ARCTIC NATURAL GAS

- **Lower energy costs**
- **Safe and reliable energy supply**
- **Reduce greenhouse gases**

The Economics of Northern Natural Gas

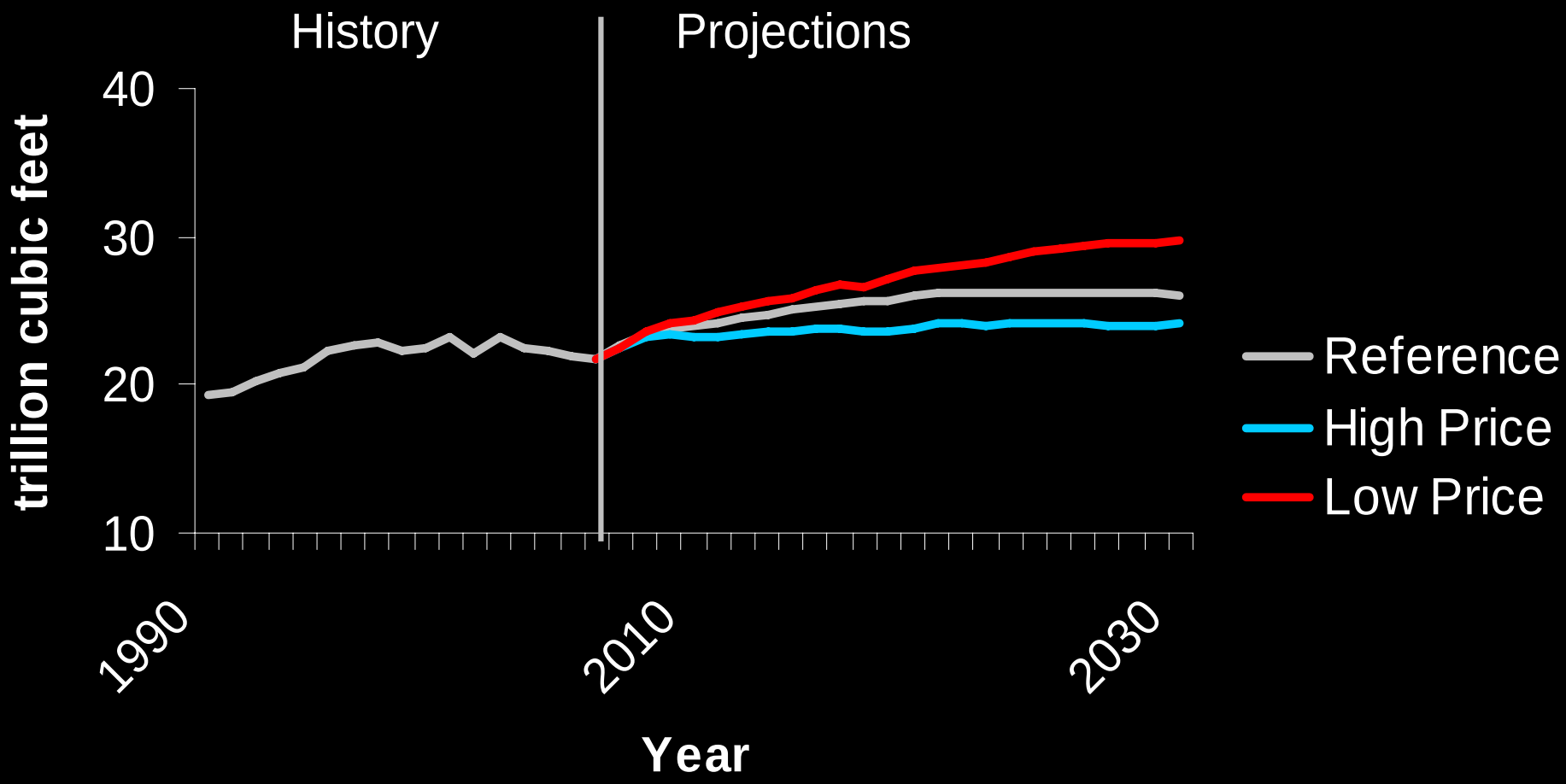
Mackenzie Gas Project

Imperial Oil

