This public comment has been sent via the form at:
www.energyfacilities.puc.state.mn.us/publicComments.html

You are receiving it because you are listed as the contact for this project.

Project Name: Fargo to St. Cloud 345 kV Transmission Project

Docket number: ET2, E002/TL-09-1056

User Name: Todd Theisen

County: Stearns County

City: St. Joesph

Email: todd@floorguy.net

Phone: 320-363-7926

Impact: Hello David,

1) Health concerns revolving around EMF (electro magnetic fields) known to increase leukemia in children and brain and breast cancer in adults.
2) Environmental Impact and a direct and indirect violation of the MN Environmental Rights Act.
3) Aesthetic and the impact on property value
4) the potentially large easement
5) The heightened consideration for law suites against the State of MN among community members.
6) The 7% loss of electricity of above ground transmission lines.
7) Impact on current routes Historic Properties: Rural areas and Century Farms.

Mitigation: 1)Please consider I-94 as a prudent and feasible alternative due to the existence of an established Right of Way. I am requesting that my name be added to the project contact list.
2) Please consider Buried Super-Cooled Power Lines (Superconducting Cables allowing electricity to flow efficiently, with little resistance).

Submission date: Fri Dec 18 17:18:00 2009

This information has also been entered into a centralized database for future analysis.

For questions about the database or the functioning of this tool, contact:

Andrew Koebrick
andrew.koebrick@state.mn.us

ERASING

BURIED SUPER-COOLED POWER LINES MIGHT TRANSMIT SOLAR AND WIND ENERGY EFFICIENTLY OVER LONG DISTANCES.

ENERGY

BY MARK CLAYTON / STAFF WRITER

Abundant solar and wind power lies across America's vast plains and deserts, but getting that distant renewable energy to cities without wrecking vistas and raising lawsuits over transmission lines is a sizable hurdle for green-leaning utility companies. Thousands of miles of towering electrical lines will be needed before big alternative-energy projects can take hold. Yet such power lines portend years of legal snarls over the not-in-my-backyard problem.

Into this fray comes Phil Harris and his pioneering plan to use underground superconducting cables that will be both hidden from view and more efficient than traditional lines. Mr. Harris wants to build a virtually invisible network that would create a national renewable-energy hub located in the Southwest.

Today, the nation's power grid is in three disconnected pieces – Eastern, Western, and Texas. Harris's project, called Tres Amigas, would use superconducting cable to provide the first large-scale commercial trading link between those big grids – opening up new markets for renewable wind and solar power in the American East and West.

These superconducting cables contain special materials chilled to superlow temperatures, allowing electricity to flow efficiently, with little resistance. While Harris's "hub" would run in a loop, it would demonstrate the potential for superconducting power lines that could travel long distances and eliminate the 7 percent of electricity wasted by ugly, above-ground transmission lines.

In papers filed in early December with the Federal Energy Regulatory Commission, Tres Amigas outlined its plans for a $600 million, 15- to 20-mile triangular-shaped hub near Clovis, N.M., constructed using superconducting cable.

Such a trading hub could spur investment in wind and solar power development in many states around the region, say officials with Public Service Company of New Mexico (PNM). The company is weighing construction of a new "wind collector" transmission line to connect new wind farms in the east-central part of the state with Tres Amigas, if the new transmission hub is built.

Today, PNM has "no significant ability" to move power to the eastern US or to Texas, says Greg Miller, lead engineering and operations director for PNM. While power lines that run west to California remain congested, Tres Amigas would open up the other two markets – allowing development of New Mexico wind power.

"We have very rich potential for renewable-energy development, particularly with wind in the east-central part of our state," Mr. Miller says. With at least 10,000 megawatts of wind power development currently waiting for transmission lines to be built, "we think [the hub] could be the trigger that will allow us to move forward."

The supercooled cables from American Superconductor, the nation's largest maker of superconducting cable, are al-

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ready being used in small projects by the Long Island Power Authority, American Electric Power, and National Grid. Perhaps two dozen locations worldwide rely on superconducting cable, but often it is to connect key stations less than a mile from each other.

