



Alaska Climate Change Strategy

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Alaska Climate Mitigation Advisory Group of the Governor's Climate Change Sub-Cabinet Meeting #7 June 18, 2009 Anchorage, Alaska

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Meeting Agenda – Morning

- **Welcome & Introductions**
- **Introductory Remarks**
- **Process Update**
 - Approval of Summaries for prior MAG Meetings
 - Purpose & Goals of MAG Meeting #7 (Final MAG Meeting)
- **Review and Final Approval of Policy Options**
 - Forestry, Agriculture and Waste Management TWG (*45 minutes*)
- **Break**
- **Continue Review and Final Approval of Policy Options**
 - Oil and Gas TWG (*60 minutes*)
 - Cross-Cutting TWG (*45 minutes*)
- **Lunch**

Meeting Agenda – Afternoon

- **Lunch Speaker**

Potential Implications of a Carbon Trading Program to Alaska

- *Janice Adair, Washington State Department of Ecology and Past US Co-Chair of the Western Climate Initiative*

- **Continue Review and Final Approval of Policy Options**

- Energy Supply and Demand TWG (*60 minutes*)
- Transportation and Land Use TWG (*45 minutes*)

- **Break**

- **Overview and Final Approval of Research Needs Report**

- Doug Vincent-Lang, Co-Chair of the Research Needs Work Group

- **The MAG Final Report**

- **Next Steps After the MAG Final Report is Crafted**

- **Public Input and Announcements**

- **Wrap-Up and Recognition of Participants**

Meeting Purpose and Goals

- Final Approval of the Alaska GHG Emissions Inventory and Forecast
- Review and Approve all Remaining Policy Option Recommendations and Quantification Results
- Consideration of a Recommendation for a GHG Reduction Goal/Target for Alaska
- Review Process for Developing and Approving the MAG Final Report
- Review Next Steps by Sub-Cabinet

Timetable: Climate Change Mitigation Advisory Group

Date	Action
May 15, 2008	1 st Meeting: Launch Process; Review Inventory
July 15, 2008	2 nd Meeting: Catalog of Potential Policy Options
September 22, 2008	3 rd Meeting: Presentations; Identify Priority Policy Options
November 6, 2008	4 th Meeting: Select Priority Policy Options
February 5, 2009	5 th Meeting: Approve Straw Proposals
April 2, 2009	6 th Meeting: Initial Quantification of Options
June 18, 2009	Final Meeting: Approve Policy Options
Early July 2009	Draft Final Report
Mid-July 2009	MAG Comments & Teleconference Input on Draft Final Report
August 1, 2009	Deliver Final Report to Sub-Cabinet

Stepwise Planning Process

1. Develop/revise baseline inventory and forecast
2. Identify a full range of possible actions (“catalog”) and programs already in place
3. Identify initial priorities for analysis & development
4. Develop straw proposals
5. Quantify GHG reductions and costs/savings (to the extent possible)
6. Identify mechanisms, feasibility issues, co-benefits or costs, etc.
7. **Develop alternatives if needed to enhance consensus**
8. **Aggregate results**
9. **Iterate to final agreement**
10. **Finalize and report recommendations**

