April 10, 2014
Coover Hall
Iowa State University
Ames, Iowa
Word count 5043

Presentation to Dr. McCalley's Wind Energy

Science, Engineering & Policy Students

By

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Even though I don't feel particularly at ease here passing on information and my observations, I want to thank Dr. McCalley for this unexpected opportunity. Speaking before a group, even a small one like this, simply doesn't come naturally.

As a writer who routinely submits magazine and newspaper feature stories about most any form of energy, it was late in 2011 when I first became keenly aware of just how many high voltage transmission infrastructure projects were being proposed. In retrospect, my inquisitive curiosity for wind energy sprouted five years earlier.

However, my learning curve regarding both industries quickened when Clean Line Energy Partners came to Paullina in the spring of 2011 to explain their proposed high voltage direct current (HVDC) wind energy transmission project from O'Brien County to a 765 kV substation near Morris, Illinois. A map they provided showed their initial study corridor. *

Clean Line must rely on wind developers to build wind farms and ship wind energy on the 3,500 MW HVDC power line. Once delivered, they're equally dependent on utilities to buy that energy.

When I fully grasped how Clean Line's innovative business model was intended to work, I immediately compared theirs to one I routinely dealt with in the 1980s when I worked in the pipeline industry. What Clean Line was proposing seemed exactly identical to how a common carrier refined petroleum products pipeline operates.

Many different oil refineries ship their gasoline, diesel and jet fuels in batches through a common carrier interstate pipeline system. All the products fed into the head end of the pipeline are generic and fungible commodities. That means anyone shipping product has equal access to these products at anytime along the pipeline.

In my view, Clean Line is a common carrier high voltage DC wind energy transmission line. It's a business model that's worked well in the pipeline industry for decades and I don't see why it can't work well in the electric transmission industry, too. However, efficiently moving this much bulk power into the wider distribution network might evolve into an unexpected problem to solve.

I set about conducting an informal survey among landowners at the O'Brien County Fair two months later. I set up shop under a shade tree and waited for landowners to come to me. My survey question was: Are you basically supportive, unsupportive or unsure about the Rock Island HVDC power line project to Illinois?

Over those 3 days, I probably chatted up over forty fairgoers about that project and wind energy development in general. My survey showed that 69% supported the power line project, 13% were unsupportive and 17% were simply not sure. Several held unfavorable views towards wind energy development. That survey became a small part of a *Wallaces Farmer Magazine* feature story in the Oct. 2011 issue. *

When one landowner learned that Clean Line was also developing 3 other HVDC projects, Jamie Sickelka said, "They sure are ambitious." Sickelka is a landowner who farms within the Highland Wind Energy Project. An Invenergy met tower has been located on his property for over 7 years.

Shortly after, I discovered a unique learning tool when I began studying Clean Line's FERC application. After reading and rereading the complicated material, I was addicted. I can recall the local economic development director Kiana Johnson telling me about that same time, "You must be the only newspaper reporter in Iowa that relishes studying MISO long-range transmission expansion project spreadsheets."

I realized that far more HVDC and HVAC power line expansion projects were in the offing than what I initially believed. For example, from reading FERC documents I first learned of the proposed Duke Energy/American Transmission Company HVDC 3,000 MW wind energy power line project from western Iowa to Indiana. *

Through these FERC documents, I sensed something called MISO was an integral part of the high voltage grid. What's MISO, I mused? MISO (Midwest Independent System Operator) had reports on their website that were just as interesting.

These MISO documents, especially their yearly Midwest Transmission Expansion Project (MTEP) reports, led me to become aware that the upper Midwest seemed to be targeted for a historic 10-year build out of high voltage AC transmission expansion and upgrade projects that MISO estimated at a $5.5 billion cost. MISO called this initiative their Multi-Value Portfolio (MVP) of 17 transmission expansion projects. *

Website maps showed where about 6,500 miles of new power line would be located or upgraded. What was fascinating was to see these maps showing route

configurations change from one MTEP to the next. * With each iteration, these proposed new transmission routes seemed to become even more practical. All this information that I seemed to absorb caused me to wonder just what the ordinary farmer/landowner knew about MISO and how MISO can impact farming operations.

