Evaluation of the Alberta Energy Regulator's Play-Based Regulation Pilot

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Executive Summary

On September 1, 2014, the AER launched a play-based regulation (PBR) pilot to test a new regulatory approach involving a single, integrated application and decision-making process for unconventional oil and gas development projects in the Fox Creek area. Applications were accepted until July 15, 2015.

Through the pilot, the AER set out to achieve a number of objectives and evaluated the pilot against these objectives. The findings are summarized below.

Objective 1: Minimize cumulative effects in the pilot area and have industry collaborate on surface development plans.

Result:

- Progress was made toward reducing the cumulative effects of surface disturbances and water management in the pilot area.
  - Pilot participants (oil and gas companies that submitted PBR pilot applications) were able to more effectively plan the location and size of energy development infrastructure. The planning in turn decreased the amount of associated infrastructure (e.g., access roads and pipelines) and reduced the cumulative surface disturbance.
  - The AER was able to review longer-term water diversion requests because pilot participants were required to apply for water licences (instead of temporary diversion licences) due to the longer-term nature of the projects. Pilot participants were also required to submit water management plans to address water use over the entire project.
- Collaboration among pilot participants on surface development was not evident in submitted applications.

Objective 2: Enhance engagement by providing affected stakeholders, including First Nations and Métis, with the opportunity to participate in the AER's PBR pilot approach and the proponent's pilot applications.

Result:

- General information about the pilot provided by the AER to stakeholders was insufficient, leading to a limited understanding of the PBR pilot and its outcomes.
- Stakeholders see a benefit to having a broader view of energy development plans; however, they did not feel that pilot participants provided them with enough information to fully understand the project plans or their potential impacts over the long term.

Objective 3: Establish risk-based, play-based requirements for the pilot area.

Result:

- Subsurface requirements were set out in Subsurface Order No. 3 issued on March 17, 2015. The order was issued under another AER project that ran concurrently with the pilot.
- Surface-related play-based requirements were not developed and may be introduced in future development of the PBR approach.

Objective 4: Develop and test a single application and decision-making process for energy development projects.

Result:

- The AER developed and used a single, integrated application review and decision process for multiple activities in energy development projects (i.e., single application, single approval approach).
  - Pilot participants see a benefit in spending more time up front to prepare a single project application with certainty of a longer-term approval instead of submitting individual applications for each activity under the current regulatory system.
  - The requirements to submit the single applications were not sufficiently detailed and clear, making it challenging for pilot participants to develop their applications.

Opportunities to further develop the PBR approach include the following:

- Improve AER engagement with stakeholders, including First Nations and Métis, to provide a better understanding of the PBR pilot and its outcomes.
- Develop a control to ensure that stakeholders, including First Nations and Métis, are meaningfully engaged and understand the proponent's energy development before the application is submitted.
- Further develop regulatory tools that support and enable play-based regulation.
- Seek opportunities for regulatory changes to incent or mandate operator collaboration.
- Investigate solutions that provide operators with more flexibility for (a) planning and locating energy development infrastructure (e.g., multiwell pads, pipeline rights-of-way, facilities, water reservoirs, roads, etc.), (b) outlining areas where diverted water can be used within a project boundary, and (c) other energy development infrastructure specifications. This may present opportunities to change applicable legislation.
- More clearly and comprehensively define minimum application requirements.
- Create further administrative efficiencies by eliminating duplication, providing certainty about review timelines, and optimizing the single-approval decision process.

1 Play-Based Regulation

In recent years, new technologies have emerged that enable the energy industry to commercially develop Alberta's rich and largely untapped "unconventional" oil and gas resources. The use of these advanced technologies and hydraulic fracturing processes have created new opportunities, as well as new challenges. To capitalize on these opportunities and address the challenges, the AER piloted play-based regulation (PBR) based on the AER's *Discussion Paper on Regulating Unconventional Oil and Gas in Alberta*, released December 2012. PBR is grounded in two basic principles:

- **Risk-based regulation:** regulatory responses are proportional to the level of risk posed by energy development, with a focus on those areas that present the greatest risk to achieving regulatory objectives.
- **Play-focused regulation:** the regulatory approach is tailored to an entire "play" to achieve environmental, economic, and social outcomes set by the Government of Alberta.

