

National Aeronautics and
Space Administration
Office of the Administrator
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Washington, DC 20546-0001



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TO: Officials-in-Charge of Headquarters Offices
Directors, NASA Centers

FROM: Associate Administrator

SUBJECT: Improving PPBE/Workforce Forecasting and the Strategic Planning Process for Mission Workforce

To build a workforce to perform NASA's mission today, tomorrow, and in the future, the Agency emphasized three strategic areas of interest in the recent past, codified in a December 2019 memo, *NASA Strategic Workforce Planning Guidance for Mission Workforce*:

1. Agility in the workforce.
2. Becoming more demand versus supply driven to respond to changes in mission.
3. Strategically shaping the workforce to meet both near- and long-term goals and objectives.

In the process of creating workforce plans to implement these areas of interest, it was widely noted that the Program Planning and Budget Execution's (PPBE) demand-based workforce forecasting is often imprecise and is of low confidence in the outyears (i.e., beyond the budget year plus one). For example, few workforce planners believe the PPBE data. The PPBE does not capture all the work that Centers believe they have secured, and demand for testing in the Agency's major aerospace facilities is not well forecast, even in the near term. Additionally, the appropriated budget can be very different from the President's Budget Request (PBR) used in the PPBE formulation planning. In summary, the level of effort required for the PBR/PPBE workforce planning process is not commensurate with the benefits nor has the desired degree of accuracy.

Owing to these shortcomings, senior leadership across the Agency (Centers and Mission Directorates) sought recommendations to improve the PPBE formulation process and strategic workforce planning—especially demand-based forecasting—while continuing to emphasize and implement the aforementioned areas of interest. A tiger team was formed in 2021 to address these shortcomings. As a result of their efforts, the Agency will proceed with the following process and planning improvements:

- *Reduce the Burden*—The NASA central budget management tool (also known as the N2 database), used in the PPBE formulation process, will be populated with fewer data entries, starting in the PPBE24 cycle. The team identified significant entries that can be made optional, resulting in hundreds of fewer, required fields. Strictly for the workforce full-time equivalent (FTE) entries in N2 populated by the Mission Directorates (MDs), implementation of the recommended changes should result in: (a) higher-level entries to clarify and align the degree of confidence of the FTE numbers in the outyears; and (b) a consistent approach in the use of “forecast FTE.” In addition, overall planning for FTE, outside of the N2 database, will be based on the most likely scenarios anticipated by each MD. Such planning should reduce the degree of FTE changes between the plans and actuals when budgets are appropriated.
- *Improve Forecasting*—Each MD will issue written and verbal guidance to Centers for work content and workforce demand, addressing both tactical priorities and strategic direction. The MD guidance will establish the vector for work in the PPBE horizon, as well as beyond that

horizon (for years 5+) to prepare for the work demand in the long term. The initial MD guidance should be drafted and shared in fall 2022, with the intent for annual updates. MD guidance will be consistent with Center Roles, as published in NPD 1000.3E, and aligned with MD acquisition strategies, major program/project initiation, and the completion of key milestones. Guidance should not be one way, but a discussion between the MD and the Center Director.

- *Improve Strategic Workforce Planning*—NASA Centers will develop responses incorporating MD and Office of the Chief Human Capital Officer (OCHCO) guidance. These responses will provide the Agency with a better understanding of the in-house work, staffing decisions for each Center’s technical workforce, and needed capabilities to fulfill future work directions. In addition, the Center product will respond to the guidance from OCHCO on required data submissions and topics of interest, such as permanent FTE targets and mission-critical occupations/skill sets. The Center responses to workforce guidance should be submitted in Spring 2023. These responses will also form the basis for periodic “review/check-in” discussions between the MDs and the Centers on work content and workforce for each Center. Note that until the demand model is operating efficiently, the current permanent FTE Center targets/ceilings will remain in place.
- *Resolve Workforce Mismatches*—By Summer 2022, OCHCO will develop and document a clear and rapid process for MD/Center reconciliation of supply versus demand mismatches for the current and next budget year. The elimination of mismatches for these years should result in the agreed-upon, work content and FTE levels associated with each MD. Subsequently, the Agency will develop an approach to minimize workforce mismatches for the PPBE horizon and beyond. In addition, OCHCO will produce relevant data snapshots and analyses for senior leadership to monitor Center and Agency workforce. Example data sets include: growth and nature of headcount focusing on term appointments, supply versus demand—current and forecasts, and hiring and attrition.

