

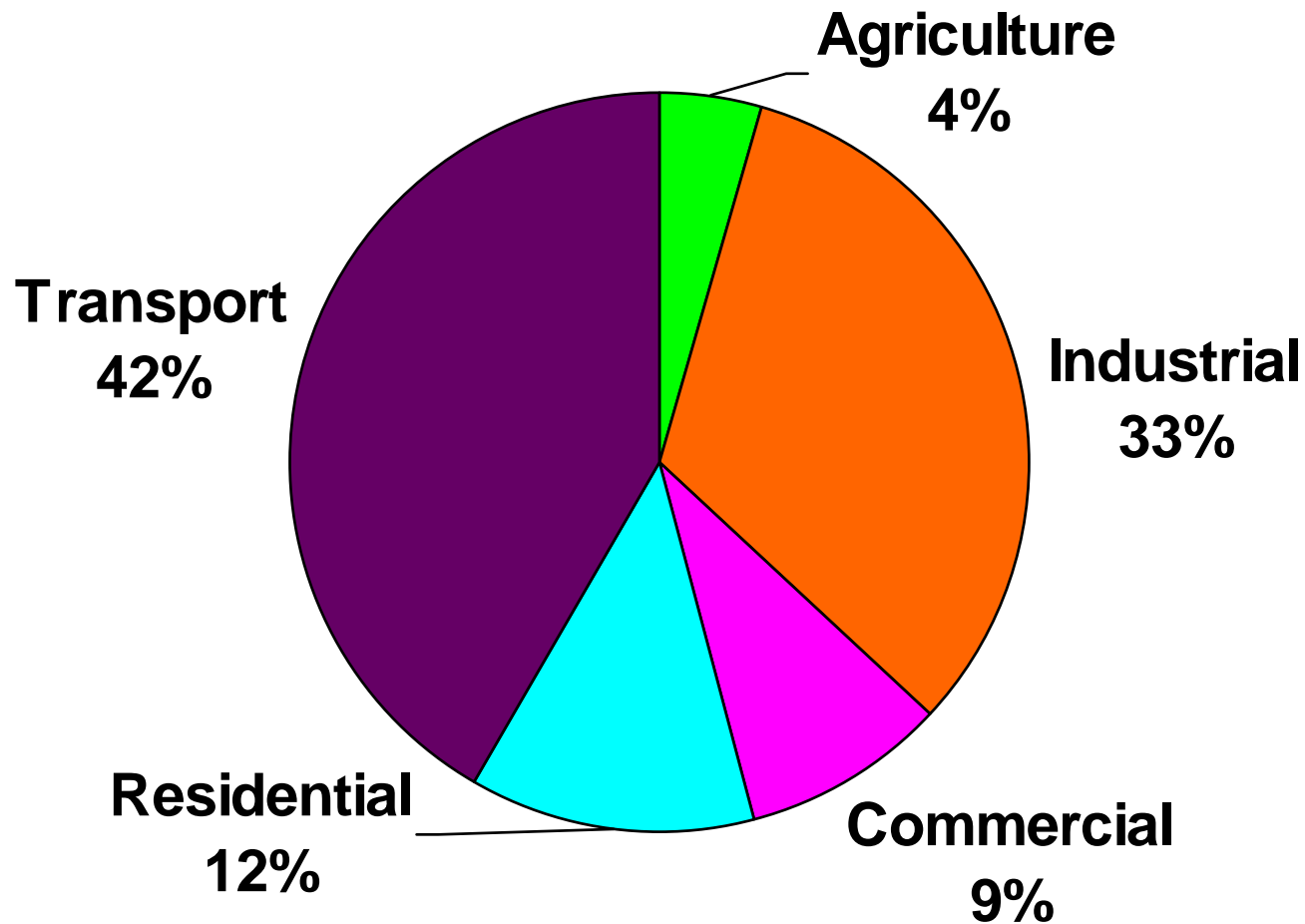


# Alternative transport fuels

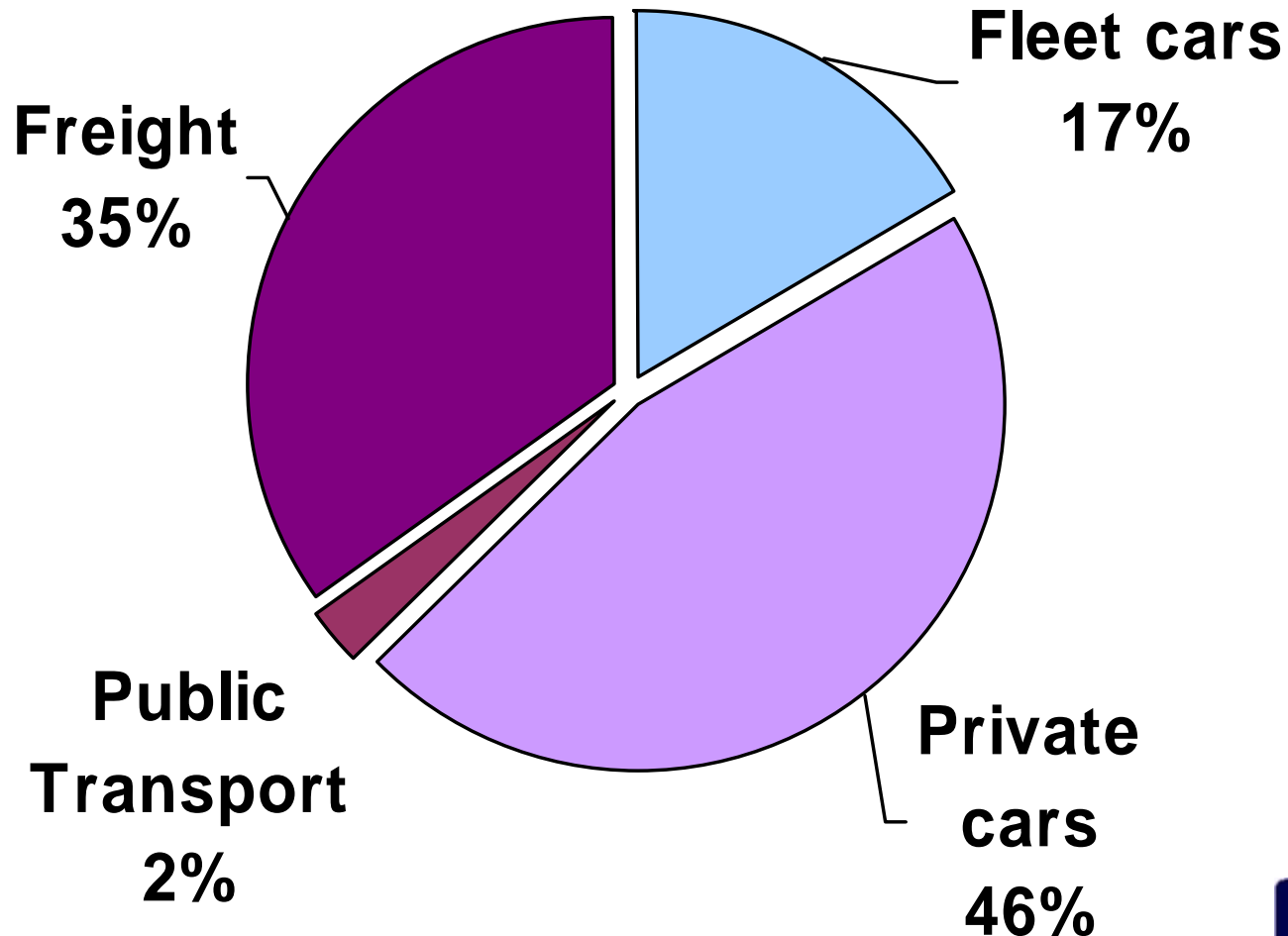
---

## Bioethanol and Biodiesel

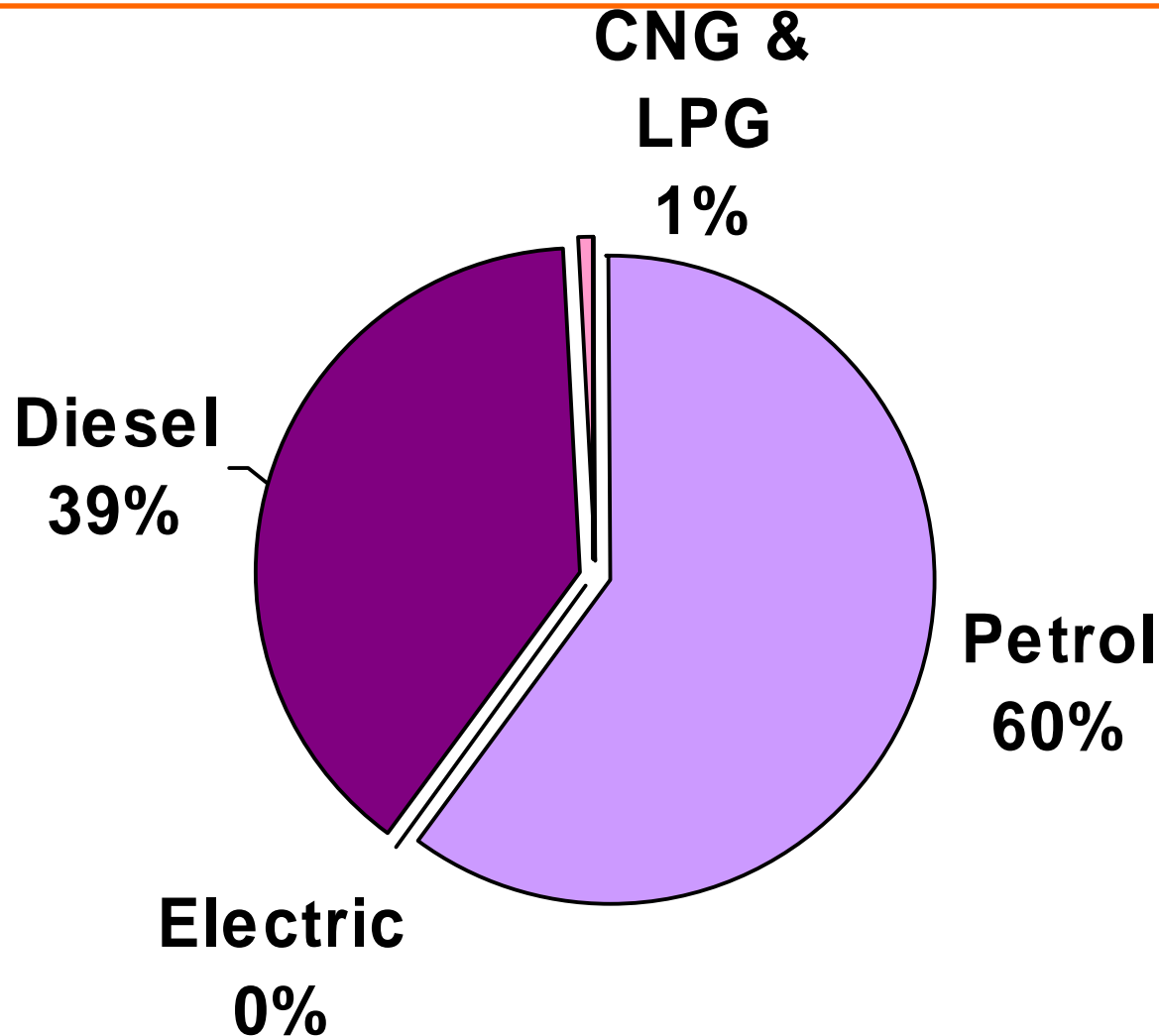
# New Zealand's energy use



# Transport energy use



# Transport energy breakdown



# Government policies

---

## Biofuel use meets objectives of:

- National Land Transport Strategy
- Climate change programme
- Sustainable Development for NZ: Plan of Action
- New Zealand Waste Strategy
- National Energy Efficiency and Conservation Strategy

**Renewable Energy Target : 30 PJ by 2012**

**2 PJ indicative target for renewable transport fuels**

# Biofuels

---

- **Two biofuel options for our current car fleet:**
  - Bioethanol – up to 5 to 10% ethanol (E5 or E10)**
  - Biodiesel – up to 5% biodiesel (B5)**
- **No conversions or new vehicle technologies required**
- **Can be produced locally in NZ**

# Ethanol production

---

- From whey (dairy industry waste stream)
- Current NZ production up to 11 million litres (0.3 PJ/year)
- Potential for new ethanol plants at South Island dairy factories
- Energy inputs to ethanol manufacture:
  - 30% steam from biogas
  - 30% waste steam from co-gen plant
  - 40% steam from natural gas

# Ethanol-Petrol Blends

---

- **EECA application to ERMA for E10 approved in August 2003**
- **Zero excise rate for ethanol for blending with petrol retained for min. 2 years from Sept 2003**
- **Currently working with oil companies and motor industry to facilitate commercial sale**
- **Pump price expected to be very similar to neat petrol**