PBR involves designing regulatory requirements and processes to suit the risks of and desired outcomes for a specific resource play (a three-dimensional space that is the target of oil or gas development). The intent of this approach is orderly and responsible development, which includes understanding broader-scale development in order to clearly identify and mitigate potential risks to public safety, the environment, and the resource. By assessing projects at the play level rather than on an activity-by-activity basis, the PBR approach presents opportunities to reduce cumulative effects, encourage operator collaboration, develop play-specific requirements, test a single application and decision-making process, and enhance disclosure of broader development plans to stakeholders.

2 PBR Pilot

The PBR pilot was a way for the AER to test, on a limited scale, this new approach to regulating unconventional oil and gas development, including shifting from activity-by-activity regulation to the regulation of multiple activities across large areas. Under the pilot, proponents could submit a single application for multiple project activities under the *Oil and Gas Conservation Act, Pipeline Act, Public Lands Act, Environmental Protection and Enhancement Act*, and *Water Act*.

The application requirements for the pilot, including requirements for stakeholder engagement, and the process for submission were set out in *Manual 009: Play-Based Regulation Pilot—Application Guide*, issued on June 27, 2014. Applications under the pilot were accepted from September 1, 2014, to July 15, 2015. Industry participation was voluntary.

Figure 1 is a map of the pilot area. This area was selected because of increasing development activity, which is occurring predominantly on public lands located near the town of Fox Creek.

