Maximizing The Benefits of Wind Energy Development Through Local Construction Hiring: The Ruso Wind Project Case Study

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Local Jobs
NORTH DAKOTA MINNESOTA

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Executive Summary

North Dakota's wind energy economy is booming. The state ranks tenth in the nation in net generation from wind energy. In 2018, wind energy provided approximately 26% of power generated in North Dakota.[1]

The proposed Ruso Wind Project will expand North Dakota's clean energy portfolio, while potentially creating more than 100 family-supporting construction jobs for local workers. Yet the full economic benefits of the project will only be realized to the extent that well-paid construction jobs generated by the project are filled by local workers. The wages and fringe benefits paid to local workers help to boost local economies rather than non-local workers who typically take their paychecks home with them when the project is complete.

To better understand the consequences of using local versus non-local workers on the Ruso Wind Project, we have analyzed the potential economic impact of the project. We find the following:

- If 70% of construction work on a wind installation the size of the proposed Ruso Wind Project is performed by local workers, construction payrolls can be expected to generate approximately $14 million in local economic activity.
- If 30% or less of construction work is performed by local workers, the associated economic impact will be $9 million or less.
- The use of a non-local construction workforce (between 10% to 30% local) to build Ruso Wind could cost local communities $5 million or more in lost payroll and local economic activity compared to a project that employs a largely local workforce (50% to 70% local).
- When retirement benefits are included, the expected difference between a largely local and non-local project grows by $1.7 million to approximately $6.7 million.

North Dakota Public Service Commission (PSC) could use its existing legal authority under Chapter 69-06-08 of the North Dakota Administrative Code to promote the use of local workforce and bring greater transparency to the development process. They can also give preference to applications for energy conversion and transmission projects that maximize availability of training and employment opportunities for local workers, and require project owners to file reports on the use of local and non-local labor during construction. Developers, such as Southern Power, can also help maximize the local benefits of wind energy projects by committing to making commercially reasonable efforts to prioritize employment of local workers, and working with contractors that partner with registered apprenticeship programs. These programs are helping to build North Dakota's local skilled energy workforce.

[1] American Wind Energy Association, "Wind Energy in North Dakota," https://www.awea.org/Awea/media/Resources/StateFactSheets/North-Dakota.pdf

Economic Impact of Local versus Non-local Hiring on Construction of The Proposed Ruso Wind Project

Wages and Benefits

The creation of construction jobs is not the only local benefit of wind energy development, but it is among the most significant, in terms of economic impacts alongside the lease and tax revenues that wind energy projects typically deliver to local residents and host communities. Wind energy construction jobs can provide middle-class wages and high-quality health and retirement benefits. These benefits are all-too-scarce for blue-collar workers in many of the rural areas where wind farms are typically built.

Construction job opportunities are frequently cited as a benefit of wind energy development in both media coverage and permitting processes. But until recently, little attention has been paid to the impact of decisions by developers and contractors to build projects with a largely local or non-local construction workforce. In 2018, North Star Policy Institute, a policy think tank based in St. Paul, undertook a study of wind energy construction in Minnesota and found that tens of millions of dollars in anticipated local economic benefits are at risk due to use of non-local labor. The findings are published in *Catching the Wind: The impact of local vs. non-local hiring practices on construction of Minnesota wind farms*, a report that was published in June of 2018.[2]

In this brief, the authors have employed the methodology used in *Catching the Wind* to estimate the local economic impact of the use of local and non-local labor on the construction of a wind energy facility, such as the proposed Ruso Wind Project. Our analysis begins by estimating the wages and benefits that would be paid to construction workers. Ruso Wind Partners has not yet announced the selection of an Engineering Procurement & Construction (EPC) contractor to build the project, so it is impossible to know with certainty the wages that would be paid to workers employed on the project.

