



En-ROADS Climate Change Simulation

Team 17

Nick Montes, Lude Rong, Sidd Shrikanth, Haley So

Simulation Overview

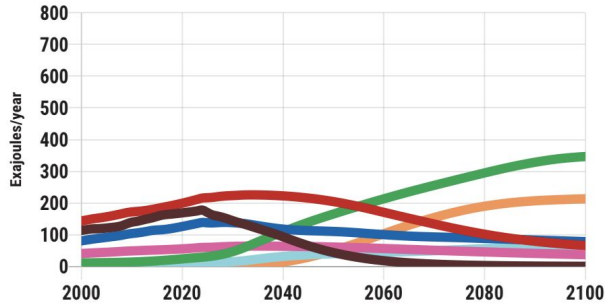


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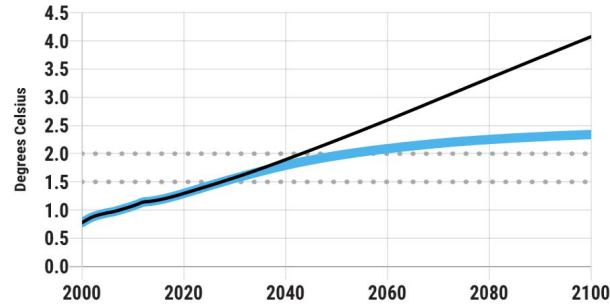
🔗 Share Your Scenario

Global Sources of Primary Energy



COAL OIL GAS RENEWABLES BIOENERGY NUCLEAR NEW TECH

Temperature Change



BUSINESS AS USUAL CURRENT SCENARIO

+2.3°C

+4.2°F

Temperature Increase by 2100

Energy Supply

- Coal: taxed (slider at ~75%)
- Oil: taxed (slider at ~75%)
- Natural Gas: taxed (slider at ~75%)
- Bioenergy: status quo (slider at ~25%)
- Renewables: subsidized (slider at ~25%)
- Nuclear: subsidized (slider at ~75%)
- New Technology: breakthrough (slider at ~75%)
- Carbon Price: medium (slider at ~25%)

Transport

- Energy Efficiency: increased (slider at ~75%)
- Electrification: incentivized (slider at ~75%)

Buildings and Industry

- Energy Efficiency: increased (slider at ~75%)
- Electrification: incentivized (slider at ~75%)

Growth

- Population: low growth (slider at ~25%)
- Economic Growth: status quo (slider at ~50%)

Land and Industry Emissions

- Deforestation: moderately reduced (slider at ~75%)
- Methane & Other: moderately reduced (slider at ~95%)

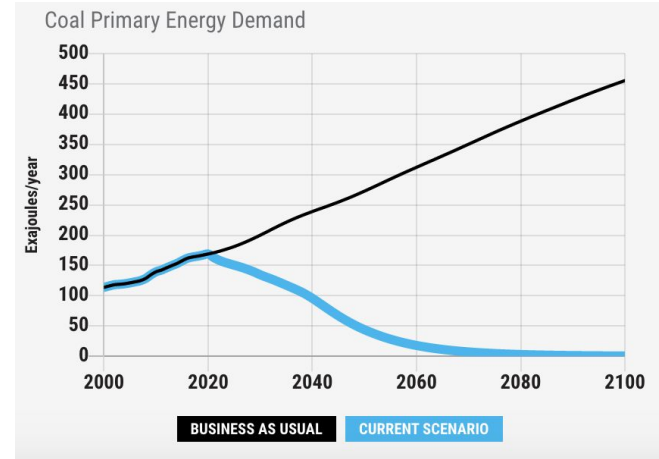
Carbon Removal

- Afforestation: medium growth (slider at ~75%)
- Technological: medium growth (slider at ~75%)



Coal

Sales Price	~\$50/ton, recently increased
Current Tax Rate	~\$1/ton (2% of the sales price)
Future Tax	\$10/tce (20% of the sales price)
Tax Start Year	2020
Tax Stop Year	2100

