
MUSINGS FROM THE OIL PATCH

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Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations. Allen Brooks

The Value Of Shale Gas Is In The Eye Of The Beholder

The company stressed the significance of its stake in the Utica shale

In late July, Chesapeake Energy Corporation (CHK-NYSE) announced positive second quarter 2011 results. In the release, the company stressed the significance of its stake in the Utica shale formation in eastern Ohio, the next hot play in the shale revolution underway in this country. The company stated the following:

“Based on its proprietary geoscientific, petrophysical and engineering research during the past two years and the results of six horizontal and nine vertical wells it has drilled, Chesapeake believes that its industry-leading 1.25 million net leasehold acres in the Utica Shale play could be worth \$15 - \$20 billion in increased value to the company. Chesapeake’s dataset on the Utica Shale includes approximately 2,000 well logs, full-suite petrophysical data on approximately 200 wells, 3,200 feet of proprietary core samples from nine wells and production results from three wells. As a result of its analysis, the company believes the Utica Shale will be characterized by a western oil phase, a central wet gas phase and an eastern dry gas phase and is likely most analogous, but economically superior to, the Eagle Ford Shale in South Texas.”

Management suggests that its land position, given the superior reservoir potential of the Utica shale, could be worth between 75% and 101% of the company’s total market capitalization

We found this paragraph quite interesting. Management suggests that its land position, given the superior reservoir potential of the Utica shale, could be worth between 75% and 101% of the company’s total market capitalization. Using the values suggested in the earnings release, Chesapeake estimates its land position is worth between \$12,000 and \$16,000 per acre. That seems high, especially after we reviewed an investment analyst’s report on another E&P company with meaningful exposure to the Utica shale, including acreage it owns in partnership with Chesapeake.

In a Citigroup Global Markets research report on EV Energy

“According to our research, over the past twelve months, transactions in the Utica Shale have been completed for an average of \$2,200/acre”

The Citigroup analysts have a very different, and an appropriately conservative, view of the Utica shale value since there have been very few wells drilled and there is little or no production history

The company cautioned, however, that if the EUR was only 4.5 Bcf, then the return would be zero

Partners, L.P. (EVEP-Nasdaq), a master limited partnership that explores and develops oil and gas properties in various states including Ohio, the analysts attempted to put a value on the company’s Utica acreage. The report stated the following about how the analysts were valuing this asset:

“Given that the Utica Shale is an emerging play, there are very few transaction comparables available to use as an anchor for our valuation. Even so, according to our research, over the past twelve months, transactions in the Utica Shale have been completed for an average of \$2,200/acre ranging between \$1,500 and \$3,600/acre (i.e. most recent transaction implies \$3,600 per acre; announced in 3Q11). In comparison, CHK indicated that its 1.25 million net leasehold acres in the Utica Shale could be worth \$15 to \$20 billion, which implies a value of \$12,000 to \$16,000 per acre.

“In addition, we have looked for comparable transactions in the Eagleford Shale given early indications that the Utica is fairly similar in potential. Based on our analysis, since late 2009, Eagleford Shale assets have sold at an average price of \$9,000/acre ranging between \$1,000 and \$23,000 per acre (i.e. most recent transaction implies \$20,000 per acre; announced in 2Q11). Our valuation of EVEP’s Utica Shale position, conservatively assumes applying a value of \$5,000 per acre to the partnership’s 213,000 net acres...”

Clearly, the Citigroup analysts have a very different, and an appropriately conservative, view of the Utica shale value since there have been very few wells drilled and there is little or no production history. Given Chesapeake’s highly optimistic pronouncement of the Utica shale being superior to the Eagle Ford, we started reviewing previous press release announcements about company developments. That search led to our reviewing Chesapeake’s comments in its March 24, 2008, press release. There, it stated the following about its new Haynesville shale play:

“Haynesville Shale: Based on its geoscientific, petrophysical and engineering research during the past two years and the results of three horizontal and four vertical wells it has drilled, Chesapeake believes the Haynesville Shale play could potentially have a larger impact on the company than any other play in which it has participated to date.”

Notice the wording of the two announcements. Also, Chesapeake projected that a \$7 per thousand cubic foot (Mcf) gas price for the life of a Haynesville well with an economically ultimate reserve (EUR) volume of 6.5 billion cubic feet (Bcf), the company would earn a 42% pre-tax return. About a year later, with natural gas prices firmly locked in a \$4 per Mcf range, the company said the return would only average in the low single digits. The company cautioned, however, that if the EUR was only 4.5 Bcf, then the return would be zero. Recently, Chesapeake reduced its activity in this shale basin.

The flood of natural gas has depressed prices and forced strategic adjustments to emphasize liquids-rich shales, although these formations continue to contribute substantial new gas production to an oversupplied market

Over the past half decade, assessments about the economic value of shale formations have shifted. Certain shales were touted as being the next biggest gas field in the U.S., only to disappoint its promoters. The flood of natural gas has depressed prices and forced strategic adjustments to emphasize liquids-rich shales, although these formations continue to contribute substantial new gas production to an oversupplied market. The industry's move into the populous Northeast region of the country has energized the environmental movement to attack it over its gas shale drilling and completion technology. In recent days, the gas companies spearheading the shale revolution must feel like the American revolutionary army wintering at Valley Forge in the late 1770s – cold, hungry, ill-dressed and questioning their plight, but still inspired by the ideals underlying the revolution.

High Speed Rail Aim Skips Fastest Growing Transport Sector

In the spring of 2009, barely three months after his inauguration, President Obama announced plans to begin fulfilling his high-speed rail vision by sticking \$8 billion into the economic stimulus bill

Since President Barack Obama came into office, he has focused on creating a legacy built on his vision for what America should look like, not what it is today. Besides totally overhauling the nation's medical care system (despite people not asking for such a radical restructuring), pushing "green energy and green jobs" for powering the country and making America "loved" in the Muslim world, constructing a high speed national rail system has been high on his list of goals. In the spring of 2009, barely three months after his inauguration, President Obama announced plans to begin fulfilling his high-speed rail vision by sticking \$8 billion into the economic stimulus bill along with budgeting annual expenditures of \$1 billion a year to "jump start" the initiative.