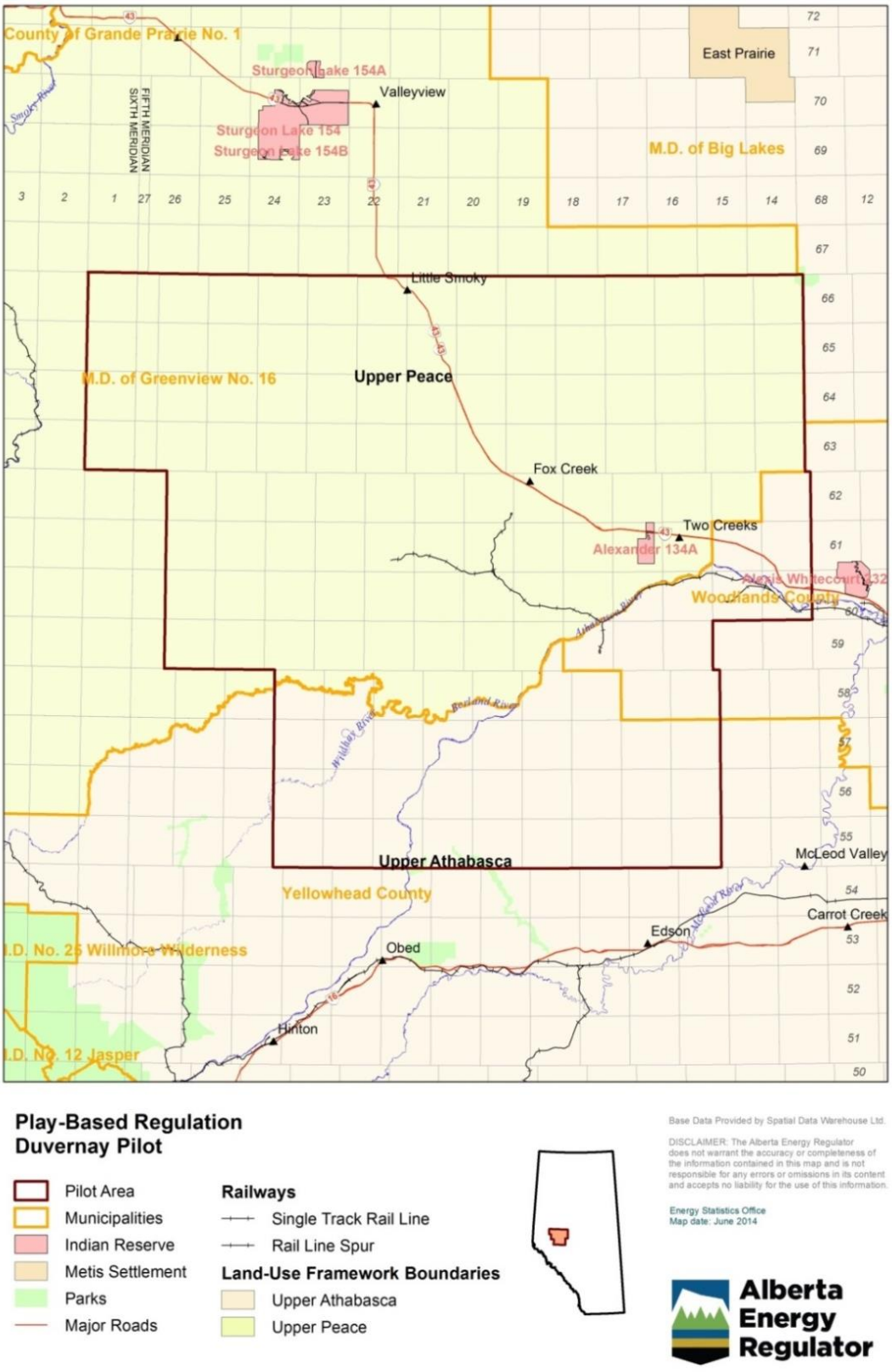

Figure 1. Map of the pilot area

2.1 Pilot Objectives

The intent of the pilot was to identify where improvements could be made and determine the approach's applicability for future development. This report evaluates how the pilot accomplished the following:

1. Minimize cumulative effects in the pilot area and have industry collaborate on surface development plans
2. Enhance engagement by providing affected stakeholders, including First Nations and Métis, with the opportunity to participate in the AER's PBR pilot approach and the proponent's pilot applications.
3. Establish risk-based, play-based requirements for the pilot area
4. Develop and test a single application and decision-making process for energy development projects

3 Evaluation of Pilot Objectives

Objective 1: Minimize cumulative effects in the pilot area and have industry collaborate on surface development plans

Cumulative Effects

- Progress was made toward reducing the cumulative effects of surface disturbances and water management in the pilot area.

  The PBR approach included understanding the potential risks of broader-scale energy development with the aim of minimizing cumulative effects on the land, water, air, and biodiversity. While the pilot did not *minimize* cumulative effects across all of these areas, progress was made towards *reducing* cumulative effects in the pilot area. It is important to note that the progress made is a small step towards the overall goal. More work is needed to address cumulative effects comprehensively in the play area. It is recognized that energy companies are among many users of Alberta's land, air, and water and that cumulative effects reductions require all users to work towards this objective. One of the limiting factors in minimizing cumulative effects in the pilot was that participation in the pilot was voluntary, and only seven[1] energy proponents submitted applications out of about 50 energy companies that have operated in the pilot area since 2011.

  As noted by pilot participants, the "one application, one decision" approach enabled them to determine the most effective and efficient placement of wells, pipelines, water reservoirs, and associated infrastructure for the project. As a result, progress was made towards reducing cumulative effects in the areas of surface disturbances and water management in the pilot area, as presented in the following examples.

[1] One of the seven pilot participants withdrew their application during the pilot.

1. Proponents applied for water licences instead of temporary diversion licences.

   The PBR pilot required companies to submit risk management plans that included water management plans to address water use over the entire project. These required pilot participants to provide more information up front and quantitatively demonstrate the need for water within specific usage areas of the project boundary. As a result, pilot applications included requests for water licences for the entire project instead of the common practice of applying for individual temporary diversion licences, which are typically used for single drilling activities. Water licences allow the AER to review broader, longer-term diversion demands from sources of water which reduces effects of cumulative effects. Water licences also provide greater certainty for pilot participants to use water over the life of the project, rather than relying on temporary diversion licences, which are only granted on a one-year basis.

2. Surface disturbances were reduced in the pilot area.

   The PBR pilot accelerated the trend towards reducing surface disturbances by creating favourable conditions for companies to create broader project development plans that strategically located and efficiently sized infrastructure. Under the pilot, pilot participants proposed fewer, larger multi-well pads rather than a greater number of smaller pads with fewer wells. This in turn decreased the associated infrastructure (e.g., access roads and pipelines) needed for the development. These conditions contribute to reducing cumulative surface disturbance.

   Analysis of non-PBR applications in the pilot area from September 2014 to October 2015, showed that only 30 per cent of non-PBR applications requested well pads greater than 2.5 hectares in size. Analysis of PBR applications in the same geographical pilot area showed that all PBR applications requested well pads greater than 2.5 hectares in area.

   While the AER has generally observed a trend towards larger pad sizes and higher well densities in recent years, the pilot has enabled pilot participants to plan for longer-term development in such a way that the occurrence of these larger pad sizes with a higher well density is present in all PBR pilot applications. In this way, pilot participants were able to reduce their overall surface land footprint.