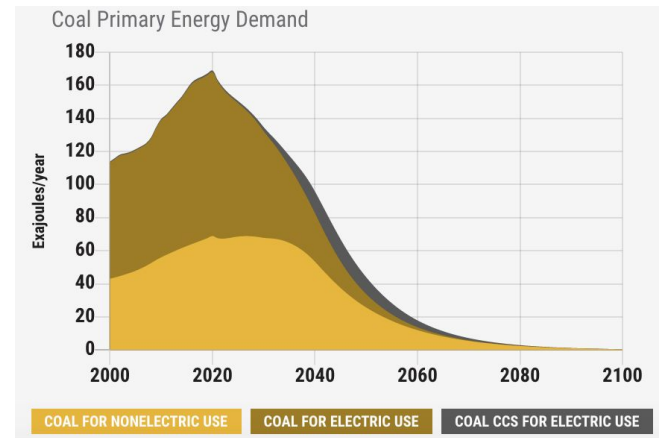


Stop building new coal infrastructure Yes

▶ Year to stop building new coal infrastructure

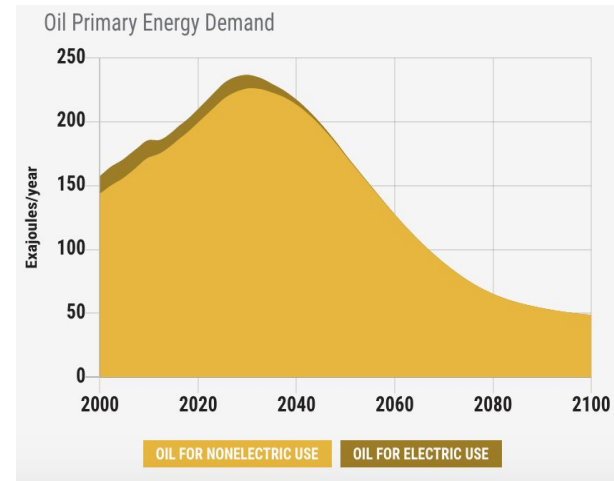
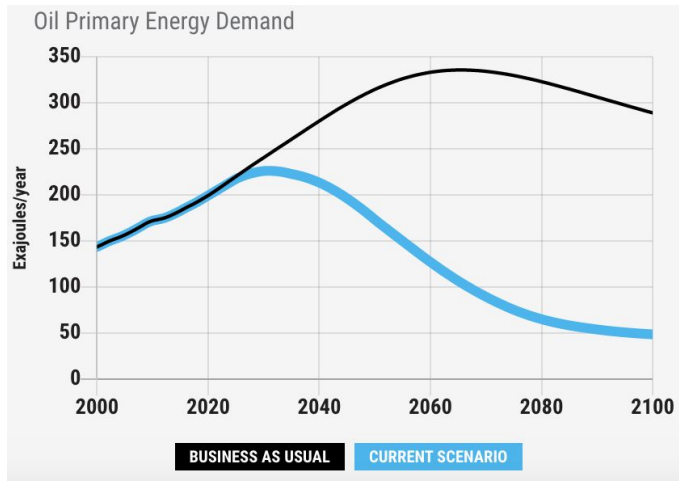
▶ Coal plant accelerated retirement %

▶ Coal carbon capture & storage (CCS) (tax/subsidy) \$/kWh



Oil

Sales Price	~\$40/boe, recently increased
Current Tax Rate	~\$20/ton (average of 50%)
Future Tax	\$28/tce (70% of the sales price)
Tax Start Year	2025
Tax Stop Year	2100



