



2022 AQMP Mobile Source Working Group Meeting #2 – Aircraft

April 6, 2021

Cleaning The Air That We Breathe...



Draft Aircraft Emissions Inventory and Potential Control Strategies

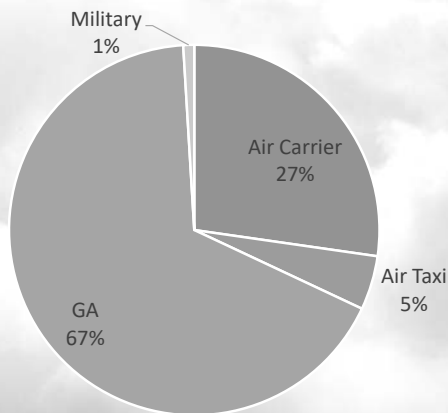


Draft Aircraft Emissions Inventory for South Coast AQMD

- Airports covered
 - Commercial (7), General Aviation (31), Military (3)
- Years covered
 - 2018 base year; 2023, 2031, and 2037 forecast years
- Emission calculation methodology
 - Aircraft operations (airports, FAA's databases)
 - FAA's AEDT tool; EPA's average emission factors; FAA survey data
- Draft inventory released April 2, 2021



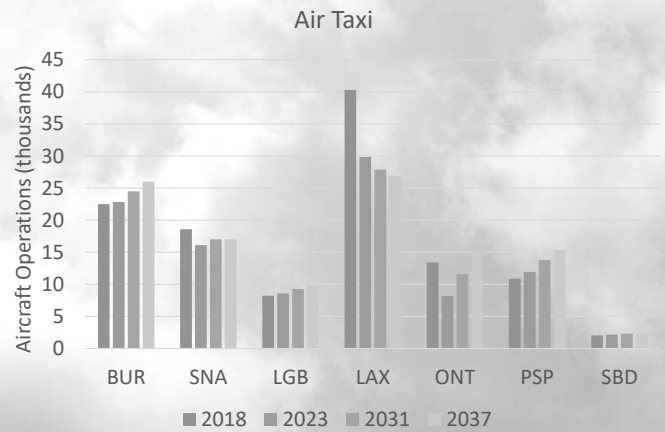
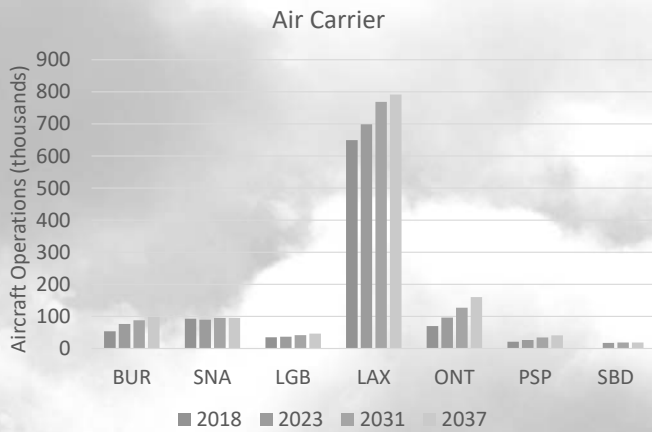
2018 aircraft operations by major category



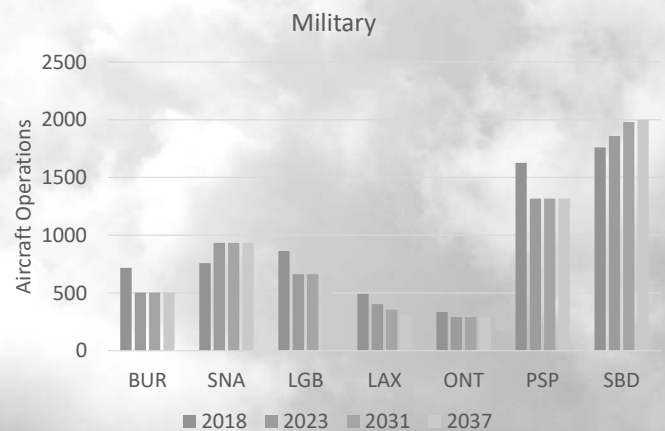
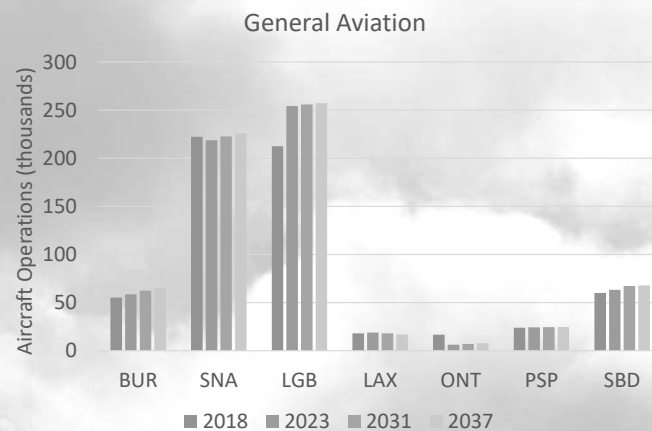
Total = 3,422,479 operations



