



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

# Toward a New Pricing Paradigm

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 is in a rotational phase, with the advanced economies resuming their traditional role as the growth engines of global commerce.*
- *With normal global harvests and grain demand growth returning to trend patterns, commodity prices will stabilize far below recent cyclical highs over the next year, but net farm income will continue to fall.*
- *Payouts under the new Farm Bill will buffer the decline in farm income, but these farm program outlays could end up far exceeding Congress' expectations in passing the new legislation.*
- *The grain and oilseed markets are transitioning from an extended period of extremely tight supplies to one of growing carryover inventories. These swelling grain and oilseed surpluses will exacerbate the existing infrastructure woes as export and feed channels become the dominant demand drivers.*
- *The U.S. ethanol industry has experienced a long-awaited resurgence in profitability in 2014. In coming months, however, the depressed corn prices will incentivize increased ethanol production, dampening margins.*
- *The combination of strong animal prices, lower feed prices, improvement in drought conditions, robust foreign demand for U.S. animal products, and continued U.S. economic growth should provide the upward thrust for a sustained mini-boom in the U.S. livestock sector.*
- *The U.S. all milk price will ratchet lower over the next year in response to the growing supply of milk. U.S. dairy processors will continue to absorb elevated raw milk costs in the closing months of the year, with lower milk prices in the offing thereafter.*
- *An all-IP network is a necessity to meet soaring broadband demands as increased consumption of video, cloud offerings, and the impending explosion of the Internet of Things propel Internet traffic to new heights.*
- *Following record-large natural gas storage injections during the summer, the power and energy markets seem confident that natural gas prices will remain stable through this winter.*

## Keep Your Seatbelts Fastened

The global economy is in a rotational phase. The advanced economies have resumed their traditional role as the growth engines of global commerce, while China and the other emerging markets are moving to more subdued growth rates as they address strategic economic and political reforms. The U.S. economy is now the only major player that can fill the void. Europe is facing significant deflationary pressures, a potential recession in periphery countries, geopolitical challenges in the Ukraine and continuing monetary stimulus. Japan continues to struggle with conflicting policy initiatives involving stimulative monetary policy, deflationary consumption taxes, and significant currency devaluation. During the next few years, the U.S. economy will follow a trajectory of sustained but subpar economic growth, but global economic growth will remain subdued and vulnerable to heightened volatility.

After several years of unparalleled prosperity, U.S. agriculture will face mounting turbulence and new challenges, including rising interest rates, a strengthening U.S. dollar, diminishing political support, larger global harvests and rising carryover inventories. Over the next year or two, with normal global harvests and grain demand growth returning to trend patterns, commodity prices will move lower, and so will net cash farm income. Government payments will buffer this decline in income, but these farm program outlays could end up far exceeding Congress' expectations in passing the new legislation. These new realities will spur realignments in farmland values, rental rates, balance sheets, and the competitive landscape. However, most agricultural producers and processors are in excellent financial shape today and should be able to weather the coming changes without undue stress.

## Global Economic Environment

The global economy remains in transition. The advanced economies have become the primary engines of global growth. China and the emerging markets are moving to a less robust growth path relative to the last five years and will focus increasingly on internal economic and

“*These new realities will spur realignments in farmland values, rental rates, balance sheets, and the competitive landscape.*”

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 8 percent, on a trade-weighted basis. 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 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 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,** driven by technology-enabling access to large fossil fuel reserves. 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.

## **U.S. Economic Environment**

The consensus forecast is now cautiously optimistic that the U.S. economy will sustain a 2.5-3.0 percent annual growth rate through the balance of 2014 and into 2015. In this event, the monetary policy transition will continue, and business fixed investment spending could accelerate in mid-to-late 2015 and 2016. Buoyed by higher incomes, reduced debt levels, improved housing prices, and strong equity markets, the consumer should provide a strong growth core for the overall economy. Businesses have been adding about 200,000 jobs a month to payrolls, but wage gains have exhibited remarkable restraint. Inflation will likely remain quiescent for the next few years in response to the substantial excess capacity still present in most industries. The Federal Reserve is on track to end its Quantitative Easing initiative by October 2014 with an eye toward moving away from its near-zero interest rate policy by mid-2015. The timing and pace of interest rate increases will be dependent on the performance of a broad range of economic indicators.

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

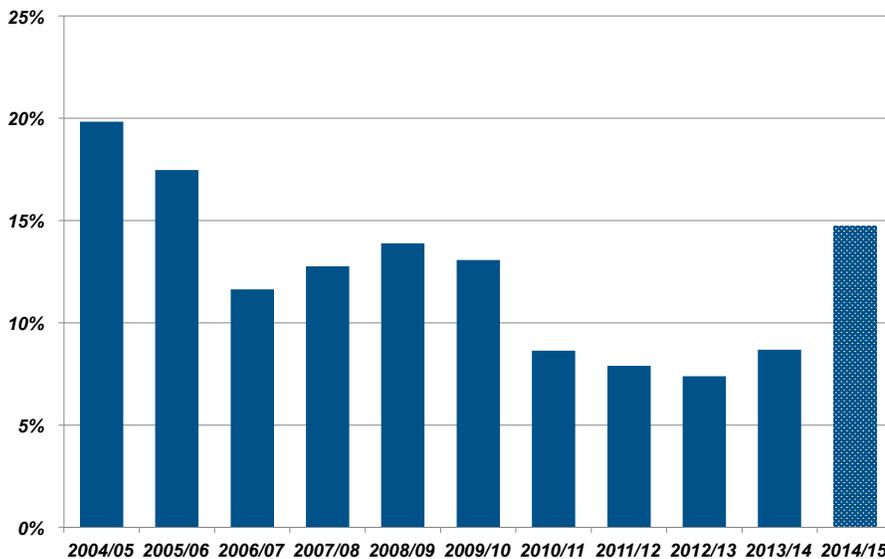
Continued favorable crop developments and record-high animal protein and dairy prices are signaling transitions ahead for all agribusiness sectors. The transitions in the commodity markets will extend into all of the related supply chains as the new pricing paradigm works its way through the marketplace. In recent years, we have seen major shifts in producers' demands for "speed, space and risk management options." This new pricing paradigm will accelerate the pace and scope of the supply chain realignments.

The grain and oilseed markets are transitioning from an extended period of extremely tight supplies to one of growing carryover inventories. These swelling grain and oilseed surpluses will also exacerbate the existing infrastructure woes as export and feed channels become the dominant demand drivers. Regional disparities in basis will also widen as record grain harvests in coming years challenge grain storage capacity as well as the nation's already overextended rail, barge and truck systems.

At the same time, the animal protein complex is at an early stage of what promises to be an aggressive expansion of meat supplies. Milk production has been growing steadily worldwide, and a more favorable feed and forage cost environment is likely to accelerate this pattern. The animal protein sector should remain highly profitable through much of 2015 but margins will then face downward pressures as meat supplies expand sharply in 2016. Low feed costs will continue to benefit both animal protein and dairy sectors, but the dairy industry will face heightened risk in 2015 and beyond due to its growing export dependency and sharp increases in global and domestic milk supplies.

Assuming normal global harvests over the next year and grain demand growth returning to trend patterns, commodity prices will stabilize far below recent levels. As a result, net farm income will decline sharply during 2014-15, perhaps by as much as 20-25 percent from 2013 levels. Government payouts will buffer some of the decline, but the new farm programs may fall under stern

## Exhibit 1. U.S. Corn Stocks Relative to Use



Source: USDA-WAOB

scrutiny if outlays greatly exceed Congress' expectations when the legislation was passed in early 2014. Over the past five years, farm income has exceeded the average for the previous decade by over 70 percent. If the new farm program outlays do balloon, both Congress and the country at large may begin to question the fairness and equity of large payments to large producers and to a sector that has financially outperformed the rest of the economy.

