

City of Columbia

701 East Broadway, Columbia, Missouri 65201



Agenda Item Number: R 191-14

Department Source: Water & Light

To: City Council

From: City Manager & Staff

Council Meeting Date: October 6, 2014

Re: Letter of Mutual Interest with Grain Belt Express

Documents Included With This Agenda Item

Council memo, Resolution/Ordinance

Supporting documentation includes: Summary of Board/Commission Reports, Presentation Material

Executive Summary

Clean Line Energy Partners made a presentation to the Water & Light Advisory Board requesting support for the Grain Belt Express Transmission Line project. As a result of their presentation and request for support the Water & Light Advisory Board voted 4-1 to recommend to City Council to Support this project.

Discussion

The Grain Belt Express project is a 750-mile DC transmission line. This transmission project is intended to connect the renewable wind energy generated in western Kansas with customer in states to the east. The line is proposed to run across Missouri in Counties north of Boone. Included with this is the material presented to the Water & Light Advisory Board and Clean Line Energy's proposed Letter of Mutual Interest.

Fiscal Impact

Short-Term Impact: NA

Long-Term Impact: NA

Vision, Strategic & Comprehensive Plan Impact

Vision Impact: Environment

Strategic Plan Impact: Health, Safety and Wellbeing

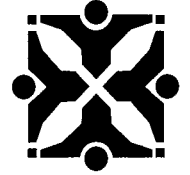
Comprehensive Plan Impact: Environmental Management

Suggested Council Action

Discussion and consideration of a Letter of Mutual Interest with Clean Line Energy

City of Columbia

701 East Broadway, Columbia, Missouri 65201



Legislative History

Sept 2, 2014 Water & Light Advisory Board Recommendation


Department Approved


City Manager Approved

A RESOLUTION

expressing support for economically feasible renewable energy options to serve City of Columbia customers.

WHEREAS, the City of Columbia Water and Light Department's (hereinafter "City Water and Light") mission is to deliver reliable, safe and cost effective water and electric service to meet its citizen owners' needs while providing exceptional customer service and environmental stewardship; and

WHEREAS, City Water and Light serves more than 48,000 customers in and around the City of Columbia, Missouri; and

WHEREAS, the City of Columbia voters passed a Renewable Energy Standard that mandates that the City shall cost-effectively generate or purchase electricity from renewable energy sources, including wind energy, at the following levels: 15% by 2017; 25% by 2022; and 30% by 2028; and

WHEREAS, in 2013, renewable energy comprised 6.97% of City Water and Light's electric portfolio; and

WHEREAS, the City of Columbia's Renewable Energy Standard presents a need for economically feasible renewable energy and City Water and Light is seeking viable options for new renewable energy sources to serve its customers; and

WHEREAS, Grain Belt Express Clean Line is constructing a project which has the potential to provide Missouri consumers with a direct current link to low-cost renewable energy in western Kansas (the "Project"); and

WHEREAS, the Project resource area is characterized by high wind speeds and may offer some of the lowest cost wind energy in the United States; and

WHEREAS, greater access to low-cost renewable energy such as that anticipated to be delivered by the Project serves the public interest and may help the City of Columbia fulfill its Renewable Energy Standard; and

WHEREAS, the City of Columbia Water and Light Advisory Board has reviewed the Project and submitted its recommendation and request to the City Council to express support for consideration of low cost wind energy produced by the Project.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. The City Council of the City of Columbia, Missouri hereby expresses its support of economically feasible renewable energy options to serve City customers, and will consider wind power accessed by the Project as an option for new affordable renewable energy to meet the City of Columbia's Renewable Energy Standard.

ADOPTED this _____ day of _____, 2014.

