INFLATED NUMBERS; Erroneous Conclusions:

The Navigant Wind Jobs Report

By Charles J. Cicchetti, Ph.D

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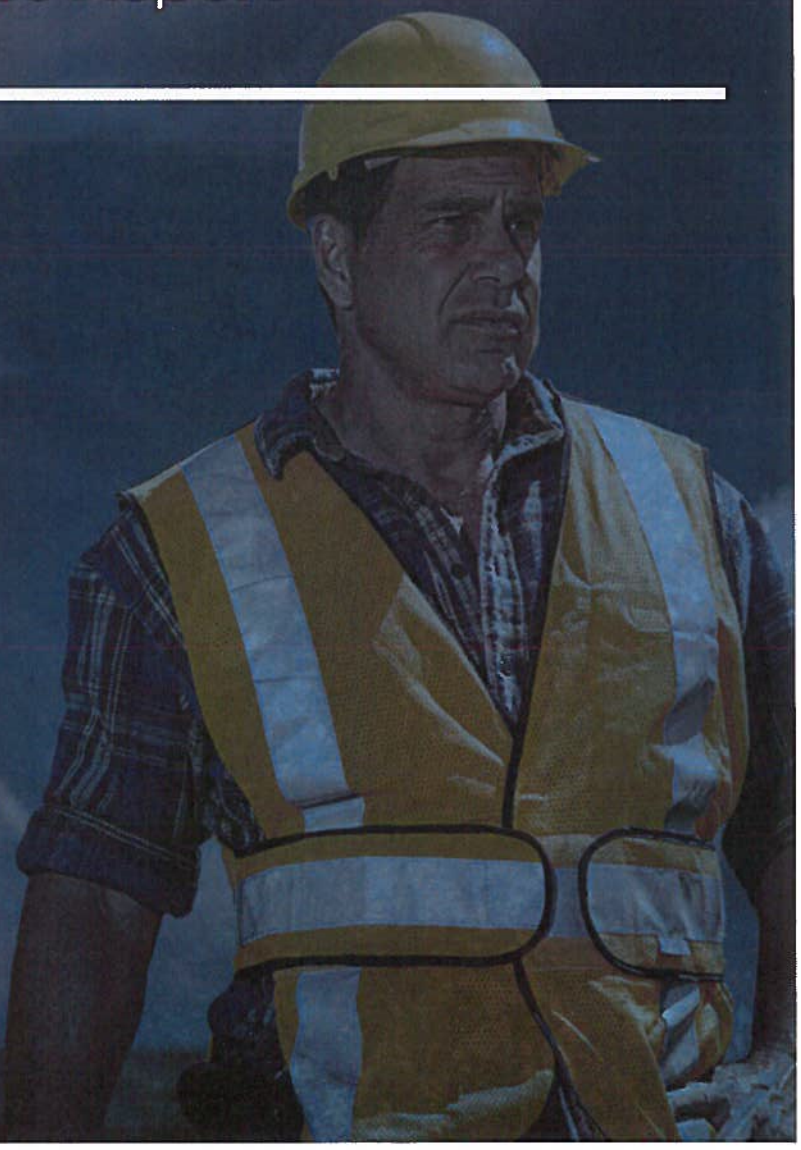

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ABOUT

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EXECUTIVE SUMMARY

In December 2011, Navigant Consulting, Inc., produced a Report substantially based on American Wind Energy Association (AWEA) assumptions.[1] This Report purports to evaluate and compare two wind Production Tax Credit (PTC) expiration scenarios (Scenario 1, without extending the PTC; Scenario 2 with the PTC). For each, Navigant estimated installed wind capacity and jobs. AWEA and its supporters have repeatedly used the Report's claim of 37,000 potential lost jobs in 2013 as a key reason to extend the wind PTC.[2] Using energy policy to formulate a national jobs policy is not efficient, cost effective, or sensible, especially when picking generation "winners" by providing extraordinarily expensive subsidies like the PTC.[3]

But most significantly, the Report's data, calculations, and resulting wind capacity and job loss estimates are not credible and should not be relied upon to support further extension of the PTC.

