Locus Bio-Energy SOLUTIONS®

Biosurfactants:

Proven Technology to Immediately and Sustainably Boost Domestic Oil Production

A Shift in Focus to Domestic Oil Production

Challenges:

Production

An *immediate* need for increased U.S. oil & gas production, despite limited fracking resources

+

ESG Compliance

SEC rule changes on climate related risks and GHG emission disclosures

Solution:

Biosurfactants

Immediately and **sustainably boost** oil recovery for a fraction of the cost of other methods

- ✓ **ESG-friendly**
- ✓ **US-based**
- ✓ **Proven on 300+ wells**

40+%

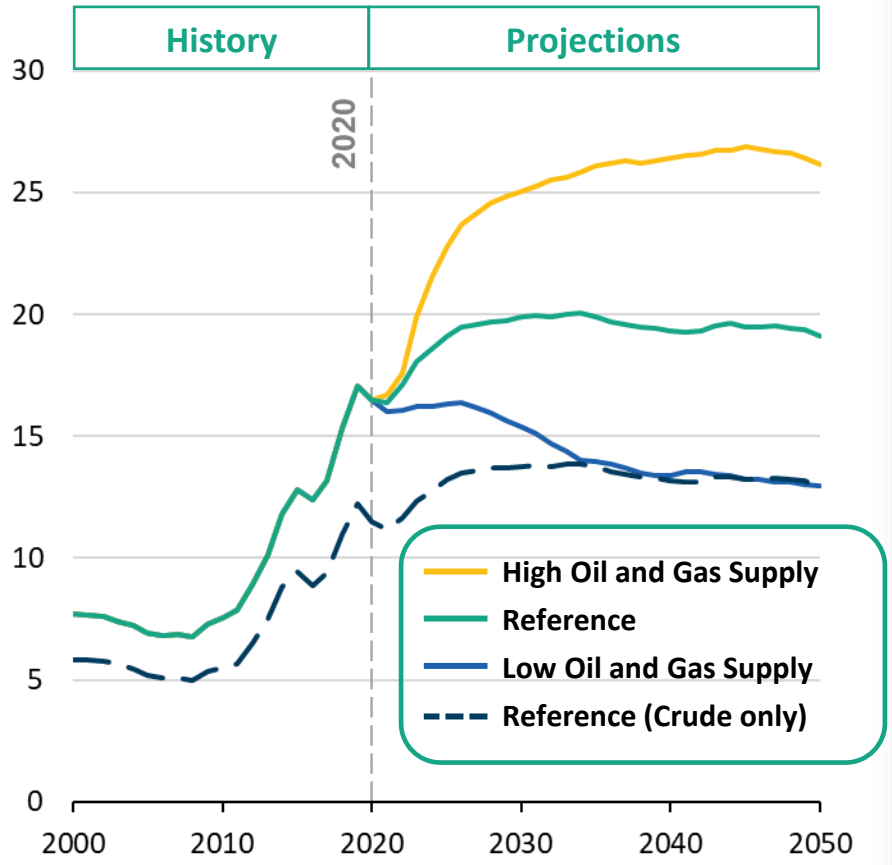
Increases across conventional and unconventional wells

EIA Production Projections to 2050

USA continues to be a globally significant producer of crude oil and refined liquids

U.S. Crude Oil and Natural Gas Plant Liquids Production

AEO2021 oil and gas supply cases (million bpd)



eia Independent Statistics & Analysis U.S. Energy Information Administration AEO2021 Press Release 2/3/21

New Well Drilling / Completions	Traditional Refracturing	Locus Biosurfactant AssurEOR STIM (only)
$5-7 MM Permian–Costs increasing	Typically, **30%** cost of D&C	Only **3%** cost of D&C
12 MM Gallons of water supply per frac, 50% requires disposal	Typically achieves up to **80%** of original peak production	Achieves **>40%** of original peak production
$3-5/BBL Disposal cost per barrel of water Seismicity concerns		

Combination: Refrac + AssurEOR STIM

- ✓ **Maximizes production** from existing assets
- ✓ Less new wells required to satisfy Total Oil Demand
- ✓ **Lower GHGs** - Less CH_4 leaking from abandoned wells

What's the Future for US Oil Production?

