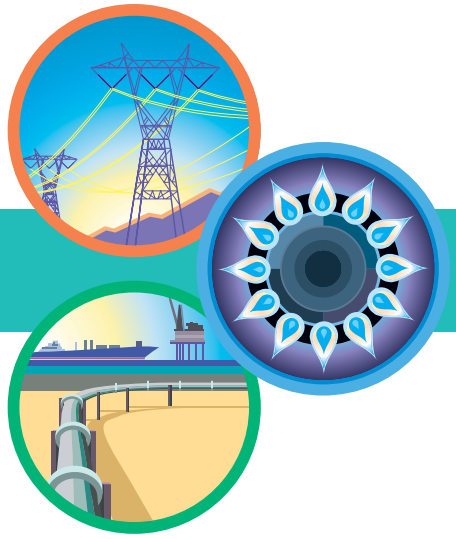

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Energy Fact Sheet

Natural Gas Well Completion: Once the well is drilled, how natural gas is extracted and transported

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Key Messages:

- Completion starts in the drilling process
- Wells are completed to improve processes and outcomes
- Well completion is a three-step process

Completion starts in the drilling process. This includes the following: —

- The surface casing is set to isolate and protect fresh water intervals
  - Fresh water intervals are up to 300 feet deep on the valley floor
- Surface casing is typically at least 1,000 feet deep and cemented the entire length of the casing
- A formation integrity test is performed
- The production hole is then drilled beyond the targeted gas zones
- The production casing is run and cemented across all of the potential gas zones
- Pressure is monitored between the surface casing and production casing during the completion process

Why are wells completed? —

- Because of the tight sands in the Piceance Basin
- It increased gas production rates and volumes
- Natural gas is more commercially viable

(continued...)

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How are wells completed? —

- Perforating
  - This ties the reservoir to the well bore
- Hydraulic Fracturing
  - This build a conductive freeway within the reservoir to increase gas rates and volumes
- Isolate gas zones and repeat the perforating and hydraulic fracturing process for the gas zone in the well bore

Hydraulic fracturing flow back units reduce emission —

- Special equipment is used to capture the first natural gas production
- This cuts natural gas flaring (lost gas) by 95 percent and increases production

Additives used during the completion process —

- Murrain Acid and Hydrochloric Acid
  - Cleans our perforation
  - Is a concentrated version of what you use to adjust pH levels in a pool or spa
  - Converts to carbon dioxide and calcium chloride water
- Bacterial control
  - Chlorine product
- Clay Control
  - Potassium chloride salt
  - Maintains permeability
- Surfactant
  - Industrial grade soap
  - Allows injected frac water to return to the well bore for reuse
- Friction Reducer
  - Reduced power required to inject fluid (fewer trucks, fewer emissions)
  - Is similar to flocculants used in water treatment plants

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