Transition to performance-based navigation (PBN) operations in the single European sky

[Regulation (EU) 2018/1048](https://www.easa.europa.eu/en/document-library/regulations/commission-implementing-regulation-eu-20181048), the implementing regulation for Performance-Based Navigation (PBN IR), seeks to enhance aircraft operations by transitioning to ensure most operations apply PBN by June 6, 2030.

This regulation was published in 2018 and stipulates that providers of air traffic management/air navigation services (ATM/ANS) and operators of aerodromes must implement PBN routes and approach procedures according to specific implementation deadlines, i.e., 3 December 2020, 25 January 2024, and 6 June 2030; hence a gradual implementation of PBN has already started.

**PBN harmonisation**

The PBN IR identifies the navigation specifications and functionalities to be used for enroute ATS routes, standard instrument departure routes (SID), standard arrival routes (STAR), and approach procedures. These routes and approach procedures are to be based on the RNAV 1, RNP 1, RNP 0.3, RNAV 5, RNP APCH (to LNAV, LNAV/VNAV and LPV minima) or RNP AR APCH specifications, as required by the [PBN IR implementation deadlines](https://www.easa.europa.eu/en/domains/air-traffic-management/transition-pbn-operations#deadline). On 26 May 2023, EASA published the [Notice of Proposed Amendment (NPA) 2023-04](https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2023-04), which makes a regulatory proposal that considers the use of the RNP 4 and RNAV 10 specifications in support of oceanic and remote continental operations. The use of a common set of ICAO specifications and functionalities allows the harmonisation of the onboard capabilities to perform PBN operations in the single European sky.

**Get ready for the changes in the airspace**

Although the PBN IR does not impose any requirements on aircraft operators, other EU regulations require aircraft to be suitably equipped and flight crew to be qualified to operate on the intended routes and approach procedures, including any necessary aircraft’s capability, operational approval, training, manuals, etc. Hence, to ensure continued and effective operation, **aircraft operators should adapt their aircraft and operations to the ANS provided**.

It is expected that the current conventional navigation infrastructure will be progressively rationalised, as PBN allows decommissioning of more costly or less performing equipment. However, a network of conventional navigation aids will be retained to ensure that safety and security will not be compromised in case of contingencies, i.e., situations where for unexpected reasons beyond service providers’ control, Global Navigation Satellite System (GNSS) or other methods used for PBN are no longer available.

**As of 6th June 2030,** the PBN IR expressly forbids the use of conventional navigation procedures or the use of PBN not contemplated in the Regulation, except in the event of contingencies (e.g., GNSS outages). In particular, the Regulation restricts category (CAT) I operations supported by instrument landing system (ILS), while it requires the implementation of PBN approaches (RNP APCH) down to localiser performance with vertical guidance (LPV) minima at all instrument runway ends.

Considering that, as of 6 June 2030, ILS CAT I approaches will only be used in case of contingency, aircraft operators should consider equipping their aircraft with satellite-based augmentation system (SBAS) avionics supporting RNP APCH operations to LPV minima and training their flight crews accordingly to ensure accessibility to airports in meteorological conditions requiring CAT I operations.

Since PBN cannot enable approach operations below CAT I minima, landing systems (i.e., ILS/GLS) enabling CAT II and CAT III operations are expressly permitted after 5 June 2030. Approach operations supported by GBAS landing system (GLS) CAT I facilities are not within the scope of the PBN IR, so they are not affected by the restrictions, and can continue to be used after the referred to deadline.

Depending on the local performance needs, either RNAV 1 or RNP 1 SID and STAR are being implemented where conventional SID and STAR are established. Therefore, aircraft will need to be equipped with avionics supporting RNAV 1 or RNP 1 operations and their flight crews will need to be qualified to operate on these PBN routes. For rotorcraft operations, the RNP 0.3 specification may alternatively be required to operate on the new routes.