ATTEST:

City Clerk

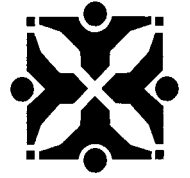
Mayor and Presiding Officer

APPROVED AS TO FORM:

City Counselor

City of Columbia

701 East Broadway, Columbia, Missouri 65201



SUPPORTING DOCUMENTS INCLUDED WITH THIS AGENDA ITEM ARE AS FOLLOWS:

Summary of Board/Commission Reports, Presentation Material

DRAFT
Water and Light Advisory Board
September 2, 2014

A meeting of the Water and Light Advisory Board was held Tuesday, September 2, 2014 at 8:05 a.m. in the 4th Floor Conference Room of the City Building. The meeting was attended by:

John Conway, Chair
Tom O'Connor, Member
Hank Ottinger, Member
Dick Parker, Vice Chair
Jack Clark, Member
Tad Johnsen, Water and Light Director
Ryan Williams, Assistant Water and Light Director
Christian Johanningmeier, Power Production Superintendent
Jim Windsor, Utility Financial Manager
Tina Worley, Utility Services Manager
Connie Kacprowicz, Communications & Marketing Supervisor
Rose Wibbenmeyer, Assistant City Counselor
Mark Lawlor, Clean Line Energy
Katie Link, KOMU
Tracy Frevert, Senior Administrative Support Assistant

APPROVAL OF THE MEETING MINUTES

The July 30, 2014 meeting minutes were approved by voice vote on a motion by Dick Parker and a second by Jack Clark.

FINANCIAL REPORT

Water and Electric Utility combined operations reflect an operating loss of \$285,200 for the ten months ended July 31, 2014; compared to an operating loss of \$1,582,283 for the same period last year. This is a reduction of \$1,297,083 of operating loss.

Net loss from Water and Electric Utility combined operation is \$5,617,499, compared to net loss of \$6,636,359 for the same period last year.

The Water Utility has an operating income of \$3,186,460 for the ten months ended July 31, 2014; compared to an operating income of \$3,635,804 for the same period last year. This is a decrease of \$449,344 of operating income.

Net income for Water Utility is \$1,072,854, compared to net loss of \$1,770,939 for the same period last year.

The Electric Utility has an operating loss of \$3,471,660 for the ten months ended July 31, 2014; compared to an operating loss of \$5,218,087 for the same period last year. This is a reduction of \$1,746,427 of operating loss.

Net loss for Electric Utility is \$6,690,353, compared to net loss of \$8,407,298 for the same period last year.

Operating revenues of the Electric Utility are up \$3,443,624 compared to the same period last year.

Operating expenses before Payment-In-Lieu-Of-Tax and Depreciation are up \$1,201,564 compared to the same period last year. Fuel and Purchased power costs have increased \$23,156 compared to the same period last year.

Dick Parker asked why Administrative and General Operating Expenses are lower than projected. Staff will research and bring answer to the Board.

NEW BUSINESS

a) Clean Line Energy, Grain Belt Express – Tad Johnsen introduced Mark Lawlor, Director of Development for Clean Line Energy Partners. Mr. Lawlor explained that the Grain Belt Express Clean Line will provide Missouri consumers a direct current link to low-cost renewable energy in western Kansas. The resource area is characterized by high wind speeds and offers some of the lowest cost wind energy in the United States. Their development of new transmission infrastructure will also create jobs and other economic development opportunities for many Missouri communities. Proposed is a 750-mile overhead direct current transmission line which can provide 500 MW delivery to MISO system in Missouri. The Grain Belt Express Clean Line is a \$2 billion project that will enable \$7 billion of new wind energy investments. Mr. Lawlor said that Clean Line delivered product is competitive with other sources of new generation, including natural gas. Proposed pricing for delivered energy is \$36 per MWh with a 2% escalator for 25 years. Fixed pricing will provide certainty in light of fuel volatility and new environmental regulations.

Tom O'Connor does not recommend endorsing the project without knowing all the pros and cons. He also does not like the need for construction of more transmission lines. Jack Clark made a motion, seconded by Dick Parker, to recommend the Council endorse the Grain Belt Express Clean Line project. Voting yes were John Conway, Dick Parker, Hank Ottinger and Jack Clark. Voting no was Tom O'Connor. Motion passed.

OLD BUSINESS

No old business.

DIRECTOR'S REPORT

a) July 7th Storm Report – Tad Johnsen reviewed the actions taken by the utility to restore power to 14,000 customers following the July 7th storm. The information, including the cost to restore power, will go to Council in a report. John Conway suggested noting in the report that no safety issues occurred. Dick Parker recommended including how much of the personnel cost was not overtime, and would have been incurred even without the storm.

b) Community Broadband – Tad Johnsen reported that Broadband Planning Study went to Council. Council asked Staff to develop a Broadband Business Plan.

c) MPUA Annual Conference - October 8-10 – All Board members are encouraged to attend, and should let Tracy Frevert know if you plan on attending.

