



AHEAD Model

Financial Specifications for the CMS-Designed Medicare FFS Hospital Global Budget Methodology

Version 3.2

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1. Introduction

This document describes the financial methodology and operational payment features of Medicare Fee-For-Service (FFS) Hospital Global Budgets (HGB) under the AHEAD model. It provides eligible applicants, providers, and other interested parties with the specifications necessary to understand how prospective Medicare FFS HGB payments are established for Participant Hospitals.

The AHEAD Medicare FFS HGB is designed to support care delivery transformation and advance value-based care by providing hospitals with a fixed, prospective annual budget for select services. HGBs are based on a historical net patient revenue (NPR) baseline and are updated annually to reflect pricing updates, policy changes, market factors, and model-specific adjustments (including performance incentives).

1.1 Updates to Technical Specifications

Version 3.2 of the HGB specifications includes the following key methodological updates based on stakeholder feedback.

- **Baseline Carveouts:** Version 3.2 details the methodology used to identify Diagnosis-Related Groups (DRG) and Healthcare Common Procedure Coding System (HCPCS) codes that are excluded from the Medicare HGB and will continue to be reimbursed through traditional Medicare FFS payment methodologies during the performance period. These carveouts are intended to preserve the incentive for hospitals to provide exceptionally high-cost, high acuity services.
- **Effectiveness Adjustment:** Version 3.2 refines the Effectiveness Adjustment (EA) methodology by incorporating risk-adjusted measures of readmissions, avoidable admissions, and emergency department utilization into the calculation of Potentially Avoidable Utilization (PAU). Hospital performance is assessed using normalized measure values and evaluated across PAU percentile bands. The updated methodology introduces more granular percentile bands, allowing EA reductions to better reflect differences in hospital performance.

Additional revisions have been made throughout the specifications to improve clarity, transparency, and readability.

Version 3.2 supersedes all previous versions of the CMS-Designed Medicare FFS HGB methodology.

Comment Period: CMS requests feedback on Version 3.2 “Financial Specifications for the CMS-Designed Medicare FFS Hospital Global Budget Methodology” through a comment period, open from September 1, 2026, through October 31, 2026. Any comments, recommendations, and questions regarding the HGB methodology detailed in Version 3.2 HGB Financial Specifications must be submitted through the [HGB Specifications Comment Period survey form](#). To facilitate review, CMS requests that each hospital submit a single coordinated response whenever possible.

CMS will consider commenters’ feedback when finalizing the HGB Financial Specifications, though CMS may not respond to each comment. Questions regarding the AHEAD Model may be directed to AHEAD@cms.hhs.gov.

Note: The specifications are updated annually prior to each performance year (PY) to reflect changes in CMS policy and other programmatic considerations.

1.2 AHEAD Model Overview

The AHEAD Model is a voluntary, state-based alternative payment and service delivery model designed to curb health care cost growth, improve population health, and advance community health outcomes. The AHEAD Model tests a flexible framework that includes statewide or sub-state¹ accountability targets for all-payer, Medicare FFS cost growth, primary care investment, and population health outcomes. The model includes specific components to help each award recipient achieve these goals, including Medicare HGB and Medicaid HGB for Participant Hospitals and a primary care program for Participant Primary Care Practices. The AHEAD Model also includes Geo AHEAD, a geographically based accountable care program designed to support total cost of care accountability and further align incentives across providers, hospitals, primary care practices, and other stakeholders within participating states and regions.

Current statewide and regional care transformation and payment reforms, along with early implementation of transformation activities, are key to building a sustainable approach to care transformation under the AHEAD Model. The Model is intended to integrate seamlessly into ongoing state health reform work—especially in those states that have already invested considerable time and resources in restructuring local delivery systems—to galvanize participating states to enhance innovation while meeting Model goals. With Medicare serving as an invested payer in these innovations, AHEAD provides a framework to use Medicare FFS, Medicaid, and commercial payer alignment to catalyze greater transformation within states and across regions. The model relies on a state-led, all-payer strategy to increase investments in primary care and integrate behavioral health and health-related social needs across the delivery system, while constraining TCOC growth through improved preventive care and population health, HGBs, and all-payer and Medicare FFS growth targets.

1.3 Hospital Global Budgets

HGBs are a method of financing health care services that shift economic incentives away from volume and toward value. This key component of the AHEAD Model aims to change care delivery, improve care quality, reduce unnecessary services, and generate revenue to invest in population health priorities. HGBs are a prospectively set fixed amount of revenue a hospital receives for the treatment of a specific patient population or program. Hospital FFS payments encourage providers to increase the volume of services to generate revenue, which may incentivize the overuse of services, duplication of complex services, or over-investment in sophisticated capital and technology. In comparison, global budgets provide hospitals, including rural and urban safety net hospitals, with financial stability and flexibility, and incentivize reductions in unnecessary utilization. Unlike FFS, hospitals participating in global budgets can retain revenue that would otherwise be lost from eliminating unnecessary utilization like readmissions or avoidable emergency department visits. Global budgets also provide hospitals with the incentives for and flexibility to work with other health care providers and public health agencies to improve the health of the mutual populations they serve.

In the AHEAD Model², Medicare HGB payment amounts are calculated based on Medicare payments in previous years and updates to reflect inflation as well as changes in populations served and services provided. Because financial incentives are decoupled from volume in an HGB,

¹ A sub-state region is defined as a group or groups of zip codes within a state that do not encompass an entire state and may or may not be close in location (i.e., do not need to share a common border). If a state elects and is accepted to participate in the AHEAD Model via a sub-state region, assessment of the state's performance is based on its participation at the sub-state region-level. States may not apply to participate in the AHEAD Model through multiple, separate sub-state regions.

² AHEAD Model Hospital Global Budget Factsheet, <https://www.cms.gov/files/document/ahead-hgb-fs.pdf>

hospitals are disincentivized to increase volume and rewarded for population health improvements that reduce costs. Through global budgets, hospitals can reduce the costs of care, improve their financial performance, and refocus investments to improve the care of their patient population.

Under AHEAD, HGBs replace payments for inpatient and outpatient facility services, but not for professional services. However, hospitals must engage and work with these professional services providers furnishing care to hospital patients, as well as non-hospital providers and facilities furnishing care to Medicare beneficiaries who may or may not seek hospital care, to succeed in this type of arrangement. Additionally, CMS makes certain waivers available to allow Participant Hospitals to formalize arrangements with these non-hospital providers and to provide additional flexibilities to Participant Hospitals. These waivers are described in greater detail in the State and Hospital Participation Agreements.

By participating in HGBs and shifting away from FFS incentives, hospitals can realize financial savings from reduced avoidable utilization (e.g., avoidable admissions and emergency visits) and moving care to lower acuity settings, when appropriate. Hospitals also derive value from stable and predictable funding, the ability to reorient activities to population health management, and the opportunity to deploy innovative strategies that improve beneficiary care quality and reinvigorate clinician engagement.

1.4 Timeline

The AHEAD Model operates for 11 years (2024 – 2034), and includes a Pre-Implementation Period and an Implementation Period, followed by up to two Transition Years. There are three cohorts of states in the AHEAD Model, each of which have their own timeline. States apply to a specific cohort when applying to the model, and CMS selects states for participation in that cohort in which they applied. Cohort participation impacts the length of the Pre-Implementation Period (which can range between 18 – 30 months) and the number of Performance Years (PYs) in the Implementation Period (eight or nine years). During the Pre-Implementation Period, AHEAD States recruit Participant Hospitals, recruit Primary Care Practices for Primary Care AHEAD, initiate Medicaid alignment, develop a Model Governance Structure, and engage private payers. **Exhibit 1** provides a visual representation of the model implementation timeline for Cohorts one to three. Medicare HGB payments and Primary Care AHEAD do not begin until the Implementation Period (PY1 and beyond) for AHEAD States.

Exhibit 1: Cohort Implementation Timeline

Cohort	2024 Q3	2025	2026	2027	2028 ³	2029	2030	2031	2032	2033	2034
1	Pre-Imp.	Pre-Imp.	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8	PY9
2	Pre-Imp.	Pre-Imp.	Pre-Imp.	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
3	NOFO	Pre-Imp.	Pre-Imp.	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8

Abbreviations: NOFO = Notice of Funding Opportunity, Pre-Imp. = Pre-Implementation Period

³ Maryland hospitals begin utilizing the CMS Designed AHEAD HGB methodology in 2028 under a PY3 methodology.

1.5 Eligible Hospitals

Acute Care Hospitals (ACHs) and Critical Access Hospitals (CAHs) are eligible to participate in Medicare HGBs under the model. Eligible Hospitals also include Rural Emergency Hospitals (REHs)—a new Medicare provider type offering outpatient, observation, emergency, and certain other services that AHEAD States allow to operate by enacting legislation prior to or during the Model Implementation Period. Eligible Hospitals must be a Medicare-enrolled facility in good standing⁴ with CMS and located in a participating AHEAD State or sub-state region to be eligible to participate. Hospital participation in AHEAD is voluntary and is subject to state-level coordination and oversight. Eligible Hospitals that meet these qualifications and sign a Hospital Participation Agreement for the AHEAD Model are termed Participant Hospitals. **Exhibit 2** outlines the hospital types eligible and ineligible for participation in the AHEAD Medicare FFS HGB.⁵

Exhibit 2: Provider Types Eligible and Ineligible from Participation in Medicare HGBs

Hospital Type	Eligible/Ineligible
Acute Care Hospitals	Eligible
Critical Access Hospital	Eligible
Medicare-Dependent Hospital	Eligible
Rural Emergency Hospital (REH)	Eligible
Rural Referral Center (RRC) Hospitals	Eligible
Sole Community Hospital (SCH)	Eligible
Tribal Hospital	Eligible
Indian Health Service (IHS) Hospitals	Eligible
Cancer Hospitals	Ineligible
Children's Hospitals	Ineligible
Long-Term Care Facilities	Ineligible
Skilled Nursing Facilities	Ineligible
Psychiatric Hospitals (free standing and distinct part units)	Ineligible
Rehabilitation Hospitals (free standing and distinct part units)	Ineligible
Transplant Hospitals	Ineligible
Veterans' Hospitals	Ineligible

Exhibit 3 lists payment policies by type of hospital that precede participation in AHEAD and details how they are addressed in the baseline and subsequent HGBs for each Participant Hospital. Hospitals that voluntarily agree to participate under a HGB sign Hospital Participation Agreements with CMS that enumerate their participation requirements and expectations. Hospital Participation

⁴ Medicare-enrolled providers must meet all requirements set forth by CMS to be considered in good standing. More information on Medicare enrollment and requirements for provider is available at: <https://www.cms.gov/medicare/enrollment-renewal/providers-suppliers>.

⁵ While Tribal and Indian Health Services hospitals are eligible for the AHEAD Model, the states currently considering the model do not have Tribal and Indian Health Services hospitals. Therefore, the HGB methodology does not specify an application for these hospitals.

Agreements are provided to interested hospitals during the Pre-Implementation Period and need to be signed in advance of a hospital participating in HGBs for the upcoming PY.

Exhibit 3: Hospital Types Included Under the AHEAD Hospital Global Budget Methodology

Hospital Type	Payments & Policies Prior to AHEAD Model	Basis for HGB Development
Critical Access Hospital (CAH)	CAHs are paid for most inpatient and outpatient services to patients at 101 percent of reasonable costs.	Medicare FFS payments and cost report settlements including swing beds that reflect total payments are used to construct a CAH's baseline HGB. Under the AHEAD Model, CAHs are no longer reconciled back to 101 percent of reasonable costs as part of their cost reporting. A payment floor is also applied to CAHs participating in AHEAD (Section 2.1.6).
Indian Health Service (IHS) Hospitals	The IHS is the principal federal health care provider and health advocate for American Indian/Alaska Native (AI/AN) peoples, and its goal is to raise their health status to the highest possible level. The IHS provides a comprehensive health service delivery system for AI/AN peoples. ⁶	Medicare FFS payments that reflect unique payment methodologies for IHS Hospitals are used to construct the baseline.
Medicare-Dependent Hospital (MDH)	MDHs receive operating payments based on the higher of the federal rate or the federal rate plus 75 percent of the difference between the federal rate and the hospital-specific rate. An MDH's capital payments are solely based on the capital base rate. MDHs may also qualify for a payment adjustment if the hospital experiences a significant volume decrease. The MDH program was set to expire on March 31, 2025 but was extended through December 31, 2026. After the extension is complete, all hospitals that previously qualified for MDH status will be paid under IPPS and will no longer receive the additional payment based on the hospital-specific rate. The MDHs do have the option to apply for SCH status and will be paid as such under certain conditions following the program expiration.	After the MDH program expiration, the Medicare FFS payments methodology for acute care hospitals or SCHs will be applied.
Rural Emergency Hospital (REH)	Medicare provider type effective 01/01/23. CAHs can voluntarily convert to an emergency hospital that does not maintain inpatient beds. REHs receive the same Medicare payment rates as other Emergency Departments (ED) paid under Outpatient Prospective Payment System (OPPS), plus an additional payment to assist with capital costs. Note that methodology may be updated depending on final Inpatient Prospective Payment System (IPPS)/OPPS rule.	Medicare FFS payments that reflect unique payment methodologies for REH are used to construct the baseline. Participating Hospitals that convert to REHs during Model PYs have the HGB reconstructed on a case-by-case basis. CMS continues to develop a REH-specific HGB methodology for inclusions of additional considerations.

⁶ See Indian Health Service Agency Overview, <https://www.ihs.gov/aboutihs/overview>.

Hospital Type	Payments & Policies Prior to AHEAD Model	Basis for HGB Development
Rural Referral Center (RRC) Program	RRCs support high-volume rural hospitals and are paid based upon the urban, rather than rural, prospective payment rates as adjusted by the applicable Diagnosis Related Group (DRG) weighting factor and the rural area index. In addition, RRCs have distinct considerations regarding the calculation of DSH adjustment factors. They are not subjected to the 12% rural cap on traditional DSH payments. As for the wage index reclassification for Medicare reimbursement purposes, the RRCs are exempt from the proximity requirement and the 106% average hourly wage criterion.	The DSH capital and operating adjustment factors used for calculating the Policy & Quality Adjustments in the APA and the hospital-specific wage index used for adjusting geographic area differences in hospital wages include the distinct DSH adjustment provisions and reclassified wage index for RRCs.
Sole Community Hospital (SCH)	SCHs can receive operating payments based on the higher of their hospital-specific payment rate or the federal rate, while capital payments are solely based on the capital base rate (like all other Acute Care Hospitals). SCHs are also subject to special considerations regarding the calculation of the DSH adjustment factor. They are exempt from the proximity requirement for wage index reclassification. For outpatient services, SCHs receive a 7.1% increase above the standard OPPS rates, excluding drugs and biologics.	The APA adjusts prices by leveraging the changes in the SCHs' Hospital Specific Payment, the reclassified wage index, and the appropriate DSH adjustment factors, all of which reflect the unique payment structure of the SCHs. Their increased OPPS reimbursement is included in standard CMS outlier payment policy and is included in the AHEAD Outlier Adjustment like ACHs.
Tribal Hospitals	Hospitals that are owned and/or operated by Tribes or Tribal organizations that contract with IHS to plan, conduct, or administer one or more individual programs, functions, services or activities under Public Law (P.L.) 93-638, or portions thereof, including construction programs that the IHS would otherwise provide for AI/ANs because of their status as AI/ANs. ⁷	Medicare FFS payment that reflect the unique payment methodology paid to Tribal Hospitals in lieu of IHS Hospitals are used to construct the baseline.

1.6 Key Terms

Exhibit 4 and **Exhibit 5** introduce key terms and explanations for current programs and payments administered by CMS that intersect with HGBs, as well as new AHEAD terms for elements of the HGB methodology.⁸

Exhibit 4: Overview of CMS Programs and Payments

Term	Description
Acute Care Hospital	A hospital that provides inpatient medical care and other related services for surgery, acute medical conditions, or injuries (usually for a short-term illness or condition) (defined as a “subsection (d) hospital” in Section 1886(d)(1)(B) of the Social Security Act) and traditionally paid through the IPPS and OPPS.

⁷ See Title I | Office of Tribal Self-Governance, <https://www.ihs.gov/selfgovernance/title-i/>

⁸ Key terms are always capitalized to indicate the term's defined purpose in the payment calculation. In some cases, the same or similar words appear in lower case for the purpose of introducing a concept.

Term	Description
AHEAD Accountable Care Prospective Trend (ACPT)	A model-developed prospective growth rate based on the (United States Per Capita Cost) USPCC rate, prospectively set for a five-year period, similar to the ACPT used in the Medicare Shared Savings Program. The AHEAD ACPT is prospectively set to avoid incorporating the effect of the AHEAD model on healthcare spending.
Alternative Payment Model (APM)	A payment approach that provides added incentive payments for high quality and cost-efficient care. APMs can apply to a specific clinical condition, a care episode, or a population. For purposes of the Quality Payment Program, APM is codified in 42 CFR 414.1305.
Completion Factor	To account for the time between when a claim is incurred and when it is paid, a completion factor is used to adjust paid amounts to estimate actual spending during a specific time period. It represents the percentage of estimated incurred claims already paid through a particular point in time, allowing the model to create a multiplier based on historic Claims Runout patterns, that allows the model to project final payments before the claims cycle is completed.
Critical Access Hospital (CAH)	A state that has established a Medicare Rural Hospital Flexibility Program (Flex) may designate certain facilities as CAHs. CMS certifies a state-designated facility as a CAH if the facility meets certain requirements. CAHs receive cost-based reimbursement for most Medicare Part A and Part B services. Eligible Hospitals must, among other requirements, meet the following conditions to obtain CAH designation: 1) Have 25 or fewer acute care inpatient beds. 2) Be located more than 35 miles from another hospital or CAH, or 15 miles if mountainous terrain with only secondary roads (some exceptions apply). 3) Maintain an annual average length of stay of 96 hours or less for acute care patients. 4) Provide 24/7 emergency care services. Conditions of Participation for CAHs are defined in 42 CFR 485 subpart F.9
Graduate Medical Education (GME)	Payments to hospitals for the costs of approved GME programs. The GME methodology includes a hospital-specific, base-period per resident amount (PRA) that is calculated by dividing a hospital's allowable costs of GME for a base period by its number of residents during the base period. Medicare-direct GME payments are calculated by multiplying the PRA by the weighted number of full-time equivalent (FTE) residents working in all areas of the hospital (and non-hospital sites, when applicable), and the hospital's Medicare share of total inpatient days. In contrast to IME, teaching hospitals' Medicare-direct GME costs are excluded from the IPPS and continue to be paid separately.
Healthcare Provider Cost Reporting Information System (HCRIS)	Facility based Medicare providers are required to submit annual cost reports to the Medicare Administrative Contractor (MAC) containing utilization data, costs and charges by cost center and financial data. In the AHEAD model, cost report data is used to collect settlement payments made to CAHs that reconcile interim payments to 101 percent of cost.
Hierarchical Condition Categories (HCC)	HCC scores use International Classification of Diseases (ICD)-10 codes to assign risk scores to patients. Within the AHEAD Model, CMS HCC risk scores are used to account for differences in beneficiary demographics and health conditions. HCC is incorporated in both the Demographic and TCOC Adjustments.
Hospital Readmissions Reduction Program (HRRP)	HRRP is another IPPS Medicare VBP. HRRP incentivizes improved communication and care coordination for patients receiving hospital care. Hospital payments are adjusted based on a measure of excess readmissions. The reduction is based on the dollar value of each hospital's percentage of potentially preventable Medicare readmissions for specific designated conditions. The penalty is collected from the hospitals through a percentage reduction in their base Medicare inpatient claims payments, up to a cap of three percent.
Hospital-Specific Market Area	A geographic region specific to a Participant Hospital. It is zip code based and identified by a zip code's contribution to the Participant Hospital's total Medicare FFS payments or the Participant Hospital's rank within the zip-code based on Medicare FFS payments. For more information, refer to section 2.2.3.1.

⁹ See Critical Access Hospitals, <https://www.cms.gov/files/document/ahead-hgb-fs.pdf> and <https://www.cms.gov/medicare/health-safety-standards/certification-compliance/critical-access-hospitals>.

Term	Description
Hospital Value-Based Purchasing Program (VBP)	The Hospital VBP adjusts ACH payments based on the quality of care delivered to hospital patients and patient experiences. The program adjusts payments to hospitals under IPPS.
Hospital-Acquired Condition Reduction Program (HACRP)	HACRP is an IPPS Value-Based Purchasing (VBP) program that ties Medicare payments for hospitals based on their performance on measures of hospital-acquired conditions (HAC). Hospitals ranked in the lowest-performing quartile (highest frequency of conditions) among all hospitals nationwide are subject to a one percent reduction in payment rates. This one percent HACRP reduction adjustment is expressed as a 0.99 factor that is applied to the hospital's payment rate after adjustments are made under the Hospital VBP program and the Hospital. Hospitals that rank above the lowest quartile are assigned a HACRP payment factor of 1.0 to be applied to their payment rates.
Indirect Medical Education (IME)	Medicare ACHs that have licensed medical staff enrolled in an approved Graduate Medical Education (GME) program receive an additional payment from Medicare, known as the IME adjustment, to reflect the higher patient care costs of teaching hospitals relative to non-teaching hospitals. The hospital receives a percentage add-on payment. This percentage varies and is calculated using a hospital's ratio of staff enrolled in GME to beds and a multiplier, which is set by the United States Congress.
Integrated Data Repository (IDR)	All data used for the AHEAD Model financial calculations are housed within the IDR. The IDR contains the following data sources: • Claims Data: Contains person-level Medicare FFS Claims data submitted by Medicare providers for payment for services provided to Medicare beneficiaries. This data is sourced from the National Claims History (NCH) and is updated on a weekly basis. • Eligibility Data: Contains beneficiary eligibility data, including Medicare Advantage (Medicare Part C) and Prescription Drug Program (Medicare Part D) plan enrollment data. This data is sourced from the CMS Common Medicare Environment (CME) and is updated daily. • Provider Data: Contains information about providers that is sourced from both the Provider Enrollment, Chain, and Ownership System (PECOS) and the National Plan and Provider Enumeration System (NPPES).
Low-Volume Adjustment	CMS provides an additional payment to a qualifying hospital for the higher incremental costs associated with a low volume of discharges.
Master Data Management (MDM) System	The MDM contains APM program overlap data, including beneficiary and provider-level data.
Medicare Administrative Contractor (MAC)	The MAC is a CMS contractor awarded a geographic jurisdiction to process Medicare Part A and Part B (A/B) medical claims or Durable Medical Equipment (DME) claims for Medicare FFS beneficiaries.
Medicare Disproportionate Share Hospital (DSH)	DSHs serve a significantly disproportionate number of low-income patients and receive payments from CMS to cover the cost of providing care to uninsured patients. This adjustment is authorized under Section 1886(d)(5)(F) of the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985. The primary method for determining payments is for a hospital to qualify based on a statutory formula that results in the DSH patient percentage. The DSH patient percentage is equal to the sum of the percentage of Medicare inpatient days attributed to patients eligible for both Medicare Part A and Supplemental Security Income (SSI), and the percentage of total inpatient days attributed to patients eligible for Medicaid but not Medicare Part A. The alternate special exception method is for large urban hospitals that can demonstrate that more than 30 percent of their total net inpatient care revenues come from State and local governments for indigent care (other than Medicare or Medicaid).
Medicare Fee-For-Service (FFS) Claims	Medicare FFS claims are requests submitted by medical providers for FFS payment by Medicare for services rendered to Medicare Part A or Part B eligible beneficiaries. These claims are processed by specific MACs. Throughout this document Medicare FFS claim payments refer to the dollars paid by Medicare for the rendered services and not utilization.

Term	Description
Medicare Hospital Inpatient Quality Reporting Program (IQR)	IQR is a pay-for-reporting program for Acute Care Hospitals. Acute Care Hospital payments are adjusted based on whether hospitals do or do not successfully report the designated quality measures. Data collected under IQR informs HACRP, HRRP, and VBP.
Medicare Hospital Outpatient Quality Reporting Program (OQR)	OQR is a pay for reporting program which collects quality measure data for Acute Care Hospitals. OPPS payments for hospitals that do, or do not, meet administrative, data collection and submission, validation, and publication requirements.
Medicare Promoting Interoperability Program	CMS program that provides financial incentives to providers to demonstrate meaningful use of Electronic Health Record (EHR) systems and meeting certain interoperability and functionality criteria and improving patient access to health care information.
Outlier Payments	In Medicare FFS, in some cases, individual payments on claims are adjusted for the excess costs related to a specific patient's condition (so called "outlier" costs). This additional payment known as an "Outlier" is designed to protect the hospital from large financial losses due to unusually expensive cases.
Rural Emergency Hospital (REH)	REHs are facilities converted from either a CAH or a rural hospital (or one treated as such under Section 1886(d)(8)(E) of the Social Security Act) with less than 50 beds, and that do not provide acute care inpatient services with the exception of skilled nursing facility services furnished in a distinct part unit.
Swing Beds	Section 1861(e) of the Social Security Act allows critical access hospitals (CAHs) approved to provide swing bed services to use their beds for acute care or post-hospital skilled nursing facility (SNF) care. A CAH with Medicare swing bed approval may use any of its inpatient beds for either inpatient or SNF-level services.
Uncompensated Care (UCC)	In Medicare FFS, DSH hospitals are also eligible to receive a new additional payment for UCC that is a pro rata share of dollars in a UCC pool. This pool is distributed to qualifying hospitals in proportion to their share of bed days attributed to low-income, uninsured patients. Hospitals receive interim payments per discharge which is then reconciled and settled in the cost report.
United States Per Capita Cost (USPCC)	Medicare spending forecast produced by the CMS Office of the Actuary.
Wage Index	As part of the methodology for determining IPPS payments to hospitals, CMS adjusts the standardized amounts for geographic differences in cost of labor for hospitals in different labor markets by a factor reflecting the relative hospital wage level in the market compared to the national average hospital wage level. This ratio is the Wage Index.

Exhibit 5: Overview of AHEAD Model Financial Terms

Term	Description
AHEAD State or Sub-state region	States that voluntarily apply and accept to participate in the AHEAD Model either statewide or in a specified sub-state region. CMS executes a Cooperative Agreement and a State Agreement with each AHEAD State.
Annual Payment Adjustment (APA)	The baseline and subsequent HGBs are trended forward using an APA based on various factors. See Section 2.2.1 for more information.
Baseline	The 3-year time period used to develop HGBs, based on Eligible Hospital Services. Given the need for Claims Runout, there is a 6-month Gap Period between the Baseline and the Participant Hospital's first PY.

Term	Description
Claims Runout	The time between the provision of medical services and the processing of claims by the MACs and the availability of claims data in Medicare databases such as the IDR.
Community Improvement Bonus (CIB)	HGBs may receive an annual upward adjustment based on hospital performance on select quality measures.
Demographic Adjustment (DA)	Adjustment to HGBs on an annual basis to reflect changes in the status of the population (population size, age, Medicare status, medical risk, etc.) served by the hospitals in a specific geographic region. See Section 2.2.2.3 for more information.
Effectiveness Adjustment (EA)	Adjustment to HGBs based on the Participant Hospital's calculated Potentially Avoidable Utilization Score (PAU). See Section 2.3.3 for more information.
Eligible Beneficiaries	All Medicare FFS beneficiaries enrolled in Medicare Part A and/or B receiving services at a Participant Hospital used to develop the HGB.
Eligible Hospital	Hospitals eligible to participate in HGBs under the AHEAD Model include ACHs, CAHs, and REHs (pending state-enabling legislation) located within a participating state or sub-state region.
Eligible Hospital Services	Eligible Hospital Services in the baseline include inpatient hospitalizations covered under Part A with bill type 11X or 12X. Inpatient services paid separately from the MS-DRG payment, such as new technology and organ acquisition costs, continue to be paid separately under existing methodologies and are not included in the HGB. To ensure hospitals remain appropriately reimbursed for exceptionally high-cost, high-acuity inpatient services, CMS excludes select DRGs from the Medicare Hospital Global Budget (HGB). Eligible Hospital Services in the baseline include outpatient services covered under Part B that are billed on facility claims (e.g., bill types, 13X, 14X, 85X, or 18X). Certain high-cost drugs, identified at the HCPCS code level, are excluded from the HGB and continue to be paid under existing Medicare claims payment methodologies. See Section 2.1 and Appendix D for more information.
Gap Period	The one-year period between the end of the three-year Baseline and PY1. The Gap Period provides the necessary time for Claims Runout and HGB calculations.
Hospital Global Budgets (HGBs)	A fixed, prospectively set amount of annual revenue to a hospital for selected Medicare Part A and outpatient facility services covered under Part B. Under AHEAD, HGB amounts are paid by Medicare to Participant Hospitals in the form of prospective, bi-weekly payments in place of traditional Medicare FFS claims. Professional services rendered in a hospital setting are excluded.
Hospital Participation Agreement	The agreement between the Participant Hospital, the AHEAD State, and CMS outlining key terms for hospital participation in the AHEAD Model. Each Participant Hospital is required to execute a Hospital Participation Agreement.
Hospital Performance Year (Hospital PY)	For the AHEAD Model, each Hospital PY is the 12-month period when HGBs for Participant Hospitals replace Medicare FFS payments for included services or CAH cost-based reimbursement. Hospitals may sign up to participate throughout the AHEAD Implementation Period by signing a Hospital Participation Agreement in advance of their first PY.
Market Shift Adjustment (MSA)	Adjustments to HGBs based on material shifts in volume for services between hospitals in such a way that covers hospitals' costs.
Model Governance Structure	A multi-sector stakeholder workgroup convened by an AHEAD State to develop and oversee the implementation of the State Population Health Accountability Plan, assist with the review of Population Health Accountability Plan, and potentially assist with the development or implementation of other elements of the Model.

Term	Description
Non-Participant Hospital	A hospital that does not have a signed Hospital Participation Agreement with CMS to participate in AHEAD. Non-Participant Hospitals continue to be reimbursed as normal. These may be located inside or outside of the state or sub-state region.
No-Pay Claims	Medicare claims for providers participating in APMs that are processed by the MAC, but not paid because the provider is paid using a method specific to the APM. All standard data elements that are found on Medicare claims are populated on these claims, including the paid amount field, which displays what the claim would have paid under FFS. Claim value codes are used to identify that the claim was not paid FFS because it was submitted by a Participant Hospital for Eligible Hospital Services.
Outlier Adjustment	An adjustment to update the HGBs based on changes in Outlier Payments calculated from Medicare FFS claims or No-Pay Claims is now included in the HGB methodology (Section 2.2.2.4). In addition, carveouts applied to the baseline for high-cost drugs and highly specialized DRGs (Sections 2.1.4 and 2.1.5) protect the hospital from large financial losses due to unusually expensive cases.
Participant Hospital	An Eligible Hospital, (Exhibit 2) as identified by its CMS Certification Number (CCN), that: 1) Is physically located within the AHEAD State or sub-state region; and 2) Has signed a Hospital Participation Agreement with CMS to participate in AHEAD.
Performance Year of the Applicable Cohort (PY)	AHEAD States elect to participate in one of three cohorts. The first year in which HGBs are available to Eligible Hospitals in that state determines the first PY of the Applicable Cohort: • Cohort one includes nine PYs, beginning January 1, 2026, through December 31, 2034. • Cohorts two and three include eight PYs, beginning January 1, 2027, through December 31, 2034.
Population Health Accountability Plan	Participant Hospitals are required to develop and implement specific initiatives documented in a Population Health Accountability Plan that further the goals of the State Population Health Accountability Plan and address the needs in their specific communities.
Potentially Avoidable Utilization (PAU)	A PAU Score is calculated for each Participant Hospital as part of the Effectiveness Adjustment. The PAU Score includes readmissions, emergency department utilization (NCQA) and avoidable admissions (calculated by the AHRQ Prevention Quality Indicators [PQI]-90). There may be other sources of PAU which hospitals can reduce to see savings under HGBs that are not included in the Effectiveness Adjustment.
Primary Care AHEAD	Primary Care AHEAD is a voluntary program within the Model for Participant Primary Care Practices. Participant Primary Care Practices may include Federally Qualified Health Centers (FQHCs) including Health Centers and Health Center Look-Alikes ¹⁰ , Rural Health Clinics (RHCs), and practices with primary care specialties as defined by CMS.
Quality Adjustment – Critical Access Hospitals (CAHs)	CAHs have an upside-only Quality Adjustment designed under AHEAD that incentivizes performance on specific, rural-relevant quality measures.
Quality Adjustment – Prospective Payment System (PPS) Hospitals	Quality adjustments to HGBs allow quality measures to align with existing CMS programs for PPS hospitals. Including HRRP, VBP, HACRP, IQR, Medicare Promoting Interoperability, and OQR. Participant Hospitals continue to report to these programs under the AHEAD Model.

¹⁰ For more information on Health Center Look-Alikes, see <https://bphc.hrsa.gov/funding/funding-opportunities/health-center-program-look-alikes>.

Term	Description
Safety Net Hospital (SNH)	Safety Net Hospitals include: 1) Short-term hospitals that serve above a baseline threshold of beneficiaries with dual eligibility for Medicare and Medicaid or Part D Low-Income Subsidy (LIS). Facilities are identified as a safety net hospital when their patient-mix of beneficiaries with dual eligibility or Part D LIS exceeds the 75th percentile threshold for all congruent facilities who bill Medicare within their state. 2) Critical Access Hospitals. 3) Short-term hospitals with Medicare DSH Patient Percent (DPP) exceeding the 75th percentile threshold for all congruent facilities who bill Medicare within their state, where DPP is defined as the sum of the percentage of Medicare inpatient days attributable to patients eligible for both Medicare Part A and Supplemental Security Income (SSI), and the percentage of total inpatient days attributable to patients eligible for Medicaid by not Medicare Part A. A hospital identified as an SNH in the base year will retain its SNH status for the model's duration. Sections 2.3.3 and 2.3.4 in the methodology described below include adjustments that account for the unique context of SNHs. Often, the policies for CAHs and other SNHs align; however, there are areas where these policies may differ (as indicated within this document).
Service Line Adjustment (SLA)	SLAs made to HGBs account for service line additions, expansions, eliminations, or contractions. SLAs reflect a hospital's pre-planned and approved intent to add or expand a new service, or to eliminate or contract out an existing service.
Social Risk Adjustment (SRA)	Adjustments to HGBs based on a combination of the CMS-developed Community Deprivation Index (CDI) and proportion of Medicare-Medicaid dually eligible and/or Part D LIS beneficiaries in the Participant Hospital's service area.
State Agreement	The legal agreement executed between the AHEAD State Medicaid Agency and CMS during the Pre-Implementation Period and prior to the start of the first PY. This is a requirement for the state to participate in AHEAD and for CMS to allow the Implementation Period/PYs to begin.
Total Cost of Care (TCOC) Performance Adjustment	An upward or downward adjustment to the HGB based on hospital performance relative to a TCOC target for the hospital's attributed population.
Transformation Incentive Adjustment (TIA)	An upward adjustment applied to each Participant Hospital's HGB in the first two PYs of the Applicable Cohort to facilitate investment by hospitals in care management and transformation activities. The TIA needs to be repaid if a Participant Hospital exits the Model before the sixth PY for its respective cohort, or before the seventh PY for Participant Hospitals in Rhode Island.
Transition Year	After the final PY of the AHEAD Model, CMS offers two Transition Years to Participant Hospitals to allow for transition to another value-based care model, back to FFS, or to a cost-based reimbursement depending on the type of hospital.
Waivers	The AHEAD Model includes Medicare Payment Waivers, allowing CMS to implement and administer Hospital Global Budget methodology and related model policies, and Benefit Enhancements; the Federal Anti-kickback Statute safe harbor for CMS-sponsored model arrangements (42 CFR § 1001.952(ii)(1)) for the AHEAD Care Redesign Program in Maryland only, and the Federal Anti-kickback Statute safe harbor for CMS-sponsored model patient incentives (42 CFR § 1001.952(ii)(2)). CMS provides more information on these waivers and any use of beneficiary engagement incentives in the Hospital Participation Agreement.