### Grains, Oilseeds, and Ethanol

With the arrival of harvest, corn and soybean conditions are better than they've been in 20 years. Yield and production will be record high for both crops, and grain handlers will be challenged to find enough space to store the bumper crop. The railroads, particularly in the Northern Plains, will also be strained as shippers vie for priority to transport grain, fertilizer, fracking supplies, and oil. Additional rail delays could have devastating effects on producers and grain handlers in the Northern Plains, many of which have been unable to ship last year's crop.

Going forward, transportation and storage constraints are likely to produce a volatile basis for both cooperatives and end users through harvest and into the coming quarters.

### Corn

Corn production in 2014 will exceed the 14 billion bushel mark for the first time ever, and ending stocks are projected to top 2 billion bushels for the first time in a decade. Corn is in its second year of recovery from recent drought, and this year's record crop is expected to increase ending stocks by 70 percent year-over-year (YoY) – more than double inventory levels from 2012. (See Exhibit 1.) Corn use is likely to stay relatively flat YoY as stocks swell and prices fall. Feed demand for corn is likely to improve marginally over the next two quarters as expansion in the domestic pork and poultry industries offsets persistent declines in beef production. Corn use for ethanol is

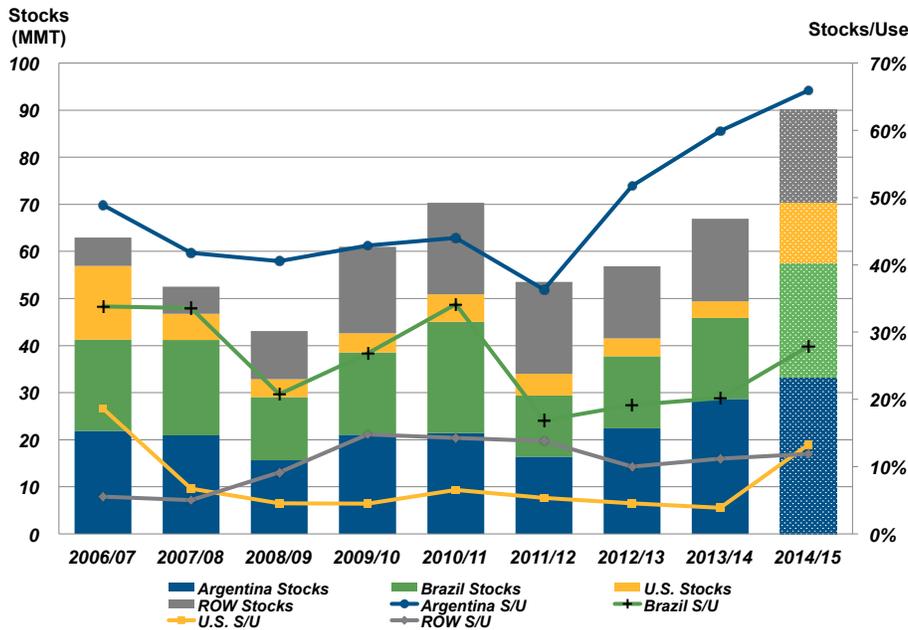
likely to remain relatively flat, around 5 billion bushels. And demand for exports is expected to fall slightly from year ago levels as global supplies are rebuilt.

China continues to be a wild card in the export outlook. Portions of northern China are experiencing the worst drought in 60 years, which will prevent China from growing its fifth consecutive record crop in 2014. The degree to which the drought has impaired overall production and the resultant increase in imports are yet to be determined. China also has yet to approve the corn variety (MIR 162) that caused it to reject shipments of nearly 1.5 million metric tons (MMT) of U.S. corn in 2013/14. China's level of need for corn imports will dictate how stringent its testing of GMO varieties will be in the coming two quarters.

In the closing months of 2014, price volatility should subside as the crop size becomes more certain, but basis volatility could increase as a result of localized logistical constraints in storage, rail, and truck capacity. Farm prices for 2014/15 are expected to range between \$3.00-3.75.

The steep 35 percent decline in prices since May will cause producers to be reluctant sellers. Many grain farmers have strong balance sheets entering the 2014

### Exhibit 2. World Soybean Ending Stocks and Stocks/Use



Source: USDA-FAS

season and will choose to wait longer to sell than usual, in hopes that prices will rally. Producers will also store more grain on the farm and utilize Delayed Price (DP) contracts. The four-year high in beginning stocks, combined with the record harvest, will pose a challenge to elevator operators as they attempt to optimize their storage and transportation resources. In those cases where oncoming supply exceeds local capacity, storage rates will be increased and basis could vary substantially from one town to the next. Following this year's harvest, elevator operators will be storing the largest supply of grain since the 1980s, and their bottom lines will benefit from increased revenues associated with storage, drying, and much improved market carry.

#### Soybeans

The combination of record U.S. soybean acreage and yields in 2014 will quickly move the U.S. from a market situation of almost unbearable tightness to much more comfortable supplies. While corn is in its second year of recovery from the recent drought, soybeans will be in their initial year. Domestic stocks are expected to expand to a level roughly four times greater than that of 2013/14.

Crush margins have been at or near record levels for much of 2014 and should remain positive for the coming two quarters, albeit at somewhat lower levels. Going forward, the expanding broiler flocks and hog herds will provide some support to falling soybean meal prices. And if soybean oil (SBO) prices continue to slide, we expect that a declining SBO/diesel price ratio will spur biodiesel producers to increase their output and fuel blenders to increase their mix of soy-based biodiesel. This price correlation between SBO and diesel fuel will provide a higher floor than would otherwise be the case.

Chinese buyers will continue to dominate U.S. export demand in 2014/15. China is expected to increase imports 7 percent over last year, with the lion's share expected to be sourced from Brazil. U.S. exports will also benefit, however, with a projected 5 percent YoY increase in 2014/15 shipments to China. The most significant factor that could alter this picture is price. The expectation that Brazil will significantly expand soybean area for the eighth consecutive year is dependent on price incentives for producers there to do so. Most estimates indicate that \$11 per bushel (Chicago price) is sufficient to incentivize expansion in Brazil. However, with soybean prices well below that level in 2014/15, Brazilian producers will either delay expansion or use their strong balance sheets to make a long term investment. The USDA is projecting that Brazilian growers will add 3.5 million soybean acres this year.

With this expected ramp-up in Brazil, global soybean stocks and the combined stocks for the big three exporters (i.e., U.S., Brazil, and Argentina) are both slated to reach record highs. (See Exhibit 2.) The precipitous decline in price will encourage more consumption around the world, but not by enough to forestall a major runup in inventories. The worldwide

stocks-to-use ratio is projected to rise to 32 percent in 2014/15 from 25 percent a year ago.

Here at home in the U.S., storage capacity will be at a premium, as inventories push storage capacity to its limit. Similar to corn, larger supplies will restore a more consistent, and wider, carry to the soybean market in 2014/15 and beyond. Elevator operators will benefit from increased revenues related to storage and carry. Soybean prices should level off after harvest, with farm prices settling in the range of \$9-10 per bushel.