Note that Enclosures 1-3 include details on the PPBE formulation/workforce planning and process improvements, including the N2 changes, the MD strategic guidance, and the content for Center responses. Additional materials related to workforce reconciliation as well as workforce monitoring through data will be provided by OCHCO.

During the course of this year, I will work closely with the Chief Human Capital Officer, the Chief Financial Officer, the MDs, and the Center Directors to ensure effective implementation of these improvements for forecasting and planning our mission content and workforce. The tiger team will also monitor implementation and report out periodically to senior leadership on progress, impediments, and any needed course corrections. I am confident that these efforts will reduce the annual burden related to the PPBE formulation planning and workforce processes, as well as improve the alignment of NASA’s technical workforce with MD requirements and long-term demand.

Thank you in advance for your support.



Robert D. Cabana

3 Enclosures:

1. Changes to N2 Data Entry Requirements
2. Items for Consideration for Mission Directorate Strategic Guidance
3. Recommended Content of Center Responses to Workforce Guidance

Changes to N2 Data Entry Requirements (New for PPBE24)

The following information is available at: <https://community.max.gov/x/ZgAjhw>.

Effective in PPBE24, NASA is making changes to the current N2 input requirements to simplify the data entry process. A high-level summary is provided below. The Office of the Chief Financial Officer (OCFO) will issue a separate Business Process Memorandum (BPM) with more detailed implementation guidance.

Elimination and Consolidation of Full Cost Elements

The following full-cost element (FCE) fields within N2 are no longer required for the Agency budget submit:

- Contracted Services.
- Forecast Jet Propulsion Laboratory (JPL) Work Year Equivalent (WYE).
- Other Center Budgeted WYE.
- Travel.
- Working Capital Fund.

When reporting to OCFO, the budget that has previously been included under the Travel FCE should be included under the Procurements FCE.

Control Account Managers (CAMs) are no longer required to populate these FCEs in N2; however, the FCEs will remain in N2 in case CAMs or Centers use the FCEs for their internal budget formulation processes. In addition, the FCE reporting for JPL WYE is being consolidated with Center Budgeted WYE. Moving forward, JPL WYE should be reported as part of Center Budgeted WYE in Center 55 (JPL).

Use of the Unallocated Civil Service FTE and Unallocated Labor FCEs

For the Program Analysis and Alignment (PAA) submissions, CAMs should not use the Unallocated Civil Service FTE or Unallocated Labor FCEs. Those fields are reserved for use later in the PPBE process. Additional guidance will be provided by OCHCO.

Changes to FTE Reporting for Outyears

For FYs 2024 and 2025, all CAMs should complete all FTE, by project, in N2. CAMs should continue to report FTE to the nearest decimal.

For FYs 2026-2028, CAMs should complete all FTE by project only where demand is known or is anticipated with a reasonable level of confidence. In addition, CAMs are encouraged to report FTE in whole numbers, rather than to the nearest decimal, where demand is not confidently known. For the outyears, CAMs are no longer required to populate FTE at the project level when demand is unknown or cannot be reasonably forecast. Instead, when the demand for FTE is known or anticipated, but the specific project is unknown, CAMs shall report FTE at an aggregated level using existing projects associated with outyear work. Each CAM, in coordination with OCFO, has the discretion to implement this change in the way that is most efficient for their Mission Directorate. CAMs shall provide additional guidance in their respective Program and Resources Guidance (PRGs).

Items for Consideration for Mission Directorate Strategic Guidance

Purpose

NASA Mission Directorates are responsible for strategy development and management of NASA's complex missions and programs—while NASA Centers are responsible for implementation and execution of those missions, as well as for providing a high-quality workforce with the right skill sets at the right time to ensure mission success. This document/guidance is envisioned as a framework to enable workforce conversations between the Mission Directorates and Centers. Noting that not all items will be applicable to all situations, this approach is designed to be a framework to communicate, as appropriate, what is known and levels of confidence around the information. The Center Workforce Implementation Plans are envisioned to replace/integrate Center Workforce Master Plans and Center Hiring Plans.

Mission Directorate Guidance

In this section, as appropriate, the Mission Directorates provide additional information to that which is known through the Program Planning and Budget Execution (PPBE) process. The intent is to inform Centers of workforce full-time equivalent (FTE) numbers (and relative confidence in the numbers); priority of programs/projects, expectations for forecast FTEs; anticipated changes/trends in Center Roles; and/or needed skills such that the Centers can generate workforce plans for the current execution year, one year ahead, five years ahead, and ten years ahead in decreasing levels of precision. The level of precision and confidence provided by the Mission Directorates is expected to rise as the year of execution approaches.

