

A large, abstract red graphic consisting of several curved, overlapping shapes that resemble a stylized flame or a series of connected arcs, positioned in the upper half of the slide.

# Shale Oil Technical Teach-In

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February 20, 2020

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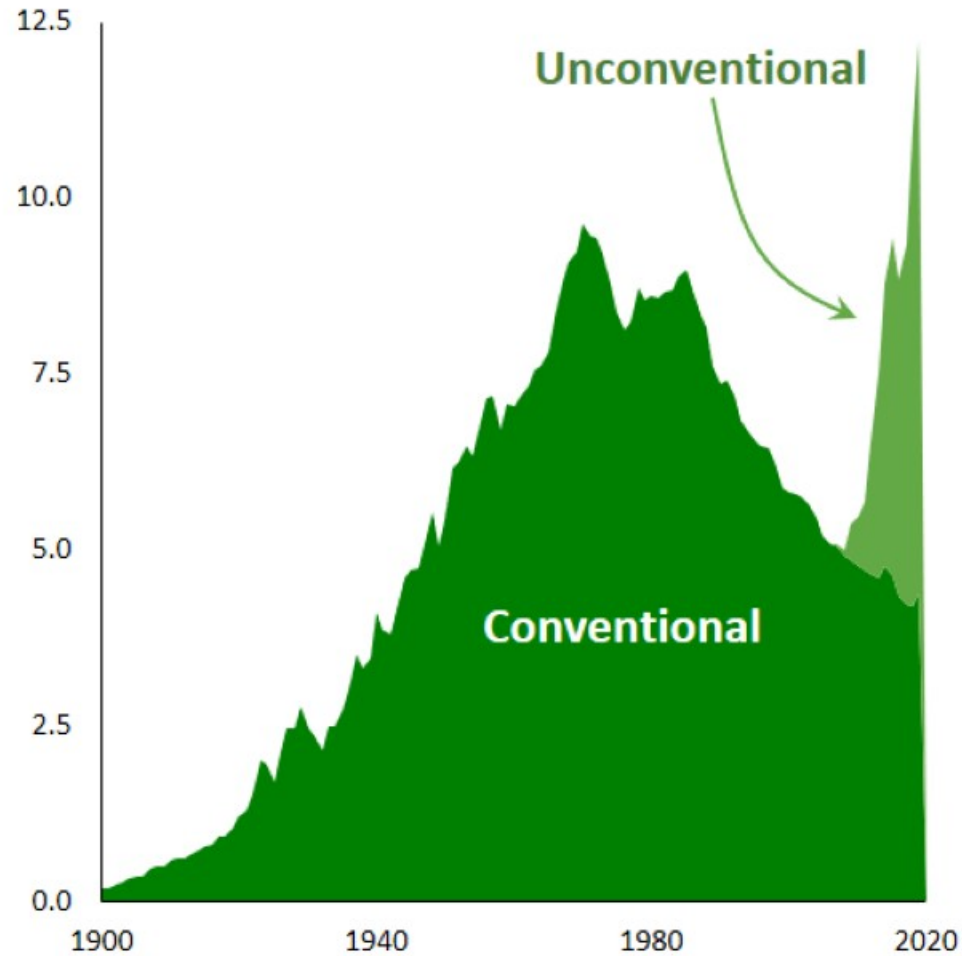
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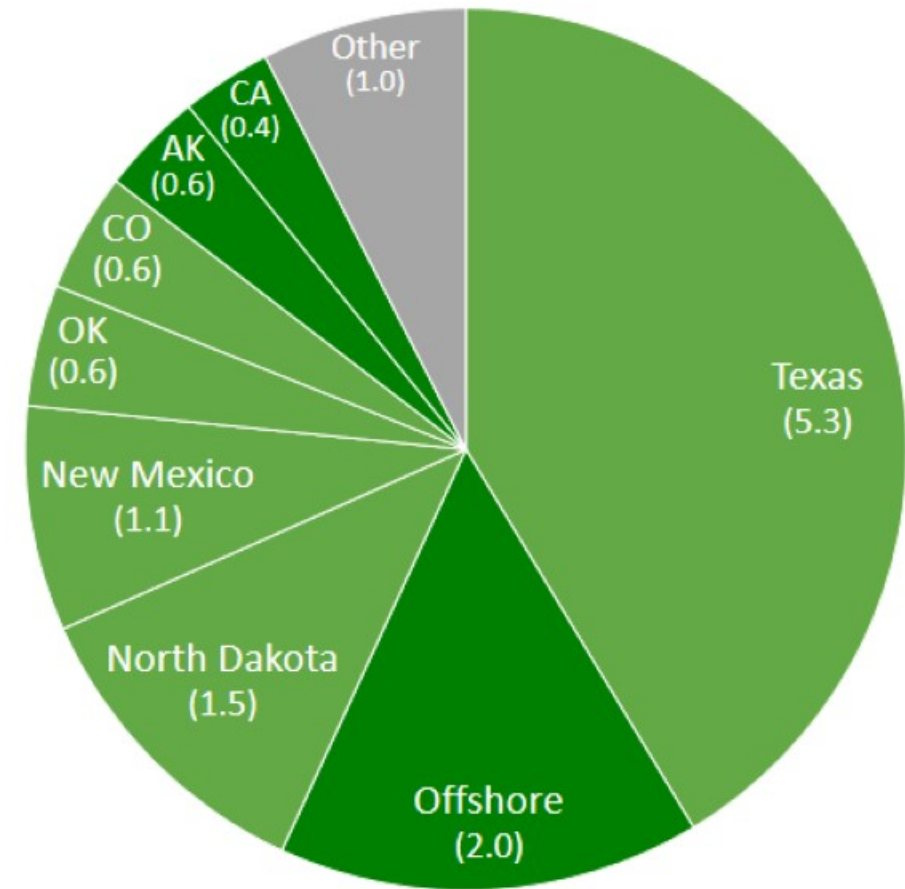


# Unconventional Oil Production has Rejuvenated the U.S. E&P Industry

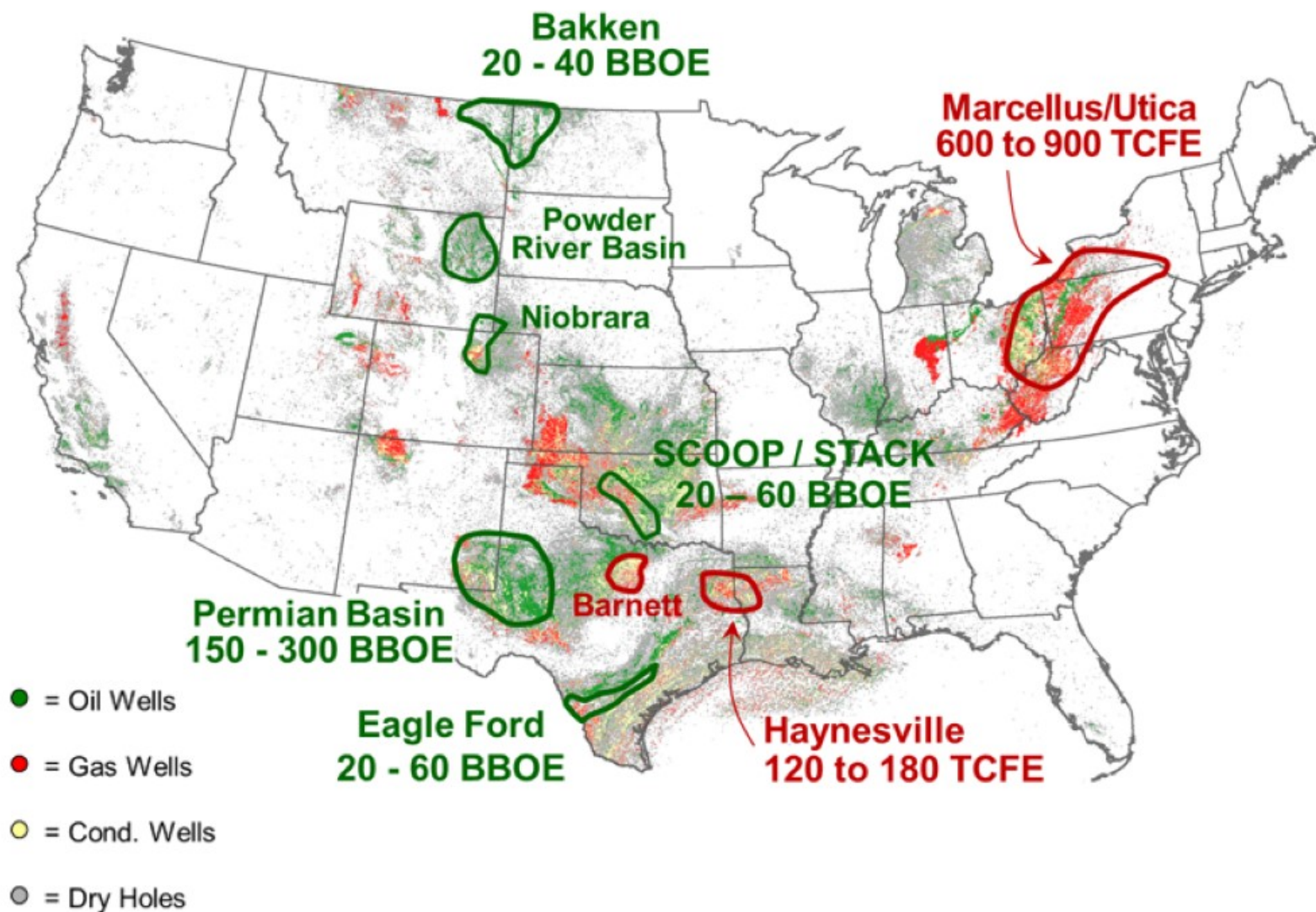
**U.S. Annual Oil Production**  
(Million Barrels of Oil per day)



