



VA Recommendations to the
**ASSET AND INFRASTRUCTURE
REVIEW COMMISSION**

**Appendix D: Cost Benefit
Analysis Methodology**

March 2022



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Background

The Department of Veterans Affairs (VA) is committed to optimizing equitable Veteran access to safe and high-quality care and services across the country. To this end, VA has developed recommendations for the modernization and realignment of the Department’s health care facilities that will be considered by the Asset and Infrastructure Review (AIR) Commission. VA’s recommendations will allow the

VA MISSION Act, Section 203(2)(F)

“In making recommendations under this subsection, the Secretary shall consider...the extent and timing of potential costs and savings, including the number of years such costs or savings will be incurred, beginning with the date of completion of the proposed recommendation.”

Department to operate a Veteran-centric high-performing integrated delivery network that retains or improves access to health care services and allows VA to meet the needs of Veterans today and in the future. The recommendations also preserve the Department’s ability to meet our education, research, and emergency preparedness missions.

As part of the process to develop the recommendations to the AIR Commission, VA conducted market assessments in 96 markets across the enterprise. These market assessments included a cost benefit analysis (CBA) to examine the costs and benefits associated with

VA’s recommendations. The CBA addresses the requirements outlined in Section 203 of the VA MISSION Act of 2018 and adheres to the Office of Management and Budget’s (OMB’s) “Circular A-94: Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs.” The CBA was developed by the Chief Strategy Office (CSO) in coordination with the Office of Construction and Facilities Management (CFM), and with data and support from VHA Finance and the Office of Community Care.

This document includes the contents listed below:

- 1) A description of the methodology used to execute the CBA
- 2) Background and assumptions underlying the CBA
- 3) Appendices capturing additional details related to the CBA

Cost Benefit Analysis Methodology

The Cost Benefit Analysis (CBA) reviews, analyzes, and compares the costs and benefits of three distinct courses of action (COA):

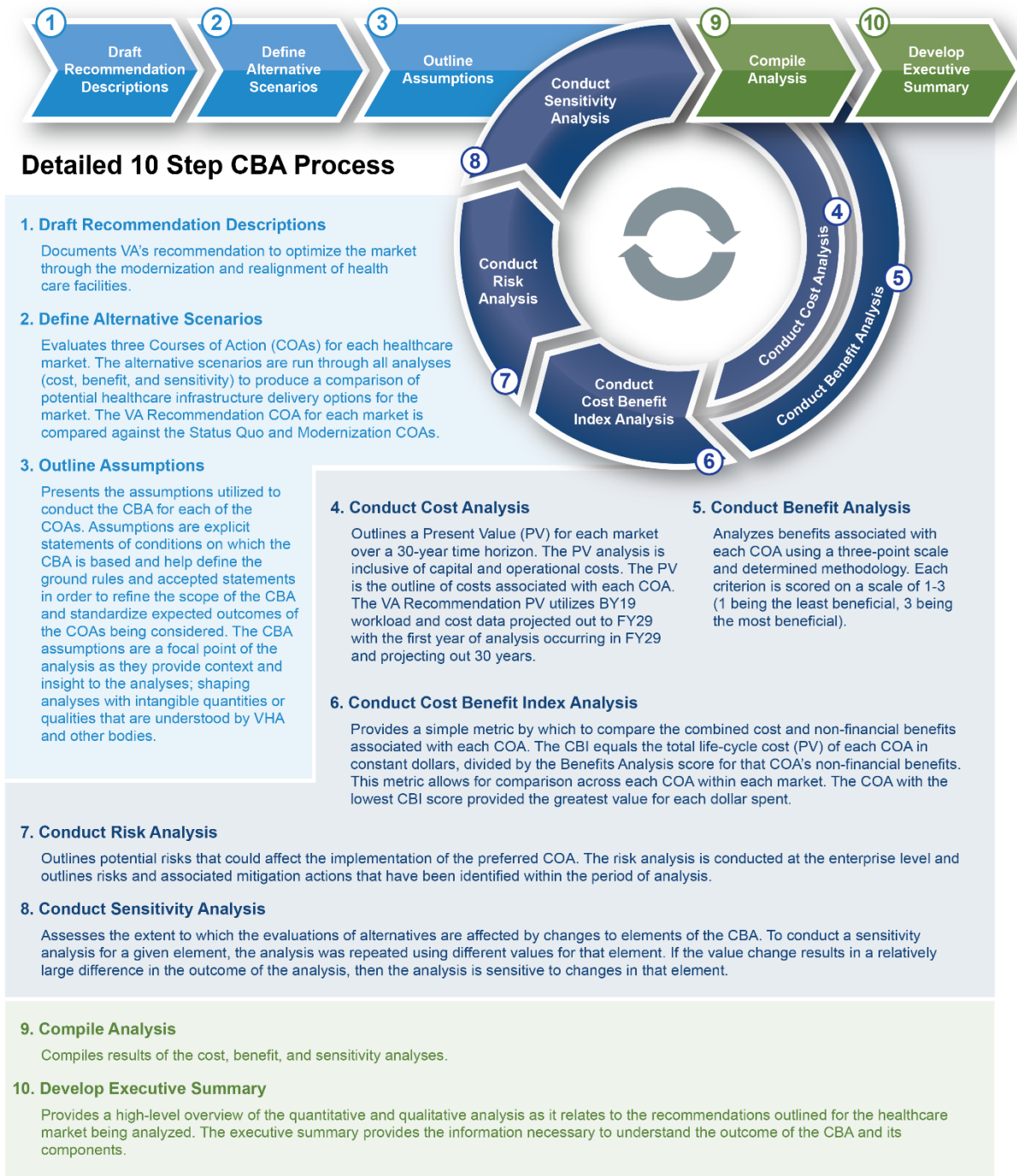
- 1) maintaining VA’s current facilities assuming no changes or additional modernization to current facilities, programs, and infrastructure (COA Name: Status Quo)
- 2) modernizing the current facilities without strategically realigning facilities (COA Name: Modernization)
- 3) strategically realigning and modernizing facilities (COA Name: VA Recommendation to the AIR Commission).