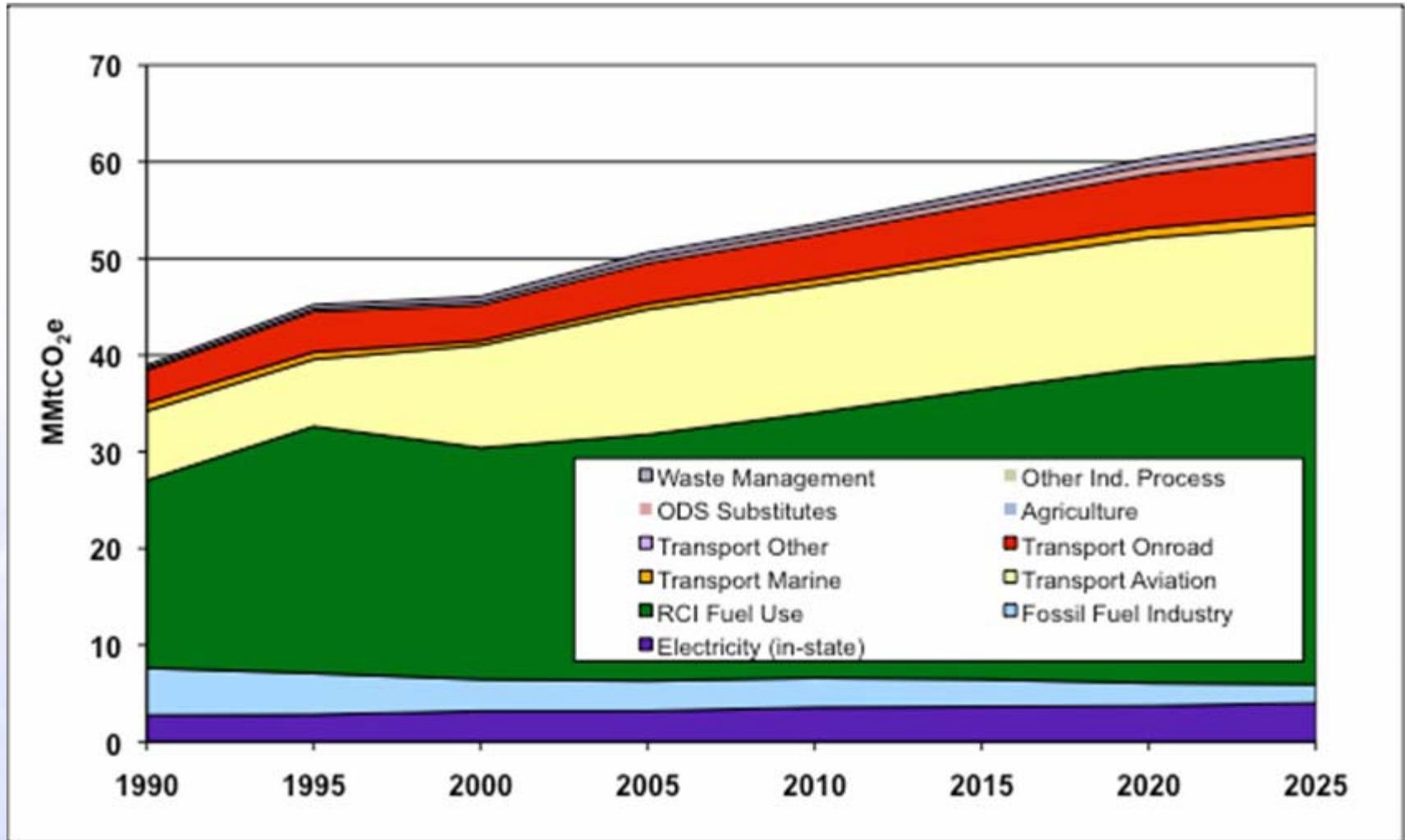
Policy Option Template

- *Policy Description (Concept)*
- *Policy Design (Goals, Timing, Coverage)*
- *Implementation Methods (parties, mechanisms)*
- *Related Programs and Policies (BAU)*
- **Estimated GHG Reductions and Costs/Savings Per MMTCO₂e**
 - Data sources, methods, and assumptions
 - Key uncertainties
- **Additional (non-GHG) Benefits and Costs, as Needed**
- **Feasibility Issues, as Needed**
- **Status of Group Approval**
- **Level of Group Support**
- **Barriers to Consensus, if Any**