"What we need, then, is a smart transportation system equal to the needs of the 21st century"

The President said that "What we need, then, is a smart transportation system equal to the needs of the 21st century; a system that reduces travel times and increases mobility, a system that reduces congestion and boosts productivity, a system that reduces destructive emissions and creates jobs." To begin the process of building this system, the federal government identified 10 corridors, each from 100 to 600 miles long, with the greatest promise for high-speed rail development. The 10 corridors are:

1. A northern New England line;
2. An Empire line running east to west in New York State;
3. A Keystone corridor running laterally through Pennsylvania;
4. A major Chicago hub network;
5. A southeast network connecting the District of Columbia to Florida and the Gulf Coast;
6. A Gulf Coast line extending from eastern Texas to western Alabama;
7. A corridor in central and southern Florida;
8. A Texas to Oklahoma line;
9. A California corridor;
10. And a corridor in the Pacific Northwest.

A 2010 study puts the cost closer to \$65 billion

As many people know, California has already approved a high speed rail line that ultimately will allow travel between San Francisco and Los Angeles in two and a half hours. The first stage of the line is a 54 mile stretch between Madera and Corcoran, two remote Central Valley towns. In the decade of 1999 to 2009 since the rail line was initially proposed, the real cost of the project is estimated to have doubled to \$42.6 billion. A 2010 study puts the cost closer to \$65 billion. The impact of the increases is that the estimated cost of a one-way ticket from Los Angeles to San Francisco has gone from \$55 to about \$100, and recent estimates suggest it may actually be closer to \$190, considerably more expensive than an advance purchase ticket on Southwest Airlines (LUV-NYSE).

The high cost of building these high-speed rail lines in China has priced them out of the reach of their average citizen

President Obama and his advisors have a fixation on the high-speed trains of Europe and also those of China. The focus on China underscores the nationalistic appeal the President makes for high speed rail. How can the U.S. be a 21st century super power if we don't have a transportation system that matches that of the rapidly gaining number two economy in the world? The problem is that the high cost of building these high-speed rail lines in China has priced them out of the reach of their average citizen. In fact, the Chinese Academy of Sciences has already warned that the debt for these new rail lines may never be repaid. The recent arrests of senior officials in the Chinese railroad administration due to corruption involved in the awarding of the contracts to build the lines, and now the horrific accident involving two high-speed trains due to a computer software design problem exposed following a lightning strike that killed 40 and injured nearly 200 people has raised serious questions about the Chinese initiative. It has recently been put on hold until the accident is fully understood.

Exhibit 1. China High Speed Rail Accident



Source: AFP

President Obama's "transformational transportation" initiative seems to have morphed into little more than a bailout of Amtrak

The ability of the President to sell his high speed rail vision seems to have fallen flat, and now it is running into the budgetary problems. President Obama's "transformational transportation" initiative, a \$53 billion to be spent over six years plan, seems to have morphed into little more than a bailout of Amtrak and some improvements to our freight hauling tracks. The failure of President Obama's vision was

As a result of this rejection, Transportation Secretary Ray LaHood announced in March that the \$2.4 billion money in the budget would go to passenger rail projects in other states, meaning Amtrak

due to the governors of the several states that were targeted to receive high-speed rail funding rejecting the money. They were motivated to say No Thanks to the offer because of the additional funding their state would have to agree to and its impact on their citizens. Early in the year, Governors John Kasich (R-OH) and Scott Walker (R-WI) turned down offers of money for new high-speed rail investments. The more significant rejection came from Governor Rick Scott (R-FL) who turned down money for a high-speed rail line between Tampa and Orlando. As a result of this rejection, Transportation Secretary Ray LaHood announced in March that the \$2.4 billion money in the budget would go to passenger rail projects in other states, meaning Amtrak.

Amtrak's total ridership accounts for less than one-half of one percent of all interstate passenger travel

In Amtrak's FY2008 annual report, its president touted that it marked the sixth consecutive year of ridership increases and the latest year was a record. The problem is that ridership dropped in FY2009 and only got back to that record ridership in FY2010, when it carried 28.7 million nationwide, some 10 million fewer passengers than went through the Phoenix airport in 2009. Amtrak's total ridership accounts for less than one-half of one percent of all interstate passenger travel. About 40% of that travel occurs in the Northeast Corridor. In that market, Amtrak has about a 6% market share compared to 5% for air travel and 89% by highway. Importantly, the low market share is not due to a lack of capacity as Amtrak's load factor in 2010 averaged 47% and the Acela, the showcase high-speed line, averaged about 55%.

Intercity buses carry at least 50% more passenger miles than does Amtrak

What is interesting about the Northeast Corridor is that intercity buses carry at least 50% more passenger miles than does Amtrak. They do this without subsidies and at fares that are about a third of Amtrak's and little more than 10% of Acela fares. Despite a few high-profile intercity bus accidents, the safety record of the industry is better than trains. Intercity buses suffer almost 80% fewer fatalities per billion passenger miles than Amtrak and uses 60% less energy per passenger mile than Amtrak.

Ridership of buses was particularly strong in the Northeast, Midwest and California, three regions targeted by the Obama administration's high-speed rail initiative

Between 2007 and 2010, intercity bus ridership rose by 22% making it the fastest growing transportation mode. It has grown nearly twice as fast as Amtrak's ridership, which increased by 12% over the period. Ridership of buses was particularly strong in the Northeast, Midwest and California, three regions targeted by the Obama administration's high-speed rail initiative. The motor coach industry pays a lower federal fuel tax of just 7.3-cents per gallon compared to 18.4-cents for auto drivers. Motor coach companies have received some subsidies for complying with the Americans with Disabilities Act and to meet national security needs. Together these subsidies amount to about \$63 million per year. As scheduled intercity buses represent only about a quarter of the motor coach industry, they receive less than \$17 million in annual subsidies compared to Amtrak, which receives nearly 100 times that amount in subsidies.

The lower overhead has enabled a reduction in fares and the bus companies rely on yield management

The key to the success of the intercity bus industry has been its adoption of a new business model. Tickets are now mostly sold over the Internet, buses pick up and drop off passengers at curbside and drivers handle the baggage. No more being forced to go to a rundown, intercity bus terminal. Additionally, intercity buses are now mostly nonstop with multiple routes between cities. This means the actual travel time is little more than alternative modes such as trains or planes. The lower overhead has enabled a reduction in fares and the bus companies rely on yield management. Under this new model, multiple classes of service on some routes have developed such as the "Chinatown buses" that mostly begin and end their trips in predominantly Asian neighborhoods. These buses have little leg room and few amenities such as Internet service. The next level of buses has more legroom, leather seats and free Wi-Fi. An example is Vamoose with its Gold service that has only 36 seats and costs \$50 between New York and Washington. The highest level of service is LimoLiner that operates buses with only 27 seats between the New York and Boston Hilton hotels and features food service, on-board movies and meeting tables for \$89 per seat.