To evaluate these courses of action, VA examined the combined cost and benefits of each COA for each market. The CBA is conducted at the market level, rather than at the facility level, to allow for a holistic assessment of a COA’s impact that considers optimization of the market across all health care facilities. The financial costs were assessed using a Present Value (PV) analysis while the non-financial benefits

were assessed using a Benefits Analysis Scoring process. Ultimately, the CBA results in a Cost-Benefit Index – a simple metric by which to compare the combined cost and non-financial benefits associated with each COA. The COA with the lowest CBI score is the preferred COA.

To execute the CBA, VA conducted a standardized 10-step analysis of the alternative scenarios. The graphic below provides a step-by step overview of the CBA methodology, and the subsequent pages provide additional detail for each step.

Figure 1 - Detailed CBA Process



Step 1 | Draft Recommendation Descriptions

To begin the CBA, VA's recommendation for the strategy to optimize the market through the modernization and realignment of health care facilities is captured. It is extracted directly from the market assessment summary documentation used to brief VA leadership on the recommendations.

Step 2 | Define Alternatives

Three alternative COAs were developed for comparison of cost and benefits in each market. Each market CBA contains a detailed description of three COAs: "Status Quo," "Modernization," and "VA Recommendation to the AIR Commission."

Descriptions of the three courses of action are provided below:

- **COA 1 – Status Quo:** The Status Quo COA is the baseline COA against which other alternative scenarios are compared. The Status Quo COA is representative of the annual capital and operational costs associated with the FY 2019 actual to FY 2029 projected capital and operational workload, assuming no changes or additional modernization to current facilities, programs, and infrastructure.

The VA enterprise-level Status Quo COA includes fully represented capital and operating costs and medical program budgets outlined in Volumes II and IV of the President's Budget.

The Status Quo COA:

- Outlines expenditures and provides baseline supply and demand, access, satisfaction, efficiency, quality, and facilities & sustainability, and mission assumptions
- Represents an easily understood and quantifiable expense baseline, comprised of:
 - Medical Services – expenditures for furnishing inpatient and outpatient care and treatment to beneficiaries of VA and Veterans
 - Medical Community Care – expenditures for furnishing health care to individuals at non-Department facilities
 - Medical Support & Compliance – expenditures in the administration of the medical, hospital, nursing home, domiciliary, construction, supply, and research activities
 - Medical Facilities – expenditures for the maintenance and operation of hospitals, nursing homes, domiciliary facilities, and other necessary facilities of VHA
- Breaks out expenditures by the capital and operational costs
- Includes Non-VA care costs to account for the care paid for by VA via the Community Care Network (CCN)

The cost of maintaining facilities over time, and not modernizing, would be in excess of the current facility level Strategic Capital Investment Plan (SCIP) and Non-Recurring Maintenance (NRM) expenditures. Additionally, the Status Quo COA assesses facilities in their current state; therefore, buildings greater than 50 years old may be well over 80 years old by the presumed

end of the period used for this PV calculation (30 years). To account for the additional cost of aging infrastructure over 30 years, the Status Quo COA incorporates assumptions associated with the cost and upkeep of aging facilities over time.

More specifically, a two-times multiple is assessed to the assumed current Facility Condition Assessment (FCA) retirement per year to account for the actual cost of deficiencies within a parent station. In addition, a 7.97% FCA growth multiple is assumed over each 10-year period. As such, the Status Quo COA accounts for an annual increased burden over the 30-year horizon of the CBA with a final lump sum "Payoff" in year 30 if applicable.

- **COA 2 – Modernization:** This alternative COA represents refurbishment of healthcare-related facilities that are greater than 50 years of age and rebuilding these facilities to meet workload projections, as well as investments to keep newer facilities up to date, compliant, and safe. While the Modernization COA includes the existing operational construct and associated operational expenditures outlined in the Status Quo COA, it differs by including catch-up modernization capital funding followed by the annual sustainment funding needed to maintain the infrastructure and ensure optimal operation and performance.

These costs include replacements, additions, repair, and maintenance costs as appropriate in each market to modernize and right-size clinical services inventory based on future VA projected workload.

The Modernization COA:

- Does not assume relocation of facilities to be more proximate to enrollee population densities
- Breaks out expenditures by the capital and operational costs. These expenditures are inclusive of changes to infrastructure related to health care delivery
- Includes non-VA care costs to account for the continuum of care paid for by VA
- **COA 3 – VA Recommendation to the AIR Commission (VA Recommendation):** This alternative COA is derived from VA's recommendation to the AIR Commission for the market. The market recommendation is focused on developing a high-performing integrated delivery network that balances VHA-delivered care provided in VA-operated medical center campuses and facilities with care delivered through partnerships and Community Care.

The VA Recommendation COA:

- Assumes all associated costs of realignments in a market produced by the VA Recommendation
- Accounts for annual sustainment funding needed to maintain the infrastructure and ensure optimal operation and performance
- Includes capital and operational costs associated with modernizing infrastructure not directly impacted by the VA Recommendation in each market
- Includes Non-VA care costs to account for the care paid for by VA via the Community Care Network (CCN)

A detailed summation of data sources and data descriptions can be found in Appendix A: Alternative Analysis, Data, and Documentation Source Materials.

Step 3 | Outline Assumptions

Assumptions helped define the ground rules and the scope of the CBA. Assumptions were created and vetted at the enterprise level and applied across all analyses. The analyses are explicit about the underlying assumptions that were used to arrive at estimates of future benefits and costs. Every CBA completed integrates the overarching CBA assumptions with other analyses accounting for a degree of variability and uncertainty within the CBA.

The overarching operating assumptions are outlined in Appendix B: Assumptions Matrix and Breakdown.