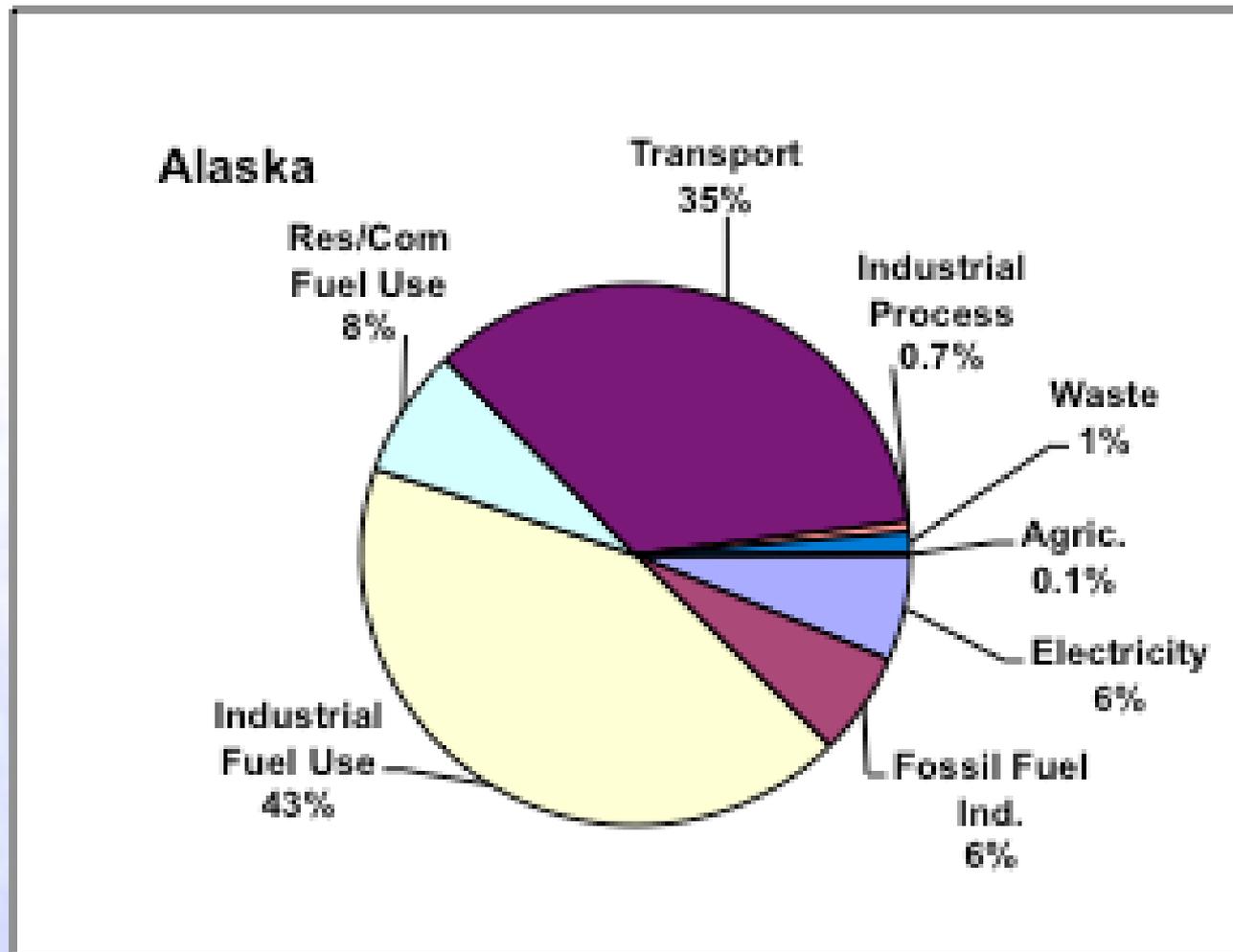
Alaska GHG Emissions Inventory and Forecast

- Few changes submitted by TWGs
- Changes submitted to date have been included in I&F update

Alaska GHG Inventory & Forecast



Alaska GHG Inventory by Sector



Final Approval of Policy Option Recommendations

- Forestry, Agriculture & Waste (FAW)
- Oil & Gas (O&G)
- Cross-Cutting Issues (CC)
- *Lunch Break*
- Energy Supply & Demand (ESD)
- Transportation & Land Use (TLU)

FAW TWG Policy Options

1. Forest Management Strategies for Carbon Sequestration
2. Expanded Use of Biomass Feedstocks for Energy Production
3. Advanced Waste Reduction and Recycling

FAW – Quantification Results

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)				Net Present Value 2010–2025 (Million 2005\$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2015	2020	2025	Total 2010–2025			
FAW-1	Forest Management Strategies for Carbon Sequestration							
	A. Coastal Management Pre-Commercial Thinning	Included under FAW-2						Pending
	B. Boreal Forest Mechanical Fuels Treatment	Included under FAW-2						Pending
	C. Community Wildfire Protection Plans	Included under FAW-2						Pending
	D. Boreal Forest Reforestation	0.09	0.12	0.15	1.6	\$150	\$92	Pending
FAW-2	Expanded Use of Biomass Feedstocks for Energy Production							
	A. Biomass Feedstocks to Offset Heating Oil Use	0.01	0.03	0.04	0.3	\$27	\$90	Pending
	B. Biomass Feedstocks for Electricity Use	0.07	0.12	0.18	1.5	\$59	\$38	Pending
	C. Biomass Feedstocks to Offset Fossil Transportation Fuels	0.03	0.06	0.09	0.8	\$41	\$52	Pending
FAW-3	Advanced Waste Reduction and Recycling	0.27	0.45	0.65	5.3	-\$43	-\$8	Pending

