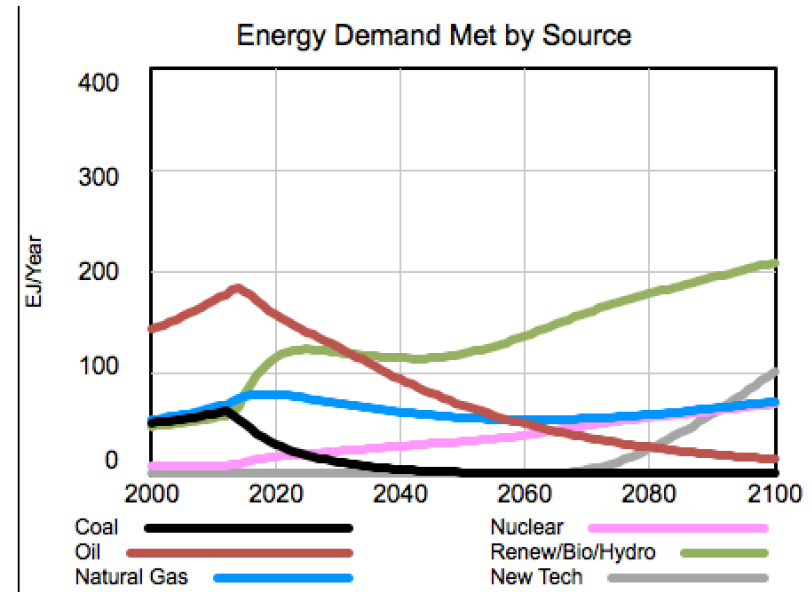


# Team Quark (Group 4): Neutrons, Fuel Cells, and Trees

Our recommendations

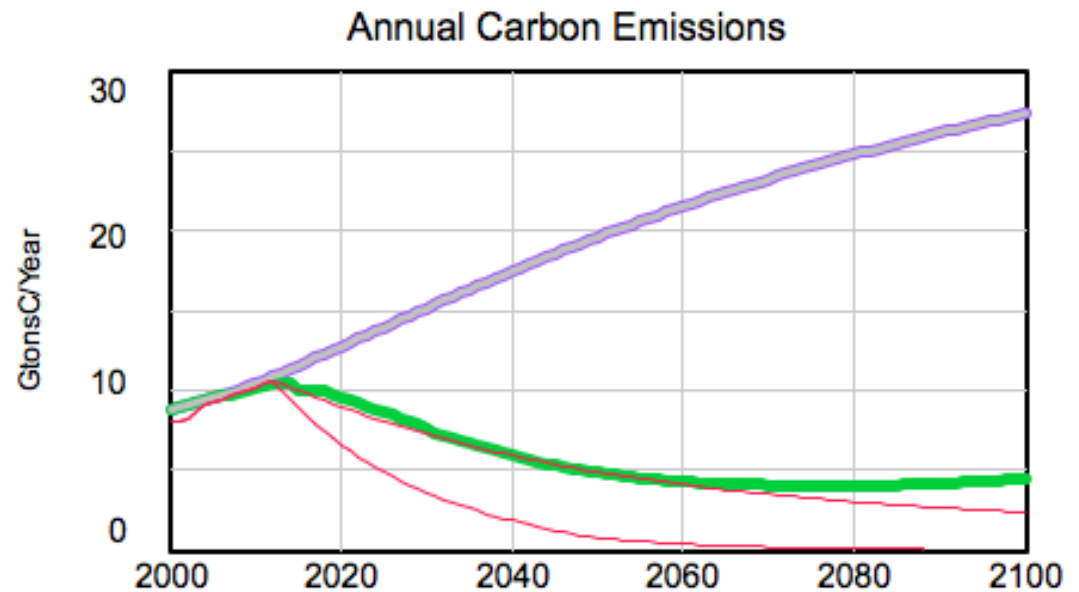
- **Accelerated coal retirement** [0.1 in 2012]
- **Performance standard of 40** [starting 2012]
- **Subsidize renewables** [3 from 2012-2040], **nuclear** [3 from 2012-2020], **new tech** [2 from 2020-2050]
- **New tech (fuel cell) breakthrough** [.95 in 2050]
- **Land use** [REDD .8, other gasses .9]