Tad Johnsen noted that included in the packet of information mailed to the Board was a copy of the Power Point presentation presented to Council on the electric rate structure. The presentation includes a residential rate comparison with Austin (Texas) Energy.

CHAIRMAN’S REPORT

No Chairman’s report.

Dick Parker had several questions concerning:

- the biomass test burn - no fuel has been delivered yet
- the community solar project – the Board will receive information at the next Board meeting
- the ash pond – an outside engineer has determined there are no problems with the ash pond.

Mr. Parker requested the breakdown for FY2013 and FY2014 of demand megawatts by the basic billing categories, and the megawatt hours for those categories (coincidental and non-coincidental peak information). Jim Windsor will provide available information.

VISITOR COMMENTS

No visitor comments.

The next regularly scheduled meeting date is Wednesday, October 1, 2014 in the 4th Floor Conference Room of the City Building

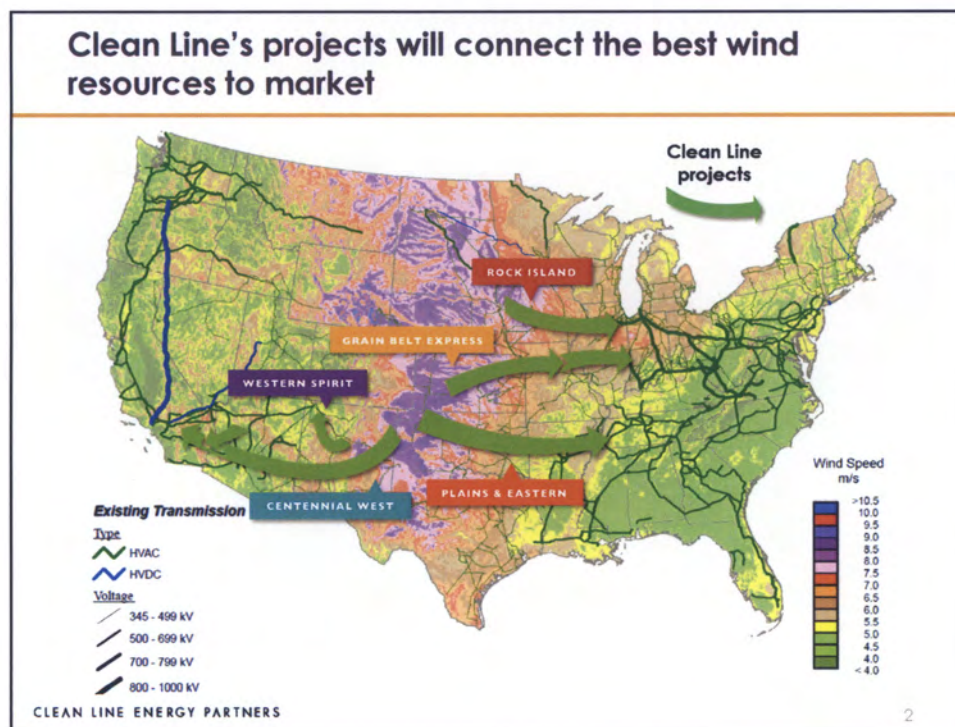
Jack Clark made a motion to adjourn, seconded by Dick Parker. Motion passed and the meeting adjourned at 9:42 a.m.

Grain Belt Express Clean Line

Clean Energy. Delivered.

CLEAN LINE
ENERGY PARTNERS




Missouri



National Grid is a key investor in Clean Line Energy

nationalgrid

CLEAN LINE
ENERGY PARTNERS

-  National Grid brings extensive experience in building, owning, and operating large transmission projects in the United States and overseas
-  National Grid owns and operates more than 8,600 miles of transmission in the United States
-  National Grid joins Clean Line's existing investors that include private equity firm ZBI Ventures

CLEAN LINE ENERGY PARTNERS

3

Direct current transmission is the most efficient way to move large amounts of power over long distances