2. Hospital Global Budget Construction

Eligible Hospitals that voluntarily sign Hospital Participation Agreements with CMS receive a fixed HGB payment for Medicare FFS inpatient and outpatient hospital services in the form of prospective, bi-weekly payments from Medicare, replacing payments for FFS claims.

To construct the Medicare HGBs for Participant Hospitals, CMS first calculates a Participant Hospital's global budget baseline by combining the hospital's historical revenue from FFS payments from the three most recent years preceding the year in which the hospital joins the model. CMS weights historical revenue, with the most recent years weighted more heavily (i.e., Base Year [BY] 1: 10 percent; BY2: 30 percent and BY3: 60 percent). Historical revenue paid by CMS outside the FFS framework is excluded from the baseline. Similarly, Medicare payments to hospitals currently paid outside the FFS framework continue to be paid as they are currently and outside of the HGB. See **Appendix D** for a detailed list of payments excluded from HGBs. Professional services rendered in a hospital setting are not included in the HGB and continue to be paid FFS.

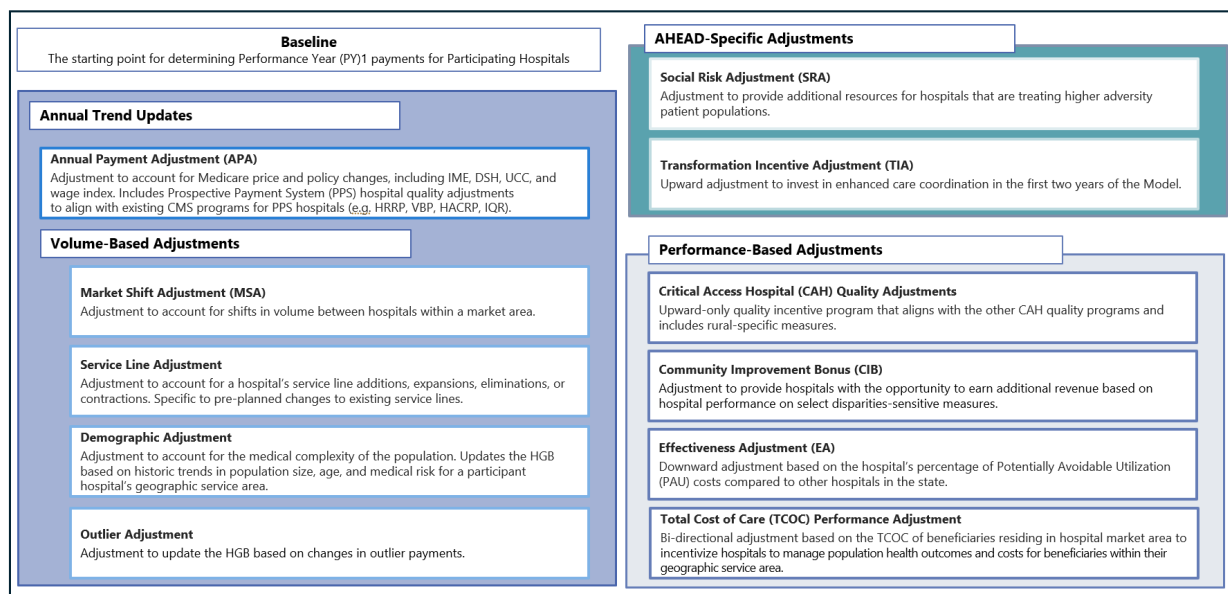
CMS then applies annual trend updates to the HGB baseline to reflect changes in inflation, demographic changes, market shifts and service line changes. CMS also applies AHEAD-specific adjustments, including the TIA and the SRA. See **Section 2.2** for additional information on annual trend updates and AHEAD-specific adjustments.

CMS also applies performance-based adjustments to HGBs based on financial and quality performance standards. Performance-based adjustments to HGBs include adjustments for performance on CMS national quality programs, community improvement, effectiveness on PAU targets, and performance on TCOC targets. See **Section 2.3** for more information on performance-based adjustments. CAHs (**Sections 2.3.1**) have separate quality and TCOC (**Section 2.3.4**) performance adjustments.

After adjusting each Participant Hospital's global budget, each hospital receives a prospective, bi-weekly HGB payment for Eligible Hospital Services in lieu of traditional FFS claims or cost-based reimbursement. Hospitals continue to submit Medicare FFS inpatient and outpatient claims and Medicare Hospital Cost Reports to CMS, however these claims will be No-Pay Claims.

Exhibit 6 is a visual representation of the elements of the Medicare FFS HGB calculation.

Exhibit 6: General Steps for Calculating the AHEAD Medicare FFS HGB



2.1 Baseline Calculation

The HGB Baseline Amount is the starting point for determining PY1 HGB payments for a Participant Hospital. For subsequent PYs the baseline is the prior PYs HGB with volume, demographic and price adjustments (**Exhibit 50**). To increase the predictability of HGB payments, the methodology does not apply retrospective reconciliation to prior PY HGBs. To calculate the Inpatient and Outpatient Baseline Paid Amount, CMS utilizes historical Medicare FFS revenue data from three baseline years (BYs). The BYs are described and weighted as illustrated in **Exhibit 7**.

CMS calculates historical Medicare FFS revenue by summing the Medicare FFS claim payments for Eligible Hospital Services during the BYs. All factors used in Medicare FFS claim payment are incorporated to ensure the HGB Baseline Amount fully accounts for Medicare FFS revenue that is replaced by the HGB. This includes all the same pricing components used to calculate the paid amount on a claim, including DRG base payment rates, adjustments for market conditions, complexity of service (DRG-Weights), policy adjustments, and quality adjustments.

Beneficiary out-of-pocket payments are excluded from the HGB Baseline Amount calculation because beneficiary cost-sharing (e.g., deductibles, coinsurance, or copayments) is unaffected by HGBs. Payment reductions from sequestration during the BYs are added back to historical Medicare FFS revenue so that sequestration can be appropriately re-applied to PY HGB payments.

Payments that are excluded from the HGB and continue to be paid separately under existing methodologies include:

- Payments made outside the Medicare FFS claims payment mechanisms (e.g., Payments for Medicare Advantage DGME).
- Payments made to specialty hospitals and distinct part units (e.g., rehab units inside acute care hospitals).

Rationale

Beneficiary Cost-Sharing is based on the Allowed Amount calculated on No-Pay Claims and is unchanged from current Medicare FFS.

- Inpatient services paid separately from the Medicare Severity Diagnosis Related Groups (MS-DRG) including new technology and organ acquisition costs.
- Select HCPCS and DRG carveouts (**See Sections 2.1.4 and 2.1.5**).
- New Technology Add-On Payments (NTAP).
- Payments made to CAHs for professional services.

More information on HGB payment exclusions can be found in **Appendix D: Payment Exclusions**.

For CAHs, settlements made through cost reports to reconcile to 101 percent of costs are incorporated in historical Medicare FFS revenue to ensure that HGBs fully account for Medicare revenue that is replaced by HGBs. For hospitals paid through other special status designations, (e.g., SCHs), these payment methodologies are also incorporated into the baseline (**Exhibit 3**). In these methodologies, the paid amount incorporates additional payments such as the hospital specific rate used to pay SCHs.

Services provided to beneficiaries covered by Medicare Advantage are excluded from the Medicare FFS HGB. Claims for these beneficiaries continue to be paid by Medicare Advantage plans. Changes in Medicare FFS enrollment, including those due to Medicare Advantage dis/enrollment are captured through the Demographic Adjustment (DA).

2.1.1 Hospital Global Budget: Performance Year 1 Baseline Calculation

Inpatient and outpatient Medicare FFS Revenue for each BY is combined to obtain weighted inpatient and outpatient baseline paid amounts. BY1 and BY2 revenue is adjusted to account for changes in Medicare FFS prices between baseline years. The methodology for adjusting inpatient and outpatient revenue is further described in **Section 2.2.1** and is aligned with that used for the Annual Payment Adjustment. Each BY is assigned a different weight, with the oldest BY (BY1) assigned a 10 percent weight, the middle (BY2) a 30 percent weight, and the most recent (BY3) a 60 percent weight. Each BY is based on a historical 12-month period, starting January 1 and ending December 31. The file representing BY3 will be pulled in May prior to PY1 allowing for at least 4 months of runout and for final delivery of the HGB final payment amounts at least 90 days prior to the start of the PY (October 3).. The most recent BY begins 24 months and ends 12 months prior to the first PY. CMS may apply Completion Factors to account for any claims that have been incurred but not yet paid by CMS. Using more recent claims data with completion factors can help to ensure that the baseline is more representative of anticipated PY1 claims, which helps to reduce risk for hospitals. **Exhibit 7** below describes each of the three BY and illustrates the weighting applied to its respective historical Medicare FFS revenue.

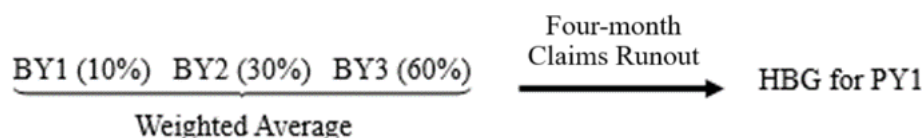
Exhibit 7: Baseline Weighting Applied to Historical Medicare FFS Revenue to Calculate PY1 HGB

Year	Description	Percentage Weighting
BY1	Begins 4 years prior to Hospital PY1 begin date.	10%
BY2	Begins 3 years prior to Hospital PY1 begin date.	30%
BY3	Begins 2 years prior to Hospital PY1 begin date.	60%

As an example, for a Participant Hospital that begins participating in AHEAD in calendar year 2028 (PY1), BY3, BY2, and BY1 would be CYs 2026, 2025 and 2024, respectively. The gap

between the most recent baseline year (BY3) and PY1 is due to the time needed for Claims Runout (i.e., 2024 data is not available until mid-2025), data processing, and adjudicating error requests.¹¹ **Sections 2.1.2 through 2.1.7** describe the baseline calculation for PY1 HGB payment. **Section 2.1.8** describes an estimated HGB calculation that is provided to interested, Eligible Hospitals in advance of PY1 to support participation decision. The estimated HGB calculation is the same as the PY1 HGB payment calculation, except that it is performed earlier in the year prior to PY1 to preview HGB payment amounts. **Exhibit 8** below illustrates the BY weighting for PY1.

Exhibit 8: PY1 Weighted Baseline Calculation



(Eq. 1.a) Weighted Inpatient Baseline

$$\begin{aligned}
 &= \left(\left(0.1 * (\text{Inpatient Baseline Paid Amounts for BY1} * (1 + \text{BY1 to BY3 APA})) \right) \right. \\
 &\quad + \left(0.3 * (\text{Inpatient Baseline Paid Amounts for BY2} * (1 + \text{BY2 to BY3 APA})) \right) \\
 &\quad \left. + (0.6 * (\text{Inpatient Baseline Paid Amounts for BY3})) \right) \\
 &\quad * \text{Baseline Adjustment Factor}
 \end{aligned}$$

(Eq. 1.b) Weighted Outpatient Baseline

$$\begin{aligned}
 &= \left(\left(0.1 * (\text{Outpatient Baseline Paid Amounts for BY1} * (1 + \text{BY1 to BY3 APA})) \right) \right. \\
 &\quad + \left(0.3 * (\text{Outpatient Baseline Paid Amounts for BY2} * (1 + \text{BY2 to BY3 APA})) \right) \\
 &\quad \left. + (0.6 * (\text{Outpatient Baseline Paid Amounts for BY3})) \right) \\
 &\quad * \text{Baseline Adjustment Factor}
 \end{aligned}$$

Calculation of the inpatient and outpatient Baseline paid amounts in Equation 1 is described in Sections 2.1.4 and 2.1.5.

2.1.2 Optimizing Performance Year 1 Baseline

For PY1 only, after the baseline calculation described in **Equation 1.a and 1.b**, CMS uses logistic regression to adjust the weighted baseline (**Appendix F**), and ensure it appropriately represents what Medicare FFS payments to the hospital would have been in the absence of HGB payments. The logistic regression uses historical claims data to estimate a probability that is multiplied by a scaling factor to calculate a Baseline Adjustment Factor. The Baseline Adjustment Factor is multiplied by the Weighted Inpatient Baseline and Weighted Outpatient Baseline to set the baseline for PY1 (**Eq 1.a and Eq. 1.b**).

$$(\text{Eq. 2}) \text{Baseline Adjustment Factor} = 1 + (P(H)) * \text{Scaling Factor}$$

Where,

P(H) = Probability from logistic regression estimated using a principal components analysis of 36 months of historical claims data (H) minus .5 to center the probability around 0. P(H)

¹¹ Gap period data is used in the APA calculation that adjusts the HGB Baseline Amount to obtain the Final Adjusted HGB Baseline Amount for PY1.

indicates the statistical probability that the 60/30/10 baseline is underestimated or overestimated relative to Medicare FFS payments to the hospital in PY1. The logistic regression equation is currently specified as,

$$(Eq\ 2. b)P(H) = \frac{1}{1 + e^{-(b_1 * x_1 + \dots + b_k * x_k + b_h * h + a)}}$$

Where,

x = Medicare FFS claims incurred and paid in month k prior to a 12-month period (to represent a performance year) plus Medicare FFS claims incurred in $k-1$ prior months divided by the weighted sum of the Inpatient Baseline Paid Amounts plus Outpatient Baseline Paid Amounts. k is specified from one to 36 prior months.

h = log of BY3 Inpatient Baseline Paid Amounts plus Outpatient Baseline Paid Amounts.

Scaling Factor = Multiplier developed from historical data that minimizes the distribution of differences between weighted Inpatient Baseline Paid Amounts plus Outpatient Baseline Paid Amounts and 12 months of Medicare FFS claims beginning six months after the baseline period across all hospitals within the state or sub-state region. This factor serves to reduce the variation between the weighted baselines and Medicare FFS payments during an upcoming calendar year that is analogous to the first PY. The multiplier can have one of two values. If $P(H)$ is less than zero, a multiplier is used to increase global budgets and a separate multiplier is applied if $P(H)$ is greater than zero.

Simulation of the Baseline Adjustment Factor using historical data improved the representativeness of baseline Medicare FFS spending relative to an upcoming performance year. CMS re-estimates probabilities and Scaling Factors using more recent data prior to PY1 and provides these to hospitals along with HGB payment amounts prior to making participation decisions.

2.1.3 Hospital Global Budget: Inpatient and Outpatient Baseline Paid Amounts

For each BY, Medicare FFS claim payments for Eligible Hospital Services are summed to calculate a total Inpatient Baseline Paid Amounts and Outpatient Baseline Paid Amount. Claim payments incorporate all factors included in the calculation of FFS payments made on claims, including applicable Medicare pricing adjustments. In Medicare FFS, interim payments on claims for pricing adjustments such as Disproportionate Share Hospital (DSH) and Indirect Medical Education (IME) are paid on claims then subsequently reconciled via hospital cost reports. HGB baseline amounts are adjusted as needed using amounts from the cost reports, pro-rated to align with the baseline time periods described in **Exhibit 7**. In the event that a cost report is not available due to timing, CMS uses a placeholder value from the most recent cost report, then subsequently adjusts HGB payments in the next payment cycle. Dollars removed from claims payments due to sequestration are added back in so that sequestration can be appropriately re-applied to PY HGB payments.

For CAHs, interim payments made via claims and settlements made through cost reports are incorporated into Inpatient Baseline Paid Amounts and Outpatient Baseline Paid Amounts. Medicare Swing Bed payments are also included for CAHs. Payments made for professional services are excluded.

Payments that are made outside the Medicare FFS claims payment mechanisms continue to be paid separately under existing methodologies and are not included in the HGB. Examples include Medicare bad debt, Direct Graduate Medical Education (DGME), nurse and allied health education, and organ acquisition costs. Currently Medicare FFS provides payment to hospitals

for IME and DGME costs for Medicare Advantage (MA) beneficiaries. These payments continue to be paid through Medicare FFS and excluded from HGB payments for either MA plans or in the CMS-Designed global budget. Participant Hospitals continue to submit shadow claims as they do today. CMS also applies a floor for IME and DGME so that if volume is reduced as a result of HGB payments, IME and DGME payments cannot be any lower than in BY3.

Medicare expenditures in specialty hospitals and distinct part units are also excluded from HGB payments. This exclusion is because one of the goals of HGBs is to reduce potentially avoidable utilization and may not be appropriate for specialized services provided in hospital-distinct part units or specialty hospitals, such as psychiatric, rehabilitation, cancer, and long-term care services. See **Section 1.5** for a complete list of hospital types that are ineligible to participate in HGBs through the AHEAD Model.

Exclusions specific to IPPS and OPPS FFS payments are included in **Sections 2.1.4 and 2.1.5**.

2.1.4 Inpatient Baseline Paid Amount

For ACHs, the inpatient Baseline paid amount includes all hospital Medicare FFS payments for Eligible Hospital Services paid under the IPPS. Eligible Hospital Services in the baseline include inpatient hospitalizations covered under Part A with bill type 11X or 12X. Inpatient services paid separately from the MS-DRG payment, such as new technology and organ acquisition costs, continue to be paid separately under existing methodologies and are not included in the HGB.

a. DRG Carveouts

To preserve the incentive for hospitals to provide exceptionally high-cost, high-acuity inpatient services, CMS excludes select DRGs from the Inpatient Baseline and thus from the Medicare Hospital Global Budget (HGB). Services associated with excluded DRGs continue to be reimbursed under existing Medicare payment methodologies. For the PY1 baseline, the most recent, complete (minimum of 4-months runout) claims data are used in the calculation. CMS may use national Medicare FFS data and/or state-based all-payer data, as appropriate, to determine the list of DRGs that will be excluded from the Inpatient Baseline.

The set of excluded DRGs is as follows:

- **Pre-MDC DRGs (MDC 00):** DRGs within the Major Diagnostic Category (MDC)-00 (Pre-MDC), which includes cases that bypass normal MDC assignment. These DRGs represent some of the most resource-intensive inpatient cases and include DRGs 001 through 019 (e.g., heart transplant liver transplant, lung transplant),¹² or
- **Open Heart DRGs:** DRGs associated with open heart procedures, or
- **Trauma and Burn DRGs:** DRGs within trauma or burn related MDCs with a Case Mix Index (CMI) greater than 2.5, or
- **Other Highly Specialized DRGs:** DRGs that meet all of the following criteria:
 - a. At least 40 percent of national Medicare FFS payments for the DRG are attributable to Academic Medical Centers; and
 - b. The DRG has a CMI greater than 2.5; and

¹² <https://icd10coded.com/ms-drg/mdc-00/>

- c. The DRG has an Impact Score greater than 0.015 percent.

The Impact Score measures the potential financial impact of a DRG across hospitals by comparing actual DRG payments to expected DRG payments and aggregating the variation across hospitals and baseline years. It is calculated using the following methodology:

- **Step 1:** Calculate each hospital's three-year average share (for PY1, this is the three Base Years) of inpatient Medicare FFS payments attributable to the DRG.

$$(Eq. 3) \text{ Average DRG Share of Medicare Payments}_{DRG,H} = \frac{Paid_{DRG}}{Paid_H}$$

- **Step 2:** For each DRG, calculate an Impact Score by measuring absolute three-year dollar variation within each HGB-eligible hospital and aggregate the results across all hospitals and baseline years.

$$(Eq. 4) \text{ Impact Score}_{DRG} = \frac{\sum_{YR} \sum_H |IP_{H,YR} - Share_{DRG,H} \times TotalIP_{H,YR}|}{\sum_{YR} \sum_H TotalIP_{H,YR}}$$

CMS plans to conduct a data informed clinical review of the resulting carveout list and may add or remove DRGs where warranted based on clinical and access considerations, as well as any programmatic objectives.

A complete list of DRGs identified for exclusion in PY1 will be provided to Participant Hospitals prior to the start of the Performance Year. The carveout list will be updated annually through application of the methodology described above. Changes to the carveout list may affect the DRGs excluded from the HGB and, as applicable, will be reflected in HGB calculations, including the annual MSA calculation. CMS will monitor the carveout policy on an ongoing basis and may, in exceptional circumstances, modify the policy during a Performance Year.

b. Inpatient Baseline Paid Amount Calculation

Medicare FFS payments for services under the IPPS are based on the factors described in **Exhibit 9** and **Appendix C: IPPS and OPPS Payment Components**.

Exhibit 9: FFS Payment Factors Under IPPS Included in Baseline Calculation

Factor	Description
Base IPPS Payments Rates	• Labor & Non-Labor Standardized Base Operating Payment Rates • Capital Base Payment Rate
Location Specific Market Condition Adjustments	• Wage Index • Cost of Living Adjustment (COLA)
Complexity of Service/Case Mix	• DRG Weight
Claims Based Policy Adjustments	• IME Adjustments for Operating & Capital • DSH Adjustments for Operating & Capital • Low Volume Adjustment • UCC Adjustment • Outlier Adjustment

Factor	Description
Quality Adjustments	• HRRP • VBP Program • HACRP • Medicare Hospital IQR • Meaningful EHR User

The inpatient Baseline paid amount only includes claims for which Medicare is the primary payer. The CMS IDR is used to pull all relevant claims and claim paid amounts. The inpatient Baseline paid amount is adjusted for the reduction in FFS payment amounts due to sequestration by adding back in the reduction applicable as of the date of service.

For CAHs, the inpatient Baseline payment amount is the sum of interim payments made through claims, cost report settlements, Skilled Nursing Facility swing bed (swing bed) interim payments made through claims, and swing bed settlements made through cost reports. Settlement amounts (CAH and CAH Swing Bed) are obtained from cost report data in the Healthcare Provider Cost Reporting Information System (HCRIS), and swing bed interim claim payment amounts are obtained through the CMS IDR.

For hospitals paid using special status designations, (e.g., Medicare Dependent Hospitals, **Exhibit 3**), the baseline paid amount includes payments specific to these unique payment methodologies. For these hospitals and ACHs, the inpatient Baseline paid amounts are calculated as,

$$\begin{aligned}
 & \text{(Eq. 5) Inpatient Baseline Paid Amount for Non CAH Hospitals} \\
 &= \text{Paid Amounts on FFS Claims} + \text{Medicare Settlement on Cost Reports} \\
 &+ \text{Sequestration}
 \end{aligned}$$

For CAHs, Inpatient Baseline Paid Amounts are calculated as,

$$\begin{aligned}
 & \text{(Eq. 6) Inpatient Baseline Paid Amount for CAH Hospitals} \\
 &= \text{Paid Amount on Interim Inpatient Claims} \\
 &+ \text{Paid Amount on Interim Swing Bed Claims} \\
 &+ \text{Settlement to 101\% on Cost Reports} + \text{Sequestration}
 \end{aligned}$$

Where,

Paid Amounts on FFS or Interim Claims: The sum of the total Medicare paid amount on claims for all Eligible Hospital Services from the CMS IDR.

Medicare Settlement on Cost Reports: Pro-rated settlement amounts from cost reports for payments such as IME that are settled via cost reports. Amounts are exclusive of interim payments made on claims.

Sequestration Amounts: Statutorily required reduction to Medicare payments.

Settlement to 101 percent on Cost Reports: For CAHs only Part A settlement payments from Worksheet E-1. If more than one cost report overlaps a baseline year, settlement payments from both cost reports are weighted proportional to the number of months that the cost report overlaps the baseline year. See **Section 2.1.6** for more detail.

Exhibit 10 includes specific parameters for claim inclusion.

Exhibit 10: Parameters for Claim Inclusion and Exclusion Under IPPS

Parameter	Description
Medicare as a Primary Payer	Only claims for which Medicare is the primary payer are included.
Type of Bill	Eligible Hospital Services include claims with bill types 11X or 12X.
Claim Date	Claims for Eligible Hospital Services are included if the inpatient date of service ‘from date’ is within the applicable BY.
Carved Out DRG	DRGs that require highly specialized services will be carved out and paid as standard FFS claims.

2.1.5 Outpatient Baseline Paid Amount

For ACHs, the outpatient Baseline amount includes all Medicare FFS payments for Eligible Hospital Services. For CAHs, the outpatient Baseline paid amount includes interim payments and settlement data from cost reports for outpatient services. Eligible Hospital Services in the baseline include outpatient services covered under Part B that are billed on facility claims (e.g., bill types, 13X, 14X, 85X, or 18X).

a. HCPCS Carveouts

Certain high-cost drugs, identified at the HCPCS code level, are excluded from the HGB and continue to be paid under existing Medicare claims payment methodologies. This approach recognizes the volatility and financial risk associated with high-cost drugs, which may expose Participant Hospitals to substantial unforeseen costs under the HGB.

The methodology used to identify HCPCS codes for exclusion is described below. For the PY1 baseline, the most recent, complete (minimum of 4-months runout) claims data are used in the calculation. CMS may use national Medicare FFS data and/or state-based all-payer data, as appropriate, to determine the list of HCPCS codes that will be excluded from the Outpatient Baseline.

A HCPCS code is eligible for exclusion if both of the following criteria are met¹³:

- The percentage of total Medicare FFS payments for the HCPCS code furnished in the OP setting, relative to the combined office and outpatient hospital settings, is **greater than or equal to 80 percent**; and
- The annual Medicare FFS cost per beneficiary for the HCPCS code (of those receiving the drug) is **greater than or equal to \$100,000**.

Biosimilars, generics, and substitutes of drugs identified using the above methodology are included on the carveout list.

Following application of the quantitative methodology, CMS plans to conduct a clinical review of the resulting carveout list (including biosimilars, generics, and substitutes) and may add or remove HCPCS codes based on clinical and access considerations, as well as any programmatic objectives.

¹³ Exclusion criteria also include HCPCS Pricing Code = ASP-based drugs” (51), “WAC-based drugs” (53), or “Not subject to ASP pricing. Payment is based on Wholesale Acquisition Cost (WAC) (57) and where Addendum B Status Indicator = “Pass-through drugs/biologicals” (G) or “Non-pass-through drugs/biologicals (separately payable)” (K)

A complete list of HCPCS codes identified for exclusion in PY1 will be provided prior to the start of the Performance Year. The carveout list is updated annually through application of the methodology described above. Changes to the carveout list may affect which HCPCS codes are excluded from the HGB and, as applicable, will be reflected in HGB calculations, including the annual MSA calculation.

b. Outpatient Baseline Paid Amount Calculation

Medicare FFS payments for services under the OPSS are based factors described in **Exhibit 11** and in **Appendix C: IPPS and OPSS Payment Components**.

Exhibit 11: FFS Payment Factors Under OPSS included in Baseline Calculation

Parameter	Description
Base OPSS Payment Rates	OPSS Conversion Factor
Geographic Factors	- Hospital Wage Index (Labor Portion of Conversion Factor is Adjusted – 60%) - Non-Labor Portion of Conversion Factor is Not Adjusted
Complexity of Services	APC Relative Weight
Claims Based Policy Adjustments	- Sole-Community Hospitals (SCH) Add-On - High-Cost Outlier Adjustment

These components, and all pass-through payments, continue to be calculated based on current payment policies.

The outpatient Baseline payment amount is calculated by summing the total OPSS FFS payment amounts across all claims for which Medicare is the primary payer. The CMS IDR is used to pull all relevant claims and claim payment amounts. The outpatient Baseline payment amount adds back in the reduction in FFS payment amounts due to sequestration so that sequestration can be appropriately reapplied to the HGB payment made during the PY. For CAHs, the outpatient Baseline paid amount includes interim payments made on claims and settlement payments paid via cost reports and excludes payments for professional services (CAH Method II billing revenue codes 0960-0989).

For other hospitals paid using specials status designations, (e.g., SCHs, **Exhibit 3**), the outpatient Baseline paid amount includes payments made under these unique payment methodologies. For these hospitals and ACHs, outpatient Baseline paid amounts are calculated as,

$$\begin{aligned} \text{(Eq. 7) Outpatient Baseline Paid Amount for Non CAH Hospitals} \\ = \text{Paid Amounts on FFS Claims} + \text{Sequestration} \end{aligned}$$

For CAHs, Outpatient Baseline Paid Amounts are calculated as,

$$\begin{aligned} \text{(Eq. 8) Outpatient Baseline Paid Amount for CAH Hospitals} \\ = \text{Paid Amount on Interim Outpatient Claims} \\ + \text{Settlement to 101\% on Cost Reports} + \text{Sequestration} \end{aligned}$$

Where,

Paid Amounts on FFS or Interim Claims: A sum of the total Medicare paid amount for all hospital claims using the CMS IDR.

Sequestration Amounts: An additional payment to account for the two percent sequestration reduction made to Medicare claims payments.

Settlement to 101 percent on Cost Reports: For CAHs only Part A settlement payments from Worksheet E-1. If more than one cost report overlaps a baseline year, settlement payments from both cost reports are weighted proportional to the number of months that the cost report overlaps the baseline year. See **Section 2.1.6** for more detail.

Exhibit 12 provides details on the parameters for claim inclusion and exclusion.

Exhibit 12: Parameters for Claim Inclusion and Exclusion Under OPPS

	Parameter	Description
Parameters for Claim Inclusion	Medicare as Primary Payer	Only claims for which Medicare is the primary payer are included.
	Type of Bill	Eligible hospital services include claims with bill types 13X, 14X, 85X, or 18X.
	Claim Date	Claims are included if the claim from date is within the BY.
Parameters for Claim Exclusion	Outpatient High-Cost Drug Carve Out Amounts	Drugs identified by CMS as being high cost.
	Professional Payments on CAH Hospital Claims	The sum of all professional payments as reported in the CMS IDR where the Revenue Center Code on the claim line has a code of 096, 097, or 098.

2.1.6 Payment Floor for Critical Access Hospitals

The AHEAD Model includes a payment floor to ensure HGB payments for CAHs are no lower than current Medicare FFS reimbursement at 101 percent of costs (before sequestration). The floor is calculated such that if prospective HGB payments for the PY are less than what would have been paid by Medicare FFS had the CAH not participated in HGBs, CMS makes an additional payment to the CAH equal to the difference.

The difference is incorporated into subsequent HGB payments. Due to the time needed to process hospital cost reports, this payment occurs after the PY once cost report or reports that overlap the PY are available in HCRIS. If more than one cost report overlaps the PY, Medicare revenue is weighted using the number of months that overlap the PY. For example, if a hospital files a cost report that corresponds to the first three months of the PY and a subsequent report that corresponds to the remaining nine months, revenue from the first cost report is weighted at 25 percent and 75 percent from the subsequent cost report. This calculation is made only after both cost reports are available.

2.1.7 Baseline Adjustments

The Weighted Baseline calculation uses historical Medicare FFS payment data to determine the hospital's global budget, however changes can occur over time that might cause the baseline to not be representative of PY1. The CMS-Designed global budget includes several mechanisms to account for these types of changes.

Service Line Adjustment (SLA) (see **Section 2.2.2.2**) can be used to prospectively adjust funding to better align HGB payments with operational and service line changes. For example, if a hospital is expanding into a needed service or closing an underutilized service, the SLA allows the hospital to adjust its HGB such that it is not tied to historical data that no longer reflects this new reality. Service Line Adjustments can also be used to account for changes in CMS payment rules, such as when new technology services shift from separately payable to be included in APCs.

The hospital Participation Agreement (PA) includes provisions for Exogenous Factors, Changes in Control, Changes in Status that can be used to account for exceptional circumstances such as

mergers, operational disruptions, or changes in hospital status. CMS works with hospitals on a case-by-case basis for situations that might warrant considerations of such one-time adjustments using processes outlined in the PA. The PA is distributed to interested hospitals prior to PY1.

CMS encourages hospitals to proactively report historical or forward-looking information that could cause the baseline to not represent PY1. Prior to calculating PY1 baselines, CMS distributes a survey to hospitals to gather relevant information on factors that could affect the baseline. The data is used to identify where Service Line Adjustment or provisions in the PA such as Exogenous Factor could necessitate one-time adjustments. Any one-time adjustments are evaluated on a case-by-case basis. CMS reviews each request, considering supporting rationale and documentation, before deciding to approve, modify, or deny the adjustment.

2.1.8 Baseline Estimates

Hospitals interested in participating in the CMS-Designed HGB can request that CMS provide an estimate of their global budget amount. CMS will provide hospitals with these estimates in the summer prior to the PY of interest. The estimates will use the same time periods and weighting as described in **Exhibit 7** in **Section 2.1.1** above but will be preliminary in that they may be modified to address data, calculation, or policy concerns prior to being finalized.

For PY1 and each subsequent PY, CMS will provide to the Participant Hospitals a report setting forth the final Medicare FFS Hospital Global Budget (the “**Medicare FFS Hospital Global Budget Report**”). This report will be issued to Participant Hospitals at least ninety (90) Days prior to the start of the PY in which such Medicare FFS Hospital Global Budget will take effect. CMS will deem any Medicare FFS Hospital Global Budget Report final 30 Days after the Medicare FFS Hospital Global Budget Report is issued, unless the Participant Hospital submits to CMS a Medicare FFS Hospital Global Budget Report Error Notice. CMS will resolve error notices in accordance with the hospital’s participation agreement.