2100 Temperature Increase = 2.0 deg C



# Team E=mc<sup>Hammer</sup>: Moderate Subsidies, Moderate Taxes

- Subsidies and taxes timed for smooth transition to renewable sources mid-century
- Natural gas for initial transition
- Slow carbon tax increase
- Long-term GDP growth of 1.5%; good business prospects



2.4°C increase by 2100

# EthicEnergy: Brains, Batteries, and Bugs

- **Aggressive Incentives for Green Energy Shift:**

- Subsidy adjustments
- R&D expansion for generation and storage
- Regulations (carbon density)
- New job / industry training

- **Increase Energy Efficiency:**

- Public awareness & education
- Efficiency regulations

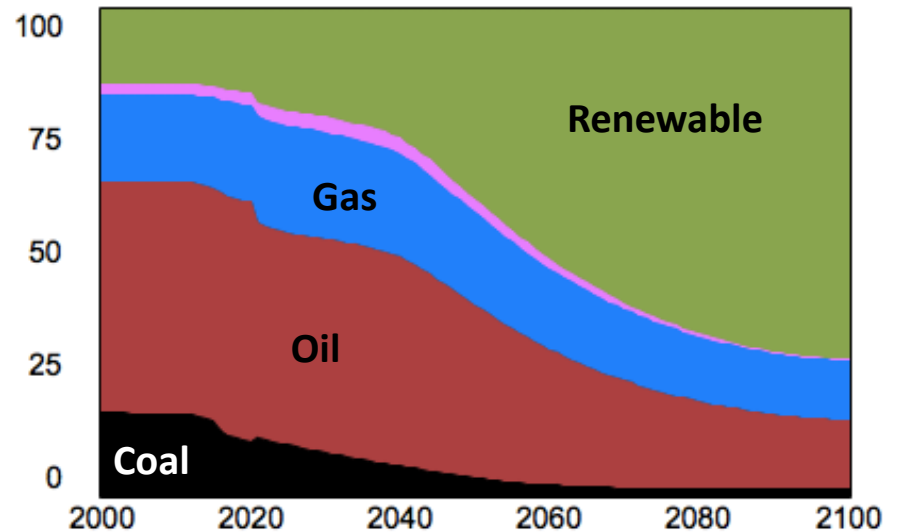
- **Social Change:**

- Land use/deforestation
- Reuse and recycle

- **Clean Energy Funding for Developing Communities:**

- Maintain economic growth
- Investment in green infrastructure

