The Declining Appetite for the Wind PTC

Highlights

- Not all tax breaks last forever. The ethanol tax credit was terminated despite the semblance of a gigantic lobby behind it. The same could be happening with the production tax credit (PTC) for wind energy.

- Wind and ethanol have a lot in common. They were both at peak popularity when they were much smaller. When times have changed, there is resistance, first, to the tax credit on pay-for grounds. But then, the sheer scale of the program creates externalities. These can be political game-changers in time.

- In this note, we take a preliminary stab at sizing market externalities that could reduce support for the tax credit. Twenty years ago, they were negligible. Today, they could be material—at a time when the basic utility business model is under threat due to low power prices, flat demand, and disruptive technologies.

Discussion

Congress likes to repeat itself, until it doesn’t. We have been watching the current debate on the Production Tax Credit (PTC) for wind energy with history in mind. There comes a time when subsidies which are popular to start with become less popular as conditions change.

The wind PTC may be reaching that point—not just because some in Congress are losing patience with the so-called tax extenders, but also because fundamental market conditions are putting the traditional utility model under stress.

Extenders Fatigue

The Senate Finance Committee last week (April 3) marked up a tax extenders package that includes a two-year extension of the wind PTC for calendar years 2014 and 2015, but the package faces an uncertain outlook on the Senate floor and stiff resistance in the Republican-controlled House. (See full details here.) Part of the problem is extenders fatigue. This package marks the fifteenth time that Congress has taken up an extenders bill. Fifteen times is just too many.

Finance Committee Chairman Ron Wyden (D-Ore.) said so himself, and he named the bill the Expiring Provisions Improvement Reform and Efficiency (EXPRISE) Act deliberately to underscore his view that this should be the last time ever. The next time around, Wyden says, there should be fundamental tax reform. Some of the extenders should be made permanent, he believes.
and the rest should go away.

Of these fifty-five extenders, we estimate that only six to eight are core provisions of the tax code. (See our thoughts [here](#).) Others might count a little differently. But there is wide agreement that the majority of extenders are special interest handouts, the pet political projects of a few influential members of Congress, or simply too trivial to have any impact on problems they supposedly address.

More and more, the optics of doing an another extenders package without culling a great many of them are challenging to members of Congress whose Tea Party-influenced constituencies chafe at business as usual. The Senate Finance bill terminates only two of 55—while actually expanding tax breaks for the TV and movie industry, among others.

Cutting only two extenders is not nearly enough for a great many, if not the majority of House Republicans. It is also not nearly enough for many Senators, in our view, including possibly Senate Minority Leader Mitch McConnell (R-Ky.), who is facing a Tea Party primary challenge even as we write. Thus, irrespective of its merits, the wind PTC is not a sure bet for extension. It is one of more than four dozen items on a list that is already objectionable for being too long—and this year there is no fiscal cliff that could force the House to accept the whole list as proposed by the Senate.

House Ways & Means Committee Chairman David Camp (R-Mich.) holds his first hearing on tax extenders on April 8. He will begin by accentuating the positive and highlighting two tax breaks he would like to keep: Sec. 179 small business depreciation and the R&D tax credit. Camp says that he will probably hold hearings on which extenders should be permanent through the spring and into the summer. He hasn’t said when he would do an extenders proposal himself, but our guess is that he will wait until after the fall elections. (The Joint Committee on Taxation details the extenders Camp wants to keep [here](#).)

One recent test of House Republican sentiment toward the PTC is a recent bipartisan letter organized by Reps. Steve King (R-Iowa) and Dave Loebsack (D-Iowa) and signed by 118 House members, of whom only six were Republicans. We think the PTC is most endangered if Republicans win a Senate majority in the fall.

The World is Changing

A problem more fundamental than extenders fatigue is that electricity markets have changed since the PTC was first enacted more than 20 years ago in the Energy Policy Act (EPACT) of 1992. At the time, wind energy production was not even a rounding error. Now it is a major factor. The regulated utility business model was also much more robust than it is now. Today, it is hard to say there is any one utility business model; it is more like a collection of models, but all are challenged to some degree. The result, as we will see, is more political resistance to expansion and extension of the PTC than existed before.
We recall writing in a report long ago—so long we can’t find it now, but roughly 2006 or 2007—that “the wind PTC has no natural enemies.” We confidently predicted at the time that it would be extended for what then would have been the fourth or fifth time. It has been extended a total of seven times to date, most recently in the American Taxpayer Relief Act of 2012.

