

Follow the Barrel

The Gulf Crude-to-Market System · Grades 11–12 / First-Year College

Name _____ Date _____ Class _____

How to use this sheet. This is a *ride-alongside* worksheet: keep the interactive Gulf map open beside you and use it to answer. Read the box, then work the parts in order — each one builds on the last.

The map	Open the Gulf Fuel Flow Map full-screen. It shows the flow of crude, refined product, and power across TX, OK, LA, and NM.
Year slider	FY2000 → FY2026. Drag it, or press PLAY to watch infrastructure appear, grow, and change through time.
Lens row	Switches which energy system you see — petroleum, natural gas, solar, wind, nuclear, coal, hydro, geothermal. Start on petroleum .
Hover cards	Hover any refinery, city circle, or the import/export cards to read the detail behind it.
Scenarios	The disaster buttons (COVID '20, Uri '21, Harvey '17...) re-run a real event and shift the supply/demand curves.

Part 1 · Orient — the physical machine

Petroleum lens on, year at FY2024. Before anything moves, map the parts.

1.1 Where does crude *enter* this region? Name the two production sources the map shows feeding the system.

1.2 Follow the ribbons inland. Where does the crude go — what kind of place, and why is it on the coast?

1.3 Hover the refineries. Which single plant does the map flag as the largest in the United States, and roughly how big is it?

- 1.4 Find **Cushing** on the map. It is not a refinery — what is it, and why does the map call it a price-setting chokepoint?

Part 2 · Follow the barrel — the transformation

Now trace one barrel from entry to exit, and ask what happens in the middle.

- 2.1 Crude flows *toward* the refineries, but refined product flows *away* toward cities. In your own words, what does a refinery actually do to justify that reversal of direction?

- 2.2 Switch to the **natural gas** lens and hover a refinery. The map says gas is both *burned* and *cracked* there. What are gas's two jobs inside a refinery, and what does that tell you about how the oil and gas systems connect?

Part 3 · The market pie — who burns it

Petroleum lens. Hover a city consumption circle to open its market pie.

- 3.1 Open the market pie for one metro (e.g. Houston or Dallas–Fort Worth). Which refinery or refineries supply most of its product, and how does the map encode *how much* each city consumes?

- 3.2 Scrub the slider across several years with one pie open. Does the mix stay fixed, or shift? What real-world force could move it?

Part 4 · The shale revolutions — Permian & Bakken

The big idea of the whole map: why US oil and gas production exploded after about 2008, and what that expansion did to the country. Petroleum lens; use the production readout and the import/export cards.

4.1 Why did it happen? Before ~2008 US oil output had been declining for decades; then it reversed and surged. The map shows shale everywhere — the Barnett outside Fort Worth that ‘started the whole shale era,’ the Permian, Haynesville, the Bakken. What technological breakthrough unlocked all that rock at once?

4.2 Effect 1 — imports. Open ‘where the crude comes from’ and scrub FY2005 → FY2024. What happens to foreign imports as shale ramps, and which countries move?

4.3 Effect 2 — the great reversal. In the 2000s the Gulf was building LNG terminals to *import* natural gas (find the Lake Charles regas docks on the gas lens before ~2016). What did shale do to that plan, and what larger flip does it stand for?

4.4 The catch — the plumbing couldn’t keep up. Production grew faster than pipelines. Name the two improvised fixes the map shows as a result: one for Bakken crude (watch the crude-by-rail flow FY2012→FY2018) and one for Permian gas (the Waha note).

Part 5 · Time travel — the crude export ban

Open the ‘where the crude goes’ card and watch it as you drag the slider from FY2000 to FY2026.

5.1 Before about 2015, where do essentially all US crude exports go? After 2015, what changes on the card?

-
-
-
- 5.2** Advanced: the US exports light shale crude AND still imports heavy crude at the same time. Using what the map says about Gulf refineries, explain how a net oil exporter can still be importing crude.
-
-
-

Part 6 · Economics — the COVID negative price

Press the **COVID '20** scenario. Watch Cushing, and watch the supply/demand panel.

- 6.1** What physically happens at Cushing during the scenario, and how does the map connect that to WTI settling at NEGATIVE ~\$37 in April 2020?
-
-
-

- 6.2** Read the supply/demand signature. In COVID, which way do the curves move, and what happens to price and quantity? Now compare it with the **Hormuz '26** scenario — how is its signature the opposite?
-
-
-

Part 7 · Vulnerability — where the system is fragile

Press the **VULNERABILITY** button (petroleum view). The map hides this layer by default — you have to turn it on. Every asset is now scored; hover or click the cards to read them.

- 7.1** The map scores each asset on FOUR axes. Name them, and say in one line what each one measures.
-
-
-

7.2 Open the highest-scoring card — **Colonial Pipeline**, composite 4.6. Which two axes are maxed at 5, and what physical fact drives each?

7.3 Open the **Foreign crude imports** card (composite 3.0). It scores only **2** on asset integrity, while most crude assets here score 4. Why is that one axis so low, even though import dependence is real?

7.4 Two cards can land at nearly the same composite for opposite reasons. Open **Cushing** (3.8) and **Corpus Christi** (3.5) and contrast their fingerprints — what makes Cushing's risk different in KIND from Corpus's?

7.5 Carry one forward. Across the cards you opened, which single axis best explains why the Gulf as a *whole* is a national vulnerability — and which asset is your strongest evidence? (You'll use this in Part 8.)

Part 8 · Step back — what the barrel is for

You've traced the whole machine. Before you judge it, ask why it exists at all.

8.1 A ton of coal, this barrel of refined crude, and a fully charged EV battery all store energy — yet nearly every airplane, cargo ship, and long-haul truck on Earth runs on the barrel, not the other two. From what you've traced on this map — how the barrel is made, moved, and burned — what property must it have that the others lack, and why is that worth the entire system you just studied?

Part 9 · Synthesize — defend a claim

Use evidence from at least two earlier parts. There is no single right answer — the argument is graded, not the side.

9.1 The Gulf is the heart of US oil: it produces, refines about half the nation's capacity, and since 2015 exports to the world. **Is the Gulf's export-gateway role a national strength or a national vulnerability?** Take a position and defend it with specific evidence — including at least one vulnerability card and its score from Part 7.

Terms of Use & License

Feel free to share — you are welcome to copy, print, and distribute these resource materials / PDFs to other teachers, schools, or districts.

© 2026. Ashley King. All Rights Reserved. All HTML code, website designs, scripts, and software tools hosted at fuelflowmaps.org are the exclusive intellectual property of the author; unauthorized copying, cloning, or distribution of the website's underlying code or platform architecture is strictly prohibited.