### **Wheat**

Winter wheat producers currently are experiencing much improved conditions compared with 2013. Last year's excessive rains in Colorado and drought in the Southern Plains plagued producers as they attempted to plant. Conditions this time around have been nearly perfect. The return of moisture to the key states of Kansas and Oklahoma should vastly improve yields and production there as we look ahead to the 2015/16 crop. Meanwhile, spring wheat farmers in the Northern Plains have been challenged with excess rain through much of the current growing season, which is likely to impact yield and/or quality in most areas.

Domestic carryover stocks will be constrained in 2014/15 as a result of the precipitation imbalances. In contrast, the 2014/15 global wheat stocks will continue their upward trend and remain at comfortable levels.

Export demand is expected to fall slightly in 2014/15 as the divergent U.S. and world supply situations create a wider than usual price spread between the U.S. and its exporting competitors. Quality will be an issue in the shorter term through the 2014/15 marketing season as the spring wheat in the Northern Plains, Canada and the EU will likely face quality issues due to excess rains. Premiums for good quality protein wheat will provide selling opportunities and price support.

Elevator operators that handle wheat will face tough challenges in the near term especially in the Northern Plains. With a less than stellar wheat crop, elevators will have to choose whether to store or ship potentially lower quality wheat to make room for impending

corn and soybean crops. Many grain bins around the Northern Plains remain full with last year's crops, as rail disruptions have left grain handlers without transport options. These elevator operators will face their biggest challenges in the upcoming quarter. Farm level wheat prices are expected to stay within the range of mid \$5-6 per bushel.

### **Ethanol**

The U.S. ethanol industry has experienced a long-awaited resurgence in profitability in 2014. Declining corn prices and somewhat resilient ethanol prices have equated to the highest producer margins seen in several years. Moreover, lower corn prices are likely here to stay through at least 2015, which will continue to aid margins. Strong balance sheets and cheap feedstocks will encourage increases in production well into 2015, though. Increased throughput at the plants will lift stocks and dampen returns per gallon, pushing margins downward to marginally positive levels for most of the next two quarters. To the plus side, strong demand for distillers dried grains (DDGs) in China will aid plant revenues.

Over the longer term, the industry continues to face uncertainty regarding the Renewable Fuel Standard (RFS). The EPA has yet to rule on the blending level requirement for 2014, and the agency's ruling will have significant implications for 2015 and beyond. Indications now point to a larger blending requirement than originally proposed in late 2013. But if the final blending requirement is set at or near the 10 percent blend level, it will diminish hopes of long-term, sustainable growth for the industry.

### **Animal Protein Industries**

The U.S. livestock industry has entered a new era of renewed profitability, propelled by high animal prices and sharply reduced feed costs. In turn, the favorable operating margins will encourage the animal protein industries to stabilize and eventually expand over the next several years. The resulting increase in meat supplies eventually will lead to more moderate retail meat prices and livestock prices, but it will take a while for

these supplies to expand significantly. Meanwhile, the combination of strong animal prices, record large crop production, improvement in drought conditions, robust foreign demand for U.S. animal products, and continued U.S. economic growth should provide the upward thrust for a sustained mini-boom in the U.S. livestock sector.

### Beef

The beef industry is dealing with the after-effects of drought conditions in 2011 and 2012 which caused the breeding herd number to drop dramatically. This decline has resulted in smaller calf crops and the sharp contraction in beef production in recent years. The production environment today is much different than it was even a year ago. Industry profitability is currently at unprecedented levels and can be attributed to the combination of record calf/cattle/beef prices, drastically lower feed inputs, improved pasture conditions and robust domestic and international demand for U.S. beef. These record-high prices equate to profit potential for all sectors of the supply chain, but also increase the need for effective price risk management.

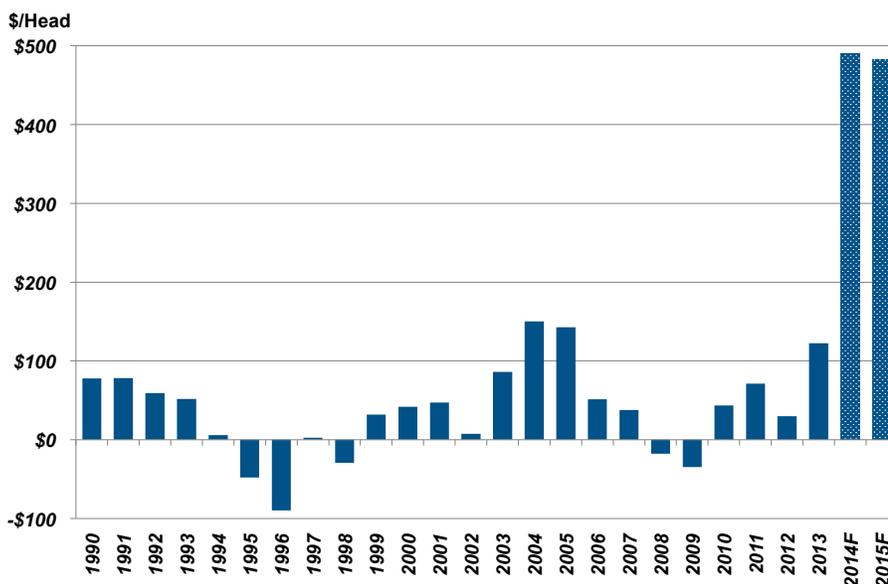
To date, the cow/calf producer has been the biggest beneficiary of current marketplace dynamics. With record profits at an estimated \$490 per cow in 2014 and expected to remain above \$450 per cow in 2015, this sector will determine the speed at which the herd expands. (See Exhibit 3.)

Due to the long biological production cycle of beef cattle, feeder cattle supplies will remain tight and competition from an overbuilt feeding industry will prevail throughout 2015. There are early indications of herd rebuilding, but a steady trend is yet to develop. One indication of a turnaround is heifer slaughter, which is expected to decrease 7.5 percent in 2014. Cow slaughter will also decline nearly 13 percent, indicating that producers are answering the economic signal to produce a larger calf crop.

Cattle feeders are also enjoying improved profitability, with average feeding margins reaching nearly \$200 per head in summer 2014. This improvement is due to both strong fed cattle prices and the downward drift in feed prices. The number of available cattle for placement on feed will continue to decline over the next couple of years, causing more competition among feeders to fill their pens. The lower feed costs are not fully compensating feedlots for the increased input cost of feeder cattle. This imbalance will lead to high breakeven price levels for late 2014 and into 2015. The result will be a tightening of cattle feeding margins on a cash-to-cash basis.