Members of the American Bus Association report that they fill an average of about 60% of their seats

The impact of this model is shown by data collected by Randal O'Toole of the Cato Institute that shows in June 2009 there were 13 different companies providing 3.6 billion seat miles of service per year in the Boston-Washington corridor. In May 2011, there were 16 different carriers providing 4.0 billion passenger-seat miles of service per year. Members of the American Bus Association report that they fill an average of about 60% of their seats, or about 2.4 billion passenger miles in 2010. That compares to Amtrak's report that it offered about 3.4 billion seat miles in that corridor and filled about half, for about 1.7 billion passenger miles.

During the same period, Amtrak's fares have increased from 25-cents to 31-cents per passenger mile despite subsidies funding about a quarter of its operating costs

In 2001, the last year data is available, intercity bus fares nationally averaged about 13-cents per passenger mile. Under the new model, these fares are now more in the range of 7-cents to 10-cents. Over 2001 to 2007, airline fares have averaged about 13-cents per passenger mile. During the same period, Amtrak's fares have increased from 25-cents to 31-cents per passenger mile despite subsidies funding about a quarter of its operating costs. The Bureau of Economic Analysis estimates Americans spend about 36-cents per vehicle mile while the California High-Speed Rail Authority calculated that the average intercity car, carrying 2.4 occupants, results in an average cost of 15-cents per passenger mile for autos. Intercity buses operating under the new business model are a highly competitive mode of transportation.

When it comes to energy and pollution, intercity buses are much more efficient than rail. The Department of Transportation's 2007 study, "Transportation for Tomorrow," reported that intercity buses use less than 1,000 British thermal units (BTUs) per passenger mile while passenger trains use more than 2,500. With recent ridership increases, energy consumption has likely dropped to about 2,400

The average Amtrak intercity train used 2.8 times as much energy and emitted 3.2 times as much carbon dioxide as intercity buses

BTUs per passenger mile. A 2007 report by M.J. Bradley & Associates for the American Bus Association found that the average Amtrak intercity train used 2.8 times as much energy and emitted 3.2 times as much carbon dioxide as intercity buses. A life-cycle analysis prepared by researchers at the University of California determined that passenger rail lines used 2.5 times as much energy as they used in just operations, while highway users utilized only about 1.6 times as much energy in operations.

Even at identical load factors, railcars would still weigh far more per passenger than buses, and they would use even more fuel per passenger mile

Why are buses more efficient than trains? First, intercity bus companies are profit-driven so they operate only in cities where they can fill most of their seats. Second, trains' steel wheels provide less friction than buses' rubber tires so they are more efficient, but that is offset by the greater weight of railcars. The typical motor coach weighs about 35,000 pounds, or roughly 1,000 pounds per passenger. A typical 80-passenger train car weighs 110,000 to 150,000 pounds. When you add its share of the weight of a locomotive capable of pulling five cars, you add about 50,000 pounds to the car weight. This means that total car weight is 150,000 to 200,000 pounds, which with a 50% load factor means about 4,000 pounds per passenger. Even at identical load factors, railcars would still weigh far more per passenger than buses, and they would use even more fuel per passenger mile.

Secretary LaHood suggested that President Obama and Vice-President Joseph Biden would be remembered for high-speed rail the way Dwight Eisenhower is for interstate highways and Abraham Lincoln for the transcontinental railroad. "They will go down in history as the railmen of the 12th century," according to Secretary LaHood. Possibly the recent deficit battle has saved them from pushing a more expensive, energy-inefficient and less environmentally-friendly transportation system on the nation. Then again, as California transit expert and accountant Tom Rubin put it, "High speed rail is not about efficient transport. It's all about shaping cities for a certain agenda."

Does Gore's Climate Change Rant Signal Movement's End?

Some have described Mr. Gore as having come "unhinged"

By now, most people have heard about former vice president and Nobel Prize winner Al Gore's rant about deniers of his global warming orthodoxy. Some have described Mr. Gore as having come "unhinged," which bothers them when they think he was a mere 500 votes away from becoming our president. Another observer offered up the view that Mr. Gore set back the goals of the Aspen Institute, which are "to foster values-based leadership, encouraging individuals to reflect on the ideals and ideas that define a good society, and to provide a neutral and balanced venue for discussing and acting on critical issues."

For those who haven't heard the rant, the text is below:

Mr. Gore's frustration with the deniers reflects his realization that his climate orthodoxy is crumbling as more scientific studies demonstrate problems with the data and imagery underlying the "science"

"The model they innovated in that effort was transported whole cloth into the climate debate. And some of the exact same people — by name, I can go down a list of their names — are involved in this. And so what do they do? They pay pseudo-scientists, to pretend to be scientists, to put out the message: "This climate thing, it's nonsense. Man-made CO2 doesn't trap heat. It may be volcanoes." Bulls--t! "It may be sun spots." Bulls--t! "It's not getting warmer." Bulls--t!

"And there are about 10 other memes that are out there, and when you go and talk to any audience about climate, you hear them washing back at you. The same crap, over and over and over again ... There is no longer a shared reality on an issue like climate even though the very existence of our civilization is threatened. People have no idea! And yet our ability to actually come to a shared reality that emphasizes the best evidence ... It's no longer acceptable in mixed company, meaning bipartisan company, to use the goddamn word 'climate.'"

Mr. Gore's frustration with the deniers reflects his realization that his climate orthodoxy is crumbling as more scientific studies demonstrate problems with the data and imagery underlying the "science." The latest challenge involves the scientist who wrote of the polar bears' demise based on observing four carcasses of bears who drowned while swimming in Arctic waters with no ice. The foundations of the data in his paper and his involvement in the direction of research grants to people who "peer reviewed" his article appear to be the reasons why wildlife biologist Charles Monnett of the Bureau of Ocean Energy Management Regulation and Enforcement has been suspended pending completion of an internal investigation. While this is only the most recent example, the Climategate and Glaciergate scandals, the collapse of the Copenhagen climate negotiations, the announcement by prominent signers of the Kyoto global climate treaty that they will not re-up on a new treaty and investigations into the personal financial gains of government scientists by promoting climate change show how hollow Mr. Gore's orthodoxy has become. We suspect the deniers will soon begin to use the title of Mr. Gore's crowning achievement — "An Inconvenient Truth" — as a derogatory term.

