



Commingled Production Guide

VERSION 1.0: November 2018

About the Commission

The BC Oil and Gas Commission (Commission) is the single-window regulatory agency with responsibilities for regulating oil and gas activities in British Columbia, including exploration, development, pipeline transportation and reclamation.



The Commission's core roles include reviewing and assessing applications for industry activity, consulting with First Nations, ensuring industry complies with provincial legislation and cooperating with partner agencies. The public interest is protected by ensuring public safety, protecting the environment, conserving petroleum resources and ensuring equitable participation in production.

Mission

The Commission regulates oil and gas activities for the benefit of British Columbians by:

- Protecting public safety.
- Respecting those affected by oil and gas activities.
- Conserving the environment.
- Supporting resource development.

Through the active engagement of stakeholders and partners, the Commission provides fair and timely decisions within its regulatory framework. It supports opportunities for employee growth, recognizes individual and group contributions, demonstrates accountability at all levels, and instills pride and confidence in our organization.



Vision and Values

To provide oil and gas regulatory excellence for British Columbia's changing energy future.

- Respectful Accountable
- Effective Efficient
- Responsive Transparent

Additional Guidance

As with all Commission documents, this manual does not take the place of applicable legislation. Readers are encouraged to become familiar with the acts and regulations and seek direction from Commission staff for clarification. Some activities may require additional requirements and approvals from other regulators or create obligations under other statutes. It is the applicant and permit holder's responsibility to know and uphold all legal obligations and responsibilities.

Throughout the manual there are references to guides, forms, tables and definitions to assist in creating and submitting all required information. Additional resources include:

- [Glossary and acronym listing](#) on the Commission website.
- [Documentation and guidelines](#) on the Commission website.
- [Frequently asked questions](#) on the Commission website.
- [Advisories, bulletins, reports and directives](#) on the Commission website.
- [Regulations and Acts](#) listed on the Commission website

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Manual Revisions

The Commission is committed to the continuous improvement of its documentation. Revisions to the documentation are highlighted in this section and are posted to the [Documentation Section](#) of the Commission's website. Stakeholders are invited to provide input or feedback on Commission documentation to OGC.Systems@bcogc.ca or submit feedback using the [feedback form](#).

Version Number	Posted Date	Effective Date	Chapter Section	Summary of Revision(s)
1.0	November 2, 2018	November 5, 2018	Various	This is a new document. Users are encouraged to review in full.

Chapter 1: Commingled Production Approval Types

Commingled production is the flow of fluids, originating from two or more pools, in an unsegregated manner to a well measurement meter.

Production may be commingled down-hole in the wellbore or at the surface prior to metering.

Commingling may occur at any point in the life of a well, from initial design to a recompletion late in the life of a well. Commingling is a method to maximize the total recoverable hydrocarbons from a well. Commingling provides an opportunity to produce zones that may be individually uneconomic to produce, either initially or after having declined to marginal rates. Commingling may also help to lift liquids to the surface that would otherwise hinder production.

1.1 Area Approvals

Area approvals target identified opportunities to drill and complete commingled zones. The Commission has issued several Area Commingling Approvals, requiring only that a notification be submitted once specific formation have been commingled in a well. These include:

- [Deep Basin Area Approval](#)
- [Outer Foothills Area Approval](#)
- [Plains and Northern Foothills Area Approval](#)

Please see Chapter 3 for guidance on each approval.

1.2 Pool Approvals

The Commission has issued, upon application, a few pool-specific commingling approvals to facilitate programs of close step-out and in-fill development drilling. Commingled wells within these limited areas must be reported via the Commission's [notification form](#).

For regulatory purposes, the Commission has created numerous compound pools. Completion of intervals within these designated pools is not considered commingled production and no approval or notification is required. Examples include:

- Altares field – Doig Phosphate-Montney A pool
- Ring field – Bluesky-Gething-Montney pool

1.3 Individual Well Approvals

Wells that do not meet the criteria of an Area Commingling Approval, or other specific commingling approval issued by the Commission, require an individual well application. The application guide is incorporated into this manual as Chapter 4.

Applications are reviewed for the benefit to reserves recovery and potential effects to other pool operators.