These examples illustrate the initial progress that has been made towards reducing cumulative effects by facilitating more upfront planning to create broader development plans. They also illustrate how by evaluating longer-term development plans, the AER will be able to better assess potential cumulative effects and put in place measures to reduce them. To this end, industry has noted that they will put more effort into minimizing cumulative effects in a play if they are mandated to do so or if there are economic advantages. In order to continue the work done during the pilot, further development of regulatory tools which support and enable play-based regulation is needed.

Collaboration

- Collaboration among pilot participants on surface development was not evident in submitted applications.

  Although *Manual 009* encouraged pilot participants to collaborate, no commitments were made by the pilot participants to collaborate to reduce surface development (facility proliferation) and water use. The lack of collaboration was likely the result of the following:

  – The Duvernay is in the early stages of development.

  – PBR projects are dispersed throughout the pilot area.

  – There is a perceived risk by pilot participants that collaboration may induce stakeholders to object on broader surface development plans.

  – Collaboration was voluntary.

  Pilot participants noted that collaboration on surface infrastructure (e.g., water reservoirs, roads, and pipelines) is not considered a loss to each operator's competitive advantage. Collaboration is a welcomed aspect of the PBR approach, and pilot participants recognize that it needs to do more to realize this benefit. However, pilot participants have also signaled that more needs to be done by the Government of Alberta and the AER to strike a balance between encouraging collaboration and mandating it. In order to have industry collaborate on surface infrastructure across a play, regulatory changes should be considered to incent or mandate operator collaboration. By increasing collaboration among operators on surface infrastructure, it is expected that cumulative effects can be further reduced.

Objective 2: Enhance engagement by providing affected stakeholders, including First Nations and Métis, with the opportunity to participate in the AER's PBR pilot approach and the proponent's pilot applications.

In October 2015, a survey was sent to stakeholders in the Fox Creek area in order to gain insight into the PBR pilot. The AER was looking for information about the AER's engagement process and about how the PBR concept was applied during the pilot project. Key groups in the PBR pilot project area that received the survey included local government, First Nations, Métis, disposition holders, landowners/ occupants, local businesses, first responders/mutual aid, recreational land users, industry, environmental nongovernmental organizations, and interested public. The survey was also available on the AER's website. As a result of the survey and AER staff interactions with stakeholders during the PBR pilot, the following results were observed:

- General information about the pilot provided by the AER to stakeholders was insufficient, leading to a limited understanding of the PBR pilot and its outcomes.

The feedback collected from surveys identified that AER staff were available to provide information to stakeholders and responded to questions and concerns about the pilot. There was a general lack of information about the pilot, and the information that was available to stakeholders was insufficient to gain an understanding of the PBR pilot. Stakeholders expressed that accessible information about the pilot was unclear and not relevant.

Concerns noted by AER staff during their interactions with stakeholders, First Nations, and Métis people included water allocation and restrictions, seismic events related to hydraulic fracturing, lack of clarity on how stakeholders will be engaged throughout the life of the project, and cumulative effects. To address concerns and information requests during the pilot project, AER field staff held information sessions, one-on-one meetings, and community meetings with stakeholders to explain the PBR single-approval approach, how the PBR pilot would work, and how parties were able participate in the process. AER staff also noted concerns about mineral tenure expiration and the role of Alberta Energy and the Aboriginal Consultation Office, though both concerns were out of scope for the pilot.

- Stakeholders see a benefit to having a broader view of energy development plans; however, they did not feel that pilot participants provided them with enough information to fully understand the project plans or its potential impacts over the long term.

  Stakeholders, including First Nations and Métis, were provided with large PBR applications, but pilot participants did not meaningfully engage with stakeholders and explain potential impacts of larger-scale projects over the long term. Generally, stakeholders questioned whether their input was considered in the pilot participant's applications and how pilot participants would continue meaningful engagement with stakeholders in the pilot area. It was suggested that more time and effort was required for pilot participants to address all stakeholder concerns in the pilot area during the initial application. The PBR applications complied with existing AER requirements for the application process.

  Feedback from pilot participants and forest management agreement (FMA) holders identified that requirements to obtain FMA holder consent were unclear. Although the process for proponents to obtain FMA-holder consent had not changed in the PBR pilot, a clear description of the PBR approach was not provided to FMA holders and proponents in the early stages of the AER's stakeholder engagement efforts. This resulted in some delays during the single integrated decision period. The AER should clarify the FMA-holder consent process for single integrated energy applications.

  Overall, stakeholders could identify with the reasons for moving towards a PBR approach; however, in practice, they did not see how the pilot improved or provided additional benefits to stakeholder engagement for energy development projects.

