

# United States renewable energy attractiveness indices



## US highlights

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### All renewables index

With the results of the first Regional Greenhouse Gas Initiative auction behind us (\$3.07 per ton of CO<sub>2</sub>), we began incorporating the cost of carbon into our power offtake analyses both for the 10-state Regional Greenhouse Gas Initiative (RGGI) and the other regional initiatives currently in development, such as the Western Climate Initiative and the Midwestern Regional Greenhouse Gas Reduction Accord (discounted to account for their inherent uncertainty). The Regional Greenhouse Gas Initiative will impact the 10 member states differently based upon their current electricity generating mix. New York, the state that is expected to see the highest electricity price increase due to RGGI, saw its score in the all renewables index jump four points, causing it to rise from sixth in the second quarter to a tie for second this quarter. Another rising star was Kansas (up three points and seven places), which participates in the Midwestern Regional Greenhouse Reduction Accord. A number of states that are not part of a greenhouse gas initiative saw their ranking fall – notably, Oklahoma (from 12th to 15th) and Nevada (from 20th to 25th).

### Tax equity market update: has the credit crunch ruined our party?

The tax equity market had a tough quarter. Some investors have left the market and yields have increased, leaving many developers holding the bag. In this article, we examine historical tax equity yields, our expectations for future yield requirements for the tax equity market and ways in which the renewable industry can work towards lowering the cost of tax equity.

### Webcast

Ernst & Young LLP will hold a webcast to cover the Q3 2008 United States renewable energy attractiveness indices on 17 December 2008 at 11 a.m. EST. The webcast will take a deeper look at how the credit crunch has impacted the financing of renewable energy companies and their projects. In addition, we will cover the important events highlighted in the Q3 2008 indices, along with any topical events.

# Overview of indices

The main indices (all renewables, long-term wind and long-term solar) are referred to here as the “long-term indices.” The long-term indices are forward-looking and thus present a long-term outlook of the renewable energy industry. Thus, a state that exhibits positive attributes (such as unexploited wind resource, attractive power pricing or an attractive tax climate) will score highly even if that state has little current installed capacity. Readers should refer to the guidance notes set out on page 18.

## All renewables index

This index provides an overall score for all renewable energy technologies. It combines individual technology indices as follows:

- ▶ Long-term wind index – 70%
- ▶ Long-term solar index – 15% (comprising the small-scale index and the large-scale index)
- ▶ Biomass index – 10%
- ▶ Geothermal index – 5%

## Individual technology indices

These indices are derived from scoring:

- ▶ Technology-specific parameters (the technology factors) – accounting for 65%
- ▶ General state-specific parameters (the renewables infrastructure index) – 35%

## Renewables infrastructure index

An assessment by state of the general regulatory infrastructure for renewable energy. On a weighted basis, the index considers:

- ▶ Strength of renewable portfolio standard (RPS) – 29%
- ▶ Planning and grid connection issues – 57%
- ▶ Access to finance – 14%

## Technology factors

These provide resource-specific assessments for each state. Each of the technology indices considers, on a weighted basis, the following:

- ▶ Power offtake attractiveness – 25%
- ▶ Tax climate – 8%
- ▶ Grant/soft loan availability – 8%
- ▶ Market growth potential – 25%
- ▶ Current installed base – 8%
- ▶ Resource quality – 18%
- ▶ Project size – 8%

## Long-term solar index

These indices are derived from scoring:

- ▶ The large-scale (utility scale projects) solar index – 67%
- ▶ The small-scale (non-utility scale or behind-the-meter projects) solar index – 33%

## Comments and suggestions

We welcome your comments or suggestions on any aspect of the indices. Please contact Michael Bernier or Roshni Patel with any comments and/or suggestions. For companies interested in comparability information for a select number of states or analyses tied to specific corporate objectives, please contact:

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## Glossary

AWEA	American Wind Energy Association	PPA	Power Purchase Agreement	IRR	Internal Rate of Return
MWh	Megawatt Hour (1,000,000 WH)	GW	Gigawatt (1,000 MW)	RPS	Renewable Portfolio Standard
CHP	Combined Heat and Power	PTC	Production Tax Credit	M&A	Mergers and Acquisitions
kWh	Kilowatt Hour (1,000 WH)	IPO	Initial Public Offering	S-REC	Solar Renewable Energy Certificate
DOE	Department of Energy	PV	Photovoltaic	MW	Megawatt (1,000 kW)
PE	Private Equity	ITC	Investment Tax Credit	WREGIS	Western Renewable Energy Generation Information System
GC	Green Certificate	REC	Renewable Energy Certificates		

# US highlights

## All renewables index

With the results of the first Regional Greenhouse Gas Initiative auction behind us (\$3.07 per ton of CO<sub>2</sub>) we began incorporating the cost of carbon into our power offtake attractiveness analyses both for the 10-state Regional Greenhouse Gas Initiative (RGGI) and the other regional initiatives in development such as the Western Climate Initiative and the Midwestern Regional Greenhouse Gas Reduction Accord (discounted to account for their inherent uncertainty). The Regional Greenhouse Gas Initiative will impact the 10 member-states differently based upon their current electricity generating mix. New York, the state that is expected to see the highest electricity price increase from the RGGI, saw its score in the all renewables index jump four points causing it to rise from tied for sixth in the second quarter to tied for second this quarter. Another state showing significant movement was Kansas (up three points and seven places) which participates in the Midwestern Regional Greenhouse Reduction Accord. A number of states that are not part of a greenhouse gas initiative saw their ranking fall, notably, Oklahoma (from 12th to 15th) and Nevada (from 20th to 25th).

## Long-term wind index

Minnesota and Pennsylvania joined the top 10 in the long-term wind index. Minnesota tied for 10th, having increased its power offtake attractiveness score due to its participation in the Midwestern Regional Greenhouse Gas Reduction Accord. Pennsylvania managed to increase its ranking despite only being an observer in the Regional Greenhouse Gas Initiative (no consideration given in the power offtake attractiveness score) as they installed one new wind farm this quarter and have four projects (approximately 270 MWs) currently under construction.

## Long-term solar index

This quarter, Oregon fell out of the top 10, as Oregon continues to struggle with demand issues for the monetization of their Business Energy Tax Credit. Replacing Oregon was New York and Massachusetts, which joined the top 10 (tied for 10th) for the first time, due to higher expected electricity prices, which should drive demand for distributed solar generation.

## Geothermal index

This quarter, California retained the top spot in the geothermal index. Nevada saw its score decrease, resulting in a tie for second due to its lack of participation in a greenhouse gas program.

## Biomass index

This quarter, we saw Maine's score increase (due to their participation in the Regional Greenhouse Gas Initiative) tying with California for the top spot.

## Issue content

This issue of the *United States renewable energy attractiveness indices* contains three articles:

### Tax equity market update: has the credit crunch ruined our party? – page 3

The tax equity market is in the midst of a challenging period. Some investors have left the market and yields have increased, leaving many developers with an equity gap in their project finance plans. In this article, we examine at historical tax equity yields, our expectations for future yields in the tax equity market and ways in which the renewable industry can work towards lowering the cost of tax equity.

### Legislative summary – page 14

This article summarizes the energy tax provisions of the Emergency Economic Stabilization Act of 2008, which President Bush signed into law on 3 October 2008. The article solely focuses on the technologies covered in the United States renewable energy attractiveness indices. If you have questions about other programs please do not hesitate to contact us.

### Impact of solar's AMT exemption – page 16

The most recent legislation included an exemption for AMT for Section 48 investment tax credits. In this article we look at how the exemption is an important event for the solar tax equity markets since it should increase market demand in three ways: (1) allow investors hurt by the current economic environment to continue investing, (2) allow current tax equity investors to increase their investment levels, and (3) allow investors from more volatile/cyclical industries to participate.