2.2 Annual Trend Updates

2.2.1 Annual Payment Adjustment

The Annual Payment Adjustment (APA) adjusts the HGB Baseline Inpatient and Outpatient Amounts and annually adjusts PY HGB payments to account for changes in Medicare FFS prices between baseline years or from one PY to the next. These changes include updates to hospital payments per legislative or administrative policy changes. The APA differs from other adjustments in the global budget that account for acuity (e.g., demographic) and volume (e.g., market shift). The APA instead reflects the specific FFS payment factors (e.g., wage indexes) for each Participant Hospital and adjusts baseline and PY amounts accordingly. The APA is calculated at the Medicare CCN level because input data sources (e.g., IPPS Final Rule Impact File) are only published by Medicare at the CCN level. If a hospital elects an HGB calculated at the Organizational National Provider Identifier (ONPI) level, the APA corresponding to the CCN is applied to the HGB.

The Inpatient APA is based on the change in the hospital specific IPPS payment factors published annually in the IPPS Final Rule. To calculate the Inpatient APA, an annual Case Adjusted Rate (CAR) is calculated for each Participant Hospital. The CAR is equivalent to total Medicare Payments divided by the Case Mix Index (average MS-DRG weight) divided by volume. It can be interpreted as the average Inpatient Medicare payment per unit at a Participant Hospital adjusted by the hospital’s average MS-DRG weight. The Inpatient APA is designed to adjust for price and policy changes only, and therefore the CAR controls for changes made due to DRG-weights and volume. The CAR calculation accounts for the same location specific price adjustments (e.g.,

wage index, COLA) and Policy & Quality Adjustments (e.g., IME, DSH, UCC, HRRP) made in IPPS and OPPS payment rates. Unlike the baseline payment, the Inpatient APA is calculated using summary data that CMS utilizes for payments in the upcoming fiscal year (e.g., IPPS and OPPS Final Rule).

The Outpatient APA is adjusted based on the change in the hospital-specific Ambulatory Payment Classifications (APC) payment amounts. This calculation creates the Wage Adjusted APC Conversion Factor (WAACF), which is the basis for the Outpatient APA. Like the Inpatient APA, the Outpatient APA incorporates geographic area differences in hospital wages (e.g., Wage Index) and updates for policy shifts and price changes (e.g., OPPS APC conversion factor).

The APA is the percentage change in the Participant Hospital's CAR and WAACF between two years. The APA is used to adjust BY1 and BY2 Inpatient and Outpatient Baseline Paid Amounts to BY3 price and policy changes when calculating the Baseline. **See Eq.1(a) and Eq.1b in Section 2.1 Baseline Calculation.** The APA is also used to adjust the Baseline to reflect PY1 price and policy changes when calculating the PY1 HGB. For more information, please refer to Eq. 1, Eq. 8, Eq. 11, and **Exhibit 15**).

Reimbursement for CAHs is based on reasonable costs instead of IPPS and OPPS, therefore the IPPS Hospital Market Basket serves as the basis to price adjust baseline payments to PY1 dollars.¹⁴ CMS uses the IPPS Hospital Market Basket to update payment rates for IPPS hospitals annually and to account for changes in the prices of goods and services used by these hospitals in treating Medicare patients, as well as for other factors.

Other special designation hospitals include those detailed in **Exhibit 3** (e.g., SCHs, REHs). These hospitals are paid using methods that differ from standard IPPS/OPPS. For example, SCHs are paid a Hospital Specific Payment (HSP) Rate that does not use the same IPPS and OPPS payment factors. For these hospitals, the change in HSP is used to adjust prices in AHEAD. The wage index and DSH adjustment used by the APA calculation includes policies and adjustment factors applicable to these hospitals.

2.2.1.1 Inpatient Annual Payment Adjustment: Overview

Payment Factors Included: The inpatient portion of the HGB is adjusted based on the change in the hospital specific IPPS payment factors listed below and published annually in the IPPS Final Rule. Please see **Exhibit 13** and **Appendix B: Data Sources** for more information about where each data source can be found.

Exhibit 13: FFS Payment Factors Under IPPS Included in Annual Payment Adjustment

Factor	Description
Base IPPS Payments Rates	- Labor & Non-Labor Standardized Base Operating Payment Rates - Capital Base Payment Rate
Location Specific Market Condition Adjustments	- Wage Index - Cost of Living Adjustment (COLA)
Complexity of Service/Case Mix	MS-DRG weight
Claims Based Policy Adjustments	- IME Adjustments for Operating & Capital - DSH Adjustments for Operating & Capital - Low Volume Adjustment - UCC Adjustment

¹⁴The IPPS Hospital Market Basket refers to the input price index used to measure changes in the costs of providing hospital services under IPPS. See [CMS' website on Market Basket Data](#) for more information on updates to and forecasts regarding the Market Basket.

Factor	Description
Quality Adjustments	• HRRP • VBP Program • HACRP • Medicare Hospital IQR • Meaningful EHR User

APA Calculation: For the APA, the AHEAD CAR is calculated for each Participant Hospital's BY or PY. The percentage change in the CAR between years is multiplied by either baseline payments or prior global budget amounts to adjust for changes in prices over time.

To determine the APA factor for the inpatient portion of the HGB, calculate the percentage change in the CAR between two years (see **Eq. 1**). To trend the baseline amount forward (see **Section 2.1**) the two years included in the calculation are BY1 to BY3 and BY2 to BY3. Subsequently, the two years included in the calculation are BY3 to PY1 and then each PY to the next.

$$(Eq. 1) \text{ Inpatient APA} = \frac{\text{Year 2 CAR} - \text{Year 1 CAR}}{\text{Year 1 CAR}}$$

c. AHEAD Case Adjusted Rate

The CAR represents a Participant Hospital's average case mix adjusted payment per discharge and is calculated by estimating total Medicare payments for a hospital (Medicare allowed amounts for a hospital minus sequestrations and deductibles), including all operating and capital amounts and policy adjustments. Total Medicare payments and policy and quality payments are then normalized for patient mix by dividing by the Case Mix Index, which is the Participant Hospital's average MS-DRG weight per inpatient discharge. The average case mix adjusted payment is calculated by dividing by total Medicare discharges to normalize for volume differences between years. The payment adjustment for uncompensated care is unrelated to case mix and is calculated separately then added to payments that are adjusted for case mix to maintain parity with Medicare FFS. An example of the calculation of the CAR can be found in **Exhibit 14**.

(Eq. 2) AHEAD Case Adjusted Rate (CAR)

$$= \frac{\frac{(\text{Est Medicare Payments} + \text{Policy \& Qual Adj})}{\text{Case Mix Index}}}{\text{Medicare Discharges}} + \frac{\text{UCC Oper. Adj}}{\text{Medicare Discharges}}$$

The data elements required to calculate the CAR; (1) Estimated Medicare Payments (**Eq. 3**), (2) Case Mix Index, (3) Total Medicare Discharges, and (4) Policy & Quality Adjustments (**Eq. 7**), are defined in **Sections 2.2.1.b, 2.2.1.c, 2.2.1.d, and 2.2.1.e**. The UCC Operating Adjustment is defined in Appendix A: Formulas and Calculations.

d. Estimated Medicare Payments

For the CAR, Estimated Medicare Payments are calculated by multiplying operating and capital rates by the number of discharges reported in the CMS Impact File for a Participant Hospital minus deductibles and sequestration. Total Medicare Payments are estimated by first calculating the total operating and capital payment amounts and then adjusting that total by the Low Volume Adjustment factor and the Hospital-Acquired Condition Reduction Program (HACRP) Adjustment factor.

(Eq. 3) Estimated Medicare Payments

$$= (\text{Operating Amount} + \text{Capital Amount}) \\ * (1 + \text{Low Volume Adjustment Factor}) * (\text{HACRP Adjustment Factor})$$

Where,

Operating Amount: The operating amount is calculated by following the same steps used to price FFS claims, but at an aggregate level. A location adjusted operating rate is first calculated by multiplying the Medicare Wage Index and COLA by the base labor and non-labor operating base rates respectively. The location adjusted operating rate is then multiplied by the Participant Hospital's total number of Medicare discharges and case mix index (average DRG-weights) to obtain total base estimated operating payments. An example of the specific adjustments applied is provided in **Exhibit 14**, the calculated amounts are detailed in **Appendix A: Formulas and Calculations**, and data sources for each component such as the COLA are detailed in **Appendix B**.

(Eq. 4) Operating Amount

$$= (((National Operating Labor Base Rate * Medicare Wage Index) + (National Operating Non Labor Base Rate * Operating COLA)) * Medicare Discharges * Case Mix Index)$$

For SCHs the Operating Amount is equal to the higher of their hospital-specific payment rate multiplied by total discharges and the case mix index or the operating amount calculated in Eq. 4 that uses the national operating base rates. If the hospital-specific payment rate is utilized, policy and quality adjustments are excluded.

(Eq. 4a) Operating Amount For SCH

$$= (Hospital Specific Operating Labor Base Rate * Medicare Discharges * Case Mix Index) IF greater than Operating Amount calculated in Eq. 4$$

Capital Amount: Similar to the Operating Amount, the Capital Amount is estimated by following the same steps as would be for FFS claims, but at an aggregate level.

(Eq. 5) Capital Amount

$$= ((National Capital Base Rate * Geographic Adjustment Factor for Capital * Capital COLA) * Medicare Discharges * Case Mix Index)$$

Low Volume Adjustment Factor: The Low Volume Adjustment Factor provides an additional payment to qualifying hospitals with a low volume of discharges and is applied to the sum of the operating and capital amount.

HACRP: The HACRP reduces overall payments by up to one percent for Participant Hospitals with the worst-performing quartile of risk-adjusted quality measures for reasonably preventable HACs. To account for this adjustment, CMS applies a reduction to the summed operating and capital payments amount (adjusted for the Low Volume Adjustment Factor) for Participant Hospitals.

Estimated Deductibles: Estimated deductibles are removed in the estimation of total Medicare payments (adjusted for the Low Volume Adjustment Factor and HACRP). These costs are paid by beneficiaries and not Medicare and are unaffected by participation in Medicare FFS HGBs. As a result, they are excluded from both baseline and the APA. The estimated total annual deductible amount for a Participant Hospital is calculated by multiplying the Medicare Annual Inpatient Deductible Amount by the total number of Medicare Discharges.

(Eq. 6) Estimated Deductibles

$$= Medicare Annual Inpatient Deductible Amount * Total Number of Medicare Discharges$$

Sequestration Percentage: “Sequestration is the automatic reduction (i.e., cancellation) of certain federal spending, generally by a uniform percentage.”¹⁵ The sequestration reduction percentage is applied to the total operating and capital payments amount after accounting for the Low Volume Factor, HAC Adjustment, and Estimated Deductibles.

e. Policy and Quality Adjustments

(Eq. 7) Policy and Quality Adjustments

$$= (\text{Operating Policy \& Quality Adj} + \text{Capital Policy \& Quality Adj}) \\ * (1 + \text{Low Volume Adjustment Factor}) * (\text{HACRP Adjustment Factor})$$

Operating Policy & Quality Adjustments: Includes IME, DSH, Low Volume, HRRP, VBP, HACRP and IQR adjustments (see **Appendix C: IPPS and OPPS Payment Components**). These adjustments are applied in IPPS as percentage add-ons to geographic and case-mix adjusted base rate. UCC payments are considered separately as they are not calculated as percentage add-ons and are applied on a per-claim basis.

In the APA, two years of IPPS Impact File data are reviewed (the PY and one year prior), and the higher values for the DSH Operating Adjustment Factor and UCC Per Claim Amount are used. This helps to create payment stability and reduce year-to-year variability.

Capital Policy & Quality Adjustments: Includes IME, DSH, and Low Volume adjustments. (See **Appendix C: IPPS and OPPS Payment Components**)

Similar to the DSH Operating Adjustment the higher of value is use for the DSH Capital Adjustment. For the APA, two years of IPPS Impact File data are reviewed (the PY and one year prior), and the higher value for the DSH Capital Adjustment Factor is utilized.

f. Case Mix Index

The Case Mix Index is the average DRG weight for a hospital inpatient discharge. Dividing the total Estimated Medicare Payments by the Case Mix Index for a Participant Hospital, normalizes for changes in patient mix allowing the CAR and thus the APA to measure only price and policy changes. Changes in the complexity of the population served are accounted for in the Demographic Adjustment.

g. Total Number of Medicare Discharges

The total number of Medicare Discharges is the sum of all Medicare cases for a Participant Hospital in a given Fiscal Year, from the Medicare Provider Analysis and Review (MEDPAR) claims file, as reported in the Impact File. It does not account for transfer adjustments. Dividing the case mix adjusted Estimated Medicare Payments by the total number of Medicare Discharges removes the impact of volume on the CAR and thus allows the APA to account for changes in price and policy alone.

Exhibit 14 provides an example of how to calculate the Inpatient APA CAR.

Exhibit 14: Inpatient Annual Payment Adjustment: Case Adjusted Rate Example Calculation

Item	Factor	Operating Labor Related (1)	Operating Non-Labor Related (2)	Operating Base (3)	Capital Base (4)	BY Total (5)
A	National Base Rate	\$3856.27	\$1789.81		\$459.41	

¹⁵ [Congressional Research Service: Medicare and Budget Sequestration](#)

Item	Factor	Operating Labor Related (1)	Operating Non-Labor Related (2)	Operating Base (3)	Capital Base (4)	BY Total (5)
B	Wage Index / Geographic Adjustment	1.0634			1.043	
C	Wage Adjusted Base Rate	= (A1 x B1) \$4,101				
D	Operating COLA		1		1	
E	COLA Adjusted Base Rate		= (A2 x D2) \$1,790			
F	Medicare Discharges			2245	2245	2245
G	Case Mix Index			1.6642	1.6642	1.6642
H	Location & Case Mix Adjusted Operating/Capital Amount			= (C1 + E2) * F3 * G3 \$22,009,536	= (A4 * B4 * D4) * F4 * G4 \$1,790,221	
I	Total Operating/ Capital Amount					= H3 + H4 \$23,799,757
J	Readmission Adjustment			= (H3 * (1 - .9992)) \$17,608		
K	VBP Adjustment Factor			1.0108		
L	VBP Amount Redistributed (with 2%)			= ((K3 - 1) + 0.02) * H3 \$677,894		
M	VBP 2% Withhold			= H3 * -2% (\$440,191)		
N	VBP Adjustment			= L3 + M3 \$237,703		
O	IME Adjustment			= (H3 * 0.0909) \$2,000,667	= (H4 * 0.1194) \$213,752	
P	DSH Adjustment			= (H3 * 0.0429) \$944,209	= (H4 * 0.3389) \$606,706	
Q	Policy & Quality Adjustment Total			= J3 + N3 + O3 + P3 \$3,200,187	= O4 + P4 \$820,458	= Q3 + Q4 \$4,020,645
R	UCC Per Claim Amount			250		
S	UCC Adjustment			= R3 * F3 \$561,250		
T	Low Volume Adjustment Factor					1
U	HACRP Adjustment					0

Item	Factor	Operating Labor Related (1)	Operating Non-Labor Related (2)	Operating Base (3)	Capital Base (4)	BY Total (5)
V	Sequestration Percentage					-0.02
W	Medicare Annual Inpatient Deductible Amount					1364
X	Estimated Total Deductibles					=W5 * F5 \$3,062,180
Y	Estimated Medicare Payments					=I5 * T5 * (1 + U5) \$23,799,757
Z	Estimated Policy & Quality Adjustments					=Q5 * T5 * (1 + U5) \$4,020,645
AA	UCC Adjustment					=S3 * T5 * (1+U5) \$561,250
AB	Interim CAR					=(Y5 / G5 F5) + (Z5 / G5 / F5) + (AA5 / F5) \$7,696
AC	Case Adjusted Rate (CAR)					=(AB5 – W5) – (V5 * (AB5 – W5)) \$6,206

h. Applying the Inpatient Annual Payment Adjustment for PY1

When calculating the Inpatient Baseline Paid Amount, total paid amounts from eligible claims (See **Section 2.1.1**) for BY1 and BY2 are adjusted to reflect price and policy changes between each BY. (See **Eq.1(a)** and **Eq.1(b)** in **Section 2.1 Baseline**) The final Inpatient Weighted Baseline Paid Amount, is multiplied by the Baseline Adjustment Factor, is then adjusted to reflect price and policy changes between BY3 and PY1.

(Eq. 8) Inpatient PY1 APA Adjusted Amount

$$= \text{Inpatient Baseline Amount} * (1 + \text{Annual Inpatient Adjustment for BY3 to PY1})$$

The HGB is calculated on an annual basis, using the IPPS Hospital Market Basket update effective on October 1 to update the inpatient portion of the HGB effective January 1 of PY. In approximately August of the PY, CMS publishes the next IPPS Hospital Market Basket update. This update is used to calculate the next PY's HGB and to calculate an adjustment to the current PY's HGB to account for updated prices applicable between October and January of the current PY. CMS makes a one-time payment at the beginning of the next PY to account for updated prices.

Exhibit 15: Example of Baseline & PY 1 Inpatient Annual Payment Adjustment Application

Item	Factor	BY1 (1)	BY 2 (2)	BY3 (3)	PY1 (4)
A	Case Adjusted Rate	\$6500	\$6700	\$6900	\$7000
B	Inpatient APA Percent	$= (A3 - A1) / A1$ = 6.2%	$= (A3 - A2) / A2$ = 3.0%	$= (A4 - A3) / A3$ = 1.4%	-
C	Baseline Amount (Adjusted for Sequestration)	\$1,000,000	\$1,200,000	\$1,300,000	-
D	Adjusted Baseline Amount	$C1 \times (1 + B1)$ \$1,062,000	$C2 \times (1 + B2)$ \$1,236,000	C3 \$1,300,000	
E	Percent Contribution to PY 1 Baseline	10%	30%	60%	-
F	Weighted Baseline Amount	$C1 \times E1$ \$100,000	$C2 \times E2$ \$370,800	$C3 \times E3$ \$780,000	$F1 + F2 + F3$ \$1,250,800
G	APA Adjusted Baseline				$F4 \times (1 + B3)$ \$1,268,311

2.2.1.2 Outpatient Annual Payment Adjustment: Overview

The outpatient portion of the HGB is adjusted based on the change in the hospital-specific APC payment amounts, which is effective January 1 of each year as part of the OPPS Final Rule. Similar to the inpatient calculation, the Outpatient APA incorporates geographic area differences in hospital wages (e.g., Wage Index) and updates for factors such as policy shifts and price changes (e.g., OPPS APC conversion factor). This creates the Wage Adjusted APC Conversion Factor (WAACF), which is the basis for the Outpatient APA. The OPPS APC conversion factor is calculated by CMS and made publicly available through the Impact file (see **Appendix B: Data Sources**).

To determine the Outpatient APA, calculate the percentage change in the WAACF between two years (see **Eq. 9**). To trend the baseline amount forward (see **Section 2.1**) the two years included in the calculation are BY1 to BY3 and BY2 to BY3. Subsequently, the two years included in the calculation are BY3 to PY1 and then each PY to the next.

$$(\text{Eq. 9}) \text{ Annual Outpatient Adjustment} = \frac{\text{Year 2 WAACF} - \text{Year 1 WAACF}}{\text{Year 1 WAACF}}$$

a. Wage Adjusted APC Conversion Factor (WAACF)

The WAACF is calculated in two steps. First, the OPPS APC Conversion Factor is multiplied by the hospital specific wage index. This total accounts for 60 percent of the WAACF. The other 40 percent is determined by multiplying the OPPS APC Conversion Factor by 40 percent. The sum total is equivalent to the WAACF.

(Eq. 10) WAACF

$$= ((OPPS\ APC\ Conversion\ Factor * 0.6 * Hospital\ Specific\ Wage\ Index) + (OPPS\ APC\ Conversion\ Factor * 0.4))$$

b. Applying the Outpatient Annual Payment Adjustment for PY1

To apply the Outpatient APA to the PY1 HGB, the Outpatient APA for each BY is applied on a weighted basis. The three BY budgets are multiplied by the Outpatient APA (Equation 10) and the weighted amount; 10 percent for BY1, 30 percent for BY2, and 60 percent for BY3.

(Eq. 11) Outpatient PY1 APA Adjusted Amount

$$= Outpatient\ Baseline\ Amount * (1 + Annual\ Outpatient\ Adjustment\ for\ BY3\ to\ PY1)$$

For the outpatient services, the OPSS Final Rule and Market Basket Update are released in November prior to becoming effective January 1 for FFS payments. These updates are incorporated into HGBs effective January 1.

c. Applying the Annual Payment Adjustment: Basis and Timing

The APA is applied to calculate the initial HGB for PY1 (see **Eq. 8** and **Eq. 11**). The APA is applied to subsequent PYs based on the same approach; however, each subsequent PY is compared to the previous PY, as outlined below in **Exhibit 16**.

Exhibit 16: Basis for Annual Payment Adjustments

Performance Year	Inpatient	Outpatient
PY2 = HGB PY1 * (1 + PY2 APA)	$(PY2\ IP\ CAR - PY1\ IP\ CAR) \div PY1\ IP\ CAR$	$(PY2\ OP\ WAACF - PY1\ OP\ WAACF) \div PY1\ OP\ WAACF$
PY3 = HGB PY2 * (1 + PY3 APA)	$(PY3\ IP\ CAR - PY2\ IP\ CAR) \div PY2\ IP\ CAR$	$(PY3\ OP\ WAACF - PY2\ OP\ WAACF) \div PY2\ OP\ WAACF$
PY4 = HGB PY3 * (1 + PY4 APA)	$(PY4\ IP\ CAR - PY3\ IP\ CAR) \div PY3\ IP\ CAR$	$(PY4\ OP\ WAACF - PY3\ OP\ WAACF) \div PY3\ OP\ WAACF$
PY5 = HGB PY4 * (1 + PY5 APA)	$(PY5\ IP\ CAR - PY4\ IP\ CAR) \div PY4\ IP\ CAR$	$(PY5\ OP\ WAACF - PY4\ OP\ WAACF) \div PY4\ OP\ WAACF$
PY6 = HGB PY5 * (1 + PY6 APA)	$(PY6\ IP\ CAR - PY5\ IP\ CAR) \div PY5\ IP\ CAR$	$(PY6\ OP\ WAACF - PY5\ OP\ WAACF) \div PY5\ OP\ WAACF$
PY7 = HGB PY6 * (1 + PY7 APA)	$(PY7\ IP\ CAR - PY6\ IP\ CAR) \div PY6\ IP\ CAR$	$(PY7\ OP\ WAACF - PY6\ OP\ WAACF) \div PY6\ OP\ WAACF$
PY8 = HGB PY7 * (1 + PY8 APA)	$(PY8\ IP\ CAR - PY7\ IP\ CAR) \div PY7\ IP\ CAR$	$(PY8\ OP\ WAACF - PY7\ OP\ WAACF) \div PY7\ OP\ WAACF$

Exhibit 16a: Sample calculation of the Inpatient HGB component with IPPS update from 2025-2026

Item	Factor	Calculation
A	Inpatient component of the 2026 HGB calculated prior to PY1 using the APA based on the 2026 IPPS Final Rule.	\$101,536,420
B	25% Weight to represent Oct-Dec	25%

Item	Factor	Calculation
C	Inpatient component of the 2026 HGB re-calculated during November of PY1 using the APA based on the 2027 IPPS Final Rule. All other inputs to the calculation are the same as those used to calculate the 2026 prior to the PY.	\$105,428,566
D	25% Weight to represent Oct-Dec	25%
E	One-time payment to adjust Inpatient component of the 2026 HGB made during the beginning of 2027 to account for updated CMS prices applicable in the 4 th quarter of 2026.	$= (C * D) - (A * B)$ $= (\$105,428,566 * 25\%) - (\$101,536,420 * 25\%)$ $= \$973,037$

Exhibit 17 below details the timing of the PY Market Basket update based on CMS' updates to the DRG and APC base rates based on IPPS and OPSS Final rules.

Exhibit 17: Timing of the Inpatient Prospective Payment System and Outpatient Prospective Payment System Updates for Inpatient and Outpatient Services During the AHEAD Model

	Pre-AHEAD	AHEAD							
	Oct 2025 – Dec 2025	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
IPPS	Oct 2025	Oct 2025	Oct 2026	Oct 2027	Oct 2028	Oct 2029	Oct 2030	Oct 2031	Oct 2032
OPPS	Jan 2025	Jan 2026	Jan 2027	Jan 2028	Jan 2029	Jan 2030	Jan 2031	Jan 2032	Jan 2033

The APA is applied to calculate the initial HGB for PY1, as well as each subsequent PY. It is subject to changes in the IPPS Hospital Market Basket and other payment adjustments as detailed earlier in this section.

2.2.2 Volume-Based Adjustments

Volume-Based Adjustments update the Baseline Amount (adjusted by the APA) to reflect changes in demographics and volume. Because annual revenues from the HGB are fixed, Participant Hospitals are incentivized to reduce potentially avoidable utilization, improve beneficiaries' health, and shift care to appropriate lower-acuity settings to maximize net income. Volume-based adjustments facilitate predictable HGB payments and provide incentives for growth in retained revenue or savings that accrue to hospitals from the difference between fixed historical revenue and costs from lower utilization during the PYs¹⁶. Calculation of these adjustments consider Medicare FFS payments for all Eligible Hospital Services in the state or sub-state region, regardless of individual hospital participation in the AHEAD Model. Medicare payments to ineligible hospital types (as defined in **Section 1.5**) or for excluded hospital services (as defined in **Appendix D**) are not included in the calculation of volume-based adjustments. HGBs provide market shift and service line adjustments to account for service volume change year-over-year.

¹⁶ See [Evaluation of the Maryland Total Cost of Care Model: Progress Report, April 2024](#)

1. **Market Shift Adjustment:** Adjusts for upward and downward changes in revenue when patient volume and complexity realigns or shifts between Eligible Hospitals within a Hospital-Specific Market Area.
2. **Service Line Adjustment:** Adjusts funding to account for service line modifications, including additions, expansions, reductions, or elimination of specific service lines. Of note, Participant Hospitals can retain a portion of the revenue associated with the volume of a removed service line to invest in population health activities.
3. **Demographic Adjustment:** Adjusts HGBs for changes in the size and acuity of Medicare FFS beneficiaries served by the hospital.
4. **Outlier Adjustment:** Alters HGBs for changes in the portion of outlier payments between the baseline and PY.

d. 2.2.2.1 Market Shift Adjustment

The MSA is designed to account for upward and downward changes in revenue when patient volume and complexity realigns or shifts between Eligible Hospitals within a Hospital-Specific Market Area. The MSA provides an adjustment to HGBs to cover the costs associated with shifts in FFS dollars (as measured by No-Pay Claims or FFS claims) and patient resource needs (measured using DRG and APC weights) from one hospital to another within a Hospital-Specific Market Area. The adjustment includes both participating Hospitals and non-participating Hospitals to account for revenue shifts in and out of the HGB. The MSA functions to re-distribute volume between hospitals, while the Demographic Adjustment (**Section 2.2.2.3**) updates global budgets in response to changes in the population served by each hospital.

The MSA is not applied to planned service line contractions or eliminations and is not applied to new service line additions until two years of experience have occurred (**Section 2.2.2.2**). The Service Line Adjustment (SLA) adjusts HGBs for anticipated revenue changes due to planned service line modifications. Conversely, the MSA accounts for historical volume shifts between hospitals. To ensure SLAs are funded at the full amount approved by CMS, SLAs are removed from the MSA.

To support small hospitals and provide additional protection from year-to-year volume variations, an MSA small provider floor will be implemented. The floor will be set at 0%, ensuring no eligible hospital receives a downward adjustment from the MSA. Eligible small providers are any hospitals whose FFS-equivalent payments represent 2% or less of the AHEAD state's or sub-state region's total FFS-equivalent payments (based on the more recent of the two MSA calculation years). The MSA is calculated as the change in the share of FFS dollars and weights for a hospital within its Hospital-Specific Market Area. In Medicare payment methodologies, weights are a measure of resource use and are typically multiplied by a conversion factor or base rate to produce a payment amount in dollars. This shift in weights and FFS dollars for each hospital is multiplied by a MSA Shift Allowance allocated to the MSA to convert the change in market share to dollars.

Calculating a Participant Hospital's MSA involves four primary steps:

1. Determine the Hospital-Specific Market Area and overlapping market areas
2. Calculate the MSA Shift Allowance available for the Hospital-Specific Market Area
3. Calculate the proportional shift in FFS dollars and weights for the hospital within its Hospital-Specific Market Area

4. Convert proportional shift in weights and FFS dollars to MSA adjustment amount in dollars that can be applied to global budgets.

The MSA is a bi-directional adjustment for all Participant Hospitals except those defined as Small Hospitals under the MSA methodology for which a MSA Floor would apply. Participant Hospitals that gain proportional market share receive a positive MSA. Participant Hospitals that lose proportional market share receive a negative MSA, with the exception of Small Hospitals as detailed below. The methodology is designed to ensure that increases due to changes in utilization are offset by reductions in utilization elsewhere.

The MSA is applied to prospective HGB payments beginning in PY2 using historical data. For the PY2 MSA, data from BY3 and the Gap Period gap period is used. For PY3 data from the Gap Period and PY1 is used in the MSA. Subsequently, the MSA is calculated using claims data from the prior two years (e.g., PY1 and PY2). See **Exhibit 49** for more information. The MSA amount is calculated separately for inpatient and outpatient services and then summed into a single adjustment to HGB payments.

a. Determine the Hospital-Specific Market Area and Overlapping Market Areas

The Hospital-Specific Market Area for each Eligible Hospital (**Section 1.5**) is a collection of zip codes identified by contribution to the hospital's total Medicare FFS dollars or the hospital's rank within the zip based on Medicare FFS dollars (based on the more recent of the two MSA calculation years). All Eligible Hospitals in the HGB State or Substate region and Border States are assessed to determine hospital-specific market areas and overlapping market areas. A Border State is defined as a state that shares a boundary with the HGB State (or Substate). Any Border State Hospitals whose market area zip codes overlap with a HGB State (or substate) Hospital are included in assessing the HGB State (or Substate) market shift. Hospital-Specific Market Areas are reassessed annually, based on data from two years prior (the more recent comparison year) and shared with each Participating Hospital prior to the PY. To be included in a Hospital-Specific Market Area, a zip code must be located within 120 miles of the Eligible Hospital. In addition, the zip code must meet at least one of the following criteria:

1. The zip code contributes at least 0.75 percent of the Eligible Hospital's total FFS dollars
2. Within the zip code, the Eligible Hospital is the first or second hospital ranked by FFS dollars
3. When zip codes are sorted descending by total FFS dollars, the zip code contributes to the top 75 percent cumulative FFS dollars to the hospital

The MSA measures shifts in services between hospitals within this Hospital-Specific Market Area. The MSA is calculated by including zip codes identified for each hospital using the three steps above, plus those zip codes that overlap from other Hospital-Specific Market Areas. This set of zip codes are Overlapping Market Area Zips. Overlapping zip codes are included because Medicare beneficiaries residing in zip codes that are in more than one hospital's market area are more apt to receive services from either hospital.

b. Calculate the MSA Shift Allowance Available for the Hospital-Specific Market Area

The MSA Shift Allowance is the maximum amount of dollars that can shift between Eligible Hospitals in the Hospital-Specific Market Area. For each hospital, it is equal to the sum of FFS dollars across each hospital market area zip codes, plus FFS dollars in Overlapping Market Area Zip codes, adjusted by the State Growth Benchmark (inpatient and/or outpatient trend) and a funding factor of 80 percent.

$$(Eq. 1) \text{ MSA Shift Allowance}_i = \sum_{j=1}^{j=n} s_j * \text{State Growth Benchmark} * \text{Funding Factor}$$

Where,

n = Number of Hospitals with Overlapping Market Area Zip Codes is the total number of hospitals with at least one Overlapping Market Area zip code with the primary hospital.

s = Sum of FFS Dollars from Overlapping Market Area Zip Codes is the sum of Hospital FFS dollar No-Pay Claims and FFS equivalent payment amounts in Year 2 to all hospitals for beneficiaries residing in Overlapping Market Area Zips (**Section 2.2.2.1a**).

State Growth Benchmark is the AHEAD state or region wide trend factor applied to the MSA Shift Allowance to recognize growth from one year to the next. The selected State Growth Benchmark is used for the second of two years included in the MSA. For more information, refer to the Total Cost of Care Adjustment (**Section 2.3.4**).

Funding Factor is a multiplier applied to the MSA Shift Allowance to recognize the costs for moving volume from one location to another. The higher the funding factor the higher the MSA Shift Allowance. The MSA's funding factor is set at 80 percent to cover the incremental cost of the volume shift between hospitals. CMS may revisit the value of the funding factor to balance payment stability against the need to recognize changes in volume.

Inpatient and outpatient FFS dollars and weights are based on the same methodology as the Baseline, utilizing the same inclusion and exclusion criteria.

c. Calculate the Proportional Shift in FFS and Weights for the Hospital within its Market Area

The MSA is determined based on the hospital's year-over-year change in share or proportional shift in FFS dollars and weights within its Hospital-Specific Market Area. The proportional shift is calculated for FFS dollars and weights separately and is then combined as a 50/50 weighted average between the change in the two proportions. Incorporating FFS dollars in the MSA is new to version 3.0 of the HGB Financial Specifications. The MSA recognizes outliers and other payments that are important to hospitals along with weights, which measure the resources used by the hospital to provide certain services.

The FFS Payment Proportional Shift is the change in the hospital's FFS dollars, as a proportion of the total overlapping market area's FFS dollars between the two time periods included in the MSA. See **Exhibit 49** for a complete schedule of years included in the MSA.

$$(Eq. 2) \text{ FFS Payment Proportional Shift} = \frac{\text{Hospital FFS Payment}_{\text{Year2}}}{\text{Market Area FFS Payment}_{\text{Year2}}} - \frac{\text{Hospital FFS Payment}_{\text{Year1}}}{\text{Market Area FFS Payment}_{\text{Year1}}}$$

Where,

Hospital FFS Payment = The paid amount to the hospital for Medicare FFS dollars for beneficiaries residing in Hospital Market Area Zips plus Overlapping Market Area Zips.

Market Area FFS Payment = The sum of FFS dollars to all Eligible Hospitals for beneficiaries residing in in Hospital Market Area Zips plus Overlapping Market Area Zips.

The weights proportional shift is the change in the hospital's APC or MS-DRG weights, as a proportion of the total market area's weights between the two time periods included in the MSA (Exhibit 49).

(Eq. 3) FFS Weights Proportional Shift

$$= \frac{\text{Hospital Weights}_{\text{Year2}}}{\text{Total Market Area Weights}_{\text{Year2}}} - \frac{\text{Hospital Weights}_{\text{Year1}}}{\text{Total Market Area Weights}_{\text{Year1}}}$$

Where,

Hospital Weights = The total weights for Medicare No-Pay or Medicare FFS claims for beneficiaries residing in Hospital Market Areas plus Overlapping Market Area Zips. In Medicare payment methodologies, weights are a measure of resource use and are typically multiplied by a conversion factor or base rate to produce a payment amount in dollars. For the global budget, all included services (See Section 2.1.4 and Section 2.1.5) including those not normally paid using MS-DRGs or APCs are weighted using MS-DRGs or APCs as described below. As noted above, the MSA is calculated separately for inpatient and outpatient services because they have different weighting systems.