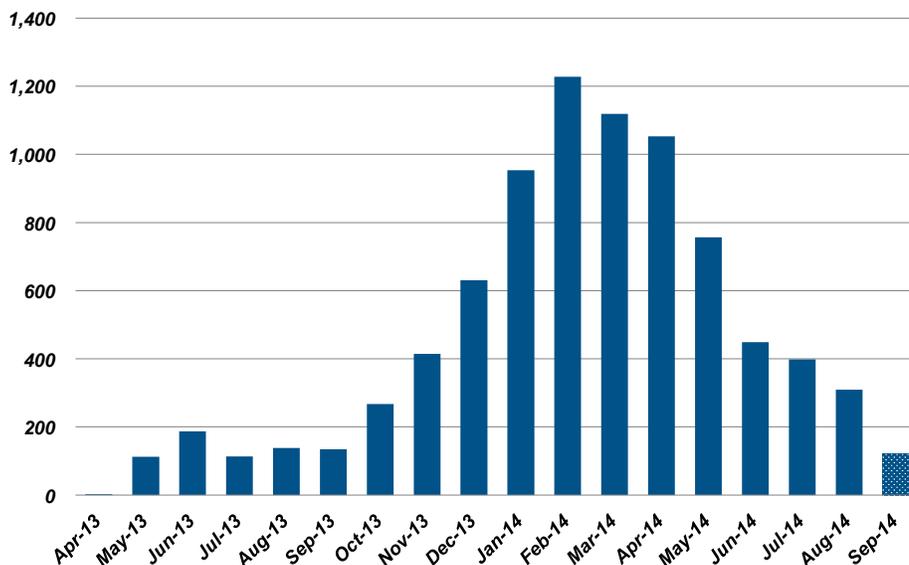
Feeders and the processing industry face similar challenges going forward, as capacity will continue to exceed the availability of cattle. Lighter slaughter rates will remain a concern for processors, but the long term trend of increased carcass weights will remain intact, partly offsetting the reduced number of cattle. The wholesale price of beef continues

**Exhibit 3. U.S. Cow/Calf Net Returns**



Source: LMIC

#### Exhibit 4. Number of New PEDv Cases by Month



Note: Sept 2014 includes data only through 9/13/14

Source: American Association of Swine Veterinarians

to set record highs in 2014. A seasonal decline in the wholesale price is likely to occur in the fall, followed by a late-year rebound; but prices should remain well above year ago levels for the rest of the year and into 2015.

Packer profitability is expected to narrow through 2015 as competition intensifies for a dwindling cattle supply. The most pressing question for packers, however, is whether consumers will continue to support the cutout value by paying record prices. Consumer prices were 17 percent higher year-over-year (YoY) in August, and could test higher limits in the fourth quarter. With this uncertainty looming, packer margins are expected to be volatile through 2015, but should remain positive on average.

#### Pork

The reduced breeding herd and pig crop due to PEDv are continuing to cast a long shadow over the pork industry. The number of new PEDv cases declined dramatically toward the end of summer. (See Exhibit 4.) However, the industry anxiously awaits the upcoming winter months, when the virus could intensify again. The USDA has granted conditional licenses on two new vaccines, but their effectiveness is yet to be determined. The industry is optimistic that the combination of successful vaccines

and increased biosecurity measures will lessen the impact of PEDv moving forward.

Despite the loss of 8 million piglets, or 13 percent of the U.S. hog herd, due to PEDv, increased carcass weights have kept 2014 pork production near year ago levels. The constricted supply and strong demand have driven wholesale pork prices up 25 percent to record highs, while catapulting margins for commercial farrow-to-finish operations to the highest levels seen in 30 years. Profitability sparks expansion and the pork industry has answered. A 5.8 percent reduction in sow slaughter year-to-date (YTD) in 2014 indicates a

gradual move toward rebuilding breeding herds. If PEDv is better controlled over the next two quarters and the survivability of piglets improves, the herd will begin to expand. With an increase in live weights, we could see an expansion in pork production as early as late 2014 and a YoY increase of more than 2 percent in 2015. Breakevens for commercial farrow-to-finish production are expected to trend lower, driven by feed inputs. Even with a moderation of hog prices, the profitability outlook is expected to remain positive through 2015.

Pork packer margins have hovered above the 5-year average for much of 2014. Packer margins are likely to narrow seasonally during late spring and early summer 2015, but should remain positive on average during the rest of 2014 and throughout 2015. With the expectation of slightly larger supplies of pork into next year, domestic and international demand will be the key determinant of price levels. Domestic demand for pork remains resilient despite record high prices. August retail pork prices set an all-time high of \$4.20 per pound, a 12 percent YoY increase. This is the sixth consecutive month of record highs, and some level of consumer resistance is expected if prices continue to move higher. High beef prices will be supportive of pork

prices, while declining chicken prices will pressure both beef and pork.

Pork exports have performed surprisingly well in 2014 YTD, posting a volume increase of 7 percent and a value increase of 18 percent. The larger increase in value illustrates the willingness on the part of foreign consumers to pay higher prices for pork than originally predicted. Chinese pork production has experienced significant herd liquidation since 2013, and with China accounting for nearly half of all global pork consumption, the Chinese could become significant pork importers in 2015. The opportunity is currently limited for U.S. product, however, due to China's ban on the commonly used feed additive ractopamine.

### **Poultry**

Broiler product demand should remain robust through the rest of this year and well into 2015, bolstered by a gradually improving domestic economy, continued strength in export demand, and the towering prices of beef and pork. Broiler production, however, has been slow to respond, with integrators having had problems expanding the number of chicks placed for growout.

Broiler meat production is on track to grow just 1.5 percent in 2014 from a year ago, with a similarly modest gain expected for 2015. Producers have been somewhat constrained in their attempts to expand the nation's chicken flock by the limited supply of broiler hatching eggs. When the broiler-producing industry reduced production in 2011 and 2012, the hatchery supply flock was also reduced, and it has not yet been rebuilt to prior levels. Following seven months of YoY declines, the number of chicks placed for growout finally posted a modest 1 percent YoY gain in August. However, it will take another 6-9 months for integrators to rebuild the supply of broiler hatching eggs in preparation for expanding the overall flock, so significant growth in broiler production will not materialize until late-2015 or early-2016.

Although slaughter rates have remained well below record levels for the past several years, total number of pounds produced has not. Many companies have switched to

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larger chickens to facilitate the production of boneless-skinless (b/s) breast meat, and average live weights across the industry have increased 1-2 percent a year for the past six years. These higher weights and more deboning have generated record amounts of b/s breast meat. In 2014, most of the increase in broiler meat production, if not all, will come from heavier average live weights, as some producers continue to adjust their production mix to align better with customer demand.

In response to current bullish market conditions, wholesale prices – and margins – for many broiler products have risen to unusually high levels. Wholesale prices for b/s breast meat will likely average around \$1.57 per pound for 2014 as a whole, up 7 percent from the previous year which followed a 15 percent increase from 2012. During 2015, lower feed costs should contribute to a small reduction in b/s breast meat prices to about \$1.47 per pound.

The prices for whole birds show much the same pattern. Prices for large-size whole birds increased by 16 percent in 2013 to average 97 cents per pound, and are expected to gain another 7 percent in 2014 to average \$1.04 per pound for the year. During 2015, slightly higher production and lower feed costs are anticipated to lower whole bird prices to an annual average in the 95 cents per pound area.

Corn and soybean meal futures markets indicate that feed ingredient costs during the next year will be well below those experienced in 2013-14. Operators' financial results should remain positive through the next 6-9 months, albeit at reduced levels. Overall, integrators' margins

are expected to remain strong, unless costs turn higher, demand stops improving, or production expands more significantly than expected.

**Dairy**

Milk production in the U.S. is in the early stages of a growth spurt, spurred by low feed costs and record-high margins. (See Exhibit 5.) Cow numbers have remained mostly constant YoY, while milk per cow continues to rise. The consensus forecast calls for milk production to increase about 2.5 percent in 2014. However, high cull cow and replacement heifer prices have played a role in limiting herd expansion, and producers should end the season with a few thousand head fewer than at the start.

Domestic butter and cheese prices surged to historically high levels through mid-September, surpassing global price levels. Butter cold storage throughout the U.S. remains woefully understocked, down 38 percent YoY. Low stocks have kept prices sky high all year, but should adjust lower through the balance of 2014 as supplies rebuild. The unusually wide and positive spreads

between U.S. and world prices have slowed U.S. exports to a halt and incentivized overseas exporters to expand their shipments to the U.S. This reversal in supply dynamics signaled the top for domestic cheese and butter prices.