## Webcast

Ernst & Young LLP will hold a webcast on the Q3 2008 United States renewable energy attractiveness indices on 17 December 2008

at 11 a.m. EST. The webcast will take a deeper look at how the credit crunch is impacting the renewable energy industry, including the tax equity market. In addition, we will be covering the important events affecting the Q3 2008 indices, along with other material developments.

Participants will have the opportunity to raise issues and questions, as well as vote on key issues during the course of the webcast. Detailed information about the webcast can be found on page 17.

# The tax equity market: has the credit crunch ruined our party?

Six months ago we were particularly looking forward to the issue of this publication in which we could discuss the salutary effects of the new renewable energy legislation. We expected that we would be able to look at the promise that lay ahead for the renewable energy industry. Upon hearing that the solar industry received an eight-year extension of the ITC and the ITC will be exempt from the AMT, we would have expected to hear champagne corks popping. Instead, at a major concentrating solar industry conference on the day the extension passed, the mood was somber, compared to our expectations just six months ago.

So what happened? Venture capital and private equity financing are the oil that fires the engine of innovation, but tax equity is the spark that converts the innovations in renewable energy to commercial life. To commercialize the technological advances financed by venture capital, be they a new thin film solar technology, new solar thermal technology, new fuel cell technology, or more mature technology like wind, project finance is the critical next step. In the past month or so, companies looking to finance their projects have realized that it is either unavailable or that the cost of project finance has risen steeply.

## How did we get here?

Before we look ahead, it is helpful to look back and understand how the tax credit equity market developed. Without question banks and investment banks leveraged up their balance sheets to previously unheard-of levels, taking advantage of cheap capital. This allowed them to offer all kinds of financial products at historically low rates, including mortgages and tax equity. The tax equity market was dominated by investment banks and the financial arms of large corporations. This created an environment where wind developers saw the yields required by tax equity investors fall from 10% to 6% (and lower for a handful of transactions) over the course of three years. Many industry participants, Ernst & Young LLP included, attributed the falling tax equity yields to a maturing industry, which included a better understanding by investors of the “real” risks in a renewable energy project – not to an economic bubble that would soon pop.

Another key cause for the current issues that we face today is that the renewable energy industry has not developed a diversified base of tax equity investors, leaving its future tied to the fate of the few major tax equity investors. Until recently, the industry was over-reliant on a half-dozen or so sophisticated investors who were able to provide cheap capital. That almost all of the major wind and solar investors were, to some degree, industry insiders (e.g., a wind turbine manufacturer who is also a major wind tax equity investor,

investment banks who are also corporate investors in large wind and solar companies and also major tax equity investors) was potentially problematic, but dismissed. As a result, potential new investors were unable to get the necessary information regarding performance and other risk factors as industry information (e.g., investment performance, accuracy of wind studies, mechanical performance of turbines) was proprietary and kept confidential. This left potential new investors, who lacked industry knowledge and/or relationships with renewable energy project developers, to learn the market “on the fly”, and with an inability to price risk or structure offers properly; and thus having a high likelihood of losing bids.

## Where are we today?

A quick scan of renewable energy websites would lead you to believe we are in a dire situation. A prominent industry executive has, for example, been quoted as stating that capital for new projects has “completely dried up.” We agree that this is a challenging market but do not believe the industry should just give up. Tax equity is still available, just not available at a 6% after-tax rate-of-return for a wind project, or 7.5% after-tax for a solar project. This is not the end of project finance, rather it is the end of the cheap-capital honeymoon, which included tax equity. That said, developers projects are likely to become less profitable, or even unprofitable because of the higher cost of tax equity.

The fact of the matter is that a number of the sophisticated investors have left the market permanently (e.g., those affected by the market turmoil), a number of previous investors have stopped investing for the time being, and those remaining have both cut back their investing goals and are looking for a higher rate of return (e.g., investment banks).

This issue is compounded by the growing amount of tax credits generated as the renewable energy industry looks to achieve lofty growth targets. We estimate that the level of tax credits generated in 2011 will be nearly double the energy tax credits claimed in 2007, resulting in a compound annual growth rate of 16.7%. This means that the tax capacity for the current tax equity investor market needs to grow at 16.7% a year or that new investors need to be brought into the market to pick up the slack. It is important to recognize that nearly all of this growth is from renewable energy tax credits, as non renewable tax credit programs have volume caps (Low-Income Housing and New Markets Tax Credits) or are seeing stagnant growth (Historic Rehabilitation).

Now that tax equity is harder to come by and significantly more expensive than it was a few months ago, there are two questions on everyone's mind:

- 1) How long will this issue persist?
- 2) What will the renewable energy market look like when the problem is gone?

No sane professional would venture an opinion as to when the credit crisis will end; however, as a group with 16 years of experience in the tax equity market, we feel comfortable making predictions about what the tax equity world will look like when the crisis ends.

## Where are we going?

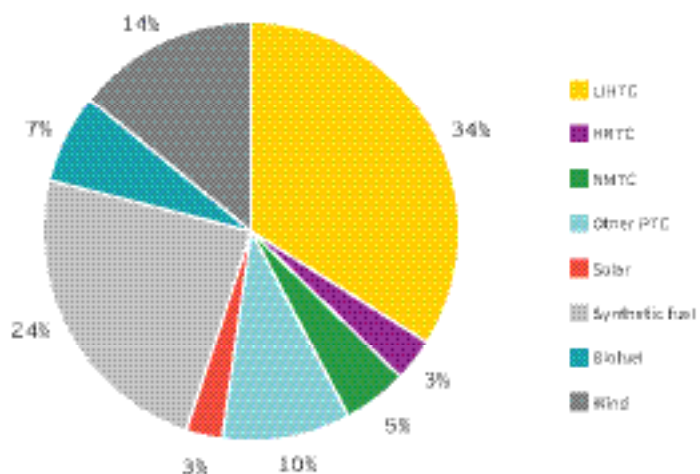
In order to predict the state of the tax equity market after the credit crisis is resolved, we need to find a proxy for the tax equity market, and understand the history of how it rebounds from previous economic downturns. For the following reasons, we are using the low-income housing tax credit market as that proxy:

1) Looking at the size of the various tax equity submarkets, the low-income housing tax credit market and the wind market are the two largest tax credit markets, making them best suited for comparability analysis. The low-income housing tax credit market has a longer track record (corporate housing credit funds date back to 1991, allowing us to see the impact of previous periods of economy contraction) and our experience has shown that low-income housing tax credit investments are more predictable (and therefore considered safer by most tax equity investors).

2) In speaking with the major tax equity investors, most have shared with us that they take into account the yields in other tax equity investments when considering investments in renewable energy tax equity. Historically, we have seen wind tax equity investments priced at a 100 to 300 basis point premium over low-income housing yields, and solar tax equity transactions have required a 250 to 400 basis point premium over low-income housing transactions.

The following analysis uses the prism of the low-income housing tax credit market and concludes with what we believe the implications are for the wind and solar markets based on these historical yield patterns.