Step 4 | Conduct Cost Analysis

The cost estimation approach incorporates a combination of capital costs based on projections from VA’s Cost Range Model (CRM) tool (Appendix C: Cost Range Model Use and Methodology) and operational costs based on projections of VA-specific workload and operating expenses derived from historical VA data. All quantifiable estimated costs were discounted to current dollar values through PV calculations.

The capital and operational cost estimates were calculated and combined to ensure a comprehensive projection of the costs associated with each COA. These estimates include one-time and 30-year costs for current relevant factors that contribute to VA’s total cost of providing care. These operational, clinical, administrative, and capital costs of providing care are outlined in a PV analysis for each COA. Therefore, each COA includes a unique and specific PV analysis based on the nature of the COA and the workload outlined within the COA.

PV analysis calculations include distinct cash flows over 30 years and utilize discount rates provided by the Office of Management and Budget (OMB) to account for inflation rates. The OMB real discount rate (social opportunity cost of capital) of 7% was applied to capital expenditures. The annually adjusted nominal discount rate was utilized for all operational expenditures. More information regarding discount rates and projections of operational costs can be found in Appendix D: Legislative Research and Review and Appendix E: Operational Cost Estimation Methodology, respectively.

$$PV_n = \frac{R_0}{(1+i)^0} + \frac{R_1}{(1+i)^1} + \dots + \frac{R_n}{(1+i)^n}$$

Figure 2 - Present Value Equation (R = Cash Flow, i = Discount Rate, n = Year)

A description of how capital and operational costs were derived is provided below.

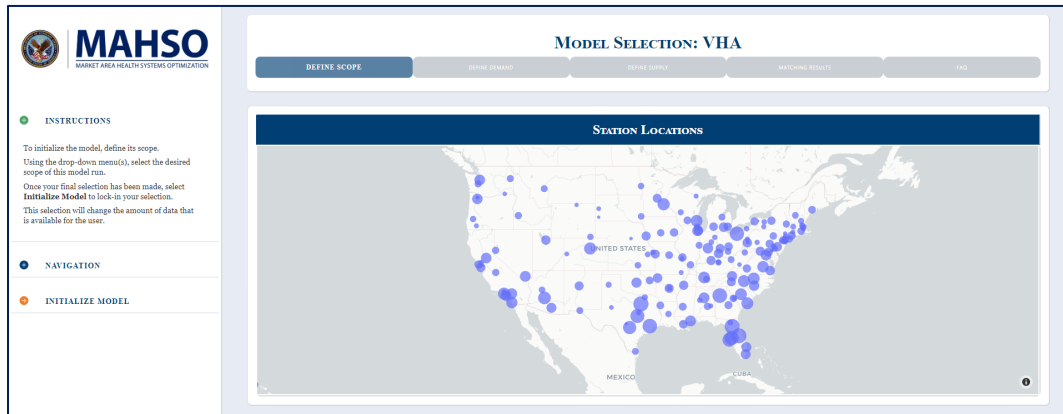
Capital Cost Development

The capital costs associated with each analysis were developed based on utilization of VA’s CRM. Based on inputs, the CRM helped define modernization costs for each of the COAs. Using projected workload, a robust allocation construct, and the application of collaboratively developed sizing assumptions, the model defined ideal space requirements by campus for VHA. The use of the CRM for the PV calculations is outlined in Appendix C: Cost Range Model Use and Methodology.

Capital costs refer to all COA-specific expenditures which require investment from VA to develop and activate a modernization or strategic realignment scenario. The costs cover the renovation of facilities, net new facility construction, leasing of facilities, purchase of land, activation and installation, mothballing, demolition, and leasing of land.

The cost range model plays a central role in each individual analysis as it serves as the primary source of quantification for all potential capital costs associated with workload and facilities. Therefore, the CRM model acts as the main capital cost estimation input of the PV analysis.

Figure 3 - Screenshot from Cost Range Model



Operational Cost Development

A customized workload costing methodology was used for quantifying relevant operational costs incurred by VA to deliver care and purchase care from the community. These operating costs include any non-capital, recurring costs associated with the actions required to support VA's ongoing operations, and all community care costs. Operational costs are derived from actual medical care expenditure data and future cost projections by clinical service line and are used in conjunction with capital cost projections to develop a final total cost for each COA.

Present Value Analysis

The CBA creates a PV estimate of operational and capital costs for each COA.

- **Cost Effectiveness:** Cost effectiveness is measured by comparing the cost variance across COAs in the same market.
- **Cost Variance:** The difference in the cost of the PV from the baseline COA (Status Quo) to the other COAs (Modernization & VA Recommendation). Cost Variance is the method used to calculate the financial benefit of the Modernization and/or VA Recommendation COA.

Table 1 – Sample Cost Analysis Cost Variance by COA

| Cost Variance | Status Quo | Modernization | VA Recommendation |
|---------------------------------------|------------|-------------------|-------------------|
| Capital Cost Variance | N/A | (\$3,975,936,676) | (\$5,473,074,098) |
| Operational Cost Variance | N/A | \$0 | \$129,681,280 |
| Non-VA Care Operational Cost Variance | N/A | \$0 | (\$595,499,268) |
| VA Care Operational Cost Variance | N/A | \$0 | \$725,180,547 |
| Estimated Cost Variance | \$0 | (\$3,975,936,676) | (\$5,343,392,818) |

Note: Cash outflows are illustrated as negative values “(\$X.X)”. Cash inflows or savings are illustrated as positive values “\$X.X”.

Step 5 | Benefits Analysis

A Benefits Analysis was conducted to evaluate the non-financial benefits of each COA. The Benefits Analysis evaluates a COA based on five key benefit domains: Demand & Supply, Access, Quality, Facilities & Sustainability, and Mission, listed below:

- **Demand & Supply:** The CBA considers how a recommendation impacts VA’s capacity to meet Veteran demand for health care services in the future.
- **Access:** The CBA considers how a recommendation will impact the convenience of VA care provided to Veterans in the future.
- **Quality:** The CBA considers how a recommendation will impact the quality of care for Veterans.
- **Facilities & Sustainability:** The CBA considers how a recommendation impacts VA’s ability to offer Veterans a welcoming and safe care environment that meets modern health care standards and ensures sustainability for future generations of Veterans.
- **Mission:** The CBA considers how a recommendation will impact VAs ability to execute its statutory missions of education, research, and emergency preparedness in support of Veterans and the nation.