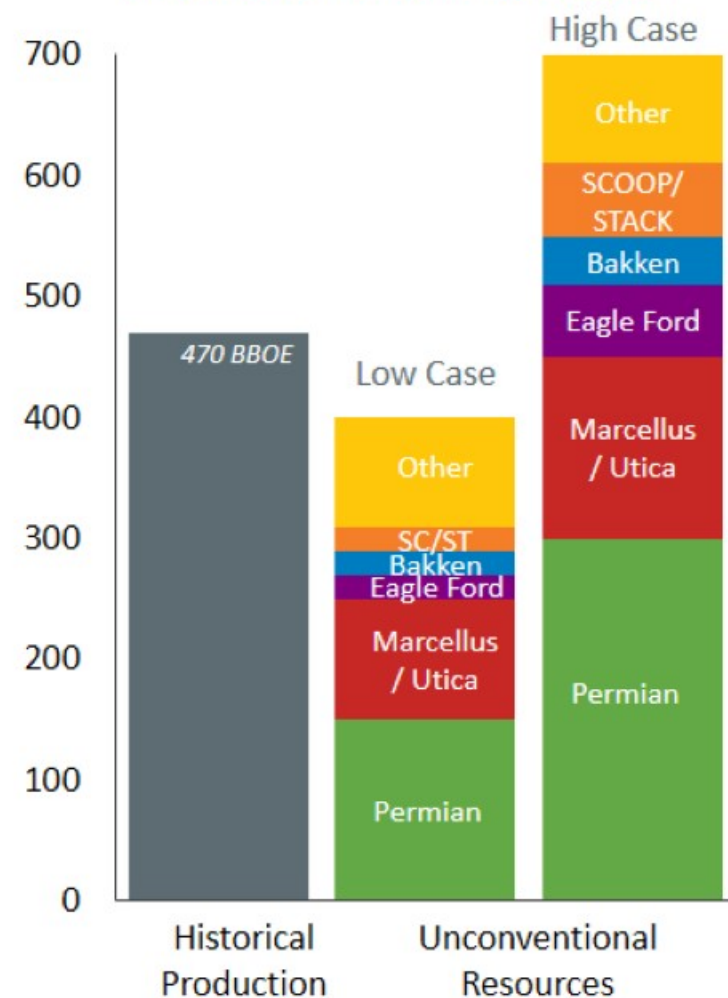
**U.S. November 2019 Oil Output**  
(Million Barrels of Oil per day)



# The Volume of Recoverable Oil in Unconventional Reservoirs is Extremely Large



## U.S. Historical Oil & Gas Production and Unconventional Resources (Billions of Barrels of Oil Equivalent)



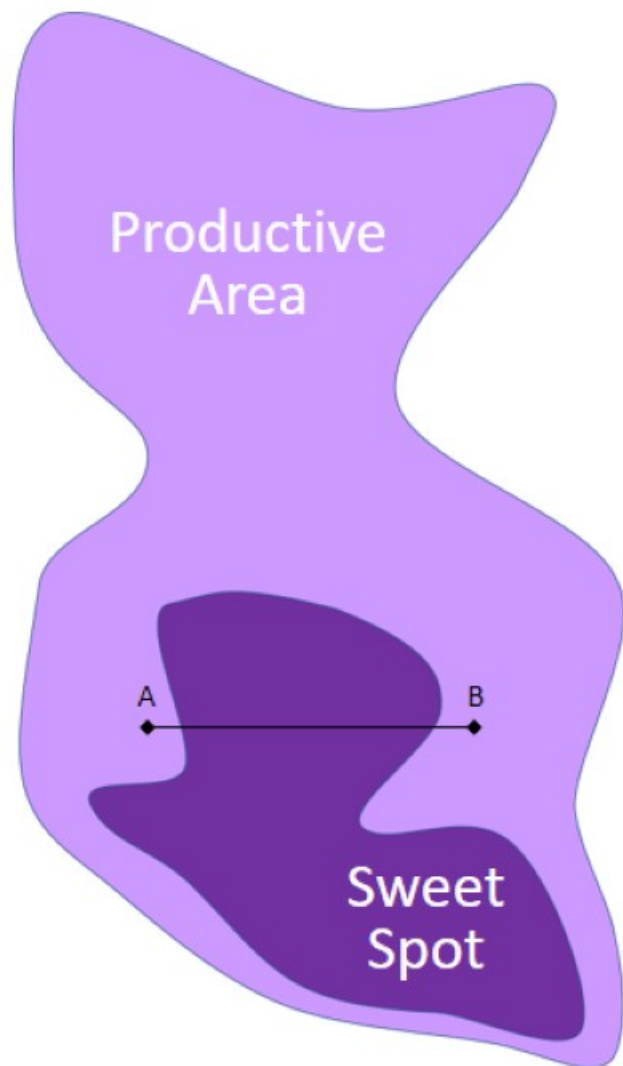
Well locations from U.S. Geological Survey. Unconventional resource estimates based upon publicly available sources and ConocoPhillips estimates. BBOE = Billion barrels oil equivalent; TCFG = Trillion cubic feet gas

Historical Production: Post 1965 to 2018 from BP Statistical Review of World Energy 2019 report; Pre-1965 oil production from EIA; Pre-1965 natural gas estimated from multiple sources.



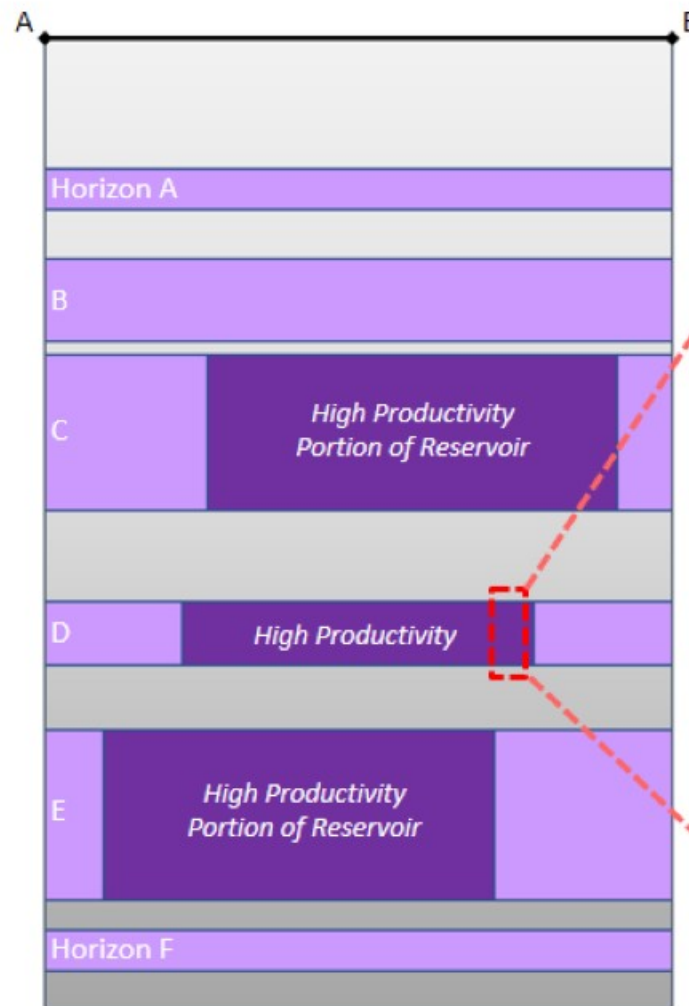
# Most of the Value from Unconventional Development Comes From Sweet Spots

