Methodology

How we define wells

This report and its tables include five well types:

- Single wellhead
- Sidetrack
- Completion
- Recompletion
- Lease

This report includes every producing entity in the Enverus database. When we know the number of wells on a lease, we distribute the total lease production equally among the wells; however, in some cases, the commercial source has allocated individual well production in proportion to well test results. Sometimes, only a lease and its total production are available (without the well counts), which leads to undercounted wells in some areas.

Production volume accounting

We removed identified, reinjected, and recycled natural gas from the gross natural gas volumes reported by some states, such as Alaska. For fields identified as having undergone or as currently undergoing natural gas injection, we reduce production levels by an equal share of the field-level injected natural gas that the state reported. We do not include injection wells in the counts unless they were producing wells at one time; in such cases, we included those wells for the years they were producing.

The pressure base that producers use to record natural gas volumes varies by state. For consistency, we converted all natural gas volumes to the federal pressure base of 14.73 pounds per square inch absolute (psia). We did not, however, adjust to account for differences in the temperature base; instead, we assumed states used 60°F as the temperature base. Because states vary in how they define a well type (oil or natural gas), we used a GOR of greater than 6,000 cf/b to designate a natural gas well. We designated wells with less than or equal to 6,000 cf/b as oil wells.

We excluded storage wells, dry holes, and wells that produce exclusively within CO_2 fields.

How we analyzed and aggregated the data

First, we used the number of days of production activity to convert volumes to a daily rate for the BOE-rate classes in the tables. For this calculation, we did not use the reported *days on* production measure for a well because it is often not available in the database. Instead, we used calendar days for consistency. To calculate the months in production, we determined the monthly production data for the first month and for the first year of production and the last month and last year of production for each well. We counted days of production using the number of calendar days in each month for the first year and last year of production. For the middle years of production, we used full years of 365 (or 366) days for days of production.

Next, we added the monthly oil and natural gas volumes, multiplied by the number of days of production, to determine annual totals for each well. We converted the annual natural gas volume to

BOE using the GOR of 6,000 cf/b, and we used the GOR to help classify a well as natural gas or oil. We classified the well as an oil well if its production of barrels of oil was greater than the natural gas production converted to BOE. We classified it as a natural gas well if its BOE production was greater than the oil production. We then added the natural gas BOE to the liquid fuels value for a total BOE for each year of the well's production. We divided this total BOE by the number of calendar days the well was in production status, which often reflected partial years for the first and last years and full years for years in between. We used these calculations to assign each well to the appropriate BOE/d rate class in the tables.

Finally, we added the well counts and production levels for each rate class to produce the yearly state tables for the report.