New Auto Efficiency Standards Arrive As Oil Prices Collapse

The Obama administration negotiated a deal with the automobile industry to boost CAFE standards for 2017-2025 from 35.5 mpg to 54.5 mpg

Literally days before Standard & Poor's downgraded the United States' credit rating, the Obama administration negotiated a deal with the automobile industry to boost the corporate average fuel economy (CAFE) standards for 2017-2025 from 35.5 miles per gallon (mpg) to 54.5 mpg. Under the standard in place until 2016, which had been increased in May 2009 by President Obama from the prior legislated standard enacted under the Bush administration, the automobile industry is supposed to achieve a fleet average of 35.5 mpg. This year's CAFE standard calls for an average of roughly 25 mpg. Under the standard that was

The new 54.5 mpg standard by 2025 will be achieved by getting autos to average 62 mpg and light trucks 44 mpg

legislated during the Bush years, the rise was anticipated to go from 25.3 mpg in 2012 to 30.0 mpg in 2016. On announcing the increase in the current standard, President Obama declared, "The status quo is no longer acceptable." Wasn't that the truth! Here we are barely two years later and we are witnessing a bold move to nearly double vehicle fuel efficiency in just over a dozen years.

The new 54.5 mpg standard by 2025 will be achieved by getting autos to average 62 mpg and light trucks 44 mpg. The newly agreed-to standard is actually about two mpg below what the Obama administration had initially proposed, which the auto industry had pushed back on. Even the auto workers union was concerned about the higher standard as they saw it as a potential job killer if the industry couldn't meet the new stricter regulations with domestic vehicles. As the government and the industry negotiated, the Obama administration gave up some of its goal in return for assurances that the auto industry could meet the new higher standard by introducing new technologies.

The more one learns about the deal, however, the more it appears it may have been a repeat of the Obama health care legislation. As you may remember, then House Speaker Nancy Pelosi (D-CA) told her members that "you have to vote for the bill to find out what's in it." Isn't it wonderful when substantive legislation impacting a large segment of the economy and our future choices of automobiles and light trucks isn't known until after the legislation is enacted?

On the other hand, as we are learning, many of the details in this legislation were negotiated by Ron Bloom, the former car czar and current Assistant to the President for Manufacturing Policy, and the various car companies on a one-by-one basis. The details suggest this negotiation may have been much like a modern-day version of Bob Barker's Let's Make A Deal television show.

The newly negotiated CAFE standards have lots of deals – credits – to help the auto makers meet the tougher standards by acting in ways the White House wants them to act

The newly negotiated CAFE standards have lots of deals – credits – to help the auto makers meet the tougher standards by acting in ways the White House wants them to act. Behind the deals are the Obama administration's twin goals of cutting carbon dioxide (CO₂) emissions from vehicles and getting one million electric vehicles on the nation's highways by 2015. The problem is that the latter goal is probably unrealistic given a lack of battery charging infrastructure and the expense of electric vehicles (EV). The former goal is driven by a belief in climate change science that is proving highly suspect and will create upheavals in our economy that will produce both known and unknown costs.

The problem is that most of the credits awarded to auto manufacturers reward them for selling certain types of vehicles that incorporate specific technologies. These credits are being determined and awarded by the federal government agency responsible for both setting the standards and measuring the outcomes – the Environmental Protection Agency (EPA).

As a result, the Obama administration is engaged in dictating industrial policy rather than providing incentives for consumers and auto companies to drive changes in the marketplace

The Obama administration's goal is to reduce carbon dioxide (CO₂) emissions to 163 grams per mile per vehicle by 2025. Because these emissions come from the use of fuel to drive the vehicle, the way to achieve this goal is to boost the CAFE standard to 54.5 mpg. But the Obama administration has also determined that the emissions reduction goal can be achieved by the introduction of new fuel-economy technologies and other emission reduction steps that don't necessarily boost engine fuel efficiency. To help pressure the auto makers, the deal envisions much higher credits for early introduction of these favored technologies. As a result, the Obama administration is engaged in dictating industrial policy rather than providing incentives for consumers and auto companies to drive changes in the marketplace. As a result of this approach and the specific rewards for auto companies, we may get vehicles that actually average only 40 mpg but are graded as achieving 54.5 mpg. Talk about grading on a curve!

Exhibit 2. Ford Announces Delay Of Electric Focus



Source: *Automotive News*

Ford has just announced it will delay the introduction of the all-electric Focus model from this fall until next spring

Electric cars and plug-in vehicles have yet to gain much traction beyond the early trendsetter buyers. In fact, Ford Motor Company (F-NYSE) has just announced it will delay the introduction of the all-electric Focus model from this fall until next spring. Yet at the same time, the latest auto deal is designed to promote the manufacture and sale of EVs. Now brace yourself, here is how you will wind up buying an EV.

Each EV sold will be treated as two cars for purposes of calculating the manufacturer's CAFE rating

The EPA has determined that the all-electric Nissan (NSANY.PK) Leaf has a 99 mpg rating despite the fact the car doesn't use any gasoline. At the same time, the Chevrolet Volt, which uses battery power until its charge is exhausted and then is powered by a small gasoline engine, has been awarded a 93 mpg rating by the agency. Beginning in 2017 under the new standard, EVs, plug-in hybrids and fuel cell powered cars are classified as 'zero emission' vehicles. Each EV sold will be treated as two cars for purposes of calculating the manufacturer's CAFE rating. The one car, in this case the Leaf, will be credited with 198 mpg in the fleet fuel-efficiency calculation.

The more EVs sold, the more the auto manufacturer can sell vehicles with “poor” emissions ratings

This means that the more EVs sold, the more the auto manufacturer can sell vehicles with “poor” emissions ratings while still meeting the new fleet standard. This likely means that the poor emission vehicles sold will be light trucks (SUVs), which we know are much more profitable for Detroit than small, fuel-efficient vehicles and presumably EVs. The EV credit starts at two vehicles in 2017 and declines to 1.5 vehicles by 2021. Plug-in hybrids, on the other hand, will receive a 1.6 vehicle credit in 2017 declining to 1.3 in 2021.

To help the domestic auto manufacturers such as GM that the government still controls, full sized pickup trucks were offered special credits

To help the domestic auto manufacturers such as General Motors (GM-NYSE) that the government still controls, full sized pickup trucks were offered special credits. A ‘mild’ hybrid pickup will get a 10-grams-per-mile per vehicle credit during 2017-2021, while a ‘strong’ hybrid pickup will get a 20-grams-per-mile per vehicle credit. The definition of what constitutes a ‘mild’ versus a ‘strong’ hybrid will be determined in September, but we will bet that the determination will be more helpful to GM and the other American auto manufacturers than the foreign auto companies.