Aircraft operations by major aircraft type and commercial airport



Aircraft operations by major aircraft type and commercial airport (cont'd)





Taxi times and mixing heights for commercial airports

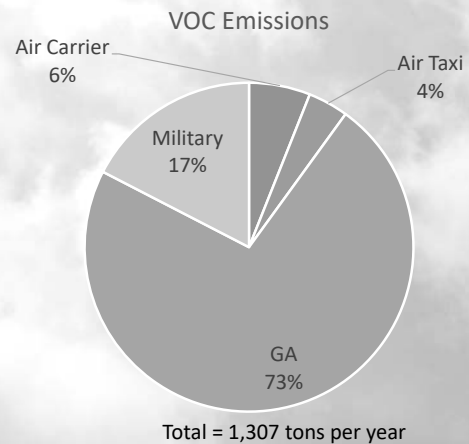
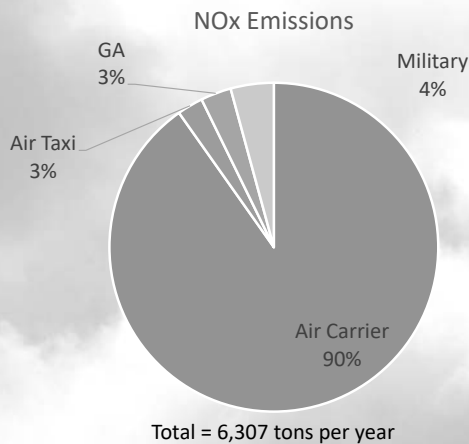
Airport	Taxi time (min)		Mixing height (feet)
	In	Out	
LAX (2018)	12.18	19.24	1,800
LAX (2023)	13.26	21.01	1,800
LAX (2031)	15.76	24.97	1,800
LAX (2037)	17.91	28.39	1,800
LGB	4.39	13.17	1,800
SNA	5.75	9.63	1,900
BUR (pre-terminal) ¹	1.25	4.67	2,500
BUR (post-terminal) ²	2.49	2.97	2,500
PSP	5	5	4,000
ONT	3.5	3.5	3,000
SBD	Default	Default	3,500

¹Pre-terminal replacement taxi times used for 2018 and 2023

²Post-terminal replacement taxi times used for 2031 and 2037

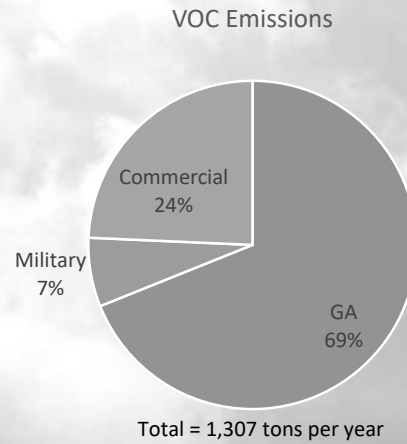
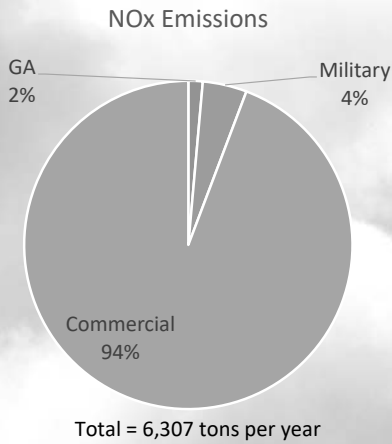