Therefore, I decided to conduct my own unscientific experiment in the summer of 2012. At noon one day, I walked to the local Cenex gas station/convenience store armed with but one simple question. Cenex is the local farmer's hideout. Sure enough, six or seven farmers were present drinking coffee, eating and pondering typical farmer stuff.

After listening awhile, I asked if anyone was aware of MISO and what its primary purpose was. Coming as no surprise, nobody knew what the acronym MISO stood for, so I explained its origin. Still, that didn't seem to provoke any awareness. I explained that MISO was the independent, non-profit entity that oversees the high voltage grid in the upper Midwest. I also explained that MISO's primary mission was to get electricity to the consumer at the lowest possible cost.

I reported the results to Tina Potthoff at MidAmerican Energy. Potthoff is their spokesperson and media relations manager. I explained my suspicions, my approach and the results. I told her that the typical Midwest farmer was clueless of MISO's relevance.

I argued that MISO and the utility companies did a poor job at getting useful information down to the level of the ordinary farmer. Ms Potthoff thought my observations were meaningful and perhaps useful.

Later in Dec., the Iowa Utilities Board and many MidAmerican Energy high voltage transmission engineers and right-of-way agents came to Hartley, Iowa. This was the first joint IUB/MidAmerican Energy landowner's informational meeting to reveal the

newly proposed MVP #3 345 kV high voltage transmission line project from O'Brien County to Webster County near Fort Dodge.

Sure enough, MidAmerican had people there to explain why MISO exists and how these MVP projects were analyzed and conceived over many years. MidAmerican's MISO compliance officer, Jeff Gust, explained why the large Regional Transmission Organizations (RTOs) are vital for maintaining and upgrading the U. S. high voltage electric infrastructure.

Another equally as momentous policy initiative in that 2011 MTEP was the designation of renewable energy zones, really wind energy zones, in many locations scattered throughout the 12-state MISO RTO. Clearly, what drove MISO to consider instituting this major new policy shift was because of the 64,000 MW of wind requests that MISO had received prior to 2010. *

Though MISO doesn't have the authority to insist that wind energy developers build wind farms in certain areas, it is aware of where wind energy firms are likely to prospect for future wind energy development. Local farmers and landowners were totally clueless of this new MISO policy as well.

Perhaps some lessons can be learned. I wonder how many times MISO senior high voltage transmission analysts and engineers have appeared on some of the early morning Ag programs broadcast in most Midwest TV markets. I think John Bear is MISO's CEO. Has Mr. Bear ever appeared on any of these programs like Ag Day or U. S. Farm Report filmed right there in Indianapolis where MISO is headquartered?

TV programs like these are viewed widely throughout the MISO region (and other RTO regions) and are what reach down to the ordinary farmer and landowner. MISO

should consider having representatives appear on these TV programs at least once or twice a year anyway to explain long-range transmission expansion intentions.

Any future substantial upgrade to the high voltage transmission infrastructure will require a much stronger three-way partnership between landowners, public utility companies and both the federal and state regulating agencies. Perhaps one or two of you will work for MISO in some capacity for a career. So keep this notion in mind. Maybe I'll even see one of you on my TV some morning at 5:00.

Usefulness of County Wind Energy Conversion Ordinances

O'Brien County's Board of Supervisors started to consider adopting a wind energy conversion ordinance in the summer of 2003. Though no interest in developing wind energy in the county was projected or existed at the time, the O'Brien County Assessor, Lowell Dykstra, pushed for an ordinance early on because nearby Buena Vista County had one. Dykstra wanted to ensure that utility-scale wind turbine infrastructure was adequately taxed.

The initial public hearing to approve County Ordinance # 19, an ordinance for the Assessment of Wind Energy Conversion property, was held on July 29th. Three county residents were present asking questions about taxing utility scale wind farms. The Board adopted the ordinance on Sept. 2, 2003.