## Geographic Sweet Spots



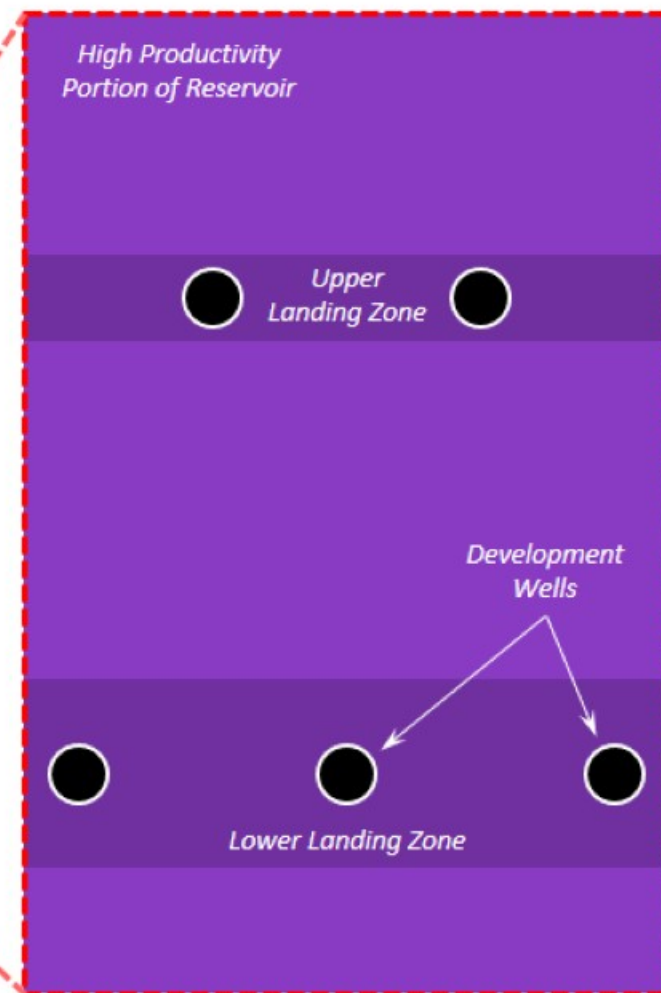
Map View: 100s of miles N-S & E-W

## Highest Productivity Reservoirs



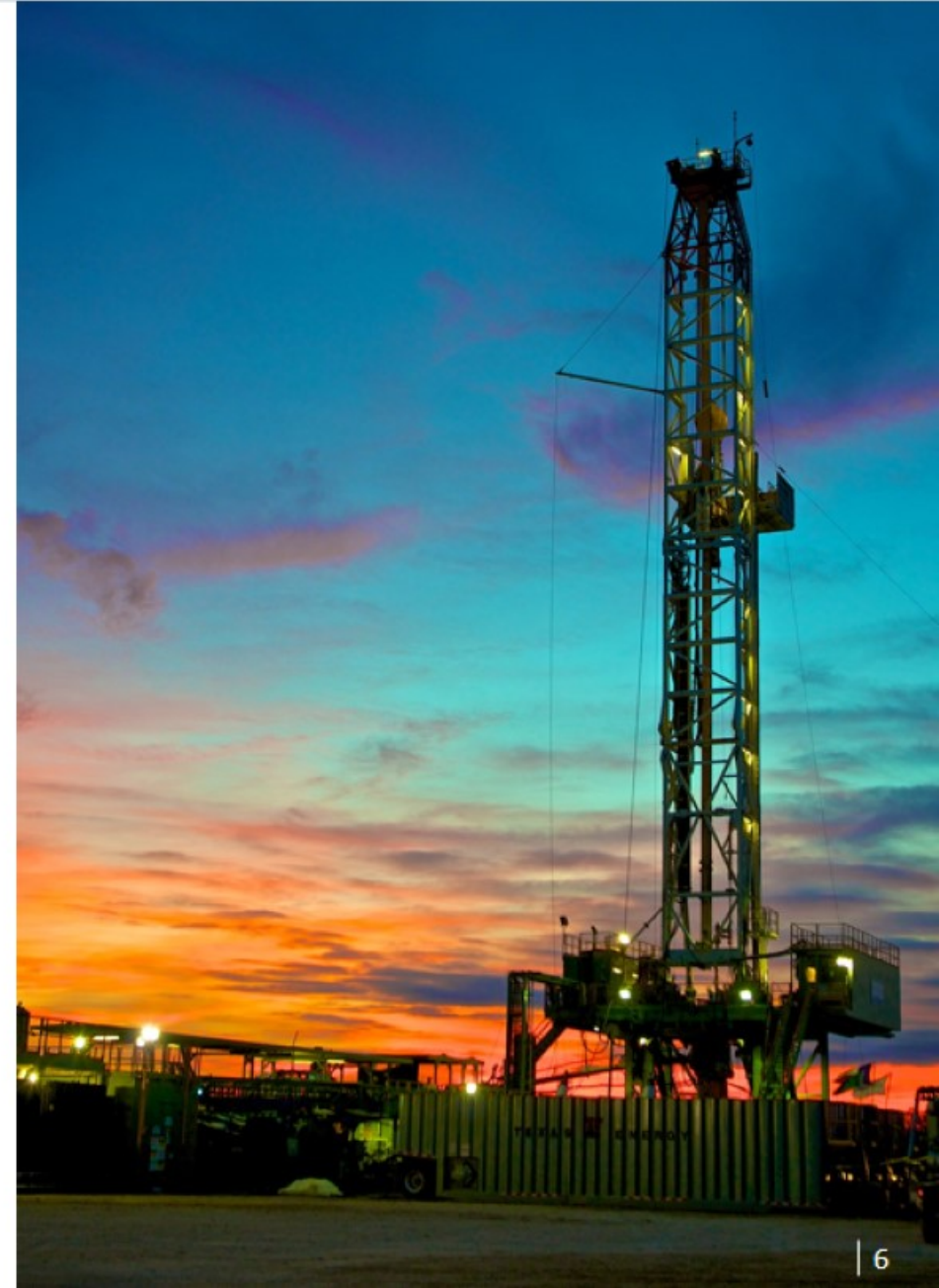
Cross Section View: 1,000s of vertical feet

## Optimal Landing Zones



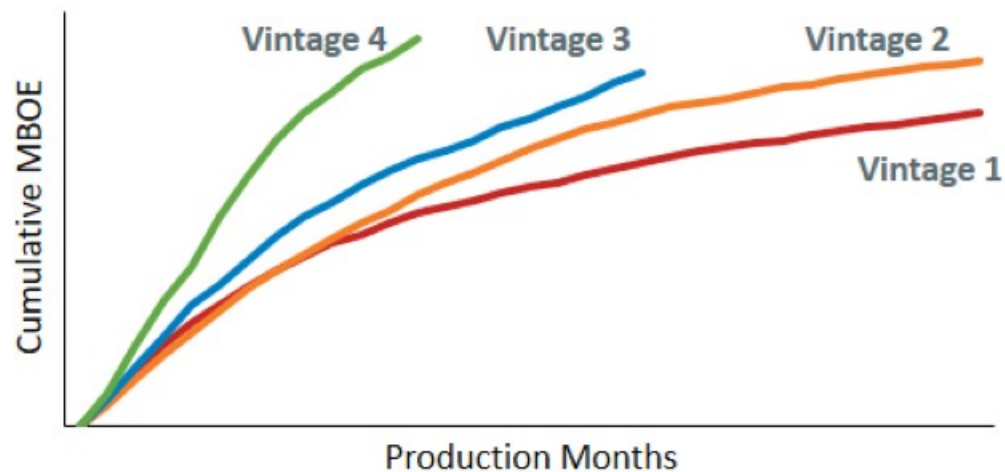
Gun Barrel View: 10s to 100s of vertical feet

