



Advance of EASA Position on Energy Reserve

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new concepts

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Agenda

Objectives

Applicable SC VTOL and Opinion 02/2020 on Fuel/Energy Schemes

VTOL Phases of flight and alternate landing sites

EASA approach

Conclusions

Questions?

Objectives

Identify where in the SC VTOL Energy Reserve is affected

Current rulemaking activities for CAT

Provide EASA position on Energy Reserves as input to the Part-UAM

Identify some possible challenges when defining Energy Reserves

Applicable SC VTOL requirements Subpart E

VTOL.2430 Lift/thrust system installation, energy storage and distribution system

(b) Each storage system must:

(4) provide energy for a **sufficient reserve** based on a standard flight; and

EASA Opinion 02/2020 Fuel/energy planning and management (published 08 Oct 2020)

Objectives of this Opinion:

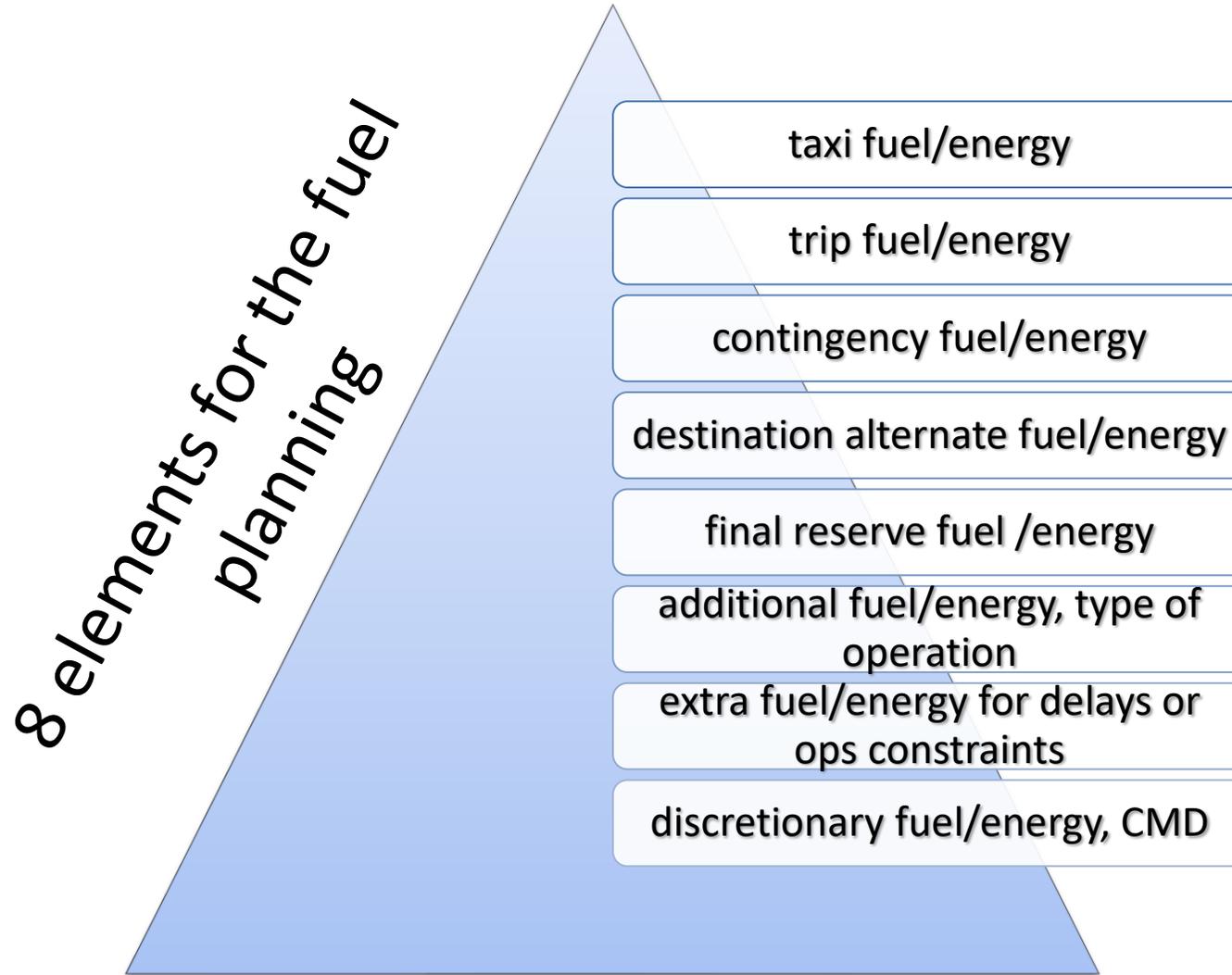
- improve efficiency of fuel/energy planning and management for commercial air transport (CAT) aeroplanes, while maintaining a high level of safety;
- incorporate into EU rules the latest International Civil Aviation Organization (ICAO), Annex 6, Parts I, II, and III amendments on fuel planning and management; and
- clarify and simplify the rules for helicopter fuel energy planning and management, including helicopter refuelling with rotors turning, taking into account current industry best practice.