Tax credits claimed in 2007



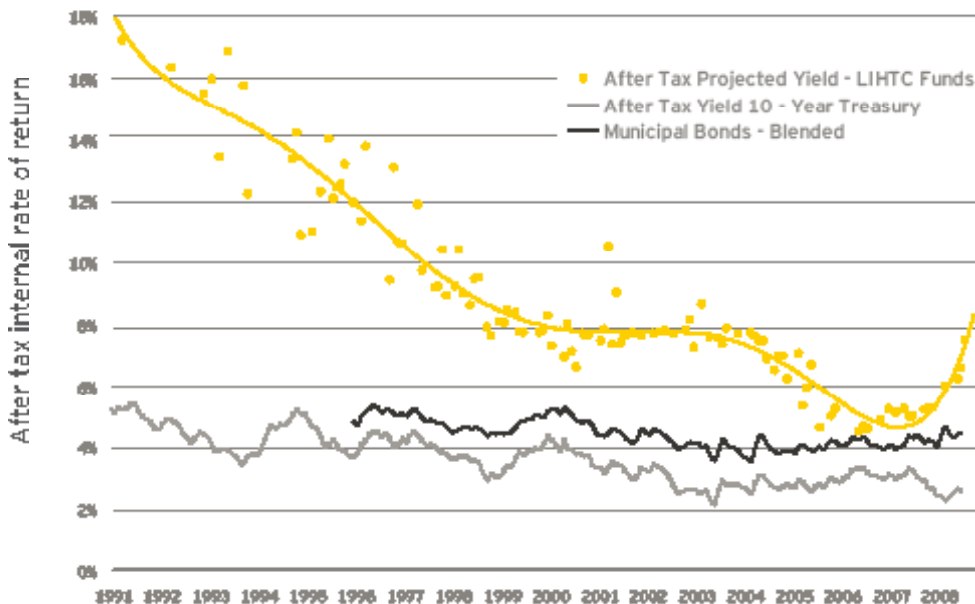
As you will note from Figure 1, the history of low-income housing tax equity market yields can roughly be divided into four periods: (1) 1991–1997 (when yields continuously fell from 18% in 1991 to 8% in 1997); (2) 1998–2005 (when yields stabilized in the 8% after-tax range); (3) 2005–2007 (when yields fell from 8% to a low of 4.25%); and (4) late 2007 through the present (when yields rose sharply, to 8% as of this writing).

Starting in 2005, the market saw the spread between after-tax US Treasury yields (10-year) and LIHTC tax equity returns fall from 500 basis points (the historical range from 1998 to 2005 with the exception of the internet bubble) to a low of 175 basis points in late 2006. It continued at 200 basis points through all of 2007 and the beginning of 2008. In the last six months we have seen the spread start to widen significantly (the most recent data point we have indicates a 575 basis point spread).

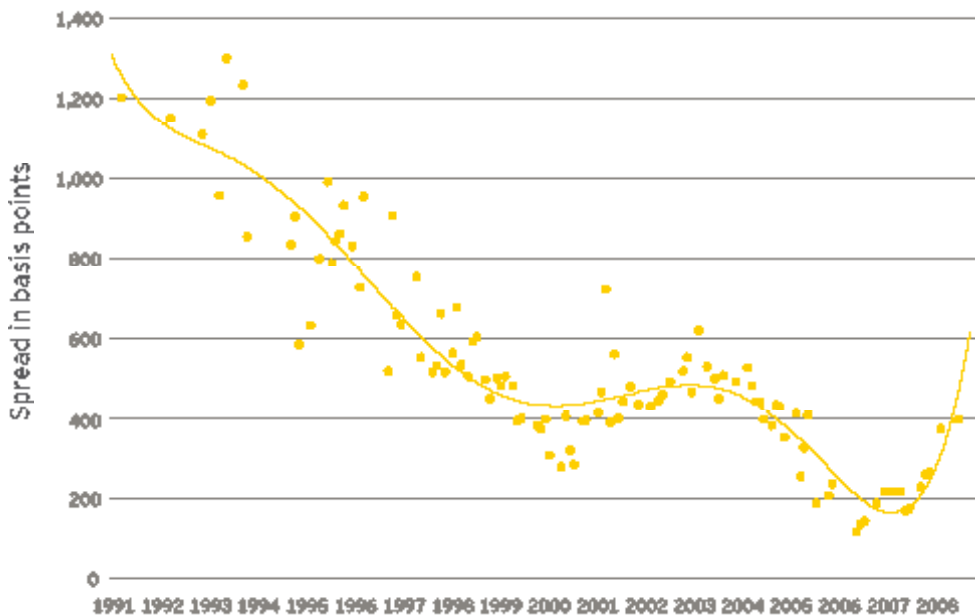
While there probably hasn't been a historical time period analogous to today, we can look at the internet bubble of 2000 to give us an idea of how the future might play out. Looking Figure 2, it is relatively easy to see the parallels in the market. In order to help us understand how the tax equity market may evolve in the coming years, it would be instructive to examine how the housing credit equity market responded to the bursting of the internet bubble.

In 1998, the spread between LIHTC yields and tax-adjusted US Treasury (10-year) obligations, assuming the investor was subject to a 35% tax rate, moved from 500 basis points to just under 300 basis points (yields for LIHTC tax equity fell from 8.00% to 6.25%) by late 2000. Shortly thereafter, the internet bubble burst and yields quickly jumped back up, bringing the spread back to 500 basis points (with yields rising to 8.00%). It is also worth remembering that it took time for the market to settle down, as indicated by the wide scatter of the transaction points (particularly in late 2001) reflected in Figure 3. The housing tax credit equity market (like the energy credit market) does not "clear" at 4:00 p.m. EST each day. Since the underlying assets require long development periods, their re-pricing takes time to take hold.

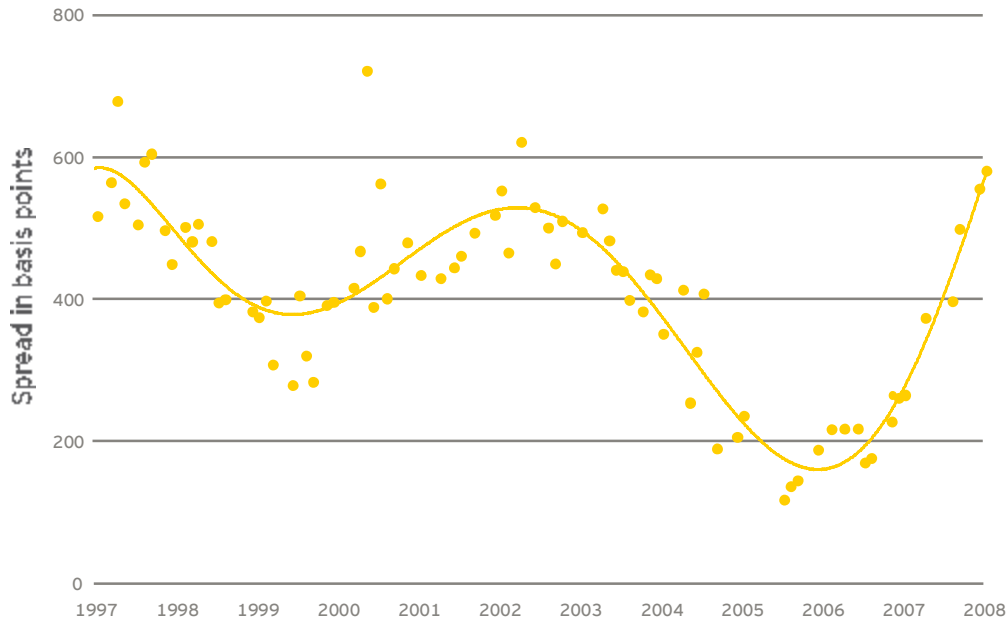
**Figure 1** Historical after-tax return for low income housing tax credit investments



**Figure 2** Spread between LIHTC yields and after-tax return on 10-year treasuries



**Figure 3 Spread between LIHTC yields and after-tax return on 10-year treasuries**



Currently, we see the spread jump dramatically, and at this point, slightly overshoot the 500-basis point historical range (as depicted in Figure 3). Given the length and depths of this bubble we expect to see a material increase in the spread until the credit crunch passes. Once the crisis passes, we expect yields to stabilize so that the spread between LIHTC and after-tax US Treasuries is closer to 500 basis points. Based on current US Treasury rates, that would result in an after-tax yield of 6.50% to 7.50%. Given the historical spreads between LIHTC and renewable energy tax equity we would expect to see an after-tax yield of 8.50% to 10.50% for wind tax equity and 9.00% to 11.50% for solar tax equity (assuming that the yield on Treasuries remains constant).

