



Dakota Resource Council Comments Re: Dept. of Energy Quadrennial Energy Review Infrastructure Constraints August 8, 2014

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Background on Dakota Resource Council:

Dakota Resource Council (DRC) was formed in 1978 to protect North Dakota's land, air, water, rural communities and agricultural economy. DRC is a non-profit grassroots organization. DRC's more than 650 members use grassroots actions to influence public opinion and shape public policy to protect agriculture, natural resources, livelihoods and community well being.

I. Introduction

North Dakota is a natural resource rich state. North Dakota hold vast oil reserves and a great potential for wind energy. Yet North Dakota currently lacks sufficient infrastructure to efficiently capture our natural resources and move them to energy markets.

The Bakken oil boom in Western North Dakota has caused significant rises in oil production in North Dakota. Due to the rapid nature of the Bakken oil boom energy infrastructure is being taken to its brink. The overuse of existing infrastructure combined with not enough planning at the beginning of the oil boom and not enough investment in new infrastructure has created a situation where oil producers throughout the state are wasting valuable natural gas via the process of flaring or burning off the associated gas from oil production. The inefficiencies in North Dakota's oil production should serve as an example of why it is important for infrastructure planning prior to an energy boom.

In addition, the oil boom in North Dakota is increasingly sending more oil by rail. There are several constraints to our current rail infrastructure with regard to moving oil. Currently, North Dakota does not require producers to stabilize their oil prior putting oil in rail cars. Also the current DOT-111 rail cars are unsafe for the transporting of crude oil due to the ease with which they can be punctured in the case of a derailment¹. As a result it is clear that North Dakota needs to invest in

¹ Gerken, James. "DOT-111 Rail Tank Cars Used To Ship Oil Called 'Unacceptable'" *The Huffington Post*. TheHuffingtonPost.com, 27 Feb. 2014. Web. 29 Jul. 2014. http://www.huffingtonpost.com/2014/02/27/dot-111-rail-tank-cars_n_4865960.html

more micro refineries to stabilize oil by stripping natural gas liquids (NGLs). In addition, safer rail cars must be constructed as quickly as possible so that Bakken crude on the rails is not a moving bomb.

North Dakota's wind industry like its oil industry is booming. Although there is a boom in the production of wind, many inefficiencies still exist, which are detrimental to the full proliferation of wind energy. Wind energy is mainly bottlenecked due to a lack of available transmission that can move wind generation out of state. Projects are starting in North Dakota like MISO's MVP (multi-value project) transmission project, which will allow more wind farms to connect to transmission and create a market to move North Dakota wind to surrounding states. For wind to succeed in North Dakota, current infrastructure must be optimized, while new transmission must be built to cater to new wind generation.

Critically important landowner rights must be given greater consideration in the construction of new infrastructure. To build new infrastructure, companies need permission from landowners to put in transmission lines, pipelines, and rail loading facilities. Companies investing in new infrastructure or companies updating existing infrastructure must make a genuine attempt to engage with landowners prior to moving forward with any infrastructure projects. As always, projects that have landowner buy-in will move forward with fewer speed bumps than projects that are detrimental to landowners or in which landowner concerns are glossed over.

II. Oil Infrastructure

Infrastructure Constraints causing inefficiencies in North Dakota's oil boom

Currently, North Dakota oil producers flare between 33% and 26% of the associated natural gas produced in the Bakken². Estimates by the investor group CERES show that North Dakota is wasting approximately 100 million dollars of its natural gas resource a month³. There are two major reasons for the widespread waste of natural gas due to flaring in North Dakota: 1. lack of midstream gas gathering infrastructure and 2. the relatively low market price for natural gas (compared to crude oil)⁴. These two factors combined have made the Bakken one of the most wasteful energy plays in recent history. The natural gas that is being flared is contributing to man-made climate change by adding carbon to the atmosphere.⁵

² Leader, Jessica. "Bakken Shale Flaring Burns Nearly One-Third Of Natural Gas Drilled, New Study Finds." *The Huffington Post*. TheHuffingtonPost.com, 29 July 2013. Web. 01 Aug. 2014.

³ Upton, John. "\$100 Million worth of Natural Gas Goes up in Flames Every Month in North Dakota." *Grist*. Grist, 31 July 2013. Web. 28 July 2014.

⁴ Sakelaris, Nicholas. "Breitling CEO Faulkner: Low Gas Prices Cause Dilemma - Dallas Business Journal." *Dallas Business Journal*, 20 Feb. 2013. Web. 28 July 2014.

⁵ Krauss, Clifford. "Oil Companies Are Sued for Waste of Natural Gas." *The New York Times*. The New York Times, 17 Oct. 2013. Web. 01 Aug. 2014.

To combat flaring, new infrastructure must be built, while at the same time companies must also optimize existing oil infrastructure. The following are possible solutions to the infrastructure issues that are causing the wasteful practice of flaring:

1. Require comprehensive planning prior to the construction of new gas capture infrastructure to reduce flaring in the Bakken.

