



**QUARTERLY U.S. RURAL ECONOMIC REVIEW**

# Farm Commodity Prices Realigning

This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries.

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**Key Points:**

- *The global economy remains in transition, headed into uncharted waters. The advanced economies have become the primary engines of global growth.*
- *Earlier projections for record corn and soybean harvests in 2014 did not disappoint. Prices, however, offered a surprise rally in Q4-2014 after the lows established in late September. Typically, the market expects large crops “to get larger” and prices to fall after a record crop. Instead, futures prices for corn, wheat, and soybeans climbed an average of 25 percent through the remainder of the year.*
- *By many accounts, the fall fertilizer application season was lackluster. Fewer tons applied in the fall will result in greater applications in the spring, putting additional pressure on the already strained U.S. transportation system.*
- *The U.S. ethanol industry’s policy future remains uncertain. The Environmental Protection Agency announced in late November that it will defer a decision on the Renewable Fuels Standard blending mandate until an unspecified time in 2015.*
- *The animal protein complex is at an early stage of what promises to be an aggressive expansion of meat supplies. To date, however, the protein industries have been hobbled by constraints that have temporarily curtailed the potential production responses to record high prices.*
- *The coming year will be a challenging one for dairy producers and processors worldwide, with all having to adapt their operations to what promises to be a painful cyclical correction.*
- *While California’s recent heavy rains have provided temporary relief from the three-year drought, it’s still too early to judge whether the drought has ended. The rainy season began in early November and still has four to five months to go.*
- *With U.S. oil prices below \$60 a barrel, the rig count will likely decline in coming months, but U.S. oil production will still continue to grow, albeit at a slower pace. At the same time, growth in natural gas production is likely to slow reflecting slowdowns in production from “associated” gas in crude oil basins, and from “wet” gas plays.*
- *Ever-increasing IP traffic coupled with double-digit growth in consumer spending on broadband services – up 80 percent during the past five years – continues to provide opportunity for rural communications providers.*

## Uncharted Waters

The collapse in oil prices and ongoing volatility in foreign exchange markets have sent the world economy and commodity markets into uncharted waters. The U.S. and United Kingdom are on sustained albeit subdued growth trajectories. Japan and the Eurozone, however, are teetering on recession, and China continues to promote domestic consumption as a growth driver with mixed success and moderating growth. The emerging economies continue to struggle for growth as reduced capital inflows and dampened export opportunities limit their potential growth. At the same time, the Central Banks are implementing divergent strategies. The U.S. Federal Reserve Bank and the Bank of England are reducing their monetary accommodation while the Bank of Japan and the European Central Bank are expanding their stimulus efforts. These divergences are adding to the volatility in currencies and capital flows.

This global economic environment is fostering significant price realignments in commodity and input markets. With U.S. agriculture increasingly reliant on export markets, these realignments will be driven by domestic and global economic forces including trade flows, macroeconomic momentum, and currency movements. Larger grain and oilseed supplies, the strengthening U.S. dollar, and a flattening in grain consumption demand have combined to apply significant downward pressure on commodity prices. If a pattern of more normal harvests prevails in 2015, there should also be major realignments in the prices of fertilizer, seed, fuels, land rents and cropland values. The animal protein sector has benefitted from lower feed costs and some unique factors that have contributed to wider margins. Those factors may give way in late 2015 and pressure prices and margins sharply lower. The dairy sector, with increased dependence on exports, is already beginning to feel the downward price pressures from sharply increasing domestic and global milk supplies.

## Global Economic Environment

The global economy remains in transition and headed into uncharted waters. The advanced economies have become the primary engines of global growth. China and

the emerging markets are moving to less robust growth paths than the last five years and will focus increasingly on internal economic and political reforms. Growing middle classes in the emerging economies, particularly China, will continue to boost global demand for food, fiber and agricultural products and lend support to U.S. export growth, albeit at a slower pace.

Going forward, the global economy will be buffeted by daunting challenges from many directions:

- **Central banks in the U.S. and Europe will continue to occupy center stage.** The number one challenge facing the advanced economies during the next year and beyond will be to unwind their highly stimulative fiscal and monetary policies without undermining the global economic recovery or triggering a renewed inflationary cycle.
- **The value of the U.S. dollar is heading higher.** Over the past three years, the foreign exchange value of the U.S. dollar has climbed about 22 percent, on a trade-weighted basis. (*See Exhibit 1.*) Further increases are in the offing, assuming that the U.S. economy continues to outperform the other advanced countries and that the Fed soon begins tightening monetary policy and allowing interest rates to rise.
- **Eurozone deflationary pressures and weak growth will rekindle sovereign debt issues.** In the coming year or so, global capital markets will re-assess both the risks of default and members' commitments to fiscal discipline. Overall economic growth in Europe will likely remain subdued during 2015 and beyond, and major economic reforms will be delayed.
- **China's economic growth will continue to ratchet lower.** China's ability to stimulate internal consumption and reduce their dependence on exports will determine its growth potential. Their new 10 year plan emphasizes the quality of growth in terms of realigning their economy and addressing issues such as the environment, state-owned enterprises and provincial autonomy. Target growth is at 7.5 percent a year, but the possibility of a hard-landing with Chinese growth falling below 7 percent

### Exhibit 1: U.S. Dollar Index



Source: Bloomberg

must be carefully monitored. Shadow banking exposure to the real estate sector in particular remains an issue.

- **Geopolitical flare-ups will continue to dominate the global landscape.** The Middle East turmoil appears to be expanding rather than contracting, and the Ukraine's problems will linger for some time and reduce growth potential in both Russia and Europe.
- **World energy markets are undergoing a paradigm shift.** The emergence of a more self-sufficient North American energy market and a reduced European dependence on Russian energy supplies will entail significant economic and geopolitical consequences. Oil prices have collapsed in recent months. Comments from OPEC, and particularly Saudi Arabia, indicate a willingness to allow a low level of oil prices for a significant period of time in order to reduce oil production in regions with relatively higher costs of production. OPEC's new strategy will impact the growth path of oil production in a number of regions, including the rapidly growing shale basins. Lower crude oil prices will give a boost to consumers in oil dependent economies but will also slow investment in the energy sectors.

### U.S. Economic Environment

The pace of U.S. economic growth has improved appreciably over the past six months. The nation's business leaders and policymakers are voicing renewed optimism that growth in the 2.5 to 3 percent range will be sustained over the next few years. In part, the impetus behind the recent growth acceleration reflects such elements as rising inventories, an improving trade balance, and a spike in Federal spending all of which are unlikely to persist.

However, consumer spending is likely to gain greater momentum from continued robust job growth, declining joblessness, strengthening wage and salary incomes, and lower gasoline prices. Business fixed investment spending will also move higher as the improving consumer outlook encourages companies to carry out long delayed investment projects.

Going forward, however, the U.S. economy will also face headwinds from several directions that will retard but not stall the recovery. The recent sharp decline in oil prices, for example, will temper investments in the energy sector. The housing sector should continue to gain momentum, but the specter of rising interest rates may limit the willingness of homebuilders to increase inventories of homes in advance of sales. The Federal Reserve will be cautious in transitioning from its highly accommodative stance and toward its objective of flattening the yield curve and limiting increases at the longer end of the yield curve – yet it will still move in this less accommodative direction. The rising value of the U.S. dollar will contribute to a wider U.S. trade deficit, encouraging imports from abroad and discouraging exports of U.S. produced goods and services.

## **U.S. Agricultural Markets**

Rarely in the past have the agricultural markets displayed such a divergent range of supply-demand imbalances. The grains, oilseed, cotton, and dairy markets are all under pressure from ballooning supplies, while the animal protein industries are hobbled with short term constraints that have temporarily curtailed the potential production responses to record high prices. These imbalances leave a wide range of price expectations linked to both domestic and global developments.

Similarly wide-ranging expectations extend to the entire food, fiber and agriculture supply chain. Input prices for seed and fertilizer, along with land rents and cropland values, are poised to begin significant realignments, with impacts on inventory valuations and balance sheets. Profit margins and supply availability in the processing and retail segments could also change dramatically, sometimes for the better and sometimes for the worse.

## **Grains, Oilseeds, and Ethanol**

Earlier projections for record corn and soybean harvests in 2014 did not disappoint. Mild weather during harvest allowed many growers to dry crops in the field, averting a much-feared run on rail, truck, and elevator infrastructure. Prices, however, offered a surprise rally in Q4-2014 after the lows established in late September. Typically, the market expects large crops “to get larger” and prices to fall after a record crop. Instead, futures prices for corn, wheat, and soybeans climbed an average of 25 percent through the remainder of the year. If sustained, these prices will cushion the decline in net farm income for 2014/15. For elevator operators, earnings will be up due to greater throughput, along with the best market carry in years.

The aftermath of plummeting oil prices will reveal widespread impacts across the agricultural sector. Oil production and shipments by rail, however, are expected to continue to expand, offering little relief to grain shippers. In coming months, the severity of winter temperatures will again exert significant influence on shipping times. To date, there have been few significant transportation disruptions.

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U.S. exports of corn, wheat and soybeans are diverging in 2014/15. Wheat and corn exports are trailing year ago levels, while soybean sales have set new records. The declining cost of moving grain from the U.S. interior to the ports will add back value to grain producers and elevators in 2015. However, rail system constraints will keep basis volatility risk elevated in the Northern Plains.

### **Corn**

Market prices in the closing months of 2014 did not follow the script for a record corn crop. The usual narrative that “the world is awash in grain” may be true at a fundamental level, but domestic sales have been very slow, while feed and ethanol demands have been robust. This combination yielded a steady, and unexpected, 30 percent climb in corn futures from early harvest through the end of the calendar year. The collapse in oil prices does pose a risk for corn ethanol production during the first half of 2015. But lower gasoline prices will enable consumers to purchase more high-priced meat, supporting the expansion in poultry and pork production, and thus bolstering feed demand.

