politicians, they are often an essential component of financing for major energy projects. Schindler also addresses the debate over regulating financial transmission rights and the financial side of carbon cap and trade transactions.

Finally, Lindsey Scheel describes and analyzes the *Bice v. Petro-Hunt, L.L.C.*<sup>21</sup> decision; one of the most important oil and gas decisions rendered by the North Dakota Supreme Court. The court adopts the "wellhead" view of royalty valuation and rejects the "marketable-product" view. While I do not agree with the court's decision in *Bice*,<sup>22</sup> which addresses the costs of treating sour natural gas, I recognize that "[n]either [the wellhead nor marketable-product] view is entirely satisfactory."<sup>23</sup> Time will tell how aggressive lessees will become in claiming and calculating deductions; many will likely conclude that they have little risk in pushing the envelope. Unfortunately, either view generally leads to aggressive behavior, as the marketable-product view encourages lessors to aggressively push the royalty valuation point further and further downstream.

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21. 2009 ND 124, 768 N.W.2d 496.

22. On appeal, I was briefing counsel for the appellants.

23. OWEN L. ANDERSON ET AL., HEMINGWAY ON OIL AND GAS LAW AND TAXATION § 7.4(C), at 339 (3d ed. 2004).