2018 aircraft emissions by major category

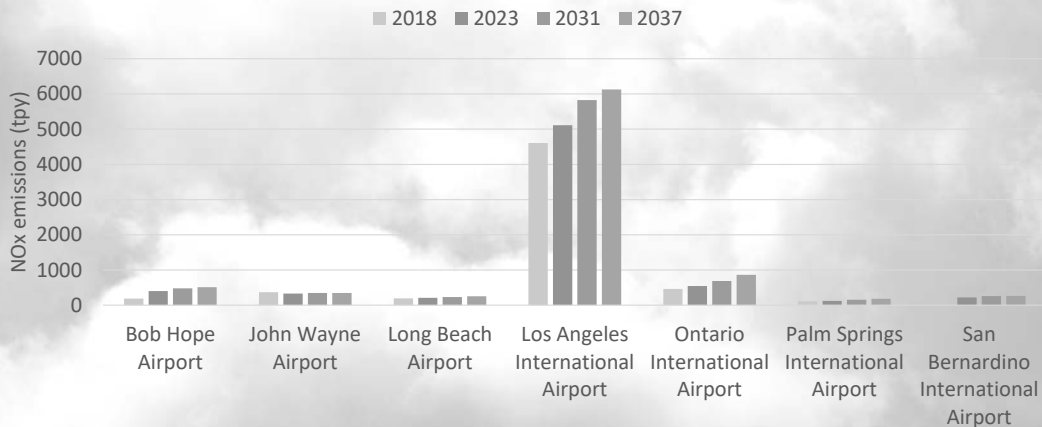




2018 aircraft emissions by airport type

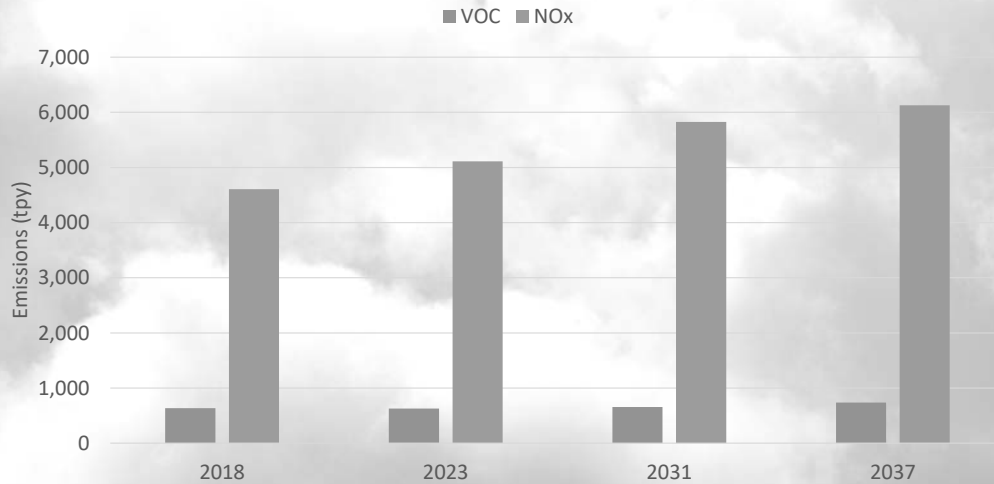


Aircraft emissions for commercial airports (NOx)