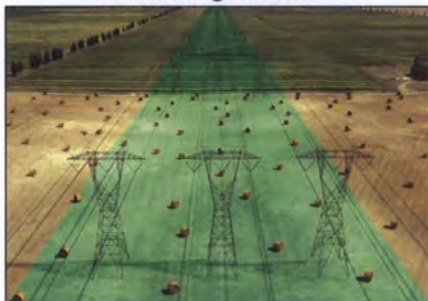
Smaller footprint – Uses a narrower right of way than comparable AC lines

More efficient – Transfers power with less infrastructure and lower line losses than AC lines moving a comparable amount of power over long distances

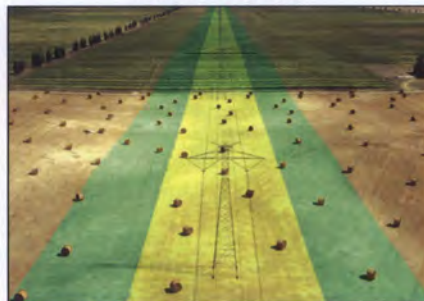
Lower cost – Requires less infrastructure and has lower line losses, resulting in lower costs and lower prices for clean energy

Improved reliability – Provides the operator control of power flow and facilitates the integration of wind energy from different resource areas

Alternating Current



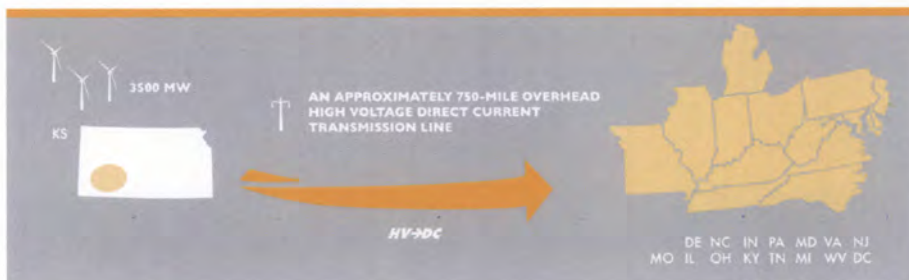
Direct Current



CLEAN LINE ENERGY PARTNERS

4

Grain Belt Express will deliver low-cost wind energy from Kansas to Missouri and other states that need it



750-mile overhead, direct current (DC) transmission line

\$2 billion transmission project that will enable \$7 billion of new wind energy investments

1.4 million American homes powered per year

CLEAN LINE ENERGY PARTNERS

5

Grain Belt Express Clean Line will result in significant economic benefits



5,000+

CONSTRUCTION JOBS



INCOME FOR COMMUNITIES

TAX REVENUE



500+

OPERATIONS JOBS



INCREASED MARKET COMPETITION

CONSUMER BENEFITS



LOCAL PARTNERSHIPS

LOCAL CONTRACTORS



MANUFACTURING JOBS

LOCAL VENDORS

CLEAN LINE ENERGY PARTNERS

6


Grain Belt Express has agreements with Missouri manufacturers, supporting jobs at four plants



MEDIUM POWER TRANSFORMERS
St. Louis, MO



INSULATORS AND HARDWARE
Centralia, MO

 **General Cable**
TRANSMISSION LINE CONDUCTOR
Sedalia, MO



ALUMINUM ROD
New Madrid, MO



CLEAN LINE ENERGY PARTNERS

7

Wind energy delivered by Grain Belt Express will result in health and environmental benefits