We can, however, estimate pay and benefits rates based on the prevailing wage rates established by the U.S. Department of Labor for heavy industrial construction projects in North Dakota. These prevailing wage rates are calculated based on wage surveys submitted by local construction employers and trade unions, and industry sources affirm that these rates are consistent with the rates commonly paid to North Dakota workers employed on wind energy projects.

Wind farm construction requires the skills of construction laborers, ironworkers, millwrights, operating engineers, and electricians. Workers in these trades typically earn between $24 and

[2] Katie Hatt and Lucas Franco, "Catching the Wind: The impact of local vs. non-local hiring practices on construction of Minnesota wind farms," North Star Policy Institute, June 2018, available here: https://northstarpolicy.org/catching-the-wind-the-impact-of-local-vs-non-local-hiring-practices-on-construction-of-minnesota-wind-farms

$36 per hour in wages and $12 to $23 in hourly fringe benefit contributions (e.g. healthcare, pension and vacation payments) depending on their trade. We estimate the average wage of a wind energy construction worker based on an average of the rates for each craft.

TABLE 1: North Dakota Wage Rates[3]		
Craft	**Wage**	**Fringe Rate**
Laborer	$23.78	$16.22
Millwrights/Ironworker	$32.13	$22.61
Operator	$28.47	$16.41
Electrician	$35.64	$11.67
AVERAGE (standard)	**$30.01**	**$16.73**
Overtime	**$45.01**	

Based on interviews with wind construction workers and contractors, we found that overtime work is common as wind energy construction workers typically work long hours. In northern climates where the construction season is limited, our research indicates that the typical wind energy project may last six months, during which time workers average 60 hours per week, for a total of roughly 1,500 hours -- 1,000 hours of straight time ($30 per hour) and 500 hours of overtime ($45 per hour).

Spending Patterns of Local and Non-Local Workers

Local and non-local workers are assumed to perform similar work and earn similar wages on a wind farm construction project. Non-local workers are defined as workers that do not maintain a permanent residence within a daily commuting distance of the project. Non-local workers secure temporary lodgings and generally receive per-diem payments from employers to offset lodging and food costs.

Workers on wind energy projects in North Dakota typically receive per diem payments of roughly $100 according to interviews with workers and other industry professionals.[4] Per diems are generally provided on working days, so non-local workers on a North Dakota wind project could be expected to receive per-diem payments six days per week over the six-month duration of a project. Thus, we estimate the total value of per-diem payments to a non-local worker employed on a North Dakota wind project to be $15,600 ($100 x six days a week x 26 weeks).

We expect local workers on a North Dakota wind project to earn approximately $52,509 in pay, excluding benefits, while non-local workers should receive gross pay totaling $68,109, excluding

[3] These wage and fringe rates are based primarily on federal Davis-Bacon rates for heavy industrial/processing plants and refineries for McLean and Ward countries. We used building rates for ironworkers for the same geographical area, since heavy industrial rates were not provided for that craft. The carpenter/ironworker rate is a blended rate. All Davis-Bacon rates for North Dakota are available on the General Services Administration website: https://beta.sam.gov/search?index=wd&keywords=&sort=-modifiedDate&date_filter_index=0&date_rad_selection=date&wdType=dbra&state=ND&page=3

[4] Per diem rates are based on interview and survey data from past and current wind farm construction workers.

benefits. These estimates are calculated based on 1,000 hours of work at the standard pay level (1000 x $30.01) plus 500 hours of overtime (500 x $45.01). For non-local workers, we add per-diem to their total pay ($52,509 + $15,600).