Inpatient services are weighted using,

- **MS-DRG Weights:** The MS-DRG system is used to classify inpatient services based on the patient's diagnosis, the severity of the illness, and the procedures performed. Each MS-DRG is assigned a weight that reflects the relative resource use required to treat patients in that group. These are updated annually using historical cost data and adjusted for geographic factors. Although CAHs are not paid using MS-DRGs, CMS assigns MS-DRG weights to these claims that can be used in the MSA. DRG weights are not provided for CAH swing beds services, however these are grouped using IPPS pricing software to assign MS-DRG weights.

Outpatient services are weighted using,

- **APC Weights:** APCs are used to group outpatient services into clinically coherent categories with similar resource utilization. Each APC is assigned a weight, which reflects the relative cost of providing a service within that classification. The weight is calculated based on the average cost of all procedures within the APC group, adjusted for geographic cost differences.
- **Weighting for ASP/AWP Drugs:** Part B drug claims paid via Average Sale Price (ASP) or Average Wholesale Price (AWP) are outside of the OPSS APC payment mechanism and these claims are not normally assigned APC weights. ASP/AWP drugs are assigned an APC weight by dividing all APC claim weights by all APC HOPD payments to calculate a scale factor that represents the average Medicare payment per unit of APC weight. ASP/AWP payments on No-Pay or Medicare FFS claims are then multiplied by that scale factor to convert ASP/AWP prices to APC relative values. Drugs paid through ASP/AWP are included except drugs excluded from the HGB (See Section 2.1.5).

See **Appendix E** for more information about weighting.

Market Area Weights = The sum of hospital weights for all hospitals with beneficiaries residing in Hospital Market Area Zips plus Overlapping Market Area Zips. After calculating the FFS Payments Proportional Shift and the Weights Proportional Shift, an overall weighted proportional shift is calculated. The weighting is evenly split 50 percent toward FFS payments and 50 percent toward weights.

(Eq. 4) Proportional Shift

$$= (\text{FFS Payments Proportional Shift} * 50\%) \\ + (\text{FFS Weights Proportional Shift} * 50\%)$$

An example of the calculation of the proportional shift in FFS and weights for a hospital within its Hospital-Specific Market Area is provided in **Exhibit 18a and 19b**. Overlapping Weights and FFS Payments for Hospital-Specific Market Area hospitals are summed to calculate total MSA weights and dollars for Hospital One's MSA. The proportional change in volume at other hospitals is not displayed because it is not used to calculate Hospital One's proportional shift.

Exhibit 18.a: AHEAD MSA Proportional Shift Example for a Single Hospital – Case Weights

Hospital Number	Year 1 Weight (A)	Year 2 Weight (B)	Year 1 Prop of Weight (C) = A/(Sum of A)	Year 2 Prop of Weight (D) = B/(Sum of B)	Shift in Proportion of Weights (E) = D-C
1	200	270	50.0%	56.8%	+ 6.8%
2	90	100	x	x	x
3	50	40	x	x	x
4	45	50	x	x	x
5	0	5	x	x	x
6	15	10	x	x	x
Total	400	475			

Exhibit 18.b: AHEAD MSA Proportional Shift Example for a Single Hospital – FFS Payments

Hospital Number	Year 1 FFS Payments (F)	Year 2 FFS Payments (G)	Year 1 Prop of FFS Payments (H) = F/(Sum of F)	Year 2 Prop of FFS Payments (I) = G/(Sum of G)	Shift in Proportion of FFS Payments (J) = I-H
1	\$5,000,000	\$6,000,000	55.6%	59.1%	3.5%
2	\$2,000,000	\$2,100,000	x	x	x
3	\$900,000	\$700,000	x	x	x
4	\$800,000	\$1,000,000	x	x	x
5	\$0	\$100,000	x	x	x
6	\$300,000	\$250,000	x	x	x
Total	\$9,000,000	\$10,200,000			

Weighted Proportional Shift for Hospital 1 = (6.8% * 50%) + (3.5% * 50%) = 5.2%

d. Convert Proportional Shift in Weights and FFS Payments to MSA Amount

Each Participant Hospital's MSA amount is the weighted proportional shift of FFS payments and weights multiplied by the MSA Shift Allowance.

(Eq. 5) Hospital MSA Amount = Proportional Change × MSA Shift Allowance

Small hospitals, particularly those in rural market areas, may experience unpredictable downward volume shifts year-over-year that may disproportionately destabilize the fixed nature of

prospective HGBs and pose financial risk due to larger than anticipated reductions to HGBs after accounting for MSA. To provide additional payment stability in HGBs for smaller hospitals, an MSA floor of zero percent is set for hospitals below a threshold of two percent of an AHEAD state's or sub-state region's total Medicare payments, making the MSA upward only. This threshold is assessed and applied annually to each performance year. The MSA floor limits the size of any downward reduction to HGBs that can be applied as the result of the MSA for hospitals where the floor is applicable. For example, a zero percent MSA floor and threshold of two percent means that any hospital with less than a two percent share of total FFS dollars cannot receive a downward adjustment from the MSA.

Exhibit 19 provides an example of an MSA calculation that converts the proportional shift to an MSA adjustment amount for a hospital. The proportional shift (Item A) and Year 2 Market Area FFS Payments (Item B) are carried through from **Exhibit 18**. For this example, the State Growth Benchmark is assumed to be 1.05 and the Funding Factor is 80 percent.

Exhibit 19: AHEAD MSA Proportional Shift Example for a Single Hospital

Item	Variable	Weights (1)	FFS (2)	Total (3)
A	Proportional Shift	6.8%	3.5%	$=(A1 * 50\%) + (A2 * 50\%) = 5.2\%$
B	Year 2 Market Area FFS Payments			\$10,200,000
C	State Growth Benchmark			1.05
D	Funding Factor			80%
E	MSA Shift Allowance			$= B3 * C3 * D3 = \$10,200,000 * 1.05 * 80\%$ $= \$8,568,000$
F	MSA Amount			$= A3 * E3 = 5.2\% * \$8,568,000$ $= \$445,536$

e. 2.2.2.2 Service Line Adjustment

The Service Line Adjustment (SLA) prospectively adjusts the HGB baseline to reflect planned structural changes, such as changes in physical infrastructure or staffing levels that alter hospital service capacity. Unlike the Market Shift Adjustment (MSA), which is retrospective and based on observed changes in utilization that are intermittent and unplanned, the SLA is prospective and applies to hospital-initiated capacity changes or capacity changes that a hospital prospectively implements to address community health needs or shifts in the capacity of other providers. SLA are expected to persist for multiple Performance Years (PYs) and be associated with substantial revenue.

For the SLA, a service line is defined as a distinct clinical capacity area represented by a related set of services provided to Medicare beneficiaries. Hospitals must define the relevant service line using, at minimum, the associated DRG codes, HCPCS codes, and/or revenue codes.

Two types of service line changes can be submitted through the SLA:

1. **Additions:** When a Participating Hospital plans to introduce a new service line or expand capacity for an existing one, it requests a service line addition. Upon approval, CMS provides prospective payments equal to projected Medicare FFS revenue for two PYs and later reconciles these payments to the actual Medicare FFS equivalent revenue generated by the addition (as measured using No-Pay Claims). Additions are approved when they address a demonstrated market area need (See **c.1 CMS Evaluation of Additions**).
2. **Reductions:** When a Participating Hospital plans to eliminate or meaningfully reduce capacity within a service line, such as shifts to lower-cost settings or consolidations designed to improve efficiency, it requests a service line reduction. Approved, service line reductions benefit hospitals by providing legacy revenue payments and temporarily preventing loss of revenue via the MSA. Legacy revenue payments phase down over-time and are reconciled to Medicare FFS no-pay claims-based amounts after two years. Reductions are approved when the hospital can demonstrate beneficiary access to the service will not be meaningfully diminished.

To qualify for prospective payment (provided for approved service line additions) or legacy revenue (provided for approved service line reductions), a proposed service line change must represent a substantive, durable shift in capacity, not temporary operational variability. Short-term fluctuations in volume, temporary staffing changes, or shifts derived by population demographics do not constitute service line changes for SLA purposes.

The SLA process consists of four steps. Steps 1 and 2 apply uniformly to all SLA requests. Steps 3 and 4 follow the same overall structure but differ based on whether the request is for a service line addition or a service line reduction.

1. **Submit SLA Request:** The hospital submits an SLA request for a planned service line addition or reduction. The request must include a supporting rationale, projected revenue impact, and all required regulatory and state documentation.
2. **CMS Review for Eligibility:** CMS evaluates the request for eligibility based on two criteria, (1) description of a substantive durable capacity change and (2) the minimum revenue threshold. Requests that do not meet eligibility criteria are denied and do not proceed to approval review.
3. **CMS Review for Approval:** CMS reviews the request for approval of prospective revenue (additions) or legacy revenue (reductions). While the review framework is consistent, eligible change types and approval determinations differ by request type. CMS considers beneficiary access, market-area conditions, state recommendations, and regulatory approvals.
4. **Determination of Payment and Reconciliation Amounts:** For approved requests, CMS calculates prospective revenue (additions) or legacy revenue (reductions) and provides funding to the hospital, as applicable. After two performance years, CMS reconciles the projected revenue impact to actual revenue experience. Approved adjustments are incorporated into future HGB calculations and appropriately reflected in the MSA.

CMS will not provide reimbursement or legacy revenue for service line additions or reductions unless an SLA is requested. CMS will monitor volume by service line to identify and reconcile payments attributable to unreported service line additions or reductions that are of substantive,

durable capacity and meet the minimum revenue requirements described below (See **b. Step 2: CMS Review for Eligibility**).

a. Step 1: Submit Service Line Adjustment (SLA) Request

CMS will establish a formal SLA submission and review process designed to support consistent evaluation of the financial, operational, access, and population health implications of proposed changes. To allow adequate time for CMS review and any related appeals, Participant Hospitals must submit SLA requests no later than September 1 preceding the performance year (PY) in which the SLA would take effect. Mid-year SLA requests generally will not be considered except in emergency circumstances (e.g., introduction of technology or Medicare coverage or payment rules).

Each SLA submission must include sufficient detail to enable CMS to independently evaluate the request. CMS reviews the submitted materials holistically, using the following inputs and documentation:

1. **Description of the Proposed Change:** A narrative description of the proposed service line addition or reduction, including relevant operational details such as facility modifications, bed capacity changes, clinical program expansions or wind-downs, and staffing model changes.

The request must explicitly define the services impacted by the service line capacity change. CMS will provide a list of DRG-based service line groupings as a reference tool; hospitals may use these groupings or propose alternative structures using DRG, HCPCS, and/or revenue codes. For hospital-wide expansions or reductions spanning multiple service lines, CMS may evaluate the change in aggregate (e.g., change in total hospital admissions).

2. **Rationale, Community Benefit, and Population Health Alignment:** Hospitals must describe the underlying rationale for the proposed change, including how it aligns with identified community needs, operational objectives, the hospital's Population Health Action Plan (PHAP), and state population health objectives or plans. If the geographic area, the Participating Hospital expects the SLA to affect is distinct from its market area, it should define and justify an alternative service area for the SLA. CMS evaluates this information to assess whether the proposed service line change supports population health goals while also preserving or improving beneficiary access.

3. **State Regulatory Review and State Recommendation:** Where applicable, hospitals must provide documentation of required state regulatory approvals, such as Certificate of Need (CONs) and state licensing. CMS reviews these materials to confirm appropriate authorizations are in place and to understand the state's rationale for approval.

CMS also considers the AHEAD State's recommendation and any contextual information provided regarding local priorities, market dynamics, or access considerations. Because state review timelines may vary, hospitals are encouraged to initiate state review early to ensure CMS can incorporate state input into its evaluation.

4. **Market-Area Utilization and Access Considerations:** To assess potential access implications, CMS analyzes utilization patterns within the hospital's market area, defined as the proportion of total cases relative to the beneficiary population. CMS evaluates whether the service line is essential to local access, whether alternative capacity exists, and whether the proposed change may meaningfully affect beneficiary access to care.

5. **Revenue Impact Estimates and Methodology:** Hospitals must submit projected Medicare revenue changes for both year 1 and year 2 of the proposed service line change, disaggregated by the associated DRGs, HCPCS codes, and/or revenue codes. Submissions must also include the methodology used to develop the projections, including:

- Data sources (e.g., internal cost reports, claims data),
- Capacity changes driving hospital volume change
- Volume assumptions, including expected growth or contraction.

CMS uses this information to assess the validity, consistency, and reasonableness of the projected impacts.

6. **Beneficiary Shift Patterns (for Service Line Reductions Only):** For service line reductions, hospitals must provide a quantitative assessment of where affected beneficiaries are expected to receive care, including:

- Identification of specific hospitals or providers likely to absorb redirected volume, and
- Description of lower-cost or alternative care settings expected to replace displaced inpatient or outpatient services, where applicable.

This information supports CMS's evaluation of total savings and system-wide access impacts.

7. **Legacy Revenue Request (for Service Line Reductions Only):** If the hospital is requesting legacy revenue, the submission must include a description of the intended use of retained discretionary and PHAP-aligned funding. CMS reviews this information to assess alignment with program objectives.

CMS may request clarifying information or supplemental documentation during the review process. Hospitals are expected to respond promptly to maintain eligibility for prospective revenue adjustments or legacy revenue consideration.

b. Step 2: CMS Review for Eligibility

After submitting an SLA request, in Step 2, CMS will review the request to determine initial eligibility. Initial eligibility is established by determining:

1. Whether the service line adjustment is a substantive, durable capacity change
2. Whether the service line adjustment meets the minimum revenue requirement

Any services reimbursed under Medicare FFS, including those available to providers through CMS waivers, such as hospital at home can be included as service line additions. Services not reimbursed through Medicare FFS are not eligible for service line requests.

b.1. Substantive, Durable Capacity Change

To be eligible, a service line change must represent a durable, multi-year structural adjustment, not temporary or operational variability. The following characteristics define a qualifying change:

- It reflects a planned, sustained shift in capacity expected to persist across multiple PYs.
- It involves structural modifications to service availability, staffing models, infrastructure, or program design.

The following types of changes do *not* qualify, as they do not represent durable structural adjustments:

- Short-term operational variability
- Temporary staffing shifts
- Temporary marketing-driven demand changes
- Population-driven service fluctuations (which are addressed by the Demographic Adjustment)

b.2. Minimum Revenue Threshold

A service line change meets the SLA minimum revenue threshold when the greater of the first- or second-year projected Medicare revenue impact is:

1. **At least 1%** of total eligible Medicare revenue, or
2. **At least \$500,000** in eligible Medicare revenue

c. Step 3: CMS Review for Approval

The criteria for approving an SLA differs for additions and reductions and are described below.

c.1. CMS Evaluation of Additions

CMS evaluates service line additions for approval of prospective payment by assessing whether the proposed expansion:

- Addresses a demonstrated need or alleviates capacity constraints in the Participating Hospital's market area or a service area defined by the Participating Hospital as the target area for the SLA
- Enhances beneficiary access to essential services without creating unnecessary duplication
- Aligns with the hospital's operational capabilities and long-term planning

Additions are more likely to be approved when they alleviate capacity constraints, respond to market-area utilization patterns, and support the model's goals of strengthening care availability and system efficiency.

Service line additions are categorized as either New Capacity or Capacity Shifts. *New Capacity* refers to expansions that meaningfully increase a hospital's ability to deliver services. *Capacity Shifts* refer to relocations or reconfigurations of existing capacity between hospitals within the same market area or under common ownership. **Exhibit 20** provides illustrative examples of each.

Exhibit 20: Types of Service Line Additions

Change Category	Change	Example
New Capacity	Adding capacity for a specific service	Hospital adds advanced stroke care capacity such as Interventional Stroke Care (Mechanical Thrombectomy)
New Capacity	Adding capacity for a general service	Hospital adds beds expanding medical and surgical services
New Capacity	Hospital wide capacity increase	Hospital expands to a new building adding more IP capacity

Change Category	Change	Example
New Capacity	Service Line increase in Base Year(s)	Hospital adds an Oncology wing during Base Year 2
New Capacity	Adding hospital-based services previously unavailable	Hospital launches a new bariatric surgery program.
Capacity Shift	Hospital system shifts service between two market area hospitals	Hospital system eliminates oncology services from Hospital A but adds it to Hospital B within the same system and market area
Capacity Shift	Hospital closures	Hospital A shuts down their oncology wing and Hospital B adds capacity to accommodate transfer of patients
Capacity Shift	Hospital outpatient oncology center closure	Hospital A shuts down their outpatient oncology treatment center and a community-based oncology treatment center opens

c.2. CMS Evaluation of Reductions

CMS evaluates service line reductions for approval of legacy revenue by assessing whether the proposed expansion:

- Contributes to hospital financial sustainability and generates savings for CMS and/or the hospital where appropriate
- Reflects the availability of alternative providers
- Aligns with the hospital's PHAP and broader system planning
- Avoids creating any barriers to care or diminished access within the Participating Hospital's market area

Reductions are more likely to be approved when they protect essential access, demonstrate credible operational and financial rationale, and promote more efficient delivery of care in line with model goals.

Exhibit 21 describes three categories of qualifying service line reductions, including illustrative examples. Qualifying reductions include (1) Rightsizing, defined as reductions in capacity where the hospital demonstrates sustained low utilization or a clear mismatch between existing capacity and market demand; (2) Shift to Lower-Cost Settings, defined as service line reductions that reflect a transition of care to a lower-cost, clinically appropriate site of service, such as moving procedures from the hospital outpatient department to an Ambulatory Surgical Center (ASC) or physician office; and (3) Capacity shift, defined as a relocations or reconfigurations of existing capacity between hospitals within the same market area or under common ownership.

Exhibit 21: Service Line Reduction - Qualifying Types and Examples

Change Category	Change	Example
Rightsizing	Rightsizing based on market need	Hospital reduces inpatient surgical beds due to persistently low patient volume (utilization) Reduction in service capacity due to market area overcrowding or a new provider entering the market
Rightsizing	Efficiency gains	Consolidating duplicative service lines within a system

Change Category	Change	Example
Rightsizing	Elimination or reduction in a service line due to sustained low demand	Closing a persistently low-volume inpatient rehabilitation unit
Shift to Lower Cost Setting	Shifting services to lower cost ASC setting	Shifting services to Ambulatory Service Centers (ASC) or physician office
Shift to Lower Cost Setting	Shifting services to Home Health (HH) or a Skilled Nursing Facility (SNF)	Shifting services to a non-inpatient setting resulting in a shorter stay
Capacity Shift	Hospital system shifts service between two market area hospitals	Hospital system eliminates oncology services from Hospital A but adds it to Hospital B within the same system and market area

d. Step 4: Determination of Payment and Reconciliation Amounts

The criteria for determining payment and reconciliation amounts associated with an SLA differs for additions and reductions and are described below.

d.1. Determination of Payments and Reconciliation Amounts for Additions

d.1.1. Overview of Payment Approach for Service Line Additions

When CMS approves a service line addition, estimated prospective revenue reflecting forecasted Medicare FFS volume associated with the new or expanded capacity is added to the HGB for a two-year period. Estimates of prospective revenue must be supported by the hospital's analysis of Medicare FFS volume and prices, as detailed below in the **Guidance for Estimating Revenue for SLA Additions**. Prospective revenue is incorporated into the hospital's HGB beginning in the performance year in which the service line change becomes operational and is paid through bi-weekly payments.

Prospective payment amounts are reconciled to Medicare FFS No-Pay Claims after two years to reflect actual utilization. Any variance between projected and observed Medicare FFS equivalent revenue for the new service line is trued up through an adjustment to the HGB. After reconciliation, FFS equivalent Medicare revenue aligning with the utilization of the new service line in the first two years is incorporated into future baselines.

If actual experience in Year 1 differs materially from the approved estimate, CMS may request updated Year 2 projections (and supporting assumptions) prior to the start of Year 2 to ensure the prospective amount remains appropriate. Any updates will be applied prospectively and remain subject to the model's reconciliation provisions.

Exhibit 22 provides an end-to-end illustration of the prospective payment and reconciliation process.

Exhibit 22: Example Service Line Addition Payment and Reconciliation – (PY2 as Year of Service Line Capacity Change)

Time	Step(s) in Service Line Addition Process
By September 30th of year prior	Request: Hospital submits service line request with annual forecast of Medicare FFS equivalent revenue associated with the service line addition; CMS reviews and approves the request.

Time	Step(s) in Service Line Addition Process
PY2	Prospective Payment: CMS adds forecasted revenue to the HGB for PY2, which is paid through bi-weekly payments. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation which is based on the Gap Period and BY3.
PY3	Prospective Payment: CMS adds forecasted revenue to the HGB for PY3, paid through bi-weekly payments. CMS may adjust the originally submitted revenue estimate as appropriate. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation based on BY3 and PY1.
Mid-PY3	HGB Reconciliation: CMS reconciles PY2 prospective payments to actual Medicare FFS No-Pay Claims by adjusting remaining PY3 bi-weekly payments.
PY4	Prospective Payment: Actual service line payments from PY2 are incorporated into the PY4 HGB. No separate service line addition payment is made. MSA: All dollars associated with the impacted service line are <u>removed</u> from the MSA calculation based on PY1 and PY2.
Mid-PY4	HGB Reconciliation: CMS reconciles PY3 prospective payments by adjusting remaining PY4 bi-weekly payments.
PY5	Prospective Payment: No prospective payment is provided. Actual service line payments from PY3 are incorporated into the PY5 HGB. MSA: All dollars associated with the impacted service line are <u>removed</u> from the MSA calculation based on PY2 and PY3.
PY6	Prospective Payment: No prospective payment is provided. The PY6 HGB is calculated without service line differentiation. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation based on PY3 and PY4.

d.1.2. Calculating Estimated Revenue for Service Line Additions

Exhibit 23 outlines CMS’s approach for estimating projected Medicare FFS revenue associated with an SLA. To promote consistency across Participant Hospitals, projected revenue estimates should be developed using a capacity-driven approach, applying Medicare FFS per-unit payment rates and reasonable assumptions regarding utilization for newly added or expanded capacity.

Exhibit 23: Guidance for Estimating Medicare FFS Revenue for Service Line Additions

Service line additions should be estimated using the steps below.

- 1. Estimate Expected Volume Based on the Capacity Increase:** Hospitals should first quantify the increase in volume associated with the addition. Expected volume should be tied to how much of the new capacity is reasonably expected to be used. Volume should reflect realistic utilization levels and should consider the following:
 - Typical ramp-up time patterns
 - Market-area Medicare demand
 - Historical use of comparable services

Examples of increased capacity that could drive volume include adding additional inpatient beds, procedure room slots, or increased hours of operation or staffing.

2. Determine Medicare Per-Unit Payment Rates: Hospitals must estimate projected revenue using standard Medicare FFS per unit payment rates applicable to the service setting and type of care delivered, including:

- **Inpatient services: DRG payment rates.** Hospitals may reference the CMS Medicare Web Pricer tool to validate applicable Medicare payment rates and payment logic.
- **Outpatient services: OPPS/APC payment rates**

Hospitals should not use charges, commercial reimbursement rates, or other non-Medicare pricing assumptions.

3. Calculate Projected Medicare Revenue: Projected Medicare revenue for the addition should be calculated as: Projected Volume × Medicare FFS Per-Unit Rate

This calculation should be completed at the same level of specificity as the service line request (e.g., DRG, HCPCS, or number of additional beds).

d.1.3 Reconciliation of Payments for Service Line Additions

Because utilization associated with new or expanded service lines is difficult to predict in advance, approved prospective revenue is subject to reconciliation to Medicare FFS-equivalent payment for the first two PYs of implementation.

Under reconciliation, the prospectively paid SLA amount is compared against the actual FFS-equivalent utilization for the approved service line, as reported through No-Pay Claims. Any variance between the prospectively added amount and observed utilization is applied via an adjustment to the hospital's HGB in the subsequent PY.

Following sufficient claims run-out, CMS will calculate the reconciliation amount (See **Exhibit 28** for more detail) and apply any amounts to the following HGB. For example, PY2 reconciliation is calculated after claims run-out and is incorporated into the initial HGB for PY3.

After the first two PYs, the approved service line addition becomes a permanent component of the HGB and is no longer subject to reconciliation. For the 3rd and 4th PYs, all applicable service line revenue is removed from the MSA. Beginning in PY5, all service line revenue is subject to the MSA calculation.

Exhibit 24 presents a simplified reconciliation example. Paid amounts are shown as average per-unit payments and summarized totals; actual claim-level payments may vary due to factors such as beneficiary cost-sharing and other payment adjustments.

Exhibit 24: Reconciliation Example

Item	Data Element	Base Year Actual (1)	Year 1 Projection (2)	Year 1 Actual (3)
A	Total Units	800	1,800	1,709
B	Paid Amount per Unit	\$500	\$600	\$550
C	Total Paid Amount	= A1 x B1 \$400,000	= A2 x B2 \$1,080,000	= A3 x B3 \$939,950
D	New or Reduced Units	-	= A2 – A1 1,000	= A3 – A1 909

Item	Data Element	Base Year Actual (1)	Year 1 Projection (2)	Year 1 Actual (3)
E	Paid Amount from New or Removed Units	-	= B2 x D2 \$600,000	= B3 x D3 \$499,950
F	Reconciliation	-		= E3 – E2 (\$100,050)

d.1.4. Prospective Revenue Methodology for Baseline Year Changes

If the addition occurs during one of the Baseline Years, CMS incorporates the incremental revenue attributable to the new capacity into the SLA calculation for the relevant Baseline Year.

Exhibit 25 presents a prospective payment example for an oncology expansion completed in Base Year 3. With all other inputs held constant, the example shows how the expanded oncology revenue flows through the weighted baseline year calculation and results in an SLA amount for PY1.

Exhibit 25: Prospective Payment Service Line Expansion Example

	Base Year 1	Base Year 2	Base Year 3	Gap Period	PY1 - Projected
Oncology Revenue	\$10M	\$10M	\$20M	\$15M	\$30M
Other Revenue	\$290M	\$290M	\$290M	\$145M	\$290M
Total Revenue	\$300M	\$300M	\$310M	\$160M	\$320M

To calculate the PY1 prospective payment amount due to the service line change occurring in BY3 the following approach is used.

1. **Calculate the weighted PY1 baseline** where BY1 total revenue is weighted at 60%, BY2 total revenue is weighted at 30%, and BY3 total revenue (including the SL addition) is weighted at 10%. Weighted PY1 baseline (excluding optimization).

$$\begin{aligned} \text{Weighted Baseline}_{\text{Total}, \text{PY1}} &= (10\% \times \$300M) + (30\% \times \$300M) + (60\% \times \$310M) \\ &= \$30M + \$90M + \$186M = \$306M \end{aligned}$$

2. **Calculate a weighted baseline specifically for oncology revenue**, using a similar 60/30/10 weighting.

$$\begin{aligned} \text{Baseline}_{\text{Onc}, \text{PY1}} &= (10\% \times \$10M) + (30\% \times \$10M) + (60\% \times \$20M) \\ &= \$1M + \$3M + \$12M = \$16M \end{aligned}$$

3. **Determine the estimated PY1 oncology paid amount** (see d.1.2. Calculating Estimated Revenue for Service Line Additions).

$$\text{Revenue}_{\text{Onc}, \text{PY1}} = \$30M$$

4. **Calculate the PY1 SLA prospective revenue** for the oncology capacity change. The prospective revenue is equal to the incremental oncology revenue between the weighted baseline and the PY1 expected revenue.

$$\text{SLA}_{\text{Onc}, \text{PY1}} = \text{Revenue}_{\text{Onc}, \text{PY1}} - \text{PY1 Baseline}_{\text{Onc}, \text{PY1}} = \$30M - \$16M = \$14M$$

d.2. Determination of Payment and Reconciliation Amounts for Reductions

d.2.1. Overview of Payment Approach for Service Line Reductions

Legacy Revenue is provided to Participant Hospitals with approved service line reductions beginning in the PY in which the service line change becomes operational. Legacy Revenue payment is equal to a percentage of the estimated savings to CMS attributable to the service line capacity change(s).

The percentage and the allowable uses of the revenue vary by year (see **d.2.3 Legacy Revenue Distribution**). Legacy revenue payments are incorporated into biweekly HGB payments. Legacy payment amounts are reconciled to Medicare FFS No-Pay Claims after two years to reflect actual utilization. Any variance between estimated and observed revenue is trued up through reconciliation.

d.2.2. Calculating Estimated Revenue for Service Line Reduction

Revenue associated with a service line reduction is estimated as follows:

- **Shifts to Lower-Cost Settings:** Revenue estimates are calculated based on the net difference in utilization and Medicare FFS equivalent unit costs between the higher-intensity setting and the new lower-intensity setting. Participating hospitals will project:
 - Utilization in each setting and associated Medicare FFS-equivalent unit costs, and
 - Quantify the net change in Medicare FFS-equivalent expenditures that is attributable to the shift.
- **Right-sizing:** Estimated reduction in revenue is equal to the estimated system-wide reduction in Medicare FFS payments associated with the capacity adjustment. The revenue estimate reflects how utilization patterns change following the adjustment, including whether volume shifts to other providers, moves to lower-cost settings, or is avoided altogether. CMS assesses net spending effects across the Medicare program overall.

Additional details regarding how to calculate revenue associated with a service line reduction will be provided in subsequent versions of the financial specifications. In the first and second year of the service line reduction, CMS provides legacy revenue based on the estimated revenue reduction. In the third year, legacy revenue is based on the observed reduction in utilization and Medicare FFS revenue associated with that reduction from the second year. In the fourth year and after, legacy revenue is based on the observed reduction in utilization and the Medicare FFS revenue associated with it from the third year.

d.2.3 Legacy Revenue Distribution

Legacy Revenue funding must support PHAP-aligned (see **d.2.4 PHAP-aligned Legacy Revenue**) or discretionary (see **d.2.5 Discretionary Legacy Revenue**) purposes. The share of the estimated revenue reduction that CMS will provide in legacy payments for each of these purposes is displayed in **Exhibit 26** for each year following an approved service line reduction. After receiving CMS approval for a service line reduction, non-CAHs can receive 70% of the revenue associated with the reduced or eliminated service line in the first year and reduced percentages in subsequent years. A CAH may request retention of up to 100% of the revenue associated with the reduced or eliminated service line in each year following the change. For non-CAHs 20% of the revenue will

be distributed as discretionary and the remainder will be for PHAP-aligned purposes. For CAHs the legacy revenue provided will be distributed as 50% PHAP-aligned and 50% discretionary.

At CMS' discretion, in the case of a hospital closure, CMS may adjust the legacy revenue distribution to incentivize appropriate reduction of excess capital investment and generate long-term structural savings.

Exhibit 26: Legacy Revenue Distribution by Year

Year During or After Service Line Reduction	Non-CAHs			CAHs		
	PHAP-Aligned	Discretionary	Total	PHAP-Aligned	Discretionary	Total
1	50%	20%	70%	50%	50%	100%
2	40%	20%	60%	50%	50%	100%
3	30%	20%	50%	50%	50%	100%
4+	0%	20%	20%	50%	50%	100%

Exhibit 27 provides an example of legacy revenue payments allocations for a non-CAH hospital.

Exhibit 27: Example of Legacy Revenue Allocation for non-CAH hospital by Year

Yr	Estimated Revenue Reduction	PHAP-Aligned Percent	PHAP-Aligned Revenue	Discretionary Percent	Discretionary Revenue	Total Hospital Retained
1	\$10M	50%	\$5.0M	20%	\$2.0M	\$7.0M
2	\$8M	40%	\$3.2M	20%	\$1.6M	\$4.8M
3	\$6M	30%	\$1.8M	20%	\$1.2M	\$3.0M
4+	\$5M (per year)	0%	\$0	20%	\$1.0M	\$1.0M

d.2.4. PHAP-Aligned Legacy Revenue

PHAP-aligned legacy revenue must be used to fund activities that are aligned with the PHAP or serve population health or structural healthcare delivery system goals, at CMS' discretion. Legacy revenue may fund activities in one or more of the following domains of the hospital PHAP.

1. **Resources:** Investments that expand or strengthen capacity to improve population health (e.g., staffing, technology, data infrastructure, community partnerships, evidence-based interventions).
2. **Stakeholder Engagement:** Activities that deepen or formalize engagement with community partners (public health agencies, behavioral health providers, social services, community-based organizations addressing social drivers of health).
3. **Hospital Action Planning:** Implementation of strategies related to the two statewide PHAP measures the hospital is actively monitoring (planning, execution, evaluation, or refinement of interventions).
4. **Health Promotion & Clinical-Community Linkages:** Enhancements to screening, referral, and connection to community resources and preventive services (care navigation, patient outreach, integrated care coordination).

5. **Hospital-Selected Measure Improvement:** Initiatives to improve the hospital's selected population health measures (operational, clinical, or community-based efforts directly supporting performance improvement).

In PY1, the hospital PHAP will not yet be submitted. In this case, the hospital should explain how it aligns with one of the domains rather than reference their existing PHAP.

d.2.5. Discretionary Legacy Revenue

The Discretionary share of the legacy revenue is intended to be patient-focused or used to support staff transitions and/or cover reasonable downsizing or closure costs necessary to safely implement the service line change. Allowable uses for discretionary legacy funding include:

- Patient-focused transition supports (e.g., care navigation, transportation coordination during transition, patient communication/outreach).
- Workforce transition (e.g., training/upskilling to redeploy staff to PHAP-aligned programs or to other in-system roles).
- Reasonable downsizing/closure costs tied to the service line change (e.g., equipment decommissioning, space repurposing that supports population health, one-time project management).
- At CMS' discretion, other uses that align with Medicare program goals and regulations.

d.2.6. Reconciliation of Legacy Revenue

Similar to the reconciliation process for service line additions, estimated revenue reduction amounts associated with service line reductions are reconciled to Medicare FFS—equivalent payment for the first two performance years (PYs) of implementation. Any variance between the prospectively removed amount and observed utilization will result in an adjustment to the hospital's HGB in the subsequent PY. The timing of claims run-out and reconciliation is aligned with the policy for service line additions (see **d.1.3 Reconciliation of Payments for Service Line Additions**). Reconciliation is not required for complete service line eliminations because all revenue associated with the eliminated service line is removed prospectively.