In particular, the Report vastly overstates potential jobs losses without the PTC because it: (1) relies on biased, inflated wind capacity forecasts; (2) incorrectly applies economic models; and (3) fails to consider job creation opportunities from building other generation sources instead of wind. In fact, following Navigant's methodology, building conventional generating capacity results in even greater job creation than building more wind. Nevertheless, basing energy policy on the number of jobs created by building generation facilities is economically wasteful. The choice of generation alternatives should focus on establishing policies that create cost-effective, affordable, and reliable electricity.

The Report's Wind Capacity And Jobs Numbers Are Grossly Inflated

- Navigant erroneously calculated PTC-related job losses ignoring contrary federal government data, and instead used the wind industry's self-serving, inflated forecasts for wind capacity. Navigant forecasts 20,200 MWs of additional wind capacity with a 4-year extension of the PTC, relative even to its also inflated base case. The Navigant forecasts with and without the PTC extension exceed the government's reference 2016 forecasts by 20% and 55%, respectively.

- Navigant incorrectly applied the Jobs and Economic Development Impact (JEDI) economic model. Replicating Navigant's work for five important wind states (California, Texas, Iowa, Illinois, and Pennsylvania) demonstrates that through this error alone, Navigant overstates potential job losses by at least 100%.

- Navigant also incorrectly applied the Impact Analysis For Planning (IMPLAN) economic model, using questionable multipliers to add indirect and induced jobs, which further overstates potential job losses by at least another 72%.

Overall Jobs Will Increase, Not Decrease, By Using Alternatives To Wind Generation

Navigant's inflated numbers are further distorted because Navigant estimated the incremental wind capacity that would be built because of the PTC and then fed those capacity numbers into the economic models. Navigant's flawed methodology presents only a fraction of the true economic story. Wind is not a particularly reliable or dependable source of energy. Adding 20,200 MWs of wind does not translate into the same amount of reliable electricity capacity, capable of replacing on a MW-for-MW basis an equal amount of conventional existing nuclear or fossil-fired generation. Accordingly, no one should think that a MW of new wind generation could replace an existing MW of nuclear or coal generation. The importance of distinguishing between the availability and utilization of different types of generating capacity should not be ignored.

Navigant's job creation methodology never asks: "Compared to what?" Wind is not the only choice. Navigant never compares wind's job impact to the jobs created using other types of electricity generating capacity. This unreasonably ignores two important considerations. Second, if 20,200 MWs[5] of generating capacity were actually needed, based on Navigant's own methodology, alternative generation and plant life-extensions would add more jobs than wind.

The Report poses the wrong question. The appropriate question is the impact of the wind PTC's extension on the overall economy, a question answered by focusing on cost-effective and reliable resources that could be built instead of wind.[5] The reality is that wind generation is much less available than other electricity generation resources. Alternative electricity generation types also typically employ more direct jobs per MW of installed capacity. Therefore, for the same MWs of added capacity, other forms of generation would actually increase direct jobs.

- Assuming wind could replace other electricity generation resources on a MW-for-MW basis is incorrect. However, if the choice is viewed as how many jobs will be added when electricity capacity additions are being evaluated, there would be many more jobs added using other generation resources.

- Using Navigant's previous work, published in *Public Utilities Fortnightly (PUF)*, to determine local direct permanent jobs shows that operating other forms of generation would result in more jobs than operating similar amounts of wind generation.

- A one-year PTC extension could cost up to $4.8 million for each direct wind manufacturing and construction job added. Worse, costly uneconomic subsidies that increase retail electricity prices reduce U.S. competiveness and reduce job creation in the overall economy.

As highlighted above, Navigant's fatally flawed Report on the impact of the wind PTC expiration is based on self-serving industry interviews and unsupported wind capacity forecasts that have no credibility. Therefore the Report's resulting job loss numbers are meaningless and should not be used to justify spending billions of dollars in taxpayer money to extend an unneeded subsidy for the wind industry. On the contrary, if the rationale for PTC extension is based on creating jobs in the overall economy, the reality is that other generating technologies would create more direct jobs for the same amount of added capacity than wind power would create.