Any comprehensive planning regarding gas lines must also involve all pertinent stakeholders in the process. Pertinent stakeholders in this case include: landowners, oil and gas companies, tribal governments, local governments, state governmental agencies, and federal agencies.

2. Maximize capture of gas within existing infrastructure by providing incentives for the current owners of midstream gas gathering to give contracts to other oil and gas companies within the Bakken.

Gas capture should be the number one priority in the Bakken. Currently, oil companies in the Bakken that own gas gathering or have favorable relationships with companies that build and own gas gathering have the lowest flaring rates, and companies that do not have their own gas lines or favorable relationships are often left on an island forced to flare their gas⁶. This means there are two possibilities: let the market work itself out and allow flaring to continue, or provide incentives to owners of gas gathering to give contracts to companies outside of their network so that the gas is captured.

3. Slow down oil permitting until gas gathering infrastructure catches up.

Many experts argue that the nature of the Bakken is reckless⁷. A woman died on Stand Rock Reservation in North Dakota this winter due to lack of propane, while oil and gas producers in North Dakota flared off 30% of the very same heating source.⁸ This example cries for the need to slow down drilling permits until the infrastructure is in place to efficiently capture the resource. Although the Department of Energy likely cannot help with this process due to most of the minerals in North Dakota being on private land, it

⁶ Rahim, Saqib. "E&E Publishing." *BUSINESS: Bakken's Top Dog Wants to Snuff out Gas Flaring*. E&E Publishing, 3 Mar. 2013. Web. 29 July. 2014.

⁷ "Unconventional Oil and North Dakota Communities: State Fiscal Policy Unprepared for Impacts of Energy Development." *Headwaters Economics Unconventional Oil and North Dakota Communities State Fiscal Policy Unprepared for Impacts of Energy Development Comments*. N.p., Apr. 2012. Web. 01 Aug. 2014.

⁸ Associated Press. "Standing Rock Woman Dies with No Propane to Heat Home." *The Daily Republic*. Associated Press, 5 Feb. 2014. Web. 31 July 2014.

is still important that it is understood the pitfalls of permitting oil activity without sufficient infrastructure causes a waste of a resource, in this case natural gas that could be used for heating homes.

Oil by Rail

The transportation of moving oil by rail from North Dakota has exposed many safety issues with regard to the safety of our current rail infrastructure. Derailments across the U.S. and Canada involving Bakken crude have taken lives and caused billions in property damages⁹. As was noted earlier the current constraints with moving oil through our rail system are two-fold. First, it is not standard practice to stabilize crude in North Dakota via the process of stripping NGL's (explosive liquids) from Bakken crude¹⁰. Second the current rail cars being used to move Bakken crude, DOT-111s, are not safe due to the likelihood they will puncture and explode in the case of a derailment¹¹. Cities like Lac-Mégantic and Casselton, ND can attest to the explosiveness of rail cars carrying Bakken oil.

To solve the current infrastructure constraints of moving Bakken via rail lines, there must be a concerted effort to require the stripping of NGLs from Bakken via micro refineries¹². In addition, DOT-111 cars must be phased out or banned altogether.

III. Wind Infrastructure

Wind Transmission/Infrastructure Constraints

North Dakota has one of the best wind potentials in the United States. NREL currently ranks North Dakota #6 in wind energy potential¹³. Some estimates assert that North Dakota wind alone could meet 230 percent of the state's energy needs¹⁴. At the present, North Dakota falls short of its potential wind energy production, with only 15 percent of its total energy being produced by

⁹ Frisch, Tracy. "Oil Pipelines on Wheels." *Hill Country Observer*. Apr. 2014. Web. 01 Aug. 2014.

¹⁰ Hays, Kristen. "Safety Debate Eyes Taming Bakken Crude before It Hits Rails." *Reuters*. Thomson Reuters, 12 May 2014. Web. 29 July 2014.

¹¹ Ha, Tu Thanh. "Rail Cars like Those in Lac-Mégantic Disaster Are Prone to Puncturing." *The Globe and Mail*, 8 July 2013. Web. 01 Aug. 2014.

¹² "'Micro Refineries' a Solution to Oil-train Woes, Energy Firm Says." *UNCONenergy*. N.p., 3 July 2014. Web. 01 Aug. 2014. <<http://unconenergy.com/2014/07/03/micro-refineries-a-solution-to-oil-train-woes-energy-firm-says/>>.

¹³ "State Wind Energy Statistics: North Dakota." *State Wind Energy Statistics: North Dakota*. AWEA, 10 Apr. 2014. Web. 27 July 2014. <<http://www.awea.org/Resources/state.aspx?ItemNumber=5191>>.

¹⁴ Id.

wind¹⁵. There are many political and market based reasons that can explain why North Dakota is not meeting its full potential with wind, but it can be argued that optimizing current transmission while constructing new transmission would provide wind energy a means to compete and thrive in the energy markets regardless of politics or current market constraints.

