BC MONTNEY DEVELOPMENT HIGHLIGHTS

Liquids Growth in BC Montney

The Montney region is a premier North American resource play that spans northwest Alberta and northeast British Columbia. In the Dawson Creek region, the BC Montney has an abundance of liquids-rich natural gas and light tight oil.

Over the past three years, we have been focused on constructing key facility infrastructure to increase our rich gas condensate (liquids) handling capacity in the Dawson Creek region. Encana now has three fully commissioned and operational gas plants onstream in our North Dawson operating area, and two liquids hub facilities, the North Central Liquids Hub and our South Central Liquids Hub.

These facilities have improved our ability to compress, process and increase our liquids production. We have more than tripled our Montney liquids production from early 2017 (Q1) to late 2018 (Q4). Our continued emphasis on innovation and streamlining processes have enabled us to accelerate our learnings, reduce our cycle times and increase operational efficiencies.

The plants and liquids hubs were all carefully designed to be low emission and to keep within the acceptable thresholds for flaring, which is regulated by the BC Oil and Gas Commission.

Our 2019 development plan will focus on modest growth while generating free cash flow. Our activity level across the Montney will be lower than 2018 activity, with an average of about two rigs active across our Dawson Creek operating region throughout 2019.

Did You Know?

Encana’s new natural gas processing facilities near Dawson Creek are powered by the use of hydro-generated electricity.

This infrastructure project represents the highly innovative and collaborative solutions that help lower carbon footprint while supporting the standard of living and prosperity enjoyed by Canadians.

- The largest such facilities built in western Canada in the last 20 years demonstrates industry’s leadership in providing affordable energy while reducing environmental impact.
- Hydro power will reduce the plants’ CO₂ emissions by about 860,000 tonnes per year. This is equivalent to annually taking approximately 184,000 vehicles off the road, making this one of the largest GHG reduction projects in BC.
- In addition to the significantly reduced carbon footprint, hydro electrification also:
  - Increases the operational reliability of the plants.
  - Reduces plant noise for local stakeholders and is consistent with Courtesy Matters, Encana’s longtime good neighbour policy.

Acquisition of Newfield Exploration Company

Encana completed its acquisition of Newfield Exploration Company (Newfield) on February 13, 2019. The acquisition, which added approximately 360,000 net acres to Encana’s portfolio in the oil-rich window of the Anadarko Basin, creates a premier resource company with large-scale positions in the core of the Permian, Anadarko and Montney. We are pleased to welcome Newfield and are excited for the opportunity to increase our resilience and ability to create value, while remaining focused on efficient growth and responsible development.
Reducing our Impacts Through Operational Efficiencies and Innovation

Through innovation and a persistent emphasis on finding efficiencies, Encana continues to realize increased production. More importantly for community members is finding efficiencies that help to reduce impacts on rural lifestyle.

**Courtesy Matters®:**

Our ability to operate starts with securing and maintaining positive working relations and a favourable reputation in communities where we operate. Our strategy in the Alberta Montney requires long-term operations, therefore we must carefully consider quality of life values and how we mitigate the impacts our activity can have on rural lifestyle.

We recognize that our activity and the associated traffic, lighting and noise can be disruptive to neighbouring residents. At Encana, a company-wide program called “Courtesy Matters”, emphasizes good neighbour practices in all areas where we operate. This program focuses on respectful behaviour and mitigates our impacts throughout all stages of our operations.

**Reduced Cycle Times**

Over the past year, we’ve been able to reduce cycle times for our drilling and completions activity by focusing on efficiencies, detailed planning, implementing improved technologies and incorporating learnings and experience from across our operating areas. Our multi-well pad approach in the Montney typically involves drilling four to twelve wells per pad and efficiencies are realized by using multiple rigs and frac crews simultaneously, on certain pad sites. Through concurrent operations including drilling, completions and facilities, we can optimize services, infrastructure and significantly reduce our overall cycle time spent on the pad. While reducing our cycle times helps to maximize resource recovery and manage risk, it ultimately reduces the associated impacts our activity can have in an area.