Maximize production and useful life from EVERY well

Benefits

Reduced need for drilling and fracking new wells

- Less CO2, rigs, sand, steel, personnel

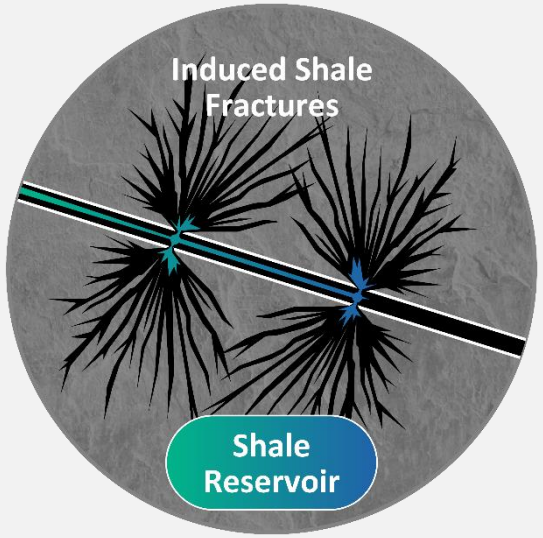
Minimize plugging and abandonment and associated costs

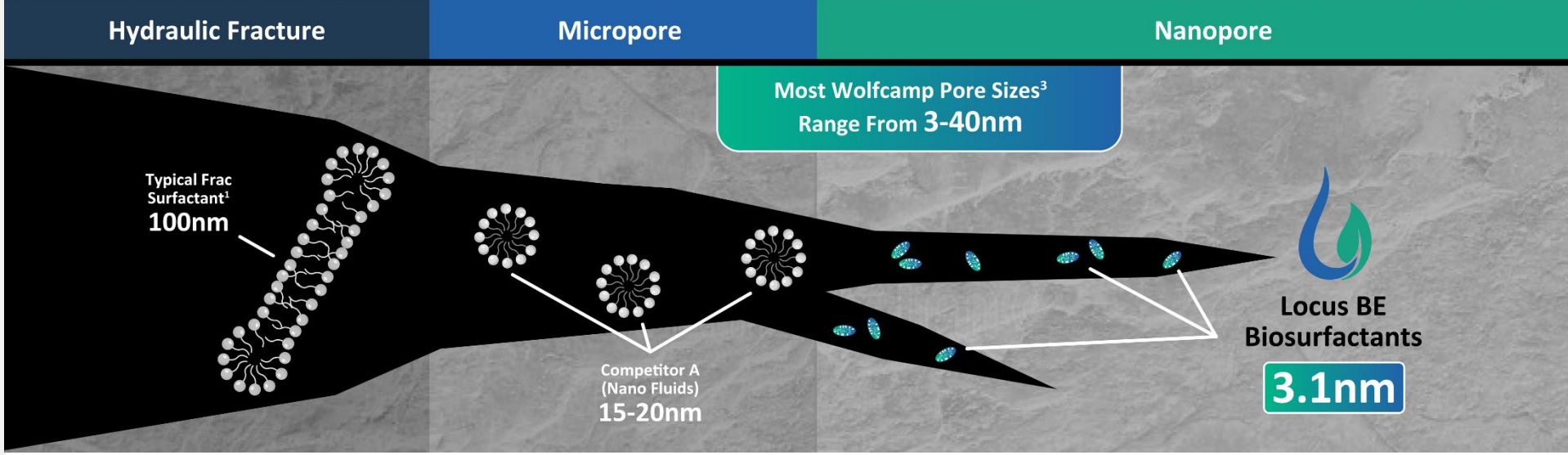
- Reduced methane leaks from abandoned wells

Greater royalties over well lifespan

- Maximize ROI/royalties on investments

…but do so in an economic and sustainable manner.