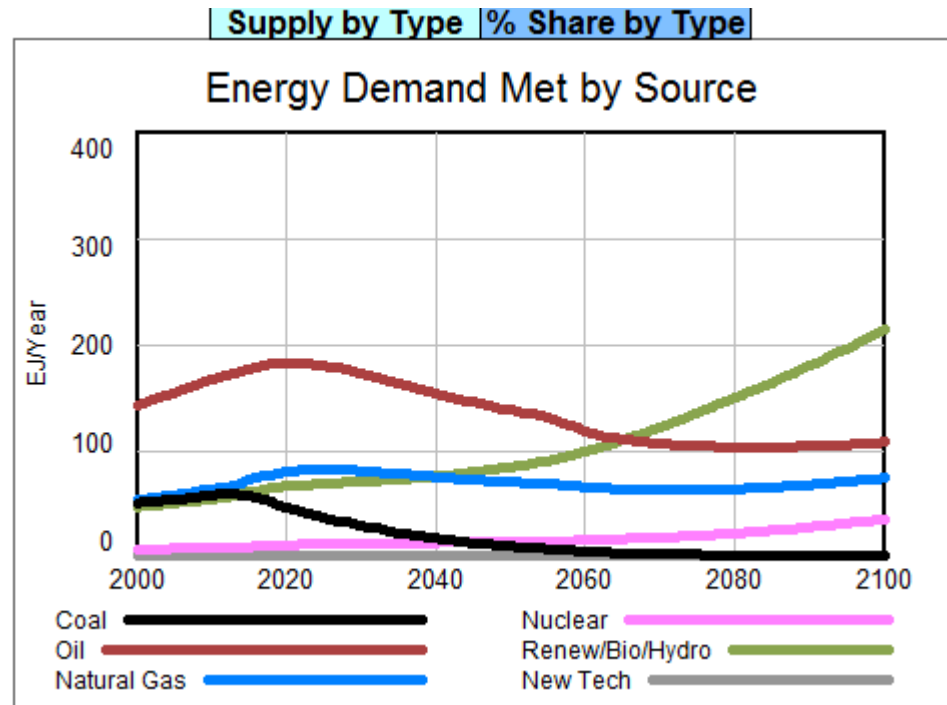
Energy Share by Source



2100 Temperature Increase = 1.9 C

## The Long Haul Truckers: Sustainable agriculture, renewables, and rebalanced growth

- GDP growth @ 3% short term, 1.5% long term
- Energy efficiency 3% efficiency improvement per year as noted by DOE
- Delayed carbon tax to minimize impact on industry
- Slight taxes on fossil fuels
- Subsidies for renewable energies with moderate efficiency gains
- 30% reduction in other GHGs

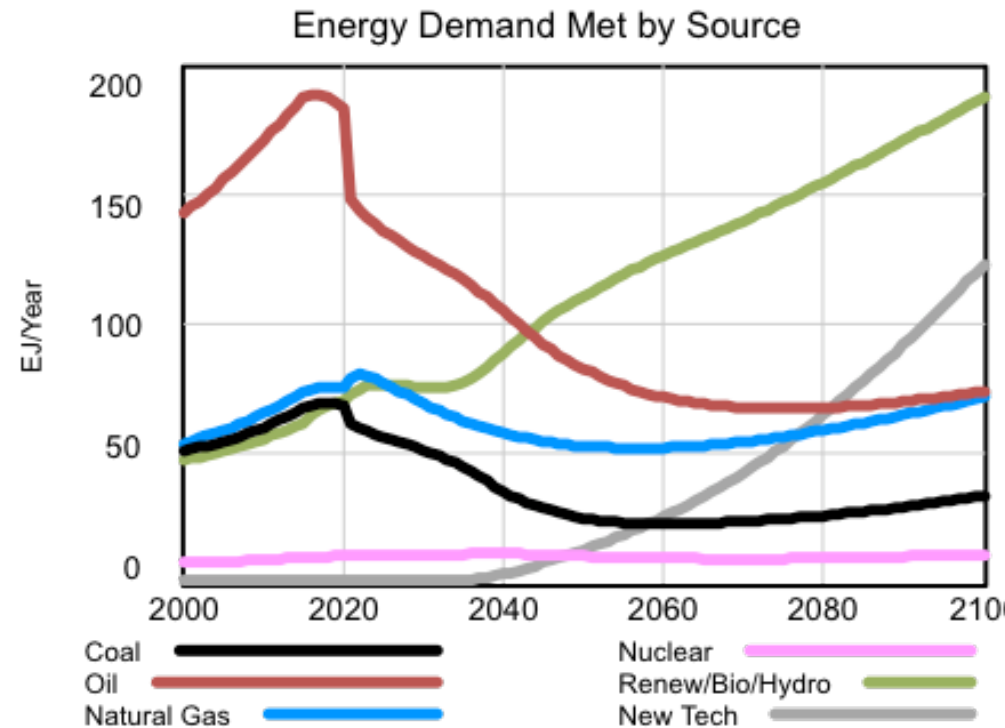


2100 Temperature Increase: 2.9 degrees C

# Team E3CV: Timing & The Wedge Theory

## Our recommendations

- **Emissions price** \$55 phased in from 2015 to 2025
- **EE Annual improvement rate of new capital** 7%
- **Breakthrough cost reduction** New Tech .95, Renewables .3
- **Oil & Coal price** -5, -6 starting in 2020
- **Renewable & Biomass subsidy** 3
- **REDD** .8
- **Other gases** .8

