Maximizing The Benefits of Clean Energy Development Through Local Construction Hiring: A Case Study of Coneflower Solar

May 2025

Lucas Franco, PhD

Local Jobs
NORTH DAKOTA MINNESOTA

Maximizing The Benefits of Clean Energy Development Through Local Construction Hiring: A Case Study of Coneflower Solar

May 2025

Executive Summary

Minnesota's clean energy economy is booming. The state ranks tenth in the share of electricity produced from wind, solar and energy storage power plants.[1] In 2023, renewable energy provided approximately 33% of all power generated in Minnesota.[2]

The proposed Coneflower Solar project will expand Minnesota's clean energy portfolio by approximately 235 megawatts, while creating an estimated 200 construction jobs, of which many could potentially be filled by local workers. Yet, the full economic benefits of the project may only be realized to the extent that local workers are given the opportunity to fill construction jobs. The wages and fringe benefits paid to local workers help to boost local economies, while non-local workers typically take their paychecks home with them when a project is complete.

To better understand the consequences of using local versus non-local workers on the Coneflower Solar project, I have analyzed the potential economic impact of the project. I find the following:

- If 70% of construction work on an installation the size of the proposed project is performed by local workers, construction payrolls can be expected to generate approximately $18.8 million in local economic activity.
- The use of a non-local construction workforce (between 10% to 30% local) to build the project could cost local communities $7.6 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 $2.8 million to approximately $10.4 million.

Historically, the reliance on non-local workers to build Minnesota clean energy projects was an all-too-common problem that has cost local communities millions in lost economic benefits in recent years. Thankfully, since 2018, there has been a substantial increase in the use of local workers on utility scale wind and solar projects.

---

[1] MN DEED "Compare Minnesota: Clean Power, 2024," https://mn.gov/deed/data/economic-analysis/compare/compare-minnesota/energy/clean-power.jsp

[2] Christopher Ingraham, "Wind, solar now provide one third of Minnesota's electricity," April 30, 2024, available here: https://minnesotareformer.com/briefs/wind-solar-now-provide-one-third-of-minnesotas-electricity/#:~:text=Renewable%20sources%20like%20wind%20and%20solar%20accounted,and%20the%20Business%20Council%20for%20Sustainable%20Energy.&text=Nuclear%20energy%20generated%20an%20additional%2021%%20of,to%2054%%2C%20the%20highest%20in%20the%20Midwest.

Since the June 2018 release of the *Catching the Wind* report by the North Star Policy Institute, the conversation around local hiring practices has shifted. There is growing recognition and concern that the failure to recruit and employ local workers on major clean energy projects in Minnesota could cost regional economies millions of dollars in lost economic opportunities. The issue is increasingly generating the attention of news media, especially in Southern Minnesota from communities such as Marshall,[3] Pipestone,[4] Worthington,[5] Rochester,[6] and across the state of Minnesota.[7]

In a 2019 report, Mankato Building Trades President Stacy Karels described the positive change his members in Southwest Minnesota had seen on wind projects in particular in just a few short years:

> "It's been a big turnaround. In 2017 and 2018, you hardly saw Minnesota workers on wind energy projects. This summer we might have a hundred local Building Trades members at Blazing Star alone, and we'll put even more to work shortly as Nobles II kicks off. Over the last couple years, we saw too many projects like Lake Benton II. This year they're the exception. For the most part, it seems like the industry understands this needs to be a two-way street, and if they want to develop local resources they need to give back to local workers."[8]

The goal of this report is to measure the possible socioeconomic impact of using different percentages of local versus non-local workers on the Coneflower Solar project. Based on recent practices in North Dakota by the developer (Apex Clean Energy), I am concerned that this project could fail to maximize the use of local workers and thus substantially undercut local benefits.