Optimizing existing transmission

Much of America's current electric transmission infrastructure is outdated or is not being used efficiently¹⁶. To remedy this problem, we must optimize how we use our current transmission infrastructure. Smart grid technology is a means to reducing inefficiencies in our currently outdated and inefficient transmission lines¹⁷. Smart grid technology allows people running electricity on our lines to optimize its use and reduce inefficiencies in transmission lines¹⁸. Smart grid requires upgrades to the current lines, which will take time and money, but it is worth the investment so that we can reduce the number of new transmission lines in the future.

Smart grid is also necessary in order to optimize the use of wind energy because smart grid allows more flexibility in the energy grid. That would allow resources to be used when they are at peak production, as in the case of wind, when the wind is blowing¹⁹.

Investment in new transmission to get more wind on the wires

Due to the current constraints on North Dakota's transmission infrastructure, it will be key to strategically construct new transmission lines that can get more wind electrical production moving on transmission lines. New construction of transmission will allow more users to get into the electric grid, which in turn will allow more companies to invest in North Dakota wind, and as a result more wind will be developed in the wind swept prairies of North Dakota.

Currently, there is a proposed transmission line in North Dakota that will meet the goal of increasing the transmission capacity for wind power. The proposed line is called the MVP-6 line. The MVP-6 line is a project of Montana Dakota Utilities and Otter Tail Power as a part of MISO's (Midwest Independent

¹⁵ Id.

¹⁶ Fahey, Jonathan. "America's Power Grid Is like an Old Car." *Electronic Component News*. Associated Press, Web. 01 Aug. 2014. <<http://www.ecnmag.com/news/2013/03/americas-power-grid-old-car>>.

¹⁷ "Energy.gov." *Smart Grid*. Dept. of Energy, July 2012. Web. 28 July 2014. <<http://energy.gov/oe/services/technology-development/smart-grid>>.

¹⁸ Id.

¹⁹ King, Chris. "Smart GridWatch." *EMeter Too Much Wind Energy How the Smart Grid Can Help Comments*. Siemens, 29 Aug. 2011. Web. 30 July 2014. <<http://www.emeter.com/smart-grid-watch/2011/too-much-wind-energy-how-the-smart-grid-can-help/>>.

System Operator) MVP (multi-value project) initiative²⁰. The MVP-6 line is a modern 345-kv transmission line, and will allow various users to interconnect, most notably wind farms²¹. New transmission lines like the MVP-6 line combined with smart grid will help modernize North Dakota's existing electrical so more wind can be on the wires.

IV. Landowners

Landowner approval is paramount to the upgrading and the construction of new infrastructure. It is important for companies building new oil and gas infrastructure as well as electric transmission lines to understand how to best engage landowners. Landowners have distinct wants and needs that will allow them to buy in to specific projects and these wants and needs must be considered prior to constructing projects²².

The use of eminent domain should be avoided in order to not cause opposition from landowners towards energy companies²³. In addition, infrastructure must be planned in a manner, which will have a smaller footprint on private property rights of people in North Dakota.

Pre-planning to determine the best available infrastructure routes that have a small footprint on existing land uses combined with proper engagement of landowners will likely minimize landowner opposition and remove the need to use heavy-handed tactics like eminent domain.

V. Conclusion

Realizing the constraints of North Dakota's current infrastructure is the first step in solving the inefficiencies in North Dakota's wind and oil industries. In the case of oil production the lack of pipelines result in the waste of natural gas via flaring. In the case of wind, the inefficiency of aging transmission lines combined with not enough new transmission has bottlenecked the widespread development of wind energy. In the case of our rails it will be key to understand the current constraints to our oil by rail shipping system such as the dangers of DOT-111 cars, the need to stabilize Bakken crude of NGLs, and the need to modernize our rail cars making them safer.

In order to solve these infrastructure-based inefficiencies there is a clear need in both oil production and wind energy for investment in new infrastructure. It is also necessary to optimize efficiency with regard to existing

²⁰ "Big Stone South to Ellendale Transmission Line." *Big Stone South to Ellendale (BSSE) Transmission Line*. Web. 01 Aug. 2014. <<http://bssetransmissionline.com/>>.

²¹ *Id.*

²² "Oil and Gas at Your Door?" *Oil and Gas Accountability Project* (2005):Earthworks. Web.

²³ Buchelle, Mose. "Eminent Domain: In Texas, Landowners Face Continued Uncertainty." *Texas RSS*. NPR, 15 July 2013. Web. 01 Aug. 2014.

transmission. Optimizing efficiency in current infrastructure combined with investment in new infrastructure will allow North Dakota to maximize its production of both wind and oil, while reducing waste and harmful greenhouse gas emissions. Lastly while making new investments in infrastructure and upgrading current infrastructure it is absolutely necessary to take into account landowner rights and livelihoods, and to avoid the use of eminent domain.