1.3.1 Conditional Approval Prior to Completion

For a well that does not meet the criteria of an Area Commingling Approval, an operator may apply prior to obtaining individual zone test results to receive an 'interim' individual well approval of commingle. An interim approval, if granted, states specific zonal testing requirements and other conditions that must be met. While this is not the preferred method of application (the Commission prefers a single, complete package post-testing) there may be individual well circumstances that warrant this approach.

In this two-step process, the initial application should contain all available information from the individual well application guide referenced above. Testing information, once obtained, is submitted under separate cover to complete the application and receive final approval.

1.4 Commingling Oil and Gas

Commingling an oil pool and a gas pool in a well is normally not allowed. Commingling, in this case, removes the ability to monitor zone production allowable GOR and manage/optimize oil recovery.

The few cases in which an oil and a gas pool have been granted commingled production approval have been de facto recognition that fracture stimulation(s) have resulted in communication of zones behind pipe.

The Commission remains open to an application for a specific case where it can be demonstrated that recoveries and equity will not be negatively affected. Such may include an oil well that has reached its economic limit – commingling with a gas zone would help to lift fluids and extend the operating life.

Chapter 2: Reporting Requirements

This section outlines the various types of reporting required for a commingled well.

2.1 Production Reporting

2.1.1 Petrinex

As of November 5, 2018, all production reporting is to be completed through Petrinex. Please refer to the Petrinex British Columbia Inclusion Project [Industry Readiness Handbook](#) for further information.

2.1.2 Weighted Reporting

Production reporting should be appropriately weighted to reflect both rate and projected zonal recoverable reserves. These values are derived from the following (listed in order of preference): production, testing (including production logging/spinner), petro-physical properties and/or analogies.

Completed formations that are determined not to be contributing any fluids may usually remain included in a commingled completion, with a zero per cent allocation factor on the notification form.

Each approval specifies one of two possible methods for reporting production.

2.1.3 Zonal Reporting (Multiple UWIs)

Monthly fluid volumes are reported to each zone (UWI) based on percentages of the total metered as specified in the approval document. In some cases, it is stated that the well operator may later alter the percentages based on more recent zonal allocation information. A common percentage value may be specified for each fluid type: gas, condensate, water, or different values where supported by flow testing or production data.

Example 1:

	Gas	Condensate	Water
Zone A	50%	50%	50%
Zone B	50%	50%	50%

Example 2:

	Gas	Condensate	Water
Zone A	60%	20%	40%
Zone B	40%	80%	60%

2.1.4 Single Zone Reporting (Single UWI)

Where there is insufficient information to determine a reasonable allocation of individual zone production contributions, the Commission specifies that all production be reported to a single zone/UWI. This is generally the deepest active commingled UWI in the well. Royalties are calculated based on this total production. The Commission may split the production in the internal database by pre-determined allocation values for approximating reserves recoveries.

2.2 Notification of Commingled Well Production

The submission of a [Notification of Commingled Well Production](#) informs the Commission of:

- The commencement of production of two or more zones in a wellbore without zonal segregation, or
- The amendment of information for a well which a notification was previously submitted.

Where the wellbore configuration has resulted in more than one commingled stream (zones A&B and C&D are commingled, but A&B are isolated from C&D), a separate Notification of Commingled Well Production form is required for each grouping of zones.

2.2.1 Form Instructions

Form Field	Instructions
Initial Notice	Check if no previous Notice has been submitted for any of the reported zones.
Amendment Notices	The operator is obligated to inform the Commission when circumstances have resulted in a change to a previous commingled reporting for the well. Amendments are expected to be on a go-forward reporting basis; however, where retroactive reporting is being made, details must be included in the comments section. Allocation factors may require amendment over the life of a well due to a variety of reasons, such as: <ul style="list-style-type: none"> • new well test data that changes the basis for calculation of gas contribution from one or more zones, or • the abandonment of one or more zones, or • the addition of one or more zones to the original commingled wellbore configuration.
Well Authorization No.	Insert the five digit WA number.
Well name	Insert the approved well name.
Initial Commingled Production or Amendment Date	Enter the date that the zones identified below commenced production in a commingled state. If this is an "Amendment Notice," this will be the date that allocation factors change due to new test data, or the addition or abandonment of zone(s).
Approval type	Check one that applies. Individual well: application and approval from the Commission for the specific well and formations. Deep Basin, Outer Foothills or Plains Area: well that meets the criteria for commingling without application, see Chapter 3. Poor: commingled under the approval conditions issued for two or more specific pools.
Formation name and interval	Insert the name and code of the formations in which the well is complete. Enter the top and base of the gross perforated interval within the formation. The interval must be measured, in meters, from Kelly bushing and rounded to a single decimal place.
Unique Well Identifier	Insert the 16 character unique well identifier for the well event.
Deepest?	For the listed completion events, check the box that represents the deepest. This applies to all area based commingling notification as well as individual well notification where the Commission has requested that all production be reported to the deepest well event. This UWI will be used to report wellbore production in Petrinex. In most cases, the Commission will assign allocation factors when issuing individual well approvals.