Tres Amigas would be a "game changer," company officials say.

"What we're starting to see is a new phase in commercialization of superconducting cable – not just in this country but globally," says Daniel McGahn, senior vice president and general manager of American Superconductor in Westborough, Mass.

A tour of American Superconductor's factory found the company creating flat metal tape out of "high-temperature superconducting" (HTS) oxide materials and costly silver, then slicing it into thin flat strips. The strips wrap around a pipe carrying liquid nitrogen, which cools the cable to minus 346 degrees Fahrenheit.

At that temperature, electrons that ordinarily move randomly, losing energy in bumper-car-like collisions that generate heat, shift to highway mode. Electrons then move in pairs in one direction, generating no heat and losing no energy.

Eliminating the inefficiencies of traditional copper wires would save around $16 billion a year, estimates the US Department of Energy – and pave the way for long-distance transmission of wind and solar power.

Eliminating traditional copper wires for power transport would save the US $16 billion a year.

Another advantage: Being underground, the cable would be resistant to terrorist strikes.

Cost, however, has long been a major issue. However, the price gap is closing, American Superconductor says. A 1,000-mile length of superconducting cable capable of carrying 5,000 megawatts would cost about $8 million to $13 million per mile, a recent company white paper says. That's about on par with the $7 million to $10 million cost per mile for an equivalent conventional 765 kilovolt line.

Tres Amigas trading hub – which Harris says would be the world's largest use of superconducting cable – is like an automobile traffic circle. It could bring into the loop up to 5,000 megawatts of power at any one moment from any or all of the three grids. The power would then be sent out to whichever grid needs the electricity.

"We need the ability to send energy produced in New Mexico to surrounding states," Gov. Bill Richardson said in a statement in October. "Tres Amigas will break that barrier, creating a larger market for our energy."

But there are larger implications here, too. Building 130-foot-high transmission lines to deliver renewable energy from distant locations to big cities is a costly challenge. One major expense comes from potential neighbors who file lawsuits to avoid alternative-energy projects or connecting wires from obscuring historical areas or natural vistas. This not-in-my-backyard mentality could drastically slow the nation's renewable-power development.

"Tres Amigas will show superconducting technology is indeed a commercially viable alternative and a tremendous step forward in solving the nation's transmission gridlock," Harris says. "It should lessen lawsuits. If it's buried, who cares?"

Well, Jeremy Chipps, for one. A resident of La Crescent, Minn., he and other members of Citizens Energy Taskforce have been fighting proposals for big power lines that they contend would carry mainly coal power – not renewable energy. He also is not persuaded that big transmission lines are really needed. He'd prefer the United States move to local power generation, rather than depending on big, distant facilities, even wind farms.

"We're not anti-'shoring up the grid,' " Mr. Chipps says. "But we are against massive costs of systems only designed to retain market share of big power companies. We think it would make more sense for power to be generated much closer to where it is used."

Others, however, are keen on superconducting technology. Johanna Wald, senior attorney for the Natural Resources Defense Council, recently put her stamp on a new conventional transmission line to bring renewable energy into southern California.

"We are going to have to look at all these technologies if we are going to meet our needs for renewable energy to address climate change," she says. "Undergrounding is something utility companies today do only reluctantly. Increasingly they are willing to acknowledge the need to look at that option."

The idea of underground superconducting cables thrills Paul Miller, county administrator of Madison County in New York. His and seven other counties fought a power line that would have planted huge transmission towers in the middle of the Delaware River Valley – 200-foot-high spires about every 800 feet.

"If superconducting transmission lines really come to pass," he says, "and really offer the promise [they seem] to, a lot of the existing right of ways could be transformed." Such lines "would be a lot more palatable if [they] didn't have monster towers." ■

Superconductors vs. towers

A superconducting cable hidden underground can carry the same amount of electricity as three high-tension power lines spanning a 600-foot right of way. While costly to make, the buried cables are also more energy efficient than traditional means.