### Can the trip be made less painful?

The first and most obvious issue that occurred to us in undertaking this analysis was, "Can the spread between LIHTC and renewable energy tax equity shrink over time?" In our judgment, the answer is "yes" for proven technologies. But we feel that it will take a considerable amount of effort from the entire industry to educate potential investors and deepen the market. We believe that at least three things must happen if the spreads between LIHTC and renewable energy are to narrow: (1) it must be easier for less sophisticated investors to enter the market; (2) there must

be a dramatic increase in investor education to bring in potential new investors; and (3) the industry needs to develop and share performance data so that investors can measure risk versus reward.

Investors that have had the opportunity to look at the different tax equity markets from a potential investment perspective soon realize how much more difficult a wind or solar deal is to close. A major difference is that in the LIHTC market nearly every tax credit fund offers "free" vendor due diligence to potential investors. Ernst & Young provided vendor due diligence on over \$2B of LIHTC tax equity investments in 2007 (24% of estimated investments to date). When you combine that with the other major vendor due diligence providers, it is easily more than 65% of all housing credit equity investments made in the first 10 months of 2008. To the best of our knowledge there is no such mechanism in the marketplace for renewable energy investments. By contrast, when we have been asked to provide due diligence on potential investments, the developers (and/or their placement agents) have been unwilling to reimburse that cost. We believe that facilitating the availability of third-party independent due diligence will help less sophisticated investors become more comfortable with making renewable energy tax equity investments. It is for this reason that, in cases where Ernst & Young acts as placement agent for the developer, we provide potential investors with a report that provides the same information that would be available in a third-

party due diligence report. We feel that these efforts increase the potential investor pool and will ultimately lead to better pricing for our clients.

One of the most rewarding aspects of the renewable energy industry is the large number of conferences where individuals can come to learn about the industry, including conferences that are specialized to a single technology. However, thus far, there are no conferences tailored exclusively towards tax equity investors and their education. We believe the time has come to develop such conferences with an eye toward educating new investors – providing a forum for current and potential investors to discuss their issues and to help investors better understand the industry. Providing investors with the opportunity to learn about renewable energy in the context of those business issues vital to them (risk mitigation, GAAP results, asset monitoring, etc.) would go a long way to deepening the investor base.

## Conclusion

Unless Congress comes to the rescue (and there is some hope that this may happen), the days of 6% after-tax tax equity for wind farms and 7.50% after-tax tax equity for solar developments are gone forever. That said, the tax equity market isn't as bad as some are making it seem. The consensus view is that the next three to six months the tax equity market will be unpredictable. Looking at historical spreads between US Treasuries and other tax equity markets, along with the reaction of the tax equity market to the internet bubble, our best judgment is that over the intermediate term, yields should stabilize at something closer to 8.50% to 10.50% for wind tax equity and 9.00% to 11.50% for solar tax equity (assuming somewhat constant US Treasuries). However, the renewable energy industry has the opportunity to soften the impact of rising tax equity returns, and potentially shrink the premium renewable energy tax credit investors are demanding over other tax equity investments. The industry must: (1) make it easier for less sophisticated investors to enter the market; (2) increase tax equity investor education; and (3) develop industry information so that investors perceived risks are closer to the actual investment risks.



# Market activity Q3 2008

## Wind

Announcements regarding future projects made during this quarter represented a more scattered pattern, where some developers are cutting back while other developers are increasing their production targets, mainly due to uncertainty in the debt and equity markets.

FPL Energy announced that they are still on target to install 1,300 MWs of new capacity in 2008 with nearly 800 MWs to be completed in the fourth quarter. However, FPL Energy did announce that they were cutting back their 2009 target by over 26% (from 1,500 MWs to 1,100 MWs).

While FPL was reducing its 2009 construction target, we saw BP Wind Energy announce a joint venture with Clipper Windpower to develop a 5.050 MW wind farm in South Dakota. This announcement was made the same day Reyad Fezzani, the CEO of BP's wind and solar operations, commented that financing for wind farms had "completely dried up."

This quarter, Caithness entered into a PPA with Southern California Edison to develop a 909 MW wind farm in Oregon, which is expected to be completed in 2011 or 2012, showing confidence in their ability to raise project capital.

The credit crunch has segregated the development community into those that have access to tax equity and those who do not. Developers with access to tax equity are looking at this downturn as a chance to strengthen their standing, while those without access to tax equity are trying to survive.

On the transmission front, the story continues to improve, as Duke and AEP announced a joint venture to build 240 miles of transmission lines in Indiana, allowing electricity generated in Indiana to be transported to customers in other areas. The cost of the project is expected to be \$1B and is expected to be completed by 2014 or 2015.

## Biomass

Energy investment and development companies BayCorp Holdings Ltd., Energy Management Inc. (EMI) and Tyr Energy Inc. announced that they have jointly formed and capitalized American Renewables LLC to develop, build and operate biomass fueled, electric power generating facilities. BayCorp and EMI have contributed their interests in three biomass projects under development to American Renewables while Tyr Energy has provided development capital.

## Solar

The solar market continued to be very active in the third quarter of 2008.

Duke Energy went back to the North Carolina Utilities Commission and revised their distributed solar power project, cutting its size and investment in half. It has been speculated that this change was brought through criticism from consumer advocates and Duke's business customers. This outcome may cause concern for utilities that are looking to make similar investments in solar now that the "public utility exemption" has been lifted.

First Solar and Solar City have entered into an agreement under which First Solar will supply 100 MWs of its thin film solar modules for Solar City to use in its popular residential SolarLease program. The supply is expected to provide enough solar electricity to power 70,000 homes. As part of the deal, First Solar provided Solar City with \$25M of equity to help the company grow. Solar City currently sells solar systems in California, Arizona and Oregon, but is looking to expand into the East Coast – taking advantage of high electricity prices, which should make Solar City's residential PPA program attractive. As seen on page 11, there are currently three Northeast states in the top 10 of the long-term solar index.

After years of warnings about supply constraints and a polysilicon shortage, the solar market is suddenly dealing with the potential for oversupply. In early October, BP Solar announced it is canceling a \$100M expansion of its Maryland manufacturing facility, using the already constructed shell as office space and a warehouse instead. BP Solar cited increasingly intense competition as the reason for their decision. Also this quarter, equity analysts at Goldman Sachs downgraded First Solar and SunPower's rating, further flagging the possibility of oversupply.

## Geothermal

In the third quarter, the US Department of the Interior received \$28.2M in bids for geothermal energy developments on federal public lands in Nevada. The auction was for the lease of 35 parcels of Bureau of Land Management (BLM) land covering 105,211 acres.

A survey released on August 7 by the Geothermal Energy Association identified 103 geothermal projects under development in 13 states. If completed, these projects could add more than 4,000 MWs of capacity, more than double the current installed capacity.

# Excerpt: country attractiveness indices

This table shows the results of the all renewables index from the renewable energy country attractiveness indices Q3 2008 prepared by Ernst & Young's Renewable Energy Group based in the UK. The country attractiveness indices provide scores for national renewable energy markets, renewable energy infrastructures and their suitability for individual technologies.