For the first two years of implementation, CMS also reconciles the estimated revenue reduction amounts that were previously applied to calculate legacy revenue payments against actual experience. This reconciliation trues up legacy revenue payments that were provided prospectively. The reconciliation and corresponding adjustment for the first year of implementation occur midway through Year 2, while the reconciliation and adjustment for the second year of implementation occur midway through Year 3.

d.2.7 Impact on Hospital Global Budget

All revenue associated with the service line reduction is removed from the HGB. If a service is fully eliminated, no reconciliation is anticipated, as the revenue associated with the entire service line is removed from the HGB. For partial reductions, in the first two years of service line implementation, the estimated revenue reduction amount is removed from the HGB (see **d.2.2 Calculating Estimated Revenue for Service Line Reduction**). Beginning in Year 3, that estimate is reconciled based on actual experience, with the year 3 reconciliation based on Year 1 experience and Year 4 reconciliation based on Year 2 experience.

In addition, for Year 3 and 4, all service line associated revenue is removed from the MSA calculation so as not to double count the reduction in service line activity. **Exhibit 28** provides an end-to-end overview of the prospective payment and reconciliation process.

Exhibit 28: Example Service Line Reeducation Legacy Revenue Payment and Reconciliation – If Service Line Shift Takes Place in PY2

Time	Step for Service Line Reduction
Before PY2	Request: Hospital submits a service line reduction request, including forecasted Medicare FFS revenue reductions, which CMS reviews and approves.
PY2	HGB: CMS reduces the HGB to reflect the estimated reduction in Medicare FFS revenue for Year 1 of the service line reduction. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation based on the Gap Period and BY3. Legacy Revenue: CMS provides legacy revenue equal to 70% of the estimated reduction in Medicare FFS revenue. Of this amount, 50% must be PHAP-aligned and 20% is discretionary, depending on hospital type (e.g., CAH vs non-CAH).
PY3	HGB: CMS reduces the HGB to reflect the estimated reduction in Medicare FFS revenue for Year 2 of the service line reduction. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation based on BY3 and PY1. Legacy Revenue: CMS provides legacy revenue equal to 60% of the estimated reduction in Medicare FFS revenue. Of this amount, 40% must be PHAP-aligned and 20% is discretionary.
Mid-PY3	HGB Reconciliation: CMS reconciles the PY2 HGB adjustment to actual Medicare FFS No-Pay Claims reflecting the observed PY2 revenue reduction. Any variance is addressed through an adjustment to remaining PY3 bi-weekly payments. <i>Note: For complete service line eliminations, no reconciliation adjustment is required.</i> Legacy Revenue Reconciliation: CMS reconciles PY2 legacy revenue to actual observed savings.
PY4	HGB: The PY4 HGB reflects reconciliation of the PY2 reduction amount. MSA: All dollars associated with the impacted service line are <u>removed</u> from the MSA calculation based on PY1 and PY2. Legacy Revenue: CMS provides legacy revenue equal to 50% of the estimated savings to CMS. Of this amount, 30% must be PHAP-aligned and 20% is discretionary.
Mid-PY4	HGB Reconciliation: CMS reconciles the PY3 HGB baseline adjustment to actual Medicare FFS no-pay claims reflecting the observed PY3 revenue reduction. Any variance is addressed through an adjustment to remaining PY4 bi-weekly payments. <i>Note: For complete service line eliminations, no reconciliation adjustment is required.</i> Legacy Revenue Reconciliation: CMS reconciles PY3 legacy revenue to estimated reduction in CMS FFS-equivalent spending attributable to service line reduction calculated based on actual observed utilization.
PY5	HGB: The PY5 HGB follows the standard methodology, with no service line-specific adjustments. MSA: All dollars associated with the impacted service line are <u>removed</u> from the MSA calculation based on PY2 and PY3.

Time	Step for Service Line Reduction
PY6	HGB: The PY6 HGB follows the standard methodology. MSA: All dollars associated with the impacted service line are <u>included</u> in the MSA calculation based on PY3 and PY4.

e. Appeals

Participant Hospitals may appeal CMS service line approval decisions, prospective revenue amounts, and legacy revenue amounts when they believe CMS made an error. The appeals process is detailed in the PA. Disagreement with CMS’s exercise of judgment, without new facts or specific methodological issues, is not sufficient grounds for appeal. As detailed in the PA, appeal processes must be based on one or more of the following:

- Factual error or material omission in CMS’s determination.
- New or clarified evidence that was not reasonably available at the time of the original decision (e.g., updated state approval status or market-access analysis).
- Methodological clarification regarding estimates, assumptions, or beneficiary shift patterns.
- Program-alignment justification, demonstrating how the proposed change advances population health, preserves or improves access, and aligns with the hospital’s PHAP.

2.2.2.3 Demographic Adjustment

The Demographic Adjustment (DA) is designed to adjust HGBs to reflect changes in both the size and medical risk of the population served by each Participant Hospital (**Section 1.6**). As the size and risk profile of the population changes, the utilization of services also changes. In many cases, the DA accounts for a more medically complex population as the population ages, new beneficiaries qualify for Medicare coverage, and existing beneficiaries’ care becomes more medically complex. The DA also accounts for shifts in enrollment from Medicare FFS to Medicare Advantage by adjusting Medicare FFS HGBs downward as Medicare is no longer the primary payer for those services.

For the DA, beneficiary Hierarchical Condition Category (HCC) scores are used to assess changes in beneficiary clinical and demographic risk. CMS has historically used HCC scores to estimate future healthcare costs for an individual and to account for differences in patient complexity.

The DA is the average percentage change in total HCC scores across all counties served by each Participant Hospital weighted by the percentage of revenue its residents accounted for at the Participant Hospital. For example, if a hospital generates one million in total Medicare FFS revenue and residents from County A accounted for \$100k of that revenue, the County A weight for that hospital is ten percent.

The total HCC accounts for both population shifts and clinical and demographic risk changes in the areas served by the Participant Hospital. Each beneficiary in a county is assigned an HCC score, with a value of 1.0 representing the national average risk of a Medicare beneficiary. If additional beneficiaries move into a county or if residents of a county become sicker, the total HCC increases proportionally.

The DA is based on the year-over-year change in HCC scores across all counties served by each Participant Hospital, then applied to the HGB in the subsequent PY. The share of FFS payments from the year ending six months prior to each PY is Y1, and the share of FFS payments from the

year ending 18 months prior to each PY is Y2. The share of FFS payments and number of counties served is calculated using data from the more recent time period (Y1) and is updated annually. Claims data is used to calculate HCC scores and the change in Total HCC is calculated using the change between Y2 and Y1 and is updated each time the DA is calculated.

a. Demographic Adjustment Calculation

The DA adjusts HGBs by the weighted average percentage change in total HCC scores across counties served by the Participant Hospital. The change in total HCC scores is applied proportional to the share of Medicare FFS claim payments for Eligible Inpatient and Outpatient Hospital Services generated from each county for the Participant Hospital. The DA is calculated as,

$$(Eq. 1) DA_i = \sum_{j=1}^{j=n} s_j * \Delta Total HCC$$

Where,

n = Number of Counties Served by the Hospital is the number of counties with at least one resident with an FFS claim (or No-Pay Claim equivalent) for Eligible Inpatient or Outpatient Hospital Services at the Participating Hospital. Counties can be located in- or out-of-state so that the demographic adjustment fully aligns with total hospital Medicare FFS revenue.

s = Share of FFS Payments is equivalent to revenue generated for the Participant Hospital from each county *j* served by the hospital divided by total revenue generated for the Participant Hospital across all counties. Revenue is the sum of Medicare FFS claim payments or No-Pay Claims for Eligible Inpatient and Outpatient Hospital Services using the same inclusion/exclusion logic as in the Baseline Calculation (**Section 2.1**). All factors used to calculate Medicare FFS claim payments are incorporated including base payment rates, adjustments for market conditions, complexity of service (DRG-Weights), policy adjustments, and quality adjustments.

Δ Total HCC = Percentage change in the county sum of HCC scores. The county sum of HCC scores is calculated by summing the HCC score for every Medicare beneficiary that resides in the county. HCC scores are calculated for all Medicare beneficiaries and are summed to better represent the entire distribution of acuity, rather than a single measure of central tendency, such as the mean or median.

HCC scores incorporate data on beneficiary health condition(s) using the ICD-10 codes and demographic factors (e.g., age, gender). Each beneficiary receives a single score that covers a 12-month lookback period. The CMS HCC Model Software for ICD-10 Mappings is used to determine the HCC scores for each beneficiary¹⁷.

b. Demographic Adjustment Example

Exhibit 29 provides an example of how the PY1 DA is calculated for a Participant Hospital that served beneficiaries from three counties.

¹⁷ [Medicare Advantage Rates and Statistics: Risk Adjustment](#)

Exhibit 29: Example Demographic Adjustment Calculation for Participant Hospital

Item	County	County Sum of HCC Scores (Y1)	County Sum of HCC Scores (Y2)	Percentage Δ Total HCC	Total Revenue from County (Y1)	Share of FFS Claims (Y1)	County Adjustment
		(1)	(2)	(3)	(4)	(5)	(6)
A	County A	74.5	72.5	$= (A3 - A1) / A1 = 2.76\%$	\$110k	$= A2 / D2 = 35.48\%$	$= A4 \times A5 = 0.98\%$
B	County B	62.5	68.5	$= (B3 - B1) / B1 = -8.76\%$	\$40k	$= B2 / D2 = 12.90\%$	$= B4 \times B5 = 1.13\%$
C	County C	77.5	70	$= (C3 - C1) / C1 = 10.71\%$	\$160k	$= C2 / D2 = 51.61\%$	$= C4 \times C5 = 5.53\%$
D	Total	-	-	-	$= A2 + B2 + C2 = \$310k$	-	$= A6 + B6 + C6 = 5.38\%$

2.2.2.4 Outlier Adjustment

a. Overview

In Medicare FFS, IPPS and OPPS outlier adjustments provide additional payment to hospitals to mitigate the financial risk associated with encounters that are unusually expensive and resource intensive. IPPS and OPPS outlier payments serve as a protection mechanism for hospitals, ensuring they can continue to provide high-quality care to patients with exceptional medical needs without jeopardizing their financial stability. IPPS and OPPS outlier payments are included in paid amounts used to set the HGB baseline (e.g., BY1-BY3). The HGB outlier adjustment protects Participant Hospitals against changes in the frequency or intensity of outlier cases between the baseline and/or PYs. This approach recognizes and compensates Participant Hospitals for treating exceptionally high-cost patients.

In Version 2.0 of the CMS-Designed HGB, the adjustment for outliers was part of the Annual Payment Adjustment and used outlier payment data from the IPPS Impact File. The outlier adjustment in Version 3.0 uses the actual outlier payment amounts from claims instead of estimated amount sourced from the IPPS Impact File. Shifting from estimated to actual outlier payments that are calculated on a claim-by-claim basis better aligns with what hospitals can expect under Medicare FFS and reinforces the focus on resource intensity at the case level, rather than the overall utilization.

Under current Medicare FFS policy SCHs receive a 7.1% increase above standard OPPS rates, excluding drugs and biologics. The Outlier Adjustment operates the same under both standard and increased OPPS rates, following the provisions of the standard CMS Outlier Payment Policy, and naturally accounts for the higher 7.1% OPPS reimbursement rate for SCHs. CAHs do not receive outlier payments in Medicare FFS and are therefore ineligible for the Outlier Adjustment. The HGB does include a CAH payment floor to protect these hospitals (see **Section 2.1.6**).

b. Outlier Adjustment Calculations

For each performance year, the outlier adjustment for HGBs is calculated as the change in the share of outlier payment from one year to the next. The share of outlier payments for each Participant Hospital and year is calculated as\,

$$(Eq. 1) = \text{Share of Outlier Payments} = \left(\frac{\sum \text{Outlier Payments on FFS or No - Pay Claims}}{\sum \text{Total Paid on FFS or No - Pay Claims}} \right)$$

Where,

IPPS or OPPS Outlier Payments on FFS or No-Pay Claims = IPPS or OPPS APC outlier payments as calculated using standard Medicare FFS processing rules. No-Pay Claims are used to calculate what the outlier payment would have been if the Participant Hospital was not participating in global budgets.

Total Paid FFS or No-Pay Claims = The paid amount Medicare FFS payments for Eligible Hospital Services or what would have been paid on No-Pay Claims for during the Performance Year.

The change in the share of outlier payments between years is calculated as shown in **Equation 2**, which is then multiplied by the global budget amount to calculate the value of the adjustment.

$$(Eq. 2) \text{ Outlier Adjustment} = (\text{Share of Outlier Payments}_y - \text{Share of Outlier Payments}_{y-1}) * H$$

Where,

y = Baseline or Performance Year included in the calculation. See **Exhibits 50 to 52** for details.

H = Hospital global budget after applying the Annual Payment Adjustment and Demographic Adjustment.

To allow for nine months of claims runout, which may be needed for complex outlier claims, the outlier adjustment is calculated late in PY2 and first applied to PY3 global budgets.

Example of outlier adjustments for PY3 and PY4 are provided in **Exhibit 30a** and **Exhibit 30b**. In this scenario, the Participant Hospital's hospital global budget for PY3 is reduced by \$2,080,000 to account for the lower share of outlier payment in PY1 compared to the Baseline. The Participant Hospital's HGB for PY4 would increase by \$1,097,250 due to a one percent increase in share of outlier payments from PY1 to PY2.

Exhibit 30a: Example Outlier Adjustment Calculation for Performance Year 3 (PY3)

Time Period	IPPS and OPPS Outlier Payment Amount	Total FFS or No-Pay Claims Payment Amount	Percent of Outlier Payment Amount
	(A)	(B)	= (A) / (B)
Baseline	\$5,000,000	\$100,000,000	5.00%
PY1	\$3,300,000	\$110,000,000	3.00%
PY3 HGB Baseline	\$104,000,000		
PY3 Outlier Adjustment Amount	= (3.00% – 5.00%) * \$104,000,000 = - \$2,080,000		

Exhibit 30b: Example Outlier Adjustment Calculation for Performance Year 4 (PY4)

Time Period	IPPS and OPPS Outlier Payment Amount	Total FFS or No-Pay Claims Payment Amount	Percent of Outlier Payment Amount
	(A)	(B)	= (A) / (B)
PY1	\$3,300,000	\$110,000,000	3.00%
PY2	\$3,800,000	\$95,000,000	4.00%
PY4 HGB Baseline	\$109,725,000		
PY4 Outlier Adjustment Amount	= (4.00% – 3.00%) * \$109,725,000 = \$1,097,250		

2.2.3 AHEAD Specific Adjustments

2.2.3.1 Social Risk Adjustment

AHEAD applies an upside-only Social Risk Adjustment (SRA) to HGBs to account for hospital-to-hospital differences in the social risk for their beneficiary populations. The intention of this adjustment is to provide additional resources for hospitals that are treating higher adversity patient populations.

The SRA is based on a calculated Social Risk Score (SRS) for each hospital. The SRS for a hospital is determined based on the Community Deprivation Index (CDI) and a combination of dual-eligibility and Part D Low Income Subsidy (LIS) referred to as the Low-Income Marker.

- The CDI is a CMI-developed factor-based index that uses US Census indicators – including poverty, education, housing, and employment factors – to characterize census block social risk correlated with health outcomes.¹⁶ The CDI is an update to the Area Deprivation Index (ADI), where:
 - Deprivation factors from the American Community Survey data are standardized by rescaling each input to have a mean of zero and a standard deviation of one
 - Statistical shrinkage is applied for more precise factor measurement
 - Factors are updated and reweighted based on more recent input data

These updates help to account for differences in income and housing prices. The CDI value for a hospital will not be lower than that determined in the SRA applied to PY1 to account for the possibility that a hospital may positively influence the community deprivation of local areas, and to not penalize them for doing so.

- The Low-Income Marker (LIM) reflects whether a beneficiary is either dually eligible (full or partial dual) or eligible for Part D LIS at any point in the rolling 12-month period immediately preceding the calculation.

To calculate a hospital SRS, first beneficiary addresses are geocoded, and a 12-digit Federal Information Processing Standard (FIPS) code composed of state, county, tract, and block group is assigned to each beneficiary. FIPS codes are based on where beneficiaries reside on their first day

of eligibility within the PY³. Next, the percentage of FFS revenue (using the same criteria for inclusion/exclusion as the Baseline, see **Section 2.2.2.1** for more detail) for each hospital's claims for beneficiaries living in each census block group (including census block groups from outside of the state) is calculated to weigh the SRS by the geographic distribution of the hospital's Medicare FFS revenue. A weighted SRS is then calculated for a hospital based on the average beneficiary social risk score for the census block group and the percent of revenue that the census block group contributes to total hospital revenue.

The SRA percentage (ranging from zero to two percent) and dollar amount applied to each HGB is calculated by assigning a percentile based on the hospital's total SRS compared to all other hospitals within the AHEAD state or sub-state region. The SRS percentile is referenced against the percentile lookup table in **Exhibit 32** to determine the SRA percentage. To receive an SRA above zero percent, a hospital must fall above the 40th percentile of hospitals in the state. The SRA is calculated annually prior to each PY using the most recent baseline year for PY1 and the prior PY thereafter (**Exhibit 49**).

To calculate the SRA for each Participant Hospital, CMS uses the steps below:

- 1) **Geocode all beneficiaries to an assigned census block group:** Geocode all Medicare FFS beneficiaries in the AHEAD state or sub-state region to a census block group using beneficiary address information from the IDR against available census data files. Beneficiary addresses that are unable to be geocoded to a census block group based on address are then geocoded based on the beneficiary address coordinates or the coordinates of the beneficiary zip code centroid.
- 2) **Calculate the beneficiary-level SRS.** The beneficiary SRS is equal to the National CDI for their assigned census block group and a beneficiary level binary indicator for dual-eligibility and/or Part D Low-Income Status. SRS can range from zero to 150. Note that a beneficiary would not have an SRS (e.g., SRS = 0) if there was no CDI assigned to their specific census block group and if the LIM criteria is unmet. This SRS can be calculated for each beneficiary b as:

$$(Eq. 1) SRS_b = National\ CDI + (50 * LIM)$$

Where,

National CDI = National CDI, which is expressed as a percentile with a range of one to 100, is assigned for each eligible beneficiary. Points for National ADI range from one to 100. National CDI is fixed (or higher) based on the PY1 calculation to account for positive hospital influence.

Low-Income Marker (LIM) = Set to one if a beneficiary is either dually eligible (full or partial dual) or deemed eligible for Part D LIS at any point in the rolling 12-month period immediately preceding the calculation. If a beneficiary is not dually eligible and is not eligible for Part D LIS, LIM equals zero for that individual beneficiary. Points for LIM equal zero or 50.

- 3) **Aggregate beneficiary scores to census block group area.** Beneficiary scores are summed and averaged across all beneficiaries that year for the census block group area. This SRS can be calculated for each census block group g as:

$$(Eq. 2) SRS_g = \left(\sum_{j=1}^{j=n} SRS_b \right) \div n$$

Where,

n = Number of beneficiaries in the census block group.

- 4) **Calculate the Participant Hospital's SRS.** Hospital-level scores are developed by computing a weighted score based on the census block group's proportion of hospital payments (using Medicare FFS claims or No-Pay Claims) multiplied by the average census block group SRS. This SRS can be calculated for each hospital *h* as:

$$(Eq. 3) SRS_h = \sum_{g=1}^{g=n} (SRS_g * \frac{P_g}{P_h})$$

Where,

n = Number of total census block groups from which hospital revenue is received

h = Participant Hospital

g = Census block group from which hospital revenue is received

P_g = For census block group **g** of a Participant Hospital **h**, the sum of Medicare FFS claim payments (or No-Pay Claims during the PY) for Eligible Inpatient and Outpatient Hospital Services using the same inclusion/exclusion logic as in the Baseline Calculation (**Section 2.1**)

P_h = For all census block groups of a participant hospital **h**, the sum of Medicare FFS claim payments (or No-Pay Claims during the PY) for Eligible Inpatient and Outpatient Hospital Services using the same inclusion/exclusion logic as in the Baseline Calculation (**Section 2.1**)

An example of how to calculate a Participant Hospital's SRS is shown in **Exhibit 31** below:

Exhibit 31: Example Social Risk Score Calculation for Participant Hospital

Defined Geographic Area	Census Block Group Average SRS (A)	Proportion of Hospital Payments (B)	Weighted SRS $\sum A * B$
Census Block Group A	97	50%	48.5
Census Block Group B	87	30%	26.1
Census Block Group C	80	20%	16
Hospital SRS			90.6

- 5) **Determine the Participant Hospital's SRA based on percentile.** To calculate the Participant Hospital SRA, determine the percentile of the Participating Hospitals' SRS Score within the state. The percentile is then referenced against the percentile lookup table in **Exhibit 32** to determine the SRA percentage. This method allows for a smoother cutoff point between hospitals receiving a zero and non-zero SRA, as opposed to a stricter cutoff at the state median.

Exhibit 32: Percentile Lookup Table for Determining SRA Percentage

Percentile of SRS	SRA %
0-9%	0.0%
10-19%	0.0%
20-29%	0.0%
30-39%	0.0%
40-49%	0.2%
50-59%	0.4%
60-69%	0.7%
70-79%	1.1%
80-89%	1.6%
90-100%	2.0%

Exhibit 33 is an example of the SRA calculation, after the hospital SRS is established in Steps 1-3 above.

Exhibit 33: Example Calculation of Social Risk Adjustment

Hospital	SRS	Percentile of SRS	SRA Percent Adjustment
Hospital A	35	36	0.0%
Hospital B	31	27	0.0%
Hospital C	25	18	0.0%
Hospital D	35	45	0.2%
Hospital E	36	55	0.4%
Hospital F	37	64	0.7%
Hospital G	38	73	1.1%
Hospital H	42	82	1.6%
Hospital I	46	91	2.0%

2.2.3.2 Transformation Incentive Adjustment

Robust hospital participation will be important for realizing care transformation and sustainable savings under the AHEAD Model. In addition to expectations for states to use regulatory levers to incentivize or otherwise encourage hospital participation, CMS will also include a one percent upward TIA to each Participant Hospital's HGB in the first two PYs of the Applicable Cohort. The one percent adjustment will be applied after all annual trend updates have been completed (**Exhibits 50 to 52**). The TIA serves as both an incentive for early participation and provides additional revenue that hospitals may invest in care management and transformation activities that will generate medium- and long-term savings under the Model, including infrastructure, staffing,

technology, or other resources needed to succeed under a HGB construct. The TIA will need to be repaid in full if the Participant Hospital exits the Model before the sixth PY. If the Participant Hospital remains in the Model through PY6 or longer, no repayment is necessary.

2.2.3.3 Adjustments to Hospital Global Budgets Given State Performance on Medicare Fee-for-Service Total Cost of Care Targets

As noted in the AHEAD NOFO, Appendix XI, CMS may take corrective action if the AHEAD State is unable to meet annual targets. This corrective action may include submission of a corrective action plan, modification of CMS-Designed HGB methodology, and/or other modifications to Primary Care AHEAD. A potential modification to the CMS-Designed HGB may include an additional adjustment that may reduce all or some HGBs in the AHEAD State or sub-state region. CMS will consider the magnitude of the missed target, the State's plan to improve performance, individual hospital performance, among other factors in determining any such methodology, and will consult with the AHEAD State as part of this decision.

2.2.4 Logistical Order of Operations for Annual Trend Updates and AHEAD Specific Adjustments

Exhibit 34 illustrates the order of operations when applying annual trend updates and AHEAD specific adjustments to the HGB.

Exhibit 34 Example Calculation of HGB Annual Trend Updates & AHEAD-Specific Adjustments

Item	Adjustment	Adjustment Amount	Financial Specifications Section
A	Current HGB	\$200,000,000	2.1
B	MSA	\$200,000	2.2.2.1
C	Service Line Adjustment (SLA)	(\$20,000)	2.2.2.2
D	Outlier Adjustment	\$50,000	2.2.2.4
E = A + B + C + D	HGB Adjusted for Volume	\$200,230,000	
F	APA	3.0%	2.2.1
G	DA	2.0%	2.2.2.3
H = E * (1 + F) * (1 + G)	HGB with APA and DA	\$210,361,638	
I	SRA	0.5%	2.2.3.1
J = H * (1 + I)	HGB after Annual Updates		
K	TIA (PY1 and PY2 only)	1.0%	2.2.3.2
L = J * (1 + K)	HGB after annual and AHEAD-specific Adjustments	\$213,517,063	

2.3 Performance-Based Adjustments

The following section details the performance-based adjustments that are applied to a Participant Hospital's HGB. In addition to the quality related adjustments described below, HGBs for Acute Care Hospitals are also adjusted for existing CMS national quality programs incorporated into FFS (IQR, OQR, HRRP, HACRP and VBP) as part of the Annual Payment Adjustment (**Section 2.2.1**).

An example of this adjustment is displayed in **Exhibit 14**. CAHs are not required to participate in the CMS national hospital quality programs (e.g., IQR, OQR, HRRP, HACRP, VBP).

2.3.1 Critical Access Hospital Quality Adjustments

In AHEAD, CAHs participate in the CAH Quality Incentive Program, an upside-only quality program that begins as pay-for-reporting and advances to pay-for-performance for a select set of measures, including rural-specific measures. The program will begin as pay-for-reporting and advance to pay-for-performance over the Model lifecycle to support CAHs in this process. The initial years of pay-for-reporting will allow CAHs to familiarize themselves with the measures, reporting requirements, and implement potential interventions or care strategies to prepare for the transition to pay-for-performance. CAHs must report on at least one measure in all three domains to obtain the pay-for-reporting reward. CMS monitors changes in measure outcomes from baseline of Model participation to inform future national quality efforts targeted to CAHs.

This CAH Quality Incentive Program begins as a pay-for-reporting reward in PY3 and progresses to a pay-for-performance reward by PY8. As indicated in **Exhibit 28**, in PY5 through PY7, both reporting and performance impact the reward amount with progressively more emphasis on performance. From PY8 forward, the reward is entirely based on performance. For example, if a CAH qualifies for the maximum pay-to-report reward of one percent and half of their pay-to-perform reward of one percent in PY6, their total CAH quality reward is 1.5 percent (one percent pay-to-report, 0.5 percent pay-to-perform). The CAH quality performance period is the most recent complete year of data two years prior to the PY, and the CAH quality base period is the year prior. For example, the HGB adjustment for PY5 is calculated the November of PY4 and is based on improvement from PY2 to PY3. Quality data is sourced from Medicare Beneficiary Quality Improvement Project (MBQIP) and time periods for each measure are selected to most closely align with performance years in **Exhibit 35**.

Exhibit 35: Critical Access Hospital Quality Incentive Program - Upside Reward

Example Year	2026 (PY1)	2027 (PY2)	2028 (PY3)	2029 (PY4)	2030 (PY5)	2031 (PY6)	2032 (PY7)	2033 (PY8)
Pay-for-Reporting			2% Based on PY1	2% Based on PY2	1.5% Based on PY3	1% Based on PY4	0.5% Based on PY5	0%
Pay-for-Performance					0.5% Based on PY3/PY2	1% Based on PY4/PY3	1.5% Based on PY5/PY4	2% Based on PY6/PY5

Exhibit 36 includes a sample set of CAH Quality Program Measures and is subject to modification due to CMS' annual measure update process.

Exhibit 36: AHEAD Critical Access Hospital Quality Program Measures

Domain	Measure	Identifier	Steward	CMS Program Alignment	Data Sources
Health Care Quality and Utilization	CMS Hybrid Hospital-Wide Readmission (Hybrid eHWR)	NQF 2879 CMIT 529	CMS	IQR	Claims; Electronic Health Data; Administrative Data

Domain	Measure	Identifier	Steward	CMS Program Alignment	Data Sources
Health Care Quality and Utilization	Emergency Transfer Communication Measure	NQF 0291 CMIT N/A	University of Minnesota	N/A (MBQIP)	Claims, Electronic Health Data, Paper Medical Records
Health Care Quality and Utilization	Outpatient ED Arrival to Discharge (OP-18b)	CMIT 427	CMS	OQR	Electronic Health Data
Patient Safety	OPI-01 Safe Use of Opioids - Concurrent Prescribing	NQF 3316e CMIT 506	CMS	IQR; Promoting Interoperability Program	Electronic Health Data
Patient Safety	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital onset Clostridium difficile Infection (CDI)	NQF 1717 CMIT 462	CDC	HACRP HIQR HVPB	Electronic Health Data, Other, Paper Medical Records
Patient Safety	VTE-1 Venous Thromboembolism Prophylaxis	NQF 0371 CMIT 758	Joint Commission	IQR; Promoting Interoperability Program	Electronic Health Data
Patient Safety	Sepsis Bundle (SEP-1)	CMIT 678	CMS	IQR; VBP	Electronic Health Data
Patient Safety	Severe Obstetrics Complications (PC-07)	NQF N/A CMIT 1028	The Joint Commission	Promoting Interoperability Program	Electronic Health Data
Patient Experience	HCAHPS - Hospital Consumer Assessment of Healthcare Providers and Systems (multiple measures)	NQF 0166 CMIT 338	CMS	IQR; HVPB	Instrument-Based Data

A CAH's performance is measured on an annual basis and scored for attainment (compared to a measure threshold and benchmark) and improvement (compared to baseline performance). Patient experience measures are also scored separately for consistency. Quality measure data periods vary by quality measure.

Exhibit 37 details the definitions of measure constructs, measure thresholds, and benchmark performance standards that drive the sample hospital calculation. **Exhibit 38** shows an example of AHEAD CAH quality domains, measures, and thresholds and benchmarks performance standards.

Exhibit 37: AHEAD Critical Access Hospital Quality Measure Construct Definitions

CAH Quality Construct Element	Definition
Measure Threshold	Median measure score of CAHs nationally in the CAH quality base period
Measure Benchmark	Mean of top decile score of CAHs nationally in the CAH quality base period
National Measure Floor	Lowest measure score of CAHs nationally in the CAH quality base period
Hospital Measure Baseline	Hospital performance in the CAH quality base period

CAH Quality Construct Element	Definition
Improvement Points	Hospital performance compared to its CAH quality base period performance and the national benchmark between 0-9.
Attainment Points	Hospital's performance compared to the national threshold and benchmark between 0-10.
HCAHPS Consistency Points	Compares hospital's lowest scoring HCAHPS dimension to the threshold and awards Consistency Points based on that dimension's score vs. the national measure floor. Consistency Points range from 0 – 20 points.
Achievement Points	Better of Improvement or Attainment Points
Total Performance Score	Sum of all measure achievement points, weighted by domain and divided by total possible achievement points
Domain Weights	Each of the following domains are weighted equally and measured within each domain as follows: - Healthcare Quality and Utilization: 34 percent - Patient Safety: 33 percent - Patient Experience: 33 percent

Exhibit 38: AHEAD Critical Access Hospital Sample Quality Performance Standards for Select Measures (Thresholds and Benchmarks)¹⁸

Domain	Measure	Improvement Indicator	Threshold	Benchmark
Healthcare Quality and Utilization	Hospital Wide Readmission (<i>proxy for Hybrid eHWR</i>)	Lower is Better	15.4	14.5
Health Care Quality and Utilization	Emergency Transfer Communication Measure	Higher is Better	N/A	N/A
Healthcare Quality and Utilization	OP ED Arrival to Discharge - Very High Volume	Lower is Better	173	120
Healthcare Quality and Utilization	OP ED Arrival to Discharge - High Volume	Lower is Better	166	117
Healthcare Quality and Utilization	OP ED Arrival to Discharge - Medium Volume	Lower is Better	146	104.2
Healthcare Quality and Utilization	OP ED Arrival to Discharge - Low Volume	Lower is Better	112	76
Patient Safety	OPI-01 - Safe Use of Opioids	Lower is Better	17	8
Patient Safety	NSHN Clostridium Difficile	Lower is Better	0.523	0.000
Patient Safety	SEP-1 Sepsis Bundle	Higher is Better	60	86
Patient Safety	VTE-1 Venous Thromboembolism Prophylaxis	Higher is Better	91	100
Patient Experience	HCAHPS - Communication with Nurses	Higher is Better	80	88
Patient Experience	HCAHPS - Communication with Doctors	Higher is Better	80	89

¹⁸ Data Source: HHS Care Compare, January – December 2019 (except Hospital Wide Readmissions July 2019 – December 2019 and eCQMs January – December 2021). This table includes results for both CAHs and Acute Care Hospitals due to data availability for demonstration purposes, however CMS may develop CAH-specific thresholds and targets for this adjustment.

Domain	Measure	Improvement Indicator	Threshold	Benchmark
Patient Experience	HCAHPS - Responsiveness of Hospital Staff	Higher is Better	67	82
Patient Experience	HCAHPS - Communication About Medicines	Higher is Better	64	74
Patient Experience	HCAHPS - Discharge Information	Higher is Better	88	92
Patient Experience	HCAHPS - Care Transition Measure	Higher is Better	52	63
Patient Experience	HCAHPS – Overall Hospital Rating	Higher is Better	72	86
Patient Experience	HCAHPS – Cleanliness and Quietness	Higher is Better	66.5	80.5

Note: Data was not available at the time of publication for Emergency Transfer measure.

a. Critical Access Hospital Quality Adjustment – Pay for Reporting

A hospital qualifies for the full upside-only pay-to-report reward if it reports at least one quality measure in all three domains. Hospitals that do not meet this reporting threshold are not eligible for the pay-to-report reward.

b. Critical Access Hospital Quality Adjustment – Pay for Performance

The calculation of CAH's Quality Total Performance Score (TPS) is detailed below. The TPS is used to calculate the CAH reward percentage:

- **Step 1:** Calculate thresholds and benchmarks using national data for ACHs and CAHs for each measure.
 - Threshold – Calculate median (50th percentile) performance of all national hospitals with valid results for each measure.
 - Benchmark – Calculate mean of top decile of performance of all national hospitals with valid results for each measure.
- **Step 2:** Calculate hospital performance in each measure for applicable base period and performance period.
- **Step 3:** Use hospital performance to determine Attainment, Improvement and Consistency (HCAHPS only) Points.
 - **Step 3a:** Attainment Points – Compares hospital's result during the performance period to the national threshold and benchmark during the base period as detailed below:
 - Hospital's result at or better than the benchmark = 10 Attainment Points
 - Hospital's result worse than the threshold = 0 Attainment Points
 - Hospital's result equal to or better than the threshold but less than the benchmark = 1–9 Attainment Points using the formula below (rounded to nearest whole number):

$$(Eq. 1) \text{ Attainment Points}_h = \left(9 * \frac{\text{Perf. Period Result} - \text{Threshold}}{\text{Benchmark} - \text{Threshold}} \right) + 0.5$$

- **Step 3b:** Improvement Points – Compares hospital’s result during the performance period to their own result during the base period as detailed below:
 - Hospital’s result at or better than the benchmark = 9 Improvement Points
 - Hospital’s result at or worse than its base period result = 0 Improvement Points
 - Hospital’s result better than the base period result but worse than the benchmark = 0–9 Improvement Points using the formula below (rounded to nearest whole number):

$$(Eq. 2) \text{ Improvement Points}_h = \left(10 * \frac{\text{Perf. Period Result} - \text{Base Period Result}}{\text{Benchmark} - \text{Base Period Result}} \right) - 0.5$$

- **Step 3c:** HCAHPS Consistency Points – Compares hospital’s lowest scoring HCAHPS dimension during the Performance Period to the threshold and awards Consistency Points based on that dimension’s score versus the national measure floor. Consistency Points are considered Achievement Points and incorporated into the calculation of the Patient Experience domain score (see Step 4). Consistency Points range from 0 – 20 points and the calculations are detailed below:
 - All dimension scores are greater than or equal to the national thresholds = 20 Consistency Points
 - Any dimension score is less than or equal to the worst national dimension score in the base period = 0 Consistency Points
 - The lowest dimension score that is less than the national threshold = 0-20 Consistency Points using the formula below (rounded to nearest whole number):

$$(Eq. 3) \text{ HCAHPS Consistency Points}_h = \left(20 * \frac{\text{Perf. Period Score} - \text{National Floor}}{\text{Threshold} - \text{National Floor}} \right) - 0.5$$

- **Step 4:** Calculate Achievement Points for each CAH hospital, h , by taking the higher of Attainment or Improvement Points.

$$(Eq. 4) \text{ Achievement Points}_h = \max(\text{Attainment Points}_h, \text{Improvement Points}_h)$$

- **Step 5:** Calculate Domain Score by summing total Achievement points divided by total possible points (10 points per included measure, 20 for HCAHPS Consistency Points) in each domain.
- **Step 6:** Calculate Total Performance Score (TPS) by equally weighting each domain score. A minimum of 2 domains is required to calculate a TPS score.