**Collaboration:**

Encana has worked with a local Producers Group to better understand operational impacts including the various noise sources that can impact area residents. This group has focused attention on potential noise mitigation and has worked collaboratively to promote change with our operations and within the service industry. By accepting regulatory change and implementing mitigations that help address noise concerns, the service industry can help to advance how we collectively reduce operational impacts.

**Noise Mitigation Efforts:**

**Understanding Noise**

A certain amount of noise can be expected with most industrial activity, however, it is the excessive noise that is of particular concern to us and to area residents. Considerable time and effort has been put towards better understanding noise so that we can better mitigate its impact on those living near our development. Here are some of the things we are doing:

- Fingerprint data capture: collects data on features that influence noise, amplification and propagation of noise. A better understanding of these elements helps to inform and improve our mitigation of noise impacts.
- Monitoring plan: determine scope of monitoring plan, balancing viable data collection and costs.

**Implementing Noise Mitigation Strategies**

Determining Site Specific Noise Reduction Techniques:

- Design site layout and construction techniques to maximize sound mitigation and use related best practices on new sites:
  - Use lidar and mapping to optimize site layout; use soils as a natural barrier on the perimeter of the lease when feasible.
  - Positioning equipment on site can act as a barrier for noise mitigation (i.e. the Sahara tower may be used for sand storage and minion tanks may be used for water storage).
- Explore the use of acoustic paneling options and work to better understand the effectiveness in reducing noise impacts. Panels are considered on a site-by-site basis, pending a number of variables, including proximity of landowner/resident to our padsite location.
- On temporary sites, we’ve reduced the number of electrical generators from 20+ down to two high-efficient, larger enclosed units, minimizing the noise impact. This has become a standard operating practice for Encana’s completions operations going forward.
Lighting Considerations

Encana is committed to reducing our operational impacts and has invested considerable resources to minimize our lighting disturbance on neighbouring residents. The primary objective of our lighting mitigation is to keep light within leased boundaries.

- On permanent facilities, Encana has been exploring light reduction mitigation within the existing facility designs to reduce overall light impacts of these facilities.
- Temporary lighting is directed to focus on lease, while balancing safety and security of our workers. This is assessed carefully by our Drilling and Completions team and determined on a site-by-site basis.
- Fewer generator/light tower combinations used on temporary sites, reducing the cumulative lighting impact as well as has assisted with noise reduction.

Traffic Management

- Use preferred routing for heavy hauling to reduce traffic impacts on area residents and landowners.
- Employ Road Monitor as needed, to monitor and manage traffic during heavy hauls.
- A network of water lines and pipelines are used to distribute fresh water and produced water across our operating areas to support our development activity. This has significantly reduced our water hauling truck traffic, removing tens of thousands of trucks from local roads. To learn more, read our Water Management story below.

Water Management

Water resources are critical for everyone and essential to communities throughout northeast British Columbia. Water is also important for hydrocarbon development, so we go to great lengths to manage this valuable resource efficiently.

Encana’s water strategy is to:

- Rely primarily on alternate water sources for hydraulic fracturing, and secondarily on streams.
- Monitor streamflow to maintain ecosystem flows.
- Construct off-channel reservoirs to store water.
- Transport water via pipelines instead of trucks whenever possible.

Encana’s primary alternate water sources for hydraulic fracturing in our Dawson north and south properties include:

1) Deep saline groundwater, unsuitable for human or animal consumption or agriculture purposes.
2) Reuse water flowing back from fracturing operations and hydrocarbon zone production (Dawson North).
3) Reuse produced water from our production facilities (Dawson North) (water removed from the hydrocarbon stream).
4) Reclaimed water from the City of Dawson Creek.

The Farmington Water Resource Hub at 16-36-78-17 W6M and the Tower Water Resource Hub at 3-7-81-17-W6M are examples of water recycling facilities that recycle water from fracturing and produced water from hydrocarbon production, thereby reducing the use of fresh water for hydraulic fracturing. These alternate water sources account for 60-80 percent of our long-term total water demand in the Dawson Creek region. The remaining 20-40 percent of water may come from streams, when required, such as the Peace, Kiskatinaw and Pouce Coupe rivers, Bissette and Coal creeks and private dugouts.
Process Safety is a disciplined framework for managing the integrity of our operating systems and processes by applying good design principles, engineering and operating and maintenance practices.

