

**Adapting to an Industry in Transition**  
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**Remarks by Ryan Lance**  
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There's an old saying. "Those who can't remember the past, are condemned to repeat it."

Since joining the industry in the early '80s, I've been through six downturns, and five upturns. Like you, I'm still waiting for the next upturn.

All these cycles had unique causes and timing, but similar impacts. Over-hiring – then under-hiring. Over-spending – then under-spending. Acquisitions – then divestitures. Profits – then losses. Government concern about energy security. Then, when prices were low, little interest in energy policy.

So let's ask, what does today's downturn tell us? What are the "new rules of the game?" How do we adapt to an industry in transition? I'll suggest to you that:

- One, the oil outlook has fundamentally changed. U.S. tight oil has boosted supplies. At the same time, the world economy is uncertain. This has slowed down demand growth.
- Two, U.S. production is currently declining, but it could come back – and strongly.
- Three, U.S. tight oil will contribute to new, shorter-cycle market volatility in the future. That's because of its very nature.
- Four, we've traditionally pursued megaprojects. But they now face challenging economics.
- Five, these realities are forcing changes in business strategies.
- And six, government still plays a key role in our long-term prospects.

I'll share these ideas, then we'll engage in questions and answers.

The Challenge of Low Prices

Clearly, our industry is hurting. Oil prices were \$100 per barrel in mid-2014. They've since been as low as \$30. Not many industries lose 70 percent of their revenue seemingly overnight. Prices are better now, in the \$45-to-\$50 range. But still too low to justify any significant increases in investment.

A big contributor to the global surplus was increased U.S. oil and natural gas liquids production. Since 2008 it grew 87 percent, or nearly 6 million barrels per day. This gave the U.S. Congress the confidence to finally approve crude oil exports, following a 40-year ban.

And this U.S. production was very resilient. It increased for 10 months even after the price downturn. It finally peaked in April last year. It's down since then, but by less than 800,000 barrels per day.

Production remained strong for several reasons. It took time to ramp activity down. Rigs were under contract. Some producers kept drilling to hold their leases. They also high-graded by drilling in only the best areas. Besides that, quite a few already-drilled wells were

being completed. Also, several financial factors mitigated the low prices, such as production hedging and lower service costs.

ConocoPhillips has a major position in tight oil – or shale. So we've learned a great deal about it. The enormous potential, relatively low supply costs and short-cycle nature. You can go from exploration to production in a year or less. All these are big advantages.

The energy renaissance occurred first in the U.S., then it spread to Canada. At peak, the industry was investing \$100-to-\$200 billion annually in North America. Those free-spending days are over. I've seen a prediction that through 2019, cuts in global upstream spending will total \$1.6 trillion. These cuts are impacting sectors far beyond exploration and production – our supply chain, other industries and even the broader economy.

Looking back, low prices have always forced cutbacks in investment. Drilling also goes down. This historically reduces production. But the U.S. declines have been modest, and declines could take even longer elsewhere, in countries with longer project cycle times. Meanwhile, again historically, low prices have stimulated demand. These factors together typically soak up any surplus.

So today's low prices are sowing the seeds for the next upcycle. That's the theory. The questions are, when, and to what extent? Will we see a strong upturn – as after the 2008 recession? Or will it be more gradual? Will geopolitics play a role? Will an upturn be steady, or will prices oscillate? We don't know for certain, but there are some elements to consider.

#### Potential Revival of U.S. Tight Oil Production

The U.S. has enormous tight oil resources. These could help fill any future gap between world supply and demand.

This tight oil offers a shorter response time than other production, with one exception – spare OPEC production capacity. And with one caveat – there would be some lag time, which I'll discuss shortly.

Tight oil offers the optionality needed during price volatility – like today. This is due to its shorter cycle time and flexibility. It doesn't take long to drill new wells. They come on at high rates. There's usually infrastructure nearby, from previous production. And there's often spare capacity available due to the recent production decline.