EMISSIONS REDUCTIONS PER YEAR

 **CO₂** 10 MILLION TONS

CARBON DIOXIDE

 **SO₂** 16,000 TONS

SULFUR DIOXIDE

 **NO_x** 6,000 TONS

NITROGEN OXIDE

 **Hg** 100 POUNDS

MERCURY

WATER WITHDRAWAL REDUCTION PER YEAR

 **H₂O** 4 BILLION GALLONS



Sunrise on the Wabash River - Chris Hamish Photography, Indiana

CLEAN LINE ENERGY PARTNERS

8

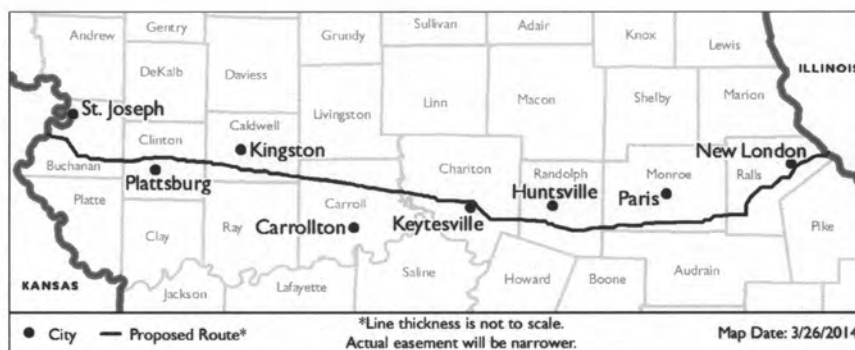
Clean Line is working one state at a time to develop the Grain Belt Express project



CLEAN LINE ENERGY PARTNERS

9

Missouri Proposed Route



"The Nature Conservancy commends Clean Line for its open, proactive approach in integrating conservation and natural resource issues in planning utility infrastructure routing and development to meet the nation's energy needs."

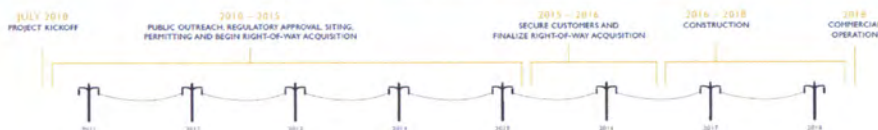
- Doug Ladd, Director of Conservation at the Missouri Chapter of The Nature Conservancy

CLEAN LINE ENERGY PARTNERS

10

A methodical and transparent development process is underway

GRAIN BELT EXPRESS CLEAN LINE SCHEDULE



Project Milestones

- Obtained public utility status from Kansas and Indiana public utility commissions
- Obtained certificate to construct 370-mile Kansas route selected with input from 2,300 Kansans
- Filed with Missouri PSC for certificate to construct along 206-mile proposed route selected with input from more than 1,300 landowners and Missouri residents
- Completed grid reliability studies with Southwest Power Pool
- Studying interconnections to deliver 500 MW to MISO and 3,500 MW to PJM
- Received over 500 expressions of support in Missouri

CLEAN LINE ENERGY PARTNERS

11

Clean Line is committed to engaging landowners and other stakeholders in decision-making process

- 250 local stakeholders provided input at Community Roundtables in Missouri
- More than 1,300 landowners gave feedback on potential routes at 13 Missouri Public Open Houses, online and over the phone
- We continue to work with landowners to minimize impacts to their land and compensate fairly for a transmission line easement



CLEAN LINE ENERGY PARTNERS

12

Grain Belt Express delivered cost of energy includes low-cost wind and efficient transmission



2¢/kWh

+



2¢/kWh

=



4¢/kWh

High capacity factor
wind energy from
western Kansas

Highly efficient long-
distance DC transmission

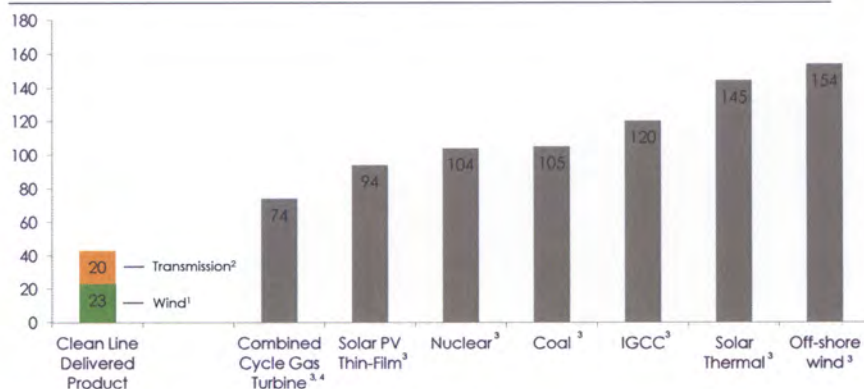
Grain Belt Express
delivered cost of energy

CLEAN LINE ENERGY PARTNERS

13

Clean Line delivered product is competitive with other sources of new generation, including natural gas

Levelized Cost of Energy
\$/ MWh



1. Based on the Lazard estimate for high-capacity factor wind, includes Production Tax Credit
2. Assumes ~725 miles of transmission at \$2 mm per mile, end-point converter costs of \$250 mm each, mid-point converter at \$100 mm and development cost of ~\$100 mm, price is flat for 25 years
3. Cost of generation based on mid-point of Lazard's Levelized Cost of Energy estimate
4. Assumes \$4.50/MMBtu gas price.