Ample global corn supplies and a persistently strong U.S. dollar will keep U.S. exports below year ago levels. Worries about South America pulling back on corn planting in 2015 have lessened as corn prices pushed past \$4.00 per bushel. But Brazil’s late start to soybean planting will delay second-season corn planting there, and compress an already tight production window. Combined corn production for Argentina and Brazil is forecast to slump 7 percent. China managed to produce its second largest corn crop ever this year, despite a serious drought in its main growing region. With its grain elevators filled to the brim, China’s corn imports are expected to fall to a four-year low, off 40 percent from last year. On the bright

side, China signaled in mid-December that it will end its import ban of corn products that contain the GMO trait MIR-162. More positive news for corn demand came out of Cuba in mid-December when the Obama administration announced that the U.S. and its southern neighbor are working to normalize relations. Cuba's imports of U.S. corn peaked in 2008, when they ranked as the eleventh largest importer of U.S. corn. Since then, U.S. corn trade with Cuba has plummeted 76 percent, even as Cuba increased its total corn imports by 27 percent. Both the China and Cuba breakthroughs could add significant demand and price support for corn over the medium term.

However, with domestic corn ending stocks projected at 2 billion bushels, the question looms whether the current rally in corn prices can persist into 2015. Tax motivations often cause producers to defer sales into the next year, and revenue will soon be needed for their ongoing expenses. Therefore, corn is likely to start trickling out of the bins and into the supply chain in greater volumes, keeping cash prices capped in the mid-to-upper \$3.00 range well into 2015.

Looking ahead to the planting of the 2015/16 U.S. crop, the market is giving few signals as to whether corn or soybeans will be more highly valued next fall. With the South American soybean crop off to a good, albeit late, start, the risk premium in next year's price is low. With a status quo outlook for South America, U.S. producers may factor in the five year low in oil and energy prices as they select seed for spring planting. Energy related costs make up a much higher percentage of corn production costs than that of soybeans, when factoring in fertilizer, chemicals, diesel fuel, and propane for drying at harvest. Hence, in a high priced energy and fertilizer market (all else being equal), producers are more prone to plant soybeans. The reverse may be true in 2015 if the soy/corn price ratio is a toss-up, and energy-related costs are neutralized. That said, if the market continues to balance the need for corn or even slightly favors soybeans, growers could end up with about 88 million acres planted to both crops next spring. Assuming a trend yield and commensurate demand, supplies could build further, in which case prices would have a difficult time elevating past recent levels well into 2016.

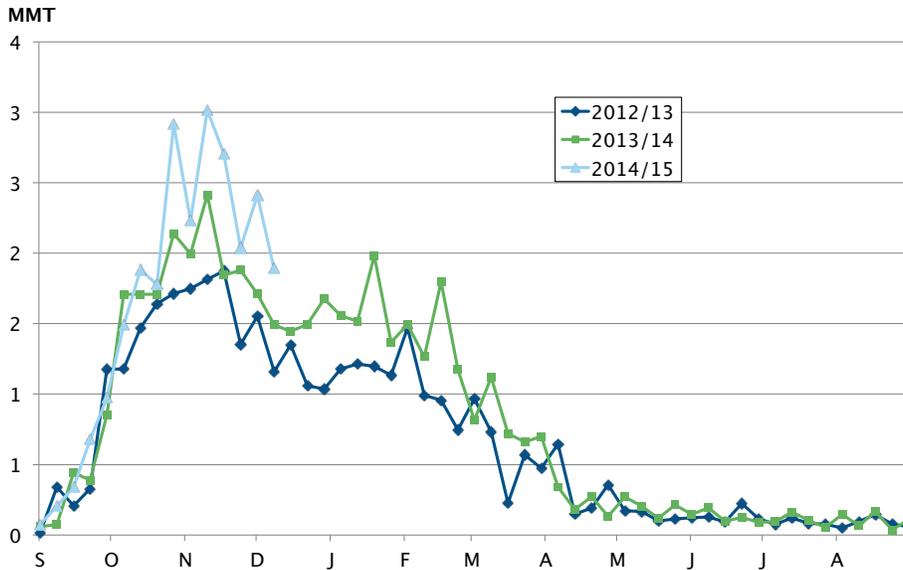
## Soybeans

The largest U.S. soybean harvest on record is complete, and the formerly tightest soybean supply situation in modern times has now been replenished to a multi-year high. Processors and exporters could not get the soybeans fast enough this fall, with pipelines depleted, prices dramatically lower, and crush margins well into the black. Soybeans dominated agricultural transport throughout the final quarter of 2014. Beans accounted for a record-large share of barge traffic, and export sales ran at record pace into December, as producers raced to capture sales under the November futures contract before the inverted market penalized them for holding them into December. The market was signaling that the soy pipeline needed to be restocked, so producers shipped beans and stored corn.

Now that carry has returned to the soybean market for the first time in years, and a record number of soybean-loaded vessels are on their way to China, sales activity will slow in the opening months of 2015. Soybean demand and prices will be supported by improving crush margins in China in Q1 2015, and expansions in domestic U.S. hog and poultry populations. However, the South American crop is off to a great start, and the Argentina/Brazil combined harvest is projected to eclipse last year's record by 6 percent. Vessels will begin loading in Brazilian ports by early February, with the added price advantage of a weaker real versus the dollar.

Consistent with the past two years, U.S. soybean exports peaked in November and are steadily declining. (See *Exhibit 2*.) The steepness of the decline in January and February will depend on growing conditions in South America and production estimates. If Brazil and Argentina deliver their third consecutive record crop as expected, global price pressure will increase, as U.S. and global stocks mount heading into 2015/16. Prices are likely to cool in Q1 2015 as the U.S. sales pace slows, and global attention turns to the Southern Hemisphere. Basis will provide less price support to the producer compared with the past two seasons, but carry will reward those who held back some of their beans. Cash prices are expected to remain in the low-to-mid \$10 range in Q1-2015.

## Exhibit 2: U.S. Soybean Export Shipments



Source: USDA-FAS

Domestic soybean crushers have experienced excellent margins through Q4 2014, supported by solid demand for soybean meal (SBM). Crush margins will drift lower after January due to the divergence of soybeans and SBM (soybean prices will have a healthy carry while SBM futures will be inverted), but margins will remain in the black through the first half of 2015. Robust domestic and export demand for SBM will continue to be counterbalanced by weaker demand for soybean oil (SBO). Abundant supplies of Canadian canola oil are pressuring U.S. SBO prices, along with the collapse of crude oil prices, and flat demand from biodiesel producers.

### Wheat

Geopolitical issues, freezing temperatures with lack of insulating snow cover, and challenges in finding quality wheat will provide an opportunity for wheat to continue as a price leader in early 2015.

Domestic winter wheat planting was completed on schedule and the crop is off to a good start. Winter temperatures threaten to damage the crop, though, as snow cover has been thin for most of the major growing areas. While record global wheat production indicates the world has plenty of wheat, there are several factors

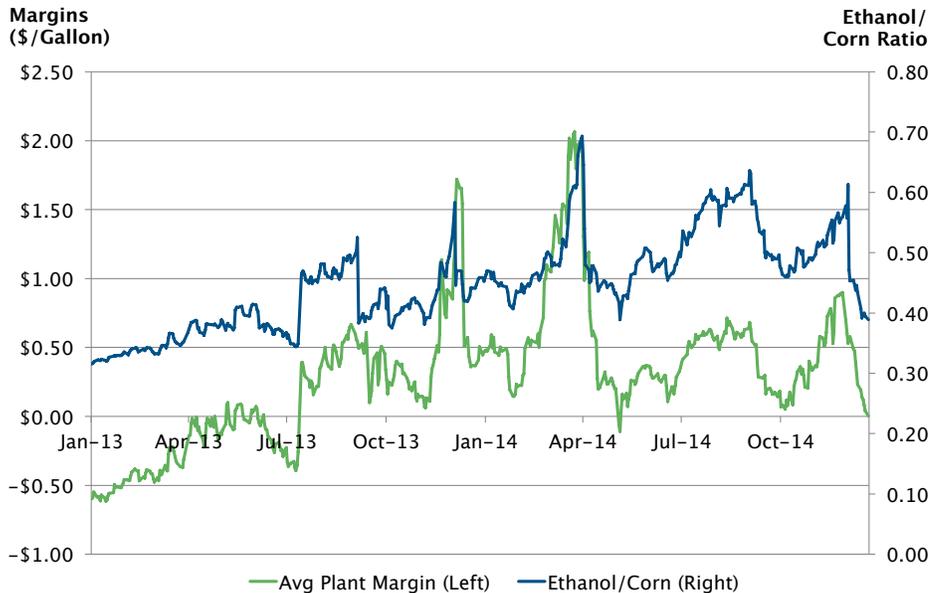
that could produce price volatility. Quality issues within the EU, Canada and U.S. spring wheat supplies will likely keep premiums in the market for good quality spring wheat. Brazilian wheat has been plagued by untimely rain lowering wheat quality, some of which will be too poor to use for feed. Argentina also faces quality issues due to excess precipitation, albeit to a lesser extent. Feed wheat will not be hard to find.

Dry conditions during the planting season in Russia and frigid temperatures with little insulating snow cover have spurred overseas hedgers to

bid up the Chicago wheat price, adding a risk premium into the U.S. wheat market. As the ruble plummeted in early December and fears increased about food inflation, Russia took steps to limit wheat exports. This cautionary move further elevated Chicago wheat (the international hedge) and compressed the spread between Chicago and Kansas City wheat to levels that defy the differences in fundamentals between the different wheat classes.

Domestically, current crop year supplies will remain at multi-year lows for hard red winter wheat, and at three-year highs for soft red winter wheat. Barring a major winterkill, both classes will rebound in 2015/16 to levels not seen in roughly a decade. However, for the duration of the current crop year, prices will remain far above the world price and exports will continue to suffer. Sales to foreign buyers are projected to fall by more than 20 percent this year, with the U.S. firmly positioned as a residual supplier. Unless Russian production estimates further deteriorate and/or they further restrict exports, U.S. wheat prices are expected to drift lower in Q1-2015 as some of the risk premium exits the market and the world price applies pressure to domestic prices. Basis variance will remain wide by class on fundamentals, but Chicago futures are likely to drift to the low \$6 range.

### Exhibit 3: Ethanol/Corn Price Ratio and Ethanol Plant Margins



Sources: CME, Bloomberg, CoBank.