## All renewables index at Q3 2008

Rank	Previous <sup>1</sup>	Country	All renewable	Wind index	Onshore wind	Offshore wind	Solar	Biomass/ other	Geothermal	Infrastructure <sup>2</sup>
1	(1)	USA <sup>3</sup>	69	70	75	55	73	62	68	67
1	(2)	Germany	68	67	66	71	73	68	55	66
3	(4)	China	63	68	71	57	48	51	51	66
4	(3)	India	63	64	70	43	62	60	44	64
5	(4)	Spain	62	64	69	49	67	56	38	69
5	(6)	UK	62	66	64	71	50	58	36	64
7	(7)	Italy	60	59	64	46	68	57	61	64
8	(8)	Canada	57	61	66	49	42	50	33	64
9	(9)	France	57	58	60	54	60	55	28	59
10	(10)	Portugal	56	58	62	45	59	48	34	62
10	(10)	Ireland	55	59	59	58	37	55	29	64
10	(10)	Greece	55	58	62	47	59	42	34	58
13	(13)	Australia	53	53	55	44	62	48	56	58
14	(14)	Sweden	51	52	52	52	43	56	34	52
15	(15)	Netherlands	49	51	51	50	48	43	23	47
16	(15)	Denmark	48	50	47	58	42	46	34	56
16	(17)	Norway	47	49	50	47	31	48	31	52
16	(17)	Belgium	47	51	50	56	36	37	28	51
19	(17)	Poland	47	51	53	45	42	36	22	45
20	(20)	Brazil	45	46	49	35	45	42	22	45
21	(22)	New Zealand	44	48	51	38	33	32	44	45
21	(20)	Japan	44	46	48	40	47	34	40	51
23	(24)	Turkey	36	38	39	34	39	28	33	37
24	(25)	Austria	36	30	40	0	53	49	35	47
25	(23)	Finland	35	33	33	35	25	53	22	34

Source: Ernst & Young LLP

<sup>1</sup> Ranking in Q1-Q2 2008, all renewables index in brackets.

<sup>2</sup> Combines with each set of technology factors to generate the individual technology indices.

<sup>3</sup> This indicates US states with renewable portfolio standards (RPS) and favorable renewable energy regimes.

## Ernst & Young LLP's Renewable Energy Group

With a dedicated 50-strong team of international advisors operating from our UK member firm, supported by a network of over 65 experienced professionals from our member firms worldwide, Ernst & Young LLP's Renewable Energy Group (the Group) helps clients to increase value from renewable energy activity. Members of the Group provide advice and services in many sectors of the renewable energy industry.

Contact: For further information on the services we provide, and for future copies of the *Renewable energy country attractiveness indices*, please contact Jonathan Johns, Andrew Perkins or Ben Warren:

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# All renewables index at Q3 2008

Rank*	State	All renewables index	Long-term wind index	Long-term solar index**	Biomass index	Geothermal index	Infrastructure index***
1 (1)	Texas	80	85	74	66	68	81
2 (2)	California	71	68	80	76	77	74
3 (3)	New Mexico	70	72	74	56	68	74
4 (8)	New York	69	72	64	65	60	57
5 (5)	Oregon	68	68	63	69	68	68
6 (4)	Colorado	67	70	65	52	65	67
6 (8)	Iowa	67	69	58	66	54	60
8 (6)	Montana	66	68	61	60	69	70
8 (6)	Washington	66	69	55	66	62	66
8 (8)	Massachusetts	66	66	64	68	67	73
11 (8)	Pennsylvania	65	67	59	62	61	70
11 (14)	Minnesota	65	67	55	67	55	62
13 (12)	New Jersey	64	65	66	56	63	73
13 (14)	Arizona	64	61	77	61	68	72
15 (16)	Maine	63	63	57	76	66	60
15 (12)	Oklahoma	63	67	56	50	57	58
17 (16)	Wisconsin	62	64	55	64	55	59
18 (19)	New Hampshire	61	61	58	68	61	53
18 (20)	Vermont	61	62	59	58	58	55
18 (20)	Illinois	61	64	53	60	53	57
18 (25)	Kansas	61	65	53	51	53	41
22 (16)	Hawaii	60	59	65	59	64	61
23 (20)	Rhode Island	59	59	60	56	60	59
23 (20)	Connecticut	59	58	63	58	59	56
25 (20)	Nevada	58	56	70	49	69	55

Source: Ernst & Young LLP

\* Ranking in prior quarter in brackets

\*\* Represents the index score for both large and small-scale solar

\*\*\* Combines with each set of technology factors to generate the individual technology indices

# Long-term indices at Q3 2008

Rank*		State	Wind index
1	(1)	Texas	85
2	(2)	New Mexico	72
2	(6)	New York	72
4	(2)	Colorado	70
5	(6)	Iowa	69
5	(4)	Washington	69
7	(4)	Montana	68
7	(6)	Oregon	68
7	(6)	California	68
10	(11)	Pennsylvania	67
10	(6)	Oklahoma	67
10	(12)	Minnesota	67

Source: Ernst & Young LLP

\* Ranking in prior quarter in brackets

In the third quarter, 4,204 MWs of new wind capacity was installed in the US. Again, Texas led the way, installing the most new capacity (just shy of 700 MWs) and the largest project (170 MWs). California continued to struggle, installing only one new wind farm with a capacity of 20 MWs. West Virginia and North Dakota, two states with comparatively low installed-capacity to date, completed large projects. West Virginia and North Dakota installed 164 MWs and 180 MWs of new capacity, respectively.

The indices, for the first time, reflect the impact of carbon for states with greenhouse gas reduction programs. States which have greenhouse gas programs are likely to see an increase in demand for wind power, as it is a non-carbon-emitting form of electricity generation. New York was the biggest winner in this quarter's indices, jumping from tied for sixth to tied for second.

Also this quarter, Pennsylvania and Minnesota re-joined the top 10. Pennsylvania and Minnesota joined the top 10 less because of their improvement and more because of Oklahoma's loss of a point for its lack of wind installations in the third quarter. In 2008, Minnesota has already installed 80 MWs of capacity while Pennsylvania has completed 30 MWs with another 272 MWs currently under construction.

Rank*		State	Solar index
1	(1)	California	80
2	(2)	Arizona	77
3	(3)	Texas	74
3	(4)	New Mexico	74
5	(6)	Nevada	70
6	(6)	New Jersey	66
7	(5)	Colorado	65
7	(8)	Hawaii	65
9	(14)	New York	64
9	(9)	Florida	64
9	(11)	Massachusetts	64

New York rose from 14th to tied for 9th in this quarter's long-term solar index, due to expected future increases in electricity pricing attributable to its participation in the Regional Greenhouse Gas Initiative. Our calculations show that New York will be the state most impacted by the program, as we expect that a price of \$3 per ton will translate to a \$0.018 increase in the retail cost per kWh of electricity. This addition to the already relatively high retail electricity prices should drive the adoption of distributed solar.

Oregon fell out of the top 10 as we have seen developers struggle to monetize Oregon's Business Energy Tax Credit. The lack of a liquid market for the state tax credits results in a high discount and provides the project with less subsidy than anticipated driving up the PPA price that developers must offer consumers.

Massachusetts joined the top 10 this quarter, as its new solar subsidies (discussed in last quarter's USAI) have driven up demand for solar equipment. Interestingly, due to the way the Massachusetts program has been designed, solar panels manufactured in the state receive a higher subsidy. This gives Evergreen Solar a competitive advantage, as it is the only manufacturer with its own manufacturing facilities in Massachusetts.