Form Field	Instructions
Production Allocation Factor (% of total)	Percentage of commingled wellbore production that has been calculated as originating from each completion, as measured at equivalent stock tank conditions. For Area approvals see Chapter 3. For individual well approvals these will be the Commission's assigned allocation factors noted in the approval.
Gas	Percentage raw natural gas production.
Condensate	Percentage associated hydrocarbon liquids production.
Water	Percentage associated water production.
Attachments	Where the approval to commingle production is conditional upon submitting specific reports, attach documents.

2.3 Abandonment

At the time of abandonment, each formation must be segregated in the wellbore, usually by bridge plug and cement cap. Individual preformation intervals within a specific formation do not require segregation.

All abandonment operations require the submission of a Completion/Workover report. Please see [the Oil and Gas Activity Operations Manual: Chapter 9](#) for further information on Abandonments and required reporting.

Chapter 3: Area Approval Guides

The guidance provided in these sections are intended to be used in conjunction with the specified Approval issued by the Commission.

3.1 Deep Basin Area

1. The geographical boundaries to which these conditions apply are as follows:

93-I-16	Blocks H (units 51-100), I-K
93-P-01	Blocks A-L
93-P-02	Blocks A-C, F-L
93-P-06	Blocks A, B, G-J
93-P-07	Blocks A-L
93-P-09	Blocks A-H
93-P-10	Blocks A-H
93-P-11	Blocks A-H
2. The zones included are as follows: Paddy, Cadotte, Notikewin, Falher, Bluesky, Gething, Cadomin and Nikanassin.
3. Zones must be comprised of sweet gas only.
4. Royalty will be calculated on a well production basis, as if production were being taken from a single zone. Eligibility criteria for targeted royalty programs will likewise be based on the total wellbore production.
5. Common zonal ownership is recommended; however, the Commission as a regulator will not be enforcing common ownership.
6. Commingling is not allowed if the reservoir pressure of any zone exceeds 90% of the fracture pressure of any other zone proposed for commingling.
7. The Nikanassin, Cadomin and Gething zones are approved for commingling, subject to notification and reporting requirements outlined in Items 11 and 12, and testing requirements outlined below:
 - a. Nikanassin, Cadomin and Gething zones are eligible for commingling notification regardless of their initial flow capabilities. However, best practices should be followed in the event that an

anomalous, highly productive Gething zone is encountered, with allowance made for extended testing and/or consideration of initial segregated production.

- b. A production allocation factor is based partially on an individual zone Normalized Inflow Capacity (NIC) calculation outlined below:

$$NIC = \frac{q \times Psi^2}{Psi^2 - Pwf^2}$$

Where: Psi = shut-in reservoir pressure, use regional pressures.

Pwf = bottom hole flowing pressure, flexibility to use flowing wellhead pressure and extrapolate to bottom hole conditions.

Note that the NIC must be calculated post-stimulation.

- c. The well flow test must be submitted via eSubmission as a PRD submission, allowing confirmation of NIC and tracking of gas flaring.
 - d. If a zone does not flow gas after perforation or stimulation it must be swabbed to 80% of perforated depth to ensure no flow capability. Non-productive zones may be included as part of the commingled wellbore, with an assigned allocation factor of 0%.
 - e. Nikanassin, Cadomin and Gething zones are exempt from initial pressure requirements in all wells. However, best practices should be implemented to ensure appropriate sampling and identification of anomalous situations.
 - f. Gas analyses are not required for these zones.
8. Eligibility of the Paddy, Cadotte, Notikewin, Falher, or Bluesky for immediate commingling is based on productivity. Each zone is classified as 'high rate' or 'low rate,' based on the Normalized Inflow Capacity (NIC) calculation outlined in 7b above.
- a. Initial reservoir pressures are required on all high rate zones.
 - b. A high rate zone is defined as a zone with a sandface NIC greater than or equal to 100.0 10³ m³/d.
 - c. High rate zones must be produced segregated.
 - d. Low rate zones are defined as having a NIC less than 100.0 10³ m³/d.