#### Ethanol

Massive movements in oil and gasoline prices changed the landscape for ethanol producers heading into 2015. The nearly 50 percent collapse in oil prices dragged down ethanol prices, and has compressed margins. (See Exhibit 3.) But this plunge comes after an unprecedented run that delivered an average \$0.50 per gallon return for plant operators over the past 18 months.

Margins are likely to hover closer to breakeven through the first few months of 2015, as ethanol exports are expected to drop from record levels due to ethanol's high value relative to gasoline. Exports are a small portion (only 5 percent) of overall U.S. ethanol sales, but are critical to keeping supply and demand in balance for an industry that is built to handle a greater capacity than the 10 percent U.S. blend rate. Canada accounts for roughly half of U.S. export sales to satisfy its 5 percent blending mandate, but most other export markets are discretionary blenders – that is they blend ethanol as an octane enhancer when the economics make sense.

The industry did receive good news in mid-December when China announced that it would approve several

additional corn GMO traits in its grain and distillers imports, including the crucial MIR-162 trait. The change in policy ended an effective ban on U.S. corn and distillers grains (DDG), and China paired its announcement with a fresh round of U.S. DDG buying. China accounted for half of U.S. DDG export sales from 2013 until the ban was put in place mid-year 2014. Prices for the ethanol co-product declined to very attractive levels after China's exit, and their return to the market comes at an opportune time for the industry.

With one foreign policy matter solved, the U.S. ethanol industry still faces an uncertain policy future here at home. The Environmental Protection Agency (EPA), which oversees the Renewable Fuels Standard (RFS) blending mandate, announced in late November that it will defer a decision on 2014 blending requirements until an unspecified time in 2015. The announcement makes it increasingly likely that the agency will backtrack on its original proposal to slash the ethanol blending mandate to a level below the current 10 percent blending rate. Although the EPA provided no time table, it did state that a multi-year schedule will emerge with the decision, which will lay out blending requirements through 2016.

#### Animal Protein Industries

The animal protein complex is still at an early stage of what promises to be an aggressive expansion of meat supplies. Demand has reached new heights despite record-high prices. The pork and poultry industries should remain profitable through much of 2015, but margins will likely begin to compress later in the year as these meat supplies expand. Due to the long biological production cycle for cattle, feeder cattle supplies will remain tight, and competition from an overbuilt feeding industry will prevail throughout 2015 – and much of 2016, too.

Milk production has been growing steadily worldwide, and a more favorable feed and forage cost environment is likely to accelerate this pattern in coming month. However, the U.S. dairy industry will face heightened risk in 2015 due to its growing export dependency and sharp increases in global and domestic milk supplies.

**Beef**

Early indications of an expansion of the beef herd are beginning to solidify. A downward shift in feed prices, improved pasture/range conditions, and continued strength of demand both domestically and internationally have all combined to set the stage for increased beef production in the future. However, a significant increase in the beef supply probably won't be realized until 2017. Total U.S. beef production is expected to ease 1 to 2 percent in 2015 with the decline front-loaded in the first half of the year, and then bottom out in 2016. Volatility in the marketplace and uncertainty about the consumer's willingness to support record-high prices will be areas of ongoing concern. Proper risk management strategies are paramount to the beef industry's ability to preserve

the equity that has been captured in 2014, especially for those margin operators in the business.

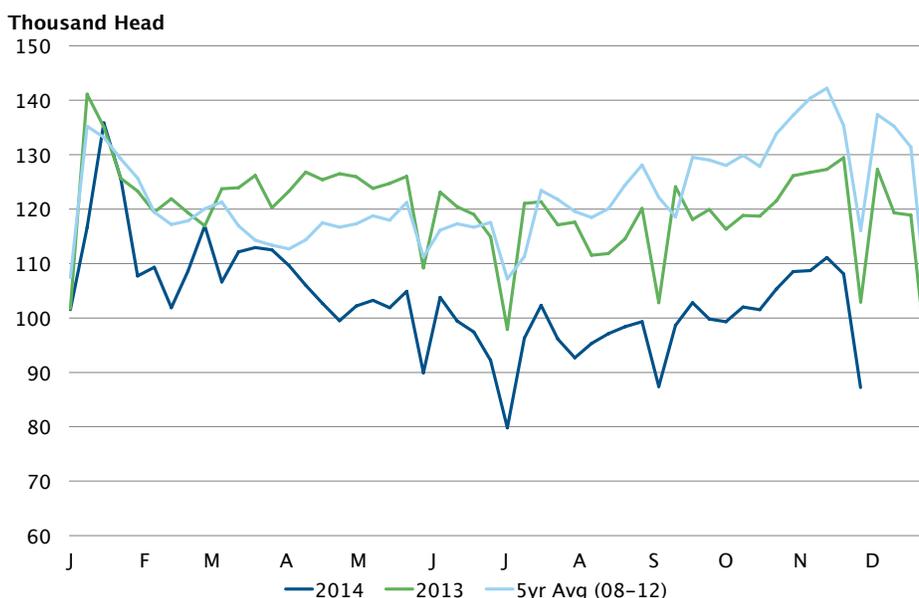
The cow/calf producer remains the biggest beneficiary of the current, positive economic conditions. With record profits estimated at over \$500/cow in 2014, the outlook for 2015 remains at similar levels. It is this sector that will dictate just how fast the herd expansion will unfold. Given beef's long production cycle, one can confidently predict that feeder cattle supplies will remain tight throughout 2015 and into 2016. Cow/calf producers will benefit from competition among market participants up the supply chain as they work hard to secure adequate supplies. Stocker and feedyard operators will continue to compete for steer calves, while their heifer mates are sought after as equally suitable market or replacement breeding animals.

All indications now suggest that the U.S. cow herd bottomed out in 2014, and confirmation will come in the annual cattle inventory report released in January 2015. U.S. beef cow slaughter is estimated to have declined 18 percent in 2014. (See Exhibit 4.) Another indicator is the beef cow cull rate, which has dropped below 9

percent and is expected to track similar to past expansion years. Heifer slaughter is estimated to have fallen 8.5 percent in 2014 with more heifers having been held back as replacements. In fact, heifer slaughter as a percent of total fed slaughter has dropped below 35 percent and provides an additional strong indicator of heifers being held back for breeding. Herd expansion is expected to continue for several years, but is no guarantee with Mother Nature being the most influential market factor in beef's outdoor production system.

Cattle feeders enjoyed record profitability throughout 2014 as the margin environment was in their favor. Lower feeder cattle

**Exhibit 4: Weekly U.S. Cow Slaughter**



Source: USDA-NASS

placement prices early in the year, strong fed cattle prices, and sharply lower priced feed inputs in 2014 all contributed to the record margin levels, which climbed as high as \$300/head on average in late 2014. The combination of cheaper cost of gains and the incentive to produce more pounds of beef caused a dramatic increase in days on feed and average carcass weights in late 2014. The declining currentness of feedyard inventory has not had a negative impact on the market up to this point, but it is something to keep a close eye on in the coming months.

Looking ahead, the number of available cattle for placement on feed will continue to decline over the next couple years causing continued competition to fill pens. Lower feed costs are not fully compensating for high feeder cattle inputs. On the revenue side of feedyard operations, fed cattle prices should remain supported throughout 2015 by tight front-end supplies, but will ultimately be determined by consumer demand for beef. Cattle feeding margin levels will be a concern into 2015 and proper risk management strategies will require detailed attention.

Owing to the tight supplies of market-ready cattle, the packing industry continues to be overbuilt with excess capacity. Packers are faced with the dilemma of procuring enough cattle to efficiently operate their plants, while uncertainty looms regarding the sustained demand pull through that largely influences packer profitability. Record high fed cattle prices and a disproportionate rise in beef cutout values pushed packer margins into the red during late 2014. Nonetheless, annual packer profitability is estimated around \$20/head for all of 2014, including the favorable margin levels posted earlier in the year. Packer margins will remain a challenge during 2015, but those margins could turn out to be better-than-expected insofar as robust consumer demand supports record-high retail beef prices.

Beef demand, in fact, has held up surprisingly well in the face of record-high retail prices. Real per capita expenditures for beef were 14 percent higher in October versus a year ago, and the year-to-date (YTD) growth amounted to a positive 6 percent. The recent

“*U.S. hog expansion is now back on track after having been delayed during the past year by the porcine epidemic diarrhea virus (PEDv).*”

strengthening in the U.S. economy and lower gas prices should keep intact the trend of robust beef demand in 2015. However, next year's outlook for greater domestic pork and poultry supplies and thus lower prices, if realized, would create some headwinds curtailing the continued strong growth in beef demand.

Year to date, U.S. beef export volume has edged up at a modest 1.4 percent, while the 16 percent surge in value clearly demonstrates the continued strength of international demand. Limited supplies of U.S. beef production in 2015, along with a strengthening dollar, could constrain beef exports. At the same time, beef imports have expanded to fill the void in domestic lean beef supply, driven down by reduced cow slaughter. A stronger U.S. dollar and continued strong demand for ground beef will support import demand, but a tightening of supply in Australia will limit growth of lean trimmings imports into the U.S. in 2015.

### **Pork**

U.S. hog expansion is now back on track after having been delayed during the past year by the porcine epidemic diarrhea virus (PEDv). The industry's ability to deal with the PEDv remains the greatest unknown among industry participants and remains a key variable in pork production growth forecasts for 2015. With the return of colder weather, the number of positive cases has slipped below year-ago levels. The industry remains optimistic that the combination of herd immunity, successful vaccines, and increased biosecurity protocol will lessen the impact of PEDv in the future. The PEDv situation, combined with

carcass weights and exports to China, will be the major factors in determining the pork production outlook.

Total pork production is estimated to have declined 1 to 1.5 percent during 2014. Losses from the PEDv in 2014 caused a slaughter reduction of 5.1 percent YTD, but an offsetting increase in carcass weights added 3.5 percent to total production. Spurred by supply shortage fears in the beginning of 2014, wholesale pork values soared to record highs followed by a price correction in the later part of 2014. Due to the drastic reduction in the cost of production, commercial farrow-finish operations should remain profitable in 2015, albeit at lower margin levels than in 2014. The pork cutout is estimated to have averaged \$110/cwt in 2014, and the outlook for 2015 calls for a slight decline to \$101/cwt.