1 Navigant Consulting, *Impact of the Production Tax Credit on the U.S. Wind Market*, December 11, 2011. Hereafter, "the Report." Available at: http://www.awea.org/learnabout/publications/reports/upload/AWEA-PTC-study-121211-2pm.pdf

2 *See*, AWEA Press Release http://awea.org/newsroom/pressreleases/officialyearendnumbersreleased.cfm; http://www.awea.org/newsroom/pressreleases/Layoffs_wind_power.cfm; http://cleantechnica.com/2012/12/13/wind-tax-credit-awea-is-up-for-a-6-year-phase-out/; http://www.westgov.org/index.php?option=com_content&view=article&id=428:ptc-letter-to-congress&catid=261; http://news.yahoo.com/wind-energy-tax-credit-survives-fiscal-cliff-230400967.html

3 The Congressional Joint Committee on Taxation estimated a one-year extension of the PTC would cost $12.1 billion. *See*, Joint Committee on Taxation, estimate of Senate Finance Committee's tax-extender bills, JCX-70-12, August 2, 2012. Available at: https://www.jct.gov/publications.html?func=download&id=4482&chk=4482 &no_html=1. Moreover, wind generation is intermittent and unreliable, because the wind often fails to blow when demand is greatest, making wind a less desirable generation source when compared to both conventional and other renewable generation sources.

4 Difference between Scenario 1 and Scenario 2. Report, p. 13.

5 Donald Harker and Peter Hans Hirschboeck, "Green Job Realities – Quantifying the Economic Benefits of Generation Alternatives," *Public Utilities Fortnightly*, May 2010. Available at: http://www.fortnightly.com/fortnightly/2010/05/green-job-realities.

INTRODUCTION

In December 2011, Navigant issued a report entitled *Impact of the Production Tax Credit on the U.S. Wind Market*, which concluded in pertinent part that if the wind PTC were not extended for four more years there would be: (1) nearly 75% fewer annual additions of wind capacity in 2013;[6] and (2) about half as many, or 37,000 fewer, wind-related jobs in 2013.[7]

The Report, however, is fatally flawed, because unsupported and erroneous assumptions, not facts, drive its predicted dire outcomes. Without detailing its methodology, the Report claims to apply the JEDI and IMPLAN models to calculate the capacity and jobs impacts of a wind PTC expiration, but it relies on incorrectly utilized JEDI/IMPLAN models, proprietary data, and likely biased, unreliable interviews to drive the models' results. Simply put, biased and erroneous inputs make any modeling results meaningless.

First, the Report based its job loss numbers on self-serving industry wind capacity forecasts that far exceed impartial government forecasts. Second, the Report incorrectly applied the JEDI model, an error that alone overstated claimed job losses by at least 100% in the key states that were reviewed.

Third, the Report applied the IMPLAN model by using questionable multipliers to add indirect and induced jobs, which overstated job losses by at least another 72%. Lastly, the Report told only half the story, choosing to ignore the reality that wind by its nature is not a reliable source of electricity generation capacity. Furthermore, other forms of electricity generation would create many more direct operating, construction, and manufacturing jobs for each additional MW of installed capacity.[8]

This is not to say that the nation's electricity generation decisions should be based on which source of electricity generation creates the most jobs per MW of installed capacity. Goals such as economic efficiency, productivity, and grid reliability are all arguably much more important considerations. The Report, however, has been used to justify the PTC based on exaggerated and misleading claims of more jobs when, other things equal, wind capacity expands. The inconvenient truth for the wind industry is that other generating technologies produce more American direct operating, construction and manufacturing jobs than wind power per unit of installed capacity.

6 Report, p. 13.

7 Report p. 24.

8 The Committee on Energy and Commerce issued a June 18, 2012, memorandum that focused on job creation resulting from Section 1603 of the American Reinvestment and Recovery Act (the Recovery Act or "stimulus")—a grant program administered by the Department of Treasury (Treasury) and the Department of Energy (DOE) that offered cash payments to renewable energy projects, mainly solar and wind. The memorandum concluded, among other things, that besides overstating the number of jobs created by Section 1603 grants, the National Renewable Energy Laboratory's (NREL) models do not account for displaced jobs, economic activity related to changes in utilization of existing power plants, electric utility revenues, and household and business energy expenditures. The NREL study does not estimate job creation and economic impacts associated with possible alternative spending of federal funds. To date, over $10 billion have been awarded to wind projects under this recently expired program.