Economic Impact of Local versus Non-local Hiring on Construction of the Proposed Coneflower Solar Project

Wages and Benefits

The creation of construction jobs is not the only local benefit of renewable energy development, but it is among the most significant, in terms of economic impacts alongside the lease and tax revenues that clean energy projects typically deliver to local residents and host communities. Solar construction jobs can provide middle-class wages and high-quality health and retirement

[3] Jim Muchlinski, "Bitter Root project targets the high ground in YMC," Marshall Independent, January 10, 2019.
[4] Kyle Kuphal, "Wind Workers: One union's push to keep them local," Pipestone County Star, October 29, 2018.
[5] Karl Evers-Hillstrom, "Union wants Minnesota workers hired for wind farm construction," Worthington Globe, September 29, 2018.
[6] Jeremiah Wilcox, "Outsourcing Wind Energy Jobs," KIMT 3, August 6, 2018.
[7] Mike Hughlett, "Regulators table Canby area wind farm over labor concerns," Star Tribune, December 6, 2018.
[8] Lucas Franco, "Catching the Wind 2.0: An Update on Changing Employment Practices in Minnesota's Wind Energy Industry," Local Jobs North, 2019.

benefits. These benefits are all-too-scarce for blue-collar workers in many of the rural areas where solar farms are often built, especially in rural Southwest Minnesota.

Construction job opportunities are frequently cited as a benefit of solar development in both media coverage and permitting processes. But until a few years ago little attention was paid to the impact of decisions by developers and contractors to build renewable energy projects with a largely local or non-local construction workforce. In 2018, North Star Policy Institute, a policy think tank based in St. Paul, Minnesota, 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.[9] The dynamics are very similar for solar projects.

In this brief, I 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 solar energy facility, such as the proposed Coneflower Solar project. My analysis begins by estimating the wages and benefits that would be paid to construction workers. Apex 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. I can, however, estimate pay and benefit rates based on the prevailing wage rates established by the Minnesota Department of Labor and Industry for highway and heavy industrial construction projects in Minnesota. 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 Minnesota workers employed on solar energy projects.[10]

Solar farm construction requires the skills of construction laborers, ironworkers, millwrights, operating engineers, and electricians. Workers in these trades typically earn between $29 and $41 per hour in wages and $19 and $30 in hourly fringe benefit contributions (e.g. healthcare, pension and vacation payments) depending on their trade. I estimate the average wage of a wind and solar energy construction worker based on an average of the rates for each craft.

TABLE 1: Prevailing Wage Minnesota Heavy and Highway		
Minnesota Prevailing Wage - Region 8 (includes		
Craft	**Wage**	**Fringe Rate**
Laborer	$39.01	$26.01
Millwright/Ironworker	$38.23	$29.18

[9] 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

[10] Prevailing wage rates are available here: http://workplace.doli.state.mn.us/prevwage/highway_data.php?region=10.

Operator	$47.24	$29.40
Electrician	$41.00	$23.10
AVERAGE (standard)	**$41.37**	**$26.92**
Overtime	**$62.06**	

Based on interviews with renewable energy construction workers and contractors, I have found that overtime work is common as renewable energy construction workers typically work long hours. In northern climates where the construction season is limited, my research indicates that the typical renewable 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 ($41.37 per hour) and 500 hours of overtime ($62.06 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 or solar 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 a wind or solar energy project in Minnesota typically receive per diem payments of roughly $100 according to interviews with workers and other industry professionals.[11] Per diems are generally provided on working days, so non-local workers on a Minnesota wind or solar project could be expected to receive per-diem payments six days per week over the six-month duration of a project. Thus, I estimate the total value of per-diem payments to a non-local worker employed on a Minnesota combined wind and solar project to be $15,600 ($100 x six days a week x 26 weeks).

I expect local workers on a Minnesota wind and solar project to earn approximately $61,761 in pay, excluding benefits, while non-local workers should receive gross pay totaling $77,361, excluding benefits. These estimates are calculated based on 1,000 hours of work at the standard pay level plus 500 hours of overtime. For non-local workers, I add per-diem to their total pay ($61,761 + $15,600).