# Commentary: high-scoring states

## Texas

Ranking	Q3 2008	Q2 2008
All renewables index	1	1
Long-term wind index	1	1
Long-term solar index	3	3

This quarter, BP Wind Energy and Padoma Wind Power LLC announced full commercial operations of Phase I of the Sherbino Wind Farm in Pecos County, Texas. The first phase had a nameplate capacity of 150 MWs. The power produced from this phase will be delivered into the ERCOT transmission system and sold on the wholesale power market. The project developer reportedly has the ability to add multiple phases, allowing the wind farm to increase in size to a nameplate capacity of 750 MWs.

Texas utility Austin Energy initiated the first phase of its smart grid deployment using GE Energy's smart grid software. The project is one of the first of its kind in the nation. The software is designed to improve Austin Energy's ability to prevent outages and quickly restore power if outages occur. While many utilities have initiated smart grid initiatives with smart meters, smart grid is really a suite of products and software designed to improve the grid's overall performance. Austin Energy has chosen to start its process by implementing software solutions that will make other smart grid products, like smart meters, more impactful.

## California

Ranking	Q3 2008	Q2 2008
All renewables index	2	2
Long-term wind index	7	6
Long-term solar index	1	1

California continues to have the top spot in our Long-Term Solar Index, seeing growth in the entire solar market, utility-scale, commercial distributed and residential distributed.

San Francisco's solar incentive program has led to a quadrupling of applications for new solar installations during its first three months, most of which were in the form of residential applications. The warm reception for the program has caused nearly one-third of the funds set aside for the first year to be committed during the first three months of the program. As a result, Mayor Newsom made a push to increase the funding for the program. The program hopes to double the city's solar power generation from 5 MWs to 10 MWs by the end of next year.

California also saw the first commercial installation of a 7.2 kW concentrated photovoltaic installation in North America when SolFocus flipped the switch on an installation at California radio station KGO.

Ausra began operations of its first US concentrated solar thermal plant on 23 October 2008. The plant, located in Bakersfield, California, has 5 MWs of nameplate capacity and will be utilized to demonstrate its technology as it begins to develop a 177 MW facility in San Luis Obispo, California. It was the first solar thermal plant built in California in nearly 20 years. Also this quarter, Ausra announced that it had secured \$60M of funding as part of its latest financing round, continuing the trend of large venture capital investments in the CSP market.

Beyond solar, California continues to be a renewable energy hotbed. This quarter, Cobalt Biofuels announced plans to build a pilot plant in the San Francisco Bay Area during 2009. The plant will generate biobutanol from non food materials such as sweet sorghum and wood pulp. The announcement and closing of financing was somewhat surprising given a tough financing environment that had a number of biofuel producers canceling projects.

## New Mexico

Ranking	Q3 2008	Q2 2008
All renewables index	3	3
Long-term wind index	2	2
Long-term solar index	4	4

The New Mexico Commissioner of Public Lands announced that it is reorganizing two divisions within the State Land Office to include renewable energy and water resources.

This change has been made in hopes of increasing the development of clean energy. Currently, developers are waiting on their applications to lease 240,000 acres of trust land which could be developed. The granting of these applications should allow for New Mexico to develop significant new wind capacity. Currently only 6,800 acres of trust land are utilized for wind power.

## New York

Ranking	Q3 2008	Q2 2008
All renewables index	4	8
Long-term wind index	2	6
Long-term solar index	8	14

Our calculations show that based on the current mix of electricity generation in New York, the impact of the Regional Greenhouse Gas Initiative on retail electricity prices will be approximately \$18 per MWh. As the cost for the allowances increases, the impact on retail electricity prices will increase proportionately. This increase will make renewable energy generating assets (wind, solar, etc.) more attractive to both utilities and to potential purchasers of distributed technologies.

The higher price for brown power competition just adds to our list of reasons why we consider New York an attractive market over the next few years, which also includes its Renewable Portfolio Standard of 25% by 2013.

While the wind market is beginning to see rapid growth, we are anticipating a similar profile for the solar market as many PPA providers are targeting New England as the next growth area.

## Oregon

Ranking	Q3 2008	Q2 2008
All renewables index	5	5
Long-term wind index	7	6
Long-term solar index	11	9

Greentech Media has reported that Principle Power has been raising \$20M in funding to move forward with its plans for a 150 MW offshore wind park. Principle Power also announced a partnership with Portugal's EDP for the development of an offshore wind farm. Principle Power is also in talks with Tillamook People's Utility District about a Power Purchase Agreement. The wind farm is expected to consist of 30 five MW wind turbines off the coast of Oregon. While no offshore wind farm has started construction in the US, a number of

projects are in the planning stage, including Cape Wind along the shores of Massachusetts, Bluewater Wind which has signed a PPA but has not started construction off the coast of Delaware, and Garden State Offshore Energy, a joint venture between PSEG and Deepwater Wind, off the coast of New Jersey.

SolarWorld opened a 500 MW solar cell manufacturing facility, the largest in North America, located in Hillsboro, Oregon. The facility is expected to cost more than \$400M and employ 1,000 people.

# Legislative summary

On 3 October 2008, President Bush signed into law the Emergency Economic Stabilization Act of 2008. The new law, sometimes referred to as the “financial markets rescue plan” also contains a number of tax provisions including the Energy Improvement and Extension Act of 2008 (the Act). This article focuses solely on the technologies covered in the United States renewable energy attractiveness indices. If you have questions about other programs please do not hesitate to contact us.

## Solar

The Act: There are three major changes to the Section 48 investment tax credit (ITC) for solar energy property: (1) The credit has been extended for eight years (through 2016); (2) the so-called public utility exception has been removed; and (3) the credit can now be used to offset the AMT. The Section 25D residential energy-efficient property tax credit has also been extended for eight years and the previous \$2,000 credit limitation for individual taxpayers has been eliminated.

Analysis: It seems clear that the extension package was most favorable for the solar energy industry. The eight-year extension provides solar equipment manufacturers with a stable legislative environment in which to make decisions regarding expansion of manufacturing capacity or other infrastructure costs. The eight-year extension is also a major boon to utility-scale solar developers that have longer planning and construction time frames. This added stability should allow the solar industry to narrow some of the infrastructure investment gap it has had with the wind industry.

This victory for solar developers/PPA providers is not without its potential downside, given the lifting of the public utility exemption. While this was widely anticipated after the release of IRS Notice 2008-60, we expect this to have a significant impact on both distributed and utility-scale developers. We also expect that an increasing number of public utilities will enter into the distributed solar market with rooftop programs using a variety of execution methods. Utility companies will need to defend their market share, as every dollar paid to a PPA provider is a dollar of lost revenue (and the associated profit for regulated utilities). Since utilities are required to purchase increasing levels of renewable energy to achieve state mandates, it would seem that they should be considering an “own and operate” model rather than simply purchasing offtake. This would presumably strengthen if they are allowed to include the cost of solar equipment in their rate base. This could be a significant disadvantage for PPA providers already facing competition for projects from installers and equipment manufacturers looking to vertically integrate. These companies may now find themselves competing with well-capitalized utilities that already have significant infrastructure (i.e., billing and collection) in place.

Shifting to utility-scale solar projects, we expect to see a different impact from the lifting of the public utility exemption. Here we anticipate that the impact could more closely resemble the wind industry, such that the developer’s value proposition shifts from owning and operating to constructing facilities. That said, one main difference between the impact of this provision on wind and solar is that most of the major utility-scale solar developers are also equipment manufacturers. The lifting of the public utility exemption may allow them to undertake more projects since now they can sell equipment and build facilities for multiple utilities. If the same companies elect to own and operate each facility, they are likely to face a slower rollout due to their own capital limitations.

Another important change, as noted, is that the solar ITC can now be used to offset AMT. This is covered in more depth in an article on page 16.