- It deals with the prevention and control of events that have the potential to release materials or energy.
- Process Safety principles are implemented in all of our facilities from our plants to our pipelines.

Just over two years ago, we completed the development of our Process Safety Program and integrated it into Encana’s Ethos, our operational management system. Developing and integrating Process Safety was a huge, game-changing effort, which set up the critical work that was subsequently performed in the field and at our major facilities.

By focusing on improvements to asset integrity, process evaluation, risk assessments, spill prevention and equipment and site design, we reduced process safety events by 64 percent in 2017 compared to 2016. “It’s about looking at safety from a technical standpoint, right from the design of a new facility through to decommissioning,” says Travis Ferguson, Director of EH&S for Encana’s Northern Operations.

Our emphasis on process safety was recently recognized by one of our health and safety regulators, WorkSafe BC (the Workers’ Compensation Board of British Columbia) in their WorkSafe magazine. The story highlights Encana’s process safety at the Montney Sunrise Plant (located in our Farmington operating area).

Safety is a core value at Encana, for the residents in our communities and for our staff. Safe operations are reinforced with emergency response plans and training that includes:

- Consultations with area residents and stakeholders.
- Risk assessments of wells, pipelines and facilities.
- Hazard monitoring and detection equipment.
- 24 hours a day/seven days per week oversight of area operations.
- Dedicated emergency response plan training and exercises for field and Calgary-based responders.

In addition to regular site visits, state-of-the-art technology is used to remotely monitor facility integrity 24 hours a day, 365 days a year. In the unlikely event of an emergency situation, our safety control systems are designed and built to respond quickly to ensure public health and safety.
Induced Seismicity and Hydraulic Fracturing

Induced seismicity refers to seismicity caused by human activity and can be associated with several industrial processes, including hydraulic fracturing (used when completing oil and gas wells), geothermal energy extraction, mining and dam building.

Scientific evidence indicates the risk of damage or injury from induced seismicity caused by hydraulic fracturing is very low. When “fracing” happens, it redistributes stress or pressure underground. Hydraulic fracturing activities in the Montney occur at depths of 2,000 to 3,000 metres below ground or deeper. These events have typically not been felt at surface, however, there have been recent recorded events felt at surface in the BC Peace Region.

We understand these events can be concerning and unexpected, however, we do not anticipate risk to workers, public safety, the environment or to the safety of our operations as a result of induced seismicity. The BC Oil and Gas Commission has established strict protocols and mitigation requirements to deal with a seismic event, which Encana is fully complying with. We actively manage for instances of induced seismicity through a detailed mitigation strategy. Recent advancements in our completions and rigorous monitoring will further reduce the frequency and magnitude of felt seismic events.

To better understand induced seismicity, we are engaged with industry partners and we are monitoring and studying induced seismicity in the area. There is also work being conducted by universities and the BC OGC. The objective of this collaboration is to learn more about the causal factors and apply industry findings to help mitigate induced seismicity events on a continual basis.

To learn more about induced seismicity, visit https://www.capp.ca/publications-and-statistics/publications/296979

Hydraulic fracturing, a highly regulated operation, involves pumping a fluid and a propping agent (sand) to a targeted geological formation at high pressure, creating fractures in the formation which enables the production of hydrocarbons. Hydraulic fracturing is a safe and proven way to develop natural gas and oil; it has been used throughout the oil and gas industry for about 60 years.

Building Trust and Capacity

Building mutually beneficial relationships in our operating communities involves transparency and hands-on engagement.

As part of our work with Indigenous communities near our operations, we are focused on providing education and training on how we use water in our development activities. This Watershed Management course highlights the value of water and Encana’s water monitoring program, which has been instrumental in creating dialogue with Indigenous neighbours, and in some cases, actively engaged individuals within these communities on our water testing monitoring program.