ConocoPhillips

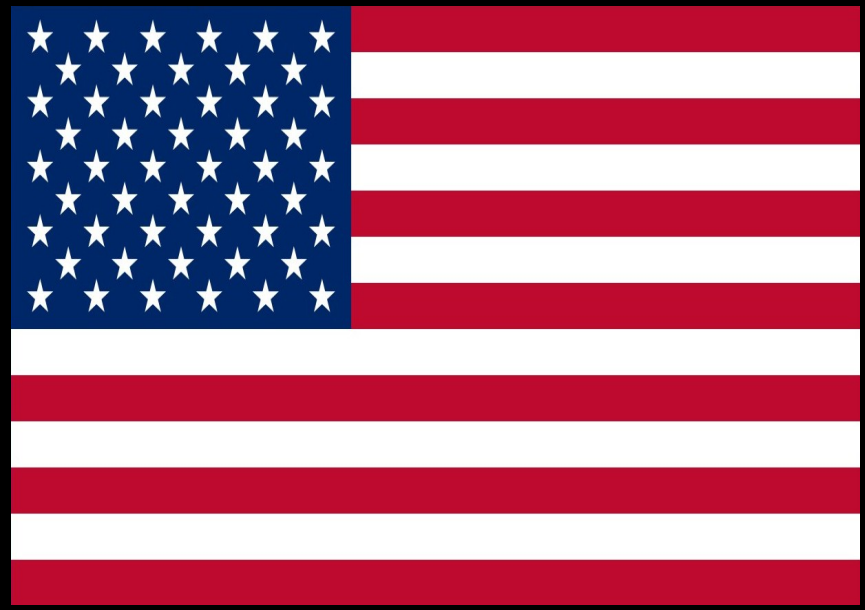
ExxonMobil

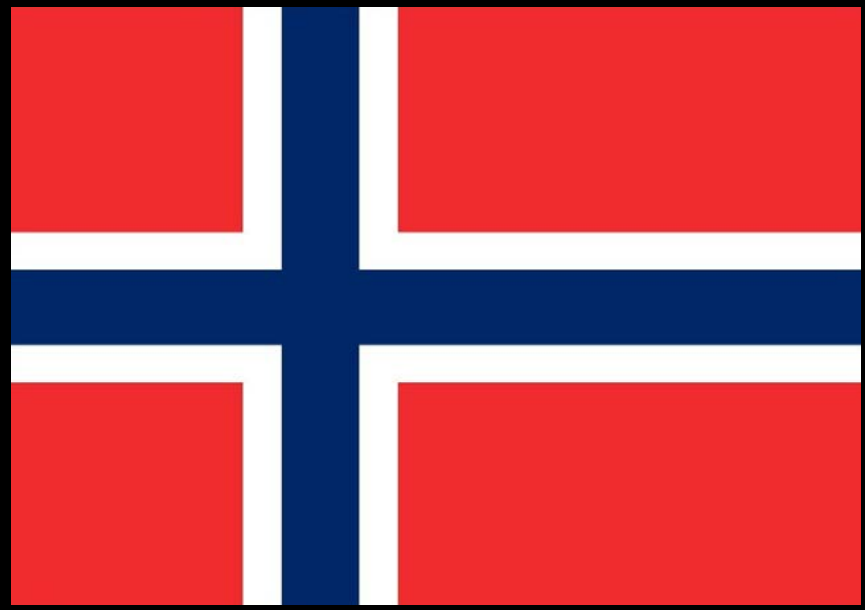
TOTAL NATURAL GAS CONSUMPTION
1990 - 2030
(trillion cubic feet)



Energy and Environmental Analysis, Inc.

