

## **Fossil Fuel Based**

### ***Fuel switching***

#### **GOAL**

Retrofit 1400 coal-fired power plants to run on natural gas.

#### **COSTS**

This uses existing technology. Combined-cycle gas power plants produce much more energy per kilogram of carbon than coal plants. Nonetheless, this would be a major effort, and would increase costs.

## **Fossil Fuel Based**

### ***Carbon capture & storage (CCS)***

#### **GOAL**

Capture all of the emissions of 800 coal or 1600 natural gas power plants and store the carbon dioxide underground.

#### **COSTS**

This is a technology that is still being developed. There are 3 pilot plants in the world. The technology would need to be scaled up and implemented very widely.

## **Fossil Fuel Based**

### ***Coal synfuels with CCS***

#### **GOAL**

Produce liquid fuels for transport from coal, and capture the carbon dioxide released in the process. 180 plants would be needed.

#### **COSTS**

This is a technology that is still being developed. New technologies will need to be developed, scaled up, and implemented.

## **Fossil Fuel Based**

### ***Fossil-based hydrogen fuel with CCS***

#### **GOAL**

Produce hydrogen fuel from fossil fuels, and capture and store all carbon dioxide. Currently, hydrogen is generally produced from natural gas. The scale of this production will need to increase by a factor of 10, and all carbon will need to be captured.

#### **COSTS**

We can produce hydrogen, but we need to develop reliable ways to transport it and safely use it to fuel cars.