“Water is important to all First Nation communities as well as for our ongoing operations,” says Tyson Pylypiw, Manager, Road & Lease, Community & Indigenous Relations. “Using water responsibly and recycling water whenever possible is critical to our success. Through continued conversations and training on our water management strategy, we’ve been able to create positive relationships built around trust. It’s a win-win situation.”

Encana staff reviewing Encana’s water management with Councilor Garry Oker from the Doig River First Nation.
Energy Conversations Matter

While Encana is focused on advancing our business position, we are also interested in advancing the energy conversation. An informed perspective is important when considering the challenges associated with the oil and gas sector, as well as an appreciation for the incredible benefits generated by this sector for all Canadians. Encana collaborates with partners who help to communicate the energy story. Here are some of the partners we work with who are interested in creating awareness and are committed to sharing factual information with communities, including municipal and business leaders, students and teachers who seek balanced and fact-based information.

Inside Education:
Inside Education provides educational programs that enable Canadian teachers and students to understand the science, technology and issues related to our environment and natural resources. They provide bias-balanced, ready-to-use, curriculum-aligned classroom resources, as well as class and teacher field studies and professional development for Alberta and northeast BC teachers. The topics they cover are extensive, including water stewardship and boreal forests, and they also promote careers in the energy and natural resource sector. They challenge students and teachers to think critically about our energy demands as a society and explore development, technology and innovations as well as complex issues such as climate change. Encana has been a proud sponsor of Inside Education since 2005.

Canadian Geographic and Canadian Association of Petroleum Producers
Encana has worked with the Canadian Association of Petroleum Producers and Canadian Geographic to help promote awareness about the role oil and gas plays in the daily lives of Canadians. The Energy IQ Map is a giant floor map developed by Canadian Geographic with support from CAPP. Encana gifted an Energy IQ map, along with resource material to the School District #59, to support energy education in schools across the school district. Energy IQ is a curriculum-linked energy education program that teaches Canadians about Canada’s energy resources, demand and production. The map is used to generate conversations related to energy, in both a local and broader context, and helps to expand understanding about our connection to all forms of energy across Canada. Part of Encana’s sponsorship includes a facilitated orientation of the map for teachers and others who are interested in learning about energy and using the map as a teaching aid.

A NEAT Organization
Encana has sponsored a number of events organized by the Northern Environmental Action Team, which is focused on empowering individuals, businesses and institutions to engage in environmentally sustainable practices. Early this year, NEAT hosted the Energy Explorers Conference at the Energy House at Northern Lights College in Dawson Creek. Several different sessions were offered to students and the community, with involvement from various energy partners who showcased their energy message. Encana’s message was facilitated by Canadian Geographic, who facilitated a session using the Energy IQ Map and led the youth and teachers through conversations regarding energy, challenging their thinking about energy development, distribution and personal use of all forms of energy.

Students exploring the Energy IQ Map at the NEAT Energy Explorers Conference in Dawson Creek.
In Your Community

Engaging Communities

Our Stakeholder Engagement and Surface Land teams are focused on providing detailed information and interacting with those interested in our development plans. To increase awareness and understanding about our activity, we continue to host Community Information Sessions in communities near our development, including Pouce Coupe, Farmington and Briar Ridge. Subject matter experts from the different disciplines are available to answer questions and discuss the various stages of development, from geology, planning and construction of multi-well pads and pipelines, to drilling, completing and operating wells. We also highlight our commitment to safety, environmental and social practices and programs in place at Encana.

A Message from the Chair of Encana’s Courtesy Matters Community Advisory Committee

Encana’s Courtesy Matters Community Advisory Committee, based in Dawson Creek, is a stakeholder forum which meets regularly to learn about Encana’s development, share related information and discuss opportunities to work collaboratively and resolve issues or concerns. Established in 2006, this community-based committee has evolved over the years and has included landowners, business representatives, local government and community leaders.