- Resource Recovery and Production
- Completions Optimization
- Drilling Performance
- Smart Field Design and Operations
- Sustainable Development
- Optimizing Pace of Development

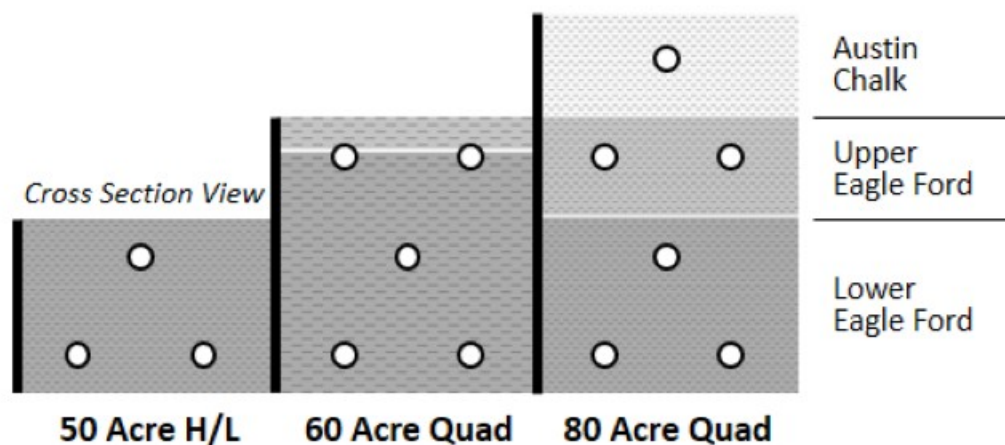


# Utilizing a “Systems Approach” to Enhance Resource Recovery and Production

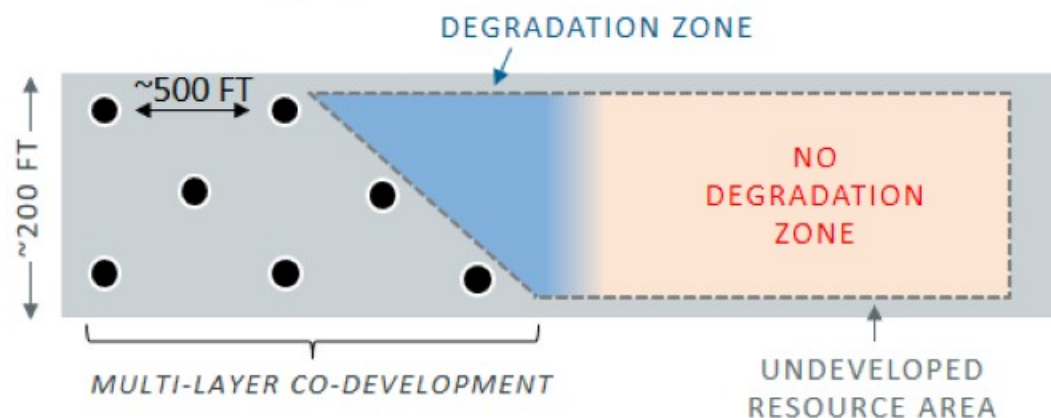
## Completion Design



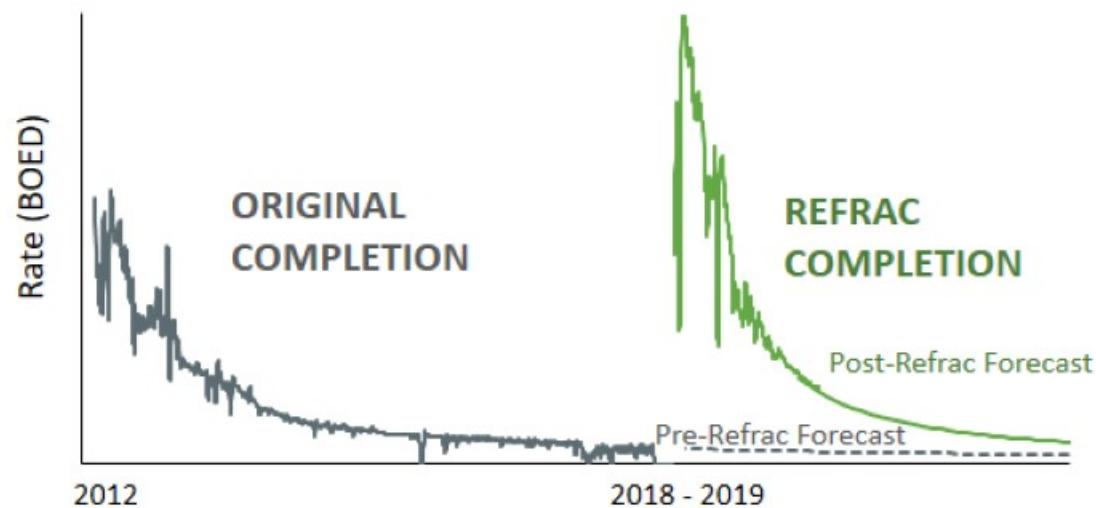
## Well Spacing & Stacking



## Managing Parent / Child Interactions



## Refracture Stimulation

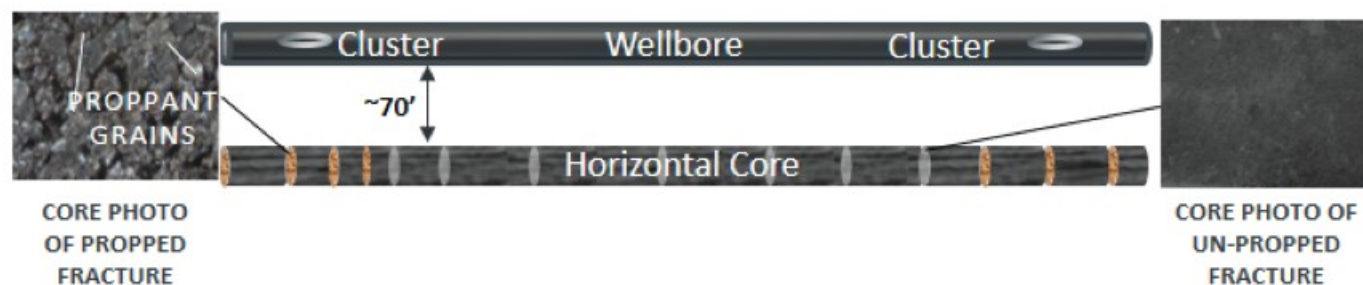




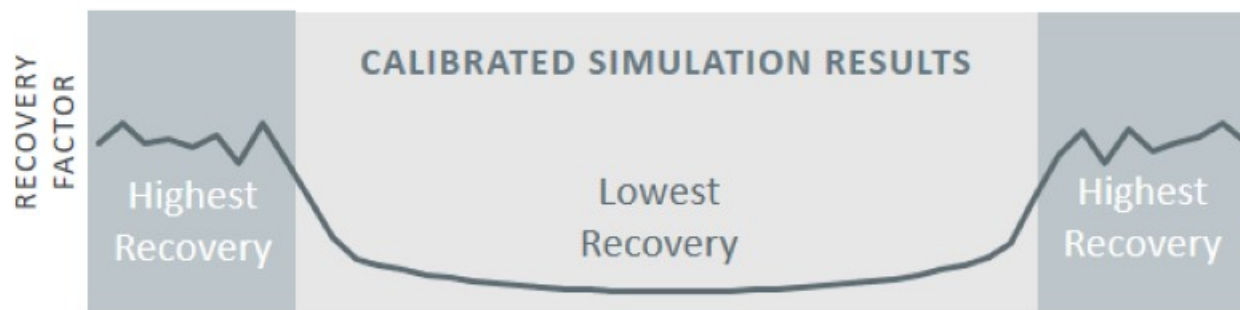
# Utilizing Differential Knowledge to Further Improve Recovery Factors