- e. AOF testing and reporting requirements still apply to both low and high rate wells. A minimum four hour flow test is to be used for low rate zone calculation. AOF data must be submitted as a TRG submission via eSubmission. Low rate zones completed at the 'top of the stack' are recommended for longer conventional testing.
 - f. If a zone does not flow gas after perforation or stimulation it must be swabbed to 80% of perforated depth to ensure no flow capability. Non-productive zones may be included as part of the commingled wellbore, with an assigned allocation factor of 0%.
 - g. Gas analyses are required for high rate zones. Although gas analyses are not required for low rate zones they must be submitted if sampled.
9. A Paddy, Cadotte, Notikewin, Falher or Bluesky zone which qualifies as a low rate zone is approved for commingling subject to the notification and reporting requirements outlined in items 11 and 12, and the requirements outlined below.
 - a. Initial pressure requirements for low rate wells are linked to inter-well distance and off-setting well production volumes in the same zone, based on the following:
 - If no initial pressure measured in any of the contiguous gas spacing areas, an initial pressure is required; or
 - If a well in a contiguous gas spacing are with an initial pressure and
 - i. $G_p > 12 \text{ e}^6\text{m}^3$ must get an initial pressure.
 - ii. $G_p \leq 12 \text{ e}^6\text{m}^3$ initial pressure is not required.
 10. Commingled wells are exempt from annual pool pressure testing requirements.
 11. Companies must create a completion event for each zone in a commingled well (all completed zones regardless of productivity) via eSubmission.
 12. The production allocation formula is based on a weighting of reserves and the initial production rate:
 - a. hydrocarbon pore volume, $HPV = h \times \emptyset \times (1 - Sx)$, 20%
 - b. Normalized Inflow Capacity, $NIC = \frac{q \times Psi^2}{Psi^2 - Pwf^2}$, 80%

Allocation formula

Zone 1: $AF_1 = \left[\frac{HPV_1}{HPV_1 + HPV_2} \times 20 \right] + \left[\frac{NIC_1}{NIC_1 + NIC_2} \times 80 \right] \%$

$$\text{Zone 2: } AF_2 = \left[\frac{HPV_2}{HPV_1 - HPV_2} \times 20 \right] + \left[\frac{NIC_2}{NIC_1 + NIC_2} \times 80 \right] \%$$

Note: Allocation percentage is to be rounded to the nearest whole number.

13. Annual reporting is a requirement for companies utilizing the commingled production notification process. Reports will include a listing of commingled wells, zones commingled in each well, NIC, Pi, gas analysis (Y/N), map showing locations of wells commingled, etc. This requirement should only be necessary for the first 2-3 years of operation and will be evaluated on an annual basis to ensure that it continues to add value.
14. Excessive water production from a commingled zone, although left to the operators' discretion, requires intervention if produced in amounts that may negatively impact ultimate recovery from other commingled zones. It is recognized that commingled production may enhance gas recovery via increased lifting capacity from zones with high liquids production.
15. When a high rate zone declines to a production level where commingling is desired, the operator may apply to the Supervisor, Reservoir Engineering, for approval on an individual well basis.
16. Individual commingling applications will still be accepted for wells not qualifying for commingling notification as stated in this guide, where exceptional circumstances warrant.
17. A commingled well may qualify for the Deep Royalty Program, based on the deepest completed zone. By default, the deep royalty credit will be deductible against royalties from all commingled zones in the wellbore but the Ministry of Finance may adjust the deep royalty credit where production from the deepest completed zone (based on production allocation factors) is not sufficient to absorb the entire deep royalty credit.

3.2 Outer Foothills Area

1. The geographical boundaries to which these conditions apply are as follows:

93-I-08	Blocks I, J
93-I-09	Blocks A, B, E-L
93-I-10	Block I
93-I-15	Blocks A, B, F-L
93-I-16	Blocks A-G, L, Block H (units 1-50)

2. The following Cretaceous zones are included: Paddy, Cadotte, Notikewin, Falher (A-G), Bluesky, Gething, Cadomin and Nikanassin.