If a CAH’s TPS is greater than the national 25th percentile, they are eligible to receive a reward scaled between zero percent and 2 percent of their HGB. A CAH receives the full 2 percent reward if their TPS is greater than the 90th percentile. For CAH h with a TPS between the 25th and 90th percentiles, the CAH reward is determined by the following:

$$(Eq. 5) \text{ CAH Reward}_h = .02 - (B_{TPS} - \text{TPS}_h) * \frac{.02}{B_{TPS} - T_{TPS}}$$

Where,

T = 25th percentile of national TPS scores

B = 90th percentile of national TPS scores

Exhibit 39 provides an example of how to calculate a CAH's quality adjustment:

Exhibit 39: Sample Calculation for AHEAD CAH Quality Measure Performance & Calculation of Total Performance Score

Domain	Measure Name	Base Period Score	Perf Period Score	Thresh-hold	Bench-mark	Attain Pts	Improve Pts	Measure Floor	Achieved Pts (Max)	Pts Possible	Domain Score
Healthcare Quality & Utilization	Hospital-Wide Readmissions (<i>proxy for Hybrid eHWR</i>)	15.8	14.8	15.4	14.5	7	7	-	7	10	0.43
	Emergency Transfer Communication Measure	N/A	N/A	N/A	N/A	N/A	N/A	-	5	10	
	ED Arrival Time to Departure Time for Discharged Patients	134	127	112	76	0	1	-	1	10	
Patient Experience	Communication with Nurses	87	84	80	88	5	0	48	5	10	0.55
	Communication with Doctors	87	82	80	89	3	0	50	3	10	
	Responsiveness of Hospital Staff	79	66 (Lowest Scoring Below Thresh)	67	82	0	0	27	0	10	
	Communication about Medicines	76	73	64	74	9	0	26	9	10	
	Discharge Information	92	90	88	92	5	0	66	5	10	
	Care Transition Measure	61	59	52	63	6	0	24	6	10	
	Overall Rating of this Hospital	83	75	72	86	2	0	42	2	10	
	Cleanliness and Quietness of Hospital Env	78.5	75.5	66.5	80.5	6	0	39	6	10	
	Consistency Points					= (20 * ((66-27) / (67-27))) - 0.5 =			19	20	

Domain	Measure Name	Base Period Score	Perf Period Score	Threshold	Benchmark	Attain Pts	Improve Pts	Measure Floor	Achieved Pts (Max)	Pts Possible	Domain Score
Patient Safety	C. Diff	0.76	0	0.52	0	10	9	-	10	10	0.38
	Safe Use of Opioids – Concurrent Prescribing	17	17	17	8	1	0	-	1	10	
	Sepsis Bundle	31	38	60	86	0	1	-	1	10	
	Venous Thrombo-embolism Prophylaxis	92	92	91	100	2	0	-	2	10	
	Severe Obstetrics Complications	N/A	N/A	N/A	N/A	N/A	N/A	-	5	10	
Overall Total Performance Score (TPS)											0.45
Incentive Reward %											0.67%

Note: Emergency Transfer Communication and Severe Obstetrics Complications are shown as a placeholder; data not yet available. Measure Floor changes annually.

2.3.2 Hospital Community Improvement Bonus

The AHEAD HGB methodology includes a Community Improvement Bonus (CIB), which is a bonus earned by Participant Hospitals to reward performance improvement on two community health improvement focused quality measures: CMS Hybrid Hospital-Wide All-Cause Unplanned Readmission (HWR) and Prevention Quality Indicators (PQI)-90 composite admission rates (**Exhibit 40**). HWR is the predicted over the expected rate of readmissions for each Participant Hospital. PQI-90 is the composite admission rate for certain conditions.

The CIB dollar value added to HGBs is equivalent to a percentage of HGB payments, ranging from zero percent to 0.50 percent of a Participant Hospital's HGB after annual updates (see **Exhibits 50-52**) paid on a sliding scale. The maximum 0.50 percent bonus is the sum of the maximum 0.25 percent bonus earned for improvement in each of the two measures.

Performance on each measure is compared to each hospital's historic performance over a fixed-base period. Performance on HWR and PQI-90 is calculated, scaled, and rewarded separately, thus hospitals must improve on both measures to earn the maximum 0.50 percent bonus. The improvement target for the HWR and PQI-90 measures is a performance improvement percentage mapped to a zero percent to 0.25 percent bonus scale. The HWR and PQI-90 rewards results are added together for a maximum total reward of 0.50 percent. Improvement targets increase as the model progresses to continue to improve community health.

To prevent unfairly penalizing Participant Hospitals caring for patients with high social risk due to factors beyond their control, performance accounts for social risk by applying a social risk adjustment multiplier to each select measure. Adjusting for social risk in quality measure performance for the CIB further incentivizes Participant Hospitals to identify and address the needs of their entire patient population, both clinical and social, to improve outcomes.

Exhibit 40: Community Improvement Bonus Maximum by Measure (Measures Subject to Change)

Domain	Measure	Cohort	Maximum CIB Participant Hospitals may Earn
Health Care Quality and Utilization	CMS Hybrid Hospital-Wide All-Cause Unplanned Readmission (HWR)	Inpatient	0.25% of HGB Payments
Health Care Quality and Utilization	PQI-90 Prevention Quality Composite (see details below table)	Inpatient and Observation > 23 hours	0.25% of HGB Payments

The CIB is applied to HGBs starting in PY4 using the year ending six months prior to PY1 as the fixed-base period and PY2 as the first performance measurement period. The bonus earned is applied to Participant Hospital's HGB after Annual Trend Updates are applied (**Exhibits 50-52**). Participant Hospital's level of performance improvement on HWR and PQI-90 in a given PY determines the bonus earned and is applied to the HGB for the PY two years following the performance measure period (e.g., PY2 performance is reflected in the Participant Hospital's PY4 HGB; PY3 performance is reflected in the Participant Hospital's PY5 HGB). **Exhibit 53** provides a summary of the time periods used for measures included in the EA and CIB.

The CIB applies a Social Risk Score (SRS) multiplier to adjust each measure for social risk using the same hospital-level SRS percentile ranking system applied to the AHEAD SRA (**Section**

2.2.3.1), The SRS percentile is a ranking of hospital SRS within a state or sub-state region that identifies hospitals caring for communities with greater social vulnerability. The hospital SRS percentile, ranging from zero to 100 percent for each Participant Hospital, determines the SRS multiplier applied to each measure performance calculation (**Exhibit 41**). Participant Hospitals with the highest SRS percentile in their state receive the maximum SRS multiplier. The greater the SRS multiplier, the greater the improvement rate for each quality measure and thus the greater the bonus.

Exhibit 41: Social Risk Score (SRS) Multiplier by SRS Percentile Categories

SRS Percentile	SRS Multiplier
<30%	1.0
30% - <40%	1.1
40% - <50%	1.2
50% - <60%	1.3
60% - <70%	1.4
70% - <80%	1.6
80% - <90%	1.8
>90%	2.0

HWR Rate¹⁹: Calculated as the predicted over expected rate of readmissions for each Participant Hospital. It is calculated as,

Standardized Rate of Readmission: $SRR_{cj} = \text{pred}_{cj} / \text{exp}_{cj}$

Where,

pred_{cj} = the predicted readmission rate for cohort c at hospital j

exp_{cj} = the expected readmission rate for cohort c at hospital j

Prevention Quality Indicator-90 (PQI-90) Admission Rate: Calculated as the portion of inpatient hospitalizations and observation stays that satisfy numerator criteria for the PQI-90 Prevention Quality Composite. It is calculated as,

(Eq. 1) PQI – 90 Admission Rate

$$= \frac{\text{PQI} - 90 \text{ compliant inpatient or observation stays} > 23 \text{ hours}}{\text{Total inpatient or observation stays} > 23 \text{ hours}}$$

The AHRQ PQI-90 Composite includes the following types of hospitalizations:

- PQI 01 - Diabetes, short-term complications admission rate
- PQI 03 - Diabetes, long-term complications admission rate

¹⁹ <https://www.cms.gov/files/document/hybrid-hospital-wide-readmission-methodology-report-03202023.pdf>

- PQI 05 - Chronic obstructive pulmonary disease (COPD) or asthma in older adults admission rate
- PQI 07 - Hypertension admission rate
- PQI 08 - Heart failure admission rate
- PQI 11- Bacterial pneumonia admission rate
- PQI 12 - Urinary tract infections admission rate
- PQI 14 - Uncontrolled diabetes admission rate
- PQI 15 -Asthma in younger adults admission rate
- PQI 16 - Lower extremity amputations among patients with diabetes admission rate

Exhibit 42 and Exhibit 43 summarize the bonus earned by Participant Hospitals on a sliding scale of improvement compared to the fixed-based period (improvement targets) in the HWR and PQI-90 measures, respectively. The CIB reward amount scales up as Participant Hospitals meet higher improvement targets that increase each year of the model. The maximum improvement targets for the HWR measure increase from 0.20 percent to one percent from PY4 to PY8. For PQI-90, the improvement targets increase from one percent to five percent.

Exhibit 42: Community Improvement Bonus (CIB) Earned for Meeting HWR Improvement Targets in PY4 - PY8 (based on PY2 - PY6 Performance)

CIB Earned (% of HGB Payments)	HWR Improvement Target				
	PY4	PY5	PY6	PY7	PY8
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.03%	0.02%	0.04%	0.06%	0.08%	0.10%
0.05%	0.04%	0.08%	0.12%	0.16%	0.20%
0.08%	0.06%	0.12%	0.18%	0.24%	0.30%
0.10%	0.08%	0.16%	0.24%	0.32%	0.40%
0.13%	0.10%	0.20%	0.30%	0.40%	0.50%
0.15%	0.12%	0.24%	0.36%	0.48%	0.60%
0.18%	0.14%	0.28%	0.42%	0.56%	0.70%
0.20%	0.16%	0.32%	0.48%	0.64%	0.80%
0.23%	0.18%	0.36%	0.54%	0.72%	0.90%
0.25%	0.20%	0.40%	0.60%	0.80%	1.00%

Exhibit 43: Community Investment Bonus (CIB) Earned for Meeting PQI-90 Improvement Targets in PY4 - PY8 (based on PY2 - PY6 Performance)

CIB Earned (% of HGB Payments)	PQI-90 Improvement Target				
	PY4	PY5	PY6	PY7	PY8
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.03%	0.10%	0.20%	0.30%	0.40%	0.50%
0.05%	0.20%	0.40%	0.60%	0.80%	1.00%
0.08%	0.30%	0.60%	0.90%	1.20%	1.50%
0.10%	0.40%	0.80%	1.20%	1.60%	2.00%
0.13%	0.50%	1.00%	1.50%	2.00%	2.50%
0.15%	0.60%	1.20%	1.80%	2.40%	3.00%
0.18%	0.70%	1.40%	2.10%	2.80%	3.50%
0.20%	0.80%	1.60%	2.40%	3.20%	4.00%
0.23%	0.90%	1.80%	2.70%	3.60%	4.50%
0.25%	1.00%	2.00%	3.00%	4.00%	5.00%

The CIB adjustment calculation is as follows:

- **Step 1:** Calculate a) HWR rate and b) PQI-90 admission rate for the base period (e.g., PY1 for initial PY4 CIB) and the performance measurement period (e.g., PY2 for initial PY4 CIB).
- **Step 2:** Calculate improvement between the performance measurement period (p) over the fixed-base period (b) in HWR and PQI-90 rates as,

(Eq. 2) PQI Admission Rate Improvement

$$= \frac{PQI \text{ Admit Rate}_p - PQI \text{ Admit Rate}_b}{PQI \text{ Admit Rate}_b}$$

(Eq. 3) Hybrid HWR Rate Improvement

$$= \frac{Hybrid \text{ HWR Rate}_p - Hybrid \text{ HWR Rate}_b}{HWR \text{ Rate}_b}$$

Multiply the rate by -1 to arrive at a positive value for Participant Hospitals that improved their performance.

- **Step 3:** Multiply the HWR and PQI-90 improvement rates in Step 2 by the Participant Hospital's SRS multiplier (**Exhibit 34**) to arrive at the overall improvement rate for each measure.
- **Step 4:** Calculate the CIB amount based on improvement target for HWR and PQI-90. Participant Hospitals can earn a CIB if improvement rates for HWR or PQI-90 (Eq. 1 and 2

above) are > zero percent. The CIB earned for each measure is on a sliding scale (**Exhibit 42 and 44**).

Exhibit 44 demonstrates a sample hospital CIB calculation of improvement in HWR and PQI-90. The improvement rates are then mapped to the improvement target and CIB earned, per **Exhibit 42** and **Exhibit 43**. The CIB dollar value earned is added to the applicable PY HGB.

Exhibit 44: Sample Community Improvement Bonus Calculation

	Calculation Step	Base Performance	Measurement Period Performance (PY2)	Calculation Value
	Hospital PY4 HGB (A)			\$41,091,536
HWR Improvement	Overall HWR Rate Improvement (C) (>0% for CIB reward)	15.67%	15.48%	1.20%
	SRS Multiplier 1.3 (SRS Percentile - 57%)			1.56%
	Readmissions CIB Scaling % (D from Exhibit. 43)			0.25%
	Readmissions CIB Earned (E = A * D)			\$102,729
PQI-90 Improvement	Overall PQI-90 Admission Rate Improvement (G) (>0% for CIB reward)	12.70%	11.89%	6.40%
	SRS Multiplier 1.3 (SRS Percentile - 57%)			8.32%
	PQI-90 CIB Scaling % (H from Exhibit. 44)			0.25%
	PQI-90 CIB Earned (I = A * H)			\$102,729
	Total CIB Earned Applied to PY4 HGB (E + I)			\$205,458

2.3.3 Effectiveness Adjustment

The Effectiveness Adjustment (EA) applies a downward adjustment based on a Participant Hospital's Medicare Potentially Avoidable Utilization (PAU) performance relative to all other Eligible Hospitals in the state. The EA is designed to incentivize Participant Hospitals to implement interventions that reduce unnecessary or avoidable care. The EA encourages hospitals to develop strategies such as transitional care programs, better integration with primary care providers to co-manage patients with chronic disease, and engagement with community-based organizations focused on addressing the social drivers of health.

Participant Hospitals' PAU is measured using a composite score based on the following risk-adjusted measures and compared to utilization levels observed across other hospitals in the state.

1. Unplanned Readmissions (as measured by CMS' Hybrid Hospital-Wide All-Cause Unplanned Readmission (HWR) measure)
2. Avoidable Admissions (calculated by the AHRQ PQI-90 indicator)
3. Emergency Department Utilization (using the NCQA Emergency Department Utilization (EDU) measure)

Although the above measures are risk-adjusted, a Participant Hospital's PAU percent is also divided by their SRS to account for additional factors not included in the quality measure risk-

adjustment models that reflect the impact of differences in population mix on PAU. Dividing Participant Hospital's PAU Score by their SRS results in higher expected PAU values for Participant Hospitals with greater SRSs.

Hospitals that have a lower PAU Score relative to all participating and non-participating hospitals in the state retain HGB funding to reinvest in clinical and social services that continue to promote the hospital's success under the model. Hospitals with a higher PAU Score relative to other hospitals in the state receive an EA reduction, which gradually increases over time from a maximum downward adjustment of 0.5 percent in the first year to 2.0 percent in the final year. The gradual increase provides hospitals time to gain additional experience with implementing processes to control PAU and form partnerships with primary care providers, post-acute care providers, and community-based organizations that can address upstream drivers of health.

a. Identification of PAU

There are three measures used to calculate the PAU composite score; Readmissions, Avoidable Admissions, and Emergency Department Utilization.

Unplanned Readmissions

Unplanned readmissions are measured using the Hospital Inpatient Quality Reporting (IQR) Program version of CMS' HWR Measure. The measure assesses a hospital's risk-standardized rate of unplanned readmissions within 30 days of discharge for Medicare Fee-for Service and Medicare Advantage beneficiaries, across a broad range of medical and surgical conditions. Planned readmissions are defined according to the CMS HWR measure planned readmission algorithm 4.0 and are not counted in the PAU Score. A readmission counts towards the PAU Score for the hospital responsible for the discharging hospitalization, even if the readmission occurs at another hospital.

Avoidable Admissions

For Participant Hospitals, inpatient admissions and outpatient observation stays with >23-hour visits meeting the following criteria are included in the PAU Score:

- Patient is a Medicare FFS beneficiary,
- Service is provided for a beneficiary within their Hospital-Specific Market Area (same as used in the MSA) (See Section 2.2.2.1.a), and
- Service is classified as AHRQ PQI-90.

The AHRQ PQI risk-adjustment model adjusts for age group and sex and incorporates the interaction between age group and sex²⁰.

Observation stays are defined by revenue codes 0760 (Treatment or observation room - general classification), 0762 (Treatment or observation room—observation room), and 0769 Treatment or observation room – other). Inpatient admissions are defined by type of bill 1X and in some cases, can incorporate more than one claim (e.g., split periods of an inpatient stay).

The AHRQ PQI-90 Composite includes the following types of hospitalizations:

²⁰ The published AHRQ PQI model also includes coefficients and interaction terms for measurement years 2020 and later. Because all years included in this analysis are 2020 or later, these coefficients are applied uniformly across all observations and do not affect comparisons within the study population. Agency for Healthcare Research and Quality. (n.d.). Prevention Quality Indicators (PQI) resources. U.S. Department of Health and Human Services https://qualityindicators.ahrq.gov/Downloads/Modules/PQI/V2022/Parameter_Estimates_PQI_v2022.pdf

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- PQI 01 - Diabetes, short-term complications admission rate
 - PQI 03 - Diabetes, long-term complications admission rate
 - PQI 05 - Chronic obstructive pulmonary disease (COPD) or asthma in older adults admission rate
 - PQI 07 - Hypertension admission rate
 - PQI 08 - Heart failure admission rate
 - PQI 11 - Bacterial pneumonia admission rate
 - PQI 12 - Urinary tract infections admission rate
 - PQI 14 - Uncontrolled diabetes admission rate
 - PQI 15 - Asthma in younger adults admission rate
 - PQI 16 - Lower extremity amputations among patients with diabetes admission rate

A PQI counts as PAU for a Participant Hospital if a beneficiary in their Hospital-Specific Market Area (same as used in the MSA) is admitted to any hospital for a PQI-90.

Emergency Department Utilization

Emergency Department visits that do not result in an inpatient or observation stay are counted in the PAU Score, as defined by NCQA's EDU measure. NCQA adjusts ED utilization rates by applying a concurrent risk adjustment methodology using the CMS Hierarchical Condition Category model. Observation stays are defined by revenue codes 0760 (Treatment or observation room - general classification), 0762 (Treatment or observation room –observation room), and 0769 (Treatment or observation room – other). The measure excludes emergency department visits for individuals: enrolled in hospice; with more than three (persons aged 65 and older) or five (persons 18-64 years old) emergency department visits in a year; a principal diagnosis of mental health or chemical dependency; with psychiatric disorders; or receiving electroconvulsive therapy. **Exhibit 53** provides a summary of the time periods used for measures included in the EA and CIB.

An Emergency Department visit counts as PAU for a Participant Hospital if a beneficiary in the Hospital-Specific Market Area (same as used in the MSA – **See Section 2.2.2.1**) visits any hospital emergency department.

b. PAU Percent Calculation

The Overall Hospital PAU Score for a Participant Hospital is calculated by summing their z-score for each EA measure to create a total PAU distribution. Transforming measure scores into z-scores ensures that all measures are on a common scale and aligns them in the same direction. This process does not alter the underlying measure results; rather, it transforms the scoring scale so that measures can be combined into a single composite PAU Score, with all three measures weighted equally (Overall Hospital PAU Score). This value is then divided by a Participant Hospital's SRS (See **Section 2.2.3.1**) proportion (SRS/100) to arrive at the Adjusted Hospital PAU Score.

(Eq.1) Overall Hospital PAU Score = $EDU\ zscore + PQI90\ zscore + HWR\ zscore$

(Eq.2) Adjusted Hospital PAU Score =
$$\frac{\text{Overall Hospital PAU Score}}{\text{Hospital Social Risk Score Proportion}}$$

c. Effectiveness Adjustment Calculation

To calculate the EA for a Participant Hospital, each hospital in the state is ranked in ascending order based on their Adjusted Hospital PAU Score to create the State PAU Percentile. If the Participant Hospital's Adjusted Hospital PAU Score is below the 20th percentile or lower (a lower Adjusted Hospital PAU Score is better), the Participant Hospital is designated as a "top performer" and does not receive an EA reduction. Hospitals that fall above the 20th percentile receive a reduction determined based on the hospital's position within the distribution of hospitals in the state (State PAU Percentile). The EA is tiered so that hospitals with a higher Adjusted Hospital PAU Score receive a greater reduction (**Exhibit 45 and 46**).

(Eq. 3) **Effectiveness Adjustment (EA)** = EA Percentile range lookup in Exhibit 45

Where,

Hospital EA Percentile: The State PAU Percentile is calculated across all hospitals in the state, sorting in ascending order based on the Adjusted Hospital PAU Score and ranked into percentiles.

For ACHs, the EA begins in PY2. For the first year of the reduction the maximum downward adjustment is 0.5 percent, eventually increasing to a maximum of two percent. The ACH percentile ranges are found in **Exhibit 45**.

Exhibit 45: Effectiveness Adjustment by Performance Year for ACHs (All Values Negative)

Payment Adjustments PY	Period of Data	Percentile Range								
		<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
PY2	Year ending 6 mo. prior to PY1	0.00%	0.05%	0.15%	0.20%	0.25%	0.30%	0.40%	0.45%	0.50%
PY3	PY1	0.00%	0.10%	0.20%	0.30%	0.40%	0.50%	0.60%	0.65%	0.75%
PY4	PY2	0.00%	0.15%	0.25%	0.40%	0.50%	0.65%	0.75%	0.90%	1.00%
PY5	PY3	0.00%	0.15%	0.30%	0.45%	0.65%	0.80%	0.95%	1.10%	1.25%
PY6	PY4	0.00%	0.20%	0.40%	0.55%	0.75%	0.95%	1.15%	1.30%	1.50%
PY7	PY5	0.00%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%
PY8	PY6	0.00%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%
PY9 (or Transition Period Year)	PY7	0.00%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%

For SNHs, the EA begins in PY3. For the first year of the reduction the maximum downward adjustment is 0.5 percent, eventually increasing to a maximum of two percent. The SCH percentile ranges are found in **Exhibit 46**.

Exhibit 46: Effectiveness Adjustment by Performance Year for SNHs (All Values Negative)

Payment Adjustments PY	Period of Data	Percentile Range								
		<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
PY2	Year ending 6 mo. prior to PY1	NA	NA	NA	NA	NA	NA	NA	NA	NA
PY3	PY1	0.00%	0.05%	0.15%	0.20%	0.25%	0.30%	0.40%	0.45%	0.50%
PY4	PY2	0.00%	0.10%	0.20%	0.30%	0.40%	0.50%	0.60%	0.65%	0.75%
PY5	PY3	0.00%	0.15%	0.25%	0.40%	0.50%	0.65%	0.75%	0.90%	1.00%
PY6	PY4	0.00%	0.15%	0.30%	0.45%	0.65%	0.80%	0.95%	1.10%	1.25%
PY7	PY5	0.00%	0.20%	0.40%	0.55%	0.75%	0.95%	1.15%	1.30%	1.50%
PY8	PY6	0.00%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%
PY9 (or Transition Period Year)	PY7	0.00%	0.25%	0.50%	0.75%	1.00%	1.25%	1.50%	1.75%	2.00%

d. Effectiveness Adjustment Example (PY1 ACH)

Exhibit 47 provides an example of how the EA is calculated for an ACH in PY2.

Exhibit 47: Effectiveness Adjustment Calculation Example

Calculation Step	Value	Calculation
HWR Measure Score	15.23%	A
EDU Measure Score	0.98	B
PQI-90 Measure Score	1023 per 100,00K	C
HWR Measure Z-Score	1.02	D
EDU Measure Z-Score	0.97	E
PQI-90 Measure Z-Score	0.92	F
Overall Hospital PAU Score	2.91	G Exhibit 38
SRS Proportion (SRS/100)	0.645	H
Adjusted Hospital PAU Score	4.51	I=G÷H
Adjusted Hospital PAU Score State Percentile (for the purposes of this example, assume 70th Percentile)	70 th Percentile	J
Hospital EA	-0.40%	K Exhibit 45. 70 th Percentile for Year ending 6 mo. prior to PY1
Hospital HGB	\$40,000,000	L
Reduction in HGB due to EA	-\$160,000	M = K * L

2.3.4 Total Cost of Care Performance Adjustment

Participant Hospitals can earn additional incentives for managing TCOC incurred by Medicare FFS beneficiaries residing in the Hospital-Specific Market Area they serve (as defined in the Market Shift Adjustment **Section 2.2.2.1**). If the change in TCOC incurred by attributed beneficiaries is below/above the established growth target, and outside the bounds of a performance corridor, the Participant Hospital is rewarded/penalized with up to a two percent adjustment to its HGB in the next PY. This aligns Participant Hospital incentives with those of the model overall, which are to reduce state TCOC while improving population health. In the case where multiple Participant Hospitals have overlapping Hospital-Specific Market Areas, Participant Hospitals have shared accountability for the TCOC of beneficiaries residing in the overlapping geography.

Beginning in PY4 for all Participants Hospitals, the TCOC Adjustment is based on the year-over-year change in TCOC, then applied to the HGB in the PY following a gap period to allow time for Claims Runout. For example, the TCOC Performance Adjustment for PY4 is calculated based on TCOC change between PY1 and PY2, noting that cohort of residents residing in the Hospital-Specific Market Area can change between the two years.

For ACHs, TCOC Adjustment is upside only in PY4, then becomes bi-directional in PY5. For more information on when the TCOC Adjustment comes into effect for each type of hospital, please refer to **Exhibit 50 to Exhibit 52**).

a. Hospital Risk Adjusted Attributed PBPM TCOC

For each Participant Hospital, a Risk Adjusted Attributed PBPM TCOC is calculated based on the weighted share of inpatient and outpatient services the Participant Hospital provides to each geographic area (e.g., zip-code) it serves. The geographic areas used in the TCOC adjustment are the same Hospital-Specific Market Areas used in the Market Shift Adjustment (MSA).

(Eq. 1) *Risk Adjusted Attributed PBPM TCOC* =

$$\left(\left(\sum_{c=1}^{c=n} \text{Hospital Specific Market Area Bene TCOC}_c * IPOPShare_c \right) \div \left(\sum_{c=1}^{c=n} \text{Hospital Specific Market Area Months}_c * IPOPShare_c \right) \right) \div \text{Weighted Average HCC Score}$$

Where,

Hospital-Specific Market Area Bene TCOC = Part A or Part B TCOC for beneficiaries with a residential address in each geographic area, *c*, served by the hospital. Geographic areas are the zip-codes included in the Hospital-Specific Market Area (same as used in the MSA) For more information, refer to **Section 2.2.2.1**.

Hospital-Specific Market Area Bene Months = Total Part A or B beneficiary months in each geographic area, *c*, served by the hospital. Geographic areas are the zip-codes included in the Hospital-Specific Market Area.

IPOP Share = Hospital's portion of total zip-code inpatient and outpatient (IPOP) Medicare FFS equivalent revenue from No-Pay Claims for Eligible Hospital services for each Hospital-Specific Market Area, *c*, served by the hospital. Geographic areas are the zip-codes included in the Hospital-Specific Market Area.

Weighted Average HCC Score = Average Hierarchical Condition Category (HCC) score for beneficiaries in the Hospital-Specific Market Area served by the hospital, weighted by IPOP Share.

For consistency with statewide TCOC target calculations, TCOC calculated separately for Part A and for Part B, then summed to create the overall Risk Adjusted Attributed PBPM TCOC.

b. TCOC Performance Benchmark

For each Participant Hospital, Risk Adjusted Attributed PBPM TCOC from the prior performance year is trended forward using the AHEAD state or region wide State Growth Benchmark to calculate the Target PBPM TCOC for the next performance year. The State Growth Benchmark is customized to each state or region, based on spending history and spending goals, and it is the same benchmark used for the state TCOC growth target, so both state and Participant Hospital TCOC incentives are aligned. By using the State Growth Benchmark as the trend, the model accounts for state specific annual growth and aligns with state or regional spending goals.

To establish the AHEAD state or region wide State Growth Benchmark, the model takes several steps, which are further illustrated in **Exhibit 40**:

1. Calculate an Annual Growth Factor, using a weighted combination of two national trend estimates, less a savings component, which is the negotiated savings to CMS that each State has negotiated through the State Agreement process
2. Calculate the State Growth Benchmark by re-weighting the Annual Growth Factor to normalize spending relative to national spending

Annual Growth Factor

The Annual Growth Factor is intended to provide a counterfactual for expected TCOC growth in the absence of the AHEAD Model. It is the weighted average of the fee-for-Service non-ESRD Part A and B United States Per Capita Cost (USPCC) growth rate and AHEAD Accountable Care Prospective Trend (ACPT). In the Annual Growth Factor calculation, the USPCC rate represents 90 percent of the weight in PY1 and decreases by four percent for each subsequent year. The annual USPCC rate and annual ACPT are used to calculate the TCOC growth targets for both the state and Participant Hospitals, thus helping to keep the Participant Hospital and state TCOC goals aligned. Per AHEAD State Agreements, USPCC and ACPT weights vary by PY.

(Eq. 2) Annual Growth Factor =

$$(USPCC \text{ Growth Rate} \times 0.9) + (AHEAD \text{ ACPT} \times 0.1) - \text{Savings Component}$$

State Growth Benchmark

The State Growth Benchmark is the Annual Growth Factor re-weighted with two-thirds weight placed on the Annual Growth Factor directly and one-third placed on a state PBPY normalized Annual Growth Factor. This creates a regression to the mean adjustment, to account for how much the state spends relative to total national spending.

(Eq. 3.) State Growth Benchmark =

$$1 + ((\text{Annual Growth Factor} - 1) \times 67\%) + \left((\text{Annual Growth Factor} - 1) \times \frac{\text{National Baseline PBPY}}{\text{State Baseline PBPY}} \times 33\% \right)$$

To calculate Target PBPM TCOC for the next performance year, each current performance year's Risk Adjusted Attributed PBPM TCOC is multiplied by the State Growth Benchmark.

(Eq 4.) **Target PBPM TCOC_{py}** =

Participant Hospital Risk Adjusted Attributed PBPM TCOC_{py-1} × State Growth Benchmark

Exhibit 48 shows a sample calculation of the State Growth Benchmark:

Exhibit 48: Sample AHEAD State Growth Benchmark Calculation

Calculation	Variable	State Value
Risk-adjusted State PBPY 2022	A	\$13,339
Risk-adjusted National PBPY 2022	B	\$13,410
USPCC Growth Rate	C	1.0423
AHEAD Accountable Care Prospective Trend (ACPT)	D	1.0400
USPCC Weight	E	90%
ACPT Weight	F	10%
Savings Component	G	0.001
Trend Factor	$H = (C \times E) + (D \times F) - G$	1.041
Percentage Component	$I = (H - 1) \times 67\%$	0.028
Dollar Component	$J = (H - 1) \times \frac{B}{A} \times 33\%$	0.014
State Growth Benchmark	$K = 1 + I + J$	1.042

c. TCOC Performance Adjustment Calculation

For each Participant Hospital, Risk Adjusted Attributed PBPM TCOC is compared to the Target PBPM TCOC calculated in **Equation 4**. The percentage difference between the Risk Adjusted Attributed PBPM TCOC and Target PBPM TCOC determines the value of the TCOC Adjustment. If the percentage difference is less than two percent (plus or minus) then no TCOC adjustment is made to the HGB because the change in PBPM TCOC is within a corridor to account for normal year-to-year variation in TCOC. Participant Hospitals with a difference of greater than two percent (plus or minus) receive an adjustment equal to 20 percent of the percentage difference. This approach recognizes true differences in performance (e.g., those outside of normal variation) and limits risk to Participant Hospitals.

$$(Eq. 5) \text{ Percentage Difference Between Hospital PBPM TCOC and Target PBPM TCOC} = \frac{\text{Attributed PBPM TCOC}_{PY} - \text{Target PBPM TCOC}_{PY}}{\text{Target PBPM TCOC}_{PY}}$$

If Percentage Difference Between Participant Hospital PBPM TCOC and Target PBPM TCOC is greater than +/- two percent, then the calculation is:

$$(Eq. 6) \text{ TCOC Adjustment} = \frac{\text{Attributed PBPM TCOC}_{PY} - \text{Target PBPM TCOC}_{PY}}{\text{Target PBPM TCOC}_{PY}} * 20\%$$

Exhibit 49 shows a sample TCOC adjustment calculation for five fictitious Participant Hospitals. Hospital B is the only hospital that has a Risk Adjusted Attributed PBPM TCOC that exceeds the two percent performance corridor. Hospital B receives a positive TCOC Adjustment.