EASA Opinion 02/2020 Fuel/energy planning and management (published 08 Oct 2020)

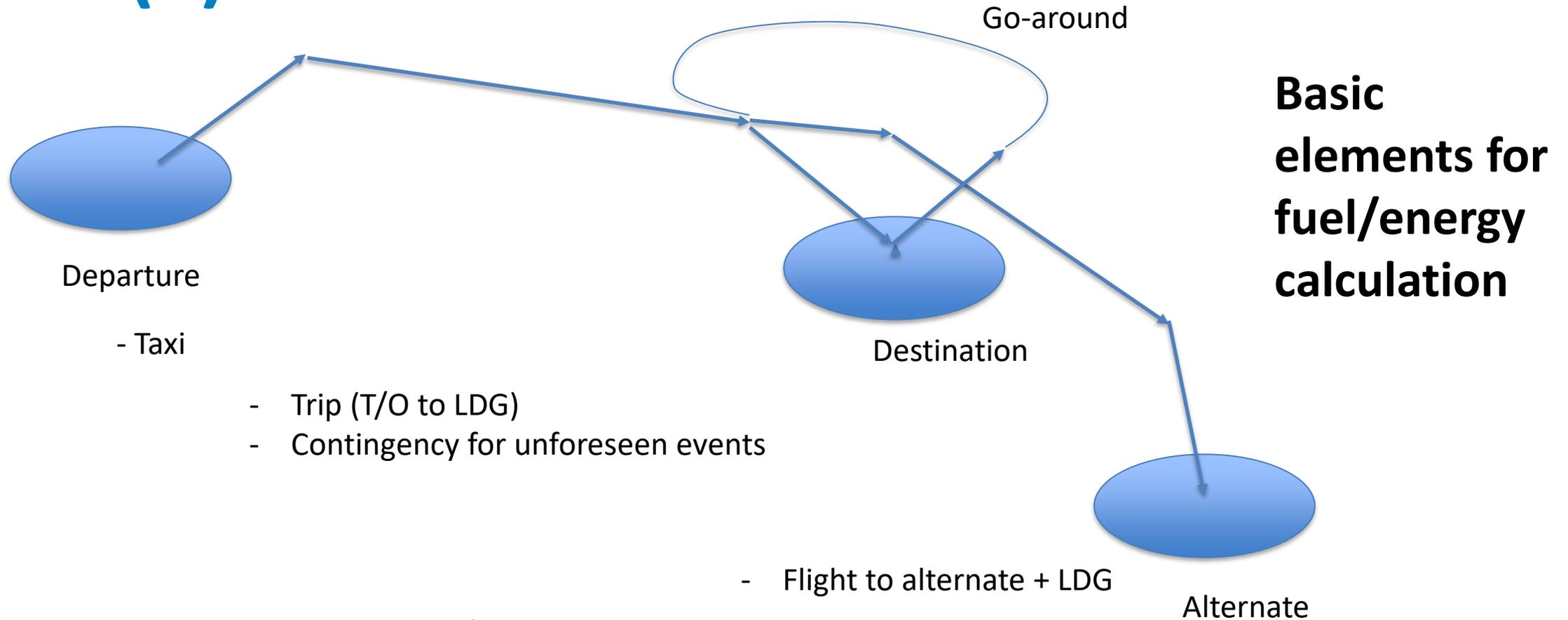
The 6 most important Implementing rules of fuel/energy schemes

- Authority (1 rule, Approval of fuel schemes)
- Part-CAT (5 rules)
 - CAT.OP.MPA.180 – general rule which describe the fuel/energy schemes plus additional requirements for the individual fuel/energy schemes
 - CAT.OP.MPA.181 – fuel/energy planning policy (quantity of fuel/energy)
 - CAT.OP.MPA.182 – aerodromes policy (selection of aerodromes – destination, alternate fuel, take off alternate, en-route alternate...etc)
 - CAT.OP.MPA.185 – in-flight fuel/energy management (e.g. declaration of fuel/energy mayday...etc)
 - CAT.OP.MPA. 200 Special refuelling or defuelling of the aircraft
- AMC and GM