3. Zones must be comprised of sweet gas only.
4. Each zone has been categorized as either **deep** or **shallow** based on expected initial pressures. The deep zone category includes Bluesky to Nikanassin. The shallow zone consists of the Paddy to Falher (A-G). Commingling is restricted to zones of like category (i.e. deep zones may only be commingled with other deep zones). Commingling of shallow and deep zones may be approved upon application to the Supervisor, Reservoir Engineering.
5. Royalty will be calculated on a commingled production basis, as if production were being taken from a single zone. Eligibility criteria for targeted royalty programs will likewise be based on the total commingled production. Commingled production must be reported via Petrinex, to the deepest completed interval within the commingled package.
6. Common zonal ownership is recommended; however, the Commission as a regulator will not be enforcing common ownership.
7. Commingling is not allowed if the reservoir pressure of any zone exceeds 90% of the fracture pressure of any other zone proposed for commingling.
8. **Deep** zones (Nikanassin, Cadomin, Gething and Bluesky) are approved for commingling, subject to notification and reporting requirements outlined in items 11 and 12, and testing requirements outlined below:
 - a. Deep zones are eligible for commingling notification regardless of their initial flow capabilities. However, best practices should be followed in the event that an anomalous, highly productive zone is encountered, with allowance made for extended segregated testing and/or consideration of initial segregated production.
 - b. Well deliverability and flow testing must be submitted as TRG and PRD submissions in eSubmission.
 - c. A production log over the commingled intervals must be obtained to determine the relative contribution from each zone for production allocation purposes.
 - d. Non-productive zones may be included as part of the commingled wellbore, with an assigned allocation factor of 0%.
 - e. Deep zones are exempt from initial pressure testing requirements in all wells. However, best practices should be implemented to ensure appropriate sampling and identification of anomalous

situations. The Commission recognizes the use of valid DFIT, DST and RFT data as useful for initial pressure determination.

- f. A commingled gas analysis must be obtained.
9. Eligibility of the **shallow** zones (Paddy, Cadotte, Notikewin, and Falher) for immediate commingling is based on productivity. Each zone is classified as “high rate” or “low rate,” based on the Normalized Inflow Capacity (NIC) calculation as outlined below:

$$NIC = \frac{q \times Psi^2}{Psi^2 - Pwf^2}$$

Where: Psi = shut-in reservoir pressure, use regional pressures.

Pwf = bottom hole flowing pressure, flexibility to use flowing wellhead pressure an extrapolate to bottom hole conditions.

Note that the NIC must be calculated post-stimulation.

- a. An initial reservoir pressure is required for each shallow zone with a sandface normalized inflow capacity (NIC) greater than or equal to $100.0 \times 10^3 \text{ m}^3/\text{d}$.
- b. High rate zones must be produced segregated. However, any low rate zone having a NIC less than $20.0 \times 10^3 \text{ m}^3/\text{d}$ may be commingled with a high rate zone, provided that the high rate zone has been completed subsequent to the low rate zones.
- c. If no high rate zones are encountered, and initial commingled production rates are greater than $150.0 \times 10^3 \text{ m}^3/\text{d}$ a follow-up flow and build up test may be required on the zone with the largest contribution to flow. This test is to be carried out within eighteen months of initial continuous production, provided the combined flow from the commingled zones is in excess of $100.0 \times 10^3 \text{ m}^3/\text{d}$ at the end of twelve months of production.
- d. Absolute open flow (AOF) testing and reporting requirements still apply to both low and high rate zones. A minimum four hour flow test must be used for low rate zone calculation. The AOF must be submitted as a TRG submission in eSubmission, allowing confirmation of NIC and tracking of gas flaring.
- e. If a zone does not flow gas after perforation or stimulation it must be swabbed to 80% of perforated depth to ensure no flow capability. Non-productive zones may be included as part of the commingled wellbore, with an assigned allocation factor of 0%.