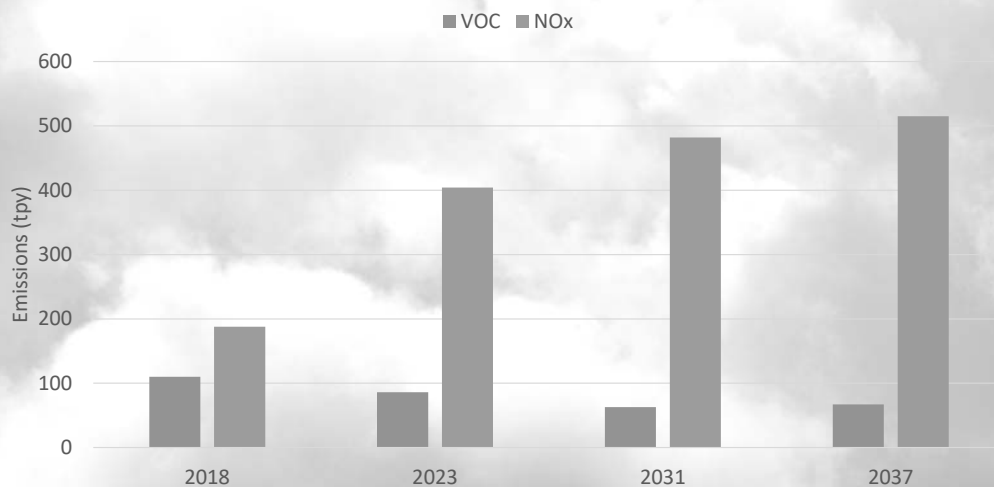




Aircraft emissions at Los Angeles International Airport

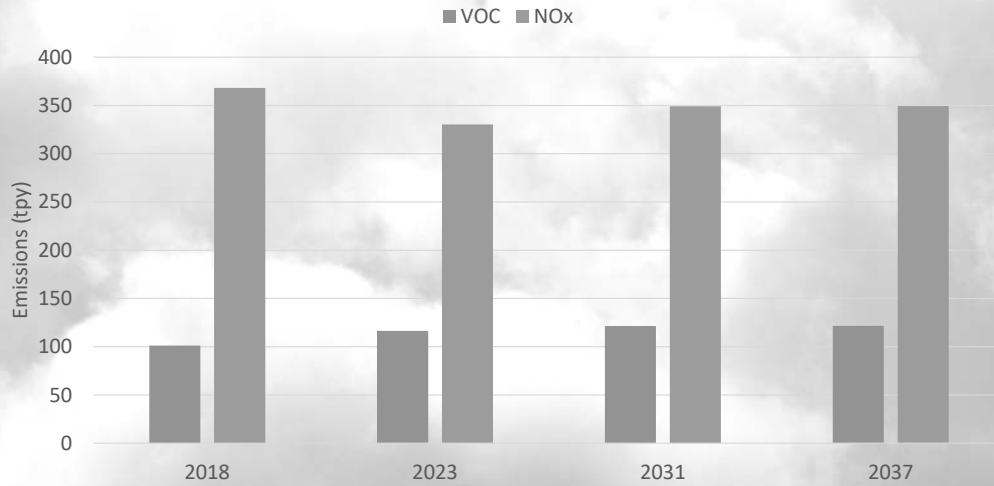


Aircraft emissions at Bob Hope Airport

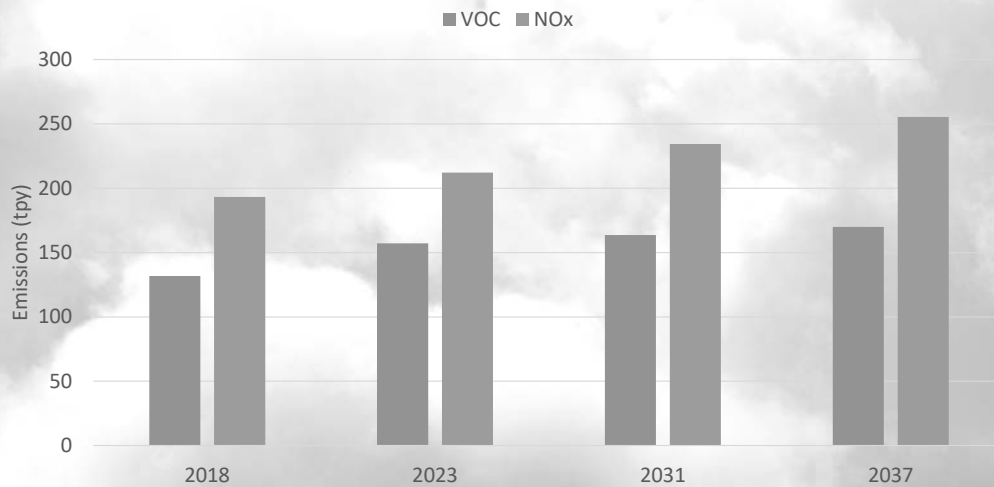




Aircraft emissions at John Wayne Airport

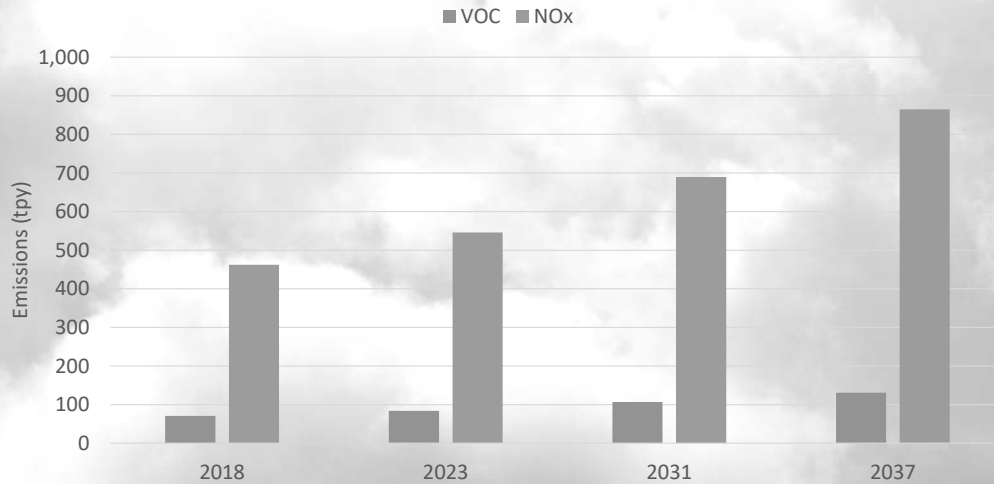


Aircraft emissions at Long Beach Airport

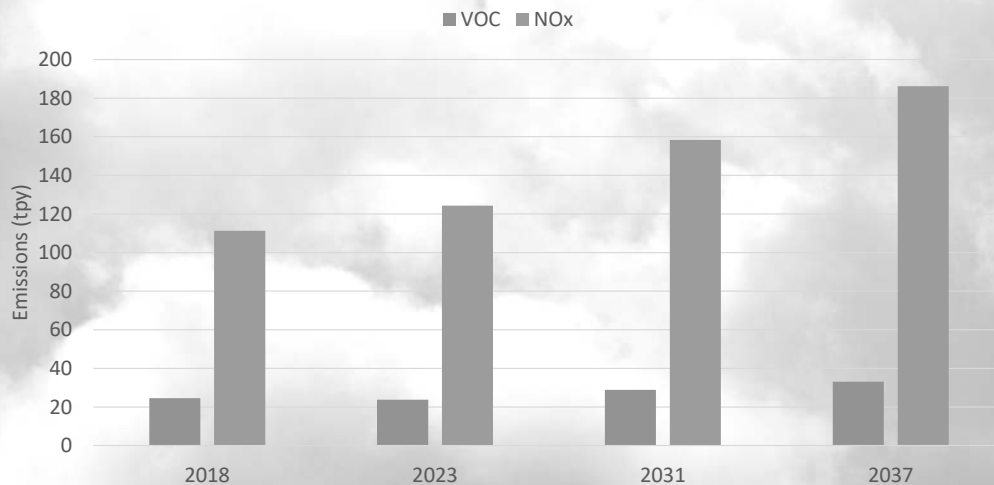




Aircraft emissions at Ontario International Airport

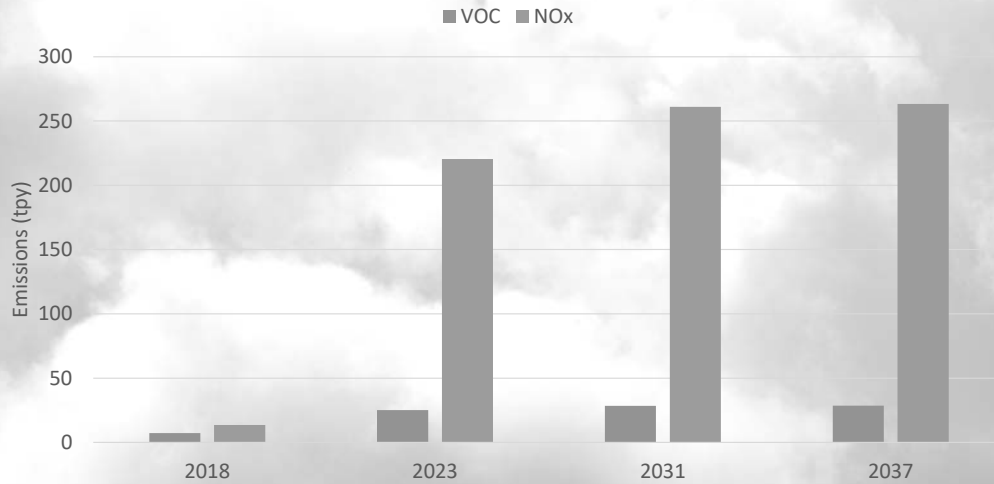


Aircraft emissions at Palm Springs International Airport





Aircraft emissions at San Bernardino Airport

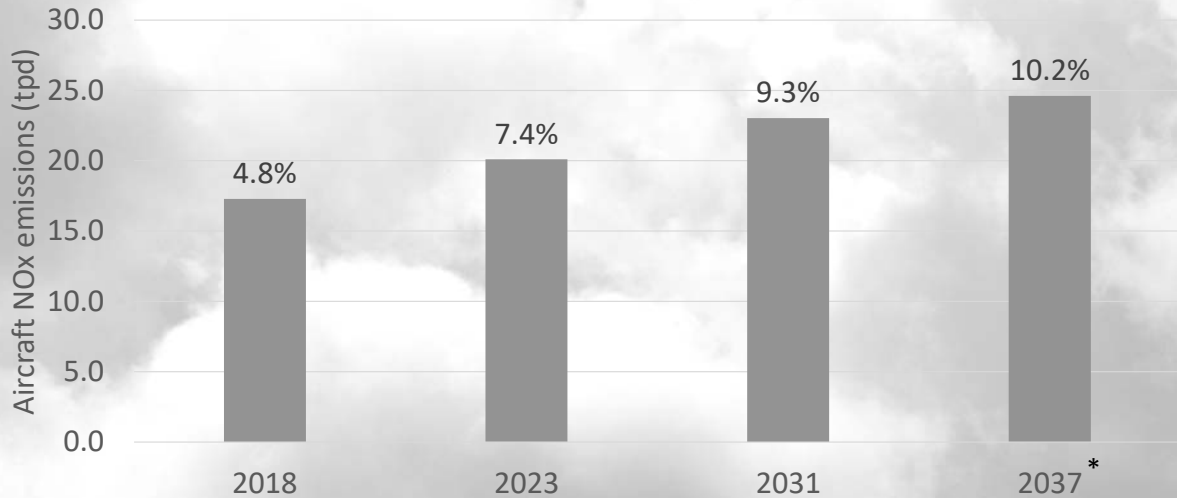


Comparison of NOx emissions with 2016 AQMP





Growing contribution of aircraft emissions



*2037 emissions are preliminary