Profitability has sparked a herd expansion, as evidenced by a 5.5 percent YTD reduction in sow slaughter. This gradual movement toward rebuilding the breeding herd should provide larger inventories of feeder pigs in 2015. Carcass weights are up 6-7 pounds in 2014, but the industry expects that trend to reverse in 2015. With larger inventories of feeder pigs and narrower margins, the industry won't be impelled to depend on higher carcass weights to meet the demand pull. The exact decline in carcass weights will be critical, however. Each 1.0 pound reduction vs 2014 can reduce year-over-year pork production by roughly 0.5 percent. With the PEDv incidence and carcass weights as two major variables, the production forecast for 2015 ranges from a 3 to 5 percent increase in supplies.

Pork packer margins remained positive throughout 2014 despite the year-end decline in wholesale values. Packer margins are likely to narrow seasonally from year-end into early summer 2015, with the profitability outlook remaining positive through all of 2015. With the expectation that supplies are increasing and prices will be pressured, consumer demand remains the key determining factor in overall pork production and packing industry profitability. Domestic consumer demand remains strong. With real per capita expenditures in October for pork up 9.6 percent from a year ago and up 7.4 percent YTD, the consumer is clearly willing to pay

higher retail prices for pork. With pork supplies expected to increase and prices moderating to the consumer, pork will have a competitive advantage over beef and may be able to gain market share over the next two years.

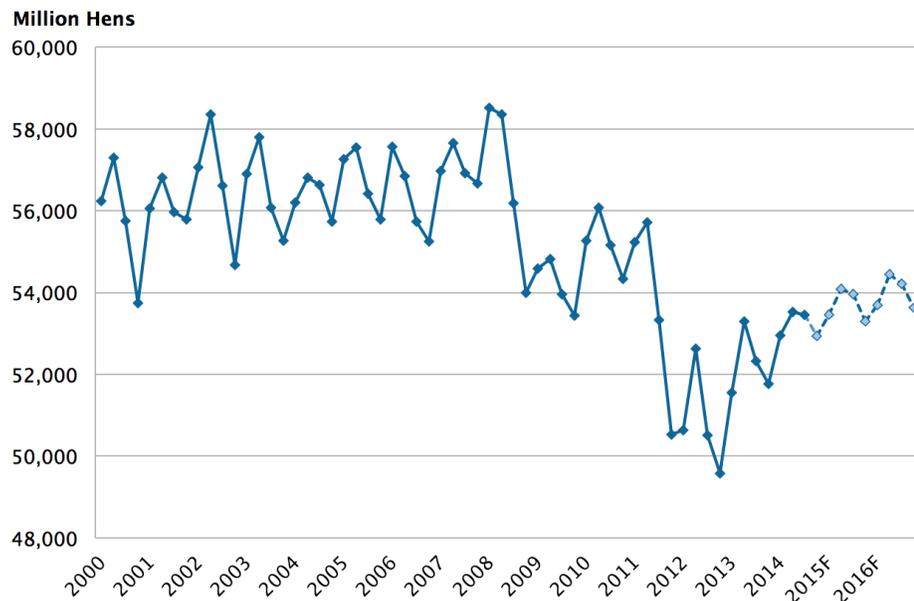
For the YTD, the volume of U.S. pork exports remains 1.8 percent above 2013 levels, while the value of those exports was up 13 percent from a year ago. Similar to beef, these figures demonstrate the international buyer is willing to pay higher prices for U.S. pork. However, pork exports did come under pressure later in the year, as U.S. prices have become less competitive compared to other exporters. Demand from China has the potential to be a major wild card in 2015 for the U.S. pork industry. China has liquidated 6.4 million sows since the beginning of 2013, creating a large potential supply shortfall in 2015. U.S. pork exports to China are currently limited by a ractopamine ban. However, U.S. exports there could increase substantially if U.S. producers reduce the ingredient usage or there is a change in Chinese restrictions regarding the use of the feed additive.

## Poultry

The broiler industry enjoyed one of its best years on record in 2014. Broiler product demand and grower margins are expected to remain strong in 2015, reflecting improvements in the U.S. economy, continued strength in export demand, and the lower price of chicken relative to the record high beef and pork prices.

Broiler production has been slow to respond to the strong economic incentive to grow supplies, with early attempts to expand the nation's chicken flock having been thwarted by the limited size of the hatchery flock. The industry is currently enjoying the lowest estimated feed ration cost since 2010, which led to record profitability in 2014. High margins suggest that broiler production should have grown at a much faster pace than the 2014 estimate of 1.5 percent. The hatchery supply flock inventory, after reductions in 2011 and 2012, began to show signs of recovery in late 2014, and gradual year-over-year increases are forecasted throughout 2015. (See Exhibit 5.) The resulting 1-2 percent increase in chicks placed for growout during the later months of 2014 shows signs of accelerating, and this trend should

## Exhibit 5: Broiler Hatchery Supply Flock



Sources: USDA, EMI Analytics

continue into early 2015. It will take much of 2015 for integrators to continue rebuilding the hatching flock, so significant growth in broiler production output will not materialize until late 2015 or early 2016.

Improvements in performance metrics such as livability, feed conversion, higher breast meat yield and live weights will also contribute to increased production volume. Along with lower feed costs, these production efficiencies equate to lower overall production costs and should help maintain solid industry returns. Average live weights are on pace to be just about 1 percent higher in 2014. With many companies shifting toward a larger proportion of big bird production, and breast meat yields increasing, boneless, skinless (b/s) breast meat production is at record highs. In 2014, the increase in broiler meat production can be mostly attributed to heavier carcass weights.

Looking forward, the broiler hatchery supply flock will gradually grow in numbers through 2016. The resulting increase in chicks placed and an expected gradual rise in average live weights should equate to steady 1.5 to 3.0 percent year over year increases in total production output through 2015 and '16. Overall production costs should

drift lower over the next two years as the grain production outlook is favorable for broiler rations. As the industry grows per capita supplies to 84 lbs in the next two years, we can anticipate a slight erosion of wholesale prices for whole birds, b/s breast meat and wings. In contrast, leg quarters exports will remain strong, resulting in reduced domestic availability and price support, with potential increases in value throughout 2016. Over the next two years, the overall profitability outlook is expected to remain positive.

One additional development to watch closely in Q1 will be any fallout surrounding the recent detection of avian flu in an Oregon backyard operation. Avian flu has not been detected anywhere in the U.S.

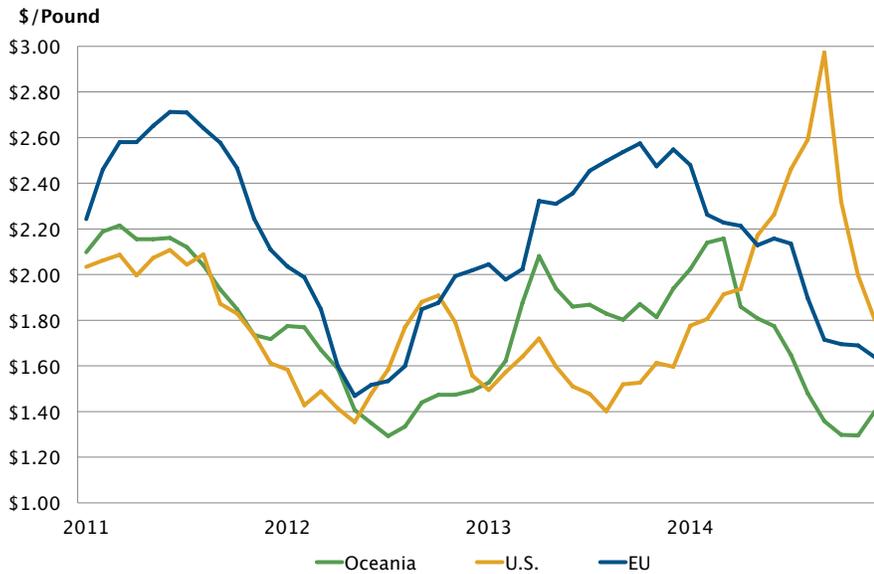
commercial broiler flock, but South Korea has already banned chicken imports from the U.S. The impact thus far is negligible, as South Korea accounts for only 1 percent of U.S. poultry exports.

How the competing meats landscape evolves will be important to watch moving forward. Record high beef prices have the potential to provide support to the entire meat complex, which could only improve the profitability outlook for broiler production. Alternatively, growing supplies of chicken and resulting lower prices will widen the price gap between it and beef, which could be a price limiting factor for the red meat complex.

### Dairy Industry

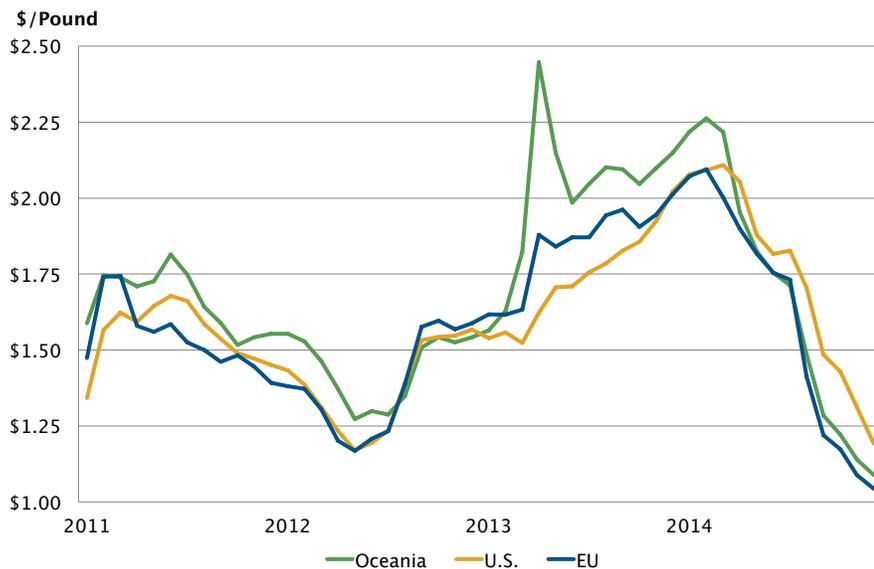
Global dairy markets are oversupplied, and so is the U.S. market. Consequently, global milk and dairy product prices are falling, and so are U.S. prices. But at year-end, U.S. prices remained above those in the rest of the world, suggesting that U.S. prices have further to fall. The trouble is, global prices are continuing to fall, in response to the global glut in the milk supply; and the U.S. milk supply is also still growing, adding to the U.S.'s imbalance. While

### Exhibit 6: International Butter Prices



Sources: USDA and CME Group

### Exhibit 7: International Skim Milk Powder (SMP) Prices



Source: USDA

dairy producers worldwide are intent on expansion, processors and manufacturers are perplexed, wondering where and when prices will bottom out.