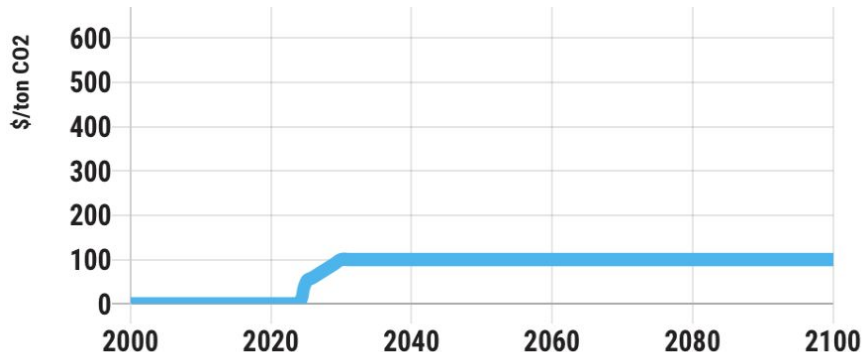
CARBON TAX (1/2)

Key Inputs

- \$50 carbon price starting in 2025, following international agreement
- Rising to \$100 (in 2011\$) by 2030

Rationale

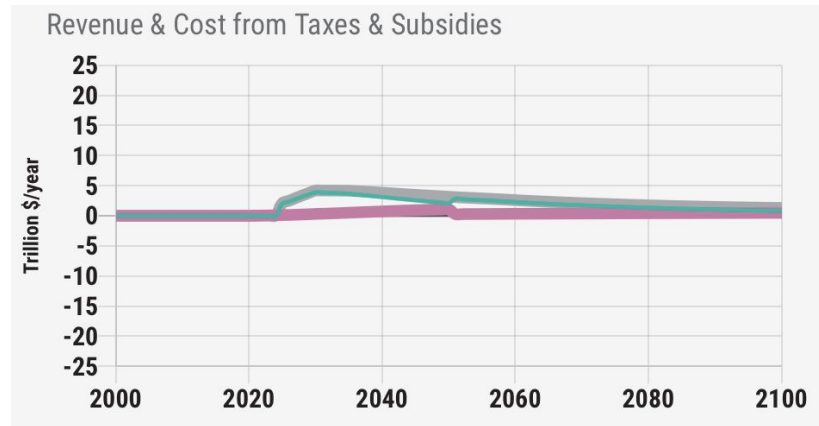
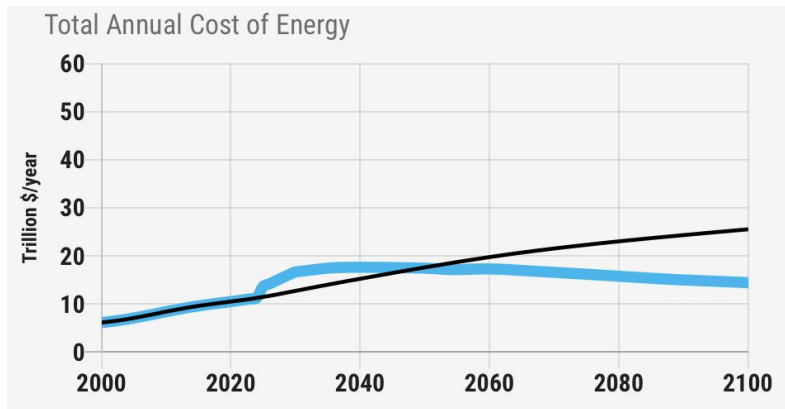
- Major policy proposals, including those by the Climate Leadership Council, envision a starting price of roughly \$50. However, we conservatively assume that political will to continue sharp annual increases will moderate around \$100/tCO₂.
- Such prices are well within the range of existing carbon markets - for instance, EU ETS credits trade in the \$30-\$40 range