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Potential updates to aircraft emissions inventory

- Focus on forecast years: 2023, 2031, 2037
- Distinction between passenger and cargo aircraft
- FAA's new Terminal Area Forecast (TAF) that will include the effects of COVID-19 on civil aviation (expected to be publicly available mid-to-late April at www.faa.gov)
 - Expected to result in lower forecasted aircraft operations
- Latest forecast of aircraft models/engines
 - Reflecting retirement of older aircraft
 - Increased use of newer aircraft
- Operational improvements not reflected in draft inventory

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Potential aircraft control strategies

- New aircraft engine and auxiliary power unit (APU) standards (EPA/ICAO)
- Operational improvements
 - De-rated take-off
 - Single engine taxiing
 - Reduced APU usage/Zero-emission APU
- Routing aircraft with cleanest aircraft models/engines
- Promoting zero-emission aviation
- Others?



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Next Steps

- Update draft aircraft emissions inventory
 - FAA's updated forecast (2023, 2031, 2037)
 - Updated aircraft models/engines forecast based on inputs from airports and airlines
 - Draft report available for review
 - Comments Due May 14, 2021
- Evaluate potential control strategies
 - Pursue potential future engine standards through EPA/ICAO
 - Work with airports, airlines, and stakeholders to evaluate potential strategies

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