an ICF International Company





No Arctic Gas Scenario

- No Mackenzie Valley Pipeline
- No Alaska Gas Pipeline
- Limited LNG arrivals

US

$298 billion

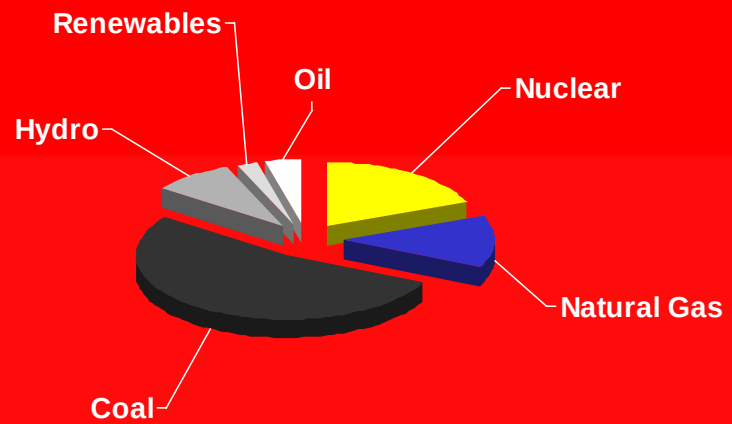
Canada

$40 billion

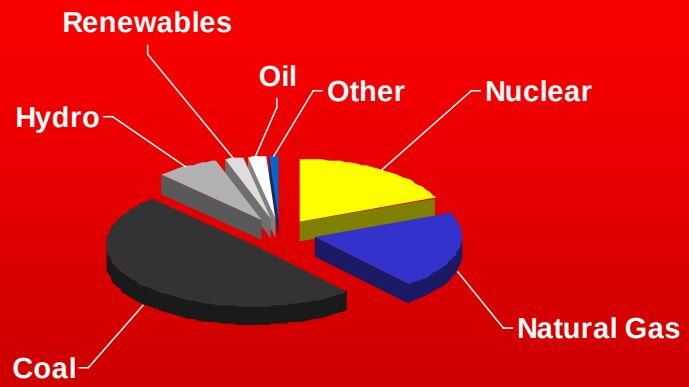
Extra costs 2014 to 2025

Security of Supply

USA Electricity Fuel Source 1993



USA Electricity Fuel Source 2006



Energy & the Environment

$$\text{Cemmissions} = \text{Population} \times \frac{\text{GDP}}{\text{person}} \times \frac{\text{energy}}{\text{GDP}} \times \frac{\text{C}}{\text{energy}}$$

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Population

The world's population size

$$\text{Cemmissions} = \text{Population} \times \frac{\text{GDP}}{\text{person}} \times \frac{\text{energy}}{\text{GDP}} \times \frac{\text{C}}{\text{energy}}$$

$\frac{\text{GDP}}{\text{person}}$

The economic activity related to population size

$$\text{Cemmissions} = \text{Population} \times \frac{\text{GDP}}{\text{person}} \times \frac{\text{energy}}{\text{GDP}} \times \frac{\text{C}}{\text{energy}}$$

$$\frac{\textbf{energy}}{\textbf{GDP}}$$

The energy intensity needed
for each unit of economic activity

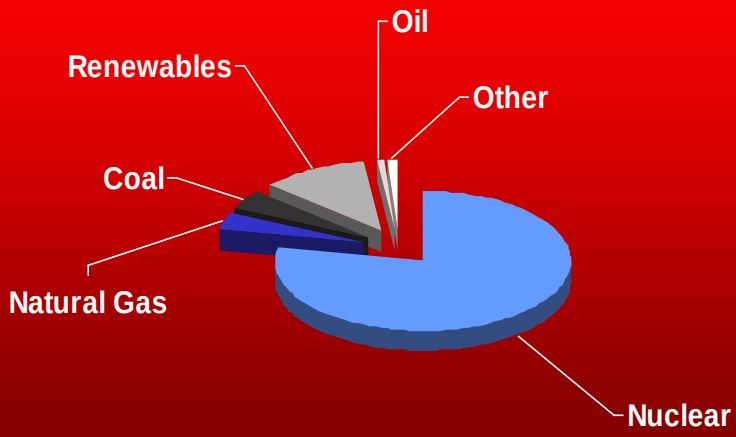
$$\text{Cemmissions} = \text{Population} \times \frac{\text{GDP}}{\text{person}} \times \frac{\text{energy}}{\text{GDP}} \times \frac{\text{C}}{\text{energy}}$$