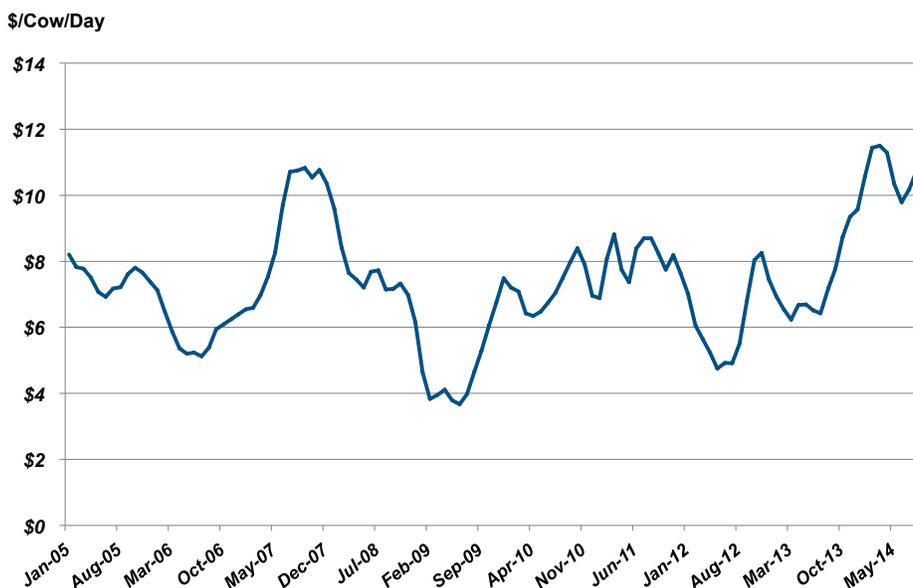
U.S. powder production has been booming as processors have sought to capitalize on world demand and take advantage of the growing export opportunities. Recently, nonfat dry milk prices have ratcheted lower, spurring concern and rumors of an impending freefall. Despite strong competition from other exporters, lower prices have kept U.S. exports competitive, surpassing expectations. Increasing global competition will limit U.S. powder exports through the rest of this year and into 2015, however. Processors will expand their production of butter and cheese, at the expense of powder products, thus aiding in rebalancing supplies and limiting the decline in powder prices.

The EU's dairy markets are in flux. With quotas scheduled to end on March 31, 2015, EU producers have been ramping up output in advance of the quota

sunset, even as they have recently lost one of their most eager buyers. The Russian ban on dairy product imports came as a surprise and will have considerable impact on the EU's butterfat and cheese sales. While the Russian political situation will have less of a direct impact on the U.S. market, the ripple effects will be noticeable as world prices adjust in response to the ban.

Going forward, EU dairy products will be readily available to global buyers at attractive price points. With stocks unusually low in the U.S. and prices there abnormally elevated, U.S. exports of butter and cheese products are likely to slip below year-ago levels during the next two to three quarters.

**Exhibit 5. U.S. Dairy Producer Income Over Feed Cost**



Source: University of Wisconsin

Moreover, a recently signed trade agreement between the EU and the Southern African Development Community (SADC) will provide European cheese makers with a new export destination, albeit to the detriment of U.S. cheese processors. In spite of the increased interest from the SADC, the EU has implemented emergency interventions to prop up falling prices, which foreshadows an oversupply and continued downward pressure on global prices. The EU/SADC agreement contains wording that has caused global concern because it creates precedents that confer the sole use of natural cheese names to certain European regions.

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The EU recently signed another bilateral trade agreement – this one with Canada – which may also have negative longer-term consequences for the U.S. dairy industry. While many of the details of this agreement are still sketchy, it does contain provisions that protect the so-called designations of origin for European producers by prohibiting the use of common names of cheeses (e.g., parmesan) unless the cheeses are produced in the EU-recognized regions of origin. For years now, the EU’s insistence on protecting these designations of origin have been problematic for EU-U.S. trade relations, and the indirect effects of the new trade agreements will be felt by U.S. exporters as market opportunities could shrink in South Africa and Canada. (The EU/Canada agreement does not go into effect until 2016.)

China’s impact on global demand for dairy products remains a concern during the near term. In fact, China’s demand for dairy products has waned since the second quarter of this year, following a period of overzealous purchasing that resulted from last year’s food

contamination scandals. This temporary pullback has left a surplus of powder in the marketplace, lowering world prices just enough to tempt less aggressive buyers. China’s imports should pick up speed this winter and begin normalizing to former levels although its needs will likely be met by Oceania and EU dairy products over the next six to nine months while global prices undercut domestic competitiveness.

The new Farm Bill’s Margin Protection Program for dairy producers (MPP-Dairy) is being rolled out this fall, but participation rates are lower than expected. Producer margins have recently receded from their all-time highs, and are expected to narrow going forward. Evidently, in these unusually good times, few dairy farmers have deemed it prudent to pay to insure against losses, but MPP enrollment could begin to climb next year depending on the extent of the decline in milk prices.

The U.S. all-milk price is expected to trend downward over the next several quarters in response to the growing supply of milk. While the spring and summer of 2015 will bring lower milk prices than anything we’ve seen this year, producer margins should remain moderately positive as long as feed costs hold steady at impressive lows.

U.S. based dairy processors will continue to absorb elevated raw milk costs as we close out the year, with lower prices in the offing for 2015. Many processors are running plants at less-than-full capacity with plans to expand as the milk volume grows slowly but steadily. Processors of products destined for international ports and processors of specialty and high-value products will be well-positioned to see continued growth in sales and profits, while declining milk prices will increasingly benefit the entire dairy processing sector.

## **Other Commodities**

### **Cotton**

U.S. cotton is staging a comeback in 2014 as it rebounds from the smallest crop since 2009. The estimated 30 percent increase in this year’s production comes as a result of much larger acreage and the lowest abandonment rate in several years. Significant

acreage was added in the Southeast, the Delta, and the Southwest, and a break in the Texas drought made the much larger crop possible. California will be the only state with material declines in production, resulting from the unrelenting drought there.

U.S. production will exceed consumption for the first time in four years in 2014/15, with export demand declining to the lowest level since 2000. China still holds 60 percent of global stocks, but it will continue to slash its import purchases in an attempt to reduce its excessive holdings. This process of inventory reduction will take several years, dampening the prospects for world cotton trade and keeping available supplies at multiyear highs. China's faltering economy and the persistently slow recovery in the developed world will also continue to hamper cotton demand for textiles. As a result, prices will remain under pressure through the 2014/15 season, limiting the incentive for U.S. producers to keep their land in cotton. Cotton acreage will drop moderately in 2015, as competing grain and oilseed crops will also have less price allure. Farm prices are expected to range between \$0.60 and \$0.70 per pound.

In early October, the U.S. and Brazil finally reached agreement to settle the longstanding cotton dispute in the World Trade Organization (WTO). Under the terms of the agreement, the U.S. agreed to implement changes in its agricultural loan and countercyclical payment programs as well as changes in its export credit guarantees under the GSM-102 program that were both deemed inconsistent with the U.S.'s WTO commitments. The U.S. also agreed to make a \$300 million "contribution" to the Brazil Cotton Institute. In turn, Brazil will terminate its Cotton case filed with the WTO, foregoing its rights to implement countermeasures against U.S. trade or any further proceedings in this dispute.