Auto manufacturers can gain credits for reducing their emissions from the air conditioning systems they install

Equally important, auto manufacturers can gain credits for reducing their emissions from the air conditioning systems they install. The EPA will offer credits of up to 18.8 grams per mile per car and 24.4 grams per mile per truck for reducing tailpipe CO₂ emissions, leakage and hydrofluorocarbon emissions. Also, there are credits for using active grill shutters, electric heat pumps, high-efficiency alternators and lights, start-stop technology, solar roof panels, active transmission warm-up and heat recovery systems using thermoelectric power. The credits range from less than one gram per mile per vehicle to five grams per mile per vehicle, however, the total for any company cannot exceed 10 grams per mile per vehicle.

The best way for the automobile companies to achieve the increased CAFE standards is to reduce the weight of vehicles and make them more aerodynamic. That was the approach the auto industry took in the 1980s in response to the 1970s oil price spikes and the need to dramatically boost vehicle fuel economy. But the National Highway Safety Administration believes this move may have contributed to as many as an additional 1,300 to 2,600 traffic fatalities in 1993. But as some leading auto engineers have determined, smaller and lighter cars constructed from stronger alloys and carbon fiber materials and equipped with the new accident-prevention computer technology can operate without crashing into each other. That computer technology means the vehicles can become much more fuel-efficient as they go on a weight diet.

Average vehicle weight increased from 3,220 pounds to 4,066 pounds due to larger cars and a greater share of trucks in the mix

To demonstrate the impact of weight on fuel-efficiency, the peak in American vehicle fuel-efficiency was reached in 1987 at 26.2 mpg. By 2004 it was down to 24.6 mpg. Over this period, average vehicle weight increased from 3,220 pounds to 4,066 pounds due to larger cars and a greater share of trucks in the mix. As Marc Ross, a professor of physics at the University of Michigan, puts it, “All else

Diesel-fuel engines typically boast 20% to 25% greater fuel economy over comparable gasoline engines while still possessing strong acceleration

being equal, decreasing a vehicle's weight by 10 percent enables about a three percent increase in fuel economy."

Of all the technologies the government and the auto makers agreed to incentivize, one with great promise – diesel – was not among them. Diesel-fuel engines typically boast 20% to 25% greater fuel economy over comparable gasoline engines while still possessing strong acceleration. The latest "clean" diesel engines, such as those that predominate in Europe, comply with the strictest state automotive emissions standards. For example, the Volkswagen (VLKAY.PK) Jetta TDI is rated by the EPA at 42 mpg on the highway, which exceeds the more expensive and complex Toyota (TM-NYSE) Camry Hybrid's 35 mpg rating.

The sad thing about these new fuel-efficiency standards is that the public has been misled as to what will be achieved because of the various credits and deals. In the end, bureaucrats will pick winners and losers rather than the marketplace. That will retard the development of new technologies just when that is what this economy needs. The new fuel efficiency standard is another example of the government acting to commit the U.S. economy to a future path of slower growth that rewards a few political favorites while harming the general public.

Incandescent Light Bulb Ban Nears As New Types Appear

Many Americans are upset over this mandate because they see it as a civil liberties issue rather than an energy efficiency move

The attempt by some congressmen to reverse the upcoming ban on the sale of incandescent light bulbs was defeated. That means that the light bulb efficiency standards scheduled to be phased in beginning in 2012 as part of the 2007 Energy Independence and Security Act will occur with the 100 watt (W) bulbs in January. Higher energy efficiency standards will be required for 75W bulbs in 2013 and 60W and 40W bulbs in 2014. Many Americans are upset over this mandate because they see it as a civil liberties issue rather than an energy efficiency move. The principal objection to the change is that the light bulb industry's answer to the mandated efficiency improvements is the compact fluorescent light (CFL) bulb – the notorious curlicue-shaped bulbs that cast a harsh white light and contain mercury that could become a hazardous situation if broken.

The other possible alternative light bulb technology is the light emitting diode (LED), which is popular in auto taillights and traffic lights. According to leading lighting company, Philips Lumileds (NXPI-Nasdaq) as projected at its analyst meeting last September, the 2010 global illumination market will grow from about \$50-55 billion to about \$80 billion by 2015 with LED lighting growing from around \$5 billion to approximately \$40 billion. Marketing firm IMS Research has forecast the worldwide lighting market to grow from about \$80 billion in 2010 to \$115 billion in 2015 with LED's share going from 10% to 46%.

The problem with incandescent bulbs is that they only convert 10% of the electricity they use into light with the rest being converted to heat

The problem with incandescent bulbs is that they only convert 10% of the electricity they use into light with the rest being converted to heat. In physics, the mechanism is called “black body radiation.” The advantage of using this method to produce light is that it gives a continuous spectrum of light, meaning all the colors are produced. That’s why we like the light given off by incandescent light bulbs.

There are actually three competing technologies to replace the incandescent light bulb. Besides the CFL and LED technologies, there is the option of using halogen gases in the incandescent bulbs to achieve a higher efficiency. Halogen bulbs are already available in stores at a higher cost than regular incandescent bulbs. They give a continuous spectrum with a similar color. However, they are expected to be phased out in Europe within a few years and also in the U.S. by 2020 because they are still less efficient.

An incandescent bulb is projected to last about 1,000 hours while LEDs can go for 50,000 hours

CFL bulbs are more expensive than incandescent bulbs while LEDs are even more expensive than CFLs. An incandescent bulb is projected to last about 1,000 hours while LEDs can go for 50,000 hours and use 20% of the energy of the incandescent. LED manufacturers are working to get the energy usage down to 10%. CFLs perform somewhere between the other two, although their performance appears to be improving in recent years as the quality of bulbs rises. The decision for consumers becomes the trade-off between initial cost and total cost.

LED lighting at 150 LPW (lumens per watt) could bring a 16.5% reduction in the nation’s electric energy consumption, returning it to 1987 levels

Recently, CREE (CREE-Nasdaq), a North Carolina-based semiconductor company, announced it has created a 75W LED replacement bulb that gives the same amount of light as an incandescent 75W but only uses 12% of the power, or 8.7W. CREE engineers calculate that if fully deployed, LED lighting at 150 LPW (lumens per watt) could bring a 16.5% reduction in the nation’s electric energy consumption, returning it to 1987 levels. The problem is that LED light bulbs are so expensive relative to CFLs and certainly compared to incandescent bulbs. If the cost can be lowered significantly, the LED market could become a new growth sector for semiconductor manufacturers.