TABLE 2: Gross Pay for Local and Non-local Workers		
	Local Worker at 1500 hours	**Non-Local Worker at 1500 hours**
Wages	$52,508.75	$52,508.75
Per Diem	$0.00	$15,600.00
Gross Earnings	$52,508.75	$68,108.75

We can estimate the amount the average local worker spends in their local area by deducting taxes and savings, and by applying an estimated share income that will be spent in a local area based on the work of economists that have studied the economic impact of local payrolls. The following table presents expected tax payments and savings for each worker:

TABLE 3: Deducations		
Deductions	**Local Worker**	**Non-Local Worker**
Effective Federal (9.24%)	$4,851.00	$4,851.00
Effective FICA (7.65%)	$4,017.00	$4,017.00
Effective State (.94%)	$493.00	$493.00
Total Tax (17.83%)	$9,361.00	$9,361.00
After Tax Income	$43,147.75	$43,147.75
Savings (3.1%)	$1,337.58	$1,337.58
After Savings	$41,810.17	$41,810.17
Current Fringe Benefits	$12,545.63	$12,545.63
Deferred Fringe Benefits	$12,545.63	$12,545.63
Total Local Spending Per Worker	**$51,638.01**	**$15,600.00**
Difference in Local vs. Non-Local Spending		**$36,038.01**

These calculations are based on standard tax rates for North Dakota. The "effective" tax rate is based on an analysis of the income bracket in which workers in this income bracket are situated. Per diems are generally not treated as taxable income.[5]

[5] Tax estimates corroborated by Smart Asset's online tax estimator. The full estimator is available at: https://smartasset.com/taxes/income-taxes#SRQvQjkXhc.

The average American currently saves approximately 3.1% of their income.[6] If we assume this trend holds, the average after-tax and after-savings income of both local and non-local workers would be about $41,810.17. On top of this income, non-local workers are expected to receive $15,600 in per-diem payments.

The economic contribution of local workers to local economies is not limited to their paychecks. Fringe benefits, which for construction workers typically include health care coverage, and retirement, training, and vacation benefits can also contribute to local economic activity. Among these benefits, health care and retirement benefits account for the lion's share.

Health care contributions are usually spend in the short-term in local economies as workers and their families patronize local clinics, hospitals, and pharmacies. Retirement funds, on the other hand, are deferred and will only contribute to local economies once a worker retires and begins to draw on pension payments or retirement savings.

For this reason, we conclude that half of fringe benefit contributions ($25,091.25/2 or $12,545.63) have a similar impact to post-tax, post-savings income, and the other half are treated as income that is deferred to be spent after retirement.

In past efforts to measure the local economic impact of local employment, economists have estimated that, on average, local workers spend 95% of their income within the region in which they live.[7] Thus, we would expect a construction job on a North Dakota wind energy project that is filled by a local worker to directly contribute $51,638.01 in the regional economy (95% of after tax /after savings income + 50% of fringe benefits or 95% of $41,815.62+ $12,545.63) in the near term, and an additional $12,545.63 over the long term.

Our research indicates that non-local workers, on the other hand, seek to restrict their local spending to the amount of their per diem and can be expected to spend the remainder of their wages and benefits in their primary place of residence .[8] Thus, we expect that a non-local worker employed on a North Dakota wind energy project will spend $15,600 locally over the duration of the project.

The near-term difference in local spending patterns between a local and a non-local worker employed on a North Dakota wind energy project is $36,038.01 ($51,638.01 - $15,600). This is $36,038.01 less per worker that non-local workers can be expected to spend at neighborhood grocery stores, car dealerships, restaurants and clothing stores. This amount is the economic stimulus gained or lost by decisions to hire local or non-local workers. The gap grows to

[6] James Chen, "Savings Rate," May 15, 2018, Investopedia, available here: https://www.investopedia.com/terms/s/savings-rate.asp

[7] Bruce Nissen and Yue Zhang, "Hiring Our Own? The impact of local vs. non-local hiring practices in two county GOB projects," August 16, 2006, Research Institute on Social and Economic Policy at Florida International University.

[8] This assumption is based on survey analysis and interviews with current and past wind energy construction and other sectors that typically employ traveling workforce.

approximately $49,500 when deferred spending associated with retirement benefits is taken into account.