TABLE 2: Gross Pay for Local and Non-Local Workers		
	Local Worker at 1500 hours	Non-Local Worker
Wages	$72,397.50	$72,397.50
Per Diem	$0.00	$15,600.00
Gross Earnings	$72,397.50	$87,997.50

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

I 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 Workers**
Effective Federal (10.37%)	$7,768.00	$7,768.00
Effective FICA (7.65%)	$5,538.00	$5,538.00
Effective State (4.8%)	$3,472.00	$3,472.00
Total Tax	$16,778.00	$16,778.00
After Tax Income	$55,619.50	$55,619.50
Savings (3.9%)	$2,169.16	$2,169.16
After Savings	$53,895.30	$53,895.30
Current Fringe Benefits	$20,191.88	$20,191.88
Deferred Fringe Benefits	$20,191.88	$20,191.88
Total Local Spending Per Worker	**$70,382.81**	**$15,600.00**
Difference in Local vs. Non-Local Spending		**$54,782.81**

These calculations are based on standard tax rates for Minnesota. 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.[12]

The average American currently saves approximately 3.9% of their income.[13] If I assume this trend holds, the average after-tax and after-savings income of both local and non-local workers would be about $53,000. On top of this income, non-local workers are expected to receive $15,600 in per-diem payments.

[12] Tax estimates corroborated by Smart Asset's online tax estimator. The full estimator is available at: https://smartasset.com/taxes/income-taxes#SRQvQjkXhc.
[13] Bureau of Economic Analysis data:https://www.bea.gov/data/income-saving/personal-saving-rate.

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, 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 spent 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, I conclude that half of fringe benefit contributions ($40,383/2 or $20,191) 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.[14] Thus, I would expect a construction job on a Minnesota solar energy project that is filled by a local worker to directly contribute $70,300 in the regional economy (95% of after tax/after savings income + 50% of fringe benefits) in the near term, and an additional $20,000 over the long term.

My 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.[15] Thus, I expect that a non-local worker employed on a Minnesota solar 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 Minnesota wind energy project is $54,782. This is $54,782 less per worker than 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 potential gain or loss in local spending is considerable when I consider total anticipated employment on a large solar energy development such as the proposed Coneflower project. Based on developer estimates, I expect the project will create approximately 200 construction jobs.[16] 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.

---

[14] 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.

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

[16] Estimate available in public meeting presentation available here (pg. 28): https://mn.gov/eera/web/project-file/11725/.

It is rare for a solar energy project to employ an entirely local workforce. The leading U.S. solar 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 solar 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 Coneflower at different hypothetical levels of local and non-local construction hiring:

TABLE 4: Direct Local Spending	
Total Local Spending 100% local	$14,076,562.40
Local Spending 70% local	$10,789,593.68
Local Spending 50% local	$8,598,281.20
Local Spending 30% local	$6,406,968.72
Local spending 10% local	$4,215,656.24
Local spending 0%	$3,120,000.00

The projected difference in cumulative local spending between a project that relies on a 70% local workforce and a 30% local workforce would be roughly $4.4 million in current spending.

The differences in local impacts continue to grow when I 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.[17]

In this report, I 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

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

local economy will result in an additional 73.77% in economic activity, beyond the earnings of those employed on the project.[18]

If I 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%	$24,460,842.47
70%	$18,749,076.93
50%	$14,941,233.24
30%	$11,133,389.54
10%	$7,325,545.85
0%	$5,421,624.00

When I include economic multipliers, the present value difference in total economic impact of using 70% local workers versus 30% rises to $7.6 million. When deferred retirement benefits are included, the total difference in economic impact between 70% and 30% local increases to $10.4 million. For rural areas of Minnesota, 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.

Conclusion

The Coneflower Solar project has the potential to create hundreds of family-supporting jobs for Minnesota residents and inject millions of dollars into the region's economy. It could also provide a pathway into a career in the construction industry for many regional workers. Throughout Minnesota there are thousands of workers employed in low wage jobs that might welcome an opportunity for a well-paid, 40+ hour per week job with benefits. This group includes current construction workers for whom the project could be an opportunity to earn better pay and benefits, and new skills that would make them more productive and marketable to construction employers. Unfortunately, these benefits are uncertain if Apex Clean Energy builds the project in a manner consistent with the company's current practice in North Dakota where

[18] 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. I do not have a regionally specific RIM II earnings multiplier for Southern Minnesota. However, I 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.

Apex has selected an EPC contractor that has apparently relied heavily on non-local workforce based on LIUNA's observations.

About the Author

Lucas Franco is the Research Manager for LIUNA Minnesota & North Dakota, which represents more than 14,000 unionized construction laborers across Minnesota and North Dakota and is affiliated with the 500,000 member Laborers' International Union of North America. He holds a Ph.D. in Political Science from the University of Minnesota. He has published numerous articles and reports on employment trends in the construction industry.