Philips said it expects to bring the cost of a LED bulb from approximately \$40 down to \$4. Analysts at investment bank Credit Suisse (CS-NYSE) say LED bulb prices have been dropping recently at a rate of about 10% per quarter and they believe the decline will continue. They project LED bulbs will be in the \$3 to \$4 range by 2014, which they believe will be a tipping point for greater use. At eight hours of use per day, an LED bulb would last 17 years before needing to be replaced. An incandescent bulb is usually replaced about three times a year under that usage. Based on the \$4 bulb, the total cost including bulbs and electricity over five years would go from \$90 for an incandescent bulb to \$13 for a LED bulb.

A recent blog by Candace Lombardi explored the merits of each of the bulb types in an unscientific but real-life comparison. Philips has just released its Ambient LED 17/75W bulb retailing for \$39.97. Ms. Lombardi had a Philips brand CFL bulb and a Philips 75W Dura Max incandescent bulb to test. Philips estimates the LED bulb will cost \$2.05 per year in electricity if used for three hours per day and your cost of electricity is 11-cents per kilowatt-hour (kWh). In February, the average price for electricity was 11.2-cents, but ranged between 7.31-cents and 17.6-cents per kWh in the continental U.S., but was much higher in Alaska and Hawaii. Residents in the Hawaiian Islands pay an average of 31.4-cents per kWh.

Exhibit 3. Will LEDs Be The Future Of Bulbs?



Source: Candace Lombardi

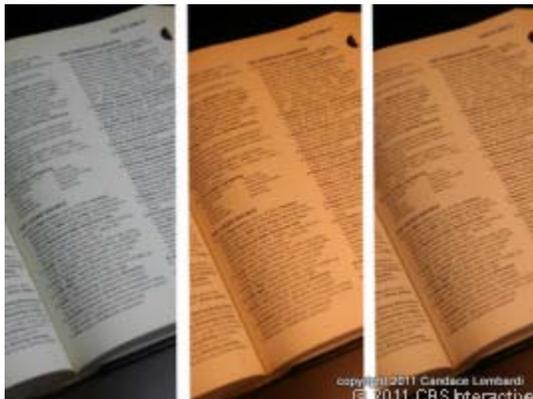
According to Philips statistics, the bulb should last 22.8 years

She found little difference in light quality between the LED and incandescent with both giving off a warm glow

The LED bulb is heavier and felt sturdier according to Ms. Lombardi. She believes it is built stronger because, according to Philips statistics, the bulb should last 22.8 years. That may mean it is less susceptible to breakage. The bulb is slightly taller than its incandescent cousin but Ms. Lombardi had no problem putting it in a bedside table lamp although there have been complaints of the bulbs not fitting in other lights.

For Ms. Lombardi, the real test was the light cast by the bulb. In her test, she found little difference in light quality between the LED and incandescent with both giving off a warm glow. This is in contrast to the cooler blue-white light of the CFL bulb. Still, the LED bulb gave off more than enough light (1,100 lumens) to read by.

Quoting from Ms. Lombardi's conclusion from her unscientific side-by-side light bulb test: "Compared to the average incandescent bulb, the Philips Ambient LED 17/75-watt bulb is much less fragile, uses less energy, can match that familiar yellow glow of incandescent, and last far longer. Compared to many CFLs on the market, it gives off a warmer light if that's what you're looking for. My admittedly unscientific reflective book page test also showed that the LED is

Exhibit 4. CFL vs. LED vs. Incandescent Bulb

Source: Candace Lombardi

slightly dimmer than the average incandescent, so you may want to opt for a CFL in rooms where you want a lot of bright white light.”

Her final conclusion was that the LED bulb was still much too expensive

Her final conclusion was that the LED bulb was still much too expensive. Her advice was to purchase one bulb to test and determine the places where it could be used in your home and then wait for the price to come down. Hopefully the price falls sufficiently before the ban on the use of “cheap” incandescent bulbs become complete.

U.S. Credit Downgrade Unleashes Doubts About Growth

As Americans watched our government leaders in action, the level of disgust for politicians grew. The mainstream media tied this disgust to the partisanship of a small bunch of Tea Party House Republicans who were opposed to allowing any tax increases to become part of the nation’s deficit solution. Many observers described the last half of July as Americans watching sausage being made – not a pretty scene. We would describe the disgust as the public’s recognition that it is always the victim of the old pea-under-the-walnut-shell game. In this case, the pea represents honesty and reality.

This was first time in history that the United States, possessing the world’s largest economy and the globe’s reserve currency, had its credit rating lowered

After the issue of raising the U.S. debt ceiling was settled, the credit rating firm, Standard & Poor’s, downgraded the nation’s credit rating from AAA to AA+. This was first time in history that the United States, possessing the world’s largest economy and the globe’s reserve currency, had its credit rating lowered. At the time the downgrade was announced, politicians, economists, bankers and the public wondered, and feared what the impact would be on financial markets. We were soon provided the answer as the Dow Jones Industrial stock average dropped by 635 points or 5.6% on the Monday following the announcement. Since then financial markets have been on a roller coaster swinging wildly almost every day by hundreds of points. After two weeks of ups and downs, the question is whether this volatility represents the new normal.

Exhibit 5. Recession Was Worse Than Initially Thought

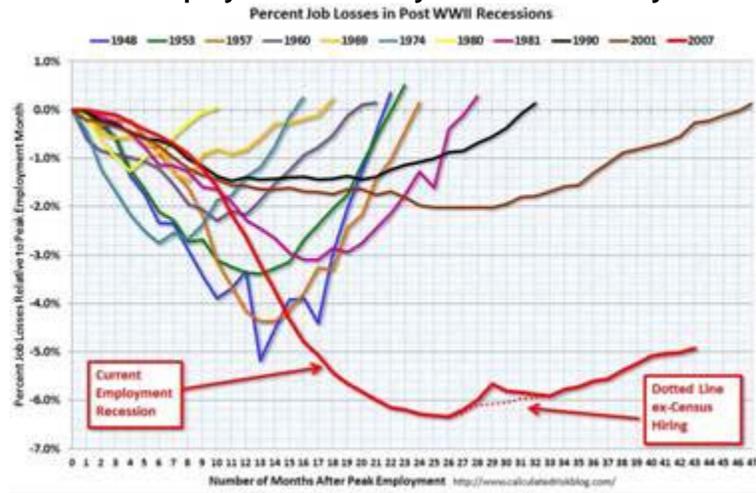


Source: BEA, PPHB

The latest figures show that the economy, which has been officially determined to be in a recovery since June 2009, actually has not yet returned to its past peak level

The credit downgrade has brought into sharper focus the question of economic growth. We recently were presented with a revision to the economic statistics from 2008 showing that the recession resulting from the financial crisis was far worse than we had understood and recent economic growth actually was weaker than prior government reports had suggested. In fact, the latest figures show that the economy, which has been officially determined to be in a recovery since June 2009, actually has not yet returned to its past peak level. The revised GDP figures also help explain why unemployment remains stubbornly high.