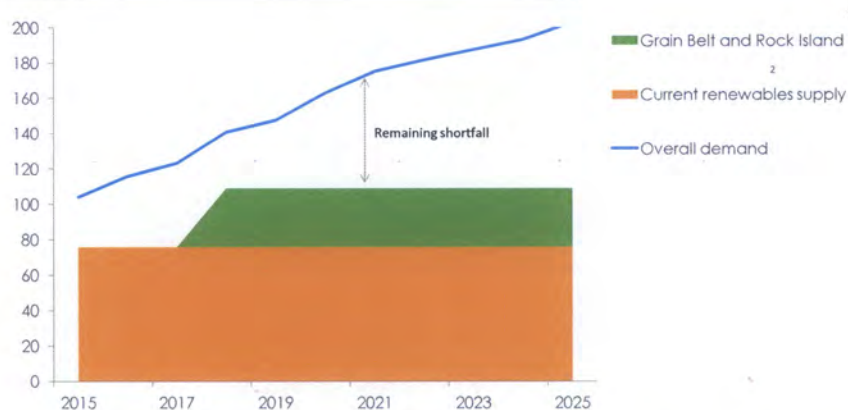
Source: Clean Line, Lazard's 2013 Levelized Cost of Energy Analysis

CLEAN LINE ENERGY PARTNERS

14

Grain Belt Express can help address the projected shortfall in renewables in MISO and PJM states

Renewable energy supply and demand in PJM and MISO states
Thousand GWh



1. Energy from existing wind, biomass, and solar projects within the PJM and MISO states
2. Demand for renewable energy credits within PJM and MISO States. States with voluntary goals are not included in the demand calculations.

Source: EIA; DSIRE; AWEA

CLEAN LINE ENERGY PARTNERS

15

Grain Belt RFI responses indicate abundance of projects that need transmission to deliver wind energy to market



13,600 MW

proposed capacity
under development

8.8 m/s

mean wind speed at 80m

52%

capacity factor of most
cost-effective 4,000 MW

Most competitive 4,000 MW



2¢/kWh

Average wind energy price
submitted, flat for 25 years



CLEAN LINE ENERGY PARTNERS

Confidential

16

GRAIN BELT EXPRESS

CLEAN LINE

www.grainbeltexpresscleanline.com



Follow Clean Line on Twitter
@cleanlineenergy

August 2014

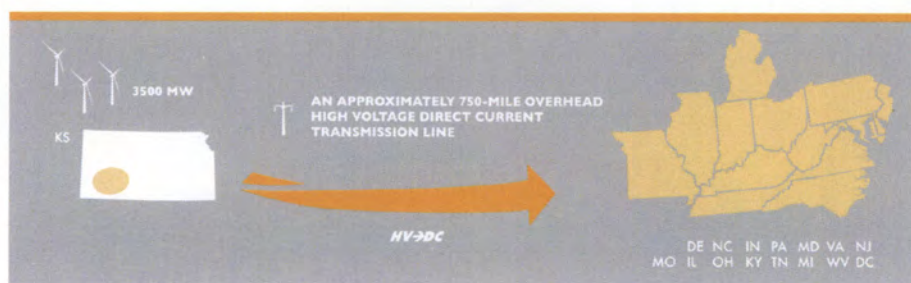
Grain Belt Express Clean Line

Discussion with
Columbia Water and Light

CLEAN LINE
ENERGY PARTNERS

Missouri

Grain Belt Express will deliver low-cost wind energy from western Kansas to Missouri



- † 750-mile overhead, direct current (DC) transmission line
- † 500 MW delivery to MISO system in Missouri
- † Point of delivery is a tap on Ameren's 345 kV line in Ralls County (Maywood to Montgomery)

