Clean Line Speech

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I see lots of risk, uncertainty and heartache. Canadians and Germans may call this a lack of preparation.

FERC wants to stabilize the Eastern Grid, reducing black outs and generate more renewables, yet there are 11 Eastern Governors don't want a new 160B national transmission corridor as documented July 12, 2010 to the U.S. Senate. East Coast Governors Don't Want Midwestern "Wind

http://media.washingtonpost.com/wp-srv/politics/documents/governor071210.pdf
http://calhounpowerline.com/2010/07/13/new-letter-from-10-east-coast-governors-we-dont-need-new-transmission-projects/
http://www.ilsr.org/east-coast-governors-say-national-transmission-grid-limits-local-energy/

Hmmm. Well, Clean Line has a lot of nerve ignoring all these elected officials. In 2012 they lobbied for FERC for siting authority. Clean Line has a lot of nerve stating they are clean when a line cannot be restricted to renewables and transmission access must be nondiscriminatory to all generators. Before FERC unleashed Clean Line of Illinois they clearly stated this. How much green initiative money has Clean Line received based on their gimmicky name? Because wind is unreliable and inconsistent, the max on any line would be 30-40%. Clean line has a lot of nerve asking Missouri to transmit energy when we have our own regional efforts to promote Local Renewable energy generation. We don't want a transmission Company competing with us for jobs, tax revenue, and clean energy development. Clean Line has a lot of nerve routing their lines outside of existing corridors and refusing to invest in burial such as in HVDC Light Line which over 40 years could save hundreds of millions of dollars in outages. $$$ RETA (Alberta Canada) has made burying lines very popular.

Canadians bury their lines along freeways and utility corridors, I don't see the problem. If FERC is going to unleash companies on us, tell them they could at least send companies who can engineer the burial of an HVDC line within existing corridors. How about the Army Core of Engineers, they are always thinking us new creative ways to do things. Look at our dams. Good engineering. However, the East Coast doesn't want a new transmission corridor.
"EIA shows future energy projects and demand basically flat. At best a growth of 9% into 2040". May Rediculous RICL

I disagree with Clean Line: Engineering, interconnection agreements, routing and construction financing should have all be decided before applying for public utility status. Look at the Keystone route delays. Clean Line is not a utility providing electricity in Missouri and is not the government, able to take land here.

Why does "Clean" Line need <u>multiple</u> transmission belts crossing large areas of the U.S.?

"Clean" Line has 4 planned High Voltage Transmission projects: Rock Island project in Indiana/Illinois, Grain Belt Express project in Kansas/Missouri/Illinois/Indiana, Centennial West

project in California/Arizona/New Mexico and Plains & Eastern project in Oklahoma, Arkansaw and Tennessee. Collectively the routes are estimated to be about 60,000 acres.

Stabilizing the Eastern Grid

Power is available from Canada

Massive inexpensive amounts of renewable Canadian hydropower is available to the NorthEast U.S. next door. **Hydro-Quebec is the World's largest hydroelectric producer.**
The **Quebec-New England Transmission** is directly to Comerford, NH and Ayer, MA.
There a planned **Northern Pass** from Quebec to southern New England
The **Hudson Power Express** plans to deliver power from Quebec to Astoria, (queens suburb of NYC)...
There is a **Lake Erie project** from Ontario. "**62 miles**" of HVDC **under** Lake Erie would connect Ontario, Canada with PJM in the U.S. Only two expensive converter stations are needed www.cleanpowerconnector.com
Other **Proposed Submarine** Cables

- **Champlain Hudson Power Express, 335-mile line.** The Transmission Developers Company of Toronto, Ontario, is proposing "to use the Hudson River for the most ambitious underwater transmission project yet. Beginning south of Montreal, a 335-mile line would run along the bottom of Lake Champlain, and then down the bed of the Hudson all the way to New York City."[15]
- **Power Bridge,** State of Maine[1]
- **Atlantic Wind Connection** between Delaware and New Jersey, potentially between Virginia and New York[18]

the count is even more T-Lines, I'm sure.

Generating more renewables

Multiple **local energy sources** (even if more expensive and infrequently used) can make the existing transmission grid **more fault tolerant to weather and other disasters that can disconnect distant suppliers**. This can be commercial Solar, Hydropower, Wind, and Biofuel energy projects. As technology improves and prices drop, more utility customers are installing solar panels.