## Differential Knowledge about Hydraulic Fracture Characteristics

**Eagle Ford SRV Pilot Learnings:  
Many Hydraulic Fractures, Low Percentage Propped**



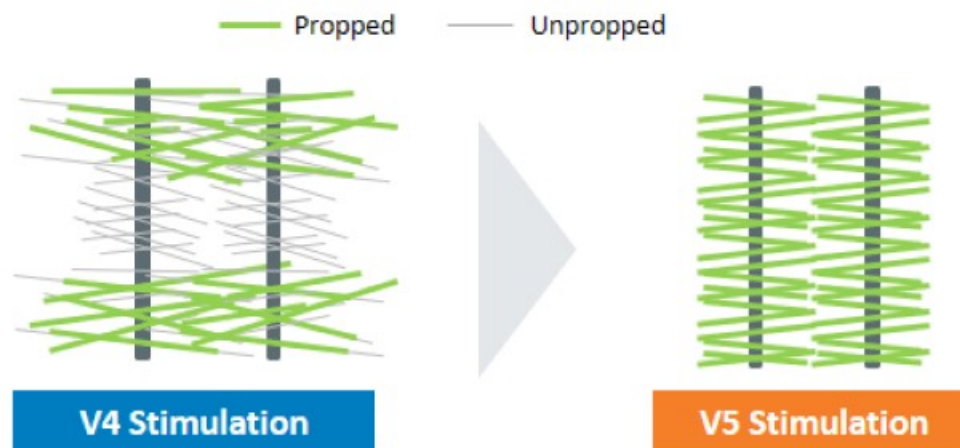
**Modeled Recovery Along Lateral Shows Hydrocarbons Left Behind**



## Opportunity to Improve Recovery Factors By:

- Improving proppant placement
- Enhancing near-wellbore drainage efficiency
- Increasing tessellation of frac pattern
- Reducing parent-child degradation

## Fracture Pattern Illustration

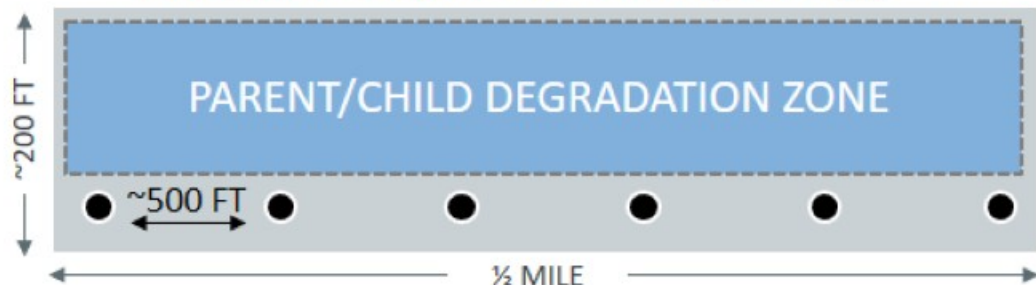




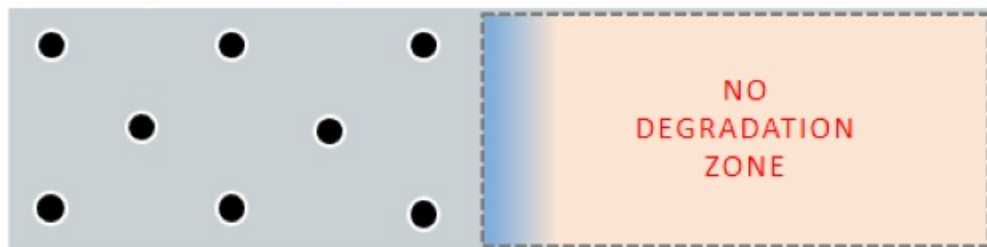
# Managing Parent / Child Degradation

## Optimized Co-Developed Spacing/Stacking

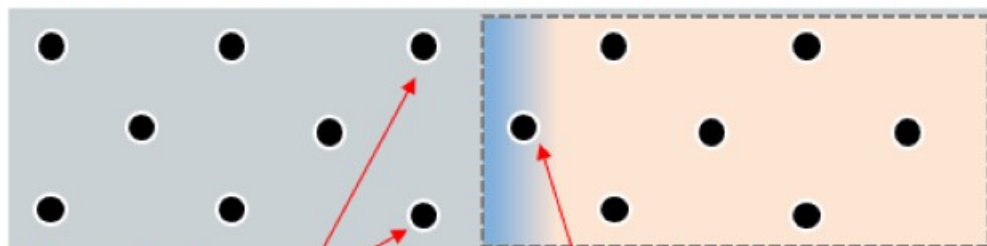
Competitor “Rapid Pace” Stacking Strategy