Its adoption seemed to spark furious activity among several wind developers when prospecting for wind energy leases erupted like a dormant volcano. Perhaps the first wind energy company to gauge local landowner interest for allowing wind turbines on private property was when Chicago based Invenergy started to develop their 500 MW Highland Wind Energy Project that's now under construction in Highland Township. *

Concurrently, Minneapolis based Navitas Energy chatted up Grant and Omega Township landowners and gathered wind energy easements in eastern O'Brien County. Shortly thereafter, Ken Hach's firm Growind started exploring for easements in Center, Franklin and Lincoln Townships in northern O'Brien County. Hach was an Enron Wind Vice President in the 1980s. Growind soon partnered up with Dublin, Ireland based Airtricity in 2004 to increase their proposed wind farm to 500 MW.

San Diego based Eurus Energy signed easements with Franklin and Floyd Township landowners in 2007 & 2008. Florida Power & Light looked into developing a wind farm in Lincoln and Hartley Townships. An old fashioned land rush, it seemed, was on to gobble up land for utility-scale wind farm development. *

But alas, reality quickly set in and due to woefully inadequate transmission infrastructure for moving out large quantities of wind energy, most abandoned their projects or put them on hold for up to 10 years. Recently, Eurus indicated their intent to move forward as early as this year.

Through that ordinance, one benefit from the development of a wind farm is the huge property tax revenues that flow into county coffers. While recently observing how closely one Center Township landowner scrutinized a Court House map showing Highland wind turbine site locations, I eased in closer. Joel Wright was bent over jotting down notes of specific sites. *

Clearly conflicted over the project, Joel noticed me and said, "I don't know whether wind energy is an efficient generator of electricity or not. If it weren't for the huge property tax revenues that wind farms generate and pay into a county, I don't think

many wind farms would ever get built." In a nutshell, Wright's one sentence laid bare his diverse feelings about wind energy.

Wind energy developers routinely claimed that wind farms are a great revenue generator for counties. Our ordinance provides for a 7-year graduated property tax abatement period. During the first year after the wind farm is commissioned, no property taxes are collected. With each succeeding year, the rate jumps by 5 %. At the 7th year, the property tax rate reaches 30 % where it's permanently capped.

For a 2007 *Wallaces Farmer Magazine* feature story, the county assessor and I calculated, year by year, just how much impact the construction of a wind farm would have for county coffers. The results were staggering, even by Dykstra's standards. *

With a net acquisition cost of $666 million in 2007 terms, the 500 MW Highland project would pay in $799,000 in the 2nd abatement year. Taxed at 15 % in the 4th year, the property tax payment jumped to $2.4 million. At 20 % in the 5th year, $3.2 million was collected. At the 7th and final year of the abatement period, the 30 % rate yielded a whopping property tax payment of $4.8 million.

Dykstra explained how property tax receipts were divvied up. Basically, 50 % of the 7th year payment or about $2.4 million went for county government operations and the other $2.4 million went to the two school districts where turbines are located.

To sum up, when the deputy county auditor tallied all the property tax receipts coming into the county in 2007, the total came to almost $14 million. Essentially, the $4.8 million payment from the Highland Wind Farm accounted for over one fourth of the county's entire tax base.

For this presentation, I emailed (ISAC) Iowa State Association of Counties a month ago asking if they would survey all 99 counties. I wanted to know how many counties had wind energy conversion ordinances and how many didn't.

Hanna DeGroot emailed her preliminary findings last week. Out of Iowa's 99 counties, the verdict shows that 21 counties have at least one wind energy related ordinance in place and 12 have none. Others have yet to respond to the ISAC survey. *

Landowner Wind Energy Associations Gaining Acceptance

Where landowner wind energy associations first seemed to take root was ten years ago in the Rocky Mountain States like Wyoming and Colorado. Wyoming now has 10 ranging in size from 12,000 acres on up to the 148,000 acre Walker Creek Wind Association. *

However, interest in forming landowner associations could be migrating east. Shortly before the O'Brien County Landowners Association became official last summer, I attended an informational meeting where proponents of the association explained why the formation of this non-profit organization would benefit all landowners.

Algona, Iowa attorney Scott Buchanan provided his legal expertise on how to form the landowner's association. Buchanan has considerable experience in drafting land use agreements for wind farm developments and advising landowners about wind energy easement contracts.