Tactical (Near-term and Mid-term: Context for years 1 through 5)

- List terminating and starting projects, if not already in N2. Include end dates, start dates, and confidence level of termination/start.
- Prioritize current projects and/or milestones, especially in Year of Execution (YoE) and YoE+ 1. (Informs Centers as they assign staff and best assures the meeting of highest-priority milestones).
- List expected work for civil servants (new projects or major scope changes only), highlighting “hands-on” work for civil servants and significant in-house testing.
- Provide confidence in workforce numbers in N2 (by program/project, lifecycle, etc.).
- Identify known disconnects between Administration and Congress (expectations for Appropriations (up or down)) and suggest scenarios that should be considered for planning purposes (e.g., most likely).
- Communicate what is still to be allocated (held at Headquarters).
- Identify changes in Center Roles during this timeframe (any immediate ramps up or down).
- List expectations for “forecasted FTEs,” (i.e., those FTEs that will be needed and are as-yet unassigned to specific projects).

Strategic (Long-term: Context for years 5+ (as appropriate...))

- Use Agency Strategic Plan, Agency Mission Planning Manifest (AMPM), and Center Roles as a framework.

- List anticipated vectors in Center Roles (increase/decrease/maintain).
 - List major changes in skillset needs, when known.
- List terminating and starting initiatives (e.g., new major project and program starts). Include confidence of initiation/termination.
- List expected changes in staffing needs after various program/project milestones are met (e.g., SLS transition from development to operations; low-boom demonstration completion) or after major projects are completed.
- List expected work for civil servants (new projects or major scope changes only).
- List expectations for “forecasted FTEs,” i.e., those FTEs that will be needed and who are as-yet unassigned to specific projects.
- Provide program selection/solicitation cadence (acquisition plans and/or acquisition philosophy).

Additional Items for Center Workforce Plans: MD-Requested Information from the Centers for 5 Years and Out

Centers should provide their philosophy on managing the workforce, assessment of core workforce skill sets, plans to address skill gaps/overages as well as plans for workforce as programs progress through “lifecycles” (e.g., moving from development to operations).

Overall Center philosophy on workforce

- Philosophy on use of permanent employees, term employees, and support contractor WYE.

Center core workforce skill sets for each timeframe, 1-5 and 5+

- Where are gaps and overages, by project and skill sets?
- To what extent are the needs of highest priority projects satisfied and how?
- Are any project milestones, especially in YoE and YoE + 1, threatened for lack of in-house staffing?
- What is the plan to fill the gaps to execute work and reduce risk to milestones?
- What is the plan to eliminate workforce overages?
- Are there any skill sets tied to one Mission Directorate (80 percent funded by one MD)? And are there any issues in those skill sets?
- What are the recruitment and retention plans for specialty skill sets (Center Roles) such as artificial intelligence, machine learning, quantum, and technology of the future?
- What skill sets, if any, does the Center strongly believe should be maintained at a certain size, even if forecasted work for that skill set is small or absent? What is the rationale for maintaining that skill set?

Center plan as programs move through lifecycles (e.g., development to operations)

- Transition strategy for redeployment, retraining, early out/buy out (specific supply-side initiatives that Centers plan to execute).

Recommended Content of Center Responses to Workforce Guidance

The following information serves as a recommendation for the Table of Contents for future Center responses to workforce guidance. It is organized into the following principal sections:

- Section 1: Center Responses to MD Strategic Guidance
- Section 2: Center Responses to OCHCO Guidance
- Section 3: (Optional) Opportunity for Centers to Provide Feedback on Best Practices and Suggested Improvements

In addition, an Executive Summary (1-2 pages) should be submitted as part of the Center response. The following information provides details about each of the three sections.

Center Data to Mission Directorates

Purpose

The data in this section is provided by NASA Centers. It enables NASA Mission Directorates (MDs) to understand if program/project objectives are at risk due to a Center's lack of appropriate workforce. For each NASA MD, the Centers should clearly indicate the workforce-related risks associated with meeting program/project objectives and their overall workforce status.

Execution Year and Execution Year + 1—updated annually

The data in this section is intended to inform MDs and allow the MDs and the Center(s) to adjust or re-plan FTE (or adjust WYE) for program(s)/project(s) when the civil servant workforce will not be available in a timely fashion. It is also intended to inform project and program managers (as well as the Office of the Chief Human Capital Officer (OCHCO)) when Centers need assistance in maintaining critical workforce who are currently not needed but will be in the future.