ConocoPhillips Multi-Layer Co-Development Stacking Strategy



ConocoPhillips Parent / Child Degradation Minimization Toolbox

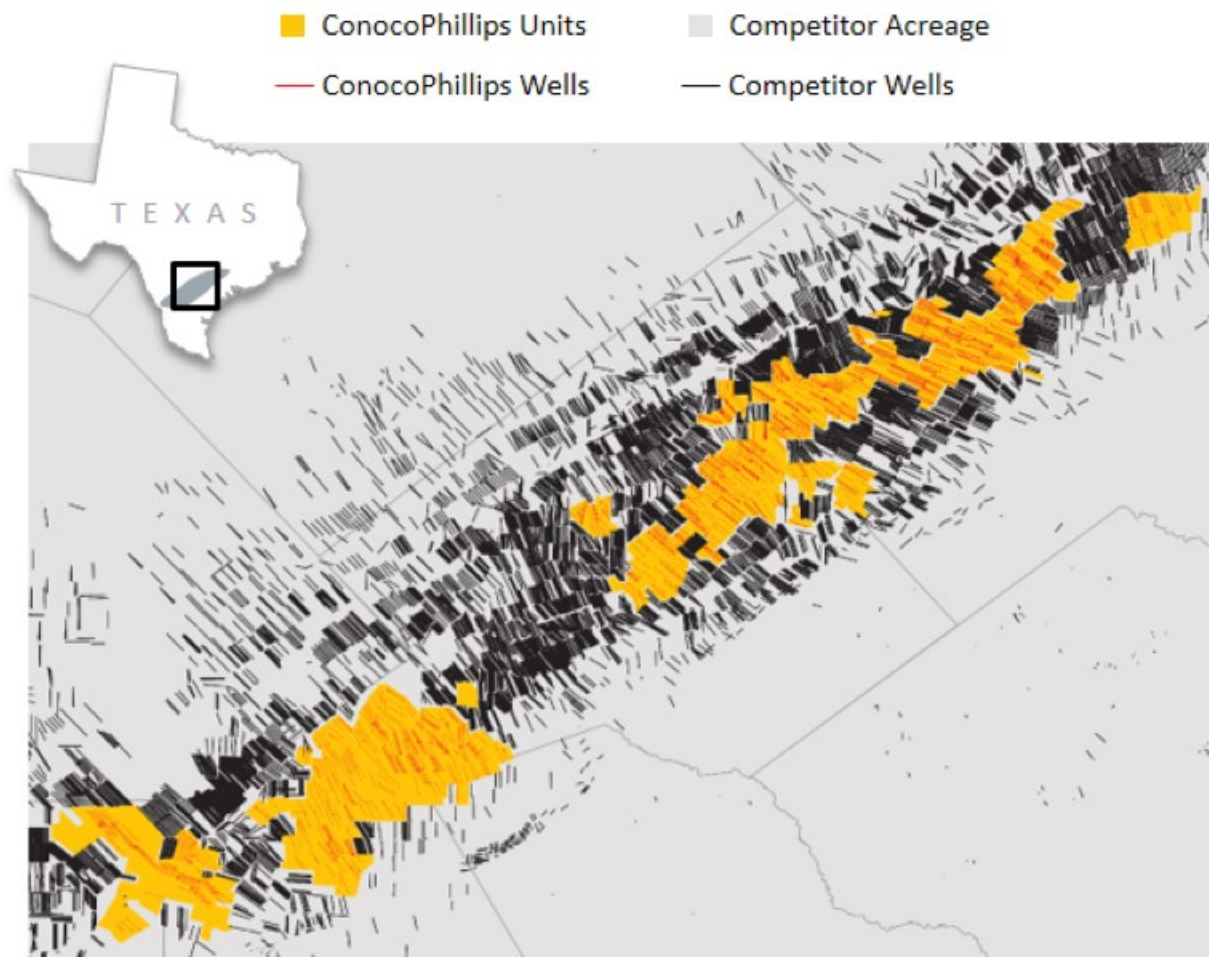


Refracs and other  
Minimization Techniques

Completion Designs to  
Minimize Interference

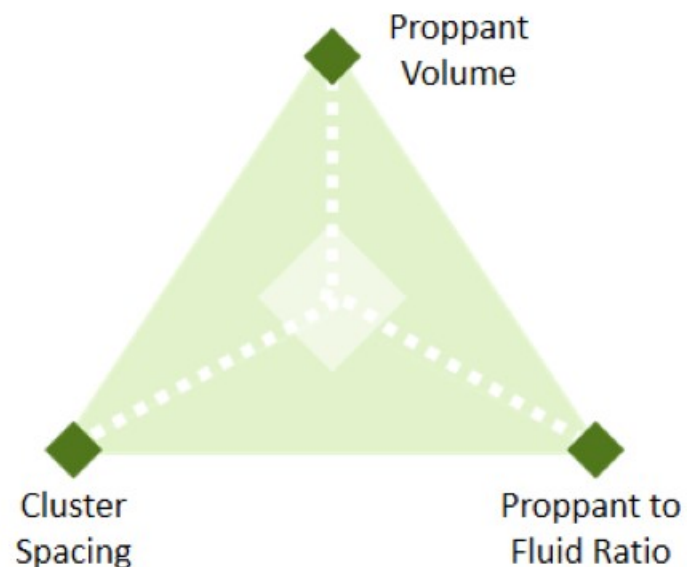
## Significant Inventory of High-Quality Acreage

ConocoPhillips Eagle Ford Position: ~3,800 locations remaining



# Completions Optimization – ConocoPhillips Bakken Data Analytics Example

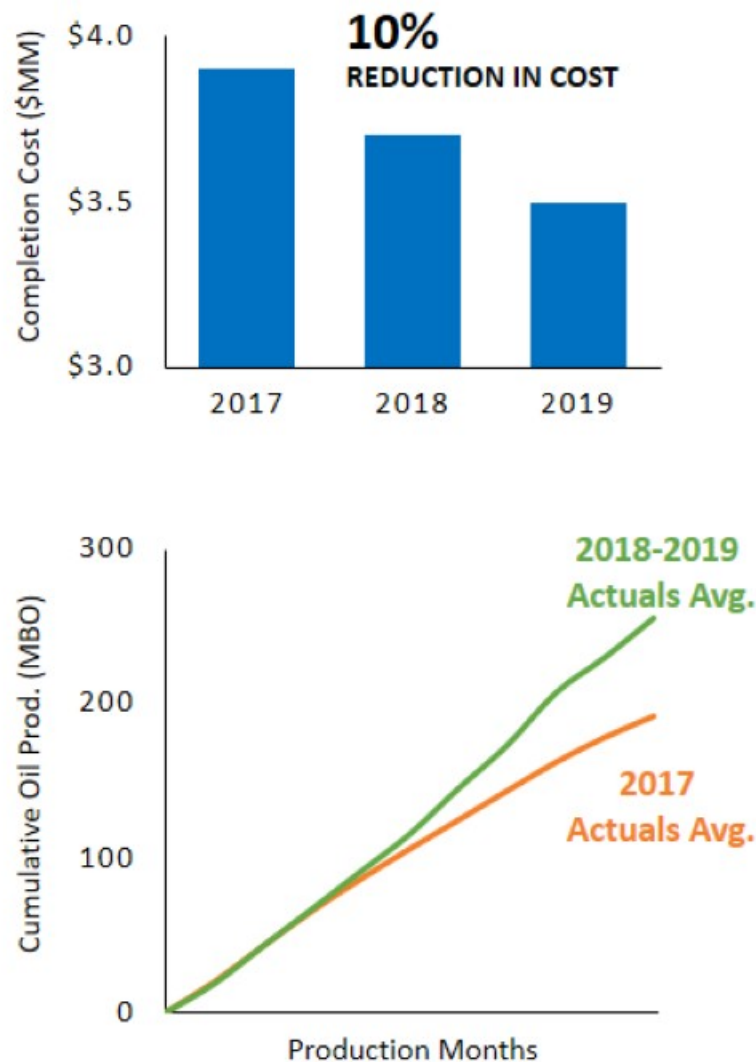
## Multi-Variate Analysis Insights



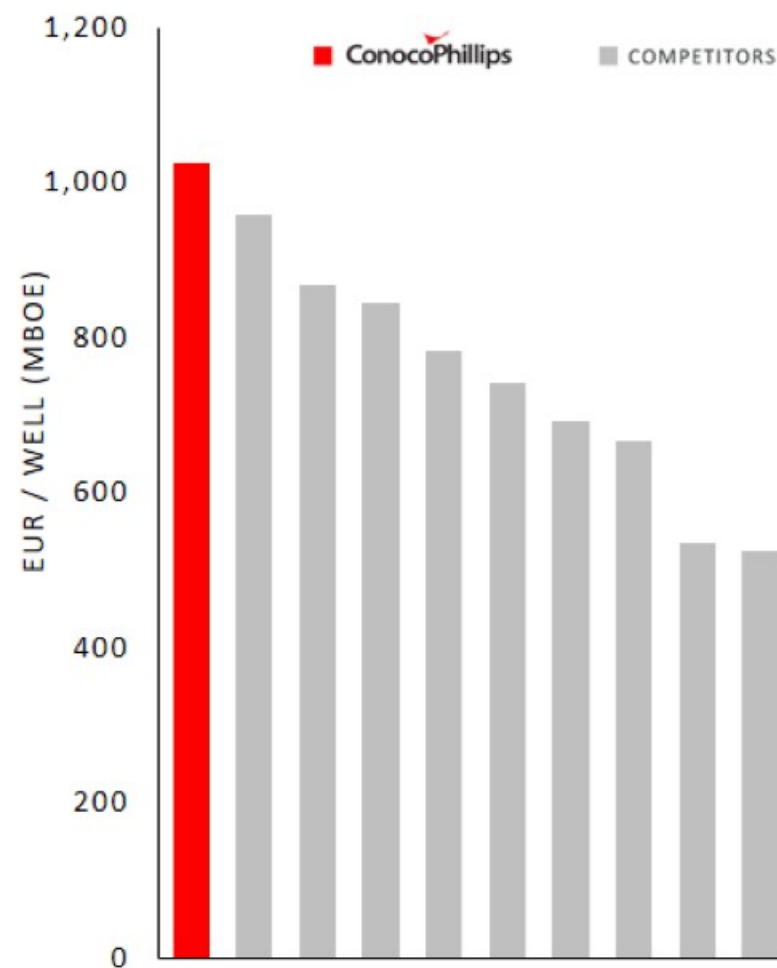
## Optimized Cost of Supply Recipe

- Tighter Cluster Spacing
- Lower Proppant to Fluid Ratio
- Less Proppant

## Impacts on Cost & Production



## EUR Performance Compared to Peers

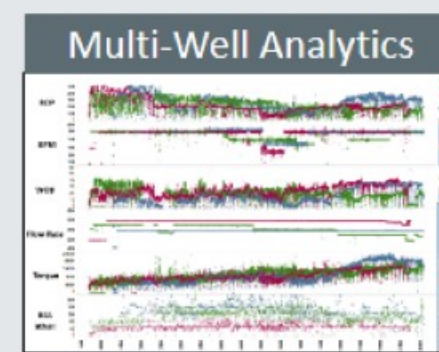
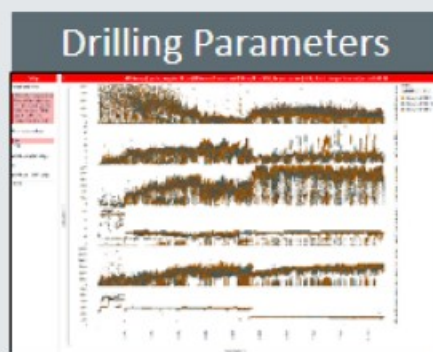


RS ENERGY GROUP (Sept. 2019); Includes the top-10 companies in terms of count of new wells online in the basin Jan. 1, 2017 – June 30, 2018: COP, CLR, EQNR, HES, Kraken, MRO, OAS, WLL, WPX and XOM.