CLEAN LINE ENERGY PARTNERS

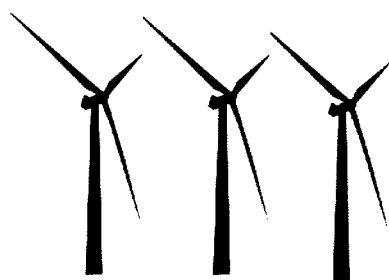
2

Purchasing wind energy delivered by Grain Belt offers Columbia Water and Light several benefits

- 1** Low-cost energy
- 2** Low or no cost local RPS compliance
- 3** Long-term price certainty
- 4** Minimal transmission congestion risk
- 5** Capacity value from superior wind resource

CLEAN LINE ENERGY PARTNERS

Grain Belt RFI responses indicate projects in western Kansas looking for customers in Missouri



13,600 MW
proposed capacity under
development

9.1 m/s
mean wind speed at 80m

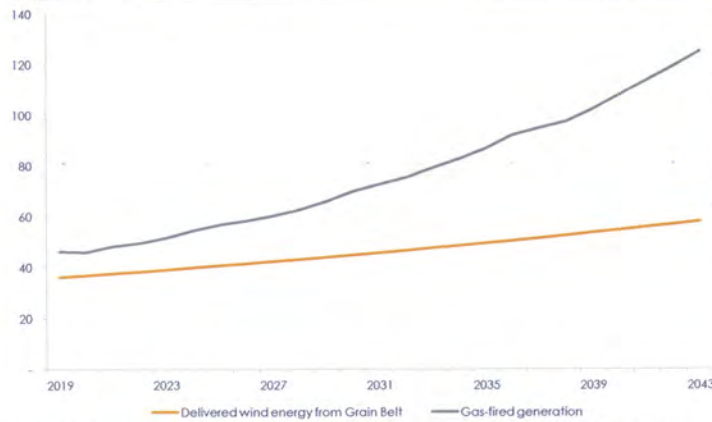
52%
capacity factor of most
cost-effective 4,000 MW

CLEAN LINE ENERGY PARTNERS

Confidential

1 Proposed pricing for delivered energy is \$36 per MWh with a 2% escalator for 25 years

Grain Belt delivered wind energy¹ vs. Combined cycle gas generation²
\$/MWh vs. year



Based on EIA forecasts, Grain Belt's delivered wind energy will be cheaper than combined cycle gas variable costs

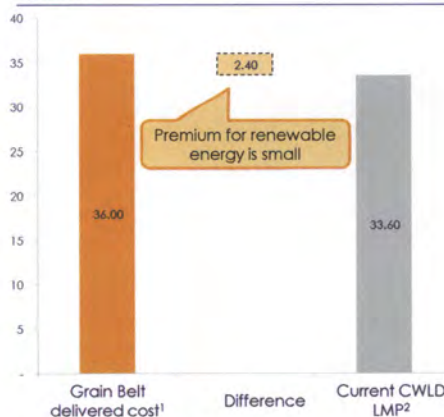
1. Based on the average price of the most competitive 4,000 MW submitted to the Grain Belt RFI, pricing assumes continued PTC eligibility for Kansas wind energy and includes transmission costs with a 2% escalator
2. Natural gas prices from the base case of EIA's 2014 Annual Energy Outlook Report, assuming 8000 Btu/kWh heat rate to convert gas prices to electric prices

CLEAN LINE ENERGY PARTNERS

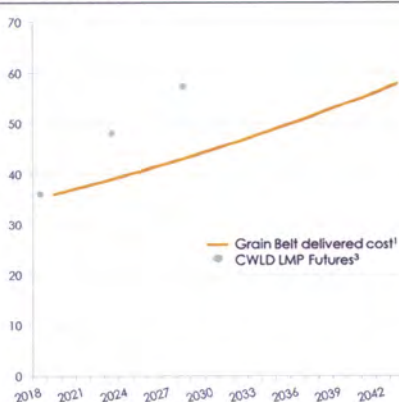
5

2 Grain Belt pricing is only a small premium to CWLD MISO locational marginal prices

Grain Belt delivered cost vs. Current CWLD LMP
\$/MWh



Grain Belt delivered cost vs. CWLD LMP Futures
\$/MWh vs. year



1. Based on the average price of the most competitive 4,000 MW submitted to the Grain Belt RFI, pricing assumes continued PTC eligibility for Kansas wind energy and includes transmission costs with a 2% escalator
2. Average LMPs for the MISO CWLD hub from the past year (July 2013 – June 2014), weighted by 51% NCF wind
3. Average forecasted LMPs for the MISO CWLD hub from the MTEP 13/14 study in the BAU scenarios for the years 2018, 2023, and 2028, weighted by 51% NCF wind

