

Carbon Tax Analysis for Hawai'i

Data, Methods and Scenarios

Update to the State of Hawai'i Climate Change Commission
October 28, 2020



ISR
UNIVERSITY of HAWAII at MĀNOA

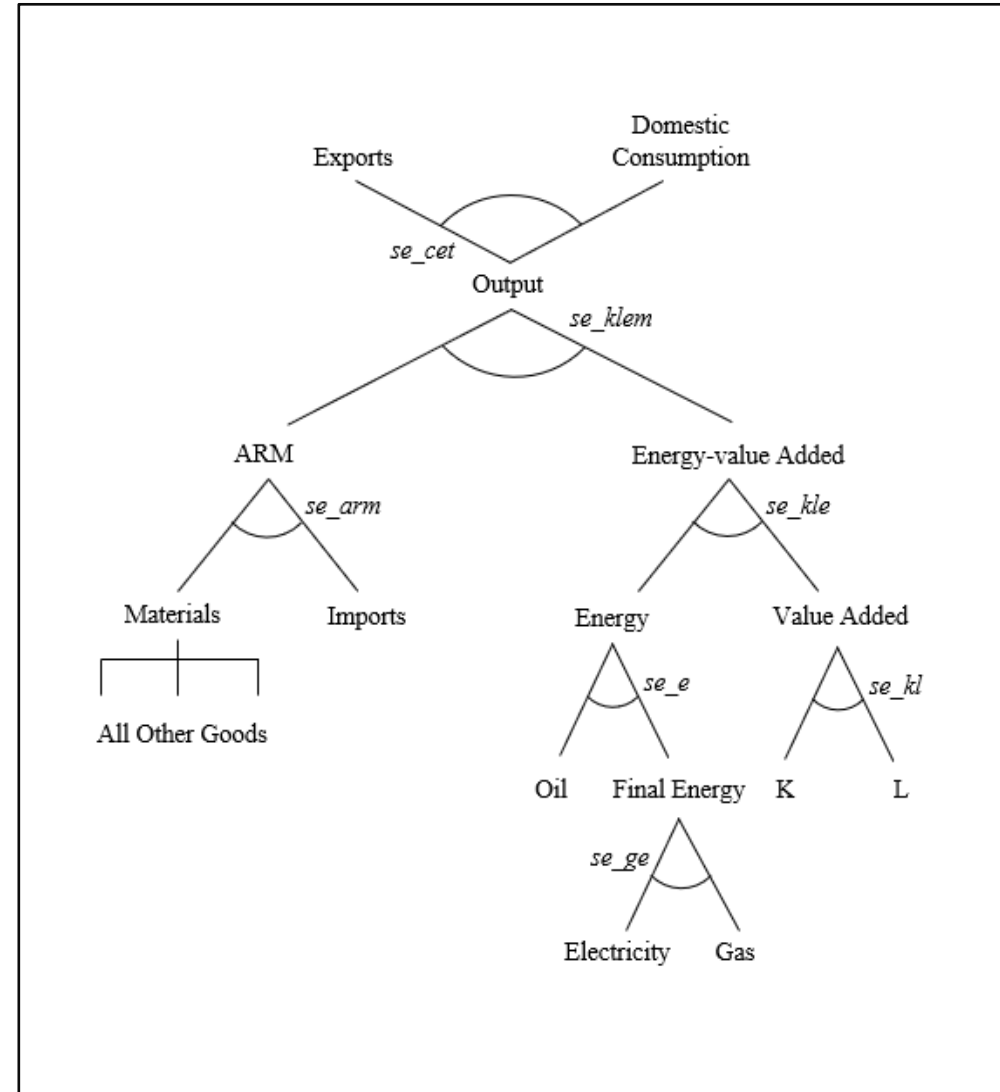
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AT THE UNIVERSITY OF HAWAII

Project Team

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Approach – A Comprehensive Model

- CGE Model finds prices and quantities where supply and demand clear markets.
Calibrated to Hawai'i's overall economy, using the 2012 Input-Output Table
- Additional data for calibration: 1997 Input-Output Table (Gas Sector), National Bureau of Labor Statistics Consumer Expenditure Data
- Integrated with the State of Hawai'i 2016 GHG Inventory



	Lowest 20 percent	Second 20 percent	Third 20 percent	Fourth 20 percent	Highest 20 percent
Total Expenditures (\$2012 Billion)	\$4.5	\$6.6	\$8.6	\$11.6	\$20.2
Oil	4.2%	4.4%	4.4%	4.2%	3.2%
Electricity	4.5%	3.8%	3.3%	2.7%	1.9%
Gas	0.1%	0.1%	0.1%	0.1%	0.1%

Data Sample

- Portion of total household expenditures by income quintile on Oil, Electricity and Gas

Baseline Economic Growth & Policy Assumptions

(2012 Index)	2012	2016	2019	2025	2030	2035	2040	2045
GSP	1	1.07	1.13	1.13	1.24	1.36	1.48	1.60
Real Visitor Expenditures	1	1.04	1.10	1.10	1.14	1.17	1.21	1.23
Visitor Arrivals	1	1.18	1.30	1.30	1.34	1.39	1.42	1.46

Assumes recovery to 2019 happens by 2025, then resumes DBEDT (2019) long-range forecast.

	2025	2030	2035	2040	2045
RPS Constraint	29%	32%	42%	52%	72%

Based on RPS statute, IGP DGPV.

	2025	2030	2035	2040	2045
Share of EVs	2%	5%	10%	18%	28%

Based on average of AEO 2020 Reference Case (Table 46) and IGP – large differences (i.e. 4% and 50% in 2045).

Scenarios (2 Prices X 2 Revenue Assumptions)

Primary Carbon Price Scenarios	Social Cost of Carbon \$2012/MTCO2	High Price pathway \$2012/MTCO2
2025	\$50	\$240
2030	\$54	\$430
2035	\$60	\$620
2040	\$65	\$810
2045	\$70	\$1,000

Carbon tax applied to Oil, Coal and Gas, accounting for 85% of statewide GHGs.

Revenues are assumed either to be:

- 1) Returned to the State
- 2) Returned to households based on equal shares.

Jet fuel is treated separately: non-bonded fuels are taxed (73%), revenues go to the state under all scenarios.

Wrapping Up

- Other Report Elements
 - Review of other carbon pricing programs and interaction with other policies

Next Steps:

- Incorporate technical feedback
- Finalize results and report
 - Deadline is end-of-year
- Share widely!