As energy development projects progress, stakeholders and the AER will be aware of the current status of each project throughout the lifecycle through annual reports submitted by each pilot participant. These annual reports will include quantitative data and data analysis and will identify opportunities for continuous improvement (e.g., adaptive management). All of the annual reports will be posted on the AER's website. Pilot participants are also required to provide stakeholders with ongoing project updates, address stakeholder concerns that arise throughout the project lifecycle in a timely manner, and demonstrate to the AER that stakeholder engagement plans are maintained and updated annually.

- There are many implications of providing stakeholders with an awareness and understanding of a broader project scope and engagement over the life cycle of the development:
  - Stakeholders and the AER will be fully aware of the current status of each project through an annual report submitted by the pilot participant that tracks progress of the PBR pilot projects and through ongoing project updates, including project scope changes.
  - Engagement is done on the entire project as a whole, instead of multiple consultations for each activity in isolation.
  - More time and effort is required for proponents to address stakeholder concerns in the pilot area during the initial application and throughout the lifecycle.

To enhance stakeholder engagement, the AER may consider earlier engagement with stakeholders. The AER may also consider ensuring that stakeholders, including First Nations and Métis, understand the pilot and its outcomes prior to commencement. This will allow stakeholders to be able to evaluate the changes based on their own experiences and to provide the AER with valuable insights about the impacts. The AER may also develop a control to ensure that stakeholders are meaningfully engaged and understand the proponent's energy development before the application is submitted.

Objective 3: Establish risk-based, play-based requirements for the pilot area

- Subsurface requirements were set out in Subsurface Order No. 3 issued on March 17, 2015.

  The order was issued under another AER project that ran concurrently with the pilot. The order sets out subsurface requirements to mitigate high risks for a zone within the Duvernay Formation, including the pilot area. These requirements, which cover development, production, and data gathering, are tailored specifically for the zone. The order is available on the AER website, www.aer.ca, under Data & Publications > Orders > Subsurface Orders.
- Surface-related play-based requirements were not developed and may be introduced in future development of the PBR approach.

Play-based surface-related requirements were not developed in the pilot and may be advanced through work with the Government of Alberta. Surface-related requirements were not developed within the time frame of the pilot because further work to develop regulatory tools that support and enable play-based regulation is needed. This may include baseline risk assessments for the delineated play area.

The pilot's approach to risk-based evaluation of applications has the potential to enable the development of standardized evaluations and surface-related requirements for the pilot area; however, further work would be needed to translate the project-specific requirements into surface-related requirements.

Objective 4: Develop and test a single application and decision-making process for energy development projects.

- *Manual 009: Play-Based Regulation Pilot Application Guide* was released on June 27, 2014, to explain the PBR approach and to describe the requirements for submitting a single application

  Before the PBR pilot, the AER had not created a single application guide that would encompass multiple activities. *Manual 009* was the first step towards setting a precedent for what a standard single application could entail. The scale and scope of the information in the single application had to represent the scale and scope of the energy development project. Pilot participants stated that *Manual 009* did not provide sufficient clarity and detail on the application requirements. The lack of clear detail made it challenging for the participants to develop their single applications. As a result, the quality and content of the received applications varied considerably. In order to build on *Manual 009*, the single application guide should be improved so that it clearly outlines the format and minimum application requirements, including all of the necessary details and supporting forms that are required to meet existing regulatory requirements.

- The AER developed and used a single integrated application review and decision process for multiple activities in an energy development project (i.e., single application, single approval approach).

  As part of the pilot, the AER received, reviewed, and decided on single applications that combined multiple activities governed under five statutes under AER jurisdiction. The single-application approach allowed the AER to gain a broader view of the proposed developments (e.g., multiple wells, associated infrastructure, and land access viewed in one shot) than through the traditional one activity, one application approach. To this end, the AER integrated the review of single applications by fostering collaboration from multiple groups across the organization that would typically work separately on applications for individual activities.

  Overall, pilot participants said they see a benefit to spending more time upfront preparing for a single project application with certainty of a longer-term approval than submitting individual applications for each activity.

The PBR applications contained development plans for up to five years, which is longer than current development plans but is shorter than what the pilot intended. While these broader development plans were an improvement over the conventional application process, the AER did not receive comprehensive and long-term views of the project development that the PBR pilot was aiming for. Approving long-term development plans depend on pilot participants providing specific locations for surface dispositions, which is a requirement under some statutes. It is not always possible for the pilot participants to provide site-specific location many years in advance of construction due to economic, budgeting considerations and subsurface uncertainties involved in the pilot participant's project planning process.