The Benefits Analysis score is based on an evaluation process that sets standardized measures for each of the domains. Each domain is scored on a scale of one to three (one being the least beneficial and three being the most beneficial). The benefit of each COA is assumed to occur when the initial cost is incurred and therefore is not discounted.

An example of the output from the key benefits process is provided below. Please note the figures below are for example purposes only and do not reflect an opportunity-based analysis. For further detail see Appendix G: Non-Financial Benefits Criteria.

Table 2 - Example of Benefits Scores for each COA

| Key Benefit Domain | Status Quo | Modernization | VA Recommendation |
|-------------------------------|------------|---------------|-------------------|
| Demand and Supply | 2 | 3 | 3 |
| Access | 1 | 3 | 3 |
| Quality | 3 | 3 | 3 |
| Facilities and Sustainability | 1 | 2 | 3 |
| Mission | 3 | 3 | 3 |
| Total Benefit Analysis Score | 10 | 14 | 15 |

Step 6 | Application of the Cost Benefit Index (CBI)

The CBI provides a simple metric by which to compare the combined cost and non-financial benefits associated with each COA. The ratio is used to compare the three COAs under consideration. The index equals the total life-cycle cost (PV) of each COA in constant dollars, divided by the Benefits Analysis score for that COA’s non-financial benefits.

Table 3 - Example of CBI for each COA

| Key Benefit Domain | Status Quo | Modernization | VA Recommendation |
|--------------------------------|--------------------|--------------------|--------------------|
| COA Present Value (\$) | (\$36,192,188,287) | (\$38,178,753,244) | (\$39,080,042,093) |
| Benefit Analysis Score | 10 | 14 | 15 |
| CBI (Normalized in \$Billions) | 3.62 | 2.73 | 2.61 |
| CBI % Changed vs Status Quo | N/A | -24.7% | -28.0% |
| CBI % Change vs Modernization | N/A | N/A | -4.5% |

Step 7 | Risk Analysis

The risk assessment identified relevant risks and considered broad impact to the implementation of the COAs. See Appendix H: Risk Analysis for further detail.

Step 8 | Sensitivity Analysis

The sensitivity analysis measured how uncertainties of one or more inputs can lead to variations in potential output.

Sensitivity analyses vary the benefit scores and the costs to calculate an updated CBI. If various inputs result in relatively large changes in the outcome of the analysis, the CBA can be considered sensitive to a change in particular inputs.

Appendix I: Sensitivity Analysis outlines the specific scenarios considered and applied for each market sensitivity analysis conducted.

Step 9 | Compile Analysis

The results of the PV, Benefits Analysis, Sensitivity Analysis, and CBI were compiled to provide measures of the cost and overall benefit of each COA. The COA with the lowest CBI becomes the recommended COA.

Step 10 | Executive Summary

The executive summary was completed at the end of the CBA and includes the following:

1. PV calculations and values for each COA
2. Benefits Analysis scores for each COA
3. COA CBI scores and recommended COA
4. Sensitivity Analysis for each COA

CBA Principles, Limitations, and Assumptions

Purpose and Limitations of the CBA

The CBAs provide high level insights into the costs and benefits associated with the recommendations at the beginning of the Health Systems planning and execution lifecycle, aiding in the evaluation of the recommendations ahead of their prioritization and execution. The CBAs do not produce a precise estimation of the costs associated with the execution of each market recommendation. Following approval of recommendations by the AIR Commission, analyses will be required to convert the strategy into an actionable implementation plan. These analyses will inform the sequencing of projects, identification of specific project requirements, assessment of feasibility, and determination of acquisition strategies. Based on the output of these analyses, VA will be able to develop cost estimates that will inform VA budget requests.

Overarching CBA Principles

The following serve as guiding principles for the creation and application of the CBA methodology. These guiding principles apply to every COA and each CBA. Moreover, these principles provide a solid foundation for analysis and allow for an accurate and unbiased application of the CBA methodology.

Table 4 - Overarching CBA Principles

| Overarching CBA Principles | |
|-----------------------------|--|
| Title | Detail |
| Level of Application | The CBA methodology has been applied to individual markets. Each COA contains a PV, including capital and operational costs, a Benefits Analysis, and a Cost Benefit Index (CBI) calculation. |
| CBA Comparison | A COA’s CBI score can only be applied to COAs within the same scope of analysis (market). Individual markets analyses are not meant to be compared across markets. The analysis compares COAs within the same market only. |