Our investor clients have become used to the idea that all extenders are extended eventually, and that enacting the extension is purely a matter of routine, in which gridlock on unrelated topics is the only source of uncertainty and delay. That has been a correct view in past years.

But we are writing now in part to highlight the changed outlook.

**Once Ethanol Looked Untouchable**

Today we see the wind PTC following the same political trajectory as the ethanol mandate and the ethanol blenders’ tax credit before it. The blenders’ tax credit and the ethanol mandate—the Renewable Fuel Standard (RFS, and RFS-2) were initially popular as a way of supporting the American farm community — specifically the corn growers — while placing minimal burdens on others. But opposition did grow over time.

The first sign of trouble was finding pay-fors for the blenders’ tax credit, once pay-fors for anything became acutely contentious in Washington’s budget crunch.

After a Congressional debate which verged on a consensus that the blenders’ tax credit should be terminated and phased out, the tax credit was surprisingly extended intact one last time — unpaid-for if we recall correctly — before it finally did terminate at year-end 2011. Having witnessed that spectacle, we see the same sense of fin-de-siecle (the end of an era) in today’s PTC debate.

In fact, ethanol no longer needed the blenders’ tax credit because it had the strong support of a mandate (an implicit subsidy) behind it. But as ethanol production ramped steadily to the 13 billion gallons per year mark, there did arise a political coalition of other agricultural interests who saw the rising price of corn as detrimental to their interests. There were also secular changes. Americans were driving less, and using more fuel-efficient cars, so gasoline consumption was going down, and the market was unable to absorb ethanol in that quantity.

A sudden rise in the price of RINs put Congress on edge of revisiting the Energy Independence and Security Act of 2007 (EISA), which created RFS-2, and so the EPA stepped in on its own to cut and freeze the ethanol mandate before Congress acted. Otherwise, EPA worried, Congress might cut not just the conventional ethanol mandate but the advanced biofuel mandate which is a top priority for EPA.
Headwinds for the PTC

The ethanol mandate has not gone away, but it has reached a point where externalities and changing market circumstances forced a halt and a review. We think that something similar may occur with the wind PTC.

The PTC was first established in 1992. It has continued, as noted, with seven extensions and four lapses since then. But in the meantime, the world has changed around it.

The traditional utility business model is seeing challenges such as never before. Demand growth is flat or near-flat as far as the eye can see. During the recession of 2008, demand actually declined. Cheap natural gas keeps power prices low. In some markets, power prices are so chronically low they don't allow cost recovery for existing generation assets, let alone new build. Meanwhile, new energy efficiency technologies are being deployed. The cost of solar photovoltaic is dropping so rapidly that it will soon be cheap enough to displace utility power in a distributed generation mode on a widespread basis. In some regions this is happening on a small scale already.

Headwinds for the utility business model translate into headwinds for wind power development via the PTC if utilities no longer have the financial wherewithal or access to the rate base to support it.

The utility industry lobbied hard for eligibility to receive the PTC, which they won in the 2008 extension of the law. Since then, Exelon has become the highest-profile company to oppose it, and companies which have been historically opposed to it, such as Entergy and PPL, remain opposed.

Our sense from monitoring lobbying activity is that overall, active support from the utility industry has declined as utilities that might be interested in wind generation have either met their state mandates or have come close enough that their state utility commissions will not allow them to build more.

Meanwhile, the active opposition has found a ready audience among Tea Party-influenced Republicans in the House of Representatives.

Who Really Pays?

Exelon argues that the PTC creates occasional negative power prices in wind-rich parts of the country that distort wholesale markets by forcing prices lower and requiring baseload power producers to cycle their plants in off peak hours, which is costly as well. Supporters of the PTC argue that with most power purchases taking place in the day ahead markets, the negative prices should not matter and in fact are a boon to consumers. For highlights of the controversy, see here, here, and here (detailed links also in the resources section.)

Our view is that spot prices do matter, and that any study of why market-clearing prices for power in organized markets across the United States are possibly too low to allow generators to recover costs has to include careful attention to the spot market.
However, here we are trying to do something a little different, which is to look at how levelized costs of energy for a system operator or rate payer differ from those of a project developer who is incented by the PTC. Electricity markets normally assume socialized costs to a considerable degree. The question to address is when do socialized costs for one generation mode become so high that they are disproportionate to socialized costs for other modes, in which case cost-shifting is likely to become a political issue.