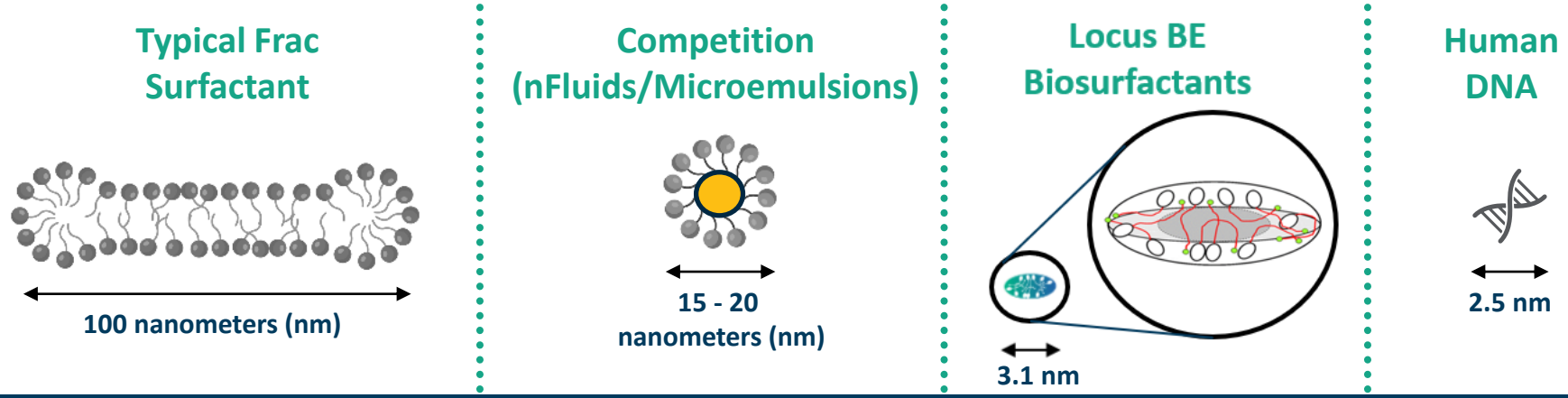




Biosurfactants: Mobilize More Oil Via Deeper Penetration

Locus BE biosurfactants can penetrate into nanopores pores as small as 3.1 nm – mobilizing oil that other treatments cannot

Comparative Micelle Sizes



Watch Here

[1] Source: *Advances in Colloid and Interface Science*, **2018**, 256, 1–22)

[2] Source : Structure of Micelles Characterized with SAXS, SANS, and MD Simulations", J. Phys. Chem. B, **2015**,119(41),13113-13133. [3] Source: Li et al., Journal of the Taiwan Institute of Chemical Engineers, **2017**, 78, 317–328. http://dx.doi.org/10.1016/j.jtice.2017.06.024

Lower Environmental Impact With Biosurfactants: Permian Basin Example

Carbon Footprint

50-Stage Permian Frac*

- **97,000** Gallons of diesel used
- **985** **Tons** of CO_2e / frac
- **210+** **cars** equivalent CO_2e emissions
- **390** **Acres of trees** would need to be planted to offset

Locus Biosurfactant Stimulation

- **0.1%** of diesel used
- **.01** **Ton** of CO_2e / application
- **< 1** **Car** equivalent CO_2e emissions
- **0.4** **acres of trees** would need to be planted to offset