THE REPORT'S WIND CAPACITY AND JOBS NUMBERS ARE GROSSLY INFLATED

The Report Vastly Overstates Wind Capacity "Lost" Without the PTC

Navigant vastly overstates wind capacity "lost" without a PTC extension, claiming 20,200 MWs of wind capacity would not be installed through 2016.[9] Navigant, however, derived this inflated number from two unsupported forecasts that were rife with made-up numbers. Most notably, both of Navigant's capacity forecasts are substantially higher than the U.S. government's Energy Information Administration's (EIA) impartial, objective wind capacity forecasts, which, inexplicably, Navigant ignores.

Navigant's Scenario 1 forecast asserts that without the PTC about 70,000 MWs of wind would be installed through 2016.[10] Its Scenario 2 forecast claims that, with a four-year extension of the PTC, about 90,000 MWs would be installed through 2016. Both forecasts rely upon unscientific and likely biased interviews with 24 wind anufacturers and developers.[11] Wind developers and manufacturers clearly have a vested interest in extending the PTC, and thus in conclusions that rely on their self-serving projections. The Report's methodology is analogous to asking the head of advanced ticket sales how well the home team will perform next season. The 20,200 MW difference between the two inflated forecasts constitutes the claimed MWs "lost" without a PTC extension.

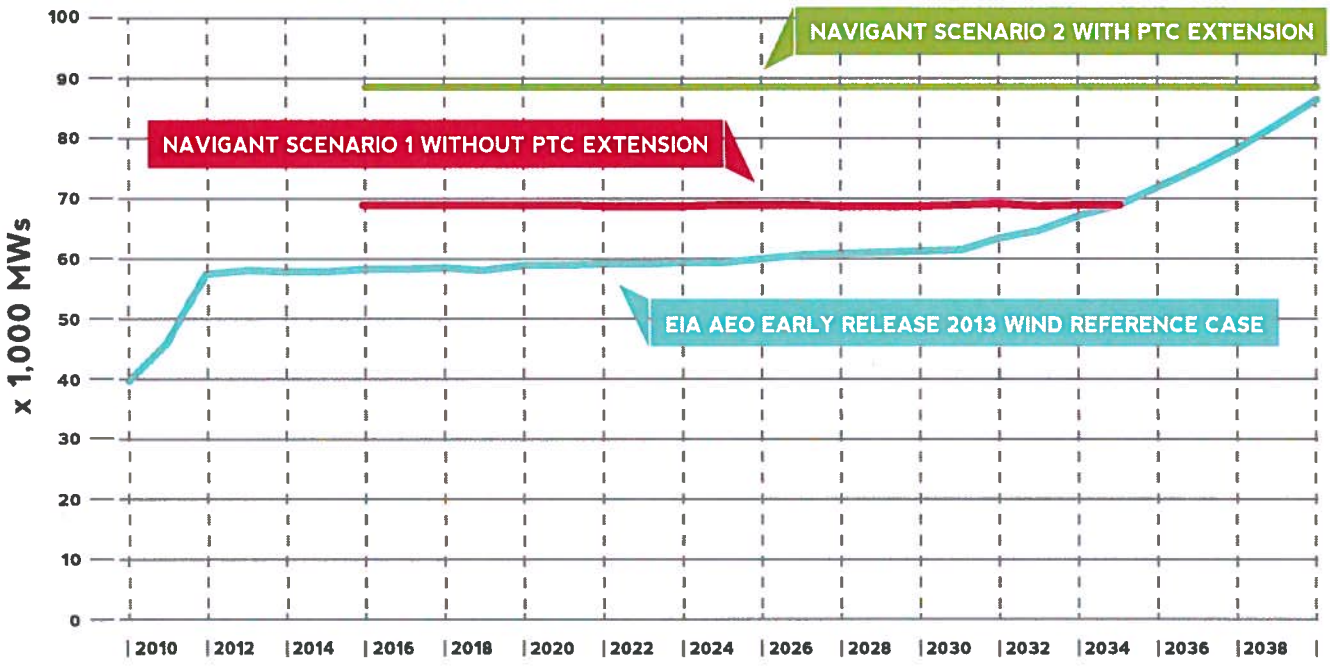
Both scenarios start with about 55,000 MWs[12] of installed wind capacity in 2012 and show annual forecasts and growth over the next four years (through 2016).[13] But the Report fails to explain the year-over-year capacity variations for the two scenarios. Most significantly, these unexplained annual capacity variations differ markedly from the federal government's comprehensive EIA energy forecasts covering multiple underlying assumptions and economic conditions.