Perhaps unwittingly, Buchanan led off his presentation by looking back 10 years at the early history of wind energy acquisition in the county. "Unfortunately, the way wind energy has progressed here is there's been a furious 8 to 10 years of prospecting by wind developers that kind of overwhelmed landowners. Landowners didn't have a lot of

information available to them. Local attorneys really didn't know a lot about the details of wind easements contracts and what their substantive terms meant.

So, we're playing a little catch up here. You really didn't have the opportunity to form a landowners association 10 years ago when the energy companies started prospecting for land," Buchanan said.

To explain why wind energy is gaining acceptance, Buchanan continued, "The prospect of wind energy development is very attractive for a lot of reasons. It represents clean energy. It represents new technology. It represents a future where we have more diverse, distributed energy resources rather than these large power plants that require coal and uranium.

It brings the economics of energy home a little bit. It allows the landowner the opportunity to participate in the U. S. Energy markets and to profit from it. As long as it's a fair deal for the landowners and a fair deal for the energy companies, there's nothing wrong with landowners entering into these wind energy easement agreements."

The O'Brien County association board established a one-time enrollment fee of $100 and a yearly membership rate of $.50 per acre. That yearly fee is waived unless funds are required for the continued operations of the association.

Another area nearby where a wind energy association recently took root is in Lincoln County, S. D. south of Sioux Falls. The Dakota Power Community Wind Project is set to build their first of 16 meteorological towers this spring for assessing the potential amount of electricity the project could generate.

These landowners are far enough along that they have already secured a wind farm developer to start addressing all the legalities for developing and building a large

utility-scale wind farm. Dakota Plains Energy based in Aberdeen, S. D. has agreed to develop the project. Dakota Plains is currently building the first phase of a planned 300 MW wind farm in Campbell County, S. D.

However, wind energy from Lincoln County needs to be connected onto a new high voltage transmission line that's yet to be developed and built. That power is then destined for the Rock Island AC to DC converter station near Sanborn, Iowa and then delivered to areas in the eastern U. S.

Wind Energy and Transmission expansion opposition

March 20th, I was in Sioux County at Rock Valley accompanying my wife to a meeting she attended. My base of operations when I'm there for the day is the Rock Valley Public Library. I often use their computers to compose feature stories, or peruse FERC, MISO or IUB documents.

Rock Valley City Hall is just two doors down. Completely out of the blue, I walked in and asked the whereabouts of any economic development director. Sure enough, one was located in a back office. A clerk yelled back and out wandered Jim Vande Velde. Vande Velde worked in economic development with MidAmerican Energy before the City hired him away. Mr. Vande Velde has a Ph.D. himself.

Vande Velde didn't know me from Adam. I asked him, "Does Sioux County have a wind energy conversion ordinance in effect?" In so many words, Vande Velde bluntly said that you'll never see any wind turbines or utility scale wind farms built in Sioux County.

Jim said that Sioux County has a high financial bond in place that's meant to discourage and dissuade all wind developers from even thinking about prospecting for

wind energy in Sioux County. That high financial bond figure basically demands that if a utility scale wind farm accidentally does get built, and somehow reaches the end of its useful life, that all vestiges of the wind farm must be removed or the bond is forfeited.

Vande Velde's personal view on wind energy is that he's inflexibly opposed to all wind energy. Jim talked about his frequent vacations to the Palm Spring's area of California. He derided all the wind turbines on the Palm Springs hillsides and how most were no longer in operation. Enron Wind and Zond Systems built these wind farms in the 1980s and early 1990s. These were some of the first large wind farms ever built. *

Vande Velde equates the Palm Springs hillsides to a junkyard because many years after their useful life, these 30 year old turbine sites don't generate much electricity. Many of them, from what he said, stand idle. Can anyone here confirm this?

So, is Vande Velde right when he calls this area around Palm Springs an unsightly junkyard that needs to be removed? I'd bet that in Sioux County, Vande Velde must be the leading opponent of wind energy and able to influence others to his closed-minded way of thinking. If those old wind turbines were to disappear, would that change his view? Do these earliest utility scale wind farms give wind energy a bad reputation?

I also discussed the O'Brien County and Lincoln County landowner wind energy associations. I explained that the goal of the association in O'Brien County was to build and develop a wind farm on 20,000 acres. I explained that Lincoln County landowners were seeking to develop a 1,000 MW wind farm on 75,000 acres.