Exhibit 49: Sample Total Cost of Care Adjustment Calculation

	Calculation	Variable	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Performance Year -1	Hospital Specific Weighted TCOC	A	\$27,000,000	\$75,000,000	\$240,000,000	\$19,000,000	\$105,000,000
	Hospital Specific Weighted Bene Months	B	30,000	104,000	295,000	25,000	130,000
	Attributed PBPM	A ÷ B = C	\$900	\$721	\$814	\$760	\$808
	Weighted Avg Risk Score	D	1.05	0.8	1.03	0.9	0.97
	Risk Adjusted Attributed PBPM TCOC	C/D=E	\$857	\$901	\$790	\$844	\$833
	State Growth Benchmark	F	1%	6%	4%	3%	3%
	Target PBPM TCOC	E * (1 + F) = G	\$866	\$955	\$822	\$869	\$858
Performance Year 2	Hospital Specific Weighted TCOC	H	\$29,000,000	\$75,000,000	\$250,000,000	\$19,500,000	\$110,000,000
	Hospital Specific Weighted Bene Months	I	32,000	105,000	295,000	25,000	130,000

	Calculation	Variable	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Performance Year 2 (continued)	Attributed PBPM	$H \div I = J$	\$906	\$714	\$847	\$780	\$846
	Weighted Avg Risk Score	K	1.06	0.78	1.05	0.9	0.97
	Risk Adjusted Attributed PBPM TCOC	$J \div K = L$	\$855	\$915	\$807	\$867	\$872
	% Difference in Attributed and Target PBPM TCOC	$-(L - G) \div G = M$	1.3%	4.2%	1.8%	0.2%	-1.6%
	Receives Adjustment (Yes/No)	N	No	Yes	No	No	No
	HGB After Annual Adjustments	O	\$22,000,000	\$41,000,000	\$141,500,000	\$12,100,000	\$65,400,000
	Scaling Factor	P	20%	20%	20%	20%	20%
	TCOC Adjustment (% of HGB)	$M * P = Q$	N/A	0.8%	N/A	N/A	N/A
	TCOC Adjustment (\$)	$O * Q = R$	N/A	\$328,000	N/A	N/A	N/A

2.4 Timing and Application of Annual Trend Update and Performance-Based Adjustments to the Hospital Global Budget

Exhibits 51-53 illustrates the timing and application of annual trend updates, AHEAD-specific adjustments, and performance-based adjustments to the HGB for Participant Hospitals over the course of the model.

Exhibit 50: Timing and Application of Annual and Performance-Based Adjustments to the Hospital Global Budget for Acute Care Hospital

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
A	Current HGB	Base HGB	PY1 HGB w. Annual & DA (Row H)	PY2 HGB w. Annual & DA (Row H)	PY3 HGB w. Annual & DA (Row H)	PY4 HGB w. Annual & DA (Row H)	PY5 HGB w. Annual & DA (Row H)	PY6 HGB w. Annual & DA (Row H)	PY7 HGB w. Annual & DA (Row H)
B	SLA	\$ Planned Service Line Changes Gap Period or PY1	\$ Planned Service Line Changes PY2	\$ Planned Service Line Changes PY3	\$ Planned Service Line Changes PY4	\$ Planned Service Line Changes PY5	\$ Planned Service Line Changes PY6	\$ Planned Service Line Changes PY7	\$ Planned Service Line Changes PY8
C	Market Shift Adjustment (MSA)	NA	Gap Period- BY3	PY1-Gap Period	PY2-PY1	PY3-PY2	PY4-PY3	PY5-PY4	PY6-PY5
D	Outlier Adjustment	NA	NA	PY1-Baseline	PY2-PY1	PY3-PY2	PY4-PY3	PY5-PY4	PY6-PY5
E = A + B + C + D	HGB Adjusted for Volume	PY1 HGB Adj for Volume	PY2 HGB Adj for Volume	PY3 HGB Adj for Volume	PY4 HGB Adj for Volume	PY5 HGB Adj for Volume	PY6 HGB Adj for Volume	PY7 HGB Adj for Volume	PY8 HGB Adj for Volume
F	Annual Payment Adjustment (APA)	PY1/ BY3	PY2/PY1	PY3/PY2	PY4/PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
G	Demographic Adjustment (DA)	PY1/ BY3	PY2/PY1	PY3/PY2	PY4/PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
H = E * (1 + F) * (1 + G)	HGB with APA & DA	PY1 HGB w/ Annual & DA	PY2 HGB w/ Annual & DA	PY3 HGB w/ Annual & DA	PY4 HGB w/ Annual & DA	PY5 HGB w/ Annual & DA	PY6 HGB w/ Annual & DA	PY7 HGB w/ Annual & DA	PY8 HGB w/ Annual & DA
I	Social Risk Adjustment (SRA)	Up to 2.0% Based on BY3	Up to 2.0% Based on PY1	Up to 2.0% Based on PY2	Up to 2.0% Based on PY3	Up to 2.0% Based on PY4	Up to 2.0% Based on PY5	Up to 2.0% Based on PY6	Up to 2.0% Based on PY7
J = H + (H * I)	HGB after Annual Updates	PY1 HGB after Annual Updates	PY2 HGB after Annual Updates	PY3 HGB after Annual Updates	PY4 HGB after Annual Updates	PY5 HGB after Annual Updates	PY6 HGB after Annual Updates	PY7 HGB after Annual Updates	PY8 HGB after Annual Updates
K	Effectiveness Adjustment (EA) ²¹	NA	Up to (0.50%) Based on Gap Period	Up to (0.75%) Based on PY1	Up to (1.00%) Based on PY2	Up to (1.25%) Based on PY3	Up to (1.50%) Based on PY4	Up to (2.00%) Based on PY5	Up to (2.00%) Based on PY6
L	Community Improvement Bonus (CIB) ²²	NA	NA	NA	Up to 0.50% Based on PY2/BY3	Up to 0.50% Based on PY3/BY3	Up to 0.50% Based on PY4/BY3	Up to 0.50% Based on PY5/BY3	Up to 0.50% Based on PY6/BY3

²¹ The EA uses the quality measures HWR, PQI-90, and EDU.

²² The CIB uses the quality measures HWR and PQI-90.

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
M	Total Cost of Care Adjustment (TCOC)	NA	NA	NA	Up to 2.0% PY2/PY1	Up to +/-2.0% PY3/PY2	Up to +/-2.0% PY4/PY3	Up to +/-2.0% PY5/PY4	Up to +/-2.0% PY6/PY5
N	TIA	1.0%	1.0%	NA	NA	NA	NA	NA	NA
O = J + (J * K) + (J * L) + (J * M) + (J * N)	HGB with Annual and Performance Adjustments	PY1 HGB w/ Perf. Adj.	PY2 HGB w/ Perf. Adj.	PY3 HGB w/ Perf. Adj.	PY4 HGB w/ Perf. Adj.	PY5 HGB w/ Perf. Adj.	PY6 HGB w/ Perf. Adj.	PY7 HGB w/ Perf. Adj.	PY 8 HGB w/ Perf. Adj.
P	Sequestration	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%
Q = O – (O * P)	Final HGB	Final PY1 HGB	Final PY2 HGB	Final PY3 HGB	Final PY4 HGB	Final PY5 HGB	Final PY6 HGB	Final PY7 HGB	Final PY8 HGB
R	Planned SLA Mid-Year Reconciliation	NA	Reconciliation for Service Line Based on PY1 Utilization	Reconciliation for Service Line Based on PY2 Utilization and PY3 Update	NA	NA	NA	NA	NA

Exhibit 51: Critical Access Hospital: Timing and Application of Annual and Performance-Based Adjustments to the Hospital Global Budget

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
A	Current HGB	Base HGB	PY1 HGB w. Annual & DA (Row H)	PY2 HGB w. Annual & DA (Row H)	PY3 HGB w. Annual & DA (Row H)	PY4 HGB w. Annual & DA (Row H)	PY5 HGB w. Annual & DA (Row H)	PY6 HGB w. Annual & DA (Row H)	PY7 HGB w. Annual & DA (Row H)
B	Service Line Adjustments (SLA)	\$ Planned Service Line Changes Gap Period or PY1	\$ Planned Service Line Changes PY2	\$ Planned Service Line Changes PY3	\$ Planned Service Line Changes PY4	\$ Planned Service Line Changes PY5	\$ Planned Service Line Changes PY6	\$ Planned Service Line Changes PY7	\$ Planned Service Line Changes PY8
C	Market Shift Adjustment (MSA)	NA	Gap Period – BY3	PY1-Gap Period	PY2-PY1	PY3-PY2	PY4-PY3	PY5-PY4	PY6-PY5
D = A + B + C	HGB Adjusted for Volume	PY1 HGB Adj for Volume	PY2 HGB Adj for Volume	PY3 HGB Adj for Volume	PY4 HGB Adj for Volume	PY5 HGB Adj for Volume	PY6 HGB Adj for Volume	PY7 HGB Adj for Volume	PY8 HGB Adj for Volume
E	Annual Payment Adjustment (APA)	PY1/ BY3	PY2/PY1	PY3/PY2	PY4/ PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
F	Demographic Adjustment (DA)	PY1/ BY3	PY2/PY1	PY3/PY2	PY4/ PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
G = D * (1 + E) * (1 + F)	HGB with Annual & DA	PY1 HGB w/ Annual & DA	PY2 HGB w/ Annual & DA	PY3 HGB w/ Annual & DA	PY4 HGB w/ Annual & DA	PY5 HGB w/ Annual & DA	PY6 HGB w/ Annual & DA	PY7 HGB w/ Annual & DA	PY8 HGB w/ Annual & DA
H	Social Risk Adjustment (SRA)	Up to +2.0% Based on BY3	Up to +2.0% Based on PY1	Up to +2.0% Based on PY2	Up to +2.0% Based on PY3	Up to +2.0% Based on PY4	Up to +2.0% Based on PY5	Up to +2.0% Based on PY6	Up to +2.0% Based on PY7
I = G + (G * H)	HGB after Annual Updates	PY1 HGB after Ann Updates	PY2 HGB after Ann Updates	PY3 HGB after Ann Updates	PY4 HGB after Ann Updates	PY5 HGB after Ann Updates	PY6 HGB after Ann Updates	PY7 HGB after Ann Updates	PY8 HGB after Ann Updates
J	Effectiveness Adjustment (EA) ²³	NA	NA	Up to (0.50%) Based on PY1	Up to (0.75%) Based on PY2	Up to (1.00%) Based on PY3	Up to (1.25%) Based on PY4	Up to (1.50%) Based on PY5	Up to (2.00%) Based on PY6

²³ The EA uses the quality measures HWR, PQI-90, and EDU.

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
K	CAH Quality Adjustment	NA	NA	2.0% Pay to Report Based on PY1	2.0% Pay to Report Based on PY2	1.5% Pay to Report 0.5% P4P Based on PY3	1.0% Pay to Report 1.0% P4P Based on PY4	0.5% Pay to Report 1.5% P4P Based on PY5	0.0% Pay to Report 2.0% P4P Based on PY6
L	Community Improvement Bonus (CIB) ²⁴	NA	NA	NA	Up to 0.50% Based on PY2/BY3	Up to 0.50% Based on PY3/BY3	Up to 0.50% Based on PY4/BY3	Up to 0.50% Based on PY5/BY3	Up to 0.50% Based on PY6/BY3
M	Total Cost of Care (TCOC)	NA	NA	NA	Up to 2.0%	Up to 2.0%	Up to +/-2.0%	Up to +/-2.0%	Up to +/-2.0%
N	Transformation Incentive Adjustment (TIA)	1.0%	1.0%	NA	NA	NA	NA	NA	NA
O = I + (I * J) + (I * K) + (I * L) + (I * M) + (I * N)	HGB with Annual and Performance Adjustments	PY1 HGB w/ Perf. Adj.	PY2 HGB w/ Perf. Adj.	PY3 HGB w/ Perf. Adj.	PY4 HGB w/ Perf. Adj.	PY5 HGB w/ Perf. Adj.	PY6 HGB w/ Perf. Adj.	PY7 HGB w/ Perf. Adj.	PY 8 HGB w/ Perf. Adj.
P	Sequestration	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%
Q = O – (O * P)	Final HGB	Final PY1 HGB	Final PY2 HGB	Final PY3 HGB	Final PY4 HGB	Final PY5 HGB	Final PY6 HGB	Final PY7 HGB	Final PY8 HGB
R	Planned SLA Mid-Year Reconciliation	NA	Reconciliation for Service Line Based on PY1 Utilization	Reconciliation for Service Line Based on PY2 Utilization and PY3 Update	NA	NA	NA	NA	NA

²⁴ The CIB uses the quality measures HWR and PQI-90.

Exhibit 52: Safety Net Hospital: Timing and Application of Annual and Performance-Based Adjustments to the Hospital Global Budget

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
A	Current HGB	Base HGB	PY1 HGB w. Annual & DA (Row H)	PY2 HGB w. Annual & DA (Row H)	PY3 HGB w. Annual & DA (Row H)	PY4 HGB w. Annual & DA (Row H)	PY5 HGB w. Annual & DA (Row H)	PY6 HGB w. Annual & DA (Row H)	PY7 HGB w. Annual & DA (Row H)
B	Service Line Adjustment (SLA)	\$ Planned Service Line Changes Gap Period or PY1	\$ Planned Service Line Changes PY2	\$ Planned Service Line Changes PY3	\$ Planned Service Line Changes PY4	\$ Planned Service Line Changes PY5	\$ Planned Service Line Changes PY6	\$ Planned Service Line Changes PY7	\$ Planned Service Line Changes PY8
C	Market Shift Adjustment (MSA)	NA	Gap Period – BY3	PY1-Gap Period	PY2-PY1	PY3-PY2	PY4-PY3	PY5-PY4	PY6- PY5
D	Outlier Adjustment	NA	NA	PY1-Baseline	PY2-PY1	PY3-PY2	PY4-PY3	PY5-PY4	PY6-PY5
E = A + B + C + D	HGB Adjusted for Volume	PY1 HGB Adj for Volume	PY2 HGB Adj for Volume	PY3 HGB Adj for Volume	PY4 HGB Adj for Volume	PY5 HGB Adj for Volume	PY6 HGB Adj for Volume	PY7 HGB Adj for Volume	PY8 HGB Adj for Volume
F	Annual Payment Adjustment (APA)	PY1/BY3	PY2/PY1	PY3/PY2	PY4/PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
G	Demographic Adjustment (DA)	PY1/BY3	PY2/PY1	PY3/PY2	PY4/PY3	PY5/PY4	PY6/PY5	PY7/PY6	PY8/PY7
H = E * (1 + F) * (1 + G)	HGB with APA & DA	PY1 HGB w/ Annual & DA	PY2 HGB w/ Annual & DA	PY3 HGB w/ Annual & DA	PY4 HGB w/ Annual & DA	PY5 HGB w/ Annual & DA	PY6 HGB w/ Annual & DA	PY7 HGB w/ Annual & DA	PY8 HGB w/ Annual & DA
I	Social Risk Adjustment (SRA)	Up to +2.0% Based on BY3	Up to +2.0% Based on PY1	Up to +2.0% Based on PY2	Up to +2.0% Based on PY3	Up to +2.0% Based on PY4	Up to +2.0% Based on PY5	Up to +2.0% Based on PY6	Up to +2.0% Based on PY7
J = H + (H * I)	HGB after Annual Updates	PY1 HGB after Ann Updates	PY2 HGB after Ann Updates	PY3 HGB after Ann Updates	PY4 HGB after Ann Updates	PY5 HGB after Ann Updates	PY6 HGB after Ann Updates	PY7 HGB after Ann Updates	PY8 HGB after Ann Updates
K	Effectiveness Adjustment (EA) ²⁵	NA	NA	Up to (0.50%) Based on PY1	Up to (0.75%) Based on PY2	Up to (1.00%) Based on PY3	Up to (1.25%) Based on PY4	Up to (1.50%) Based on PY5	Up to (2.00%) Based on PY6

²⁵ The EA uses the quality measures HWR, PQI-90, and EDU.

Item	Adjustment	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8
L	Community Improvement Bonus (CIB) ²⁶	NA	NA	NA	Up to 0.50% Based on PY2/BY3	Up to 0.50% Based on PY3/BY3	Up to 0.50% Based on PY4/BY3	Up to 0.50% Based on PY5/BY3	Up to 0.50% Based on PY6/BY3
M	Total Cost of Care (TCOC)	NA	NA	NA	Up to 2.0%	Up to 2.0%	Up to +/-2.0%	Up to +/-2.0%	Up to +/-2.0%
N	Transformation Incentive Adjustment (TIA)	1.0%	1.0%	NA	NA	NA	NA	NA	NA
O = J + (J * K) + (J * L) + (J * M) + (J * N)	HGB with Annual and Performance Adjustments	PY1 HGB w/ Perf. Adj.	PY2 HGB w/ Perf. Adj.	PY3 HGB w/ Perf. Adj.	PY4 HGB w/ Perf. Adj.	PY5 HGB w/ Perf. Adj.	PY6 HGB w/ Perf. Adj.	PY7 HGB w/ Perf. Adj.	PY 8 HGB w/ Perf. Adj.
P	Sequestration	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%
Q = O – (O * P)	Final HGB	Final PY1 HGB	Final PY2 HGB	Final PY3 HGB	Final PY4 HGB	Final PY5 HGB	Final PY6 HGB	Final PY7 HGB	Final PY8 HGB
R	Planned SLA Mid-Year Reconciliation	NA	Reconciliation for Service Line Based on PY1 Utilization	Reconciliation for Service Line Based on PY2 Utilization and PY3 Update	NA	NA	NA	NA	NA

²⁶ The CIB uses the quality measures HWR and PQI-90.

Exhibit 53: HGB Quality Measures Performance Period Applications in Cohort 2

Adjustment	PY	2025		2026		2027		2028		2029		2030		2031		2032	
		Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec
Effectiveness Adjustment (Measures: HWR, PQI-90, EDU)	PY 2 (2028)																
	PY 3 (2029)																
	PY 4 (2030)																
	PY 5 (2031)																
	PY 6 (2032)																
	PY 7 (2033)																
	PY 8 (2034)																
Community Improvement Bonus (Measures: HWR, PQI-90)	PY 4 (2030)	Base	Period	→	→	→	→	→	→	→	→	→	→	→	→	→	→
	PY 5 (2031)	Base	Period	→	→	→	→	→	→	→	→	→	→	→	→	→	→
	PY 6 (2032)	Base	Period	→	→	→	→	→	→	→	→	→	→	→	→	→	→
	PY 7 (2033)	Base	Period	→	→	→	→	→	→	→	→	→	→	→	→	→	→
	PY 8 (2034)	Base	Period	→	→	→	→	→	→	→	→	→	→	→	→	→	→

3. Operational

The following section details the roles and responsibilities of each party, state-specific flexibility, the Model Governance Structure that aids the AHEAD State and CMS in overseeing the development of HGBs, the operational timeline, payments to participating hospitals, and cost-reporting requirements.

3.1 Roles and Responsibilities

Exhibit 54 describes the roles and responsibilities of each party in setting, monitoring, adjusting, and administering the HGB.

Exhibit 54: Roles and Responsibilities

Organization	Role
CMS	Lead Federal Government agency administering the AHEAD Model. Responsible for model policy, payment methodology, and making payments to hospitals on a bi-weekly basis. CMS works with the MACs and other contractors to update payment processes and issue payments for the HGBs.
State	States apply to participate in AHEAD Model; recruit hospitals, primary care providers, and commercial insurers to participate in the model; develop State Population Health Accountability Plans; set up the Model Governance Structure; and administer cooperative agreement funding as needed. Responsible for achieving all-payer and Medicare FFS TCOC and primary care investment targets and population health and community health outcomes. Also responsible for reviewing and making recommendations to CMS regarding HGB adjustments for service line additions and contractions.
Participant Hospital	Eligible Hospitals may voluntarily opt to participate in a HGB that sets a prospective budget for Medicare FFS, and other payers as appropriate.
Medicare Administrative Contractor (MAC)	Participant Hospitals are not paid FFS for Eligible Hospital Services furnished to attributed beneficiaries. The MACs use files supplied by CMS to process, but not pay, claims submitted by Participant Hospitals.

3.2 Waivers

Payment Waivers. The AHEAD Model includes certain Medicare payment waivers that support the administration and testing Benefit Enhancements in the AHEAD Model. CMS will provide the timeframe availability and requirements for Benefit Enhancements in the applicable Hospital Agreement.

Additionally, subject to the provisions of the applicable State Agreement and Hospital Agreement, CMS will waive the requirements of the certain provisions of the Social Security Act (the Act), as necessary, for purposes of testing AHEAD, and providing Participant Hospitals and downstream participants, as applicable, the opportunity to provide Benefit Enhancements, subject to certain requirements in their associated Hospital Agreement and applicable statutes, rules or regulations administered by the Federal government.

1. Home Health Homebound Benefit Enhancement.
2. Care Management Home Visit Benefit Enhancement.
3. Post – Discharge Home Visits Benefit Enhancement.

4. 3-day SNF Rule Waiver Benefit Enhancement.
5. Nurse Practitioner and Physician Assistant Services Benefit Enhancement.
6. Concurrent Care for Hospice Beneficiaries Benefit Enhancement.
7. Telehealth Benefit Enhancement.

Fraud and Abuse Waivers. Under section 1115A(d)(1) of the Act, the Secretary of Health and Human Services may waive such requirements of Titles XI and XVIII and of sections 1902(a)(1), 1902(a)(13), 1903(m)(2)(A)(iii), and certain provisions of section 1934 of the Act as may be necessary solely for purposes of carrying out section 1115A with respect to testing models described in section 1115A(b). For this model and consistent with the authority under Section 1115A(d)(1), the Secretary may consider issuing waivers of certain fraud and abuse provisions in Sections 1128A, 1128B, and 1877 of the Act. No fraud or abuse waivers are being issued in this specifications document; fraud and abuse waivers, if any, would be set forth in the Hospital Participation Agreement or separately issued documentation.

Federal Anti-kickback Statute Safe Harbor. CMS may determine that the Federal Anti-kickback Statute safe harbor for CMS-sponsored model arrangements (42 CFR § 1001.952(ii)(1)) and CMS-sponsored model patient incentives (42 CFR § 1001.952(ii)(2)) is available to protect remuneration exchanged pursuant to certain financial arrangements or patient incentives permitted under applicable Hospital Participation Agreements, provided that such arrangements and incentives comply with the requirements of the safe harbor and the requirements to be set forth in the applicable Hospital Participation Agreement. No such determination is being issued in these specifications. Such determination, if any, would be set forth in the applicable Hospital Participation Agreement or documentation issued by CMS.

3.3 Additional Model Requirements

As part of the Model's focus on multi-payer alignment, CMS requires states that participate in AHEAD to eventually offer HGBs to Eligible Hospitals via their state Medicaid agencies. States participating in the Model must also recruit at least one commercial payer to offer HGBs by PY2. Participating states develop an aligned methodology for Medicaid. More information on Medicaid alignment expectations is available in the AHEAD [Notice of Funding Opportunity \(NOFO\)](#).

In addition, states with existing statewide hospital rate setting or hospital budget setting authority and prior experience with population-based payments or global budgets may develop their own HGB methodology, including for Medicare FFS, subject to CMS approval.²⁷ This document outlines the technical financial specifications for the CMS-Designed HGB methodology, which is offered in states or sub-state regions who are eligible to participate in the AHEAD Model and do not develop their own methodology.

3.4 Issuing Payments to Participant Hospitals

CMS makes bi-weekly lump-sum payments to Participant Hospitals under the approved, prospective HGBs. To determine the specific payments, the Medicare FFS global budget for that PY is divided into 26 bi-weekly payments. While Participant Hospitals receive these bi-weekly

²⁷ Notice of Funding Opportunity, States Advancing AHEAD Model Funding Opportunity, U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services, November 29, 2023.

payments, they continue to submit claims to CMS during the year, but these become No-Pay Claims.

3.5 Cost Reporting

Participant Hospitals continue to submit Medicare Hospital Cost Reports. The Medicare Hospital Cost Reports are amended to include information on the Medicare Part A and B global budget payment amounts made to the Participant Hospitals. Additionally, the Medicare Hospital Cost Reports also show the amounts that would have been paid had the hospitals been paid under Medicare FFS for monitoring purposes. Additional guidance is provided in the Hospital Participation Agreement on cost reporting for all Participant Hospitals, including guidance specific to CAHs.

Appendix A: Formulas and Calculations

The following provides a summary of all formulas included in this document. The tables provide more details about the calculations in each section.

Baseline Payment Amount Formulas

Exhibit A.1: Baseline Payment Amount Table of Formulas

Equation	Formula
(Eq. 1a) Weighted Inpatient Baseline Payment	Weighted Inpatient Baseline $= \left(\left(0.1 \right. \right. \\ \left. \left. * \left(\text{Inpatient Baseline Paid Amounts for BY1} \right. \right. \right. \\ \left. \left. * \left(1 + \text{BY1 to BY3 APA} \right) \right) \right) \\ + \left(0.3 * \left(\text{Inpatient Baseline Paid Amounts for BY2} \right. \right. \right. \\ \left. \left. * \left(1 + \text{BY2 to BY3 APA} \right) \right) \right) \\ + \left(0.6 * \left(\text{Inpatient Baseline Paid Amounts for BY3} \right) \right) \\ * \text{Baseline Adjustment Factor}$
(Eq. 1b) Weighted Outpatient Baseline Payment	Weighted Outpatient Baseline $= \left(\left(0.1 \right. \right. \\ \left. \left. * \left(\text{Outpatient Baseline Paid Amounts for BY1} \right. \right. \right. \\ \left. \left. * \left(1 + \text{BY1 to BY3 APA} \right) \right) \right) \\ + \left(0.3 \right. \\ \left. * \left(\text{Outpatient Baseline Paid Amounts for BY2} \right. \right. \right. \\ \left. \left. * \left(1 + \text{BY2 to BY3 APA} \right) \right) \right) \\ + \left(0.6 * \left(\text{Outpatient Baseline Paid Amounts for BY3} \right) \right) \\ * \text{Baseline Adjustment Factor}$
(Eq. 2) Baseline Adjustment Factor	Baseline Adjustment Factor = $1 + (P(H)) * \text{Scaling Factor}$
(Eq. 2b) Logistic Regression Equation	Logistic Regression Equation $P(H) = \frac{1}{1 + e^{-(b_1 * x_1 + \dots + b_k * x_k + b_h * h + a)}}$
(Eq. 3) Average DRG Share of Medicare Payments	Average DRG Share of Medicare Payments $_{DRG,H} = \frac{\text{Paid}_{DRG}}{\text{Paid}_H}$

Equation	Formula
(Eq. 4) DRG Impact Score	$(Eq. 4) \text{ Impact Score}_{DRG} = \frac{\sum_{YR} \sum_H IP_{H,YR} - Share_{DRG,H} \times TotalIP_{H,YR} }{\sum_{YR} \sum_H TotalIP_{H,YR}}$
(Eq. 5) Inpatient Baseline Paid Amount for Non-CAH Hospitals	<i>Inpatient Baseline Paid Amount for Non CAH Hospitals</i> = Paid Amounts on FFS Claims + Medicare Settlement on Cost Reports + Sequestration
(Eq. 6) Inpatient Baseline Paid Amount for CAH Hospitals	<i>Inpatient Baseline Paid Amount for CAH Hospitals</i> = Paid Amount on Interim Inpatient Claims + Paid Amount on Interim Swing Bed Claims + Settlement to 101% on Cost Reports + Sequestration
(Eq. 7) Outpatient Baseline Paid Amount for Non-CAH Hospitals	<i>Outpatient Baseline Paid Amount for Non CAH Hospitals</i> = Paid Amounts on FFS Claims + Sequestration
(Eq. 8) Outpatient Baseline Paid Amount for CAH Hospitals	<i>Outpatient Baseline Paid Amount for CAH Hospitals</i> = Paid Amount on Interim Outpatient Claims + Settlement to 101% on Cost Reports + Sequestration

Annual Payment Adjustment Formulas

Exhibit A.2: Annual Payment Adjustment Table of Formulas

Equation	Formula
(Eq. 1) Annual Inpatient Adjustment	Annual Inpatient Adjustment = $\frac{\text{Year 2 CAR} - \text{Year 1 CAR}}{\text{Year 1 CAR}}$
(Eq. 2) AHEAD CAR	AHEAD CAR = $\frac{\frac{\text{Estimated Medicare Payments} + \text{Policy and Quality Adjustments}}{\text{Case Mix Index}}}{\text{Medicare Discharges}} + \frac{\text{UCC Operating Adjustment}}{\text{Medicare Discharges}}$
(Eq. 3) Estimated Medicare Payments	Estimated Medicare Payments = (Operating Amount + Capital Amount) * (1 + Low Volume Adjustment Factor) * (HACRP Adjustment Factor)
(Eq. 4) Operating Amount	Operating Amount = ((National Operating Labor Base Rate * Medicare Wage Index) + (National Operating Non Labor Base Rate * Operating COLA)) * Medicare Discharges * Case Mix Index)
(Eq. 4a) Operating Amount for SCH	Operating Amount For Sole Community Hospitals = (Hospital Specific Operating Labor Base Rate * Medicare Discharges * Case Mix Index) IF greater than Operating Amount calculated in Eq. 4
(Eq. 5) Capital Amount	Capital Amount = ((National Capital Base Rate * Geographic Adjustment Factor for Capital * Capital COLA) * Medicare Discharges * Case Mix Index)
(Eq. 6) Estimated Deductibles	Estimated Deductibles = Medicare Annual Inpatient Deductible Amount * Total Number of Medicare Discharges
(Eq. 7) Policy and Quality Adjustments	Policy and Quality Adjustments = (Operating Policy & Quality Adj + Capital Policy & Quality Adj) * (1 + Low Volume Adjustment Factor) * (HACRP Adjustment Factor) <i>Details for the Operating and Capital Policy & Quality Adjustments are below</i>
(Eq. 7 Detail) Operating Policy & Quality Adjustments	Operating Policy & Quality Adjustments = Readmission Adjustment + Value Based Payment Net Amount + IME Operating Adjustment Amount + DSH Operating Adjustment Amount + Hospital Specific Adjustment in Excess of Federal Rate
(Eq. 7 Detail) Readmission Adjustment to Operating Payment	Readmission Adjustment to Operating Payment = (1 – Readmissions Adjustment Factor) * Location & Case Mix Adjusted Operating Amount

Equation	Formula
(Eq. 7 Detail) Value Based Payment Net Amount	Value Based Payment Net Amount $= \text{VBP Amount Redistributed (with 2\%)} + \text{VBP 2\% Withhold}$ Where, VBP Amount Redistributed (with 2%) $= ((\text{Actual Hospital VBP Adjustment Factor} - 1) + 0.02)$ $* \text{Location Adjusted Operating Amount}$ VBP 2% Withhold = $\text{Location \& Case Mix Adjusted Operating Amount} * -0.02$
(Eq. 7 Detail) IME Adjustment Amount	IME Operating Adjustment Amount $= \text{IME operating adjustment factor}$ $* \text{Location \& Case Mix Adjusted Operating Amount}$
(Eq. 7 Detail) DSH Operating Adjustment Amount	DSH Operating Adjustment Amount $= \text{DSH operating adjustment factor}$ $* \text{Location \& Case Mix Adjusted Operating Amount}$ Note: For DSH operating, two years of IPPS data from the IPPS Impact File are reviewed (the PY and the prior PY), and the higher value for the DSH Operating Adjustment Factor is utilized.
(Eq. 7 Detail) UCC Adjustment Amount	UCC Operating Adjustment Amount $= \text{UCC Per Claim Amount} * \# \text{ Medicare Discharges}$ Note: For UCC, two years of IPPS data from the IPPS Impact File are reviewed (the PY and the prior PY), and the higher value for the UCC Per Claim Amount is utilized.
(Eq. 7 Detail) Capital Policy & Quality Adjustments	Capital Policy & Quality Adjustments $= \text{IME Capital Adjustment Amount}$ $+ \text{DSH Capital Adjustment Amount}$
(Eq. 7 Detail) IME Capital Adjustment Amount	IME Capital Adjustment Amount $= \text{IME Capital Adjustment Factor}$ $* \text{Location \& Case Mix Adjusted Capital Amount}$
(Eq. 7 Detail) DSH Capital Adjustment Amount	DSH Capital Adjustment Amount $= \text{DSH Capital Adjustment Factor}$ $* \text{Location \& Case Mix Adjusted Operating Amount}$ Note: For DSH capital, two years of IPPS data from the IPPS Impact File are reviewed (the PY and the prior PY), and the higher value for the DSH Capital Adjustment Factor is utilized.
(Eq. 8) Inpatient PY1 APA Adjusted Amount	Inpatient PY1 APA Adjusted Amount $= \text{Inpatient Baseline Amount} * (1$ $+ \text{Annual Inpatient Adjustment for BY3 to PY1})$
(Eq. 9) Annual Outpatient Adjustment	Annual Outpatient Adjustment = $\frac{\text{Year 2 WAACF} - \text{Year 1 WAACF}}{\text{Year 1 WAACF}}$
(Eq. 10) Wage Adjusted APC Conversion Factor	WAACF = $((\text{OPPS APC Conversion Factor} * 0.6 * \text{Hospital Specific Wage Index})$ $+ (\text{OPPS APC Conversion Factor} * 0.4))$

Equation	Formula
(Eq. 11) PY1 Outpatient APA	Outpatient PY1 APA Adjusted Amount $= \text{Outpatient Baseline Amount} * (1 + \text{Annual Outpatient Adjustment for BY3 to PY1})$

Market Shift Adjustment Formulas

Exhibit A.3: Market Shift Adjustment Table of Formulas

Equation	Formula
(Eq. 1) MSA Shift Allowance	MSA Shift Allowance $= \text{Sum of FFS Year 1 Payments in Overlapping Market Area Zip codes} \times \text{USPCC Trend} \times \text{Funding Factor}$
(Eq. 2) FFS Payment Proportional Change	FFS Payment Proportional Change $= \left(\frac{\text{Hospital FFS Payment}_{\text{Year2}}}{\text{Market Area FFS Payment}_{\text{Year2}}} - \frac{\text{Hospital FFS Payment}_{\text{Year1}}}{\text{Market Area FFS Payment}_{\text{Year1}}} \right)$
(Eq. 3) FFS Weights Proportional Change	FFS Weights Proportional Change $= \left(\frac{\text{Hospital Weights}_{\text{Year2}}}{\text{Total Market Area Weights}_{\text{Year2}}} - \frac{\text{Hospital Weights}_{\text{Year1}}}{\text{Total Market Area Weights}_{\text{Year1}}} \right)$
(Eq. 4) Proportional Change	Proportional Change $= (\text{FFS Payments Proportional Change} * 50\%) + (\text{FFS Weights Proportional Change} * 50\%)$

Equation	Formula
(Eq. 5) Hospital MSA Amount	$\text{Hospital MSA Amount} = \text{Proportional Change} \times \text{MSA Shift Allowance Pool of Funds}$

Demographic Adjustment Formulas

Exhibit A.4: Demographic Adjustment Table of Formulas

Line	Formula
(Eq. 1) DA	$DA_i = \sum_{j=1}^{j=N} s_j * \Delta \text{Total HCC}$ Where, N = Number of Counties Served by the Hospital S = Share of FFS payments Δ Total HCC = Percentage change in county sum of HCC scores between the two years prior to the PY.
(Eq. 2) County Share of FFS Claims or No-Pay Claims	County Share of FFS Claims or No – Pay Claims = (Inpatient Baseline Paid Amount + Outpatient Baseline Paid Amount) for County j ÷ ((Inpatient Baseline Paid Amount + Outpatient Baseline Paid Amount) for all Counties Served by Hospital)

Outlier Adjustment Formulas

Exhibit A.5 Outlier Adjustment Table of Formulas

Line	Formula
Share of Outlier Payments (Eq. 1)	$\text{Share of Outlier Payments} = \left(\frac{\sum \text{Outlier Payments on FFS or No – Pay Claims}}{\sum \text{Total Paid on FFS or No – Pay Claims}} \right)$
Outlier Adjustment (Eq. 2)	(Eq. 2) Outlier Adjustment = (Share of Outlier Payments_y – Share of Outlier Payments_{y-1}) * H Where, y = Baseline or Performance Year included in the calculation. See Exhibits 43 to 45 for details. H = Hospital global budget after applying the Annual Payment Adjustment and Demographic Adjustment.