In order to receive long-term development plans from proponents that provide an even bigger picture of energy development in a play area, consideration needs to be given for solutions that provide operators with more flexibility for (a) planning and locating energy development infrastructure (e.g., multiwell pads, pipeline rights-of-way, facilities, water reservoirs, roads, etc.), (b) outlining areas where diverted water can be used within a project boundary, and (c) other energy development infrastructure specifications. This may present opportunities to change applicable legislation.

A risk-based approach was used to evaluate project activities, and conditions were imposed on approvals to mitigate project-specific risks.

Applications were reviewed based on an international risk standard, *ISO 31000:2009, Risk Management – Principles and Guidelines*, using AER criteria in five areas: stakeholder engagement, reservoir management, water management, surface impacts/infrastructure, and life-cycle wellbore integrity.

As part of *Manual 009*, proponents were asked to submit a comprehensive risk management plan that identified hazards, evaluated risks, and provided appropriate mitigation measures. These plans were assessed by the AER, and, where necessary, requirements were applied as approval-specific conditions to mitigate project-specific risks. This allowed for a more holistic assessment of the full range of risks (from water to biodiversity to subsurface risks), and such an assessment allows experts across subject areas to work together in making decisions.

The AER issued six single approvals under the PBR pilot, each with 30 to 50 individual authorizations. If approved, a single application resulted in the issuance of a single approval. Multiple activity authorizations under multiple statutes were integrated into the single approval. The single approval contained conditions to ensure that development corresponded to the original project scope and accommodated some variation in the design and operation of the energy development project.

- There are many implications of the single application and decision-making process for energy development projects:
  - Allows for a more holistic assessment of the full range of risks (from water to biodiversity to subsurface risks), and such an assessment allows experts across subject areas to work together in making decisions.
  - Encourages pilot participants to develop project based and longer-term development plans, which allows for a better assessment and reduction of cumulative effects.
  - Improves regulatory certainty for pilot participants by providing upfront conditional approval for a five-year term allowing for operator flexibility on contractor planning and construction. Conditional approval means some activities under the authorization cannot commence until the holder meets certain conditions and notifies the AER.

4 Opportunities to Further Develop the PBR Approach

Managing energy development on a play level rather than an activity-by-activity level requires that pilot participants adjust their approach to development. While the pilot was not able to achieve all of its intended objectives due to the limited duration of the PBR pilot, the AER has built confidence internally and with stakeholders and pilot participants that the PBR concept can be further implemented to realize the inherent benefits.

The following are opportunities that could be explored to minimize cumulative effects in a play and include collaboration on surface development plans:

- Further development of regulatory tools which support and enable play-based regulation
- Seek opportunities for regulatory changes to incent or mandate operator collaboration.

The following opportunities could be explored to enhance stakeholder engagement:

- The AER is to provide stakeholders, including First Nations and Métis, with a better understanding of the PBR pilot and its outcomes.
- Develop a control to ensure that stakeholders, including First Nations and Metis, are meaningfully engaged and understand the proponent's energy development before the application is submitted.

The following are opportunities that could be explored to develop play-based surface-related requirements for the entire life cycle of development in the play area:

- Further develop regulatory tools that support and enable play-based regulation, which could include baseline risk assessments for the delineated play area.

The following are opportunities that could be explored to improve the single application review and decision process:

- Investigate solutions that provide pilot participants with more flexibility for (a) planning and locating energy development infrastructure (e.g., multiwell pads, pipeline rights-of-way, facilities, water reservoirs, roads, etc.), (b) outlining areas where diverted water can be used within a project boundary, and (c) other energy development infrastructure specifications. This may present opportunities to change applicable legislation.
- More clearly and comprehensively define minimum application requirements for a single application with multiple activities.
- Create further administrative efficiencies by eliminating duplication, providing certainty about review timelines, and optimizing the single-approval decision process.

Conclusion

Although not all of the benefits and objectives of PBR were realized, the concept was tested and incremental progress was achieved. The notable achievement of the pilot was developing and testing an integrated single application and single approval decision process.

While it was recognized that some legislative and regulatory change may be considered to fully implement the PBR concept, the AER is confident that the PBR concept can work. Future development of the play-based approach may enable future pilots and broader implementation of a play or area-based regulation approach across Alberta.