Dan McLeod, local business man and current Chair of the Courtesy Matters Community Advisory Committee, is a proud advocate of the City of Dawson Creek and the energy sector. Having lived in Dawson Creek for most of his life, as well as having raised his family here, Dan is very familiar with the benefits associated with living in this northeast BC rural community, both as a place to raise a family and to derive his living from the energy sector. “I feel strongly that the energy industry must be well represented locally and be proactive in our efforts to support our community, to resolve concerns, and to be well regarded as corporate citizens across all parts of the oil and gas industry,” says Dan.

Dan believes that effective stakeholder communication is the cornerstone of positive community relations. “The Encana Courtesy Matters program is recognized as an industry leader in community engagement, and this is the reason that I have focused my efforts with this group of community-minded individuals from all walks of life.”

As Chairman, Dan’s goal for our localCourtesy Matters group is to help facilitate open, effective and responsive communication with members of our community, whether directly affected by industry or not. “In 2019, we will continue to support efforts to expand the energy conversation and to join Encana as they interact with the community in many ways, including ongoing engagement and support of School District 59, attending Encana community information sessions and other gatherings that can promote positive engagement and relationships.”

For more information on the CM Community Advisory Group, contact 250.719.6829 (ext 1116) or 403.645.2340.

Annual Spring Clean-Up

Last spring there was a collective effort to conduct roadside cleanup across our Montney operating area. An Encana crew in the Farmington area covered almost three and a half kilometres, cleaning the ditches along the 245 Road between one of our lease sites and highway 97.

Encana’s Road & Lease, Facility and Pipeline Construction spent an afternoon cleaning 80 kilometres of ditches in the Farmington and Bessborough areas; targeting roads that have a high volume of industry traffic through the winter months. The Pouce Coupe Elementary School also joined the effort, with 50 students cleaning ditches between Pouce Coupe and Dawson Creek. Their collective efforts covered seven kilometres and removed 100 bags of garbage from the roadsides! Cleaning the roadsides near Encana’s operating areas has become an annual event for Encana in the Dawson Creek region, and we’ll be gearing up for a similar effort this spring. Putting waste in its place is an expected practice and part of Encana’s Courtesy Matters program. We appreciate this collective effort and thank everyone involved for taking time to clean up the rural community.
Investing in Communities

Encana supports investment opportunities that strengthen community spirit and well-being through education, sports and recreation initiatives.

Parkland Elementary Students are Climbing the Wall

The Parkland Elementary School Parent Advisory Committee requested Encana sponsor the purchase of an Everlast Mural Climbing Wall for the Parkland Elementary School located in Farmington. Encana was quick to get on board and recognized the value that this equipment could offer, with the potential to enhance students’ physical skills, agility, coordination and concentration, important attributes for youth development, plus it’s just darn fun!

A Skateboard Park for Pouce Coupe

The Village of Pouce Coupe is working hard to secure funds to construct a skateboard park to accommodate the growing youth population. Encana is delighted to lend support to this initiative; we are confident this type of investment is beneficial and offers a healthy option for youth enjoyment and physical skill development.

Rivitalizing Trades Training

This past fall, Encana joined the Northern Lights College academia, community leaders and government representatives as they celebrated the opening of the newly constructed Trades Building in Dawson Creek, a long-awaited facility that will help to rejuvenate interest in trades training in the BC Peace Region. Encana proudly sponsored this state-of-the-art learning centre, which will greatly serve those interested in pursuing a career in the trades and support a healthy labour force across the BC Peace Region.

Encana’s Race Against Hunger Fuels Local Food Banks

The competition last August was fierce at Encana’s annual Race Against Hunger, a fun-spirited and charitable event in support of the Salvation Army, Network Ministries and St. Mark’s food banks in Dawson Creek. The event was an incredible success thanks to the generosity of the Dawson Co-op, who opens their door each year for this event, and the infectious enthusiasm of all the racers. The Co-op kindly donated all the food collected by the racers and Encana matched monetary donations dollar-for-dollar or two dollars per pound of food donated. A total of 1,166 pounds of food and $2,885 in cash donations was collected. Encana’s matching contribution provided an additional $5,217 to distribute between the food banks. Thanks to the Dawson Co-op and all those who supported this event.