The potential gain or loss in local spending is considerable when we consider total anticipated employment on a large wind energy development such as the proposed Ruso Wind Project. Based on the developer's estimate, the project will employ approximately 200 construction workers. The local economic impact of the project could differ greatly depending on how many of the workers come from the local area or hundreds or even thousands of miles away.

It is rare for a wind energy project to employ an entirely local workforce. The leading U.S. wind energy EPCs pursue national business models and employ a national workforce that includes key personnel who are essential to the safe and successful execution of the company's wind energy projects. There can be significant differences, however, between projects built by EPCs that partner with local workforce providers and deliver projects where a large majority (50% to 70%) of hours worked on the project are performed by local workers, and projects that rely largely on out-of-state crews where local workers account for a small share of hours worked (10% to 30%).

The following table lays out estimates of total payroll and total local spending for a project similar to Ruso Wind at different hypothetical levels of local and non-local construction hiring:

TABLE 4: Total Spending

Percent of Local Workers	Total Payroll	Total Local Spending
100%	$15,520,000.00	$10,327,601.00
70%	$16,456,000.00	$8,165,320.70
50%	$17,080,000.00	$6,723,800.50
30%	$17,704,000.00	$5,282,280.30
10%	$18,328,000.00	$3,840,760.10
0%	$18,640,000.00	$3,120,000.00

The projected difference in cumulative local spending between a project that relies on a 70% local workforce and 30% a local workforce would be roughly $2.9 million in current spending. When spending associated with deferred retirement benefits is included, the projected difference grows to approximately $3.9 million.

The differences in local impacts continue to grow when we account for multiplier effects of local spending. Wages earned by local construction workers are re-circulated within local economies through secondary purchases and other economic transactions. This spending creates additional jobs via multiplier effects that have been well-documented by economists.[9]

[9] The following is an example of using multiplier effects on a major pipeline project in Minnesota: Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth (UMD) Labovitz School, " Enbridge

In this report, we focus on the earnings multiplier. In Nissen and Zhang's 2006 study of the economic impact of local hiring on two major construction projects in Florida, they provide an earnings multiplier of 1.7377 for new construction work. This means that every dollar spent in a local economy will result in an additional 73.77% in economic activity, beyond the earnings of those employed on the project.[10]

If we replicate the multiplier used by Nissen and Zhang (2006), total local spending would be as follows:

TABLE 5: Total Local Spending with Multiplier

Percent Local	Total Economic Impact with Multiplier
100%	$17,946,272.26
70%	$14,188,877.78
50%	$11,683,948.13
30%	$9,179,018.48
10%	$6,674,088.83
0%	$5,421,624.00

When we include economic multipliers, the present value difference in total economic impact of using 70% local workers versus 30% rises to $5 million. When deferred retirement benefits are included, the total difference in economic impact between 70% and 30% local increases to $6.7 million. For rural areas of North Dakota, these differences in local economic impacts could amount to meaningful boosts to local household and business incomes and tax base for local schools and governments.

The Availability of Local Workers

Prioritizing local hiring on the Ruso Wind Project can not only create good, family-supporting jobs for local workers and millions of dollars in local economic activity, but can also provide a pathway into a career in the construction industry for many local workers. In the region surrounding the Ruso Wind Project, North Dakota Planning Area 2, there are thousands of workers employed in low-wage, part-time jobs with few opportunities for upward mobility.[11]

Pipeline Construction: Economic Impact Study," prepared for Area Partnership for Economic Expansion (APEX), April 18, 2017.

[10] Bruce Nissen and Yue Zhang, "Hiring Our Own? The impact of local vs. non-local hiring practices in two county GOB projects," August 16, 2006, Research Institute on Social and Economic Policy at Florida International University, pg. 8. Nissen and Zhang use an earnings multiplier specific to their region of analysis – Miami-Dade County, Florida. We do not have a regionally specific RIM II earnings multiplier for Southern Minnesota. However, we expect only minor variation from the regionally specific earnings multiplier used by Nissen and Zhang. Additional research is needed to determine the exact earnings multiplier for North Dakota.