- f. Gas analyses are required for high rate zones. Although gas analyses are not required for low rate zones they must be submitted if sampled.
- 10. Commingled wells are exempt from annual pool pressure testing requirements.
- 11. Companies are required to report each completion event individually through eSubmission. Each zone in a commingled wellbore is reported as a separate completion event.
- 12. The production allocation formula is based on a weighting of reserves and the initial production rate:
 - a. hydrocarbon pore volume, $HPV = h \times \phi \times (1 - Sx)$, 20%
 - b. Normalized Inflow Capacity*, $NIC = \frac{q \times Psi^2}{Psi^2 - Pwf^2}$, 80%

* rates determined from spinner survey results may be used in place of NIC when determining allocations for deep zones

Allocation formula

Zone 1: $AF_1 = \left[\frac{HPV_1}{HPV_1 + HPV_2} \times 20 \right] + \left[\frac{NIC_1}{NIC_1 + NIC_2} \times 80 \right] \%$

Zone 2: $AF_2 = \left[\frac{HPV_2}{HPV_1 - HPV_2} \times 20 \right] + \left[\frac{NIC_2}{NIC_1 + NIC_2} \times 80 \right] \%$

Note: Allocation percentage is to be rounded to the nearest whole number.

- 13. Annual reporting is a requirement for companies utilizing the commingled production notification process. Reports will include a listing of commingled wells, zones commingled in each well, NIC, Pi, gas analysis (Y/N), map showing locations of wells commingled, etc. This requirement should only be necessary for the first 2-3 years of operation and will be evaluated on an annual basis to ensure that it continues to add value.
- 14. Excessive water production from a commingled zone, although left to the operators' discretion, requires intervention if produced in amounts that may negatively impact ultimate recovery from other commingled zones. It is recognized that commingled production may enhance gas recovery via increased lifting capacity from zones with high liquids production.
- 15. When a high rate zone declines to a production level where commingling is desired, the operator may apply to the Supervisor, Reservoir Engineering, for approval on an individual well basis.
- 16. Individual commingling applications will still be accepted for wells not qualifying for commingling notification as stated in this guide, where exceptional circumstances warrant.

17. A commingled well may qualify for the Deep Royalty Program, based on the deepest completed zone. By default, the deep royalty credit will be deductible against royalties from all commingled zones in the wellbore but the Ministry of Finance may adjust the deep royalty credit where production from the deepest completed zone (based on production allocation factors) is not sufficient to absorb the entire deep royalty credit.

3.3 Plains and Northern Foothills Area

1. The geographical boundaries to which these conditions apply are as follows:

DLS		NTS	
Township	Range (W6M)	Map	Block
76	13 – 18	94-A-5	D, E, L
77	13 – 19	94-A-9	J - L
78	13 – 19	94-A-10	I - L
79	13 – 19	94-A-11	I - L
80	13 – 19	94-A-12	D, E, I -,L
81	13 -19, 22	94-A-13	A - K (L excluded)
82	13 – 23	94-A-14	A - L
83	13 – 22	94-A-15	A - L
84	13 – 22	94-A-16	B - G, I - L
85	13 – 23	94-B-8	A, B, G- J
86	13 – 23, 25, 26	94-B-9	A, B, G - J
87	13 – 25	94-B-16	A, B, F - K
88	13 – 25	94-G-1	A - L
		94-G-7	G- J
		94-G-8	A - L
		94-G-9	A - L
		94-G-10	A, B, G, H, I
		94-G-15	A
		94-G-16	A
		94-H -1	A - L
		94-H-2	A - L
		94-H-3	A- L
		94-H-4	A - L

NTS

Map	Block
94-H-5	A – L
94-H-6	A – L
94-H-7	A – L
94-H-8	A – L
94-H-9	C – L
94-H-10	A – L
94-H-11	A – L
94-H-12	A - H, L
94-H-13	D
94-H-14	A
94-H-15	A - D, F - K
94-H-16	A – L
94-I-1	C, D
94-I-2	C , D
94-I-3	A, G, H

2. The following pool conditions must be met for the zone to be commingled:
 - a. The pool is within a formation from the top of the Cretaceous zone to the base of the Triassic zone;
 - b. The pool contains only natural gas and associated by-products;
 - c. The pool top of pay is greater than 400 meters below ground level; and
 - d. The pool has been produced from another well within 7km of the well.

3. Sour gas zones may be commingled with sweet gas. The permit holder must ensure that commingled production will not detrimentally affect the gas quality or operations by other well permit holders in the same pool.

4. Royalty will be calculated on a commingled production basis with all production reported to the single deepest (measured depth) UWI. Eligibility criteria for targeted royalty programs will likewise be based on the total commingled production. Commingled production must be reported via Petrinex, to the deepest completed interval within the commingled package.