In both of the Report's scenarios, projected annual wind capacity growth rates never match any of EIA's year-over-year projections. Rather, EIA's 2013 forecast for wind capacity, as reported in its impartial Annual Energy Outlook (AEO), and as shown in Chart 1, differs greatly from the Report's vastly inflated forecasts.[14] Chart 1 shows EIA's 2013 AEO Early Release Reference Case and where Navigant's Scenarios 1 and 2 for 2016 actually intersect with EIA's forecasts. In stark contrast to the Report's forecasts that without the PTC about 70,000 MWs of wind capacity would be installed through 2016, and with the PTC about 90,000 MWs, EIA's AEO Early Release (2013) Reference Case[15] forecast of wind capacity for 2016 is only 58,080 MWs, and that remains relatively constant through 2030. In fact, the Report's Scenario 1 forecast for 2016 does not intersect with EIA's forecast until about 2035, or almost 20 years later. The Report's Scenario 2 forecast for 2016 does not even come close to EIA's forecast until 2040 and never intersects it.

The Report forecasts that without the PTC extension about 70,000 MWs of wind capacity would be installed about 20 years earlier than EIA's forecast (i.e., by 2016), and with the PTC about 90,000 MWs would be installed by 2016. Navigant's forecast that 70,000 MWs of wind capacity would be installed through 2016 without the four-year PTC extension is 20 percent higher than EIA's reference case forecast of 58,080 MWs, and its forecast that 90,000 MWs of wind capacity would be installed through 2016 with the PTC extension is 55% higher than EIA's reference forecast.

CHART 1

EIA AEO 2013 EARLY RELEASE NET SUMMARY CAPACITY WIND REFERENCE CASE VERSUS NAVIGANT SCENARIOS 1 AND 2



The Report Vastly Overstates PTC-Related Job Losses

The Report applies its grossly inflated PTC- related wind capacity numbers to calculate its claimed jobs numbers. The Report also incorrectly applies the economic models it uses, compounding the job number errors.

For example, the JEDI model is too narrow for Navigant's attempted broad national economic analysis as it is an individual-power-plant model, which, at best, addresses small generation unit additions within the electricity industry. Erroneously applying JEDI, the Report fails to consider the employment effects of expanded or reduced wind capacity throughout the economy. In other words, the Report fails to consider the job impacts of other generating technologies when determining the job losses due to not constructing 20,200 MWs of wind capacity, assuming that amount of capacity would actually be required.[16] Rather, the Report asserted that over five years, a PTC extension would create an additional 169,000 wind-related jobs from the claimed incremental 20,200 MWs, or 8.4 jobs per MW of wind (169,000 jobs ÷ 20,200 MWs).[17] However, correctly applying the JEDI model, as shown in Appendix A, would produce only 2,110 jobs (2,033 direct, indirect, and induced manufacturing and construction jobs, plus 77 operations jobs) for a 500 MW wind plant, or just 4.2 jobs per MW of wind (2,110 jobs ÷ 500 MWs). Thus, through this error alone, the Report erroneously overstated PTC-related jobs, and concomitantly job losses, by at least 100% (8.4 jobs per MW versus the correct 4.2 jobs per MW).

To reach the purported 169,000 "total" wind-related jobs over five years, the Report applies multipliers to estimate indirect jobs (i.e., downstream suppliers) and induced jobs (i.e., from the spending of direct and indirect workers). For each direct manufacturing job, the Report adds about 1.7 indirect jobs and almost one induced job (0.9); for each direct construction or operation and maintenance job, it adds more than 5 indirect and induced jobs.[18] Applying these questionable multipliers and adding the indirect and induced jobs to the direct jobs further inflates purported wind-related jobs, and concomitantly any potential job losses, by at least 72% [1-(47 direct jobs ÷ 169 total jobs)].