**Transition plans consultation**

The PBN IR requires the implementation of concrete measures to ensure a smooth and safe transition to PBN operations, including the establishment and approval of PBN transition plans. As a prerequisite for their approval, transition plans and any significant update thereof, must be consulted with all civil and military stakeholders concerned, including all affected aircraft operators or their representative organisations. Most PBN transition plans have already been approved and may be updated to describe the transition to PBN, particularly, the definition of the end-state after 5 June 2030.

EASA invites civil and military aircraft operators and their representatives’ organisations to take an active role during these consultations, for instance by:

* sharing information about the current navigation capabilities of their aircraft and about the plans to get equipped (e.g., with inertial and SBAS avionics) in the years to come.
* addressing the operation of capable and non-capable aircraft (in accordance with the required PBN capabilities) during the transition; and
* promoting operational changes in the airspace with a view to maximising safety, flight efficiency, and environmental gains, e.g., changes leading to reduction in fuel consumption.

In addition, aircraft operators are reminded about the obligation to provide the correct PBN capability information when filing flight plans.

**PBN-related guidance by EASA**

EASA has published guidance material enabling PBN implementation in all relevant areas, such as aircraft certification, flight crew licencing, or flight procedure design; EASA is also supporting and monitoring the progress of the implementation. Furthermore, EASA has published [FAQs on PBN implementation](https://www.easa.europa.eu/en/the-agency/faqs/airspace-usage-requirements#category-airspace-usage-requirements---pbn-performance-based-navigation) on its website, which may be further revised as implementation progresses.

Should you require additional information please [contact us](https://www.easa.europa.eu/en/contact-us-aviation-2?select=Aviation&aviation=ATM).

**PBN IR implementation deadlines**

**Implementation by 3 December 2020**

* RNP APCH or RNP AR to all IREs without PA, except at those airports listed in point 1.2.1 of the Annex to the PCP Regulation , and, where required, RF legs
* RNAV 5 for all ATS routes at or above FL150

**Implementation by 25 January 2024**

* RNP APCH or RNP AR to all IREs, and, where required, RF legs
* For all IREs, RNAV 1 or RNP 1(+) for at least one established SID/STAR
* For all IREs, RNP 0.3 or RNP 1 or RNAV 1 for at least one established SID/STAR for rotorcraft operations
* RNAV 5 for ATS routes established below FL150
* RNP 0.3 or RNP 1 or RNAV 1 for ATS routes established below FL150 for rotorcraft operations

**Implementation by 6 June 2030**

* RNAV 1 or RNP 1(+) applicable to all SIDs/STARs when established
* RNP 0.3 or RNP 1 or RNAV 1 applicable to all SIDs/STARs for rotorcraft operations when established

**Abbreviations:**
IRE: instrument runway end
PA: precision approach
RNP 1(+): RNP 1 specification including RF and/or vertical paths defined by constraints
SID: standard instrument departure
STAR: standard instrument arrival
RF: radius to fix
RNAV X & RNP X: area navigation (RNAV) & required navigation performance (RNP) navigation specifications

**Related Content**

[**Commission Implementing Regulation (EU) 2018/1048**](https://www.easa.europa.eu/en/document-library/regulations/commission-implementing-regulation-eu-20181048)

[FAQs - Airspace Usage Requirements - PBN (Performance-based navigation)](https://www.easa.europa.eu/en/the-agency/faqs/airspace-usage-requirements#category-airspace-usage-requirements---pbn-performance-based-navigation)

[**AMC & GM to AUR — Issue 2**](https://www.easa.europa.eu/en/document-library/acceptable-means-of-compliance-and-guidance-materials/amc-gm-aur-issue-2)

[**NPA 2023-04**](https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2023-04)

[EASA SIB No. 2023-03](https://ad.easa.europa.eu/ad/2023-03)

[EASA SIB No. 2022-02R1](https://ad.easa.europa.eu/ad/2023-03)