- a. Describe confidence level and associated risks of providing workforce to achieve the highest-priority program/project milestones (general description).
- b. List of MD-provided terminating or starting programs/projects or changes in MD-provided Center Roles that will require significant upskilling or reskilling of existing workforce.
- c. Expectations for forecasted FTE (responding to MD guidance, including scenarios other than the President's Budget Request).
- d. List of critical skills at the Center that are at risk based on program/project terminations.
- e. List of critical skills at the Center which are at risk (e.g., NASA-unique and not requested by programs/projects but will be required in the near future, skills that are nearly unattainable via civil service or WYE methods).
- f. List of programs/projects or task assignments believed to have been missed during the PPBE process with a short (no more than one paragraph) rationale.
- g. Impacts on the use of (including philosophy of using) WYE, including any changes owed to acquisition decisions.
- h. Any other critical issues or information (e.g., surprises) that the Center wants to share.

Years 3-5 (Remainder of PPBE Horizon)—updated only as necessary (to be decided by OCHCO in consultation with MDs and Centers)

The data in this section is intended to inform MDs and OCHCO about expected workforce risks in the mid-term horizon, allowing MDs or the Centers to adjust or re-plan programs/projects when the workforce will not be available in a timely fashion. It is also intended to inform programs/projects when Centers need assistance in maintaining critical workforce who are currently not needed but will be in the future.

- a. List of MD-provided terminating or starting programs/projects or changes in MD-provided Center Roles that will require significant upskilling or reskilling of existing workforce during this timeframe.
- b. Any new or additional information related to the previous section (see *Execution Year and Execution Year + 1* sections a-g), but applicable to this timeframe.

Years 5+ (Beyond the PPBE Horizon)—updated only as necessary (to be decided by OCHCO in consultation with MDs and Centers)

The data in this section is intended to inform MDs and OCHCO about expected workforce risks in the strategic sense and allow the Agency to plan its internal and overall workforce.

- a. Description of how the MD-provided changes in acquisition strategy, major program changes and Center Roles affect FTE levels and capabilities with each Role.
- b. List of and rationale for intended hires of specialty skill sets (based on Center Roles and Agency priorities), for example, artificial intelligence, machine learning, quantum, and technology of the future.
- c. List of and rationale for skill sets, if any, that the Center strongly believes should be maintained at a certain size, even if forecasted work for that skill set is small or absent.
- d. Any difficult or unsolvable long-term gaps or surpluses in specific skill sets.
- e. Impacts on the use of (including philosophy of using) WYE, including any changes owed to acquisition decisions.
- f. Any new or additional information related to the previous section, but applicable to this timeframe.

Center Data to OCHCO

Purpose

The data in this section is provided by NASA Centers in response to OCHCO guidance. It enables OCHCO to better understand the overall talent needs of the Agency, including current and future critical skills and capabilities. It also enables: (a) efforts to hire and retain the right talent, (b) identification of talent development needs, (c) identification of internal and external supply and demand factors, (d) workforce topics of current interest,¹ and (e) meeting Administration reporting requirements.

¹ These topics will likely change each year. Some topics of current interest will emerge frequently, so rather than be prescriptive here, this data is essentially a placeholder: a response to an OCHCO topic/guidance that is issued annually.

In the past, the OCHCO guidance has included mandatory qualitative and quantitative inputs to assess the topics listed above. In the near future, it is OCHCO's intent to limit its mandatory requests to data of interest to senior management and that which will be useful for the periodic "reviews/check-ins" that are planned between the MDs and Centers. Items supporting talent management and other OCHCO interests will be optional inputs intended to capture best practices and lessons learned across the Agency.

Current OCHCO Workforce Plan

The current OCHCO workforce planning and process are available at the following link: [Workforce Planning \(sharepoint.com\)](#); the most recent OCHCO workforce plan guidance can be found at the bottom.² As noted above, some of the data are expected to no longer be requested in the future.

The system Workforce Professional (WFPRO)³ will continue to be available to Centers for their use in drafting and submitting the Center Response.

Center to MDs, OCHCO, or Agency Leadership—optional input; can be provided annually

Purpose

The data in this section is provided by NASA Centers. It enables Centers to raise or share any other internal workforce items as it sees fit.

Best Practices or Proud Achievements

The data in this section is intended to inform others about workforce-related items of significance from which others might benefit (for example, achievements related to "future of work," training, hands-on work, etc.)

Suggested Improvements

The data in this section is intended to inform others about recommended improvements to workforce-related plans or the planning processes.

² See previous footnote, which is also applicable here.

³ The WFPRO system provides a template and outline for Center/Mission Support Enterprise Offices (MSEOs) to develop and document their Workforce Plan.