Looking ahead to 2015, it's going to be a bumpy ride for U.S. dairy producers and processors alike, and the necessary market correction may well take longer and involve steeper price declines than many analysts and industry insiders are anticipating.

Dairy product prices in the U.S. are racing downward. The CME 40-pound block cheddar cheese prices, for example, had climbed as high as \$2.45 a pound in September, averaged \$2.19 a pound in October, and closed at \$1.60 a pound in mid-December. The decline to mid-December totaled 35 percent. Similarly, nonfat dry milk (NDM) prices peaked at \$2.11 a pound in March 2014 and have been sliding ever since. NDM prices were trading around \$1.29 a pound in mid-December. This decline to mid-December totaled nearly 40 percent. The CME butter price posted a new record-high of \$3.06 a pound in mid-September, averaged \$2.00 a pound in November, and closed at \$1.875 a pound in the week of December 12. This decline to mid-December also totaled 40 percent. The consensus forecast calls for continued declines during the first half of 2015, albeit less dramatic than those that unfolded during 2014.

Despite those sharp declines, U.S. dairy product prices remained above global prices as the year wound down. In November, U.S. butter prices averaged around \$2.00 a pound, versus \$1.69 a pound in the EU and \$1.40 a pound in Oceania. (See Exhibits 6 and 7.) Similarly, in the same month, block cheddar cheese prices averaged \$1.95 a pound in the U.S., versus \$1.75 a pound in Oceania and \$1.46 a pound for Edam cheese in the EU. While the disparities between U.S. and global prices did narrow over the

course of 2014, the global prices continued to fall and, as such, provided moving targets for U.S. prices. Further declines appear to be in the offing, and it's worthwhile remembering that dairy product prices tend to overshoot the stabilizing price levels during cyclical swings.

To date, dairy producers worldwide have not heeded the loud-and-clear price signals. In fact, the major global milk sheds are all in expansion mode. Blimling and Associates, a consultancy specializing in the dairy industry, is projecting that total milk production for the EU, U.S., and New Zealand will grow about 2.0 percent in 2015, on top of the outsized 4 percent increase posted in 2014.

Dairy producers in all three of those global milk sheds are planning to expand their 2015 output. Farmers in the EU, for example, have positioned themselves to take advantage of a "generational opportunity to expand their business," as Blimling put it, following the dairy quota sunset scheduled to occur on March 31, 2015. Down under, despite sharp declines in the farmgate milk payout rates in New Zealand, favorable pasture conditions are expected to spur production growth during 2015. And here in the U.S., dairy producers are boosting their milk output in response to bullish on-farm margins. Indeed, last fall, even as dairy product prices were falling, the USDA's milk-feed ratio continued climbing and, in October 2014, stood at a seven-year high. Consequently, milk production in the U.S. is on a roll. It posted a solid 3.5 percent gain in the third quarter from a year ago, and producers are still moving forward with their plans to expand the dairy herd, having added 80,000 head in Q3-2014 from the previous quarter. We suspect that those expansion plans will be suspended by early-to-mid 2015, but meanwhile those additional cows will be delivering more milk to an already oversupplied market.

Global dairy market demand took a sharp turn for the worse during the second half of 2014, and this weakness is likely to persist through at least Q1-2015. Trade channels into Russia abruptly shut down following its ban on agricultural imports from the EU, imposed in August. Russia has been the EU's biggest cheese customer, having imported more than half a billion pounds in 2013; so its ban has left EU cheese makers holding millions of pounds of excess inventories. More bad news followed

as Chinese importers stepped to the sidelines. Their demand for milk powders slackened appreciably during the second half of the year, after decidedly aggressive purchasing activity in the first half of the year. China's overstocked inventories should be whittled down relatively soon if Chinese demand has stayed relatively constant; and with any luck, China should return to market early in 2015. In the interim, however, these two global developments have created a highly unfavorable scenario for exporters as they have watched the market slowly saturate, driving down prices.

The U.S. dairy trade has begun to weaken in response to these recent global developments, including the shifts in relative prices and the rise in the U.S. dollar. Following outsized gains in overseas sales during the first six months of 2014, U.S. exports declined 10.1 percent in Q3-2014 on a skim-solids basis. At the same time, U.S. imports have ratcheted higher. On a skim-solids basis, U.S. dairy imports totaled 1.5 billion pounds in Q3-2014, up 36 percent from a year ago.

In the closing months and weeks of 2014, U.S. dairy producers continued to expand the milk supply despite the deteriorating market fundamentals for dairy products. The impetus behind this expansion is the big spread between the price of raw milk and the cost of feed. While these margins have narrowed from last fall, they're still high by historical standards.

Producer margins are likely to compress further over the next 6 to 12 months, and it is doubtful that they will remain in the black through year-end 2015. With U.S. dairy product markets currently overbuilt, what's needed to fix this situation is an outright contraction in milk production. Toward this end, producers' margins eventually must turn negative, and it will take a sharp decline in milk prices to make this happen. At this point, it is difficult to predict how far milk and dairy product prices will fall and when the cyclical recovery will begin. But it is certain that the longer the delay lasts, the bigger the glut, and the more severe the required correction.

The rapid deterioration in market fundamentals has set off alarm bells for many U.S. dairy processors. In particular, manufacturers of cheese, powders, butter,

or other products have had their bottom lines squeezed in varying degrees by the recent sharp downturn in product prices. This squeeze occurs because under the Federal Milk Market Orders (FMMO) system, Class III and Class IV milk prices are determined by the market-based product prices, albeit with a four to six week lag. Hence, when product prices undergo a steep fall, many manufacturers are caught in a bind where their revenues are falling at a faster pace than their input costs. The Class III milk price, for example, peaked at \$24.60 per cwt in September and declined to \$21.94 in November – a fall of 11 percent. The Class IV milk price peaked at \$23.89 in August and slipped to \$18.21 in November – a fall of 24 percent. (Classes I, II, III, and IV milk prices are changed only once a month, under the FMMO system.) Processors' margin have indeed gotten squeezed, and this squeeze will persist as long as product prices are falling – and for a little while afterwards, until input costs (i.e., the Class III and Class IV milk prices) catch up with dairy product prices.

Signs of this distress are showing up in the balance sheets and income statements of various dairy processors and coops. Their bottom lines generally are shrinking, and a few companies already have posted, or will soon, quarterly losses. In addition, in conformity with accounting rules, several companies have taken lower-of-cost-or-market write-offs for their inventories of dairy ingredients, insofar as current dairy product prices have fallen far below the production cost of the inventoried goods. Four or five well-managed, large dairy cooperatives have imposed deductions ranging from \$0.07 to about \$0.25 per cwt of annual deliveries on the milk checks distributed to their coop members in an effort to maintain their break-even levels. Nonetheless, during the industry's halcyon days of late 2013 and early 2014, most processors and coops made it a point to rebuild their balance sheets and liquidity balances so that they are well insulated against the current cyclical difficulties.

The coming year will be a challenging one for dairy producers and processors worldwide, with all having to adapt their operations to what promises to be a painful cyclical correction. In this setting, the key question is how

“*The coming year will be a challenging one for dairy producers and processors worldwide, with all having to adapt their operations to what promises to be a painful cyclical correction.*”

steep will the downturn be. Judging by the various industry reports that we have read lately, no one appears to be overly alarmed. For instance, the USDA's latest outlook issued in December calls for dairy product prices to drop 25 percent on average during 2015. Given that product prices have already fallen sharply, this forecast suggests that prices probably won't fall too much farther – and this assessment appears to be consistent with the consensus forecast. Still, with global and U.S. milk production continuing to grow, the risks to the dairy industry would appear to be weighted more heavily on the downside.

## Other Commodities

### Cotton

U.S. cotton production surged 25 percent in 2014/15, as most Texas growers received just enough rain not to abandon their crop. Over the previous three seasons, Southwest cotton growers had abandoned half of their cotton crops on average. In 2014/15, the abandonment rate dropped to 17 percent. Delta growers also contributed to the increased harvest, notching another record yield as they increased production there by 21 percent YoY. The story was much the same in the Southeast, with yields there reaching the second highest level on record.

In contrast to the U.S., most of the world's major producing countries saw production declines this year as lackluster yields more than offset increases in area. Production is still outpacing consumption, however, and world stocks will set a new record again in 2014.

China’s share of those stocks has been trimmed back from roughly two-thirds to 58 percent, but its supplies are still burdensome.

Global cotton consumption is growing, but not fast enough to put a significant dent in stocks this year. World trade in cotton is expected to end up at a six year low in 2014/15, and U.S. export sales are likely to be the lowest since 2000/01. Despite modest signs of rising demand for cotton goods at the retail level, competition from synthetic fibers is still hampering the industry, and the collapse in oil prices will only serve to give synthetics a greater cost advantage.

The stocks-to-use ratios for both the U.S. and the world are estimated to end this year at record highs. The U.S. is likely to end up with a third of one year’s supply at the close of 2014/15 while global inventories will be large enough to supply the world for one full year. U.S. prices will have difficulty sustaining any rallies through 2015 due to the world’s oversupply. Prices are expected to trade in a tight range through the remainder of the marketing year, averaging in the low-to-mid \$0.60 per

pound range. The long-term bearish outlook will cause U.S. producers to cut back on planted area by 10 to 15 percent in 2015/16.