Exhibit 6. Employment Recovery Slowest In History



Source: Agora Financial

The debt ceiling agreement has limited the fiscal actions the Obama administration can take to stimulate the economy, meaning that any government stimulus must come from monetary policy. Last week the Federal Reserve commented on how much weaker the

Questions abound whether the Fed will embark on another QE

economic outlook was than they had believed, so they were planning to sustain their low interest rate policy for the next two years.

What we have learned from studying past recessions is that this latest one is a balance sheet recession. That means we must either increase the value of the assets or reduce the debt on our balance sheets. The Federal Reserve attempted to do the former with its “Quantitative Easing” or QE actions. Questions abound whether the Fed will embark on another QE. Unfortunately, we have learned to our dismay that our true debt balances are increasing faster than our ability to repay them, so our future may really involve having to deal with debt deleveraging.

Governments will have to re-negotiate their social compacts with their citizens, or they will have to hobble the historic engine of their economic growth – the investing class

Debt deleveraging takes years to occur, especially since much of the debt that has to be shed is sovereign debt. Reducing sovereign debt means either massive cuts in government spending, including social spending, or huge increases in taxes diverting income from spending and investing. Governments will have to re-negotiate their social compacts with their citizens, or they will have to hobble the historic engine of their economic growth – the investing class – and risk reducing their ability or willingness to invest in new and growing businesses. Neither choice is popular, but one will have to be selected. This is what is behind the riots in Europe, the Middle East and North Africa. It’s also what lies behind the vitriolic discourse in the United States that will likely last until the 2012 election determines which path the country will follow.

The IEA warned that another recession could put oil markets into a surplus condition that would send oil prices lower

Slow growth means less energy will be needed. As a result, we have seen all the official energy forecasting groups reduce their estimates of future oil demand. The International Energy Agency (IEA) cut its 2011 oil demand by 0.1 million barrels per day (mmb/d) due to weaker second quarter of 2011 economic data, high oil prices earlier in the year and slowing economic growth going forward. On the other hand, it raised its oil demand forecast for 2012 by 0.1 mmb/d due to Japan’s greater oil-fired power needs following the tsunami that wiped out a large portion of the country’s nuclear generating capacity. They warned, however, that another recession, which is being speculated at the moment, could put oil markets into a surplus condition that would send oil prices lower.

The EIA cautioned that its outlook for oil demand growth would be reduced if lower economic growth forecasts were incorporated into their model

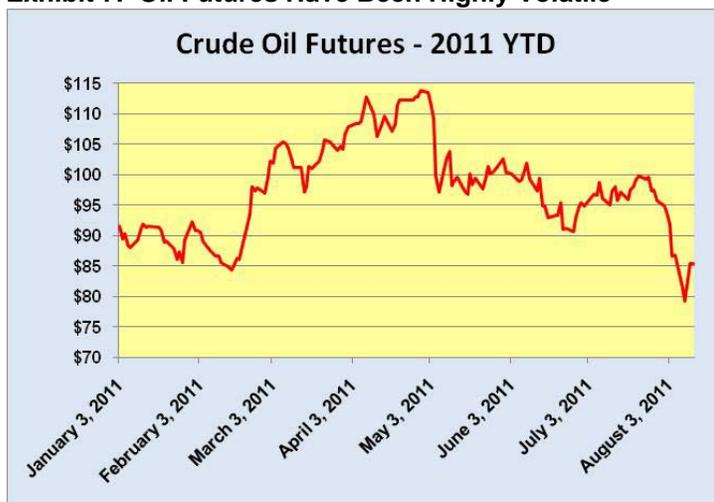
At OPEC, due to cuts to their view of world economic growth for 2011 and 2012, they have reduced their forecast of oil demand growth by 0.15 mmb/d and 0.02 mmb/d, respectively. Likewise, the Energy Information Administration (EIA) cautioned that its outlook for oil demand growth would be reduced if lower economic growth forecasts were incorporated into their model, which has not been done for the most recent forecast. The EIA is still projecting oil demand growth in 2011 of 1.4 mmb/d and 1.6 mmb/d for 2012. Both demand increases are larger than the average annual demand increase for 1998-2007 of 1.3 mmb/d. The only problem with that

Without 2004, the average would be below the projected growth in 2011 and 2012

period is that it includes 2004, when global oil demand grew by 2.9 mmb/d or more than twice the average annual rate including 2004. You may remember that 2004 was when China was aggressively building infrastructure in preparation for the Beijing Olympics. As a result, the country was woefully short of electricity so many people and businesses resorted to portable generators that prompted a significant increase in demand for diesel fuel. Without 2004, the average would be below the projected growth in 2011 and 2012.

This concern about economic growth generated a sharp fall in crude oil futures. While oil demand doesn't shift that rapidly to impact futures prices, the fear of a global economic slowdown has driven financial speculators to pull money out of commodity markets. This is what is behind the sharp fall in oil futures.

Exhibit 7. Oil Futures Have Been Highly Volatile

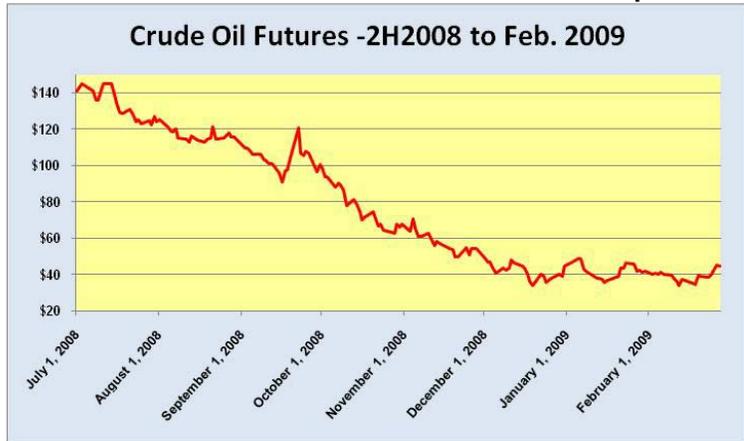


Source: EIA, NYMEX, PPHB

It is likely that oil prices will stabilize around current levels as they offer a positive return for developing new oil reserves

It is interesting to look at what happened to oil futures during the financial crisis in the second half of 2008 and early 2009. That period did reflect a serious crisis in financial liquidity and a sharp slowdown in economic activity that directly translated into an oil demand reduction. This time, the demand reduction has been fairly modest, so far, so it is likely that oil prices will stabilize around current levels as they offer a positive return for developing new oil reserves.

