ENVIROMENTAL SCIENCE

DO NOW

Why do you think the news reports fluctuations in gas prices?
DO NOW

HOMEWORK CHECK
COMPLETION GRADE
FILL IN GAPS ON ANSWERS

REVISIT DO NOW

BP OIL SPILL

SOURCES OF ENERGY - OIL

1. What are fossil fuels and how are they formed?

   Fuels derived from the remains of living organisms.
   Coal, Oil, Natural Gas

   Are they renewable? Why or why now?

   No – they take thousands of years to form. It would take 1000 years to replace the amount of organic matter (to become fuel) that we use in a day.
2. What is the difference between estimated and proved reserves? What factors cause the amount of each to change?

Estimated reserves – educated guesses, made by geologists, about the location and quantity of oil and natural gas.

Proved reserves – estimates of the amount of oil and gas available, after exploratory drilling has found the resource.

As new oil fields are discovered, the estimate of proved reserves increases – but this may also result in a decrease in estimated reserves.

3. What role does economics play in how much oil is produced/extracted? In other words, how does the price of oil influence the amount produced?

Conventional pumping (primary recovery) can extract only about 25% of the oil in an oil field.

Removal of additional oil is more costly.

Depending on the price of oil, it may make economic sense for companies to expend the extra money to get the extra oil out.
4. What is Hubbert’s Peak? Where does world oil production currently fall on this curve?

Bell-shaped curve showing the oil exploitation of a region. The peak indicates the point where half of the available oil has been withdrawn, and production begins to decline. It’s believed that the world oil production will peak within the next 10 years.

5. What is OPEC and what role does it play in the oil market?

Organization of Petroleum Exporting Countries – a cartel that agrees to increase and decrease production to manipulate prices.

An over-supply of oil decreases prices. A shortage of oil increases prices.

In the 70’s, OPEC cut off supplies of oil to the US (and other countries in response to the Arab-Israeli war) which caused shortages and a dramatic increase in prices.
6. How do fluctuations in the price of oil influence US policies?

When oil prices are high, we look to ways to mitigate this:
- increasing fuel economy requirements for cars,
- establishing the strategic oil reserve,
- look to increase domestic production by reopening oil fields or exploratory drilling
- encouraging investment in renewable energy/research

When prices are low:
- we slow down production (it’s not profitable)
- abandon conservation efforts
- terminate incentives, investments in renewable energy or research

7. What percent of US oil consumption comes from foreign sources? Who are the main suppliers of oil to the US?

66% comes from foreign sources (book)
Largest supplier is now Canada.

2013 – Gross Imports:

<table>
<thead>
<tr>
<th>Country</th>
<th>Quantity (bbl)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>3.142</td>
<td>32%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>1.326</td>
<td>15%</td>
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<tr>
<td>Mexico</td>
<td>0.319</td>
<td>3%</td>
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<tr>
<td>Venezuela</td>
<td>0.805</td>
<td>9%</td>
</tr>
<tr>
<td>Russia</td>
<td>0.400</td>
<td>4%</td>
</tr>
</tbody>
</table>
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8. What are some of the costs of the United States’ dependency on foreign oil?
   - Cost of purchase – money leaving the country, balance of payments deficit
   - Ecological costs – oil spills, pollution/destuction from drilling, piping, consuming, etc.
   - Maintaining access to oil from the Persian Gulf
     - First Gulf War – Iraq invaded Kuwait, we went in to stabilize oil access
     - Invasion of Iraq (2003) – to eliminate weapons of mass destruction (that didn’t exist) but moved to protect oil fields
     - Presence in the region angering citizens – cited as trigger for 9/11

DO NOW

Why do you think the news reports fluctuations in gas prices?

- An increasing cost of gas has a significant and wide spreading impact on our economy.
- Think about the price of vegetables at the grocery store increasing because of the increased expense produce companies face when they have to truck their product to markets/stores across the nation.
SOURCES OF ENERGY - OIL

60 Minutes Video Clip

SOURCES OF ENERGY - OIL

Opposing Viewpoints - BP Oil Spill