### Rice

Thanks to a 46 percent increase in Arkansas plantings, U.S. rice supplies will rebound in 2014/15. Producers were incentivized to increase rice acreage across the Mid-South as rice prices strengthened due to last year's smaller-than-average crop. All states but one will see a marked uptick in supplies this year; California is the

exception, where acreage and production will fall due to the ongoing drought.

With the increase in supplies, U.S. long-grain prices will be more competitive in the world market in 2014/15, and U.S. exports should benefit. While U.S. growers are usually very successful in exporting to Central and South America, this year they should also be able to increase their market shares in the Middle East and Africa. U.S. short and medium grain (mostly produced in California) prices will remain relatively strong in the upcoming year inasmuch as increased production in the Mid-South cannot offset the decline in California.

Total world stocks will decline marginally in the coming year on strong trade and the fifth consecutive year of record consumption. Global supplies will remain more than adequate, however, as Thailand and India continue to hold significant inventories. While the decline in U.S. prices will improve export prospects, the lower returns will also discourage rice planting in 2015. Mid-South producers will likely plant more small and medium grain rice and less of the long grain varieties, causing the price gap among the three classes to narrow. But in the meantime, rice prices will remain relatively flat, weighed down by a bearish grain sector and ample rice supplies both domestically and globally.

### Sugar

The U.S. sugar industry is in the midst of one of the most dramatic supply swings in history. A year ago, the USDA spent \$259 million to remove surplus sugar from the market as supplies swamped sugar producers and processors alike. In 2014/15, sugar availability will sink to the lowest level since 1958, sending prices skyward.

The domestic situation will contrast sharply with the world market, however. Global sugar supplies will climb for a fifth consecutive year to a record in 2014/15, causing the U.S. and world prices to diverge dramatically. U.S. sugar policy limits the import of sugar, with the exception of Mexico, which has privileged access to U.S. markets as a NAFTA trade partner. Mexico's exports to the U.S., however, are expected to fall by half this year. Further complicating the situation, the U.S. Commerce Department recently ruled that Mexico's sugar is unfairly

subsidized, and its shipments to the U.S. equate to dumping. To offset these subsidies, the Department has assessed import duties in the range of 3-17 percent.

In response to this lack of supply, beverage and confectionary manufacturers are likely to switch to other sweeteners where possible. Prices for high fructose corn syrup (HFCS) have fallen in 2014, and could fall further in 2015, as the sweetener closely tracks corn prices. A short-term change in U.S. import policy is also possible. Quotas are likely to be adjusted to alleviate some of the market pressures.

Going forward, U.S. producers are likely to increase production in 2015, and Mexican imports are also expected to rise. The combination of increased domestic production and imports will lift supplies back to adequate levels.

### Specialty Crops

Within the realm of specialty crops, the two big headline stories continue to be the California drought and the severe damage done by citrus greening to Florida's citrus crops. Little has changed since our last quarterly report. Harvests have begun in both California and Florida, and everyone is waiting to see just how big, or stunted, this year's harvests of specialty crops will be.

In late summer, California's legislators passed comprehensive (and controversial) rules regulating the extraction of groundwater from underground water basins, and Governor Brown signed the new bill into law in early September. Previously, California had been the only Western state without any regulation of groundwater pumping. "The thrust of the legislation," according to one review, "is to give local agencies the means to manage the groundwater basins upon which they rely in a manner that is sustainable over the long-term." However, the new regulations are scheduled to be phased in over the next 6-8 years, and it's unclear how effective the new measures will be. Moreover, it's generally expected that multiple lawsuits will soon be filed, so the new legislation will likely be tied up in the courts for several more years.

Meanwhile, the California drought continues. But this statement is somewhat misleading inasmuch as

“California’s growers are muddling through the state’s third-worst drought in the past 106 years.”

California's rainy season doesn't usually begin until late October or early November. (And the rainy season usually extends to late April or early May.) If California's 2014-15 rainy season delivers as little moisture as it did last year, it will then be accurate and fair to say that California's drought has entered its fourth year. For now, California's growers are muddling through the state's third-worst drought in the past 106 years, having had to idle tens of thousands of acres and to pay exorbitant water prices.

Now that harvesting has begun for many specialty crops in California, growers, packers, and processors are all keenly focused on how big this year's harvests will be. The harvests for many of these crops have begun somewhat earlier than usual. The early signs are mixed. For example, this year's walnut crop is expected to be a record-high 545,000 tons, up 11 percent from the previous year. Surface water was more readily available in the walnut-producing areas (i.e., Sacramento Valley and the north San Joaquin Valley), and groundwater quality was also acceptable. In contrast, this year's almond crop will likely end up below last-year's record crop – perhaps by a sizable margin. Crop yields for the first almond orchards to be harvested are reportedly 20-30 percent below year-ago levels, but these orchards are among those that have endured the greatest amount of stress during the growing season. While growers have diverted water from their other crops to their almond orchards, the quality of the water has been subpar, and many growers fear for the health of their trees. Industry insiders are expecting that the almond crop will be below last year but are reserving judgment about how large the shortfall will be.

Florida's citrus harvest has just begun and won't be in full swing until mid-October. Citrus growers there are braced for one of the worst crops in 30 years or more. The USDA's latest projection, from July, pegs Florida's

total 2013/14 orange production at 104 million boxes, down sharply from last year's 134 million boxes. Industry insiders attribute the problem to citrus greening (also known as Huanglongbing or HLB). For Florida's citrus growers, the risks appear to be weighted more heavily toward the downside, and Florida's total orange crop could end up falling below 100 million boxes this year for the first time since 1965/66.

### **Farm Supply**

Net farm income is projected to fall 14 percent in 2014 as grain stocks continue to grow and prices tumble. Conversely, production expenses will climb by 4 percent. With this drastic change in their farm income statements, producers will be much more cautious regarding crop input expenses.

*“The ongoing challenge will be balancing inventory price risk among wholesalers, retailers, and growers.”*

Fall crop nutrient demand will be a balancing act of replenishing nutrient drawdown from record crop production and fending off the tightening squeeze on grower margins. For most producers, justification for continued application will require direct, substantive economic and agronomic returns. Such a rationale will be particularly important for phosphorous and potash markets as these two nutrients may be perceived by growers as easier to delay application or to cut back on application rates.

Crop nutrients will be in relatively ample supply this fall. However, the challenge will be to distribute the product to the right locations at the right time. Some retailers will have to plan ahead to navigate through regional shortages and bottlenecks as the domestic transportation system is constrained from bumper corn and soybean crops, and continued competition from the energy markets.

It is still unclear to what extent today's lower grain prices will curtail crop nutrient demand. Domestic ammonia demand has been relatively subdued as growers continue to hold off on next year's production decisions. Prices for ammonia will likely increase once next year's planting decisions become clear and fall applications pick up. Ammonia demand for pre-plant winter wheat applications is winding down. However, natural gas curtailments in ammonia-producing regions may keep prices firm with the potential to move higher as post-harvest application closes in.

The global urea market has digested large increases in Chinese exports this year. Chinese urea exports have grown dramatically due to supply overhang, reduction in export tariffs, and weaker urea input costs. The additional tons available in the global market have been somewhat isolated from the domestic market. Retailers here are taking steps to be proactive in supply procurement to ensure that product is in place to avoid shortfalls in the spring. Prices for urea are expected to remain relatively flat through the remainder of the year.

UAN prices receded during the last quarter as a result of delayed grower purchasing. Since early August, UAN prices have been relatively flat due to lack of activity and broad availability of product in the Gulf. If ammonia prices escalate quickly, producers will shift to UAN applications. Prices are expected to remain flat over the short term until demand picks up.