Water Usage

Frac: High Water Usage

A 50-Stage Permian frac uses **13,800,000** Gallons of water

Biosurfactants: Low Water Usage

Locus Biosurfactant stimulation uses **< 200,000** Gallons of water

Compared to water required for a new frac **< 2%**

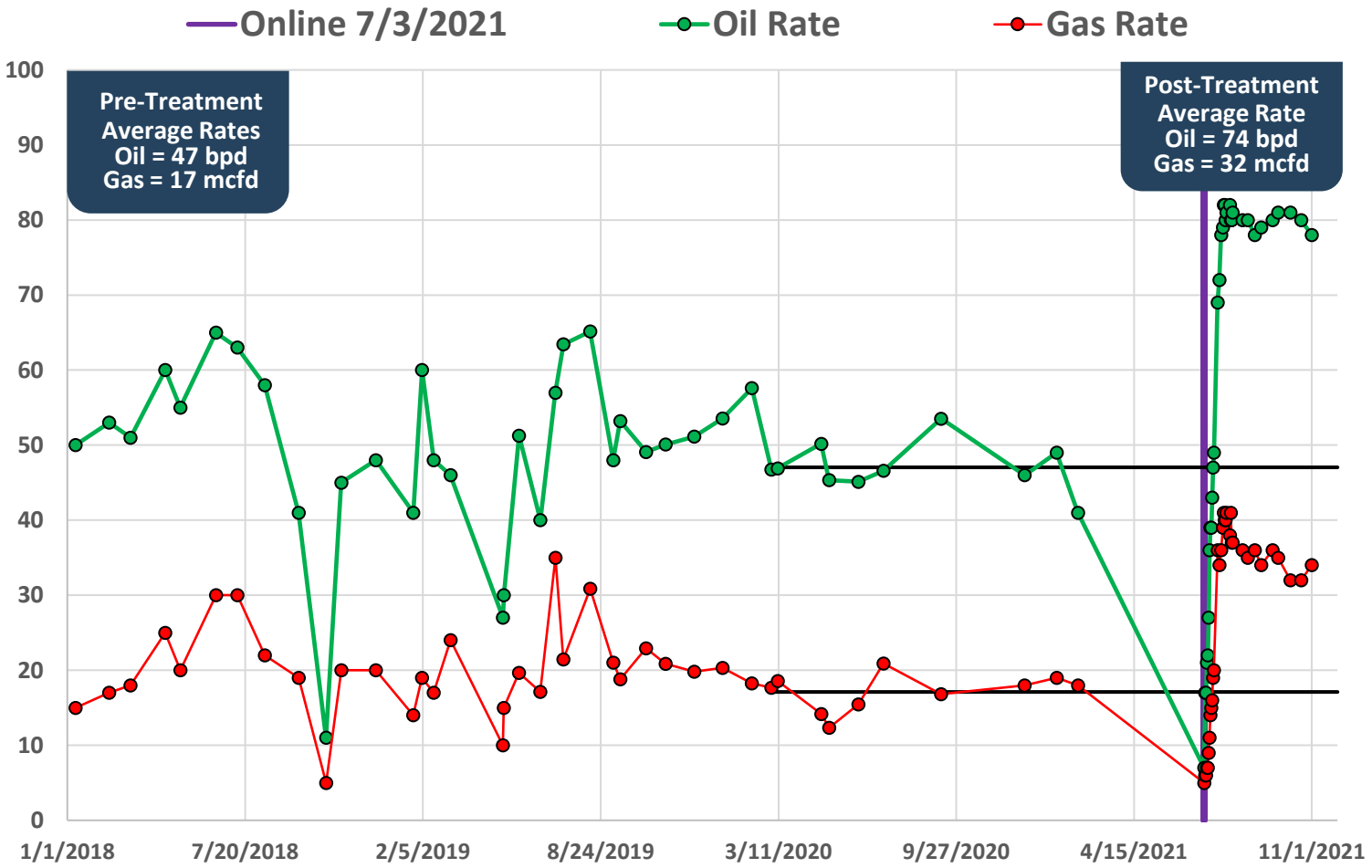
Source: GEC

* Plug and Perf single well, 50 stages 200 ft per stage , 10,000 ft lateral

Case Study: Bullhead Well Stimulation

Lower Spraberry Horizontal
Midland Basin, TX

AssurEOR FLOW® & AssurEOR STIM® Treatments



Post-Treatment Performance (113 Days)