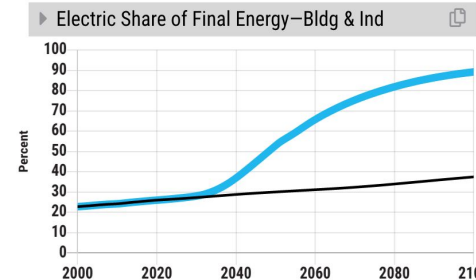
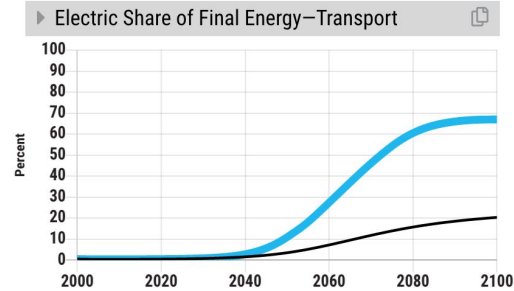
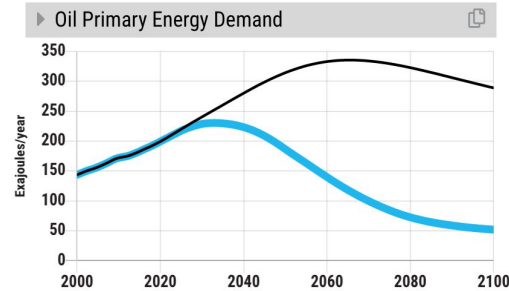
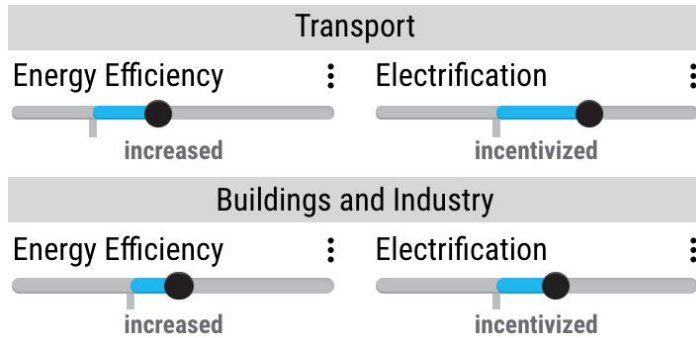
CARBON TAX (2/2)

Key Takeaways

1. Energy prices would rise somewhat initially, but fall significantly over time
2. Carbon taxes would generate over \$4tn annually in the coming decade, providing substantial revenue to fund subsidies and direct payments to vulnerable populations