Break



O&G TWG Policy Options

1. Best Conservation Practices
2. Reductions in Fugitive Methane Emissions
3. Electrification of Oil & Gas Operations, with Centralized Power Production and Distribution
4. Improved Efficiency Upgrades for Oil & Gas Fuel Burning Equipment
5. Renewable Energy Sources in Oil & Gas Operations
6. Carbon Capture (from North Slope high-CO₂ fuel gas) and Geologic Sequestration with EOR
7. Carbon Capture (from exhaust gas at a centralized facility) and Geologic Sequestration with EOR
8. Carbon Capture (from exhaust gas) and Geologic Sequestration away from Known Geologic Traps

O&G – Quantification Results

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)				Net Present Value 2010–2025 (Million 2005\$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2015	2020	2025	Total 2010–2025			
OG-1	Best Conservation Practices	Not Quantified						Pending
OG-2	Reductions in Fugitive Methane Emissions	0.2	0.2	0.2	3.2	\$181.4	\$57	Pending
OG-3	Electrification of Oil and Gas Operations, with Centralized Power Production and Distribution	0	3.0	4.4	26.6	\$7,791.0	\$293	Pending
OG-4	Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment	0.5	2.1	2.1	19.7	\$1,600.1	\$81	Pending
OG-5	Renewable Energy Sources in Oil and Gas Operations	0.7	0.7	0.7	8.0	\$2,603.4	\$327	Pending
OG-6	Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery from High CO ₂ Fuel Gas at Prudhoe Bay	0	0.9	0.9	7.8	\$1,368.8	\$176	Pending
OG-7	Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery in and near existing Oil or Gas Fields	0	1.8	1.8	16.1	\$3,094.1	\$192	Pending
OG-8	Carbon Capture and Geologic Sequestration away from Known Geologic Traps	0.7	0.7	0.7	8.0	\$7,937.7	\$994	Pending

CC TWG Policy Options

1. Establish an Alaska GHG Emissions Reporting Program
2. Establish Goals for State-wide GHG Emission Reduction
3. Identify and Implement State Government Mitigation Actions
4. Integrate Alaska's Climate Change Mitigation Strategy with the Alaska Energy Plan
5. Explore Various Market-Based Systems to Manage GHG Emissions
6. Coordinate Implementation of Alaska's Efforts to Address Climate Change

CC TWG Policy Options

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Status of Option
		2012	2020	Total 2007–2020			
CC-1	Establish an Alaska Greenhouse Gas Emission Reporting Program	<i>Not Quantified</i>					Pending
CC-2	Establish Goals for Statewide GHG Emission Reduction	<i>Not Quantified</i>					Pending
CC-3	Identify and Implement State Government Mitigation Actions	<i>Not Quantified</i>					Pending
CC-4	Integrate Alaska's Climate Change Mitigation Strategy with the Alaska Energy Plan	<i>Not Quantified</i>					Pending
CC-5	Explore Various Market-Based Systems to Manage GHG Emissions	<i>Not Quantified</i>					Pending
CC-6	Coordinate Implementation of Alaska's Efforts to Address Climate Change	<i>Not Quantified</i>					Pending

Lunch Break



ESD TWG Policy Options

1. Transmission System Optimization and Expansion
2. Energy Efficiency for Residential and Commercial Customers
3. Implementation of Renewable Energy
4. Building Standards & Incentives
5. Efficiency Improvements for Generators
6. Energy Efficiency for Industrial Installations
7. Implementation of Small-Scale Nuclear Power
8. R&D for Cold-Climate Renewable Technologies
9. Implementation of Advanced Supply-Side Technologies

ESD – Quantification Results

	Policy Option	GHG Reductions (MMtCO ₂ e)				NPV 2010–2025 (Million \$)	Cost-Effective-ness (\$/tCO ₂ e)	Level of Support
		2015	2020	2025	Total 2010-2025			
ESD-1a	Transmission, Rural	0.00	0.00	0.01	0.05	\$44	\$897	
ESD-1b	Transmission, RE Grants	0.06	0.08	0.09	1.06	-\$2	-\$2	
ESD-1	Transmission Optimization and Expansion	0.07	0.08	0.09	1.11	\$42	\$38	
ESD-246a	Energy Efficiency for Residential and Commercial Customers, 1% per year	0.34	0.80	1.18	9.22	-\$557	-\$60	
ESD-246b	Energy Efficiency for Residential and Commercial Customers, 2% per year	0.34	1.07	1.84	12.41	-\$728	-\$59	
ESD-3	Implementation of Renewable Energy	1.99	2.35	3.86	32.52	\$297	\$9	