ROI > 4
in first 90 days

Oil

Incremental Oil	% Oil Increase
+/- 3,050 bbls	57%

Gas

Incremental Gas	% Gas Increase
+/- 1,700 mcf	88%

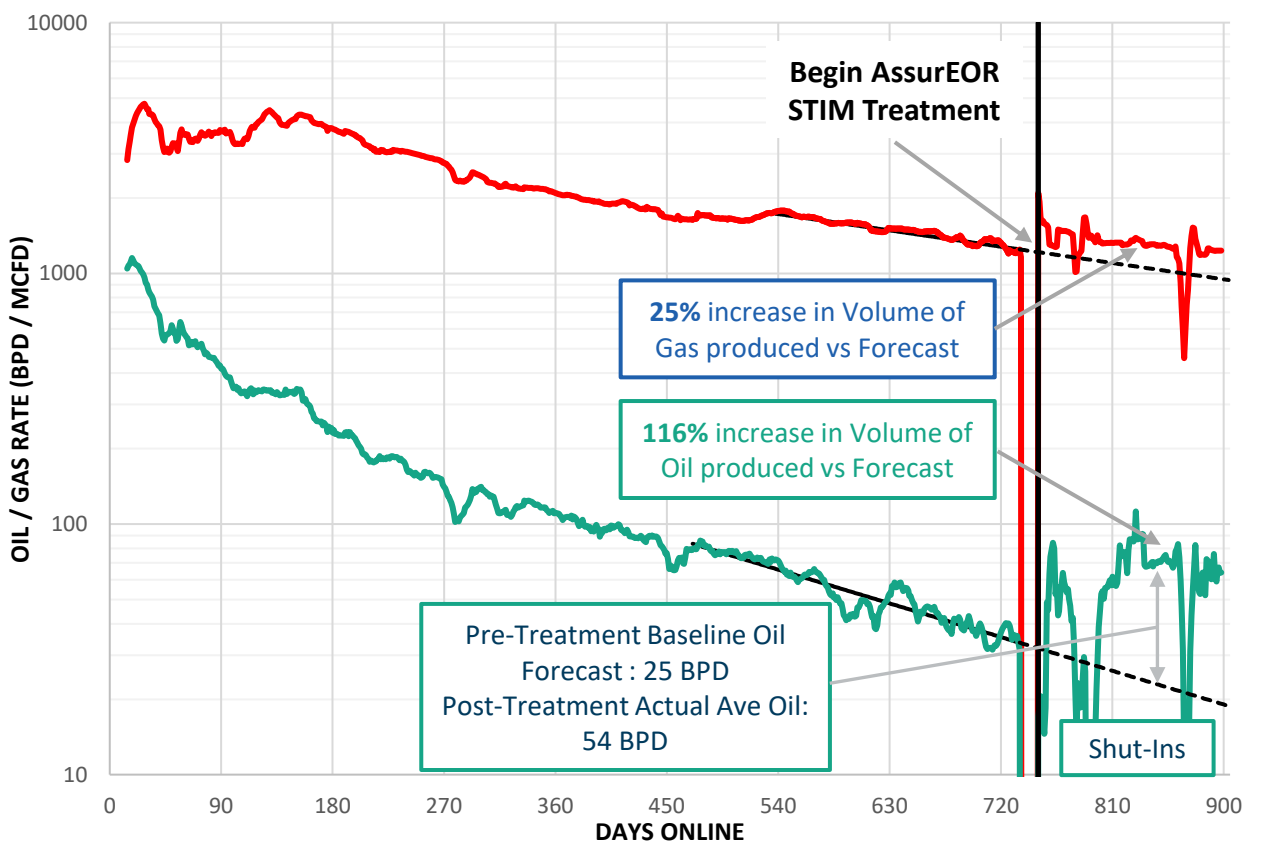
Case Study: Well Stimulation | Delaware Basin, Unconventional 4-Well Pad, 5000’ lateral

Challenge: Declining production & ROI

Operator needed to address declining oil production but did not have the economics to justify a full mechanical workover.

Solution: AssurEOR STIM (5,000 bbls)

Using actual well fluids, Locus BE customized and implemented an enhanced oil recovery treatment used with a low-cost, rigless intervention set up. Lab testing showed an anticipated 35% increase in oil production.



Post-treat performance (155-Days)

116% increase in oil production after a single treatment	**4,500** Incremental bbl of oil produced above forecast	**54** Average bdp (increased from 25 bpd baseline)	**< 4** Month treatment cost recovery
24% increase in gas production after a single treatment	**40 M** Incremental mcf gas produced above forecast	**258** Average mcfd (increased from 1,071 mcfd baseline)	**1.6X** ROI (incremental Revenue/Cost)
			$240 k Incremental revenue ($40/bo $1.50/Mcf)

Biosurfactants: **ESG Friendly Solutions & Manufacturing**

CO₂ VERIFIED
ISO 14064

ESG Value Propositions:

1. **Reduce Scope 1 emissions by maximizing oil recovery using sustainable and biodegradable biosurfactants**
    - Toxicity of Locus BE biosurfactants are 10x lower than traditional oilfield surfactants and 100% biodegradable
    - Produces more oil, minimizing the need for new drilling and lowering the carbon footprint of operations
2. **Opportunity to build a sustainable local production centers using agricultural raw materials**
    - Made from renewable agricultural raw materials, including canola and sugar beets
    - Produced with a near-zero carbon footprint
        - Locus BE manufacturing plant will be Carbon Neutral Certified by 2022 (ISO 14064 –Certification)
        - ISO 9001-accredited manufacturing program uses Lean Six Sigma techniques such as 5S methodology and renewable energy offsets
        - Production center can be built and scaled quickly (within months at < 10% CAPEX of traditional production)

Biosurfactants Answer the Call to Action for Energy Security

Augment production from:

- ✓ New Fracs
- ✓ Refracs
- ✓ Stimulations

Proven technology available to immediately increase domestic oil & gas production

1. **Enhance Oil Recovery**
2. **Meet New SEC Guidelines**
3. **Boost ROI & Profitability**

Solution: Biosurfactants

Get the Most Out of EVERY Well

- ✓ Deep penetration into existing frac matrix
- ✓ Mobilizes otherwise immobile oil
- ✓ Disperses heavy organics in formation

Can Replace or Augment Refracs

Profitability

- Low CAPEX application
- High and rapid ROI
- Applicable on all wells
- Low cost per bbl of incremental oil

ESG

- 2-4% of water required
- Low carbon bbls, low toxicity & ESG friendly
- Simple application – low risk to operator

…Plus Carbon Neutral

Double Your Production. Double Your Royalties.