**Sugar**

Mounting supplies of sugar in the world and shrinking inventories in the U.S. have created a historic divergence in price between the two markets. (See Exhibit 8.) Just one year after the U.S. sugar industry was plagued by loan forfeitures due to a glut in supply, inventory has tightened dramatically. In fact, the U.S. sugar industry experienced tighter supply situations in only two of the last 55 years.

The sudden about-face is largely due to changes in trade policy with Mexico. Mexican sugar typically accounts for about 60 percent of U.S. sugar imports, and 15 percent of total U.S. sugar supplies. This year, those figures are expected to fall to 46 percent and 12 percent, respectively.

The U.S. Commerce Department ruled in August that because of Mexico’s subsidization of its sugar industry, its exports to the U.S. amounted to dumping. Negotiations ensued, and Mexico and the U.S. reached agreement on December 22, thereby averting potentially hefty import tariff hikes. The agreement establishes minimum prices for imported Mexican sugar, restricts Mexico’s sugar exports to the U.S. from being concentrated during certain times of the year, and limits the amount of refined sugar that Mexico may export to the U.S. Under this new agreement, U.S. sugar imports from Mexico should increase quickly from this year’s depressed levels, easing the U.S.’s recent supply constraints and pressuring prices.

The global supply situation could not be more different. World production has been outpacing global consumption for five

**Exhibit 8: U.S. and World Sugar Prices**



Sources: CME, ICE

consecutive years, and this year's output has finally declined enough to reverse the building of stocks. Brazil, the world's largest sugar producer, has several sugar mills teetering on the edge of bankruptcy as world sugar prices have plummeted. A much larger than average share of Brazilian sugarcane will be converted into ethanol rather than sugar in 2015, to work down excess supplies.

U.S. food and beverage manufacturers have been vocal about the disparity between the U.S. and world situations, and the impact that high domestic prices have had on their bottom line. Relief could be on its way within weeks. If the deal with Mexico is approved as expected, U.S. prices could quickly tumble 10 to 20 percent, from roughly \$0.25 per pound to something closer to \$0.20 per pound.

“*Three years of severe drought have left the state's croplands and orchards so parched that they will need heavier than normal rainfall to repair the damages.*”

### Rice

The U.S. rice industry rebounded in a big way in 2014. Following a year when growers cut back on rice to grow corn and soybeans, rice has re-emerged in the Mid-South states. Long-grain rice production, which accounts for three-fourths of all U.S. rice, was up 22 percent on the year. The Mid-South also more than made up for a 24 percent decline in California short- and medium-grain planted area. Total production for the two classes was up five percent as Mid-South growers increased plantings in anticipation that drought conditions would prevent California's farms from getting the necessary water for irrigation. Total U.S. rice production expanded 16 percent YoY, much to the satisfaction of Mid-South rice processors and cooperatives which have seen a sizable increase in volume.

With domestic supplies replenished, prices have declined substantively, making U.S. rice competitive on the world market again. Exports will increase across the board for all classes of rice, with most of the additional rice going to Latin America and the Middle East unmilled. Total exports are likely to end up 11 percent higher versus 2013/14. While domestic consumption and exports are expected to rise relatively equally for all three rice classes, the much larger increase in long-grain production will add significantly to stocks at the end of the year, while medium- and small- grain inventories will decline by 20 percent.

California's weather through the early part of the rainy season has its rice growers anticipating a comeback in 2015. And with small- and medium- grain supplies expected to fall through the remainder of 2014/15, the market opportunity will be there to incentivize their return. Rainfall in the northern part of the state has been far above average since October, but much more is still needed to refill reservoir supplies.

U.S. rice prices have been in a steady decline since Mid-South plantings got off to a good start early in 2014. U.S. prices have inched closer to world prices, and as the world situation tightens marginally, both prices are expected to trade in a flatter, tighter range through the remainder of the U.S. marketing year. The world stocks-to-use ratio will fall to the lowest level since 2009/10, but that level will still be a relatively comfortable 20 percent. Chicago futures prices are expected to hover near or slightly below \$12.00 per hundredweight through the opening months of 2015.

### Specialty Crops

As of year-end 2014, California's rainy season was well under way, and moderately heavy rainfalls had drenched many parts of the state. Three years of severe drought have left the state's croplands and orchards so parched that they will need heavier than normal rainfall to repair the damages. California's Department of Water Resources recently estimated that it will take roughly 150 percent of the state's average precipitation (most of which occurs during the November-May rainy season) to recover from the prolonged drought.

Harvests of California's specialty crops are mostly complete, and we are now in a position to provide an assessment of the drought's damage to these crops. Yields for many of the permanent-planting crops, though not all, ended up lower than the previous year; but the shortfalls were generally more benign than the worst fears of many growers, packers, and processors. Following are thumbnail sketches of how well harvests of six of these major crops fared:

***Almonds:*** Despite a 2.4 percent increase in bearing acreage, California's 2014 almond crop will likely end up in the range of 1.85-1.9 billion pounds, or about 8-12 percent below the previous year's crop. This shortfall is due to water issues (i.e., too little water, along with salinity) and also to the "alternate bearing" nature of almond trees (i.e., nut tree yields typically vary from year to year, with one to three high-yielding years followed by a low-yielding year). Assuming that global demand continues to grow, in-shell almond prices are expected to average \$3.00-plus a pound in 2014, or 15-20 percent above last year's average price of \$2.58 a pound.

***Pistachios:*** At the outset of 2014, growers were anticipating vastly improved yields because the previous year had been an "off" one for this alternate-bearing tree. However, crop development faced several challenges as the year progressed, including uneven pollination and an erratic bloom, compounded by water scarcities. As a result, pistachio trees produced an unusually large number of blanks this year, and yields dwindled sharply below the 3,000-4,000 pounds per acre that growers had expected. In addition, water stress (i.e., scarcity and low-quality) damaged the trees, and many growers are concerned about the health of next year's crop even if the drought is lifted. This year, total production is expected to be about 450 million pounds, down nearly 25 percent from the previous year's crop – and far below the 650-750 million pounds that the industry had hoped to see during this "on" year. Buoyed by continuing strong demand, pistachio prices have ratcheted to about \$2.50 per pound, well above last year's average price of \$2.08 per pound.

***Walnuts:*** Growers harvested a record crop in 2014, with robust prices to boot. Walnut trees tend to be hardier than almond and pistachio trees and can tolerate lower-quality water. Growers used surface water where available and groundwater as needed to provide sufficient water to their trees. Moreover, the ample water supply was accompanied fortuitously by mild weather and low pest and disease pressures, thus yielding a bumper crop equal to 563,000 tons of (in-shell) walnuts, up 14 percent from the previous year's crop and a new record high. Meanwhile, walnuts are currently trading around \$2.00-2.10 per pound depending on quality, about 10-15 percent above last year's average price of \$1.83 a pound.

***Wine grapes:*** California's vintners are extolling the 2014 vintages as among their best in recent years. According to a recent press release from the Napa Valley Vintners, for example, "a benefit of the drought is that berry sizes are typically smaller and have more concentrated flavors, which many winemakers believe contributed to the overall quality of this year's harvest." Considering that vintners often use superlatives to describe the latest vintage, it's hard to know just how good this year's vintage truly is. In any event, California's wine grape production this year is estimated to be about 5-10 percent below the 2013 record crop of 4.245 million tons, but it is still the third largest harvest on record. Wine grape prices have also held up well and are hovering in the range of \$750-775 a ton, up slightly from last year's average of \$753 a ton.

***Processing tomatoes:*** The nation's cooks, amateurs and professionals, can look forward to a plentiful supply of canned and bottled tomatoes in the year ahead. California's processing tomato growers were able to scrounge ample water for their beds, and this year's crop has surged to an estimated 14.0 million tons, up almost 18 percent from the previous year and a new record-high. In the face of this year's bumper crop, processing tomato prices will be under pressure and should end up well below last year's average price of \$75.90 per ton.

***Oranges:*** California's orange orchards have weathered the 2014 drought somewhat differently depending on the variety. Fortunately for the Valencia oranges, the periods

of highest heat and least moisture occurred after the “set time” for the oranges, so the average set per tree remained on par with past years. This year’s harvest of Valencia oranges was completed by late October; and the total supply was about even with last year’s 0.5 million tons, along with comparable prices. It’s still too early to tell how this year’s crop of Navel oranges will fare. As of mid-December, the harvest was only about 25-30 percent complete, and the crop has benefited from the recent rains. Nonetheless, the Navel oranges themselves have been smaller-sized than usual, but are described as possessing exceptional quality and flavor. One packer whom we talked to estimated that, judging by the Navel oranges picked to date, this year’s harvest will be about 3-5 percent below last year’s 1.70 million tons. Navel orange prices, which vary by size, are slightly trailing last year’s. The large sizes currently sell for \$20 to \$22 per 40-pound carton, in line with last year’s crop; medium-sized oranges, for \$13 to \$16 per carton, down about \$2 to \$3 from last year’s crop; and small-sized oranges, for \$9 to \$10 per carton, off about \$5 to \$6 from last year’s crop.

In sum, California’s severe 2014 drought inflicted only minor damage to the harvests of these six specialty crops, with two of them virtually unscathed. However, the outcomes for these six crops vastly understate the drought’s overall impact on California’s agricultural sector. Many growers are worried that three years of severe drought may have caused longer-term damage to their vines and tree roots, impairing the health of their future crops. In addition, these six crops are among California’s most profitable, and their growers often chose to divert their limited supplies of water to these plantings at the expense of others. Hence, even with higher produce prices, many of the growers of these six crops still ended up booking considerably less profit this year than in previous years, owing to the high cost of securing water and the outright losses posted on their other crops. Indeed, in response to the scarcity of water, California’s growers opted to fallow an estimated 425,000 to 450,000 acres, thus generating virtually no income to their owners.

While California’s recent heavy rains have provided temporary relief from the three-year drought, it’s still too early to judge whether the drought has ended. The

rainy season began in early November and still has four to five months to go. If the current rainy season ends up delivering considerably less than normal moisture, California’s 2015 specialty crops will be gravely at risk, and the damages are likely to be far greater than those posted for 2014.