Phosphate demand could potentially decline insofar as growers choose to cut back on inessential applications. Domestic suppliers are reluctant to build inventory for fear that grower demand may be lackluster. Global prices are supported due to demand from India and Pakistan and thus may keep domestic prices from falling sharply. U.S. prices are likely to remain steady, with the potential risk of softening based on grower demand.

Potash supplies remain tight in most local markets due in part to slow rail movements, and the tight supply continues to place upward pressure on prices. Low crop prices will limit the amount of potash applied.

In the face of stiff grower reluctance to book tons ahead of time and an increasingly difficult transportation situation, suppliers will find it difficult to provide just in time inventories for customers. Retailers may turn to joint venture agreements with wholesalers to put product in place while mitigating inventory risk. The ongoing challenge will be balancing inventory price risk among wholesalers, retailers, and growers.

## Rural Infrastructure

### Communications

New opportunities for the communications industry will be outgrowths of the transition to an Internet Protocol (IP) network. An all-IP network is a necessity to meet soaring broadband demands as increased consumption of video, cloud growth and the impending explosion of the Internet of Things (IoT) propel Internet traffic to new heights. The United Nations' International Telecommunication Union reports that 40 percent of the world's population, or nearly 3 billion people, will

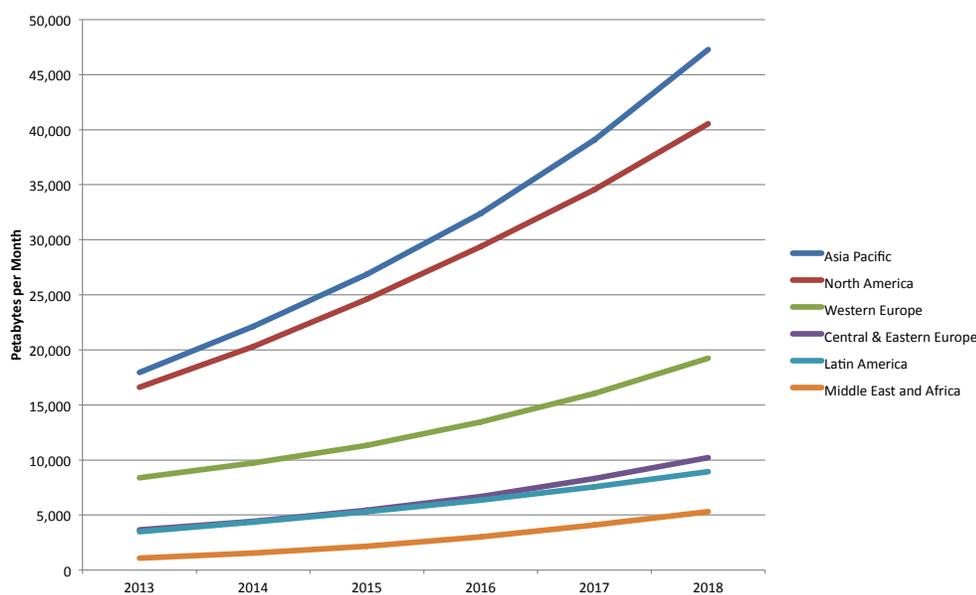
use the Internet by the end of 2014. The latest forecast estimates that global IP traffic will increase nearly 300 percent over the next five years, and Cisco projects that the amount of IP traffic generated in 2018 alone will be greater than all global IP traffic generated between 1984 and 2013. (See Exhibit 6.) In years to come, the majority of traffic will come from devices (including personal smart devices and machine-to-machine or M2M equipment) versus personal computers.

Research firm IDC estimates that shipments of smart connected devices, including desktops, laptops, tablets, smartphones and 2-in-1s (tablet + smartphone), will reach 1.8 billion units in 2014, up 15.6 percent from the previous year. IDC foresees that annual shipments of smart connected devices will reach 2.4 billion units by 2017. Factor in analysts' prediction that there will be roughly 19 billion M2M devices by 2017, and it is no surprise that analysts expect nearly 50 billion devices to be connected to the Internet by 2020.

Video viewership on mobile devices is up 532 percent from 2012. This surge is a positive trend for cable

companies that aim to retain subscribers and sustain their business plans with robust TV Everywhere offerings. According to Cisco's June 2014 report, "it would take an individual more than 5 million years to watch the amount of video that will cross global IP networks each month in 2018." This growth translates to nearly one million minutes of video traveling across the network every second. A great deal of that video consumption is expected to occur on mobile devices. A recent study by video technology firm Ooyala found that 21

Exhibit 6. Global IP Traffic by Geography



Source: Cisco Visual Networking Index, June 2014

“*The Internet of Things promises to bring the next big wave of IP traffic.*”

percent of all streaming video traffic in the first quarter of 2014 was from mobile devices, up from just 9 percent for the same time period the prior year.

The cloud marketplace also continues to expand as consumers and enterprises look for ways to push more data into the cloud. The private cloud market (enterprises that own and operate their own cloud infrastructure) is expected to grow at a 14 percent compound annual growth rate (CAGR) to \$69 billion by the end of 2018. The public cloud market (cloud infrastructure that consumers and enterprises may pay to use) totaled \$45.7 billion in 2013 and is expected to enjoy a robust 23 percent CAGR through 2018. This prospective demand is prompting data center providers to expand, placing new facilities in non-traditional markets, such as the Southwestern U.S., anticipating the need for more capacity outside of existing data center hubs. Cloud providers will also look to new technologies such as virtualization and improved Ethernet to keep pace with demand.

The Internet of Things (IoT) promises to bring the next big wave of IP traffic. Devices that monitor and report metrics, and in some cases offer remote control capabilities, will flood the market with new internet connections and an upswing in IP traffic. Smart homes, smart cars, smart manufacturing and smart agriculture will all provide opportunities for the industry. The big wireless players are looking to the “connected car” for growth. While rural wireless carriers may not see the same opportunity, they will be integral in providing the ubiquitous wireless network for data-roaming that is critical for IoT. Wireline providers would be wise to position themselves not only to connect devices, but also provide the equipment and expertise to install and maintain the myriad of devices that will be going into homes and businesses.

The sheer volume of internet traffic will continue to greatly benefit fiber transport companies. The sector, once beleaguered with a glut of dark/unused fiber, now enjoys healthy demand and balance sheets. Several up and coming fiber companies are expected to pursue successful IPOs in the near-term.

The regulatory outlook is cautiously optimistic. The current FCC regime leans toward a fact-based policy that favors competition and broadband deployment as well as industry consensus. It is likely that a long-term, predictable support mechanism for broadband will be identified by the end of the plan period.