9 Report, p. 7.

10 Report, p. 13.

11 Report, p. 12.

12 In a recent press release, AWEA claims that as of December 13, 2012, the wind industry had achieved 60,000 MWs of cumulative installed wind capacity. For the purposes of this paper, we utilize 55,000 MWs of installed capacity to accurately reflect the installed capacity projections at the time Navigant conducted its analysis. http://awea.org/newsroom/pressreleases/officialyearendnumbersreleased.cfm

13 Report, p. 13.

14 See EIA, AEO 2013 Early Release, http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2013ER &subject=10-AEO2013ER&table=16-AEO2013ER&region=0-0&cases=early2013-d102312a

15 The EIA states: "The *AEO2013* Reference Case generally assumes that current laws and regulations affecting the energy sector remain unchanged throughout the projection (including the implication that laws that include sunset dates do, in fact, end at the time of those sunset dates)." See page 2 of the EIA's AEO 2013 Early Release Overview. Available at: http://www.eia.gov/forecasts/aeo/er/index.cfm

16 The Congressional Research Service (CRS) and the *Wall Street Journal* highlighted the tremendous variability in estimates of temporary and permanent jobs spawned by the Section 1603 grant program. *See*, Phillip Brown and Molly F. Sherlock, *ARRA Section 1603 Grants in Lieu of Tax Credits for Renewable Energy: Overview, Analysis, and Policy Options*, February 8, 2011, p. 24 n15, Available at http://assets.opencrs.com/rpts/R41635_20110208.pdf. See also, Ianthe Jeanne Dugan and Justin Scheck, "Cost of $10 Billion Stimulus Easier to Tally Than New Jobs," Wall Street Journal, February 24, 2012. Available at: http://online.wsj.com/article/ SB10001424052970203710704577050412494713178.html. Those reports suggested a paltry record of long-term job creation. CRS noted that "the potential for job creation has become a key factor in evaluating renewable energy investment incentives and programs" but that "despite being an issue of importance, quantifying and measuring green job creation and growth has been difficult" and added that "it is recommended that any job creation estimate be viewed with skepticism." In support of these statement, Brown and Sherlock cited Richard J. Campbell and Linda Levine, *Renewable Energy—A Pathway to Green Jobs?* CRS Report R40833, September 24, 2009.

17 The Report claims 501,000 total wind jobs with the PTC extension and 333,000 total wind jobs without the PTC extension. The difference (501,000 – 333,000) equals the 169,000 "lost" jobs the Report claims without the PTC extension. This estimate does not correctly use the JEDI/IMPLAN method; it also includes questionable assumptions about indirect and induced jobs. *See*, Report, p. 24.

18 An important aspect of the manufacturing jobs touted in the Report is that many of these jobs are likely to be located outside of the United States. For example, the U.S. House of Representatives Committee on Energy and Commerce reported: "At the end of 2010, nine of the top-ten global wind turbine suppliers were headquartered outside the U.S." H.R. Comm. on Energy and Commerce, The Policy Paper Series, Vol. 2, Issue 1, Majority Staff Report, January 17, 2013. *American Taxpayer Investment, Foreign Corporation Benefit: Foreign Corporations Have Received Approximately One-Quarter of $16 Billion Spent on "Section 1603" Renewable Energy Stimulus Program*. Available at: http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/ files/analysis/20130117foreigninvestment.pdf.

INCREASING WIND CAPACITY COSTS AMERICAN JOBS

Additional major flaws further distort and inflate the Report's job loss numbers. The analysis narrowly focuses on wind industry jobs without considering jobs from other electricity generation technologies.[19] Wind generation is only one technology used to supply electricity to the nation. The Report ignores the complex and highly interdependent aspects of the electricity industry.[20] The electric power industry primarily adds new capacity to meet growing demand or to replace older, less efficient, and more costly generation. Therefore, it is not reasonable or legitimate to attempt to estimate the PTC's impact on jobs without analyzing the jobs related to alternative generation options.

Furthermore, using energy policy to create jobs is inefficient and often embraces major conflicting economic objectives. Rather, increased productivity and reliability and the effect of generation capacity costs on consumers are much more important considerations.

Nonetheless, in purporting to assess the jobs impact, the Report's focus should have been the U.S. economy and jobs, not just wind jobs. The Report's one-sided, incomplete analysis unreasonably fails to consider how a PTC extension would reduce other interdependent electricity generation sectors. Credible numbers require unbiased and complete analysis that considers and measures every interdependent segment of the electric power industry and nets any partial losses in one segment against any gains in others.