## **Crop Nutrients**

The USDA has estimated that net farm income fell 21 percent in 2014, but the post-harvest price rally across most agricultural commodities could help to trim the year’s decline. Conversely, production expenses are estimated to have increased 6 percent compared with 2013. The livestock sector will bolster farm income as livestock receipts are expected to increase 14 percent in 2014 and offset some of the decline in grain revenue. For row crop farmers, a decline in cash receipts will place downward pressure on margins and cause some to be more cautious about input procurement.

By many accounts, the fall fertilizer application season was lackluster. In many corn producing regions, growers had the ability to let the crop dry down in the fields, essentially stretching out the harvest season and tightening the fall application window. Falling commodity prices also compounded uncertainty on acreage decisions for the major corn and soybean regions, thus influencing the decision whether to apply fertilizer in the fall for next year’s crop. Delayed grower input procurement decisions and falling prices for both inputs and crops increase uncertainty for input suppliers. Managing inventory price risk will be key as we bridge from the winter into the spring application season.

Fewer tons applied in the fall will result in greater applications in the spring, putting additional pressure on the already strained U.S. transportation system. In the event of a repeat of last year’s prolonged and harsh winter conditions, the upper Midwest region will likely face procurement challenges. To protect against this situation, grower contracts for inputs will be more important in the spring to ensure product is in place. The last additional tons needed are likely to be the hardest and most expensive to procure. Balancing inventory

risk among the wholesaler, retailer, and producer will continue to be the central focus of the industry.

Fall ammonia applications for corn were limited by inclement weather in many areas as a slower harvest tightened the application window in 2014. Ammonia prices have remained relatively flat due to lack of activity. A situation in which tons are held over to spring will help alleviate some supply risks from potential plant shut-downs overseas, natural gas curtailments, and geopolitical issues. The price spread between competing forms of nitrogen is relatively tight and may limit upside movement in the ammonia market. In the short term, ammonia prices may pick up in the spring as growers return to the fields and demand picks up. However, it is unlikely that large price spikes will occur absent logistical constraints.

The global urea market continues to look to China for direction. The potential for persistent large exports out of China will set the market tone. Fewer fall ammonia applications will result in more dry urea demand come spring. However, lower commodity prices and indecision about corn/soy acreage has many growers deferring at least a portion of their fertilizer purchases. As growers wait for more attractive prices to sell grain, input purchases will also be put on hold. In turn, retailers will remain cautious and resist building urea inventory. While the domestic market is relatively well supplied now, product substitution to urea from other forms of nitrogen may cause localized shortages. Until demand picks up closer to spring, urea prices are expected to remain flat.

UAN prices have remained relatively stable, and grower prepay tons appear to be relatively robust in many regions. Slow fall application may also add to UAN demand for the spring. UAN prices are likely to climb in response as spring approaches. Again, late purchases will increase the likelihood of logistical problems. Spring price increases will be limited by price weakness in other forms of nitrogen and low grain prices.

Phosphate prices have recovered slightly since late Q3 2014. The critical Chinese export tax rate is still not set, and as such has kept buyers on the sideline. Expect

demand to pick up domestically and internationally as spring nears. Phosphate producers are expected to trim output, which should add support to the market. Retailers will continue to wait for grower interest before increasing inventory. Prices are expected to remain flat in the near term, with increases as spring nears, demand picks up, and more is known about China's phosphate export tax.

The tight potash supply situation is easing as rail shipments have improved. Potash prices will continue to firm in the short run, but may soften as we move past the spring season. With the risk of lower crop prices on the horizon, growers are likely to exercise more discretion with potash application this spring. Prices are expected to track demand seasonally, and trail off in the second quarter.

## **Infrastructure Industries**

### **Power and Energy**

With the 2014 books closed, power and energy executives face unusually stressful circumstances. Oil and gas producers are hoping for a rebound in crude oil prices, and electric utility executives are carefully monitoring natural gas storage inventories hoping that winter temperatures do not plunge below last year's record lows. In addition, the coming year brings greater regulatory uncertainty for the power and energy sectors, driven largely by the implementation of the Environmental Protection Agency's (EPA) Clean Power Plan (CPP) in June 2015.

Crude oil prices fell to a five and a half year low at \$56 a barrel in mid-December, reflecting weak global demand and overly aggressive production. (*See Exhibit 9.*) The International Energy Agency has cut its estimate for global oil demand four times during the past five months. Meanwhile, according to Bloomberg, Saudi Oil Minister Ali Al-Naimi indicated that the Saudis would not trim supply, reiterating OPEC's decision last month to leave the group's production target of 30 million barrels per day unchanged even as the U.S. pumps the most oil in more than three decades.

With U.S. benchmark oil prices below \$60 a barrel, rig count declines are likely to pick up in the next

several months as producers cut capital spending while attempting to maintain output growth, albeit at lower rates. U.S. oil supply is forecasted to grow by 750,000 barrels a day in 2015, down from 900,000 barrels a day in 2014.

Continued U.S. production growth and no decline in OPEC production will likely keep oil prices close to \$60 a barrel through the first half of 2015. These lower prices will force marginal oil wells to be shut-in, thereby reducing U.S. production. Oil prices should revert to \$70-\$80 a barrel during the second half of 2015. However, forecasts remain particularly sensitive to actual prices available at the wellhead and drilling economics that vary across regions and operators.

Growth in U.S. natural gas production could also decelerate due to falling crude prices via lower production growth from “associated” gas in crude oil basins, and from “wet” natural gas plays.

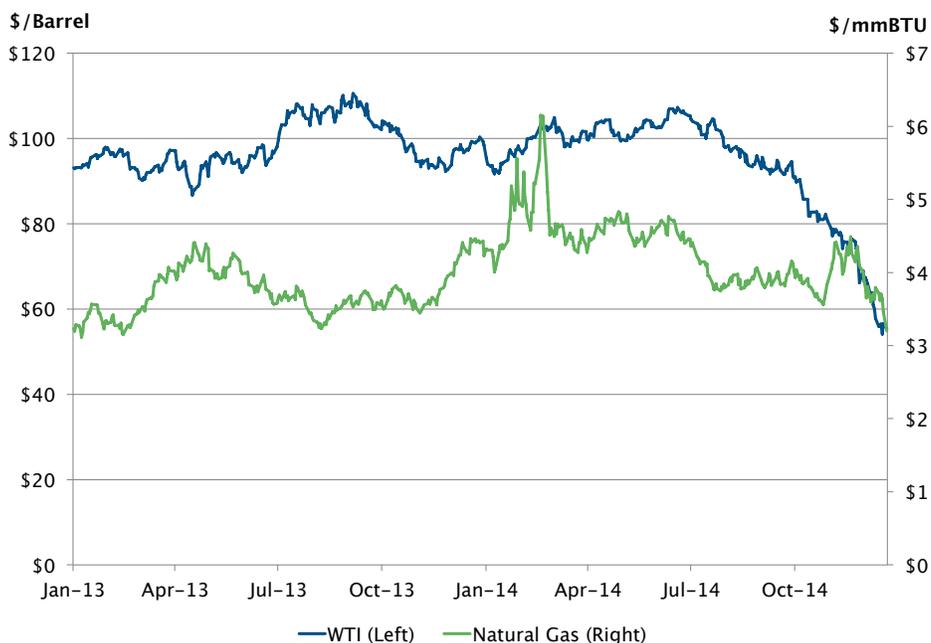
- Shale resources in the Permian, Bakken, and Eagle Ford basins currently produce non-negligible volumes of so-called associated gas, which is natural gas found in contact with or dissolved in crude oil. By some estimates, associated gas represents as much as a third of the growth of new gas supplies and currently accounts for about 8 percent of the total U.S. supply.
- Wet natural gas includes condensates, commonly referred to as natural gas liquids (NGLs) – i.e., ethane, propane, butane, isobutane, and natural gasoline. The Marcellus is the most prolific basin for wet gas, which accounts for almost 30 percent of the 19 Bcf/d of gas produced in the region.

NGLs typically track the price of crude oil because they are substitutes for crude-based byproducts used largely by the petrochemical industry, which accounts for more than half of total demand for all NGLs. For ethane, the petrochemical sector is 100 percent of the market for this product. About one-third of propane goes to the so-called petchem industry, along with some butane and natural gasoline.

Current demand from the petrochemical industry, however, cannot absorb growing ethane production volumes. Therefore, ethane prices will remain depressed until U.S. petrochemical capacity increases, an export market develops, or supply pulls back.

The U.S. propane market is also currently oversupplied. However, this glut has less to do with domestic demand and more to do with exports. The U.S. propane market is balanced by exports, particularly to Europe. Demand growth from the European petchem industry has stagnated, while warmer weather has reduced home heating demand. Flat-to-slow

**Exhibit 9: WTI Crude Oil and Henry Hub Natural Gas Prices**



Source: Bloomberg

export growth and increasing domestic production are resulting in an oversupply of propane, with the excess being sent into U.S. storage. Propane storage volumes in the Midwest are currently around 44 million barrels, 25 percent greater than last year leading into the Polar Vortex season and well above the 5-year average. In turn, these high storage volumes have sent propane prices plunging from \$1.10 per gallon in September to around \$0.55 per gallon in mid-December. Propane prices will remain depressed until demand picks up both domestically and internationally.

“*The looming shift away from coal will increasingly put the U.S. power sector at the mercy of gas storage supplies during winter peak demand*”

Falling crude prices, coupled with an oversupply of ethane and propane, are placing significant downward pressure on NGL prices. Valuable NGLs are important to natural gas producers because they make marginal gas wells economical in an environment of low gas prices. However, “wet” gas production from the Marcellus basin is well insulated from lower NGL prices due to its extremely low break-even prices, strong productivity gains, and sizable backlog of completed but non-producing gas wells. Therefore, any pullback that does occur in natural gas production will largely reflect less associated gas from the Eagle Ford and Permian basins.

Going forward, flattening of the natural gas production curve, coupled with growing demand, would result in upward pressure on natural gas spot prices. However, rising natural gas prices would in turn incentivize natural gas producers to increase drilling activity in dry gas plays that are currently uneconomical. This additional supply could prove to be critical for natural gas prices in an environment of increasing demand, much of which will

be a direct result of the EPA’s CPP that is scheduled for implementation in June 2015.