ESD – Other Policy Options

ESD-4	Building Standards/Incentives	<i>Quantified with ESD-2/4/6a</i>	Pending
ESD-5	Efficiency Improvements for Generators	<i>Moved to Research Needs Work Group</i>	Pending
ESD-6	Energy Efficiency for Industrial Installations	<i>Quantified with ESD-2/4/6a</i>	Pending
ESD-7	Implementation of Small-Scale Nuclear Power	<i>Moved to Research Needs Work Group</i>	Pending
ESD-8	Research and Development for Cold-Climate Renewable Technologies	<i>Moved to Research Needs Work Group</i>	Pending
ESD-9	Implementation of Advanced Supply-Side Technologies	<i>Moved to Research Needs Work Group</i>	Pending

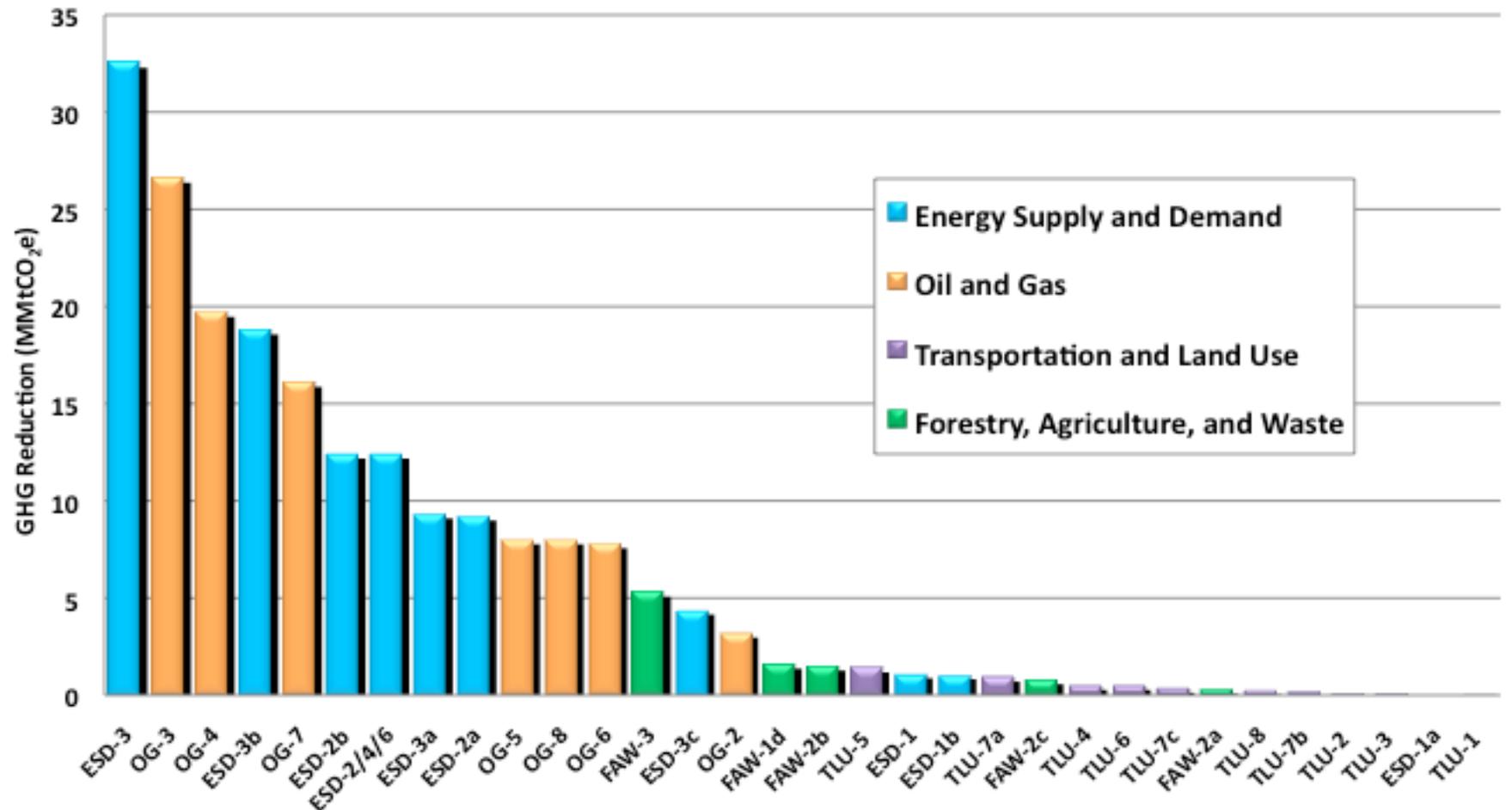
TLU TWG Policy Options

1. Transit, Ridesharing, and Commuter Choice Programs
2. Heavy-Duty Vehicle Idling Regulations and/or Alternatives
3. Transportation System Management
4. Promote Efficient Development Patterns (Smart Growth)
5. Promotion of Alternative Fuel Vehicles
6. VMT and GHG Reduction Goals in Planning
7. On-Road Heavy-Duty Vehicle Efficiency Improvements
8. Marine Vessel Efficiency Improvements
9. Aviation Emission Reductions
10. Alternative Fuels R&D