The elimination of the cap on residential solar will have a lesser impact since solar companies operating in this space had developed solutions for addressing the residential cap by utilizing a PPA structure. We see the PPA structure still being relevant (despite the lifting of the residential cap) as the tight economy should increase demand for solar by using a payment per kWh system rather than as an up-front purchase. The residential solar power company, Solar City, has proven this in the marketplace as they report that nearly 90% of their installations are being completed under their SolarLease program, as opposed to purchased systems.

## Wind

The Act: The new law provides a one-year extension, until 31 December 2009, of the placed-in-service date for the Section 45 production tax credit (PTC) for wind facilities. The statute also provides, for the first time, an investment tax credit for residential small wind, capped at \$4,000.

Analysis: While the wind industry can now celebrate a hard-fought-for one-year extension of the PTC for wind energy, the industry will have to resume its lobbying efforts as soon as the next administration takes office. In addition to the credit extension, the Act does not include a per facility cap on the amount of PTCs available. This is considered a major victory for the wind industry as most of the previous Congressional extender proposals contained such a cap.

The addition of an ITC for small wind property should help acceptance of wind energy as a residential option in this relatively immature market.

Perhaps the biggest change for the wind industry had already occurred prior to adoption of the Act, with the release of IRS Notice 2008-60. As discussed in the most recent issue of our *United States renewable energy attractiveness indices*, the notice allows regulated utilities to own and operate Section 45 facilities (including wind) within their service area while still generating the PTC. Prior to the notice, it would have been considered a related party sale, preventing the asset from generating the PTC. Several utilities have already been aggressive in this space, including Duke Energy, with its purchase of the wind developer Catamount Energy. It will be interesting to see how regulated utilities acting as owner/operators will effect PPA availability and pricing. Of course, regulated utilities typically enjoy relatively low costs of capital and some of these companies may be able to use the PTC without monetization; both of which would presumably result in lower electricity costs. This is an important trend we will be

watching closely as it has the potential to change the entire value proposition for wind development. Currently, the main economic objective for many wind developers is to realize profit from operating the wind farm from the period when the financing is retired (typically 10 to 12 years) through the end of the asset's life (estimated to be 30 years). In this new environment, the value proposition for the developer may shift to building a facility under a turnkey arrangement with a utility company, which might further contract with the developer to operate the wind farm. As soon as we have non anecdotal evidence of the trendlines, we will present additional analysis in future editions of the *United States renewable energy attractiveness indices*.

## Biomass

The Act: The new law provides for a two-year extension of the placed-in-service date for the Section 45 production tax credit (PTC) for biomass facilities. The legislation also allows for a PTC on a facility expansion, "but only to the extent of the increased amount of electricity produced at the facility by reason of such new unit."

Analysis: We are currently awaiting guidance on the facility expansion rule. At the moment, it as appears that it is intended to replace the "80/20 rule". This new rule could offer more leeway for facility expansion and changes from fossil fuel burning to biomass burning facilities. We will keep readers up to date on any guidance released by the IRS as to how the facility expansion legislation will be implemented, including the calculation of the increased electricity production. The combination of the facility expansion rule and carbon programs such as the Regional Greenhouse Gas Initiative should cause utilities to consider converting older coal plants to biomass plants and/or expanding coal facilities to include biomass rather than necessarily expanding the coal capacity. We note that the guidance in IRS Notice 2008-60 also applies to biomass transactions.

## Geothermal

The Act: Provides for a two-year extension of the placed-in-service date for the Section 45 PTC for geothermal facilities. The legislation also creates an ITC for residential geothermal heat pumps, capped at \$2,000 per taxpayer.

Analysis: The new residential geothermal program, designed as an ITC rather than a PTC, should generate more demand and make the projects easier to finance through a PPA structure similar to those that have been developed for residential solar. IRS Notice 2008-60 also applies to geothermal transactions.



# Impact of the Alternative Minimum Tax exemption for solar

Over the next few of years the consensus view is that the amount of tax equity necessary to fund solar projects will grow dramatically (the market was approximately \$500M in 2007, about the size of a single 150 MW CSP facility) at a time when the earnings of current tax equity investors are shrinking. The recently signed tax legislation included a provision that would allow investors to use the investment tax credits generated by Section 48 of the Internal Revenue Code to offset taxes due under the Alternative Minimum Tax (AMT). We see this as an important development for the solar (and to a lesser degree, fuel cell) tax equity markets. The applicability of solar credits against AMT should increase market demand in three ways: (1) allow investors hurt by the current economic environment to continue investing (assuming that they have tax capacity and are not capital constrained); (2) allow current tax equity investors to increase their investment levels; and (3) allow investors from more volatile/cyclical industries to participate.

1) Allow investors hurt by the economic environment to continue investing

As you can imagine, a number of financial companies have seen their tax liability shrink due to the credit crisis. For example, one particular tax equity investor indicated that they had no tax liability but still expected to be subject to AMT (and pay tax under AMT) until 2011. Therefore, when underwriting a transaction that commenced in 2009, the investor had to assume that the credits would not be used until 2011 (the first year they thought that they would have the tax capacity to use the tax credits on their return). This resulted in a higher cost of capital for a developer who was hoping to use this tax equity investor. With the new legislation, the tax equity investor in question will now be able to use Investment Tax Credits in 2009. It is worth noting that some tax equity investors that have been hurt by the current credit crunch have left the market due to constraints on the availability of capital to invest and not due to tax capacity therefore the AMT exemption will not help those investors.

2) Allow current tax equity investors to increase their investment levels

For corporate taxpayers, the marginal federal tax rate is 35%, while the AMT tax rate is 20%. Being prudent, most tax equity investors do not use tax planning to drop their effective tax rate all of the way to the 20% threshold, to account for potential volatility in future taxable income, but rather to 25%, which ensures a 5% cushion to the 20% AMT rate. This means that a tax equity investor is typically looking to utilize their tax planning strategies (including other tax planning tools outside of tax credits) on a pool equal to approximately 10% of their expected taxable income. With the new legislation, tax equity investors can use their tax planning strategies to reduce their effective tax-rate cushion to 5% (the same cushion that they previously had to AMT) allowing them to use tax planning strategies

to offset 95% of their expected taxable income.

For example, a major tax equity investor reported taxable income of \$2.923B in 2006. During that year, the tax equity investor would have looked to reduce its tax bill from just over \$1B to \$730M, looking for an annual benefit of \$270M from the company's tax planning strategies (including tax credits). The company's solar tax equity investments would have to come out of this pool. With the AMT exemption the pool of tax capacity which could be offset by solar investments expanded from \$270M to \$854M.

In a similar example, one tax equity investor used Section 29 synthetic fuel credits (which are also AMT exempt) to reduce its effective tax rate to 8.4%. This investor received \$234M of tax credits against a \$308M tax liability.

3) Allow investors from more volatile/cyclical industries to participate

When companies in volatile industries try to perform long-term tax planning and/or develop a recurring tax strategy, they will often assume a future tax liability using their lowest estimate, to avoid hitting AMT during the down periods. For example, one major corporation, which is a smaller tax equity investor, saw its pretax income vary from \$3.5B to \$18B between 2000 and 2006, largely due to the cyclical nature of the corporation's industry. When the corporation looks at its long-term tax planning it is likely to budget the lowest estimated tax liability (\$3.5B) and design an effective tax rate management program. This is assuming \$350M of tax liability that can be offset using the typical tax planning strategies (as opposed to \$1.8B of tax liability that could be safely offset at its peak). If that tax equity investor wanted to reduce its effective tax rate to 5%, similar to the above mentioned synthetic fuel tax equity investor, the portion of tax liability that could be offset each year would be \$3.3B.