Wind Economics

The positive story for wind is well-known. Wind technology has been advancing rapidly. The cost per megawatt hour of electricity generated by the most efficient wind turbines will soon achieve parity with natural gas. The largest new wind turbines, which can operate in more windy conditions, have a potential capacity factor approaching 50%. Thus wind has technology and economics moving in its favor.

The economics of the PTC are also straightforward. Investors fund wind power projects when the price of power, plus the PTC, plus additional tax benefits that may be available (such as bonus depreciation) is higher than the sum of capital costs plus operation and maintenance (O&M) expenses.

A rate payer, a system operator, or a state public utility commissioner would be looking at wind power from a levelized cost of energy perspective (LCOE). We take a slightly more expansive view of LCOE than does EIA in its estimates. EIA includes transmission costs, but we would also include cost of backup power, cycling (that is, the cost of ramping dispatchable power up and down as wind rolls on and off the grid), and a discount factor for off-peak pricing (that is, project economics should reflect off-peak production).

Here we propose a simple case study to see how costs would be distributed in a hypothetical energy-only market similar to ERCOT (in fact, we used ERCOT data for price-dependent elements).

It is important to note that most power — as much as 95% in ERCOT — is sold in long-term bilateral contracts, and thus taking the ERCOT hourly clearing price as a proxy for the true market price can be misleading on one level, which is a point made in the literature we cite.

On the other hand, the ERCOT clearing price is public data and ultimately drive the bilateral price as well. We think it is adequate for our purposes, which is not an economic analysis of power plants but an effort to put some order of magnitude on the cost shifting that occurs in the scenarios we study.

In the 2013 Annual Energy Outlook, EIA estimates the LCOE for wind energy to vary by region, ranging from $73.50 to $99.90 per MWh, with capacity factors ranging from 30% to 39% and assumptions for capital costs, transmission costs, and other costs not specifically broken out by region. The comparable low, medium, and high regional numbers for combined cycle gas (not necessarily the same regions) were $62.50, $67.10, and $78.20 per MWh.

We constructed low-cost, base, and high-cost scenarios as follows:
- We took low, medium and high installed capital cost estimates from a 2012 DOE National Renewable Energy Laboratory (NREL) study on wind project costs, with our low estimate coming from the low end of their most recent (2011) observed cost range, likewise with our high estimate.

- We used EIA data on regional wind generation and capacity from the 2013 Annual Energy Outlook to estimate capacity factors across regions of the country and derive low, medium and high capacity factor scenarios.

- To estimate the additional transmission capital investment cost, we used NREL’s national median cost of new transmission per kilowatt of new wind power derived from a review of forty transmission planning studies around the country.

- We used an NREL estimate of cycling costs.

- To account for the off peak pricing discount, we looked at the weighted average hourly price received by wind power operators in ERCOT versus the weighted average hourly price received by gas plants operating above a market heat rate of 8.0 mmBtu/MWh.

On the whole, our findings are consistent with EIA’s LCOE figures, particularly in the low-cost and base scenarios.

- In our low-cost scenario, we estimate capital costs plus O&M to be $40 per MWh. This translates into $24 per MWh with the PTC. Our separate breakout of socialized costs comes to $34 per MWh. Total LCOE allowing for the PTC comes to $58 per MWh.

- In our base cost scenario, we estimate capital costs plus O&M to be $79 per MWh. This translates into $63 per MWh with the PTC. Our separate breakout of socialized costs comes to $39 per MWh. Total LCOE allowing for the PTC comes to $102 per MWh.

- In our high cost scenario, we estimate capital costs plus O&M to be $133 per MWh. This translates into $117 per MWh with the PTC. Adding our separate breakout of socialized costs ($42), we get $159 per MWh.

Details and assumptions are further specified on our slides and in Exhibit 1 below.

In general, we find that in the low-cost scenario, wind is a competitive and attractive alternative, particularly from the developer standpoint when the PTC is included. In the base cost scenario, wind remains competitive at the margin, but socialized costs show a gap between developer and system-wide costs opening. In the high cost scenario, this gap opens still further.

The difference between peak and off peak pricing appears to be substantial and yet is not transparent in the market. To the extent wind projects require
peak pricing in a power purchase agreement (PPA) to be financed, the utility or load-serving entity may be carrying the difference. PPA pricing is higher than the market clearing price in this example. We do not model the extent to which utilities are required to purchase a set number of megawatt hours to meet a Renewable Portfolio Standard (RPS) goal.