[11] We define the area surrounding the Ruso Wind Project as North Dakota Planning Region 2. This is a designation defined by the State of North Dakota. This region includes Burke, Bottineau, Pierce, McHenry, Mountrail, Renville,

For example, among the roughly 45,406 workers in the region, 10,830 are employed in low-wage retail, accommodations, and food service jobs. Many of these workers would welcome an opportunity for a well-paid, 40+ hour per week job with generous benefits.[12]

TABLE 6: Total Employment and Wages in ND Planning Region 2				
Industry	**Average Employment**	**Average Hourly Wage**	**Average Weekly Wage (40 hrs)**	**Average Annual Wage (2,080 hrs)**
Retail Trade	6,351	$15	$617	$32,084
Health Care and Social Assistance	6,205	$29	$1,154	$60,008
Educational Services	4,519	$19	$777	$40,404
Accommodation and Food Services	4,479	$9	$358	$18,616
Mining, Quarrying, and Oil and Gas Extraction	3,685	$50	$1,988	$103,376

We estimate that the average construction worker on a North Dakota wind energy project would earn approximately $2,100 per week (40 hours at straight time rate of $30.02 per hour and 20 hours as overtime rate of $45.03 per hour) excluding fringe benefit payments. This is three to six times the average weekly earnings of a worker in accommodation, food service or retail work.

Many of the jobs on a project like the Ruso Wind Project require little construction experience. Some of the 10,830 workers currently employed in the retail, accommodation, or food service industries could begin work on such a project as soon as construction begins. Those employed by contractors that participate in registered apprenticeship programs would also benefit from classroom, hands-on, and on-the-job training to improve their skills and career prospects.

We expect that many of the 10,830 workers employed in industries that pay substantially less than wind energy project jobs would be eager to seize an opportunity to earn higher wages in the construction industry. Regional building and construction trades unions are ready and willing to work with wind developers and contractors to help dispatch the existing skilled workforce, and to recruit and train a new workforce.

and Ward counties. You can find more information about North Dakota planning regions here: https://www.business.nd.gov/data/regional/

[12] Arne L. Kalleberg, "Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s-2000s," 2011, Russell Sage Foundation.

Conclusion

Ruso Wind has the potential to create hundreds of family-supporting jobs for North Dakota residents and to inject millions of dollars into the region's economy. Ruso Wind Partners can maximize the benefit of the project to North Dakota by working with the EPC contractor selected to build the project to prioritize local hiring and ensure that the majority of construction work on the project is performed by local workers.

Minnesota policymakers and wind energy developers and policymakers have already begun taking steps to maximize the local benefits of wind energy development. The Minnesota Public Utilities Commission ("MPUC") has made the submission of quarterly reports on the employment of local and non-local construction workforce a standard feature of site permits for wind energy facilities. MPUC has also expressed a strong preference for wind energy projects that maximize employment opportunities for local construction workers, including a recent case where an application for a site permit was referred to a contested case hearing over local hiring concerns.

While Minnesota Public Utility Commissioners have expressed a concern for Minnesota workers, the definition of local workers employed by MPUC is not based exclusively on state borders, but instead includes workers that live within 150 miles (commuting distance) of a project. The PSC could take similar steps to protect the interests of local workers and communities by requiring quarterly reports to promote transparency, and by exercising the Commission's existing legal authority under North Dakota Administrative Code 69-06-08-01(6)(c) to give preference to energy conversion and transmission projects that maximize availability of training and employment opportunities for local workers.

About The Authors

Lucas Franco is a PhD candidate in Political Sciences at the University of Minnesota and Research Manager for LIUNA Minnesota & North Dakota, which represents more than 12,000 unionized construction laborers across Minnesota and North Dakota and is affiliated with the half-million member Laborers International Union of North America.

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