Per Firooz, "There are thousands of megawatts of renewable energy projects waiting for a connection. The attention diverted to new transmission lines impedes clean energy development. **Developers looking at the additional cost of the transmission upgrades are not able to afford the implementation of the actual energy production projects.** http://www.renewableenergyworld.com/rea/news/article/2010/08/is-the-transmission-problem-a-farce

"Stanford engineers have figured out how to simultaneously use the light and heat of the sun to generate electricity in a way that could make solar power production more than twice as efficient as existing methods and potentially cheap enough to compete with oil." http://c-sbsp.org/2010/08/27/new-solar-energy-conversion-process/

I differ with CLean Line. The best renewable resources are located right at the largest population centers which are usually next to rivers or bodies of water.

Low Head Hydropower

Per Wikipedia: A "Hydrokinetic" turbine is an integrated turbine generator to produce electricity in a free flow environment. It does not need a dam or diversion. *Instream Energy Generation Technology* or IEGT places turbines in rivers, man made channels, tidal waters, or ocean currents. These turbines use the flow of water to turn them, thus generating electricity for the power grid on nearby land. In effect, IEGT is like planting windmills in the water and is environmentally friendly. While hydrokinetic includes generation from ocean tides, currents and waves, many researchers believe its most practical application in the near term is likely to be in rivers and streams.

If the viable river and estuary turbine locations are made into hydroelectric power sites "researchers estimat[e] that [the United States'] rivers and estuaries could provide up to 130,000 gigawatt-hours per year — about half the yearly production of the country's dams"$$$

https://en.wikipedia.org/wiki/Low_head_hydro_power

Similar to the East Coast states, Missouri is filled with Lakes and Rivers. The Mississippi River is by St. Louis. The Missouri River runs thru Kansas City. The Osage River feeds the Truman Reservoir which was initially built for flood control.
http://mdc.mo.gov/your-property/greener-communities/missouri-watershed-inventory-and-assessment/osage-river-east/hydro

Transmission

I differ with Clean Line that the growth of the energy industry depends on building a new 750 mile transmission corridor thru the Midwest Grain Belt. Our focus is similar to the Eastern Governors, it is on generating our own renewables to use here, not transporting power generated elsewhere. It is creating our own energy, jobs and tax revenue from renewables. Overbuilding of transmission capacity cannot be justified. Overbuilding transmission lines is a huge and unnecessary expense to electricity consumers or energy developers.- Firooz

Showing the intent of our lawmakers, Bill S1462 American Clean Energy Leadership Act of 2009

Section 216 Siting of interstate electric transmission facilities **stated**:
(a)Policy
It is the policy of the United States that the national interstate transmission system should be guided by the goal of maximizing the net benefits of the electricity system, taking into consideration—
(7)the ability to collocate facilities on existing rights-of-way;
(8)competing land use priorities, including land protected under Federal or State law;

In the document "Environmental Impacts of Transmission Lines" written by the **Public Service Commission of Wisconsin**, Existing rights-of-way are listed **in order of preference**: (a) existing utility corridors, (b) highway and railroad corridors, (c) recreational trails with limitations, and (d) new corridors
http://psc.wi.gov/thelibrary/publications/electric/electric10.pdf

HVDC Light line burial is approximately two times the cost of Overhead DC. There is 50-80% Less outages: That's right. Would anyone like to put a dollar amount on that one? Perhaps hundreds of millions of dollars over a 40 year agreement. There will be m**ore electricity to sell:** Yes, because above ground lines lose 5-7% of the electricity as it flows down the lines. Many, many millions of dollars could go to the electric companies rather than being wasted.$$$
Light Line HVDC Projects
http://efw.bpa.gov/environmental_services/Document_Library/PortAngeles/AppendixASeaBreezeechnical.pdf
http://www.concernedcitizensmontana.net/Publish/hvdc_alternative

It also reduces EMF emissions. If people think they are getting cancer from cell phones, just think was an hvdc line will do. Many farmers are seniors and medical implant devices are a concern. In the U.S. there are 124 bird deaths per kilometer of overhead power line per year, 175 Million per year.
http://retasite.wordpress.com/the-environment/