| Overarching CBA Principles | |
|--|--|
| Costs and Benefits | The costs and benefits identified in the CBA methodology are the highest priority and most material costs and benefits that can be accurately analyzed. |
| Discount Rates | <p>Discount Rate for Capital Costs: The CBA incorporates the 7% real discount rate outlined in OMB Circular A-94.</p> <p>Discount Rate for Operational Costs: The CBA incorporates the nominal discount rates provided in Appendix C: Cost Range Model Use and Methodology. See OMB Circular A-94 for operational cost projections.</p> |
| Present Value Cashflow | Capital and operational expenditures are treated as cash outflows and therefore are negative values with cash inflows treated as positive values; resultant PV values for all COAs ultimately are negative given the limited inflows/revenues associated with the analyses. |
| Data | |
| Data Accuracy | The capital and operational data within the CBAs is representative of the best and most complete data available at the time of compilation. |
| Use of FY 2019 and FY 2029 Data | The CBA uses Base Year (BY) 2019 data projected out to Fiscal Year (FY) 2029 for all workload and cost data (in-house and non-VA) because of its availability, reliability, and obtainability. While all data is based on workload from BY 2019, it will be projected to FY 2029 and straight-line assumptions (maintaining BY 2019 to FY 2029 annual trending) will be used to carry the analysis forward for the intended 30-year time horizon of the CBA. |
| Cost Range Input | When VA Recommendations are properly applied, the output of the cost range model (as a function of the data sources outlined in Appendix C: Cost Range Model Use and Methodology) are accurate representations of the one-time capital expenditures, denoted in year “0” of the model, associated with workload adjustments. Therefore, the Cost Range Model (CRM) is an accurate and viable input into the Cost Benefit Analysis Present Value evaluation. |
| Operational Cost Analysis | When VA Recommendations are properly analyzed using the VA Recommendation Operational Unit Costs the resulting costs are accurate representations of the estimated operational costs associated with the delivery of health care over a 30-year period. |
| Timing | |
| Timing | <p>The CBA scope of analysis is limited to a 30-year time frame and utilizes the projected FY 2029 workload and cost data as the starting point (year “0”) of the CBA.</p> <p>Utilizing FY 2029 projections as the starting year of the analyses aligns the capital cost estimates from the CRM and the clinical workload and cost projections. Moreover, starting the CBA in FY 2029 eliminates the uncertainty regarding the timing of operations surrounding the VA Recommendation. This timing assumes that all staffing, operational, and other changes are made before FY 2029, eliminating potentials for flawed timing of analysis and recognizing the costs associated with the recommendation.</p> |

High-level Assumptions

The strategic decision-making process for evaluating overall costs and benefits for competing COAs is built on underlying assumptions that were developed to establish an objective, quantifiable analysis of costs and benefits. These assumptions identify conditions that must exist or events that must occur for the recommended COAs to be successfully implemented. Given that all assumptions include a degree of uncertainty, these overarching assumptions are not to be confused with the facts outlined within the market assessments.

High-level, universal assumptions underpinning the CBA methodology and more detailed assumptions are provided in Appendix B.

Operational Cost Assumptions

In accordance with the assumptions outlined in Appendix B: Assumptions Matrix and Breakdown, operational costs from the Status Quo COA only change if the VA Recommendation COA is transitioning whole service lines from a parent facility to the community. If whole service lines are not being transitioned to the community, there are no assumed operational cost differences over the 30-year life of healthcare and healthcare operations of this CBA. Similarly, if whole service lines are transferred to other VA markets/facilities, there are no assumed operational cost differences over the 30-year life of healthcare and healthcare operations of the CBA.

Inclusion of In-Progress Project Costs

In-progress costs were included in the cost analysis for the Status Quo and Modernization COAs. Information on congressionally approved major construction and major leases was as of July 2021¹. Given the scale of the present value capital and operational costs, both major construction and major leases are included within its analysis.

The costs of congressionally approved major leases and major construction projects are removed from the cost of the VA Recommendation COA. These costs represent a “normal” expense within the continued operation of the VA healthcare system. The VA Recommendation COA represents a departure from the traditional operations of VA’s healthcare system, yet the VA Recommendation COA modernizes all remaining infrastructure that is not divested under the COA.

¹ Major medical facility construction projects are defined in: 38 U.S.C. § 8104(a) (3) (A), as amended by P.L.115-182, VA Mission Act of 2018, Title V, § 503, as construction projects that have a total expenditure of more than \$20 million; 38 U.S.C. § 8104(a)(3)(B) – medical facility lease with an average annual rent of more than \$1,000,000.

Appendix A: Alternative Analysis, Data, and Documentation Source Materials

The CBA analyses leverages FY 2021 VA Budget data, including data from the Allocation Resource Center (ARC), Enrollment and Forecasting (E&F), and other additional data sources.

Data sources include the following:

Table 5 - CBA Data Sources

| Cost Benefit Analysis Data Sources | | |
|------------------------------------|--|---|
| Cost Range Model | VA Capital Asset Inventory (CAI) Database | Building, floor, leases, land, facility condition assessment, functional, and station inventory. |
| | VHA CSO Enrollment and Forecasting Enrollee Health Care Projection Model (EHCPM) | Budget Year 2019 strategic planning category parent facility utilization projections based on the EHCPM. |
| | CFM VAMC Unit Cost Guide | Provides unit cost per square foot for new construction, renovation, demolition, etc. |
| | VHA Space Calculator | Logic and Assumptions |
| | VHA Veteran Support Service Center's (VSSC) Veteran Administration Site Tracking (VAST) | Provides the location and characteristics of VA facilities and contract providers. |
| Operational Cost Data | Operational Unit Cost Data | <p>The Operational Unit Cost base year 2019 data is provided at the parent facility level for each Health Systems Planning Category level for VA facility and community care and was calculated using expenditure data. The average cost per Global RVU is provided for the following sub-components of unit costs:</p> <ul style="list-style-type: none"> • VA Full Cost (Summation of the Following) <ul style="list-style-type: none"> ○ Direct ○ Fixed Direct ○ VA Specific Direct ○ Indirect ○ Research & Education ○ VA Specific Indirect ○ Overhead • Community care costs <ul style="list-style-type: none"> ○ Claims costs ○ Care Coordination ○ Overhead ○ Delivery Operations |
| | VA Enrollee Health Care Projection Model (EHCPM) Global RVU Workload Projections | Base Year (BY) 2019 Enrollee Health Care Projection Model (EHCPM) FY19 and FY29 projected workload. This workload was provided in Global Relative Value Units (RVUs) for all outpatient services and inpatient services. |

| Cost Benefit Analysis Data Sources | | |
|------------------------------------|--|--|
| | <p>Community Care Network (CCN) Administrative Fee Data</p> | <p>Administrative Per Member Per Month (PMPM) fees paid to CCN contractors, based on CCN pricing contracts from the Region 1-5 CCN contracts.</p> <p>The data was sourced from the 2021 Admin PMPM fee schedule and is inclusive of the contract modifications executed at the time of retainment.</p> |

Application to Alternative Scenarios: The analysis assumes that all alternatives are forecasted and normalized using capital and operational workload data with a base year of FY 2019 and projected ten years to FY 2029. All scenarios are inclusive of relevant capital, medical services, community care, support & compliance, facilitates, and direct care costs.