VTOL Phases of flight and alternate landing sites (1)



VTOL Phases of flight and alternate landing sites (2)

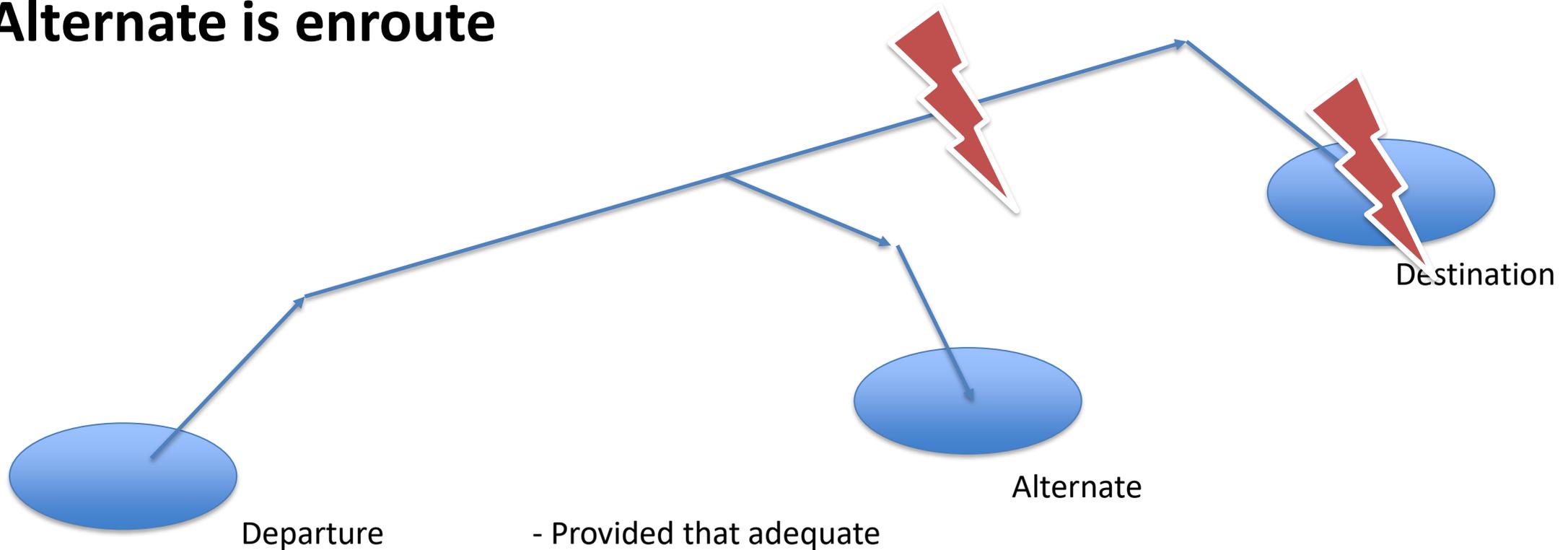


Final Reserve:

- not less than go-around + approach
- Consider abnormal/emergency situation

VTOL Phases of flight and alternate landing sites (3)

**Special case:
Alternate is enroute**



- Provided that adequate point of no return established

EASA approach

Part-UAM

- Cover the essential rules on e.g.:
 - Definitions
 - Planning requirements for fuel/energy
 - Monitoring of consumption
 - Need for consideration of safety margins, inaccuracies, HF, operational needs, extra fuel/energy
 - In-flight fuel/energy management
 - Emergency situations (aircraft and/or fuel/energy)
 - Data collection
- develop AMC and GM to account for the new technology

EASA approach

Prescriptive part In terms in flight times and altitudes have been removed

Added the provision of a point of no return for showing compliance with the 2 landing options when the alternate is along the route

EASA approach

SC VTOL, Means of Compliance

- Develop with industry concepts for adequate fuel/energy indications
 - Accounting for battery status, environmental conditions, aircraft status/configuration
 - Guidance on specifying the reserve energy with related trigger of a warning

Conclusions

Current rulemaking activities already aim at more performance-based terminology

Historical approach will not change significantly, however, will allow optimisation of the consumption of the available fuel/energy

EASA is presenting the principles of fuel/energy policy and it is up to Industry to support development of respective MoC/AMC/GM

For design purposes, the sufficient energy reserve from SC VTOL should be designed so that it is not breached during routine operations.

Challenge to display the available energy level for the required manoeuvres at all phases of flight.

Thank you for your attention

Feel free to submit your questions on our live event platform....

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