CLEAN LINE ENERGY PARTNERS

6

3

Fixed pricing will provide certainty in light of fuel volatility and new environmental regulations

Historical Natural Gas Prices at Henry Hub¹
Monthly \$/mmBtu and \$/MWh²



1. Historical Henry Hub Natural Gas Spot prices from EIA
2. Uses 8000 Btu/kWh heat rate to convert gas prices to electric prices

CLEAN LINE ENERGY PARTNERS

MATS

Mercury Air Toxics Standard (2015 compliance deadline) will prompt 65+ GW of retirements

+

CSAPR

Cross-State Air Pollution Rule overturned by Appellate Court and EPA appeal accepted by the Supreme Court

+

EPA 111(d)

Missouri to reduce emissions rate by 21% compared to 2012 levels

||

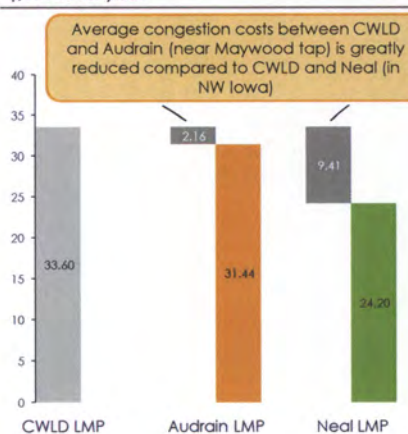
Increased avoided cost of fossil fuels
Increased value of wind energy

7

4

Grain Belt LMP pricing closely tracks CWLD node and congestion risk is greatly improved over Iowa resources in MISO

Current average LMPs¹ of MISO nodes
\$/MWh vs. year



1. Average LMPs for the MISO nodes from the past year (July 2013 – June 2014), weighted by 51% NCF wind
2. Map of transmission network from EIA

CLEAN LINE ENERGY PARTNERS



Electric Transmission Line ≥ 345 kV

8

5

Western Kansas wind profile produces substantial amount of energy in peak hours

Kansas wind diurnal profile

Average NCF from 2011 vs. hour



Source: Production data from X developer with 51% NCF for the year 2011

CLEAN LINE ENERGY PARTNERS

9

5

MISO will assign a capacity value to Grain Belt commensurate with the excellent resource

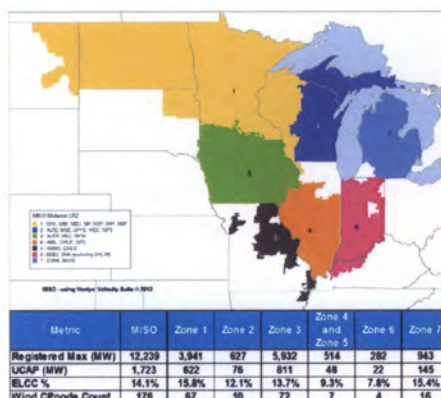


Figure 1-1: MISO Midwest Local Resource Zones (LRZ) And Distribution of Wind Capacity

- MISO uses an electric load carrying capacity (ELCC) model to assign capacity credit to wind
- Kansas wind generation with firm transmission rights can be eligible
- Based on the high capacity factor of Kansas wind, ~15% is a reasonable expectation
- Capacity credit can be used in Locational Resource Zone 5 (Missouri)

CLEAN LINE ENERGY PARTNERS

10

Discussions with Missouri load serving entities going forward

- Review Grain Belt schedule and project timing
- Discuss potential opportunities such as purchasing capacity on the line
- Feedback on proposal and decision on next steps



CLEAN LINE ENERGY PARTNERS

GRAIN BELT EXPRESS

CLEAN LINE

www.grainbeltexpresscleanline.com



Follow Clean Line on Twitter
@cleanlineenergy

March 2014