Appendix B: Assumptions Matrix and Breakdown

Overarching Assumptions

The following assumptions apply to the Cost Benefit Analysis (CBA) methodology and act as guiding principles for the creation and application of the methodology.

Quality, Access, and Veteran Impact Costs and Benefits

The assumptions below align with VA’s general understanding of quality, access, and the impact of services on Veterans so that the execution of the CBA methodology does not decrease VA’s confidence in its ability to provide quality care that is accessible to Veterans. More specifically, these assumptions attempt to set realistic parameters for the care Veterans receive at VA facilities and in the community by aligning with statutory missions and the MISSION Act.

Benefit Assumptions: The quality, access, and Veteran impact benefits assumptions were created by the CBA team in accordance with the MISSION Act Section 203 criteria. More details of the Benefits scoring can be found in Appendix G: Non-Financial Benefits Criteria.

Table 6 - Benefits Assumptions – Quality, Access, and Veteran Impact

| Benefit Assumptions | |
|--|--|
| Topic | Assumptions |
| Modernization and VA Recommendation | |
| Quality | The effect of Modernization and VA Recommendations on quality, while always positive, may have varying degrees of benefit. |
| Staffing | Modernization and VA Recommendation are assumed to have positive effects on staffing. |

Facilities and Infrastructure Costs and Benefits

The assumptions outlined relate to the design, construction, and activation of physical infrastructure. These assumptions are mainly used to guide the cost estimates created by the VA Cost Range Model (CRM) and the benefits outlined in the benefits analysis.

Costs Assumptions: These assumptions include specific dollar amounts and fee estimates associated with facilities and infrastructure costs and can be applied at the enterprise and market level. However, market specific fees or costs can be used in place of the enterprise values where they exist. This flexibility ensures that infrastructure costs can be quantified based on the best available data and accounts for cost differential across markets. These assumptions apply to every Status Quo, Modernization, and VA Recommendation scenario.

Table 7 - Cost Assumptions – Facilities and Infrastructure

| Cost Assumptions | |
|--|--|
| Topic | Assumptions |
| Overarching Capital Assumptions | |
| Design Fee | A 10% design fee (based on build costs) is added to each building. |
| Sustainment Rates | A modernization sustainment rate in line with normal Non-Recurring Maintenance (NRM) values are applied in order to maintain modern infrastructure. |
| Timing | Capital cost will align with operational projections – therefore all costs will be discounted back to BY29 costs. |
| Planned Construction | All planned construction and current construction projects are considered a sunk cost. |
| Modernization Threshold | Modernization assumes that all facilities constructed more than 50 years ago will be built new. |
| New Construction | |
| Timing | Capital costs assume that new build and modernization costs, including activation, are executed in Year 0 of the PV which corresponds to BY29. |
| Leases | All current or future leases are assumed to carry through over the entirety of the 30-year period of the CBA from BY29 to BY59. |
| General Cost Range Model Assumptions | |
| Lease Cost | Pre-Indexed (assumed) cost per square foot of lease space is \$200/NUSF (Net Usable Square Feet) unless changed to account for localized costs. A location index was used to adjust for localized costs. |
| Land Per Acre Cost | Pre-Indexed (assumed) land per-acre cost is \$300,000 unless changed to account for localized costs. A location index was used to adjust for localized costs. |
| Activation | Activation costs vary by CAI department and range from \$26/GSF (Gross Square Feet) to \$1,282 per square foot unless changed by user of the CRM. |
| Parking Costs | Pre-Indexed (assumed) parking lot costs are \$29,536 per space for structured lots and \$4,827 per space for surface lots unless changed by user of the CRM. |
| Parking Ratios | Pre-Indexed (assumed) parking lot sizes dictate 5 spaces per 1,000 GSF for clinical square footage and 3 spaces per 1,000 GSF for non-clinical square footage unless changed by user of the CRM. |
| Renovation (in place) of Common/Lobby, Vacant, and Space Under Construction | The CRM assumes any capable Common/Lobby Space, Vacant Space, and Space Under Construction will be renovated in place at the existing size. |
| VAMC CFM Unit Costs | The model assumes VAMC CFM Unit Costs are in terms of dollars per Departmental Gross Square Feet (DGSF). |
| FY2019 Workload Data | The FY2019-2029 workload data included in this model is based on Milliman data provided at the Strategic Planning Group (SPG)/Strategic Planning |

| Cost Assumptions | |
|--|---|
| | Category (SPCat) level. Any assumptions made to generate this workload data would also apply to these model inputs and outputs. |
| Hospital within a Hospital (HwH) Partnership Assumptions | |
| Facilities | The host site is unlikely to provide best space available, unless the building is new. |
| Infrastructure | Parking and infrastructure will need to be provided to support patient/family visitors and VA employees at new partnership facility. |
| Activation and Installation | VA IT will be responsible for setup, activation, etc.; Systems and IT costs will not be shared with partner/ affiliate. |
| Administration | Administrative costs will be incurred through coordinating and establishing partnerships and therefore market specific contracts will be used to index the specific cost of the administration of contracts. |
| Regulatory | Forming partnerships/affiliations will require time and financial resources to confirm adequate quality and access performance standards, as well as compliance with VA and health care regulatory requirements, at the partner site. These costs are not included in the CBA PV. |
| Care Expansion | |
| Construction/Renovation | All net new care expansion opportunities will increase facility space efficiency and align buildings with intended use. |
| Facility Specific Space | Care expansion opportunities may incorporate facility-specific space and efficiency analysis to determine whether expanded care will be supported through adding space vs. repurposing existing or underutilized space at the facility. |
| Divestment | |
| Land & Property | VA-owned land will require costs to assess utility and value. These costs, as well as costs to make the property ready for disposal, are not included in the CBA PV. |
| Sale of Land | The sale of land is considered a net neutral cost (\$0). |
| Modernization | |
| Facilities | Costs associated with upgrades to facilities and clinic infrastructure are derived from FCA projections and expected to be primarily incurred early in the 10-year projection, with lower recurring costs to be realized over time. |

Benefits Assumptions: The assumptions outlined below apply to all benefits as they relate to the decisions made regarding the design, construction, and activation of physical infrastructure. Unlike costs, these assumptions are a component of the benefit analysis and therefore the Cost Benefit Index. These assumptions apply to every Status Quo, Modernization, and VA Recommendation scenario.

