Balloting instructions: Each appointed member of the State of Alaska Oil & Gas Technical Work Group (O&G TWG) will vote for a maximum of five options to be recommended to the Mitigation Advisor Group as options which the O&G TWG believes deserve further refinement. Please **make your choices, type your name in the box provided below and reply (in confidence) to Dick La Fever via e-mail (cli@ak.net) or fax (907.258.7007) not later than midnight, Sunday October 26.**

The descriptions of the options in the ballot are intended to provide enough context to enable balloting. The descriptions **should not** be construed as being so rigid as to limit the analysis and recommendations of the options-based subgroups of the O&G TWG who will be working following balloting and MAG approval to further refine the top options.

When taking the next step to refine the top options, it is envisioned that the TWG's options-based subgroups will utilize the following overarching policy considerations:

- **Evaluate how possible GHG regulation programs (cap-and-trade, carbon tax, command and control) could impact the O&G industry in Alaska given today's economics and technology;**
- Fiscal note for budget, permitting, staffing, etc.;
- Prepare for regional tradeoffs amongst carbon and currently regulated pollutants;
- Consider streamlined permitting that allows permits for projects that offer GHG emissions reductions to be expedited;
- Use this information to inform policy makers.

The TWG may elect to form a subgroup specifically to address the overarching issues in a uniform manner for all refined options.

Alternatively, the TWG may elect to choose these overarching considerations (in part or as whole) as specific options in addition to the reduction options selected through this ballot.

OIL & Gas TWG Member Name: _____

Option	Vote for Up to 5: ☒	GHG Reduction Option Description	Potential GHG Emissions Reduction*	Economically Feasible Today	Technically Feasible in Alaska Today
1		Evaluate the feasibility and economics of an improved and expanded statewide electrical distribution system. The focus of this option is to explore opportunities for the most efficient transmission and distribution systems to provide power to oil & gas operations (upstream/midstream/downstream). A secondary focus might be to explore opportunities to generate power at the fuel supply (i.e.- gas field) where power transmission/ distribution efficiencies allow.	?	No	Yes
2		Evaluate the feasibility and economics of improving energy efficiency / cogeneration, waste heat reuse, and combined cycle includes baseline conditions. The focus of this option is to explore possibilities in Alaska Oil & Gas Operations for: a) Implementation of more thermal-efficient electrical and mechanical power prime movers (combustion turbines, reciprocating engines, boilers, etc); and b) Retrofitting "bottoming cycles" (i.e.- heat recovery steam generators and waste heat recovery) on existing prime movers, or more thermal-efficient prime movers outlined in a.	High	No	Yes
3		Evaluate the feasibility and economics of facility-sharing agreements for upstream oil & gas facility processing equipment. The focus of this option is to explore the potential that facility-sharing agreements could result in reductions of greenhouse gasses, and to	Low-Medium	Project-Specific	Yes

Option	Vote for Up to 5: ☒	GHG Reduction Option Description	Potential GHG Emissions Reduction*	Economically Feasible Today	Technically Feasible in Alaska Today
		develop model facility sharing agreements.			
4		Evaluate the feasibility and economics of using low CO2 fuel gas in place of high CO2 fuel gas. This option is limited to Oil & Gas facilities which have significant quantities of CO2 in fuel gas streams, pre combustion. The focus of this option is to explore: a) The potential emissions reductions associated with removing CO2 from fuel gas streams (primarily on the North Slope); b) Technology available for removal (i.e.-amine, membranes, other); c) Pilot promising emerging technology for CO2 removal from fuel gas streams (may fit with option 8b); d) Commercial-scale implementation	Medium-High	No	Yes
5		Evaluate the feasibility and economics of reducing emissions and improving efficiency of gas distribution systems. This option is believed to be limited to existing gas pipeline systems (Enstar, Cook Inlet Pipeline, etc). The focus would be to evaluate energy efficiency or operating practices to determine the potential emissions reductions.	Low		
6		Evaluate the feasibility and economics of renewable energy technologies for oil and gas production (wind, geothermal). The focus of this option would be to explore opportunities to integrate renewable energy	Low		

Option	Vote for Up to 5: ☒	GHG Reduction Option Description	Potential GHG Emissions Reduction*	Economically Feasible Today	Technically Feasible in Alaska Today
		into existing or newly-developed Oil & Gas operations.			
7		Evaluate the feasibility and economics of low-GHG fuels. In this option, the potential for reducing the molecular weight of fuels (and therefore the CO2/unit energy input) would be explored for oil & gas sources. Solid fuels (coal or pet coke) are not used in Oil & Gas operations in Alaska, so the emphasis would be to switch liquid fuel fired sources to natural gas, and to switch natural gas fired sources to either leaner natural gas, syngas or hydrogen.	Low-Medium	No	Yes
8		Evaluate the feasibility and economics of CO2 capture, enhanced oil recovery (EOR), and geologic sequestration from producing oil and gas fields. In this option, the focus would be to explore opportunities in existing oil & gas fields to: a) Capture CO2 from process or combustion sources; b) Utilize captured CO2 for EOR; c) Promote sequestration associated with EOR; d) Promote sequestration absent EOR; e) Augment R&D activities of others (i.e.- DOE, API) with a focus on Alaska implementation of capture, EOR and sequestration technology ("capture" activities would focus on CO2 generated during combustion as opposed to CO2 entrained in fuel gas, described in Option #4); f) Pilot promising emerging technology for capture, EOR and sequestration;	High	No	Yes

Option	Vote for Up to 5: ☒	GHG Reduction Option Description	Potential GHG Emissions Reduction*	Economically Feasible Today	Technically Feasible in Alaska Today
		g) Commercial-scale implementation.			
9		Evaluate the feasibility and economics of CO2 capture and geologic sequestration. The focus of this option is to explore the possibility of sequestration of CO2 in appropriate geologic formations absent existing oil & gas infrastructure and proven seals. Would include elements of Option 8 a, e, f and g. The presence of sealing mechanisms must be proven (ie seismic, wells) before geologic sequestration can occur.	Medium	No	No
10		Evaluate the feasibility and economics of reductions in fugitive methane emissions. In this option, the following would be explored: a) Refinements to fugitive methane inventories; b) Assessment of potential reductions of fugitive methane; c) Development of model fugitive methane reduction programs appropriate to Alaska Oil & Gas Operations.	Low		