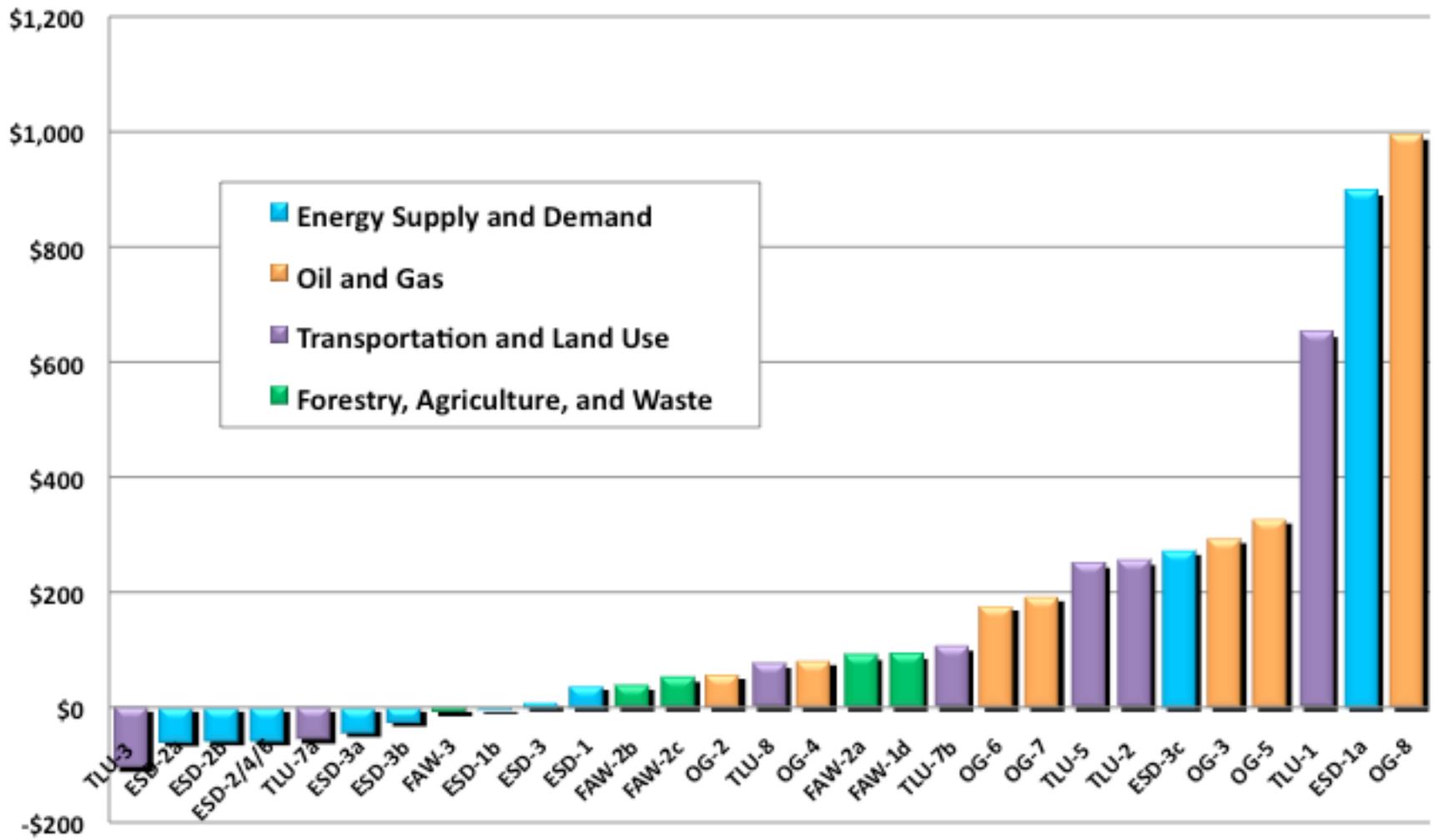
TLU – Quantification Results

Option No.	Draft Policy Option	GHG Reductions (MMtCO ₂ e)				Net Present Value 2008–2025 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2015	2020	2025	Total 2008–2025			
TLU-1	Transit, Ridesharing, and Commuter Choice Programs	0.002	0.003	0.005	0.046	\$29.9	\$651	Pending
TLU-2	Heavy-Duty Vehicle Idling Regulations and/or Alternatives	0.004	0.009	0.009	0.095	\$24.3	\$255	Pending
TLU-3	Transportation System Management	0.006	0.006	0.006	0.092	-\$9.7	-\$105	Pending
TLU-4	Promote Efficient Development Patterns (Smart Growth)	0.019	0.043	0.066	0.501	Net Savings	NQ	Pending
TLU-5	Promotion of Alternative Fuel Vehicles	0.026 – 0.084	0.054–0.173	0.090 – 0.288	0.669 – 2.139	\$207.3 – \$494.8	\$135 – \$740	Pending
TLU-6	VMT and GHG Reduction Goals in Planning	0.019	0.043	0.066	0.501	NQ	NQ	Pending
TLU-7a	SmartWay	0.050	0.075	0.084	0.930	-\$52.3	-\$56	Pending
TLU-7b	Phase Out	0.025	0.012	0.000	0.198	\$20.9	\$106	Pending
TLU-7c	Public Fleets	0.016	0.033	0.037	0.364	NQ	NQ	Pending
TLU-8	Marine Vessel Efficiency Improvements	0.012	0.022	0.032	0.269	\$20.4	\$76	Pending
TLU-9	Aviation Emission Reductions	NQ	NQ	NQ	NQ	NQ	NQ	Pending
TLU-10	Alternative Fuels R&D	NQ	NQ	NQ	NQ	NQ	NQ	Pending