$$\mathbf{\frac{C}{energy}}$$

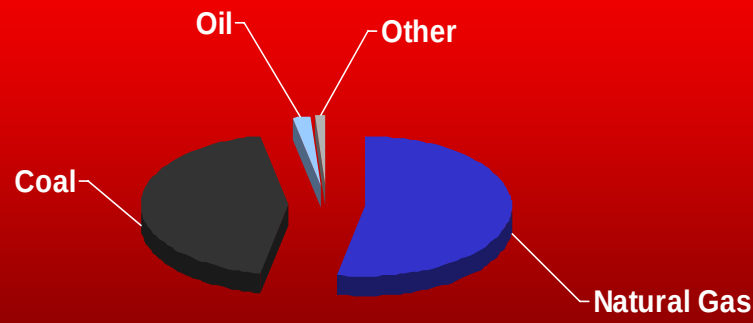
Carbon content of the fuels used

$$\text{Cemmissions} = \text{Population} \times \frac{\text{GDP}}{\text{person}} \times \frac{\text{energy}}{\text{GDP}} \times \frac{\text{C}}{\text{energy}}$$

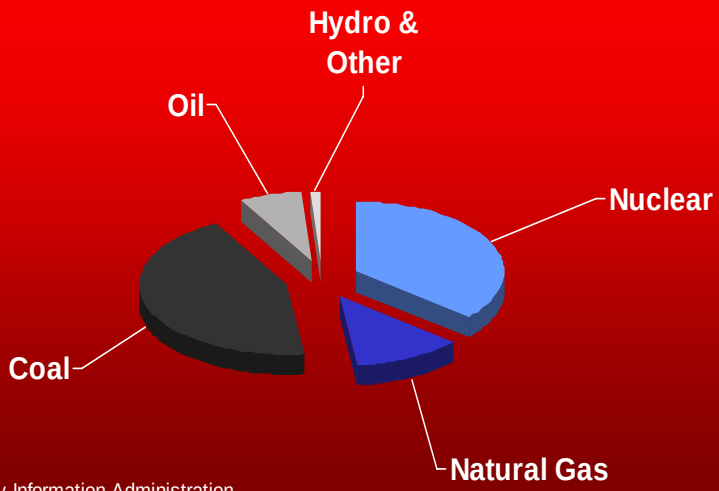
France Electricity Fuel Source 2004



UK Electricity Fuel Source 2004

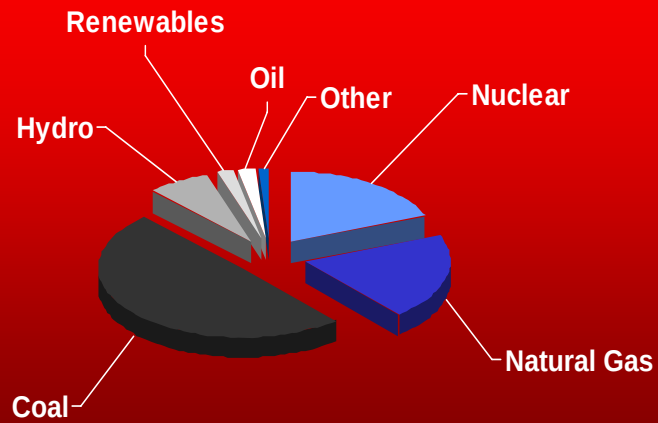


S.Korea Electricity Fuel Source 2004