Table 8 - Benefits Assumptions - Facilities and Infrastructure

| Benefit Assumptions | |
|-------------------------|--|
| Topic | Assumptions |
| Medical Care Efficiency | It is assumed that the capital improvements from modernization and therefore the VA Recommendation COA increases overall operational efficiencies within VA points of care (VAMCs, CBOCs, etc.). |

Operations and Clinical Supply Costs and Benefits

The assumptions outlined below apply to all operational and clinical supply cost decisions. Many of these assumptions detail the inferences that can be made from the Allocation Resource Center (ARC) unit that is used in conjunction with the Enrollment and Forecasting (E&F) modeling. These assumptions are not aligned to capital expenditure and relate to the costs associated with direct patient care and related supply costs (overhead and equipment, and other operational expenditure).

Cost Assumptions: The cost assumptions below were compiled based on data and documentation provided and analyzed to produce operational unit costs.

Table 9 – Cost Assumptions - Operations and Clinical Supply

| Cost Assumptions | |
|---|---|
| Topic | Assumptions |
| Inventory and Stock Management | Minimum inventory and stock limit requirements will be met for all COAs. |
| Operational Unit Cost Assumptions | |
| Global Relative Value Units (GRVUs) | The CBA utilizes GRVUs by multiplying workload by the provided unit costs; projected workload can be transferred and costed between VA and the community, while service intensity will not be used to inflate or deflate workload. Community Care and VA GRVUs are converted on a 1-to-1 basis. It is assumed that the volume of GRVUs does not change over time, and GRVU cost varies significantly by service line and VA parent facility. |
| Clinical Per Case Supplies and Equipment Cost | All supplies cost is attributed to outpatient and inpatient med/surg unit cost provided through the Operational Unit Costs. |
| Operational Cost Changes | It is assumed that operational costs will remain consistent across the Status Quo and Modernization COAs. |
| Operational Cost Changes (VA Recommendation) | It is assumed that operational costs will remain consistent for the VA Recommendation COA unless an opportunity calls for an entire service line to be shifted from VA to the community. |
| Hospital within a Hospital (HwH) Partnership Assumptions | |
| Clinical Supply | Terms of who pays for equipment, supplies and maintenance is dependent upon partnership and varies by opportunity. |

| Cost Assumptions | |
|---------------------------------------|---|
| Care Expansion | |
| Inventory and Stock Management | Additional resources for expanded care will be accompanied by higher minimum stock levels and associated procurement costs to support increased workload. |
| Divestment | |
| Personnel | Reductions in personnel costs (e.g., salaries, benefits, pensions) at divested facilities or service lines are not valued as costs savings if those positions/roles are transferred or replaced at other VA locations as part of the VA Recommendation. |
| Modernization | |
| Equipment and Technology | New equipment and medical technology costs will be incurred as part of standard modernization efforts. |

Benefits Assumptions:

Table 10 - Benefit Assumptions - Operations and Clinical Supply

| Benefit Assumptions | |
|---------------------------------|---|
| Topic | Assumptions |
| Divestment or Relocation | |
| Sale of Equipment | All sales of equipment are to be a net neutral financial benefit. Therefore, all sales of equipment will be denoted as a net gain of \$0. |

Community Care Costs and Benefits

The assumptions below outline key operating assumptions of the VHA Office of Community Care (OCC) as it relates to the Community Care Network (CCN) and other purchased care programs. These assumptions were developed based on research and interviews conducted with various offices within VHA OCC.

Cost Assumptions: The community care cost assumptions are included below.

Table 11 - Cost Assumptions - Community Care

| Cost Assumptions | |
|-------------------|---|
| Topic | Assumption |
| Admin PMPM | The Administrative cost for community care will leverage the most recent (March 11, 2021) Administrative Per Member Per Month Fee schedule associated with the Community Care Contracts for all regions. Therefore, fees will be inclusive of all contract modifications of the Community Care Network contract up until the March 11, 2021, schedule and are defined by Third Party Administrator (TPA). |

| Application of Clinical Per Case Costs | |
|--|---|
| Non-VA Care Cost | Community care clinical per unit costs, as defined by Enrollment & Forecasting’s (E&F’s) Operational Unit Costs, are accurate at the parent station and HSPC level. Note: “Non-VA Costs” and “Community Care” are used interchangeably in the CBAs. These costs include both intragovernmental costs (e.g., DOD) and Community Care costs. For the purpose of estimating operational costs, any care that is not provided at VA owned or leased facilities will be considered Community Care costs. |
| Workload Volume | The workload volume for BY19 and projections for BY29 provided by the Enrollment & Forecasting’s (E&Fs) Operational Unit Costs are accurate approximations for the amount of care to be received in the community. |

Benefit Assumptions: The community care benefit assumptions developed are included below:

Table 12 - Benefit Assumptions - Community Care Costs

| Benefit Assumptions | |
|---|--|
| Topic | Assumption |
| Quality | The CBA assumes that the Community Care Network provides timely and high-quality care to Veterans. |
| Capacity | The CBA assumes that adequate capacity exists within Community for all opportunities that increase community care usage. |
| Care Expansion and Supply | |
| Care Coordination | It is assumed that the VA existing care coordination teams are adequately staffed and resourced to facilitate all care that is transitioned from VA to the community. |
| Hospital Within a Hospital (HwH) | All HwH opportunities assume willing and able community partners that have the capacity, desire, and infrastructure to executive potential partnerships. |
| Modernization | |
| Quality/Access | Enhancements to building infrastructure and equipment will improve care quality and efficiency. Furthermore, this will result in no change to VA encounters or shifted care demand from community providers. |

Appendix C: Cost Range Model Use and Methodology

The CRM is a tool to provide capital planners, decision makers, and executives with rough order of magnitude (ROM) estimates for the cost of infrastructure modernization. The tool includes dynamic inputs, allowing for multiple scenarios and the defining of a modernization cost spectrum from the station to the enterprise level.