As expected, Vande Velde didn't seem to think these were worthwhile activities or goals. Unfortunately, Lincoln County must connect their wind energy onto a new

transmission line that could cross Sioux County to get their electricity to the Rock Island AC to DC converter station in O'Brien County.

I asked Jim if Sioux County landowners would block any attempt to develop and build a double circuit 345 kV power line carrying wind energy from Lincoln County to O'Brien County. Vande Velde said, "Sioux County landowners will probably oppose any new power line developed to carry wind energy."

I also pointed out that with the MidAmerican Energy 500 MW wind farm and the planned Eurus Energy 150 MW wind farm combined that means O'Brien County could see 650 MW or more of new wind energy in less than 5 years. Then add the 1,000 MW of wind energy from Lincoln County to that. I asked Jim how Sioux County could be sandwiched between so much wind energy and still not take any interest in developing wind energy? That observation still didn't seem to faze him one whit.

He halfheartedly said, "Farmers in Sioux County don't want to farm around wind turbine sites. They want to plant long straight crop rows. With land auctions in Sioux County occasionally bringing over $20,000 per acre at sales, the land values are too high to have wind turbine sites planted all over."

In short, I walked into an unexpected buzz saw when I debated Jim Vande Velde and his Ph.D. about wind energy and its many economic benefits.

Officials with the Rock Island project formally announced their 375 mile preferred route across Iowa last July. Once the project maps appeared in every local newspaper along the route, the forces adamantly opposed to the project began to circle their wagons and gird for a bitter fight. With help from the Illinois opposition group, the Preservation for Rural Iowa Alliance (PRIA) group sought to get noticed.

Letters to the Editor appeared in probably all local newspapers along the route. Basically, these letters were a hodge-podge of poorly written opinions and half truths that often read more like an angry diatribe against the owners of the Texas based company proposing the project. However, one rant hurtfully targeted a staff writer for the *Spencer Daily Reporter* via intimidation and bullying because the content of her newspaper report didn't conform exactly to their view of what a story should have conveyed. *

One un-informed statement followed by many more un-informed statements generally will describe the boiler-plate language used in most any letter. I honestly don't recall reading any salient, insightful or rational point that would make any discerning reader think harder about the impact of the project. And I've read many, kept a few and brought some here.

By Iowa law, Rock Island couldn't legally start to negotiate with any landowner along the route for a voluntary easement until after a joint IUB/Rock Island landowner's informational meeting was held in each county. Rock Island is introducing something new when they offer the landowner the choice of an annual easement payment or the standard one-time payment. Since, O'Brien County is the point of origin, that initial meeting was held at Hartley last August 20th.

A large contingent from the opposition group arrived early even earlier than I. PRIA's primary spokesperson and President Carolyn Sheridan collared many Rock Island and IUB officials and started working them over with relentless questions, well before the meeting's official start. Others in the PRIA group must've been assigned to enlist new members into their group. Eventually, the PRIA group followed the IUB meeting itinerary train across the state no doubt with the same strategies.

After the IUB and Rock Island finished their formal presentations a question and answer session followed. The Q & A session strategy became obvious early on at the Hartley session. It was Sheridan's task to monopolize the portable microphone for as long as she could. She'd ask a question and before an answer was even finished, she'd hastily lob in another.

Sheridan kept the IUB moderator and any Rock Island official busy for many minutes at a time. There were stretches when she stood for maybe 8 to 10 minutes before a landowner or someone from the media was able to butt in and ask a question. Sheridan is skilled at asking questions that automatically led into follow-up questions. Clearly, she was quite at ease with a microphone in her hands. Early on, I had her pegged as someone with media or public relations savvy. I don't know that to be the case, however.

Out of a Q & A session that lasted for well over an hour, Sheridan held sway with the microphone super-glued into her hands for perhaps one/third of the meeting. Except for 1 or 2 others, Sheridan did all of PRIA's questioning or offered statements for the consumption of the audience. It was obvious PRIA's advanced planning was well conceived until the last IUB/Rock Island meeting was held in early December.