SCAN ME TO CONNECT

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The Woodlands, TX 77380

In-person or virtual meetings available

LocusBioEnergy.com

Biosurfactants:

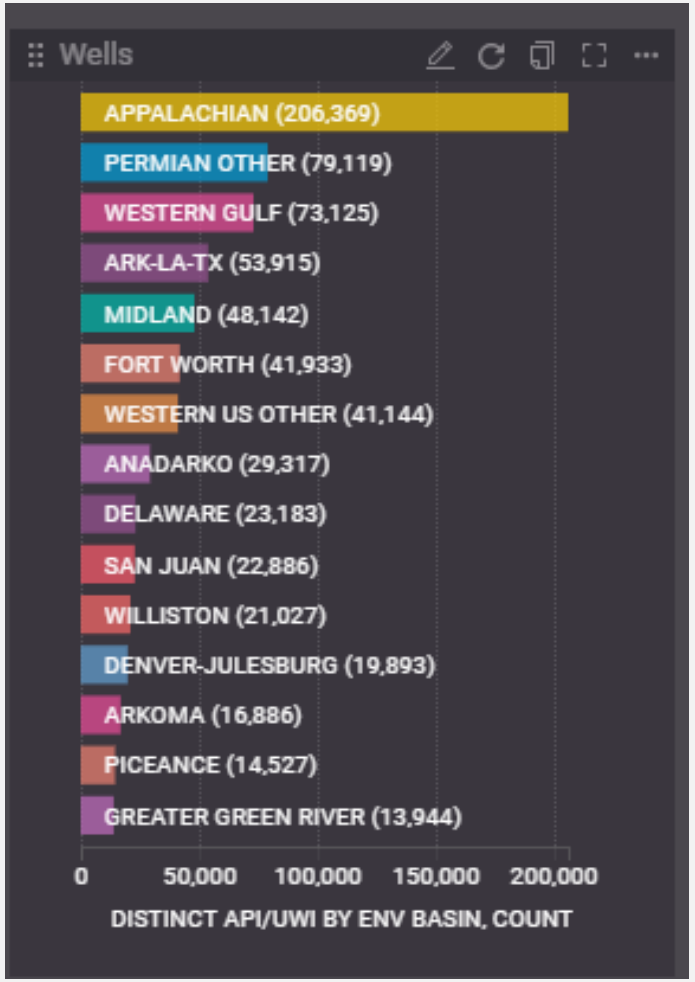
Produced by Nature.

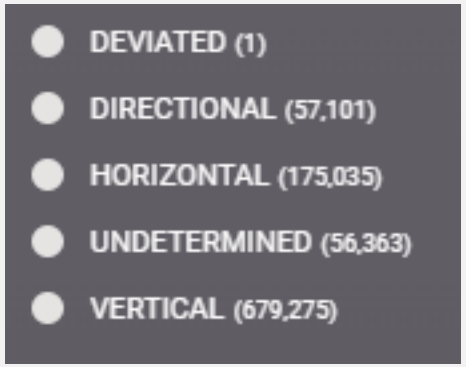
Perfected by Locus.

Data Sources

Enverus:

- 818,000 producing wells in the U.S., including offshore
- Distributed by basin below:





STRIPPER WELLS BY REGION
REGIONAL SAMPLE SIZES CORRESPONDING TO CHARTS

Study Region	Number of Wells in Chart*
Vertical Permian	85,317
Texas and Louisiana Gulf Coast	17,565
Other Texas and Southeast US	44,457
Greater Mid-Continent US	33,006
Greater Rockies	13,560
Greater Northeast US	30,065
California	22,299

*Most data points represent a single well; may include separately reported completions and/or lease level divided by well count.

JPT Article: February 1, 2021

By Laura Freeman

JPT JOURNAL OF PETROLEUM TECHNOLOGY

BUSINESS/ECONOMICS

Hundreds of Thousands of Stripper Wells—Massive Liability or Golden Opportunity?

Although they only make up about 10% of total US production, the vast majority of onshore US conventional wells are stripper wells. What are the implications for buyers seeking assets?

February 1, 2021 By Laura Freeman
Journal of Petroleum Technology