We have outlined three reasons why we expect demand for solar tax equity to increase as a result of the new legislation, which exempts the Section 48 investment tax credit from AMT. While this potential growth in demand is clearly exciting, the solar industry does need to keep in mind that it is competing with other capital uses (including other tax motivated investments) and that the risk-adjusted rates of return will need to be competitive with the other options available. Despite the AMT exemption, a corporation will generally not make an investment in a solar facility that has a risk adjusted rate of return of 8% after tax if another option is available that offers a risk-adjusted rate of return of 15% after tax. Typically, the largest taxpayers and the most profitable companies have projects that offer significant risk-adjusted rates of return, which will compete with solar projects for an allocation of capital. That said, the portion of the pie that solar is competing for just got significantly larger, which should benefit the industry in the long run.

# Q3 2008 webcast information

The development and sale of power from wind, solar, biomass and geothermal generated an estimated \$20B of impact on the US economy in 2007, a number that is expected to grow significantly over the coming years.

The US renewable energy market should not be looked at as a single market, but as 50 different markets. Factors vary from state to state. The economics of a project can vary greatly from state to state depending on many factors such as offtake pricing, access to transmission, the planning environment, state subsidies and state tax regimes.

The United States renewable energy attractiveness Indices look at all of the factors across the 50 states, and rank the states based on our activity expectations over the next three to five years. This information is extremely useful to project developers, investors, renewable energy manufacturers who are trying to determine the best place to put their capital to work, and for industry participants trying to better understand renewable energy markets.

You are invited to join the Ernst & Young webcast on Tuesday 17 December 2008 at 11 a.m. EST to hear our panelists discuss the latest market activity within the renewable energy sector.

## Featured discussion

Michael Bernier and Roshni Patel will be discussing the current state of the project finance market for renewables in the US particularly the tax equity market. The credit crunch has finally taken its toll on the tax equity market and we have seen major investors leave the market and yields rise significantly over the past quarter.

Discussions will also include a summary of recent tax credit legislation and a look at two industry trends we are watching.

Please contact Roshni Patel at +1 617 585 6853 or [roshni.patel@ey.com](mailto:roshni.patel@ey.com) for further details.

To register for the Ernst & Young Thought Center Webcast, go to [www.ey.com/webcasts](http://www.ey.com/webcasts) and click on "Upcoming Events."



# Commentary: guidance notes

## Long-term index

As stated on page 1, the individual technology indices, which combine to generate the all renewables index, are made up as follows:

- ▶ Renewables infrastructure index – 35%
- ▶ Technology factors – 65%

These guidance notes provide further details on the renewables infrastructure index and the technology factors.

## Renewables infrastructure index

The renewables infrastructure index is an assessment by state of the general regulatory infrastructure for renewable energy. On a weighted basis, the index considers:

- ▶ Strength of renewable portfolio standards (RPS) – 29%

States with an RPS were ranked based upon the immediacy of the target deadlines, the amount of renewable energy that needs to be developed to meet the target, penalties if the target is missed and the presence of a compliance-based renewable energy credit market.
- ▶ Planning and grid connection issues – 57%

Favorable planning environments (low failure rates and easy-to-navigate approval/permitting processes) receive high scores. Grid connection scoring is based on the ease of obtaining a grid connection in a cost-effective manner. The score also takes into account the degree of grid saturation for intermittent technologies.
- ▶ Access to finance – 14%

A market with a mature renewable energy financing environment, characterized by cheap access to equity and good lending terms, will score higher.

This generic renewables infrastructure index is combined with each set of technology factors to provide the individual technology indices.

## Technology factors

These comprise five indices providing resource-specific assessments for each state, namely:

- ▶ Onshore wind index
- ▶ Large-scale solar index
- ▶ Small-scale solar index
- ▶ Biomass index
- ▶ Geothermal index

Each of the technology indices considers, on a weighted basis, the following factors:

- ▶ Power offtake attractiveness – 25%

This considers the price received (including proceeds from REC sales and other major incentive programs such as state production tax credits) per kWh of electricity generated.
- ▶ Tax climate – 8%

Favorable, high-scoring tax climates that stimulate renewable energy generation can exist in a variety of forms and/or structures. Typical incentives and structures are direct renewable energy tax breaks, sales tax abatements for equipment, real estate tax abatements and accelerated tax depreciation on renewable energy assets.
- ▶ Grant/soft loan availability – 8%

Grants can be available at local and/or regional levels, and typically are more prevalent in immature markets or technologies. Soft loans have historically been used for renewable energy technologies to kick-start the industry. High scores are achieved through an array of meaningful grants and soft loans.
- ▶ Market growth potential – 25%

This category takes a holistic approach to estimating a state's projected growth levels. The market growth potential takes into account information contained in other categories, as well as information gathered but not included in one of the other categories.
- ▶ Current installed base – 8%

High-installed bases demonstrate that the state has an established infrastructure and supply chain in place, which will facilitate continued growth. High-installed bases are also indicative of the acceptance for such projects, and the lack of public support can make planning and gaining approvals more difficult.
- ▶ Resource quality – 18%

This measures the quality of resources available; for example, wind speeds and solar intensity are indicators of resource quality.
- ▶ Project size – 8%

Large-scale projects provide economies of scale and a generally favorable financing environment. Large projects also are an indicator of local acceptance.

# Ernst & Young renewable energy services

## Team overview

### Tax Credit Investment Advisory Services

With a dedicated 17-member team of advisors focused solely on tax credit monetization, Ernst & Young LLP's Tax Credit Investment Advisory Services (TCIAS) helps take advantage of the opportunities and address the risks associated with renewable energy activity. Members of the group, supported by a network of experienced professionals from our offices worldwide, provide advice and services in the following areas:

- ▶ Tax credit monetization
- ▶ Financial modeling
- ▶ Strategic planning
- ▶ Transaction structuring
- ▶ Investment due diligence
- ▶ Project finance in conjunction with Transaction Advisory Services

In addition to TCIAS, Ernst & Young provides a wide variety of tax advisory services to the renewable energy industry. Among these are:

### Renewable Energy Group

Ernst & Young LLP's Renewable Energy Group authors both the renewable energy country attractiveness indices and the biofuels indices. Members of the group provide advice and services in the following areas:

- ▶ Financial advisory and valuation
- ▶ Asset value optimization
- ▶ Transaction support
- ▶ Financial modeling and structuring
- ▶ Finance raising
- ▶ PPA tendering

For more information on the Renewable Energy Group, refer to page 9.

### Strategic Growth Markets

Ernst & Young LLP is at the forefront of issues affecting America's best high-growth companies. Our vast experience advising these companies sustains our dominant competitive position in key markets, including our audit and advisory services share of the Russell 2000®, Forbes' largest private companies and the number of companies we assist in going public. Ernst & Young is also the undisputed leader in convening the experts who shape the business climate, and advising policy makers on the issues affecting these companies.

### Washington Council Ernst & Young (WCEY)

WCEY is a legislative and regulatory advocacy group within Ernst & Young LLP that represents clients on a wide range of energy and energy tax issues. In the energy sector, WCEY represents a wide variety of renewable energy technologies and trade associations, including; solar, hydropower, open-loop biomass, closed-loop biomass, biodiesel, renewable diesel and cellulosic biomass alcohol.

### Transaction Advisory Services

Ernst & Young's Corporate Finance (Canada) Inc.'s Transaction Advisory Services assists clients who are contemplating a wide range of renewable energy transactions including:

- ▶ M&A advisory
- ▶ Strategic analysis
- ▶ Financial capital market services
- ▶ Project finance (including tax equity) in conjunction with TCIAS

Ernst & Young has been ranked the top renewable energy advisory firm by *Project Finance International* for the past seven years.

For further information on our services, and for future copies of the indices, please contact Michael Bernier or Roshni Patel.

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