Social Risk Adjustment Formulas

Exhibit A.5: Social Risk Adjustment Table of Formulas

Line	Formula
(Eq. 1) Social Risk Score (Beneficiary)	$SRS_b = \text{National CDI} + (50 * LIM)$ Where, National CDI = National Standardized CDI which is expressed as a percentile with a range of 1 to 100, is assigned for each eligible beneficiary. Points for National CDI ranges from 1 to 100. National CDI has a downward cap at the PY1 level. Low-Income Marker (LIM) = Set to 1 if a beneficiary is either dual-eligible (full or partial dual) or deemed eligible for Part D LIS at any point in the rolling 12-month period immediately preceding the calculation. If a beneficiary is not dual-eligible and is not eligible for Part D LIS, LIM equals 0.
(Eq. 2) Social Risk Score (Geographic Area)	$SRS_g = \left(\sum_{j=1}^{j=n} SRS_b \right) \div n$ Where, n = Number of beneficiaries in the census block group
(Eq. 3) Social Risk Score (Hospital)	$SRS_h = \sum_{g=1}^{g=n} SRS_g * \frac{P_g}{P_h}$ Where, n = Number of total census block groups from which hospital revenue is received h = Hospital g = Census Block Group P_g = For census block group g of a participant hospital h, the sum of Medicare FFS claim payments (or No-Pay Claims during the PY) for Eligible Inpatient and Outpatient Hospital Services using the same inclusion/exclusion logic as in the Baseline Calculation (Section 2.1) P_h = For all census block groups of a participant hospital h, the sum of Medicare FFS claim payments (or No-Pay Claims during the PY) for Eligible Inpatient and Outpatient Hospital Services using the same inclusion/exclusion logic as in the Baseline Calculation (Section 2.1)

Critical Access Hospital Quality Adjustment Formulas

Exhibit A.6: Critical Access Hospital Quality Adjustment Table of Formulas

Line	Formula
(Eq. 1) Attainment Points	$\text{Attainment Points}_h = \left(9 * \frac{\text{Perf. Period Result} - \text{Threshold}}{\text{Benchmark} - \text{Threshold}} \right) + 0.5$
(Eq. 2) Improvement Points	$\text{Improvement Points}_h = \left(10 * \frac{\text{Perf. Period Result} - \text{Base Period Result}}{\text{Benchmark} - \text{Base Period Result}} \right) - 0.5$

Line	Formula
(Eq. 3) HCAHPS Consistency Points	$HCAHPS \text{ Consistency Points}_h = \left(20 * \frac{Perf. Period Score - National Floor}{Threshold - National Floor} \right) - 0.5$
(Eq. 4) Achievement Points	$Achievement Points_h = \max(Attainment Points_h, Improvement Points_h)$
(Eq. 5) CAH Reward	$CAH \text{ Reward}_h = .02 - (B_{TPS} - TPS_h) * \frac{.02}{B_{TPS} - T_{TPS}}$

Effectiveness Adjustment Formulas

Exhibit A.7: Effectiveness Adjustment Table of Formulas

Line	Formula
(Eq. 1) Hospital Overall PAU Score	$Overall \text{ Hospital PAU Score} = EDU \text{ ZScore} + PQI90 \text{ ZScore} + HWR \text{ ZScore}$
(Eq. 2) Hospital Adjusted PAU Score	$Adjusted \text{ Hospital PAU Score} = \frac{Overall \text{ Hospital PAU Score}}{Hospital \text{ Social Risk Score Proportion}}$
(Eq. 3) EA	EA = EA Percentile range lookup in Exhibit 46 Where, EA Percentile: The State PAU Percentile is calculated across all hospitals in the state, sorting in ascending order based on their PAU Score and ranked into percentiles. For hospitals below the 20th percentile of the State PAU Percentile, the EA is zero. For all other hospitals Exhibit 45 provides the EA Adjustment for ACHs and Exhibit 47 provides the EA Adjustment for SNHs for each PY that is based on ranges or tiers of the EA Percentile.

Community Improvement Bonus Adjustment Formulas

Exhibit A.8: Community Improvement Bonus Table of Formulas

Line	Formula
(Eq. 1) PQI-90 Admission Rate	(Eq. 1) PQI – 90 Admission Rate $= \frac{PQI - 90 \text{ compliant inpatient or observation stays} > 23 \text{ hours}}{Total \text{ inpatient or observation stays} > 23 \text{ hours}}$ See Section 2.3.2 for more information about how PQI-90 is specified.
(Eq. 2) Readmission Rate Improvement	(Eq. 2) PQI Admission Rate Improvement $= \frac{PQI \text{ Admit Rate}_p - PQI \text{ Admit Rate}_b}{PQI \text{ Admit Rate}_b}$ Where, b = fixed base period and p = performance measurement period.

Line	Formula
(Eq. 3) Hybrid HWR Rate Improvement	(Eq. 3) Hybrid HWR Rate Improvement $= \frac{\text{Hybrid HWR Rate}_p - \text{Hybrid HWR Rate}_b}{\text{Hybrid HWR Rate}_b}$ See Section 2.3.2 for more information about how Hybrid HWR is specified.

Total Cost of Care Performance Adjustment Formulas

Exhibit A.9: Total Cost of Care Performance Adjustment Table of Formulas

Line	Formula
(Eq. 1) Risk Adjusted Attributed PBPM TCOC	Risk Adjusted Attributed PBPM TCOC $= \left(\left(\sum_{c=1}^{c=n} \text{Hospital Specific Market Area Bene TCOC}_c * \text{IPOPShare}_c \right) \div \left(\sum_{c=1}^{c=n} \text{Hospital Specific Market Area Bene Months}_c * \text{IPOPShare}_c \right) \right) \div \text{Weighted Average HCC Score}$ Where, Geographic Area Bene TCOC = Part A or Part B TCOC for beneficiaries in each geographic area, <i>c</i>, served by the hospital. Geographic areas are the zip-codes included in the hospital-specific market area (same as used in the MSA). For more information, refer to Section 2.2.2.1. Geographic Area Bene Months = Total Part A or B beneficiary months in each geographic area, <i>c</i>, served by the hospital. Geographic areas are the zip-codes included in the hospital-specific market area (same as used in the MSA). IP-OP Share = Hospital's portion of total zip-code inpatient and outpatient spending for each geographic area, <i>c</i>, served by the hospital. Geographic areas are the zip-codes included in the hospital-specific market area (same as used in the MSA). Weighted Average HCC Score = Average HCC score for beneficiaries in geographic areas served by the hospital, weighted by IP-OP Share.
(Eq. 2) Annual Growth Factor	Annual Growth Factor $= (\text{USPCC Growth Rate} \times 0.9) + (\text{AHEAD ACPT} \times 0.1)$ –Savings Component
(Eq. 3) State Growth Benchmark	State Growth Benchmark $= 1 + ((\text{Annual Growth Factor} - 1) \times 67\%)$ $+ ((\text{Annual Growth Factor} - 1) \times \frac{\text{National Baseline PBPY}}{\text{State Baseline PBPY}} \times 33\%)$
(Eq. 4) Target PBPM TCOC	Target PBPM TCOC_{py} $= \text{Participant Hospital Risk Adjusted Attributed PBPM TCOC}_{py-1} \times \text{State Growth Benchmark}$

Line	Formula
(Eq. 5) Percentage Difference Between Hospital PBPM TCOC and Target TCOC	Percentage Difference Between Hospital PBPM TCOC and Target PBPM TCOC $= \frac{\text{Attributed PBPM TCOC}_{PY} - \text{Target PBPM TCOC}_{PY}}{\text{Target PBPM TCOC}_{PY}}$ If the Percentage Difference Between Hospital PBPM TCOC and Target PBPM TCOC > +/- 2% then the TCOC Adjustment proceeds
(Eq. 6) TCOC Adjustment	TCOC Adjustment $= \frac{\text{Attributed PBPM TCOC}_{PY} - \text{Target PBPM TCOC}_{PY}}{\text{Target PBPM TCOC}_{PY}} * 20\%$ Hospitals with a percentage difference between Attributed PBPM TCOC and Target PBPM TCOC that is within $\pm 2\%$ does not receive a TCOC adjustment. The maximum amount of reward/penalty applied to HGBs in PY4 is limited to between 0% and 2% in PY4 or -2% and +2% thereafter.

Appendix B: Data Sources

The following provides a summary and description of the data source(s) for all data points included within the formulas in **Appendix A: Formulas and Calculations**. The noted sections provide additional details and, where necessary, any additional formulas used to obtain the data point.

Baseline Payment Amount Data Sources

Exhibit B.1: Baseline Payment Amount Data Sources

Data Element	Source
Paid Amounts on IPPS FFS Claims	IDR Inpatient Claims (claim type 60, bill type 11X or 12X)
CAH Inpatient Cost Settlements	HCRIS Full Cost Report Files
Paid Amounts on Inpatient Swing Bed Claims	IDR SNF Claims (claim type 30 and Z in third position of CCN)
CAH Inpatient Swing Bed Settlements	HCRIS Full Cost Report Files
Paid Amounts on OPFS FFS Payment Claims	IDR Outpatient Claims (claim type 40, bill types, 13X, 14X, 85X, or 18X)
DRG Carve Out Amounts	CMS-Designed HGB carveouts
HCPCS Carve Out Amounts	CMS-Designed HGB carveouts
Cost Settlements on Outpatient CAH Hospital Claims	HCRIS Full Cost Report Files

Annual Payment Adjustment Data Sources

Exhibit B.2: Annual Payment Adjustment Data Sources

Data Element	Source
National Operating Labor Base Rate	CMS Final Rule IPPS CN Table 1a or 1b (National base rates)
Hospital Specific Wage Index	CMS Final Rule IPPS CN Impact File (FY Wage Index)
National Operating Non-Labor Base Rate	CMS Final Rule IPPS CN Table 1a or 1b (National base rates)
Hospital Specific COLA	CMS Final Rule IPPS CN Impact File (only HI and Alaska hospitals receive this)
Readmission Adjustment Factor	CMS Final Rule IPPS Table 15 - Final Readmission Adjustment Factor
Hospital VBP Adjustment Factor	CMS Final Rule IPPS Table 16B - Final VBP Adjustment Factor
IME Operating Adjustment Factor	CMS Final Rule IPPS CN Impact File (IME Operating Adj Factor)
DSH Operating Adjustment Factor	CMS Final Rule IPPS CN Impact File (Operating Disproportionate Share Adjustment Factor)
UCC Per Claim Amount	CMS Final Rule IPPS CN Impact File (UCC)

Data Element	Source
National Capital Base Rate	CMS Final Rule IPPS CN Table 1d (National base rates)
Capital Wage Index (GAF)	CMS Final Rule IPPS CN Impact File, GAF
Low Volume Adjustment Factor	CMS Final Rule IPPS CN Impact File or if not populated CMS IPPS Supplemental Table 14 (FY18) - lookup from tab '13- Low Vol Adj'
Capital COLA	CMS Final Rule IPPS CN Impact File
IME Capital Adjustment Factor	CMS Final Rule IPPS CN Impact File, IME Adjustment Factor for Capital
DSH Capital Adjustment Factor	CMS Final Rule IPPS CN Impact File, Disproportionate Share Adjustment Factor for Capital
HACRP Adjustment	Hospital-Acquired Condition (HAC) Reduction Program Provider Data Catalog (cms.gov) Hospital-Acquired Condition (HAC) Reduction Program Dataset, lookup from tab '9- HACRP'
Medicare Annual Inpatient Deductible Amount	CMS 20XX Medicare Parts A & B Premiums and Deductibles Fact Sheet
Hospital Case Mix Index	CMS Final Rule IPPS CN Table 2, Col. 2 CMI
Total Number Medicare Bills	CMS Final Rule IPPS CN Impact File, BILLS
OPPS APC Conversion Factor	Calculated from the final CMS OPPS Addendum B Tables
Outpatient Location Specific Wage Index	Same as Wage Index used for IPPS. CMS Final Rule IPPS CN Table 2, Col. 3 Wage Index

Market Shift Adjustment Data Sources

Exhibit B.3: Market Shift Adjustment Data Sources

Data Element	Source
Cases (unique claims/discharges)	Claims data, count of distinct claim IDs
Case Weights	Inpatient: DRG Weights Outpatient: See Appendix F
Case Payments without Sequestrations or Deductions	Claims data. Case Payments = Payment amount / 0.98 (adds back in sequestration/deduction amount)
HGB Hospitals – Names, IDs, Locations	Determined by State and CMMI in pre-implementation phase.

Demographic Adjustment Data Sources

Exhibit B.4: Demographic Adjustment Data Sources

Data Element	Source
HCC Score	CMS-HCC Model Software/ICD-10 Mappings

Social Risk Adjustment Data Sources

Exhibit B.5: Social Risk Adjustment Data Sources

Data Element	Source
Eligible Beneficiary Details and Claim Payments by Block Group	CMS IDR eligibility and claims data
12-digit Federal Information Processing Standard (FIPS) Codes	Datasets for geocoding generated from Census Bureau (TIGER/Line shapefiles)
National CDI Scores	5-Year American Community Survey data, CMS-designed methodology for calculation, standardization, and applying statistical shrinkage

Appendix C: Inpatient Prospective Payment System and Outpatient Prospective Payment System Payment Components

Exhibit C.1: Inpatient Prospective Payment System Fee-for-Service Payment Components and Inclusion in the Baseline Payment Amount

Inpatient Prospective Payment System Fee-For-Service Payment Factor	Application to Inpatient Prospective Payment System Operating and Capital Amount
Operating Base Payment Rate	The national base operating rate, split between labor and non-labor costs, serves as the baseline amount for the operating payment.
Capital Base Payment Rate	The national base capital rate serves as the baseline amount for the capital payment.
Wage Index	The operating base rate labor related operating amount is adjusted by the location-specific Medicare Wage Index.
Geographic Adjustment Factor for Capital (GAF)	The capital base rate is adjusted by the location-specific GAF to reflect location specific labor costs
Cost of Living Adjustment (COLA)	The operating base rate non-labor related amount is adjusted by the location-specific operating cost-of-living adjustment. The capital base rate is adjusted by the location-specific capital cost-of-living adjustment to reflect non-labor capital costs.
DRG Weight	The operating and capital base payment amounts are multiplied by the MS-DRG relative weight. <i>Used in the APA to normalize prices for changes in acuity.</i>
Indirect Medical Education (IME) Adjustment	If applicable, apply a hospital specific operating and capital IME adjustment factor.
DSH Adjustments	If applicable, apply a hospital specific operating and capital DSH adjustment factor.
Low Volume Adjustment	If applicable, apply a hospital specific low volume adjustment factor to the total operating and capital amount.
Uncompensated Care (UCC) Adjustment	If applicable, add a UCC adjustment on a per discharge basis to the operating amount.
Outlier Adjustment	If applicable, apply a hospital specific operating and capital outlier adjustment factor.
New Technology Adjustment	Not Applicable
Hospital Readmissions Reduction Program (HRRP)	If applicable, apply a hospital specific HRRP adjustment factor to the operating amount. The reduction is capped at three percent.
Value-Based Purchasing (VBP) Program	If applicable, apply a hospital specific VBP adjustment factor to the operating amount.
Hospital-Acquired Condition Reduction Program (HACRP)	If applicable, reduce depending on performance overall operating and capital payments by one percent.
Medicare Hospital Inpatient Quality Reporting (IQR)	Pay-for-reporting program for ACHs that impacts operating and capital base rates.

Exhibit C.2: Outpatient Prospective Payment System Fee-For-Service Payment Components and Inclusion in the Baseline Payment Amount

Outpatient Prospective Payment System Fee-For-Service Payment Factor	Application To Outpatient Prospective Payment System Payment Amount
OPPS Conversion Factor	The national base payment amount, prior to adjustments made for wages and the APC relative weight.
Hospital Wage Index	The labor portion of the conversion factor (accounting for 60% of the OPPS conversion factor) is adjusted by the location-specific Medicare Wage Index. The non-labor portion of the conversion factor is <i>not</i> adjusted. <i>Note: The OPPS Conversion Factor and Hospital Wage Index are used to develop the Wage Adjusted APC Conversion Factor (WAACF). This is the primary unit of analysis for the Outpatient APA calculation.</i>
APC Relative Weight	The wage adjusted conversion factor is adjusted by the APC relative weight which is based on the resources required of the service. APC Weight is not incorporated into the APA but is included as the baseline amount.
Sole-Community Hospitals (SCH) Add-On	A payment increase (currently 7.1%) is added for SCHs.
Hold Harmless Payments for Cancer Centers and Children's Hospitals	If applicable, apply adjustment for Cancer Centers and Children's Hospitals
High-Cost Outlier Adjustment	If applicable, apply a hospital specific outlier adjustment factor.
Outpatient Drug Supply	Not Applicable for specific carve outs noted in Appendix D: Payment Exclusions
Outpatient New Technology	Not Applicable
Professional Payment on CAH Hospital Claims	Not Applicable

Appendix D: Payment Exclusions

Exhibit D.1: Payment Exclusions from the Hospital Global Budget

	Adjustment	Background on Payment Types	Hospital Global Budget Exclusion Rationale
Claim payments; included in paid amount on FFS claims	New Technology Adjustment Payments (NTAP)	Technologies eligible for these add-on payments are identified based on the applicable codes from the International Classification of Diseases, Clinical Modification (ICD-10) ²⁸ . Claims submitted with an ICD procedure code that indicates the involvement of a new technology in the treatment of the patient is then eligible for add-on payments.	Excluded: NTAPs are available for a limited time and are, by definition, specific to certain services and are paid separately from the HGB.
	CAH Method II Billing	Typically, CAHs may elect to bill for both facility and professional outpatient services on a hospital claim. This is only permitted if the submitting physician has reassigned their billing rights to the CAH. These payments can be identified based on UB-04 revenue codes in the range of 0960-0989.	Excluded: These amounts for professional services are excluded from the HGB and continue to be paid under established methodologies.
Pass-through payments	Bad Debt	Bad debts are amounts considered to be uncollectible from accounts and notes receivable that were created or acquired in providing services. Acute Care Hospitals are reimbursed for 70 percent of bad debts resulting from Medicare deductible and coinsurance amounts, which are uncollectible from Medicare beneficiaries after a reasonable effort has been made to collect the unpaid amounts. Pass-through payments for bad debt, reported on cost report form S-10, are not included in claims.	Excluded: In Medicare FFS, pass-through payments are made by the MAC outside of the FFS claims processing systems. These payments are excluded from the HGB and continue to be paid under established methodologies.
	DGME	Payments to hospitals for the costs of approved GME programs. The methodology includes a hospital-specific, base-period PRA that is calculated by dividing a hospital's allowable costs of GME for a base period by its number of residents during the base period. Medicare DGME payments are calculated by multiplying the PRA by the weighted number of FTE residents working in all areas of the hospital (and non-hospital sites, when applicable), and the hospital's Medicare share of total inpatient days.	Excluded: In Medicare FFS, pass-through payments are made by the MAC outside of the FFS claims processing systems. These payments are excluded from the HGB and continue to be paid under established methodologies.

²⁸ <https://www.cdc.gov/nchs/icd/icd-10/index.html>.

	Adjustment	Background on Payment Types	Hospital Global Budget Exclusion Rationale
	IME for Medicare Advantage Beneficiaries	When a beneficiary is enrolled in a Medicare Advantage plan and is an inpatient at an approved teaching hospital, the facility receives a percentage add-on payment for each case. Hospitals submit Medicare FFS claims for these beneficiaries to receive payment for IME or DGME and submit claims to the Medicare Advantage plan for the remainder of the services provided.	Excluded: In Medicare FFS, pass-through payments are made by the MAC outside of the FFS claims processing systems. These payments are excluded from the HGB and continue to be paid under established methodologies.
Pass-through payments (cont.)	Nurse and Allied Health Education (NAHE)	Payments to hospitals for the costs of nursing and allied health education activities. Payment for a provider's net cost of nursing and allied health education activities is determined on a reasonable cost basis, subject to certain conditions and limitations.	Excluded: In Medicare FFS, pass-through payments are made by the MAC outside of the FFS claims processing systems. These payments are excluded from the HGB and continue to be paid under established methodologies.
	Organ Acquisition Costs	There are two payment components for organ transplantation. Approved transplant centers are paid a PPS rate based on a MS-DRG for the actual organ transplant. They are also reimbursed for the reasonable and necessary costs associated with acquiring the organ (i.e., organ acquisition costs). Organ acquisition costs for heart, kidney, liver, lung, pancreas, and intestinal/multi-visceral transplantations incurred by approved transplant centers are treated as an adjustment (pass through payment) to the hospital's IPPS payment.	Excluded: In Medicare FFS, pass-through payments are made by the MAC outside of the FFS claims processing systems. These payments are excluded from the HGB and continue to be paid under established methodologies.
Other	Medicare Secondary Payer (MSP)	When another entity is responsible for paying a claim before Medicare.	Excluded: Beneficiaries are only included in the AHEAD Model if Medicare is the primary payer; thus, any payments for services are excluded.

Appendix E: Outpatient Market Shift Weighting Methodology

In addition to the inpatient MSA, the outpatient MSA is designed to adjust for volume changes between hospitals. Net volume changes are neutral; positive market gains awarded to some hospitals are offset by declines at other hospitals. The two main steps of the outpatient market shift are to first assign a service category to the claim and secondly to assign case mix weights to the claim. Weights are used to quantify the case-mix adjusted volume to shift from one hospital to another and used in the calculation to determine the amount of dollars to adjust in the HGB.

APC Background

APCs assign outpatient services that are paid under OPPS. Certain services are excluded from OPPS and are paid under a different methodology (such as the CMS Physician Fee Schedule, CMS National Lab Fee Schedule, ASP Drug, Vaccine Payment Limit, and Allowable Costs for CAHs). CMS develops an index to put these services on the same basis as services paid via APCs, with the exception of ASP/AWP Drugs, which is detailed below. These services are identified by a status indicator in the HCPCS/CPT table as published annually (OPPS Addendum B).

ASP/AWP Drugs Weighting

Part B facility-administered drugs, excluding carved out drugs, are included in HGBs. To assign APC weights, AHEAD creates a scale factor that converts ASP/AWP prices to APC weights as outlined in **Exhibit E.1**. The scale factor represents the average payment made by CMS in dollars per unit of APC weight for outpatient services paid via APC. The CMS OPPS Addendum B (HCPCS/CPT table) provides APC weights for the scale factor calculation.

Exhibit E.1: Scale Factor and ASP/AWP Weight Calculation

Calculation Steps	Calculation
Scale Factor (A)	$\frac{\text{Sum (APC Claim Weights)}}{\text{Sum (APC HOPD Payments)}}$
ASP/AWP Weight (B)	$\text{ASP/AWP Claim Payment} \times \text{Scale Factor}$

In **Exhibit E.2**, claim one is a pneumococcal vaccine injection, claim two is an oral medication given for nausea, and claim three is a 90-minute infusion for patients with Fabry disease. All APC claim weights were divided by all APC Hospital Outpatient Department Payments to yield a scale factor of 0.01. Each claim payment is multiplied by this scale factor to calculate a relative weight. The calculated relative weights reflect the difference in the acquisition and administration costs of these medications as claim two has the lowest relative weight (0.04) while claim three has the highest relative weight (176.6). Multiplying by the constant scale factor (0.01) preserves the differences in payment that are incorporated by CMS into ASP/AWP pricing.

Exhibit E.2: APC Weight Calculation for Part B Facility Administered Drugs

HCPCS	Description	Claim Paid Amount (A)	APC SF (B)	Calculated Relative Weight (A*B)
90677	Pcv20 vaccine im	\$270	0.01	2.7
Q0162	Ondansetron 1 mg	\$3	0.01	0.04
J0180	Injection, agalsidase beta, 1 mg	\$17,669	0.01	176.7

Case Mix Weights

Case weights on Medicare FFS claims or No-Pay Claims are adjusted based on the claim's corresponding revenue discount indicator. **Exhibit E.3** shows the final weight calculation for each revenue discount indicator.

Exhibit E.3: Outpatient Weighted Volume Calculations for Short-Term Acute Care Hospitals

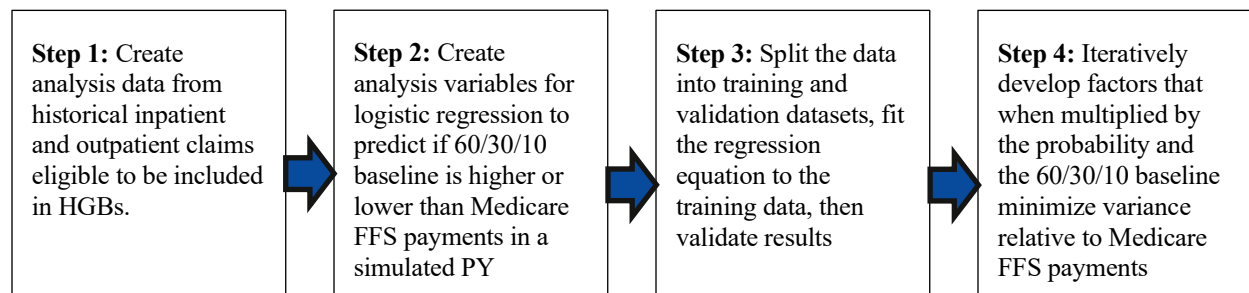
Revenue Discount Indicator	Weighting formula
0	Final weight = APC weight
1	Final weight = APC weight * Service unit quantity
2	Final weight = APC weight * $((1 + .5 * (\text{Service unit quantity} - 1)) / \text{Service unit quantity})$
3	Final weight = APC weight * $(.5 / \text{Service unit quantity})$
4	Final weight = APC weight * $(1.5 / \text{Service unit quantity})$
5	Final weight = APC weight * $(.5 * \text{Service unit quantity})$
6	Final weight = APC weight * $(.25 / \text{Service unit quantity})$
7	Final weight = APC weight * $(.75 / \text{Service unit quantity})$
Other	Final weight = APC weight * $(2 / \text{Service unit quantity})$

Currently CAHs are not paid under the APC methodology but are reimbursed 101 percent of allowable costs. CAH claims data are processed through an APC grouper, which allows for comparable data between Acute Care Hospitals and CAHs.

Appendix F: Baseline Optimization Adjustment Methodology

For PY1 only, after the baseline calculation described in **Equation 1.a and 1.b**, CMS uses logistic regression to adjust the weighted baseline (**Exhibit 8**), and ensure it appropriately represents what Medicare FFS payments to the hospital would have been in the absence of HGB payments. The logistic regression uses historical claims data to estimate a probability that is multiplied by a scaling factor to calculate a Baseline Adjustment Factor. The Baseline Adjustment Factor is multiplied by the Weighted Inpatient Baseline and Weighted Outpatient Baseline to set the baseline for PY1 (**Eq 1.a and Eq. 1.b**). The Baseline Adjustment Factor is calculated using the steps described in **Exhibit F.1** and is explained in more detail in the remainder of this appendix.

Exhibit F.1: Overview of Baseline Adjustment Factor Calculation



Calculating the Baseline Adjustment Factor involves the following steps:

Step 1: Create Analysis Data

- A. Create an analysis dataset of inpatient and outpatient claims for Eligible Hospital Services with dates of service between 2010 to 2023, except 2020 and 2021 (due to COVID-19) for all AHEAD states. These are the Simulated PYs.
- B. For each Simulated PY in Step 1.A, create Simulated 60/30/10 Baselines using the same retrospective time intervals (three years, ending 6 months prior to the PY), weights (60/30/10), and claims (inpatient and outpatient claims for Eligible Hospital Services) as described in the HGB specifications.

For example, the Simulated 60/30/10 baseline for 2018 would include BY1=2015, BY2=2016, and BY3=2017. Each BY is adjusted for price differences using CMS Market Basket Update instead of the Annual Payment Adjustment (APA) due to differences in the Impact File over time that complicate calculation of the APA.

- C. Apply completion factors to BY3 and the last 3 months of BY2.
- D. Remove Critical Access Hospitals (CAHs). This is done to simplify methodology development and because CAHs receive a floor of 101% of cost, eliminating the risk of underpayment relative to Medicare FFS payments.

Exhibit F.4: Overview of Baseline Adjustment Factor Calculation

State	Hospital	PY1	PY 1 - Actual	PY1 - 60/30/10 Estimate	Under FFS	Month 1 incurred & paid / [60/30/10 estimate]	Month 2 incurred & paid / [60/30/10 estimate]	Vector 1
CT	A	2014	\$508.3 M	\$374.2 M	1	12.0	5.0	-11.27
CT	A	2019	\$462.4 M	\$576.5 M	0	11.9	6.5	0.83
CT	A	2016	\$232.3 M	\$258.3 M	0	13.6	5.9	-0.98
CT	B	2023	\$83.3 M	\$84.4 M	0	12.3	6.2	-4.52
CT	C	2016	\$28.0 M	\$31.5 M	0	12.7	6.1	0.50
CT	D	2014	\$31.8 M	\$31.7 M	1	13.8	6.3	-1.62
CT	D	2017	\$36.6 M	\$33.5 M	1	12.5	5.8	-2.80
CT	E	2016	\$74.8 M	\$75.3 M	0	12.7	5.7	-1.77

Step 3: Logistic Regression using PCA Outputs

- Randomly split the data into three datasets by hospital and year (training 50% of observations, validation 35% of observations, test 15% of observations). Note that the test dataset is not used until Step 4.F.
- Using the training dataset, fit a logistic regression equation to predict if the Simulated 60/30/10 Baseline will be higher or lower than Medicare FFS spending in the Simulated PY. The dependent variable is Under FFS (Step 2.A) and the independent variable is Vector 1 or the first eigenvector created by the PCA (Step 2.C).
- Apply the logistic regression estimated in Step 3.B to the validation dataset to ensure similar accuracy, precision, sensitivity and specificity in predictions (**Exhibit 50**). Note that the values in **Exhibit F.5** are subject to change as CMS re-runs the logistic regression prior to the PY.

Exhibit F.5: Logistic Regression Prediction Performance Validation Statistics

Statistic	Regression fit to Training Data	Regression fit to Validation Data
Accuracy	0.7139	0.6801
Precision	0.6772	0.6033
Sensitivity	0.5722	0.5703
Specificity	0.8118	0.7526

Accuracy, precision, sensitivity and specificity are standard diagnostics for evaluating the quality predictions and are calculated from a 2x2 matrix (**Exhibit F.6**). Logistic regression outputs a probability that ranges from 0 to 1. Positive predictions (Yes below) are those with a probability greater than 0.5.

Exhibit F.6: Sample 2x2 Classification Matrix

		Actual Value	
		Yes	No
Predicted Value	Yes	TP= True Positive	FP= False Positive
	No	FN= False Negative	TN= True Negative

Where,

$$\text{Accuracy} = (TP + TN) / (TP + FP + FN + TN)$$

$$\text{Precision} = TP / (TP + FP)$$

$$\text{Sensitivity} = TP / (TP + FN)$$

$$\text{Specificity} = TN / (TN + FP)$$

- D. Center the probability by subtracting 0.5 from the output of the logistic regression, estimated using the training dataset.
- E. Apply the logistic regression from training dataset to the validation dataset and center the probability for use in Step 4F.
- F. Apply the logistic regression from the training dataset to the test dataset and center the probability for final testing in Step 4.G.

Step 4: Develop Increase and Decrease Scaling Factors

- A. Using the training dataset, develop Increase Factors and Decrease Factors specific to each AHEAD state to adjust HGBs up or down. Develop the factor by starting at 0 then increment each factor by 0.02 until 1.5. Repeat steps 4.B to 4.D for each test factor value. This results in 5,776 iterations for each state.
- B. For hospitals with a centered probability ≤ 0 (Step 3.D), test the Increase Factor by calculating an Adjusted Baseline as,
- C. Adjusted Baseline = 60/30/10 baseline * (1 + centered-probability * Increase Factor)
For hospitals with a centered probability > 0 (Step 3.D), test the Decrease Factor by calculating an Adjusted Baseline as,
- D. Adjusted Baseline = 60/30/10 baseline * (1 + centered-probability * Decrease Factor)
Calculate the difference between the Adjusted Baseline and actual Medicare FFS paid amounts during the Simulated PY.

- E. Keep only Increase Factors and Decrease Factors from the iterative testing in steps 4.B to 4.D that a) improve the number of hospitals underpredicted, b) reduce the interquartile range and c) improve the coefficient of variation compared to the original 60/30/10 baseline (without any adjustments) in the training dataset.
- F. Apply the remaining Increase Factors and Decrease Factors to the validation dataset and select the factors for each state that minimize a) the interquartile range and b) coefficient of variation compared to the original 60/30/10 baseline. Increase and Decrease factors from prior testing are found in **Exhibit F.7**. These values are subject to change.

Exhibit F.7: Sample Increase and Decrease Scaling Factors by State

State	Increase Factor	Decrease Factor
CT	0.54	0.18
HI	0.28	0.02
NY	0.58	0.06
RI	0.56	0.18
VT	0.44	0.06

- G. Apply the Increase Factors and Decrease Factors selected in Step 4.F for each state to the test dataset from Step 3.F to calculate final results that compare Adjusted Baselines to the original 60/30/10 baselines.