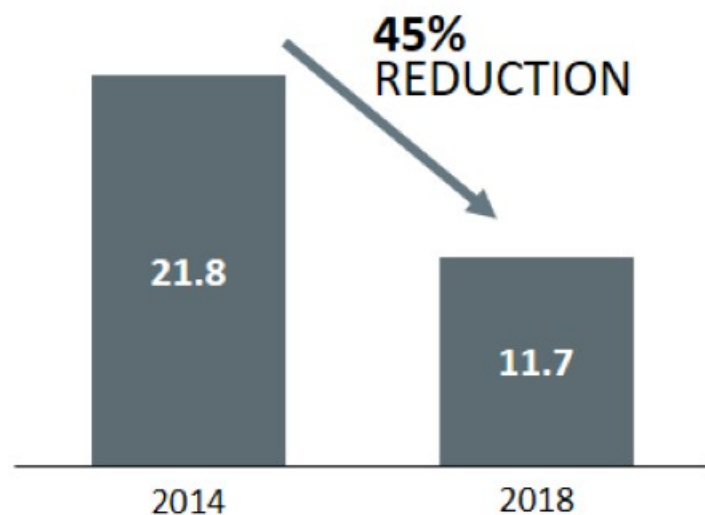


# Using Data Analytics to Improve Drilling Efficiencies

## Improved Performance Using Big Data



## Improvement in Average Spud-to-Spud Days<sup>1</sup>



## Utilizing Automated Drilling Systems



<sup>1</sup> Results from ConocoPhillips Eagle Ford Asset

## Minimize Moving Parts

- Gas lift
- Fluids on pipe
- Centralized infrastructure

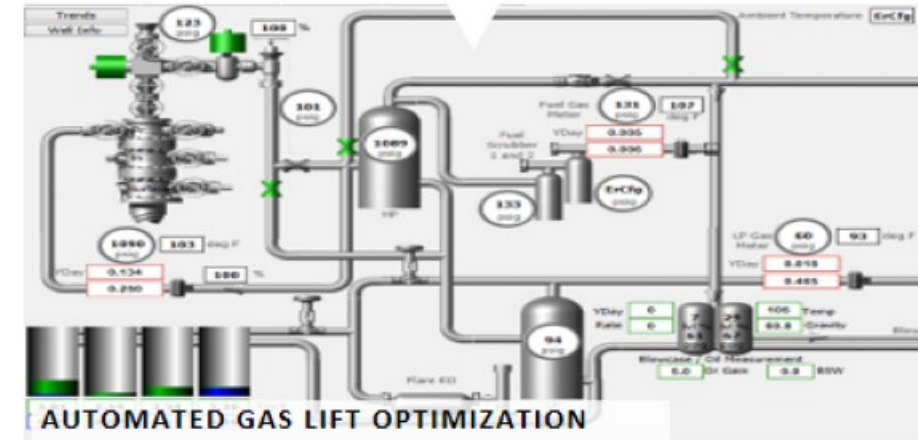


## Fully Leverage Analytics And Machine Learning

- Predictive maintenance
- Accelerated production loss diagnosis and response
- Automated process optimization

## Maximize Remote Monitoring & Control

- Web-enabled fields
- IoT sensors and controls
- Remote integrated operating centers



# BIG 3 LIFTING COST LESS THAN \$4 PER BOE

2020-2029 Average



# Unconventional Reservoir Sustainable Development



## Permian Water Recycling

ConocoPhillips is  
Targeting 90% water reuse  
in Delaware by Q3 2020

## Methane Capture

A leader<sup>1</sup> in methane  
detection and capture;  
continually targeting  
further improvement



## Eagle Ford & Bakken Reducing Trucks

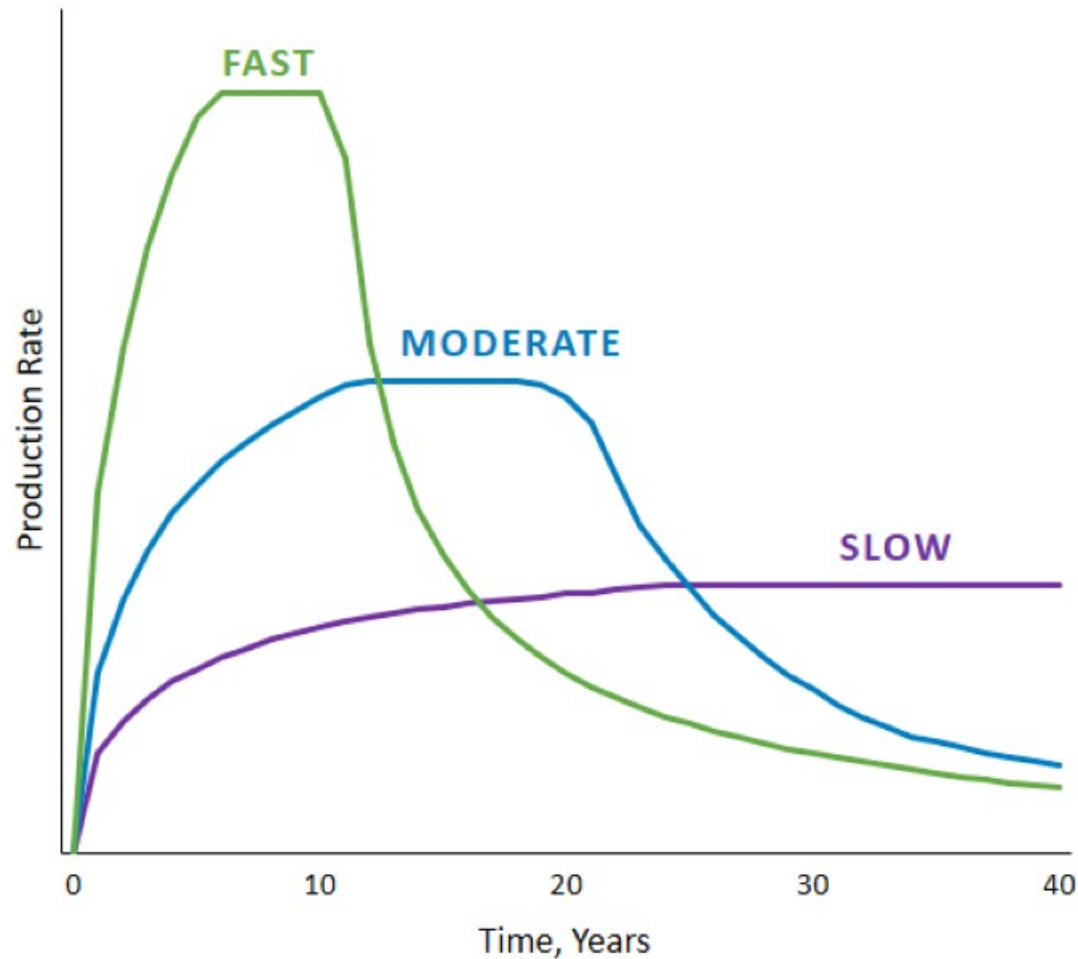
Utilizing pipeline  
infrastructure to  
eliminate >100,000 trips  
in 2020 with plans to  
double the savings over  
the next decade