One of the main “building blocks” of the CPP relies on increasing the capacity factor of gas-fired combined-cycle plants to 70 percent by 2020, from the current 48 percent. Independent power producers had greatly overbuilt combined cycle gas turbine (CCGT) plants between 1990 and 2007, creating more than 168 gigawatts (GW) of capacity at 345 plant sites, according to RBN Energy. Since then, these plants have not been fully utilized (i.e. they have a low capacity factor) because they have usually been more expensive to operate than coal fired plants and they have only been dispatched during peak consumption hours. According to the EPA, increasing the capacity factor of these CCGT plants would be a quick way to offset coal retirements, and reduce the amount of carbon dioxide and other greenhouse gases released by the power sector.

The looming shift away from coal will increasingly put the U.S. power sector at the mercy of gas storage supplies during winter peak demand. The 2014 natural gas injection season has ended, and operators have begun withdrawing working gas from storage. At the start of the withdrawal season, the storage deficit was 238 billion cubic feet (Bcf) below the 5-year average. However, strong year-over-year production growth and moderate temperatures compared to last winter, have helped erase this deficit. Furthermore, weak heating demand and ample supply have placed downward pressure on spot natural gas prices, which traded at \$2.85/MMBtu on December 29, 2014. In the absence of extreme weather and a slowdown in production, natural gas inventories should remain close to average, supporting weaker gas prices through the winter.

The coming year promises to be very “interesting” across the power and energy sectors, but how things play out hinges critically on crude oil prices. Crude prices are likely to remain depressed as long as OPEC adheres to its production quota, and growth in global oil demand remains subdued. Crude oil prices will likely average somewhere in the range of \$65 to \$75 a barrel in 2015. These low crude prices will continue to cut into the

profits of U.S. shale producers, and could lead to slower production growth for both crude oil and natural gas. In turn, slower natural gas production growth could place upward pressure on prices, as demand for natural gas is likely to grow through 2015, driven largely by environmental regulations aimed at reducing the existing U.S. coal fleet and greenhouse gas emissions from the power sector.

### **Water Utility Industry**

The economic and strategic considerations driving capital expenditure decisions among water utility managers are shifting. In recent years, consent decrees from the Environmental Protection Agency (EPA) heavily influenced those decisions. While these decrees are still important, utility managers in certain regions, especially the West and Southwest, are now spending much more time focused on drought relief, and specifically on securing additional water supplies and providing increased storage volumes. In many cases, these water supply and storage projects are proving to be equally significant in importance and capital intensity.

Financing these new projects, however, has been a challenge. Waning government funding for water and wastewater projects and declining municipal bond issuances are the result of: (1) ongoing post-recession fiscal austerity in many states and cities, (2) higher fixed costs, through pensions for example, (3) anti-tax voter attitudes, (4) lack of broad public support for infrastructure spending, and (5) the prospect of rising interest rates. In an acknowledgement of the current abysmal state of public funding for U.S. infrastructure, the White House hosted the “Build America” summit in September 2014. According to Global Water Intelligence, the goal of the meeting was to identify barriers to private investment in transportation, water, and power infrastructure, and to develop strategies for how to access and deploy the billions of domestic and foreign dollars currently sitting on the sidelines.

Results of the midterm elections could help pave the way for more private capital to finance water and wastewater projects through public-private partnerships (PPP). Republicans won Senate seats across the country and

hold a majority of at least 52 seats, expanded their margin in the House, and won key governor races. The most critical level of GOP control is now at the state and local levels, and they are the political entities that oversee and manage the majority of water and wastewater projects. Additionally, jobs created from infrastructure projects are felt most at the local level, and job creation ought to be the one issue where the White House and the Republican led Congress can agree.

Development of water and wastewater PPPs continues to be highly regionalized, with the most recent and notable signs of life occurring in Texas and California. Support for these projects have occurred against the backdrop of crippling drought and massive increases in municipal and industrial water needs. Though PPPs have struggled historically in the U.S., due largely to alternative, low-cost government funding, important changes are occurring that could provide an important boost to PPPs.

In California, legislation signed by Governor Jerry Brown will provide a new funding source for water and wastewater PPPs in the state. With the change, project stakeholders can blend private sector equity with low cost State Revolving Fund (SRF) debt. This combination provides a significant advantage with regards to transfer of risk to the private investor(s). Many analysts believe that the new legislation will lead to an increase of two to four water and wastewater PPPs per year in the state.

### **Communications Industry**

Booming broadband traffic, largely due to video consumption, continues to propel the communications industry forward. Cisco’s latest analysis predicts that annual global Internet Protocol (IP) traffic will surpass one zettabyte (roughly one billion gigabytes) sometime in 2016. By 2018, global IP video traffic will represent nearly 80 percent of all IP traffic. Ever-increasing IP traffic coupled with double-digit growth in consumer spending on broadband services – up 80 percent during the past five years – continues to provide opportunity for rural communications providers. Different segments of the industry have been successful to varying degrees in leveraging the strong demand and uptick in pricing to counterbalance the many challenges of providing

services, and those segments that have been able to contain costs and competition are faring the best.

Going forward, the data center and fiber transport sectors are expected to flourish as both wireless and wireline traffic traverses over long-haul fiber routes and enterprises and consumers continue to push more data out to the cloud. The rise of content delivery networks (CDNs) that more efficiently and effectively deliver video content to end-users via a network of servers located in data centers across the Internet will also be a boon to data center operators, as CDNs are projected to deliver 67 percent of video traffic by 2018. Additionally, the advent of just-in-time, modular facilities will allow data centers to meet demand while incurring only incremental costs.

Nearly 60 percent of American adults over the age of 18 own a smartphone, and the average smartphone generated 529 megabytes of traffic each month in 2013 – a number that is expected to balloon to 2.7 gigabytes of traffic each month by 2018. And mobile data traffic is expected to grow three times faster than fixed traffic over the next five years. Despite exponential growth in mobile data and a 50 percent increase in U.S. consumer spending on mobile phone service between 2007 and 2013, intense competition and rising spectrum costs continue to challenge wireless companies. With the next spectrum auction more than a year away, and the major wireless carriers snapping up spectrum to cash in on the expected surge of connections from the Internet of Things (IoT), the ongoing FCC spectrum auction has far exceeded the original \$10 billion reserve. At the time of publication, the bidding had reached \$43 billion, with bidding still in process. Although the steep prices may strain some wireless providers, higher spectrum prices may spur some regional and rural communications carriers to divest non-core wireless assets.

The market outlook for cable providers remains stable. These companies are compensating for losses of video subscribers with revenue from enterprise services and standalone broadband price increases. CableVision, for example, reported increased third quarter broadband revenue despite falling subscriber numbers, and Comcast posted broadband revenue growth that outpaced customer additions. This sector has also made

“*Booming broadband traffic, largely due to video consumption, continues to propel the communications industry forward.*”

great strides in TVEverywhere offerings, enabling them to offset the loss of video subscribers to over-the-top providers such as Hulu and Netflix. Going forward, cable providers face hurdles as the cost for video content continues to rise, and impending Net Neutrality and universal service regulations may require these providers to operate under a new level of scrutiny.

As cost recovery for legacy networks continues to ratchet down, rural local exchange carriers (RLECs) are making the shift to all IP-based business plans. Though some RLECs are struggling as high-cost networks and sparse and declining populations make for a challenging business model, many are finding success in augmenting high-speed broadband with ancillary services and IoT-related products, including security and other home monitoring devices. Other RLECs have capitalized on enterprise market demand in surrounding areas, and a few have completely reinvented themselves as unified communications companies and data center providers.

RLECs may find additional opportunities in federal programs. The Federal Communications Commission (FCC) announced that it selected 40 entities to receive portions of the almost \$100 million that is set aside for rural broadband experiments. Nearly half of the winning applicants will receive support to build networks capable of delivering 100 megabytes per second (Mbps) downstream and 25 Mbps upstream. The program aims to fund projects in FCC-determined eligible census blocks and to roll out the fastest broadband speeds in the most cost effective manner.

Other new opportunities for RLECs are present in recent revisions to the E-Rate program, the cost recovery program for schools and libraries. The FCC announced that it will raise the annual program cap to \$3.9 billion

to ensure that schools and libraries become Wi-Fi-enabled to access up to 1 Gbps per 1,000 users in the next five years. While school support will be based on student population, a budget floor of nearly \$10,000 per facility has been established to ensure that schools with small student populations will have sufficient funding. Schools and libraries will look to local carriers to provide equipment and broadband/Wi-Fi services as well as advice on navigating this updated program.

In November, President Obama weighed in on Net Neutrality, urging the FCC to categorize broadband as a Title II service. Reclassifying broadband in this way would transform Internet traffic from a Title I unregulated information service to a regulated telecommunications service that could be subject to cost-based metered pricing laws in addition to numerous additional, potentially stringent regulations.

At the start of the fourth quarter, it appeared that Net Neutrality would be addressed and put to bed by the end of the year. Now, however, it is clear that Net Neutrality will continue to remain a top priority for the FCC through at least the first half of 2015. The resolution, whatever it may be, is highly likely to be contested in court, drawing out the issue for an undetermined period. Ultimately, the Net Neutrality decision holds major implications for the future of all communications providers. In the near term, the President's call exacerbates an already tumultuous and murky regulatory landscape and will likely delay other FCC rulings including sustainable, long-term broadband support mechanisms.

Cyber security and related privacy matters are likely to become a prioritized issue for policy makers and providers in 2015. A recent report by computer security company Lawless Research concluded that 82 percent of U.S. companies experienced at least one online attack in the past year and 46 percent experienced three or more attacks. Though only 10 percent of attacks compromise customer data, the high profile data breaches that have occurred in the past few years left millions of U.S. consumers vulnerable to fraud. Government-mandated requirements and enforcement policies for online security are inevitable, adding complexity and requiring costly and time-consuming efforts on the part of communications companies. The FCC is taking a hardline approach on cyber security, imposing a \$10 million fine on two communications providers for failing to protect proprietary consumer data, as required by the Communications Act of 1934. ■

This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries. Analysts at Plus One Strategic Communications LLC prepared the overview of the communications industry.

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