What I haven't figured out yet is why PRIA doesn't seem to be at all interested in opposing the MVP 3 & 4 projects across northern Iowa and SW Minnesota. T & D Power is the power line construction arm of EC Source. T & D is scheduled to come into O'Brien and Clay counties and start building the 345 kV power line network perhaps this summer or next fall. With an estimated $952 million cost, MISO approved these power lines as a way to integrate more wind energy into MISO in Dec. 2011. *

The power line will cross northern Clay County entirely just north of Spencer. It's mystifying why AC wind energy transmission gets a pass, according to the PRIA folks, and HVDC wind energy transmission must never be allowed to flourish. I don't see what the difference is.

On Jan. 22, 2013, the Clay County Board of Supervisors approved a resolution offering their complete support to the Rock Island project. That resolution was read into the meeting's official minutes.

Then on Tuesday Sept. 2nd, PRIA forces massed in the Clay County supervisor's chambers to vent their disapproval of the January resolution. A photo in the *Spencer Daily Reporter* shows about forty of their group, dour faces everyone, appearing in a sea of yellow t-shirts with their logo saying "Stop Rock Island Clean Line" front and center.

Their purpose was to ask the supervisors to rescind their earlier resolution. Well, the PRIA group successfully bullied the Clay County Supervisors into abrogating their January position and going to a position of neutrality. *

At a March 15th Spencer Chamber of Commerce Eggs & Issues session Jerry Crew questioned the Rock Island project. Legislators present at this forum were: Lt. Gov. Kim Reynolds, State Senator David Johnson and State Representatives Dan Huseman and Megan Hess. These forums are usually well controlled, but this session became the most heated and really contentious discourse I've heard. Two or three uniformed sheriff's deputies and the local police chief are always present.

Crew began, "I'm Jerry Crew a no-till farmer from Webb, Iowa and a member of the Preservation of the Rural Iowa Alliance (PRIA). That's an organization formed to prevent the proposed route of the Rock Island Clean Line power line that goes through

the center of my farm. This is 44 years of my life on this farm and it's going to be cut in two by this Rock Island Clean Line."

"What happens when the wind doesn't blow?" questioned Crew. "We have this 3500 megawatt (MW) transmission line going through my farm carrying wind energy. And where is the power coming from when the wind doesn't blow? What's going to be the impact on the consumers of Iowa using electricity?

The wind blows 40% of the time and generates electricity. 60% of the time the power is going to have to come from somewhere else because there's no storage capacity. All the power is exported out of Iowa," Crew contended.

"Where's the power going to come from? Yeah, it seems like it's been blowing every day this winter. And it probably has. But, 60% of the time, the wind doesn't blow, long time average especially in the summer time. It isn't going to make power.

Where is the power going to come from? The customers on the other end of the line are going to want power 24/7. Where is that power going to come from?" Crew asks.

Trying to analyze his thinking, Crew seems to hold the mistaken belief that the HVDC power line and the converter station operate in an energized state around the clock for 365 days year. He assumes that those 3,500 MW will constantly move east. So then he offers his suspicions that power will be diverted off the MidAmerican AC power line that runs past the converter station, into the converter and onto the HVDC power line as if it were surreptitiously being pilfered.

"This is the point. They are taking it from the grid which is from the coal plants and so forth. And they say Iowans can't access this power. Iowa is loosing electricity because of this," Crew claimed.

"When the wind doesn't blow, where does that energy come from?" Crew continued to reiterate.

"The question is: what happens to the price of electricity in Iowa when we start exporting some of that power that's coming from industrial power plants?" Crew demanded to know.

"I mean it's like a giant extension chord between O'Brien County and Illinois taking power. It can't be accessed anywhere along the line because it is direct current," said Crew.

Conclusion

In conclusion, a middle aged Center Township landowner who optioned a quarter section of farmland very early on for the Rock Island $300 million AC to DC converter station is often interviewed about the project. Jay Hofland offers a different reason for supporting this project.

Hofland has repeatedly said, "We do not do a very good job of keeping our young people around here. I'm hoping that through this economic development my sons or some other young people in the community will stick around and gain from these jobs.

As a farmer, I sell hogs, cattle, corn and soybeans. We export all of those things. I'm strongly behind exporting some wind energy out of this area. It's another energy stream and it's a good opportunity."