# Biodiesel

---

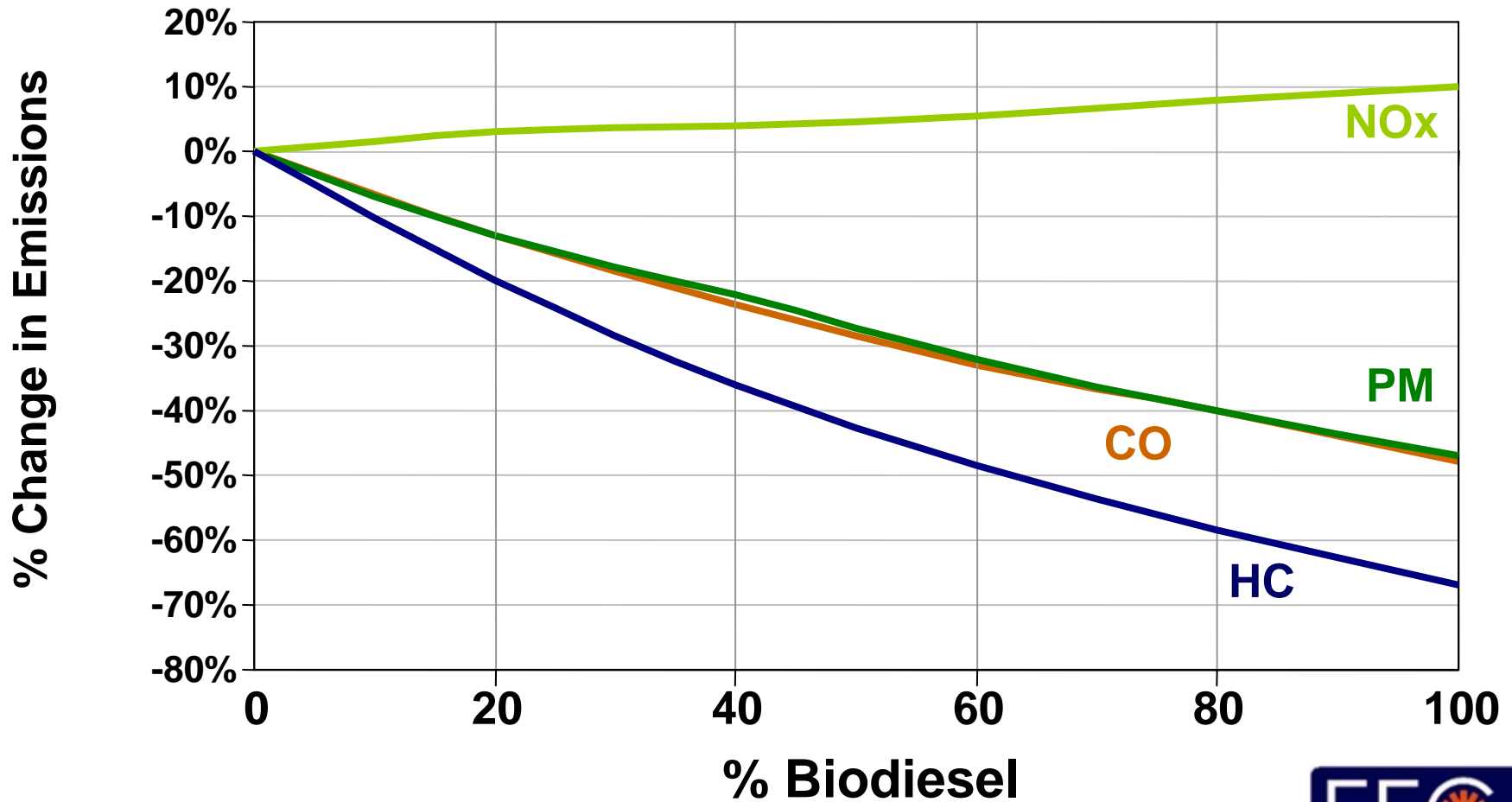
- **5 PJ biodiesel available from current NZ tallow and used vegetable oil (152 million litres)**
- **B5 allowed for in World-Wide Fuel Charter**
- **B100 accepted by many European diesel engine manufacturers**
- **Competitive with oil at US25/bbl if CO<sub>2</sub> reduction and air quality benefits captured**
- **Estimated 5 c/litre benefit for air quality nationally and 19 c/litre in central Auckland**