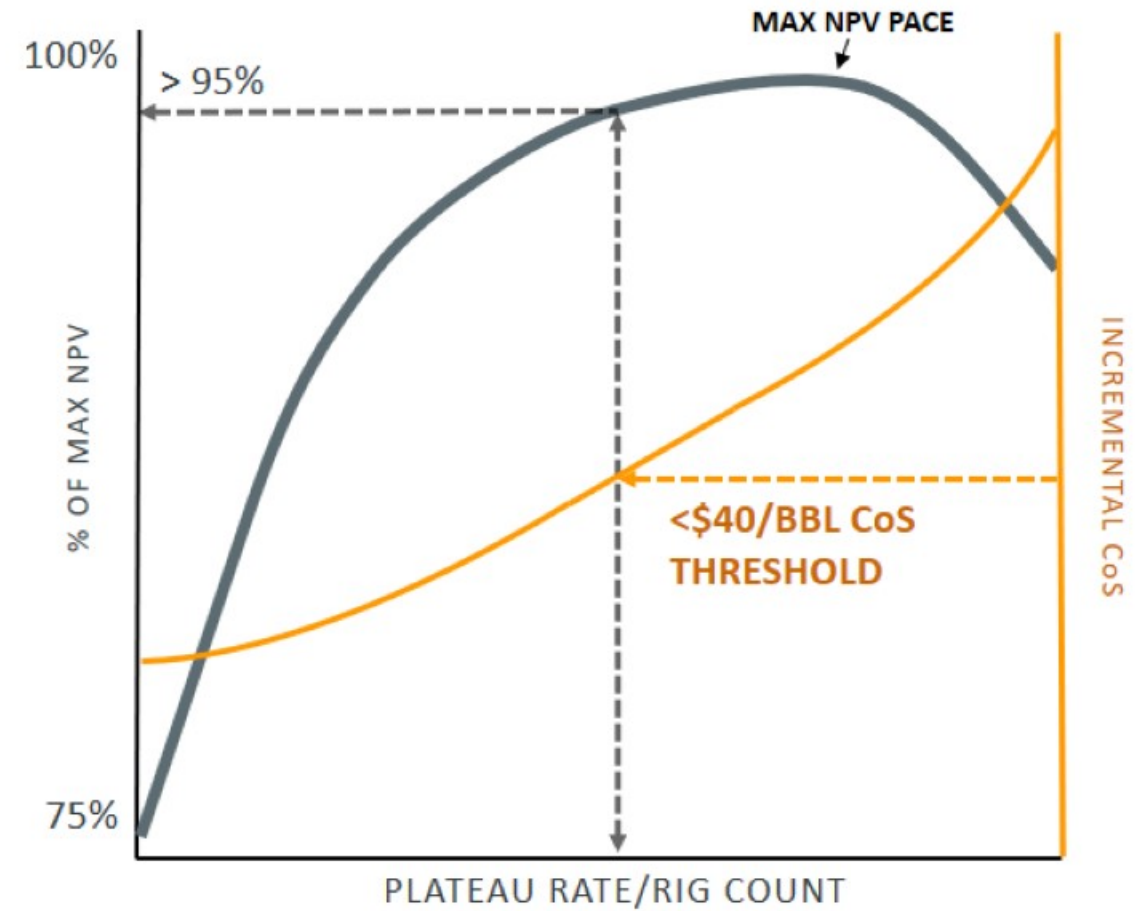
<sup>1</sup>Based on 2018 state regulatory data.

# Optimizing Pace of Development By Focusing on Incremental Cost of Supply

## What Pace of Development is Optimal?

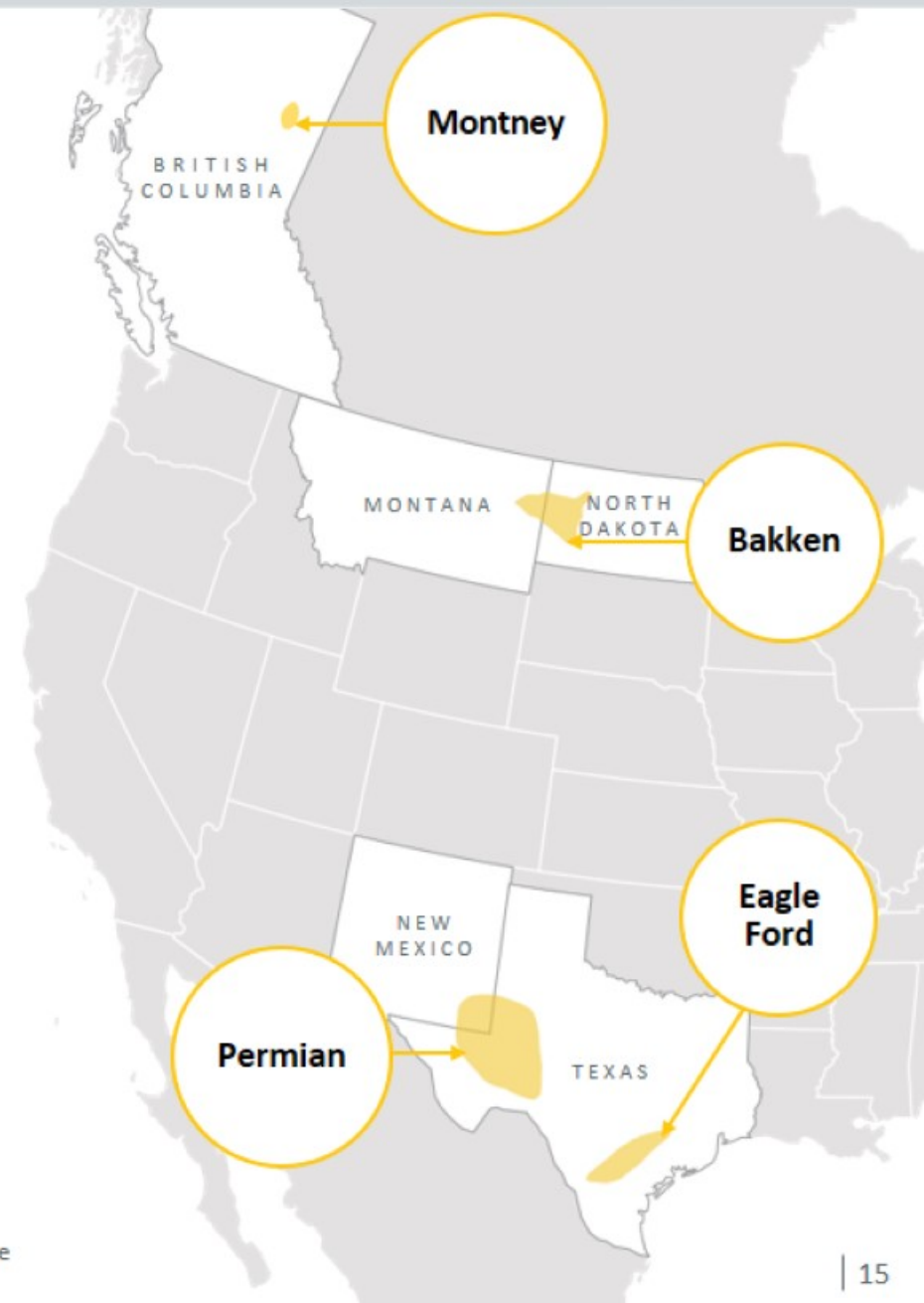


## Incremental Cost of Supply Analysis





- Producing 387,000 BOE per day from “Big Three” unconventional plays (Eagle Ford, Bakken, Permian); Producing 1,334,000 BOE per day total Company.<sup>1</sup>
- Unconventional production growth from Montney expected starting this year
- Undeveloped acreage in Argentina and Colombia
- ~50% of ConocoPhillips’ 15 BBOE of resources<sup>2</sup> <\$40/bbl WTI Cost of Supply<sup>3</sup> are unconventional
- Large conventional businesses in Alaska, Norway, Qatar, China, Australia, Malaysia and Indonesia



<sup>1</sup> Production volume during Q4 2019. <sup>2</sup> Resources volume of 15 BBOE is from November 2019 ConocoPhillips Analyst and Investor Meeting (AIM) slide deck. <sup>3</sup> Cost of Supply (CoS) is the WTI equivalent price that generates a 10 percent return on a point forward and fully-burdened basis.



- Unconventional oil production has rejuvenated the U.S. E&P industry
- Recovery and production can be enhanced using a systems approach
- Considerable room for additional technological advancements
- Pace of development is best optimized by assessing incremental CoS
- ConocoPhillips is proud to be an unconventional E&P industry leader



A large, abstract red graphic consisting of several curved, overlapping shapes that resemble a stylized flame or a series of connected arcs, positioned in the upper half of the slide.

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