Notably, in an article published in *Public Utilities Fortnightly* in May 2010, Navigant reported that wind produces fewer operating jobs than other types of generating capacity.[21] As restated below in Table 1, this analysis compared the direct, local, essentially permanent, operating jobs for different types of installed electricity generation on a capacity basis.

TABLE 1

LOCAL DIRECT OPERATING JOBS

TECHNOLOGY	AVERAGE SIZE (MW)	DIRECT LOCAL JOBS	DIRECT LOCAL JOBS NORMALIZED FOR 1,000 MW
NUCLEAR	1,000	504	504
COAL	1,000	187	187
HYDRO >500 MW	1,375	156	113
HYDRO PUMPED STORAGE	890	85	96
HYDRO >20 MW	450	86	191
CSP	100	47	470
COMBINED CYCLE	630	34	54
PV	10	11	1100
MICRO HYDRO <20MW	10	5	500
WIND	75	4	53

SOURCE: HARKER, DONALD AND PETER HANS HIRSCHBOECK.
"GREEN JOB REALITIES: QUANTIFYING THE ECONOMIC BENEFITS OF GENERATION ALTERNATIVES"
FIGURE 2, PAGE 32, PUBLIC UTILITY FORTNIGHTLY, MAY 2010

Navigant's vetted *PUF* paper demonstrates that all other generating alternatives considered would have more direct local jobs than wind generation per MW of installed capacity.

Table 2 shows the estimated direct—as well as the combined direct, indirect, and induced—manufacturing and construction jobs for three different generating sources (coal, natural gas, and wind) based on the models that Navigant used. These estimates are shown in Appendix A and were based on coal, natural gas, and wind generation JEDI/IMPLAN analyses in major wind states (California, Illinois, Iowa, Pennsylvania, and Texas).

Table 2 shows that a 500 MW wind generation plant would add 250 direct up-front construction and manufacturing jobs, or 10,100 up-front direct construction and manufacturing jobs for 20,200 MWs. The corresponding upfront jobs for natural gas and coal are 1,821 jobs per 500 MW of additional capacity, or 73,589 jobs assuming 20,200 MWs of needed capacity. Despite the previous criticisms of Navigant's methods and assumptions, it is important to understand that correctly using Navigant's JEDI/IMPLAN method to estimate the jobs related to additional installed generating capacity demonstrates that other generation types would produce about 63,500 more direct operating, manufacturing, and construction jobs for 20,200 MWs of capacity than an "assumed" 20,200 MWs of wind would. (Note: This calculation is based on treating wind capacity and fossil fuel capacity as producing the same amount of electricity per unit of capacity. Of course, this is not the case, given that wind power generates a lot less electricity than fossil fuel generating technologies for the same amount of capacity, due to its intermittency.)

Under any circumstances, however, using energy policy to create jobs is inefficient, and is even worse when policy attempts to pick the "winners" as it does with the PTC. Rather than continuing to subsidize wind with the expensive PTC, if additional generation resources are needed the more economic approach would be for providers to invest to extend the life of nuclear and hydroelectric facilities, reduce pollution at coal-fired units, and build conventional generation.

The Congressional Joint Committee on Taxation, for example, has estimated that the cost of a one-year PTC extension is $12.1 billion.[22] Thus, even accepting the Report's grossly inflated number of 37,000 wind jobs, the cost to the American taxpayers would be $12.1 billion divided by 37,000, or about $327,000 per job.[23] But the Report's job numbers are vastly overstated. Therefore, the actual wind-related job cost would be far greater. For example, using Navigant's claim of 20,200

TABLE 2

JEDI TOTAL JOBS IN MANUFACTURING AND CONSTRUCTION FOR DIRECT, INDIRECT, AND INDUCED CATEGORIES BASED ON 500 MWs OF INSTALLED CAPACITY