Competing Land Use
There is a definite competing land use priority concerning farmland and wooded areas. Let's talk about Agriculture which is the number one economic driver in Missouri. The farmers are here and they invested first. Farmers work no matter how extreme the weather. They are working and doing their JOBS to put food on the table of millions of Americans and other nations struggling with food insecurity. **Exploiting Midwest agricultural land and protesting owners in the light of World Famine, Hunger, and efforts of World Food Banks is not acceptable. Check Wikipedia. The U.S. controls almost half of World grain exports.** In 2012, 50 million Americans struggled with Food Insecurity. In 2013 Child Poverty reached record highs of 16.7 million living in Food Insecure homes. Would you rather have lower priced food without impaired agriculture or higher priced power with huge transmission and converter station costs? **In 2040 the population is projected to reach 9 Billion**. Missourian's can't farm and ranch the best ways possible on impaired land. They aren't interested in lining "Clean" Lines pockets and having another company compete with them for jobs, tax revenue and local power generation.

Minnesota's unique statute requires utilities to buy entire properties if they'll be negatively impacted by a transmission project. Cedar Summit's owners, David and Florence Minar, had argued that the CapX2020 project would have a potential adverse effect on milk production as well as damage the farm's pastoral, rural image.
http://www.midwestenergynews.com/2014/08/25/in-minnesota-transmission-ruling-perception-is-reality/

In the recent Illinois Commerce Commission hearings Illinois landowners testified they are concerned the soil damage may have a long lasting effect that continues indefinitely.

Their Agricultural Association stated the proposed Rock Island Clean Line will cause "soil compaction; IMPACT drainage tiles, aerial application, irrigation systems, gps and precision data systems in farm equipment and hinder the ability to farm efficiently."

Mr. Cole has been a tree farmer for many decades, and has managed thousands of acres of timber for other owners. He testified to the Illinois ICC as to the sensitive nature of the soil, "conducive to gully-formation and erosion, such that construction of the Project through the area would result in significant vegetation destruction as well as valuable timber clearing."

We want to keep our beautiful lands, both natural and cultivated, from becoming marred, environmentally harmed, and it's airspace wasted. Support Farm Jobs and Food production.

Weather Outages

Stabilizing a grid by putting HVDC lines anywhere across tornado alley is very questionable. Clean line's towers are way up in the air and so are their operational documents for FOUR converter stations (one in each state).

November 2013 severe storms moved through the Midwest on a Sunday, leveling towns, killing at least six people in Illinois and injuring dozens more, and causing **thousands of power failures across the region**.
Officials issued tornado watches throughout the day for wide areas **of Illinois, Indiana, Iowa, Michigan, Missouri, Ohio and Wisconsin.** Homes were leveled and trees shredded in Washington, Ill., and nearby farms were turned upside down, with farm equipment dotting the landscape. **The National Weather Service website listed reports of at least 77 confirmed tornadoes — most of them in Illinois** — although officials cautioned that in some cases there may have been multiple reports on the same storm.
http://www.nytimes.com/2013/11/18/us/severe-storms-batter-central-illinois.html?_r=0

January 27, 2009, as northern Arkansas and southern Missouri were encrusted with up to five inches of ice during a two-day storm that destroyed trees **and transmission poles leaving thousands of utility customers without power. Nearly 70 counties across both states were declared Federal disaster areas. The storm affected nearly 300 miles of Southwestern's transmission system, with 70 miles of conductor on the ground and more than 400 structures damaged.**

The **Nelson River DC Transmission System**, also known as the **Manitoba Bipole**, is an electric power transmission system of two high voltage, direct current lines in Manitoba, Canada In 1997 a tornado damaged 19 towers of the DC lines. To avoid a repetition of this event, and further improve the reliability of the power supply, Manitoba Hydro is **examining routes** further to the west.

Please support the 11 Eastern Governors who do not want a 160B national transmission corridor built out. Please encourage development of low head hydropower in our rivers to generate energy, jobs, and taxes. Please require any HVDC line to be buried in existing utility or highway corridors using new technologies such as light line. If FERC is going to unleash future companies on us, tell them they could at least send companies who can engineer the burial of an HVDC line within existing corridors. Don't take any company seriously unless they have completed and signed engineering, technical, management, financial and operational documents. At a minimum they should have an interconnection agreements and converter station commitments within their design. If any entity is awarded the contract, it should be stipulated in the contract they must be the entity doing the work and the contract cannot be sold.