If prices rise, you can drill new wells fast. If prices fall, you just stop drilling. Then natural decline takes over. So you can ramp up, or ramp down, along with commodity prices.

Also, consider the supply costs of U.S. tight oil. They're lower than many non-OPEC sources, even though not as low as some OPEC conventional production. So U.S. tight oil will draw capital away from longer-cycle major projects elsewhere.

But there's an ancillary impact from tight oil. Its flexibility will actually contribute to short-cycle price volatility. Higher oil prices would lead to more drilling. Production would rebound – after a lag. That would ultimately force prices back down. Drilling activity would then fall. And the cycle would repeat.

So U.S. tight oil will likely serve as the marginal supply source, due to its short cycle time and low supply cost. This oil would rebalance the market as prices rose or fell.

### Improved Efficiency

There's a big reason for this cost competitiveness. We've had improvements in productivity and efficiency across the board. As a result, in the three best U.S. tight oil plays – the Eagle Ford, Bakken and Permian – new wells have remained economic even at \$40 oil prices.

A number of innovations have made quantum differences, such as advanced seismic and basin analysis. These help in identifying reservoir sweet spots and drilling locations. So we're better optimizing well spacing and stacking distances.

Also, tight oil development entails drilling hundreds or thousands of wells. We now have low-cost digital sensors that capture huge volumes of information. This "big data" helps us better model and predict results, so we don't have to test everything.

During drilling, we geo-steer our wellbores into the best rock.

And we've optimized our fracture designs. We're using longer horizontal well extensions, two-to-three kilometers in some cases. And we've doubled our fracture sizes. All these innovations contribute to flow rates that are higher than in the past.

We've also enhanced drilling efficiency. We're siting multiple wells on one pad. This reduces our surface footprint.

We've cut our water consumption through reuse and recycling. And we're standardizing our surface facilities, instead of custom-designing everything. This optimizes our purchasing, training and maintenance. The savings add up.

So we're climbing the learning curve, and it's still early in tight oil reservoirs. Our expertise is about where we were several decades ago with conventional reservoirs. In baseball terms, it's the third inning of a nine-inning game.

Progress will continue. In fact, low oil prices strengthen the need for ongoing innovation.

### The Time Lag

So there's a strong case for the resiliency of U.S. tight oil. Still, when demand does rise, there will be an initial constraint on production increases. The downturn impacted not just

producing companies. It also hurt the service and supply sides. They will need time to ramp up.

Remember I mentioned the 10 months it took for production to decline. We expect a longer delay on the way back up, for several reasons.

Producers' financial resources have been stretched, particularly the smaller companies. When prices do rise, many will first pay down debt. They'll want to restore their balance sheets. They may also wait to see if an upturn has legs, or if it's a flash in the pan.

Also, consider that there are less than 500 drilling rigs running in the U.S. That's down from 2,000 in 2012. The rest are demobilized. Their crews have been laid off, along with 60 percent of U.S. fracturing field workers.

Many of these people won't come back. They've moved on to other industries. Also, 70 U.S. service firms declared bankruptcy over the last two years.

So the service industry will need some time to raise capital, recruit and train new crews, and redeploy its equipment.

There will be a somewhat offsetting factor – the greater efficiency I mentioned. Fewer rigs will be needed to increase production. But still, there will be a lag.

#### Role of Long-Cycle-Time Projects

I mentioned that we expect fewer investments in mega-projects. During the 1990s and 2000s, we faced restricted resource access. The industry needed mega-projects for growth. This was despite their high costs, their complexity and years-long cycle times.

Then tight oil changed the dynamics. It offered major new resources, and at least in North America, they were openly available. Now, add in low commodity prices, price volatility and intense competition for capital between E&P opportunities.

So we don't foresee many new major project sanctions over the near- and mid-terms. Companies are looking elsewhere, to shorter-lifecycle projects with a low cost of supply. Specifically, tight oil.