5. Common zonal ownership is recommended; however, the Commission as a regulator will not be enforcing common ownership.

6. Commingling is not allowed if the reservoir pressure of any zone exceeds 90% of the fracture pressure of any other zone proposed for commingling.

7. Non-productive zones may be included as part of the commingled wellbore, with an assigned allocation factor of 0%.
8. Initial commingled production from **new wells** with a production rate greater than 50 e³m³/d must
 - a. Produce a pool capable of producing at a rate > 30 e³m³/d segregated, and
 - b. Within 30 days of segregated production, measure and record the static reservoir pressure and obtain a gas analysis from the pool. Both the static reservoir pressure and gas analyses must be submitted to the Commission via eSubmission.

Note: the production rate is the average of the last 30 days of production from the initial 90 production days.

9. Where a new zone is completed for the purpose of commingled production in an already producing well, and the average increase in gas rate is greater than 30 e³m³/d, the permit holder must:
 - a. Produce the pool capable of producing at a rate > 30 e³m³/d segregated, and
 - b. Within 30 days of segregated production, measure and record the static reservoir pressure and obtain a gas analysis from the pool. Both the static reservoir pressure and gas analyses must be submitted to the Commission via eSubmission.

Note: the production rate is the average of the last 30 days of the initial 90 producing days following completion compared to the average rate over the two month period preceding the completion.

10. Where two or more zones are completed for the purpose of commingled production in an already producing well, and the average increase in gas rate is greater than 50 e³m³/d, the permit holder must:
 - a. Produce the pool capable of producing at a rate > 30 e³m³/d segregated, and
 - b. Within 30 days of segregated production, measure and record the static reservoir pressure and obtain a gas analysis from the pool. Both the static reservoir pressure and gas analyses must be submitted to the Commission via eSubmission.

Note: the production rate is the average of the last 30 days of the initial 90 producing days following completion compared to the average rate over the two month period preceding the completion.

11. Where previously segregated producing zones are commingled the permit holder may commingle a pool that is being or has been produced in a segregated manner with an average gas rate over 60 days ≤ 30 e³m³/d, with another pool in the same well that either:
 - a. Has an average gas rate ≤ 30 e³m³/d over 60 producing days; or
 - b. Produces at an average gas rate > 30 e³m³/d, has a minimum 6 month production history, and a second reservoir pressure test. The reservoir pressure test must be submitted to the Commission via eSubmission.

12. The initial allocation factor may be determined for a pool with no production on the weighted basis of reserves (50%) and estimated current gas rate (50%).
13. All status changes to the commingled completion events must be reported to Petrinex.
14. The “Notification of Commingled Well Production” must be submitted for each commingled grouping of formation in a well, by the 20th day of the month following the month of initial or amended commingled production.
15. A representative commingled gas sample must be collected from a well within six month of initial date of commingled production. The analysis report must be submitted to the Commission including component analyses of the natural gas and liquids within 60 days of sampling. All analyses must be submitted via eSubmission.
16. Any additional gas analyses obtained must be submitted to the Commission within 60 days of sampling.
17. All reservoir pressure tests conducted must be submitted to the Commission within 60 days of the end of the test.

Chapter 4: Application Guide: Commingle Production From Two or More Zones

An application to commingle production from two or more zones within a well bore, under Section 41 of the Drilling and Production Regulation, should contain, where applicable:

- The location and coordinates of the commingled well;
- A map showing title holders of the proposed commingled formation over the pools;
- A brief geological discussion of the formations to be commingled including logs showing the current and proposed perforations.
- The production and reservoir pressure histories for each of the proposed commingled zones, with an estimate of the current reservoir pressures and the initial and remaining reserves;
- Deliverability and AOF test information from each of the proposed commingled zones, if available;
- A gas analysis from each of the proposed commingled pools;
- A schematic diagram of the current well bore completion;
- A schematic diagram of the proposed well bore completion;
- Proposed production allocation factors for each of the commingled zones, giving weight to reserves and production rates;
- Letter of non-objection to commingled production from competitive operators producing from one or more of the proposed pools. An [example letter](#) is available on the Commission's website.

An electronic copy of the application is to be submitted to the Supervisor, Reservoir Engineering, at reservoir@bcogc.ca.