2016

The Year of Iteration
Iteration

repetition of a procedure applied to the result of a previous application, typically as a means of obtaining successively closer approximations to the solution of a problem
Since 2015 NDPC Annual Meeting

February 1, 2016 Revenue Forecast Revision
Budget allotment - 4.05%

August 4, 2016 Revenue Forecast Revision
Additional budget allotment - 2.5%
Special session August 2-4, 2016
90% budgets for 2017-2019 biennium

November 2016 Revenue Forecast

Executive Budget release December 7, 2016
In 2009 each rig drilled 8-10 wells per year.

In 2016 each rig can drill 22-25 wells per year.

Technology? Innovation?
From the Peak of 2014
Initial Production & Estimated Ultimate Recovery up 25%
Well cost down 28%
Operating costs down 29%
Total reduction 57%
Oil Price down 48%

Stages?
Fluid volume?
Proppant volume?
Re-frac candidates and technology?
High Price Sooner Case
Wells
13,255 active +315
2,087 conventional -541
11,168 Bakken/Three Forks +928
1,472 inactive +171
  +$40 for 90 days
912 waiting on completion -2
  +$50 for 90 days
NYMEX April 2018
1,982 permitted -53
  +$60 for 90 days
NYMEX 2024+
13,734 increased density approved +2,779
31,355 total +4,521
55,000-65,000 estimated final
8,675 reclaimed and bond released
1,361 reclamation in progress
Endangered Species
6 endangered
3 designated
5 threatened
1 candidate

Federal Regulation
BLM
Hydraulic Fracturing
Onshore 3, 4, & 5
Venting/Flaring
Sage Grouse

EPA
Waters of US
Clean Power Plan
Waste Rules Lawsuit
Methane Emissions
Chemical Disclosure

Price Recovery

Federal Reserve
Interest rates
$ Value
$+1% = oil -2%
$-1% = oil +4%

State Regulation
NDIC
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Addresses & Signs
Saltwater Handling
Reporting
Bonding
Pipelines
Berms

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USACOE
Easements & ROW

BIA / Tribe
ROW rule
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TERO
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33 Sections of Administrative rule changes effective October 1, 2016

43-02-03-01. DEFINITIONS
43-02-03-11. ORGANIZATION REPORTS
43-02-03-14. ACCESS TO SITES AND RECORDS
43-02-03-16. APPLICATION FOR PERMIT TO DRILL AND RECOMPLETE
43-02-03-17. SIGN ON WELL OR FACILITY
43-02-03-19. SITE CONSTRUCTION
43-02-03-19.3. EARTHEN PITS AND OPEN RECEPTACLES
43-02-03-28. SAFETY REGULATION
43-02-03-29. WELL AND LEASE EQUIPMENT
43-02-03-30. NOTIFICATION OF FIRES, LEAKS, SPILLS, OR BLOWOUTS
43-02-03-30.1. LEAK AND SPILL CLEANUP
43-02-03-31. WELL LOG, COMPLETION, AND WORKOVER REPORTS.
43-02-03-34. METHOD OF PLUGGING
43-02-03-34.1. RECLAMATION OF SURFACE
43-02-03-40. GAS-OIL RATIO TEST
43-02-03-48. MEASUREMENT OF OIL
43-02-03-51.1. TREATING PLANT PERMIT REQUIREMENTS
43-02-03-52. REPORT OF OIL PRODUCTION
43-02-03-52.1. REPORT OF GAS PRODUCED IN ASSOCIATION WITH OIL
43-02-03-53. SALTWATER HANDLING FACILITIES
43-02-03-53.1. SALTWATER HANDLING FACILITY PERMIT REQUIREMENTS
43-02-03-53.2. SALTWATER HANDLING FACILITY SITING
43-02-03-53.4. SALTWATER HANDLING FACILITY ABANDONMENT AND RECLAMATION REQUIREMENTS
43-02-03-55. ABANDONMENT OF WELLS OR, TREATING PLANTS, OR SALTWATER HANDLING FACILITIES - SUSPENSION OF DRILLING
43-02-03-80. REPORTS OF PURCHASERS AND TRANSPORTERS OF CRUDE OIL
43-02-03-81. AUTHORIZATION TO TRANSPORT OIL FROM A WELL, TREATING PLANT, OR CENTRAL PRODUCTION FACILITY, OR SALTWATER HANDLING FACILITY
43-02-03-90. HEARINGS - COMPLAINT PROCEEDINGS – EMERGENCY PROCEEDINGS - OTHER PROCEEDINGS
43-02-03-90.2. OFFICIAL RECORD
43-02-05-04. PERMIT REQUIREMENTS
43-02-05-07. MECHANICAL INTEGRITY
43-02-05-11. BONDING REQUIREMENTS
43-02-08-01.1. PROPERTY DETERMINATION
43-02-08-03. DIRECTOR SHALL DETERMINE STRIPPER WELL OR STRIPPER WELL PROPERTY STATUS

5 sections of Administrative rule changes held over to December 1, 2016 for review / revision

43-02-03-15. BOND AND TRANSFER OF WELLS
43-02-03-29.1. UNDERGROUND GATHERING PIPELINES
43-02-03-49. OIL PRODUCTION EQUIPMENT, DIKES, AND SEALS
43-02-03-51.3. TREATING PLANT CONSTRUCTION AND OPERATION REQUIREMENTS
43-02-03-53.3. SALTWATER HANDLING FACILITY CONSTRUCTION AND OPERATION REQUIREMENTS
Coming Attractions

$50/barrel & $60/barrel

Heel and Toe Setbacks

EOR Field Tests

Class VI Primacy

IOGCC - GWPC Produced Water Forums

November 8

2017 Legislature

Spill Reporting Reform
North Dakota Industrial Commission Cases Heard

2007/2008 level
North Dakota New Well Permits Issued

- 2008/2009 level
### County Occurrence of Endangered, Threatened, Proposed and Candidate Species

**Designated and Proposed Critical Habitat in North Dakota**

**October 2015**

<table>
<thead>
<tr>
<th>Species</th>
<th>Adams</th>
<th>Bismarck</th>
<th>Bottineau</th>
<th>Bowman</th>
<th>Burleigh</th>
<th>Cavalier</th>
<th>Divide</th>
<th>Dunn</th>
<th>Emmons</th>
<th>Foss</th>
<th>Valley</th>
<th>Griggs</th>
<th>Hettinger</th>
<th>Kidder</th>
<th>Logan</th>
<th>McHenry</th>
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### Critical Habitat

| Piping Plover - D           | X     | X      | X       |        | X      | X      | X      | X    | X      | X    |        |        |           |        |       |         |          |           |
| Dakota Skipper - D          | X     | X      |          |        |        |        |        |      |        |      |        |        |           |        |       |         |          |           |
| Poweshiek Skipperling - D   |       |        |          |        |        |        |        |      |        |      |        |        |           |        |       |         |          |           |

**E** - Endangered  **T** - Threatened  **P** - Proposed  **C** - Candidate  **D** - Designated
### County Occurrence of Endangered, Threatened, Proposed and Candidate Species and Designated Critical Habitat in North Dakota

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**E** – Endangered  **T** – Threatened  **P** – Proposed  **C** – Candidate  **D** – Designated