While our numbers are more of a thought experiment than an empirical study, they do seem large enough to suggest that the PTC-driven externalities can be a material factor in power markets. In past times, these might have been sustainable, but in today’s conditions, with utilities under stress, the margin of error is smaller. We can see how state regulators would be indifferent, given the total costs they face, and how baseload operators, seeking to maintain generation assets in flat to declining markets, could be opposed.

Additional Resources

“With PTC extension facing political headwinds, industry seeks to rebut critics’ attacks” Governors’ Wind Energy Coalition via E&E Publishing, March 28, 2014

“Why Exelon is Lobbying Against the Production Tax Credit” Center for American Progress, May 21, 2013


“Wind Power Helps to Lower Electricity Prices” Center for American Progress, October 10, 2012

“Negative power prices due to wind power’s subsidy” Michael Giberson, September 12, 2012

“Negative Electricity Prices and the Production Tax Credit: Why wind producers can pay us to take their power -- and why that is a bad thing” The Northbridge Group, September 10, 2012, posted by the New York Times

Additional Research

CAT, Tax: Extenders Highlight Bonus Dep Next Week, March 30, 2014
1. Scenarios assume 21%, 25%, and 38% capacity factor for low, base, and high cost scenario, resulting in 3329, 2190, and 1840 MWh of annual production per 1 MW of capacity, respectively; Model assumes 8% discount rate, tax rate of 35%, and asset lifetime of 20 years.

2. Average Real-time power price is average of real-time hourly clearing price in ERCOT from 2009-2013.

3. Capital cost is $1,500/kw, $2,000/kw, and $3,000/kw of capacity, net of depreciation tax shield, using 5-year MACRS depreciation schedule. Capital costs are from range of costs included in February 2012 DOE NREL study of installed wind project capital cost available at http://emp.lbl.gov/sites/all/files/wind-energy-costs-2-2012_0.pdf

4. O&M is estimated at $28,000/year fixed cost.

5. “Off-Peak Pricing Discount” is derived from ERCOT and Platts data on hourly wind generation and real-time price from 2009-2013. $23.97 is the difference between the weighted average price received by wind generation operating only above a market heat rate of 8.0. Discount represents revenues foregone by wind generator.

6. Cycling cost of $.87/MWh is middle of $.47 - $1.28/MWh range of additional cycling costs estimated in the National Renewable Energy Laboratory's September 2013 “Western Wind and Solar Integration Study Phase 2”, available at http://www.nrel.gov/docs/fy13osti/55588.pdf. Study assumes higher penetration of wind resources than currently exists; actual additional cycling costs may be negligible or greater than $.87 figure.

7. Figure is derived from the median of the DOE NREL's review of transmission planning studies in February 2009, available at http://emp.lbl.gov/sites/all/files/REPORT%20bnn-1471e.pdf. Figure results from treating median transmission project capital cost of $300/kw as an initial investment cost. Actual transmission costs could range from $.05/kwh to $.79/kwh.

8. PTC subsidy assumes the PTC lasts for 10 years over life of plant at a flat rate of $23/MWh in each production year.
Analyst Certification
The following analysts hereby certify (1) that their views about any and all of the subject companies and securities discussed in this report are accurately expressed and (2) that no part of their compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed in this report: James Lucier, Robert Kaminski, Tristan Berne, Alan McCormick

Important Disclosures
This publication is for private circulation and distribution in its entirety; it is provided to you for information purposes only. This is not an offer to buy or sell or the solicitation of an offer to buy or sell any security/instrument or to participate in any particular trading strategy. Capital Alpha Partners, LLC makes every effort to use reliable, comprehensive information, but we do not represent or warrant that it is accurate or complete. The views in this publication are those of Capital Alpha Partners, LLC and are subject to change without notice. Capital Alpha Partners, LLC has no obligation to update its opinions or the information in this publication. Neither Capital Alpha Partners, LLC, nor any respective officers, directors, partners, employees, or affiliates accepts any liability whatsoever for any direct or consequential loss arising from any use of this publication or its contents. Analysts may own securities of the issuers discussed herein.

© Copyright Capital Alpha Partners, LLC (2014). All rights reserved. No part of this publication may be reproduced, sold, or redistributed without the prior written permission of Capital Alpha Partners, LLC.