Our own mega-projects are now either completed, or nearly so. They have a place in our portfolio. They offer stable production and they provide cash flow. They do this for decades, through multiple price cycles. They also offer economies of scale. There are always opportunities to reduce costs and to improve efficiency.

### The Oil Sands

Which brings me to Canada's oil sands – the world's third-largest oil resource. We're among the leading producers.

The oil sands also face cost pressure. but the industry has made progress. We see a pathway to a supply cost of \$50 per barrel from SAG-D developments (that's steam-assisted gravity drainage). These projects do require high up-front capital investment. But then they have relatively low incremental costs. And the stability I mentioned.

Further progress is possible. The industry is working to shorten cycle times, reduce energy intensity, improve productivity and resource recovery, and shrink land, air, water and carbon footprints.

### Strategy for Success

In this time of transition for our industry, business strategies are necessarily evolving. Some companies are moving away from production growth as a driving goal. It no longer makes sense for them, not at lower, more-volatile prices.

Instead, they're going "back to the future." They're emphasizing financial returns. Many companies did this in the 1990s. It helped then and it will work today.

In pursuing returns, you prioritize opportunities that can contribute to profitability even despite an uncertain price outlook. There are prerequisites. You need a diverse, flexible portfolio, one that offers opportunities with low supply costs, as well as short cycle times. You can't tie up capital for years before earning a return. Projects with these advantages are being sanctioned, while more expensive projects are cancelled or deferred.

It helps to have legacy assets with low decline and low risk. They offer a base of production and cash flow. Maintaining a strong balance sheet is a necessity. So is safety and environmental stewardship.

At ConocoPhillips, we're also optimizing our operating procedures. Greater efficiency always benefits us, throughout the market cycles. We expect several billion dollars in annual savings from this as well as cost deflation.

We've cut our capital program by more than two-thirds. In 2014 we invested \$17 billion into our company. We cut that to \$10 billion last year, and this year we plan \$5.5 billion.

So we're focusing on both reducing our capital intensity and increasing our capital flexibility.

### Governments Also Face New Realities

Just as companies are adapting to the new market realities, so must producing countries. They need a competitive business environment in order to attract E&P investment.

This starts with resource access. The U.S. energy renaissance occurred mainly on private land. We could lease it from the owners, and development followed.

But both there and in other countries, there's a lot of potential on government land. The problem is gaining access. It can be difficult or impossible, particularly for international oil companies looking for opportunities in the resource-rich nations.

That access will be needed in the future, particularly if the world economy revives.

Also, consider world population growth. There are seven billion people today, growing to nine billion by mid-century. That alone will inevitably increase energy demand.

Government should also recognize another truth. Even in low-carbon scenarios, oil and gas will still be needed. So there should be a level playing field for all energy sources, with no pre-conceived winners and losers.

Government must offer regulatory and fiscal stability – and honor contractual terms.

Regulatory over-reach is a threat. So are overlapping or conflicting local and national regulations. These can slow down permitting and development, or even block it. We're also concerned by misuse of regulations for unintended purposes, such as in the U.S. There's an effort to use the Clean Air Act to regulate carbon emissions.

We believe too that regulations should be subjected to a cost-benefit test.

And last, producing countries should recognize the impact of the price downturn on the exploration and production industry. Some countries do – Malaysia, for example. They have an initiative to reduce costs in the entire upstream sector. But in other countries we're not seeing favorable responses. In fact, in some we fear tax increases. These would further reduce investment.

### Conclusion

In conclusion, this transition we're engaged in is extraordinarily difficult. And it likely won't end soon – barring the unforeseeable. The oil market has changed in ways we couldn't have expected just a decade ago. U.S. tight oil production will remain a key factor. Business cycles will remain with us. Company strategies will have to adapt. And yes, government policy remains an important factor.

Even so, I'm confident that the industry will come out of today's downturn stronger, more efficient and more tightly focused.

But when it comes to getting there – fasten your seat belts. It's going to be a bumpy flight.

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