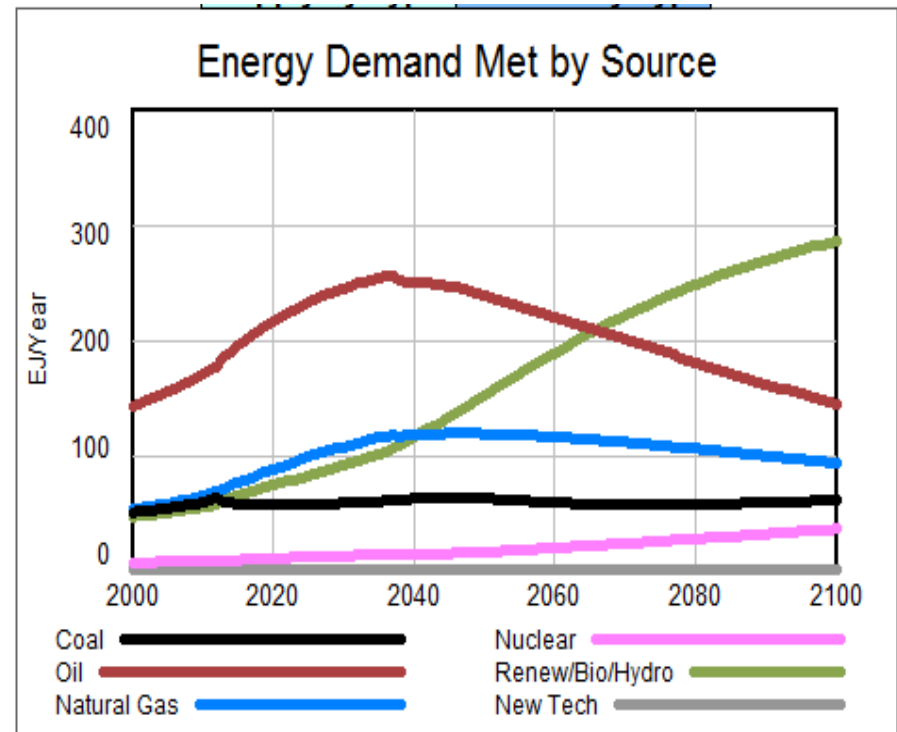


2100 Temperature Increase = 2.3 degrees C

# Team 21 (Barely Legal): Bay Area Weather with a Strong Economy

## Our recommendations

- REDD 0.6, Other Gases 1
- Immediate Subsidization: Renewables 5, Biomass 3, Oil, Gas & Newtech 1, Coal -2
- Emissions Price: \$50, starting in 2037, 20 year ramp up
- Renewables/NewTech/Biomass Breakthrough 2032 (0.2/0.1/0.1)
- Nuclear Breakthrough in 2042 (0.12) followed by Subsidization of 1

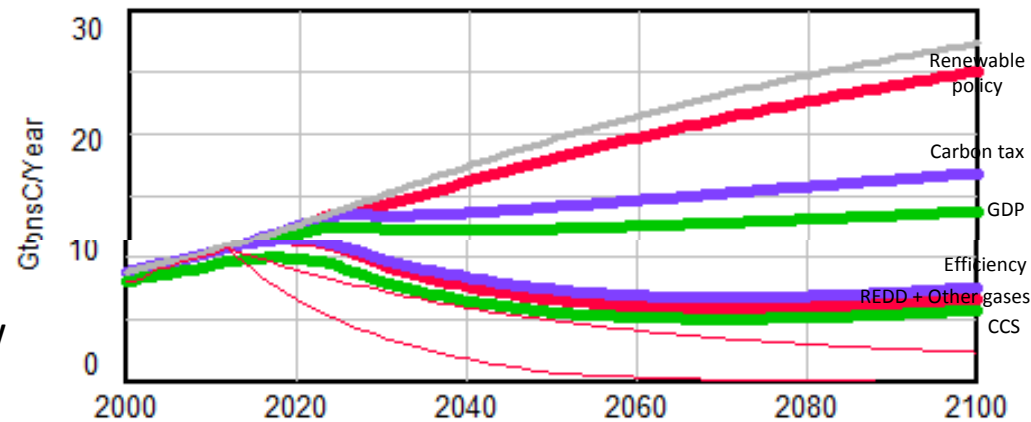


2100 Temperature Increase = 2.8 °C

# Team B●M●W: Renewables, Efficiency, CCS

- Our recommendations:

- Renewables subsidies **\$5/GJ 2012-2030**  
+ Renewables breakthrough cost reduction **40%** starting **2020**
- Carbon tax **\$50/ton** starting **2020** + achieve full price in **10** years
- GDP **3%** growth rate
- **6%** drop of energy intensity for new capital
- REDD **0.7** + Other gases **0.7**
- CCS
  - Increase old coal plant phase out rate by **3%**
  - Reduce emissions from coal by **30%**
  - Increase in coal price **\$2/GJ**



2100 Temperature Increase = 2.3 degrees C