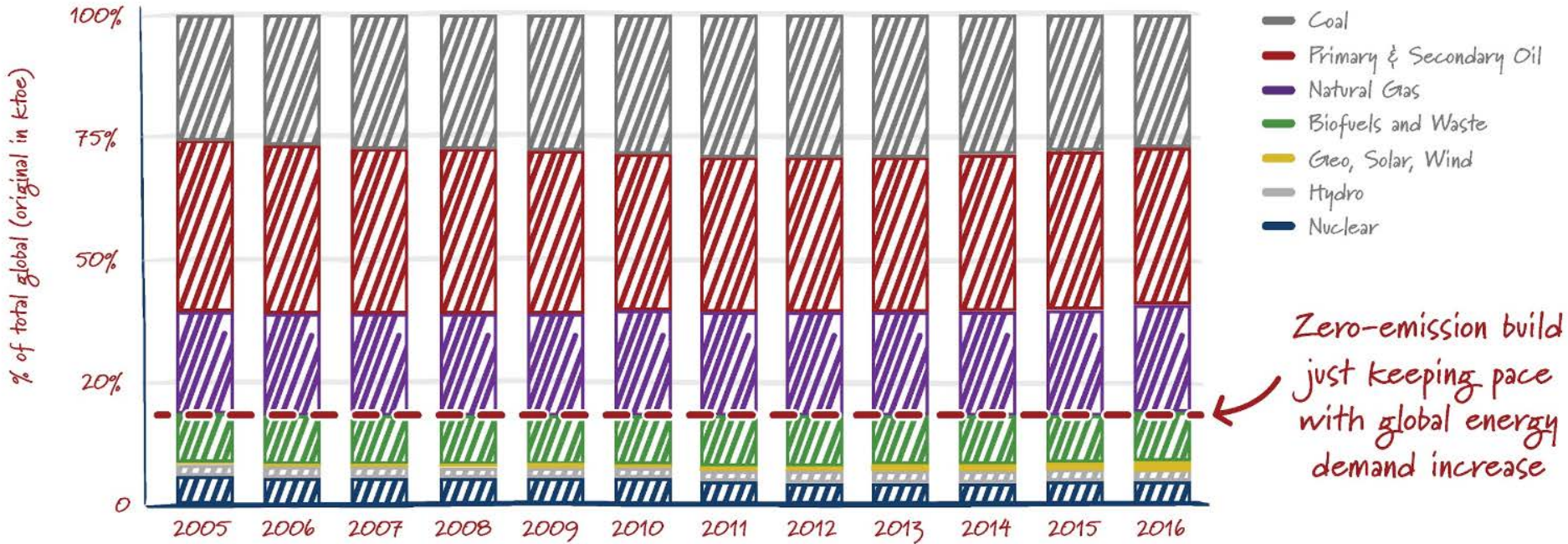


# Humanity is not yet transitioning to a zero-emission energy system

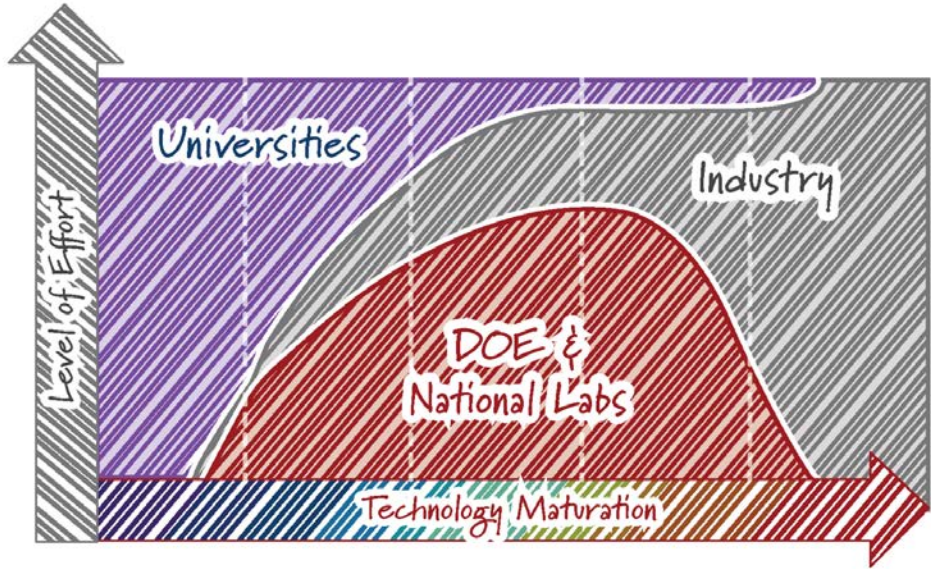
## Share of total primary energy supply by fuel type



Zero-emission build just keeping pace with global energy demand increase

Source: International Energy Agency World Energy Balances 2018

# DOE National Laboratories Relationship to Universities and Industry in the Energy Innovation System



## Commercialization

Technology available for wide-scale market use

## Demonstration

System demonstrated in operational environment

## System Testing

System performance confirmed at pilot-scale

## Development

Technology component validated/integrated

## Discovery

Concept identified/proven at laboratory-scale

## CO<sub>2</sub> Emissions from Fuel Combustion (2017)