# Biodiesel benefits

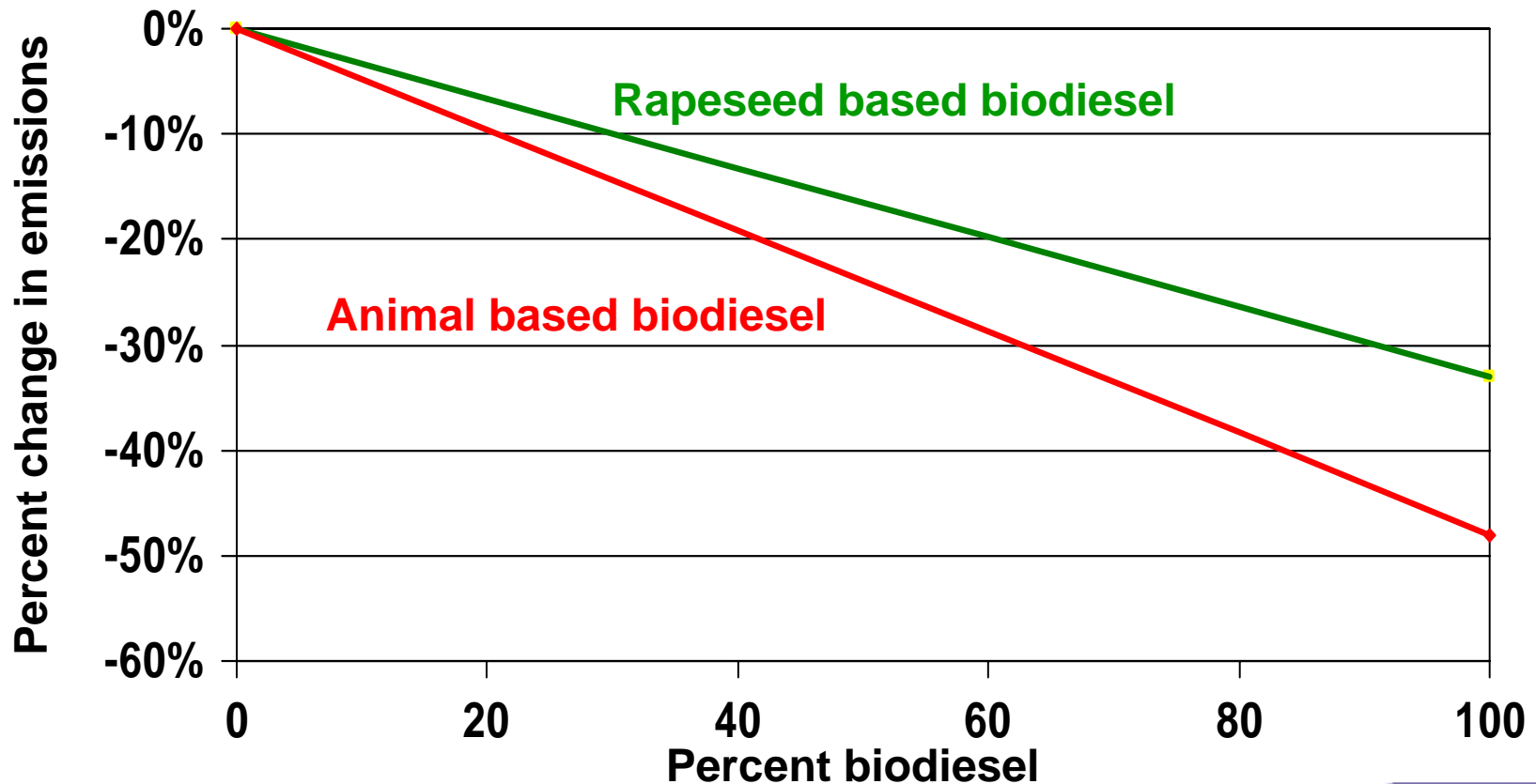
---

- High cetane, zero sulphur fuel with excellent lubricity
- Reduces PM, CO, HC
- Significantly reduces PAH and nPAH (potential carcinogens) as biodiesel contains no aromatics
- Slightly increased NOx emissions
- Reduces engine noise
- Reduced ozone forming potential
- Safer – more biodegradable than sugar, less toxic than table salt, flash point higher than petroleum diesel
- Renewable fuel - net CO<sub>2</sub> reduced

# Biodiesel Emissions



# Biodiesel source PM impact



# B5 biodiesel blends

---

- **BP hoping to demonstrate biodiesel in the Auckland area this year**
- **Development of a NZ Standard for biodiesel underway**
- **Incentives for biodiesel being investigated**
- **Biodiesel to be included in the ARC bus fleet emissions model**

# Improving energy choices

[www.eeca.govt.nz](http://www.eeca.govt.nz)