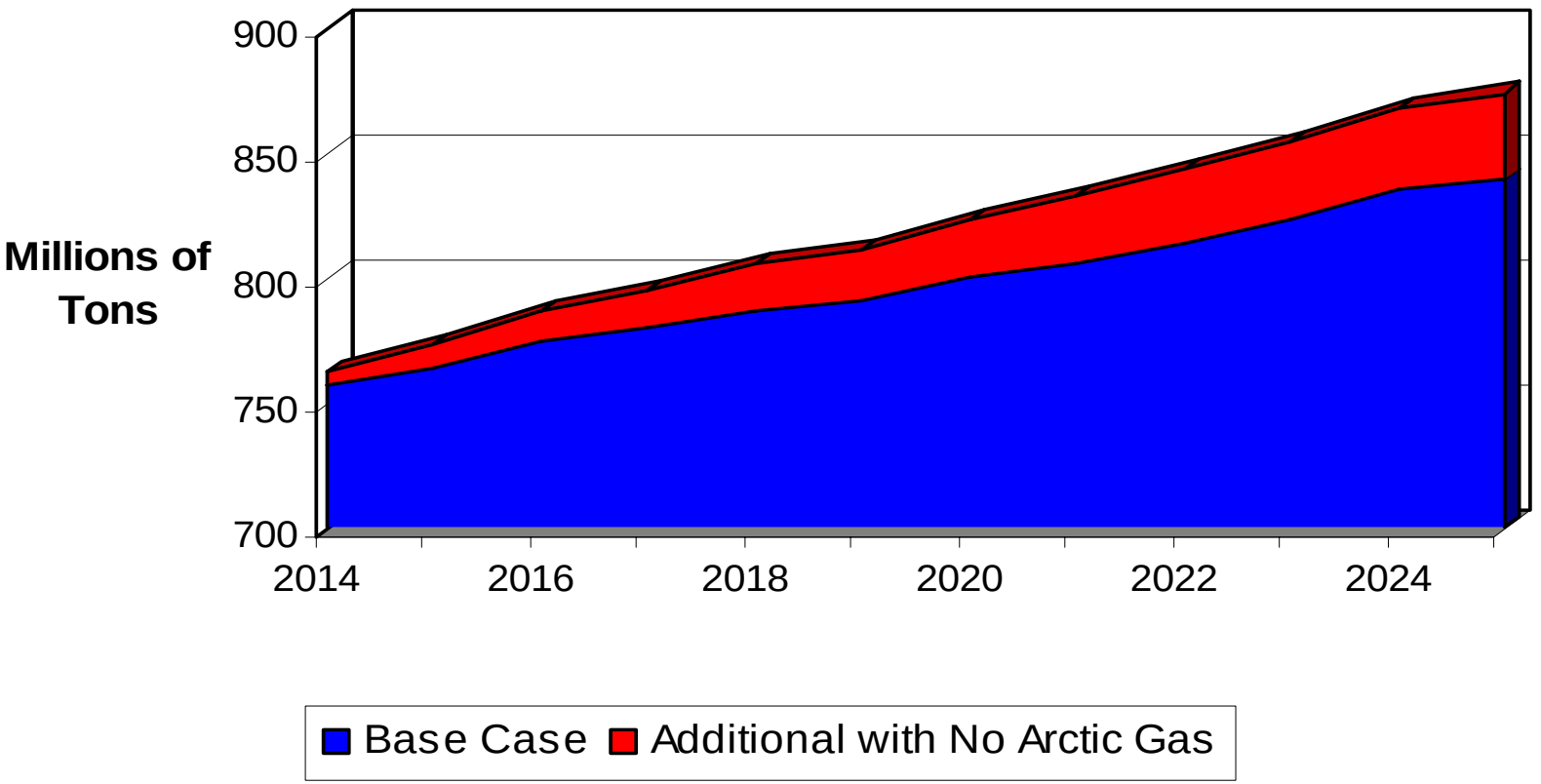


Source: Energy Information Administration

USA Electricity Fuel Source 2004



Lower-48 Carbon Emissions



- $338 billion savings
- 281 million tonnes carbon reduction

- **Reduce the cost of shipping gas**
- **Clear timeframes for regulatory reviews**
- **Strike a joint Task Force on northern pipelines**

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- **Safe and reliable energy supply**
- **Reduce greenhouse gases**