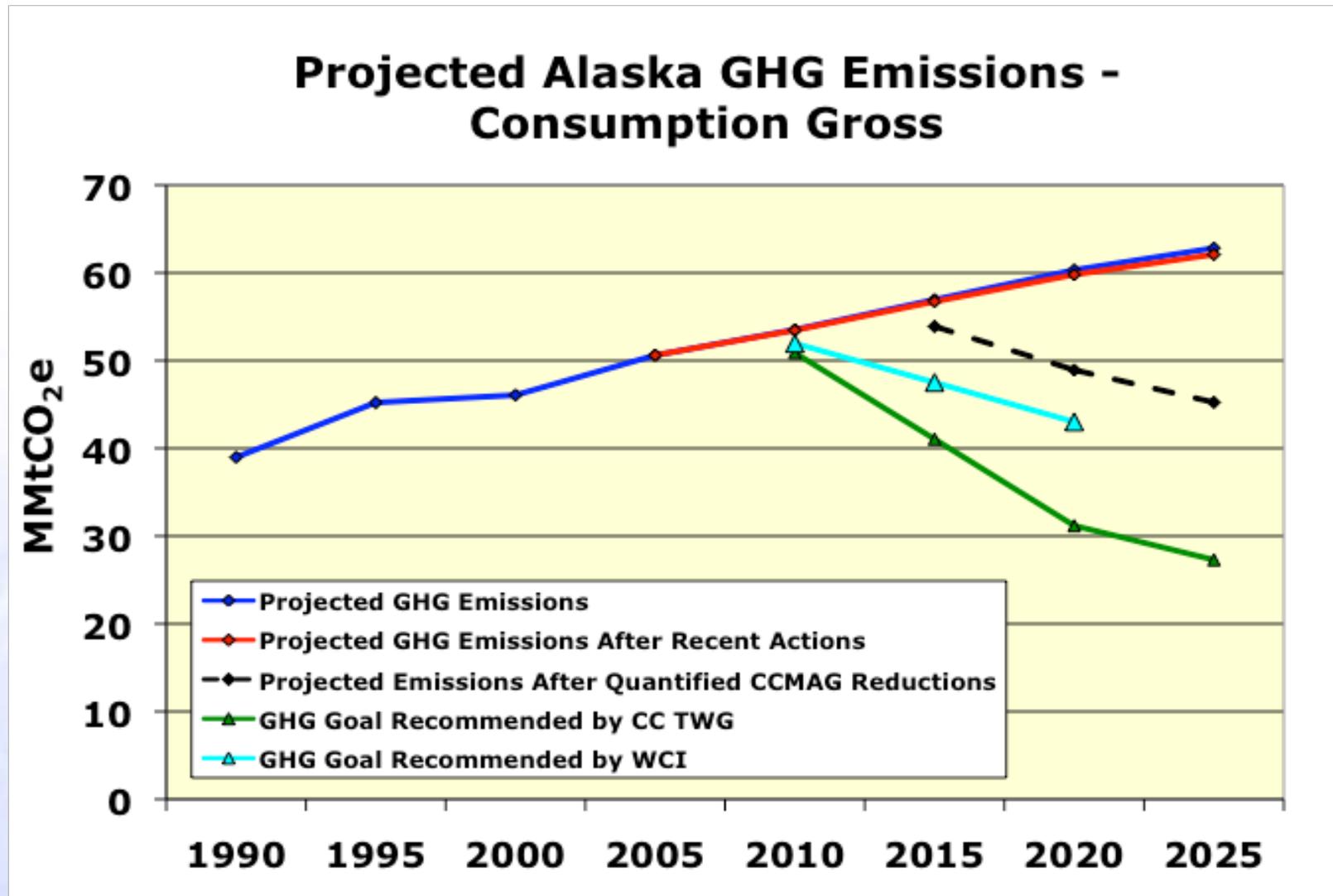
PRELIMINARY Cumulative Greenhouse Gas Reduction Potential of Alaska Policy Options 2010-2025



PRELIMINARY Alaska Policy Options
Ranked by Cost/ Savings per Ton GHG Reduced, 2010-2025
 (Negative values signify monetary savings)



PRELIMINARY “Alligator Jaws” Graph



Break



Overview & Approval of Research Needs Work Group Report

- Doug Vincent-Lang, Co-Chair

MAG Final Report: Tentative Content

Acknowledgments

Members of the Alaska Climate Change Mitigation Advisory Group
Acronyms and Abbreviations

Executive Summary

Chapter 1 – Background and Overview

Chapter 2 – Inventory and Projections of Alaska's GHG Emissions

Chapter 3 – Cross-Cutting Issues

Chapter 4 – Energy Supply and Demand Sectors

Chapter 5 – Forestry, Agriculture and Waste Management Sectors

Chapter 6 – Oil and Gas Sectors

Chapter 7 – Transportation and Land Use Sectors

Appendices

A. Administrative Order 238 Establishing the Sub-Cabinet

B. Description of MAG Process

C. Members of MAG Technical Work Groups

D. GHG Emissions Inventory and Reference Case Projections

E. Quantification Methods and Assumptions

F. Cross-Cutting Issues Policy Recommendations

G. Energy Supply and Demand Policy Recommendations

H. Forestry, Agriculture, and Waste Management Policy Recommendations

I. Oil and Gas Policy Recommendations

J. Transportation and Land Use Policy Recommendations

MAG Final Report: Prospective Schedule

- June 18 - July 12: CCS team revises PODs, develops Chapters, copy-edits and assembles Draft Report
- July 13: Post Draft Report for MAG review
- July 20: Comments due from MAG
- July 24: MAG Teleconference on Draft Report
- July 31: Revised Final Report forwarded to Sub-Cabinet

Next Steps for After MAG

- Larry Hartig, Commissioner DEC and Chair, Climate Change Sub-Cabinet

Public Input and Announcements

Wrap-Up and Recognition of Volunteers



The Center for Climate Strategies

Helping States and the Nation Tackle Climate Change

*Thank you
for your continuing
time and effort!*

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