Exhibit 8. Oil Futures Fell With GDP Growth Collapse

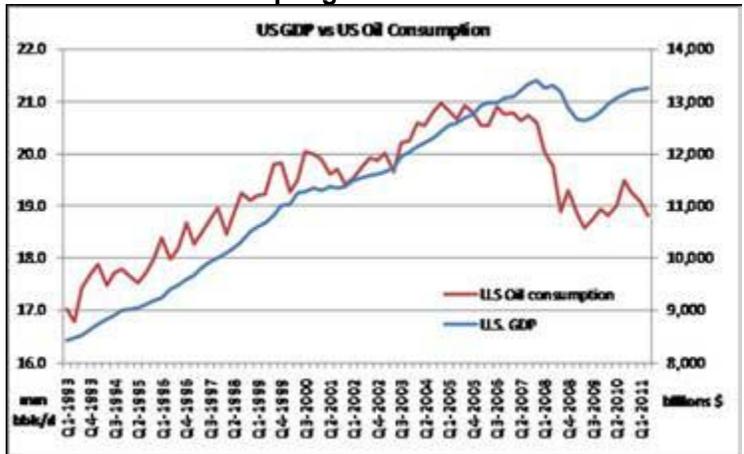


Source: EIA, NYMEX, PPHB

There has been a recent divergence in the historic lockstep pattern of economic and oil consumption growth

The biggest question for the oil market is how it will evolve in the future if the United States, Europe and Japan remain locked into slow economic growth trajectory for many years. As we have seen in the U.S., there has been a recent divergence in the historic lockstep pattern of economic and oil consumption growth. We will watch closely to see if this new relationship continues.

Exhibit 9. Will Decoupling Of Oil Use And GDP Continue?



Source: Agora Financial

The world's oil demand growth increasingly will depend on the developing economies, primarily those in Asia

If the developed economies of the world stay on a slow growth path, it means the world's oil demand growth increasingly will depend on the developing economies, primarily those in Asia. In turn, that means China. The economic growth of China is being questioned due to the financial health of its banking system, a slowdown in export demands if the developed economies are condemned to slow growth and the country's ability to grow domestic consumption to pick up the slack in manufacturing output.

If crude oil prices remain stuck in their current price range of the low \$80s per barrel for the balance of the year, our early January call that the surprise of 2011 would be lower, rather than higher, oil prices than at the start of the year - \$91.55 per barrel on January 3rd – will prove correct. This will be a huge disappointment to the oil price bulls, but lower oil prices may really be the best tonic for a global economy struggling to resume its growth course.

Energy Policy Causes Pain For Utility, Citizens and Canada

According to the Ontario Power Authority's web site, 99% of these small power projects are solar

An article in *The Globe and Mail* last Friday discussed the first-day's events of a scheduled two-day hearing before the Ontario (Canada) Energy Board in which Hydro One, the provincially-owned utility, is asking the regulators for a six-month exemption from meeting deadlines for assessing and connecting small renewable-energy projects under the province's "microFIT" program. According to the Ontario Power Authority's web site, 99% of these small power projects are solar. As one might expect, there is a fair amount of opposition to Hydro One's request, primarily from players in the solar-power industry, including manufacturers, panel installers and project proponents, all of whom claim a delay will hurt their businesses.

The delay would also be seen as hurting Ontario's green energy ambitions. The province has branded itself as a renewable energy leader and has created an incentive program to reward people for developing green energy projects. Any delay in the program would put the incentive plan at risk as well as the \$20 billion in renewable energy investments and the 20,000 resulting green jobs.

Each green-job created requires \$1,000,000 of investment

So what's the problem for this program? For starters, how about the fact that each green-job created requires \$1,000,000 of investment? Secondly, the province requires new projects have 60% of their components be manufactured locally, up from 40% prior to 2011. This requirement will force foreign manufacturers to build plants in Ontario or lose out on this market. As a result, Canada is now being taken to the World Trade Organization (WTO) by the European Union over unfair competitive business practices.

Ontario's incentive plan offers the highest prices paid in the world for solar and wind power

Ontario's incentive plan offers the highest prices paid in the world for solar and wind power. The incentive is earned by the owners of these renewable energy facilities via a feed-in tariff for the power they send to the utility grid. The program guarantees above-market prices for this power for 20 years. The rates for solar-generated power are either 64.2 cents for ground-mounted systems or 80.2 cents per kilowatt-hour for rooftop panels.

The big problem with the initiative is that Hydro One expected most of the people would erect solar panels on rooftops in cities. Instead, about 70% of the proposals are coming from the utility's rural transmission areas and from people looking to sell all their power to

The utility has a huge project backlog remaining

their electricity distributor. According to the web site, as of August 5th, the company has received almost 35,000 applications and has extended offers to 22,821 for a total of 208 megawatts (MW). It has executed contracts for 6,780 projects representing 59 MW. The utility has a huge project backlog remaining. More importantly, new applications keep arriving.

The company is receiving a large number of new applications every week

The Globe And Mail reported that in the past week, 668 new applications had arrived compared to roughly 100 a week Hydro One got in the early days of the incentive program in 2009. Based on data on its web site, over the latest two-week period, total applications increased by 1,483, which confirms the company is receiving a large number of new applications every week.

The company acknowledges it will need to upgrade portions of its network to handle the new solar power loads

Hydro One says that besides handling the overwhelming number of project applications, it has to deal with capacity constraints on its system. The company acknowledges it will need to upgrade portions of its network to handle the new solar power loads. At the same time, solar-parts manufacturers claim the utility's connection rules are too stringent compared to international peak-load guidelines.

They were anticipating two decades of 12% or better returns on their investments only to be told by Hydro One that capacity constraints are preventing it from hooking them up

As one would expect, the newspaper article had several stories of active and retired farmers who have invested all their retirement savings or taken out loans to build solar projects. They were anticipating two decades of 12% or better returns on their investments only to be told by Hydro One that capacity constraints are preventing it from hooking them up. These people are angry and fear they may lose their investments and want to know why they were encouraged to build these solar power projects when they can't be connected. An unintended consequence of an uneconomic program is the simple answer.

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