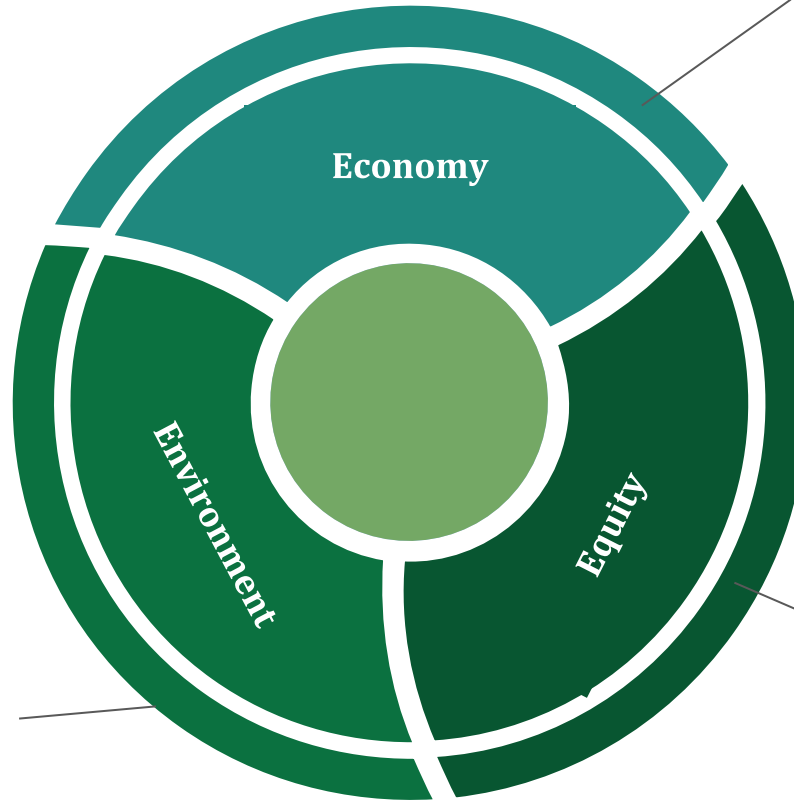
Transport, Buildings & Industrial



	Our Scenario	Business as Usual
Transport Efficiency	+1.7%	0.5%
Transport Electrification	+2.3%	0.0%
Bldg. & Ind. Efficiency	+2.1%	1.2%
Bldg. & Ind. Electrification	+1.5%	0.0%

Transport, Buildings & Industrial

- Reduction in local pollution
- Improved indoor and outdoor air quality



- Building efficiency is a “win - win” for landlords and tenants
- Requires proper financing tools
- Creation of new jobs

- Promotes public transportation
- EVs price needs to drop to avoid pricing out low income groups

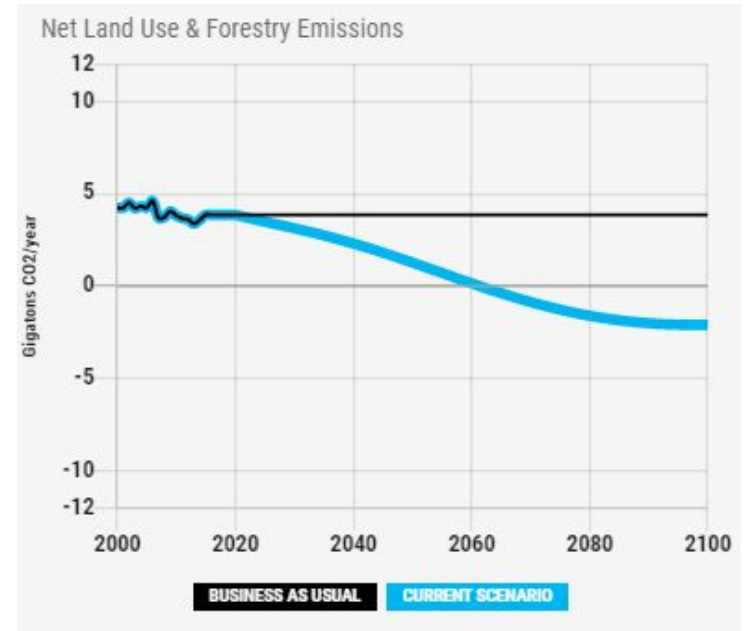
Protecting Forests

Propose:

- Decrease deforestation by 2% a year starting 2020
- Utilize 45% available land to regrow trees
 - 10 years to secure land
 - 30 years to grow the trees

Many benefits to preserving and planting more trees:

- Promotes carbon removal + betters air quality
- Increases number of jobs
- Helps save energy by regulating building temperature
- Lasting impacts



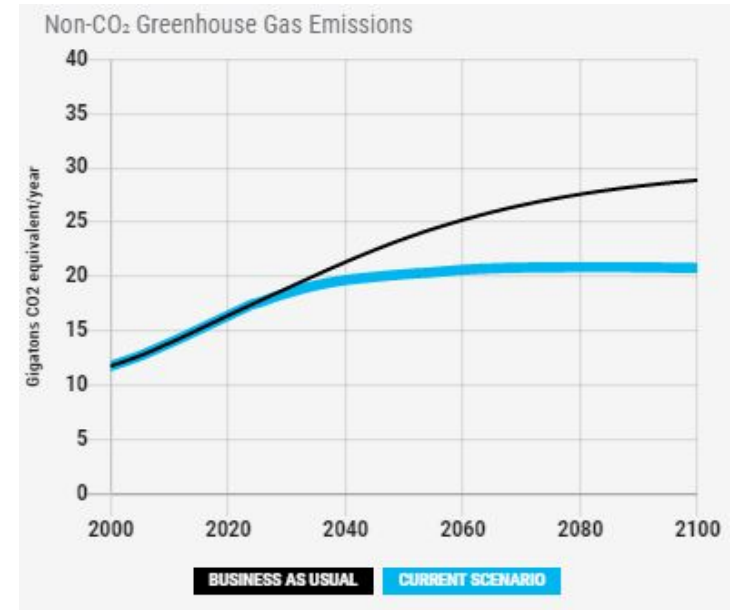
Methane & Gases

Propose:

- Limit % increase of agricultural and waste emissions to 1%
- Decrease energy and industry emissions by 5%

Rationale:

- Before ambitiously decreasing gas emissions, first we'll try to reach a plateau



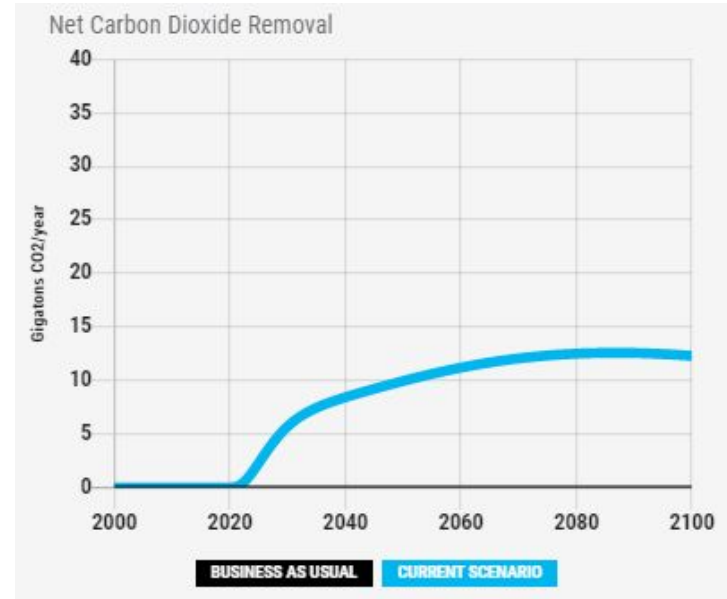
Technological Carbon Removal

Propose:

- Increase CO2 removal from all possible approaches by 50%

Rationale:

- Moderate yet optimistic about the current technologies and future discoveries to pull CO2



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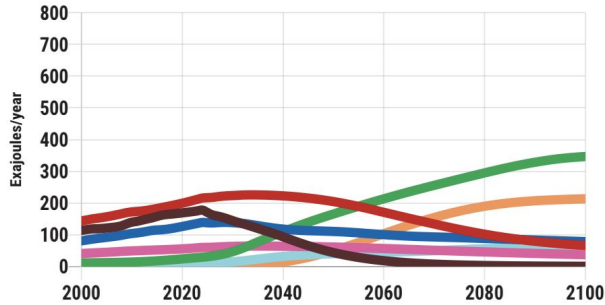


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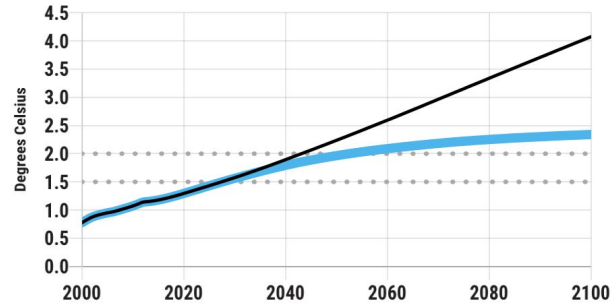
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Methane & Other: moderately reduced (slider at ~80%)

Carbon Removal

Afforestation: medium growth (slider at ~50%)

Technological: medium growth (slider at ~50%)



A glass globe of the Earth is the central focus, resting on a mossy rock. The globe is transparent, showing the continents and oceans. The background is a soft-focus forest scene with sunlight filtering through the trees, creating a warm, natural atmosphere. The text "THANK YOU!" is centered over the globe.

THANK YOU!