References

Truman Reservoir
http://mdc.mo.gov/your-property/greener-communities/missouri-watershed-inventory-and-assessment/osage-river-east/hydro

Indiana, Oklahoma average of 6 tornadoes per 10,000 square miles.

Transmission and distribution losses in the USA were estimated at 6.6% in 1997[11] and 6.5% in 2007.[11] By using underground DC transmission, these losses can be cut in half.[*citation needed*] Underground cables can be larger diameter because they do not have the constraint of light weight that overhead cables have, being 100 feet in the air. In general, losses are estimated from the discrepancy between power produced (as reported by power plants) and power sold to the end customers; the difference between what is produced and what is consumed constitute transmission and distribution losses, assuming no theft of utility occurs.

As of 1980, the longest cost-effective distance for direct-current transmission was determined to be 7,000 km (4,300 mi). For alternating current it was 4,000 km (2,500 mi), though all transmission lines in use today are substantially shorter than this.[7]

- Longest submarine cables:

  - NorNed, North Sea (Norway/Netherlands) – (length of HVDC submarine cable: 580 kilometres or 360 miles)
  - Basslink, Bass Strait, (Australia) – (length of submarine cable: 290 kilometres or 180 miles, total length: 370.1 kilometres or 230 miles)
  - Baltic Cable, Baltic Sea (Germany/Sweden) – (length of submarine cable: 238 kilometres or 148 miles, HVDC length: 250 kilometres or 155 miles, total length: 262 kilometres or 163 miles)

- Longest underground cables:

- Murraylink, Riverland/Sunraysia (Australia) – (length of underground cable: 180 kilometres or 112 miles)

A Joplin, MO substation and transmission towers in Clermont County, OH were hit earlier. "Tornadoes have been observed on every continent except Antarctica. However, the vast **majority of tornadoes** occur in the Tornado Alley region of the United States, although they can occur nearly anywhere in North America.[6] https://en.wikipedia.org/wiki/Tornado_Alley#mediaviewer/File:Tornado_Alley.gif

"Eight years ago, President George Bush issued Executive Order 13406 which stated that the federal government must limit its use of taking private property for *public use* with *just compensation* for the *purpose of benefiting the general public,* wording mirrored in the U.S. Constitution. **Bush's Order 13406 limits the use of eminent domain so it may not be used *for the purpose of advancing the economic interest of private parties to be given ownership or use of the property taken*.**"
http://www.forbes.com/sites/jamesconca/2014/02/24/foreign-company-tries-to-seize-u-s-land-for-keystone-pipeline/

The latest and most efficient solar cells in the National Renewable Energy Laboratory can achieve efficiencies greater than 40 percent while commercially-available solar panels are currently about 19 percent efficient. The best solar cells could reach 50 percent efficiency with more work, according to the laboratory's Sarah Kurtz and John Geisz.
http://www.smartplanet.com/blog/pure-genius/solar-concentrators-research-on-making-solar-power-cheaper/352

We foresee in the future, greater distributed generation because as technology is improving and prices are dropping more consumers are installing panels. The improvements found in MIT's aptly named luminescent solar concentrator (LSC) not only boost efficiency, but do so at a reduced cost. http://dsc.discovery.com/tv-shows/curiosity/topics/how-is-the-efficiency-of-solar-panels-improving.htm

Germany currently leads in this, half their renewable power is owned by ordinary citizens. Their government makes it simple and safe to install panels and lower rates.
http://www.ilsr.org/germany-solar-power-wins/

Commonwealth Edison had a lot to say at the Illinois hearings for Rock Island Clean Line:
RI will not commit to construct the Project, even if its Petition is granted in full.
No entity has committed to become a customer of RI or the Project.
The Project is promoted and studied as a means to deliver 100% wind energy from new generators to Illinois and points eastward. Those wind generators, however, do not exist and there is no proof that they will.
RI cannot demonstrate that the Project cost can be recovered as it proposes.
Given that the Project has no subscribers, the entities that RI says will pay for the Project do not now exist. Although studied and promoted as a merchant project, RI will not commit that it will not later try to charge Illinois customers for the costs of the Project's construction and operation.

RI, however, must rely on currently undeveloped operating procedures in order for the line to reliably operate at above 1,192 MW.
RI has no interconnection agreement with PJM or Midcontinent Independent.
RI has no relevant experience constructing major cross-country transmission lines, and no experience with DC transmission.