	COAL		NATURAL GAS		WIND	
	DIRECT CONSTRUCTION & MANUFACTURING	DIRECT, INDIRECT, AND INDUCED CONSTRUCTION & MANUFACTURING	DIRECT CONSTRUCTION & MANUFACTURING	DIRECT, INDIRECT, AND INDUCED CONSTRUCTION & MANUFACTURING	DIRECT CONSTRUCTION & MANUFACTURING	DIRECT, INDIRECT, AND INDUCED CONSTRUCTION & MANUFACTURING
CALIFORNIA	2,732	5,104	607	1,566	249	1,954
TEXAS	3,101	5,368	705	1,621	252	2,038
IOWA	3,395	5,450	753	1,621	258	2,073
ILLINOIS	2,688	5,054	632	1,581	244	2,003
PENNSYLVANIA	2,917	5,415	681	1,672	274	2,095
AVERAGE	2,967	5,278	676	1,612	250	2,033

MWs less wind generation without the PTC would mean an average of about 5,050 MWs per year difference over the 2013–2016 period. The JEDI/IMPLAN method shows 250 direct up-front manufacturing and construction wind-related jobs per 500 MWs, which would mean 2,525 up-front direct jobs for 5,050 MWs per year. Therefore, the cost for a one-year PTC extension could be as much as a staggering $4,792,079 per direct up-front job added ($12.1 billion ÷ 2,525 jobs).[24]

19 Another important point about job creation is that the PTC is not "free." Navigant implicitly assumes that the PTC does not have a fiscal impact and has no effect on job creation. The Joint Tax Commission estimates the fiscal impact of the PTC is $12.1 billion for a one-year extension. The money used to subsidize wind will eventually be withdrawn from the economy and cost jobs. While a comprehensive analysis of the job effects of the PTC's impact on the Treasury is outside the scope of this paper, they should not be ignored.

20 A National Renewable Energy Laboratory (NREL) report that utilized JEDI to model jobs created by wind capacity installation reported that, between 2009 and 2011, wind and solar projects created between 52,000 and 75,000 direct and indirect jobs during the construction phase and created between 5,100 and 5,500 direct and indirect jobs per year on an ongoing basis. However, NREL also admitted that, when existing jobs were exempted from the tally, only 770 direct jobs were attributable to large wind projects. Further, the NREL report admitted that its results were gross, rather than net estimates, and did not account for displacement of jobs or economic activity related to changes in existing power plants. *See*, Daniel Steinberg, Gian Porro, and Marshall Goldberg, *Preliminary Analysis of the Jobs and Economic Impacts of Renewable Energy Projects Supported by the §1603 Treasury Grant Program*, April 2012. Available at: http://www.nrel.gov/docs/fy12osti/52739.pdf.

21 *See*, Harker and Hirschboeck, *Green Job Realities – Quantifying the Economic Benefits of Generation Alternatives*, http://www.fortnightly.com/fortnightly/2010/05/green-job-realities

22 See footnote 4, page iii.

23 See David E. Dismukes, *Removing Big Wind's "Training Wheels": The Case For Ending the Federal Production Tax Credit* (American Energy Alliance, November, 1, 2012). Available at: http://www.americanenergyalliance.org/ wp-content/uploads/2012/10/Dismukes-Removing-Big-Winds-Training-Wheels.pdf

24 Adding operating jobs at 53 jobs per 1,000 MWs of wind would mean about 268 jobs, which would reduce the cost per job added by less than 11%.

CONCLUSIONS

Using energy policy to create jobs is never cost effective and is especially bad policy when used to pick "winners" by providing extraordinarily expensive subsidies like the PTC. Moreover, under any circumstances, the Report's wind capacity and job loss numbers have no credibility and should not be relied on to support any further extensions of the PTC. The Report's numerous calculation errors included:

- Using biased, self-serving industry forecasts and estimates, which created "lost" wind MWs estimates that are between 20% and 55% higher than impartial government wind capacity forecasts.
- Incorrectly using the JEDI model, which alone inflated job losses by at least 100% in the key states that were reviewed. Incorrectly applying the IMPLAN model using questionable multipliers, which inflated job losses by at least another 72%.
- Failing to consider other generating technologies that have greater job gains than wind per unit of capacity.

Given these numerous flaws the Report's job loss numbers are meaningless and provide no support for extending the PTC. Rather, extending the PTC will unnecessarily cost taxpayers billions of dollars and will not create any net American jobs. To the contrary, extending the PTC will reduce, not increase, American jobs.