#### **Power and Energy**

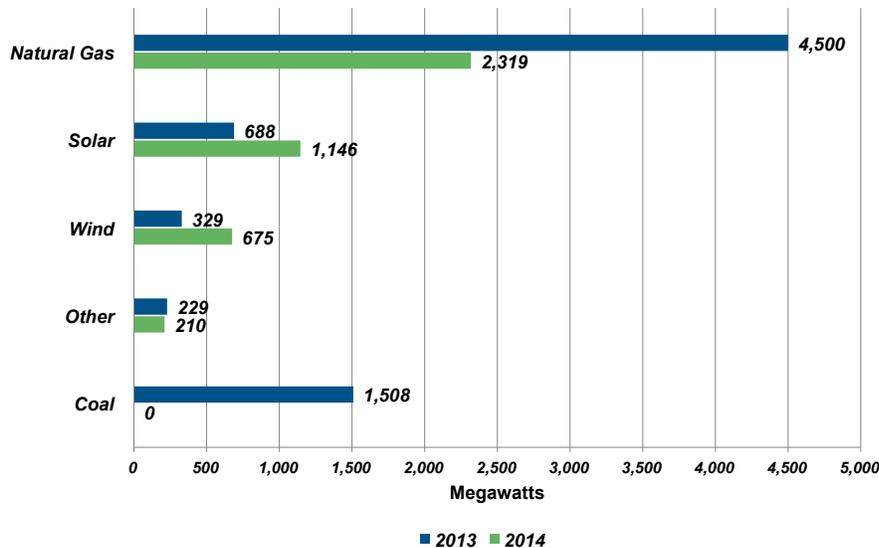
Last winter’s Polar Vortex continues to haunt the U.S. power and energy industries. However, following record-large natural gas storage injections during the summer, the market seems confident that natural gas prices will remain stable through this winter. Furthermore, given recent trends among regulators, regional transmission operators (RTOs), and natural gas infrastructure investments, the power sector is positioning itself for greater reliance on natural gas.

Working gas in storage was 2,891 billion cubic feet (Bcf) as of September 12, 2014, according to the Energy Information Administration (EIA). Stocks were then 13 percent below the 5-year average of 3,335 Bcf. The injection season will last through the end of October; and the EIA forecasts that the working natural gas inventory will be 3,477 Bcf as of the end-of-October, slightly below the 5-year average. However, barring any extreme weather event, these storage volumes should be adequate to maintain stable natural gas prices through the winter.

In the first six months of 2014, 4,350 megawatts (MW) of new utility-scale generating capacity came online. Natural gas plants, almost all combined cycle plants, made up more than half of the additions, while solar plants contributed more than a quarter and wind plants around one-sixth. (See Exhibit 7.)

## Exhibit 7. U.S. Power Plant Capacity Additions

Jan-Jun 2014 vs. Jan-Jun 2013



Source: U.S. Energy Information Administration

Solar experienced strong YoY growth, with nearly 70 percent more additions in the first half of 2014 than in the same period last year. Utility-scale solar projects will continue to dominate the market as utilities and solar developers rush to finalize projects prior to the expiration of the Investment Tax Credit at the end of 2016.

Additions of combined-cycle plants during the first half of 2014 were up almost 60 percent from the same time last year. No new additions to coal-fired capacity occurred in the first half of 2014, reflecting the challenging conditions faced by coal plants caused by increased competition from natural gas plants and impending environmental regulations. The only coal plants planned to come online in 2014 are the Kemper integrated gasification combined-cycle (IGCC) plant in Mississippi and a small conventional coal steam plant in North Dakota. Going forward, greater reliance by the power sector on natural gas will increase further, as up to 50 gigawatts (GW) of coal-fired capacity will retire by 2016.

This past winter highlighted the critical and growing interdependence of natural gas pipelines and electricity markets. Demand for natural gas soared, introducing extreme volatility in spot natural gas and wholesale electricity prices. However, compared to last year, market

conditions have changed in several respects that will help reduce price volatility and increase reliability as the nation transitions towards more natural gas-fired generation. First, The Federal Energy Regulatory Commission (FERC) is improving the coordination and scheduling of natural gas pipeline capacity with electricity markets. Second, PJM, a regional transmission organization that coordinates the movement of wholesale electricity within 13 states, has proposed adjusting its capacity markets to incentivize generators to run during times of peak demand.

Third, long-haul natural gas pipeline capacity into the northeast and New England is increasing.

The FERC's main goal in improving coordination of gas transportation and power generation is to promote investments in natural gas pipelines. Pipeline companies will not build new pipelines unless they get their capacity fully subscribed, i.e., long-term gas supply agreements with generators. However, many generators say they cannot afford to pay for that capacity because their actual gas needs may vary from fixed-supply agreements and the organized capacity markets in which they operate will not allow them to recover those costs from ratepayers. The nonalignment of the gas and electricity markets makes it more challenging for pipeline companies and power generators to efficiently develop projects. New gas-electric coordinating standards were supposed to be filed with the FERC on September 29, 2014.

Beyond increased gas and electric coordination, PJM is proposing a new capacity performance product and reinforcing standards for capacity providers that would ensure adequate supply by doing away with demand response and energy efficiency in PJM's capacity markets. The goal is to ensure that prices are high

enough to incent entry of new units and retention of existing resources.

Furthermore, this summer has seen a growing trend in utilities taking on equity stakes in natural gas pipelines. Since August, three major pipeline projects, with utility ownership, have been announced. Each project will transport gas from the Marcellus formation in Pennsylvania to the northeast or New England, increasing the Marcellus's take-away capacity by 2.5 Bcf/d.

The nation's transition away from coal-fired generation is continuing to unfold, and the market is making adjustments in hopes of facilitating a smooth landing. Meanwhile, everyone is crossing his or her fingers for an agreeably mild 2014-15 winter.

### **Water Industry**

The U.S.'s woefully underfunded water and wastewater projects now have access to \$350 million in federal dollars following the approval of the multi-billion dollar Water Resources and Reform Development Acts (WRRDA). The WRRDA contains the Water Infrastructure Finance and Innovation Act (WIFIA), a five-year pilot low interest loan program that allocates \$175 million for water and wastewater projects and \$175 million for U.S. Army Corps of Engineers' projects.

A project must have an estimated total cost of \$20 million to be eligible for WIFIA assistance. However, State Infrastructure Financing Authorities and other entities are allowed to aggregate smaller projects to meet the minimum cost threshold. In addition, the threshold for total project costs is only \$5 million in communities with fewer than 25,000 residents.

The WIFIA contains a number of caveats aimed at leveraging dollars allocated by Congress to attract private-sector investment. Tax-exempt municipal and private activity bonds (PABs) are prohibited for projects that receive WIFIA funding. Total WIFIA contributions to

“*The nation's transition away from coal-fired generation is continuing to unfold, and the market is making adjustments in hopes of facilitating a smooth landing.*”

a project can be no more than 49 percent of total costs, and the maximum federal share of a project cannot exceed 80 percent.

The WIFIA authorizes an initial appropriation of \$20 million each for the Environmental Protection Agency (EPA) and the Army Corps to cover the subsidy cost of WIFIA loans in FY2015. The authorization will then increase every year to reach \$50 million for each agency in FY2019. According to the Congressional Budget Office (CBO), each dollar authorized and appropriated for EPA clean water and drinking water projects can support up to 30 times that amount in loans. Therefore, the initial \$20 million authorization could support over \$600 million in loans and the \$50 million authorization for the final year could potentially support over \$1.5 billion in loans.

Proponents of the WIFIA program hail it as an important new finance tool for funding large projects, while opponents say the prohibition of tax-free debt is a fundamental flaw that will lead to increased privatization of public infrastructure. In fact, opponents to the bill are lobbying Congress to increase the cap above 49 percent and allow the use of tax-exempt financing.

However, federal funding for water and sewer systems has dropped 80 percent, adjusted for inflation, since 1980. This trend is not likely to change, reinforcing the role private capital will play in updating the nation's water and wastewater infrastructure. ■

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. We also want to recognize the contributions of two outside consultants: Sue Trudell, Vice President of Express Markets, Inc. Analytics, provided information and insights incorporated into the section on the poultry industry; and analysts at Plus One Strategic Communications LLC prepared the overview of the communications industry.

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