

# Defining Coal Resources and Reserves

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**Total Resource**

**Identified**

**Undiscovered**

**Demonstrated**

**Inferred**

**Hypothetical**

**Speculative**

Direct evidence for this coal was collected in the form of cores and outcrop observations

This coal is near demonstrated coal deposits.

This coal is known based on regional geology, but has not been systematically explored.

This coal is deep in the earth, under the ocean, or in unexplored coal basins.

**Measured**

**Indicated**

Bore hole or Outcrop

1/4 mile

3/4 mile

3 miles

Is it economic to mine now?

Yes

No

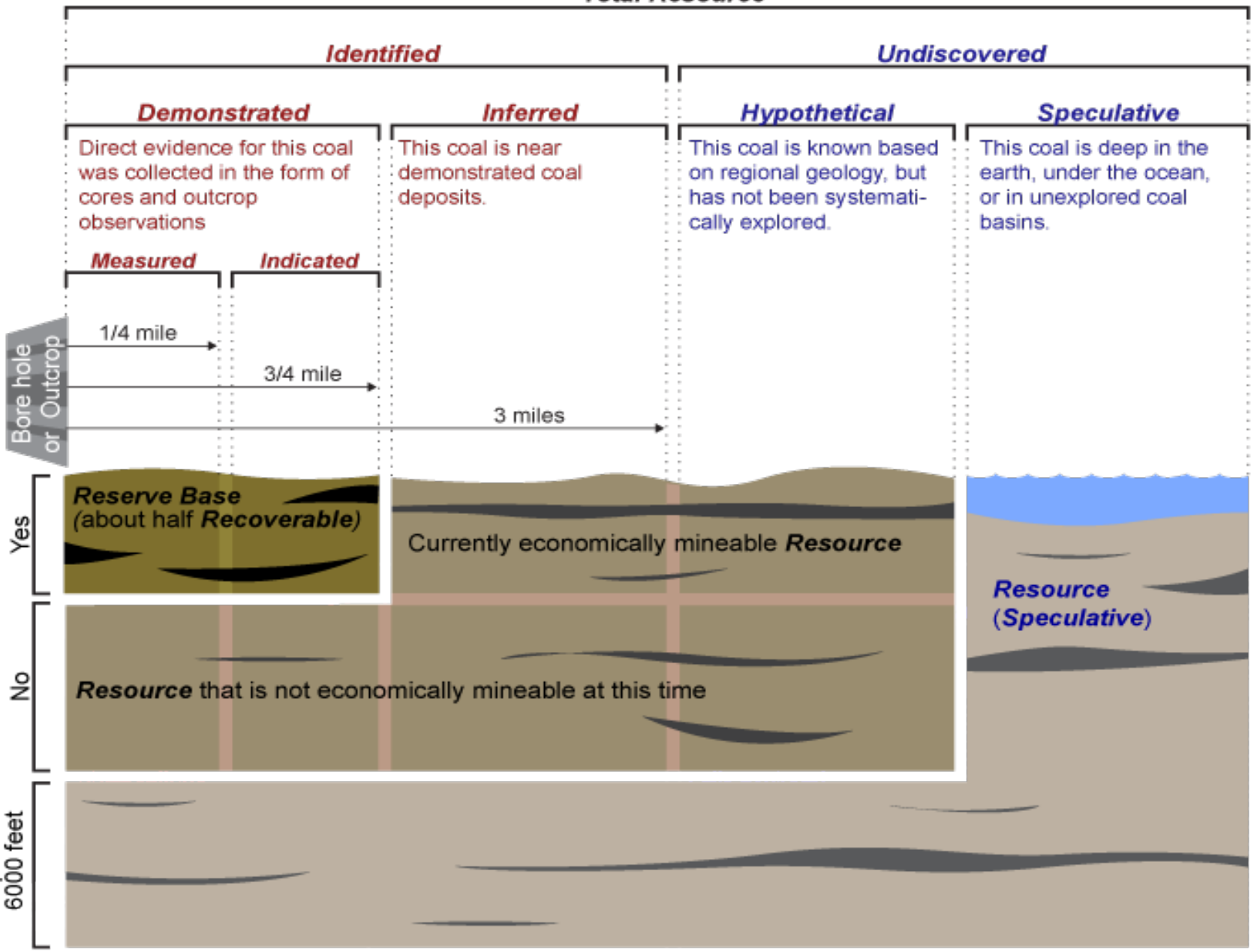
**Reserve Base**  
(about half *Recoverable*)

Currently economically mineable **Resource**

**Resource** that is not economically mineable at this time

**Resource**  
(*Speculative*)

Deeper than 6000 feet



# Resource vs. Reserve

- **Resource** is how much coal is actually in the ground.
- **Reserves** are the amount of measured resource coal that could be expected to be economically mineable under the current economic and technological conditions.

# Resource Terminology

- "**Measured**" – the amount of coal based on closely spaced, direct measurements such as visual confirmation on the surface, boreholes, or actual mines.
- "**Indicated**" – the amount of coal based on a combination of direct measurements and reasonable geologic assumptions made with high confidence.

# Resource Terminology

## cont.d

- "**Demonstrated**" – This is simply a combination of measured and indicated resource as described above.
- "**Inferred**" resource is based on the assumed continuity of coal beds, both downwards into the earth and across the landscape from points of direct measurement.
- "**Identified**" – is the combination of inferred and demonstrated resources as described above.

# Resource Terminology cont.d

- "**Hypothetical**" – refers to resources that are present in known but incompletely explored or unmapped coal beds, also limited to 6000 feet of depth and in the US, more than 3 miles from a measurement point.
- "**Speculative**" – refers to coal outside all of the above categories and is rarely used in discussions of coal resources.
- "**Total Resource**" – includes all of the categories above. Sometimes also called "resource base".

# Reserve Terminology

- "**Reserve base**" – is coal which is both “demonstrated” (meaning we know it exists – see above) and is deemed to be economically and technologically mineable at any given time.
- "**Recoverable reserve**" – refers to the amount of the reserve base that might reasonably be expected to be actually mined and used.

# Additional Considerations

- Calculating how much of a given region's demonstrated coal resources should actually be considered "reserves" depends on a complex interaction between technology, economics, and environmental regulations.
- Germany downgraded the size of their "proven reserve" in 2004 from 23 billion tons to 0.183 billion tons, a reduction of over 99%.
- Poland redefined its reserve base in 2007 and removed over 6 billion tons from their reserve