

# AS A MATTER OF FACT...

## WATER USAGE

OHIO OIL & GAS ENERGY EDUCATION PROGRAM



The average hydraulic fracturing job (well stimulation) in Ohio may require between 250,000 and 6 million gallons of water. While that number may seem to be a lot, it is important to keep in mind some facts and perspective.

### PRECIPITATION IN OHIO:

According to the Ohio Department of Natural Resources, Ohio's annual precipitation totals more than 30 trillion gallons. This quantity more than adequately recharges the local streams, rivers, lakes and aquifers in our state each year.

### DID YOU KNOW?

- Ohio is covered by 3,967 square miles of water.
- Water users of all types withdraw about 11 billion gallons of water each day from Ohio streams, rivers, lakes, and aquifers.
- Electric generation uses 8.9 billion gallons of water a day in Ohio.
- Rural and public water systems use 1.4 billion gallons daily in Ohio.
- Typically, Ohio oil and gas operators hydraulically fractured less than one well per day. This would equate to 0.04% of the total water withdrawn on a daily basis.
- The Muskingum River's median flow rate is 4 million gallons per hour and 5.8 billion gallons per day.
- Nationwide, landscape irrigation is estimated to account for nearly one-third of all residential water use, totaling nearly 9 billion gallons per day. According to WaterSense and the U.S. EPA, some experts estimate that as much as 50 percent of water used for irrigation is wasted due to evaporation, wind, or runoff caused by inefficient irrigation methods and systems.
- Nearly one-half of the water used by Americans is used for thermoelectric power generation.

### RECYCLING OF WATER:

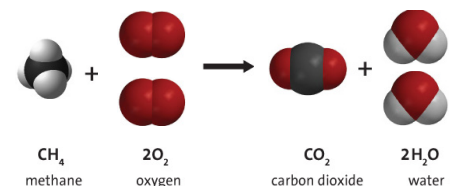
Not only does hydraulic fracturing require significantly less water than many other processes, recycling and reuse of water is increasing in operations across the United States. This further reduces the need for freshwater sources and decreases the industry's footprint on America's water resources.

### ACCOUNTABILITY:

Permit applications to the Ohio Department of Natural Resources for oil and gas drilling operations must identify the source and estimated volume of groundwater and/or surface water that will be used for each well (i.e., hydraulic fracturing operations and drilling operations).

### NATURAL GAS CREATES ENERGY... AND WATER!

A basic chemical reaction occurs as natural gas is burned. This can be seen in the following equation:  $\text{CH}_4 + 2\text{O}_2 = \text{CO}_2 + 2\text{H}_2\text{O}$ . To put it simply: one molecule of methane reacts with two molecules of oxygen to generate one molecule of carbon dioxide and two molecules of water.



So, while a "Utica Shale" well may use up to 5 million gallons of water to produce natural gas, it will create a net gain of more than 100 million gallons of water throughout the life of the well. This water is then reintroduced to the hydrologic (water) cycle.



# HOW MUCH WATER?

**300,000,000 GALLONS**

The amount of water used to produce a single day's supply of U.S. newsprint.

**5,000,000 GALLONS**

The amount of water New York City consumes every 7 minutes.

**5,000,000 GALLONS**

The amount of water a 1,000-megawatt coal fired power plant uses in 12 hours.

**100,000 GALLONS**

The amount of water used indoors and outdoors by the average U.S. citizen per year.

**62,600 GALLONS**

The amount of water to produce one ton of steel.

**39,090 GALLONS**

The amount of water used to manufacture a new car, including tires.

**400 GALLONS**

The amount of water used during the growing/production of one chicken.

**123 GALLONS**

The amount of water the average U.S. citizen uses per day.

**70 GALLONS**

The amount of water an average bath requires.

**55 GALLONS**

The total amount of water used to produce one cup of coffee.

**4 GALLONS**

The amount of water a dairy cow must drink to produce a single gallon of milk.