The model helped define modernization costs for each of the COAs. Using projected workload, a robust allocation construct, and the application of collaboratively developed sizing assumptions, the model defines ideal space requirements by campus for VHA.

Below is an outline of the steps used to apply the CRM, and overview of how the COAs relate to the application of the CRM.

Course of Action Application: While the CRM was run for each COA, the CRM has pre-defined COA scenarios built into the tool for Status-Quo and Modernization. Therefore, once the scope of analysis is defined (market or Hospital Referral Region), the tool outputs a cost and square footage analysis based on the assumptions below.

- **Status Quo:** Status Quo capital cost estimates from the CRM assume facilities can take workload up to their current space allocation, based on the VHA Space Calculator and throughput analysis in the Cost Range Model. Any resulting workload is assumed to be covered by Community Care. The Status Quo COA does not add any facilities not currently planned.
- **Modernization:** Modernization capital cost estimates from the CRM assume non-VAMC facilities can take workload up to their current space allocation, based on the VHA Space Calculator and throughput analysis in the CRM. VAMCs take all projected workload for the parent facility and right-sizing to meet the demand. Any additional in-house facility workload that is assigned to non-VAMC facilities but cannot be accommodated at those facilities would be accommodated by Community Care.
- **VA Recommendation:** VA Recommendation capital cost estimates from the CRM are driven off recommendation-driven reallocation of workload across existing, expanded, relocated, or new VA points of care, as well as to and from the Community Care network.

Cost Range Model Inputs and Outputs:

The table on the following page outlines the various data inputs and outputs of the CRM. The CRM data sources are intended to be updated annually. The outputs are considered static at the time of deployment.

Table 13 - Data Sources used for Cost Range Model

| Data Source & Utilization Overview | |
|---|---|
| Inputs | |
| VA Capital Asset Inventory Database | Building, Floor, Leases, Land, FCA, Functional, Station |
| VHA CSO, VA Enrollee Health Care Projection Model (EHCPM) | Base Year 2019 Strategic Planning Category Parent Facility Utilization Projections (projecting out to FY29) |
| CFM VAMC Unit Cost Guide | Provides unit cost per square foot for new construction, renovation, demolition, etc. |
| VHA Space Calculator | Logic and Assumptions |
| VHA Veteran Support Service Center's (VSSC) Veteran Administration Site Tracking (VAST) - Facility Hierarchy | Provides the location and characteristics of VA facilities and contract providers |
| Outputs | |
| Rough Order of Magnitude | Rough order of magnitude cost estimate for augmenting existing infrastructure to better align with derived scenarios, based on CFM cost guidance |
| Scalable Reporting | Drill-down reporting, allowing for facility, Market, VISN, and VHA views and a total system roll-up to provide talking points regarding costs to modernize VHA infrastructure and align to a more progressive modernization track |

Appendix D: Legislative Research and Review

OMB Circular A-94

OMB’s Circular A-94 provides general guidance for conducting cost benefit and cost effectiveness analysis and provides specific guidance for what discount rates to use when evaluating Federal programs. OMB Circular A-94 specifically outlines four characteristics of a high-quality, reliable cost estimate. Per OMB, a comprehensive CBA is well-documented, comprehensive, accurate, and credible.

OMB Circular A-94: GUIDELINES AND DISCOUNT RATES FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS

For the purposes of this CBA, outlined below are additional takeaways and key language of OMB Circular A-94.

Table 14 - OMB Circular A-94 Key Takeaways

| OMB Circular A-94 Key Takeaways | |
|-----------------------------------|---|
| Takeaway | Description |
| Circular Use | OMB Circular A-94 “does not supersede agency practices which are prescribed by or pursuant to law, Executive Order, or other relevant circulars.” (OMB Circular A-94, pg. 3) Therefore, the MISSION Act and other agency-specific legislation act as guide for the CBA when conflicting information exists. |
| CBA vs. Cost-Effectiveness | Cost Benefit is preferred over Cost-Effectiveness analysis. In case of a CBA, A94 recommends the use of a 7% real discount rate. <i>“Benefit-cost analysis is recommended as the technique to use in a formal economic analysis of government programs or projects. Cost-effectiveness analysis is a less comprehensive technique, but it can be appropriate when the benefits from competing alternatives are the same or where a policy decision has been made that the benefits must be provided.”</i> (OMB Circular A-94, Page 4, General Principles). |
| CBAs and PV | Cost Benefit Analyses are based on Present Value (PV). In order to arrive at an accurate PV of a proposed project or initiative an accurate accounting of proposed benefits and costs must be conducted. Elements of a Cost Benefit Analysis include: <ol style="list-style-type: none"> 1. Policy Rationale: Rationale for why VA Recommendation suggestions are being examined should be clearly stated 2. Explicit Assumptions: Analyses should be explicit about the underlying assumptions used to arrive at estimates of future benefits and costs 3. Evaluation of Alternatives: Analyses should consider different scales, methods, and levels of government involvement 4. Verification: Retrospective studies of existing programs |

| OMB Circular A-94 Key Takeaways | |
|--|---|
| | <p><i>“Present Value and Related Outcome Measures, the standard criterion for deciding whether a government program can be justified on economic principles is Present Value -- the discounted monetized value of expected net benefits (i.e., benefits minus costs). Present Value is computed by assigning monetary values to benefits and costs, discounting future benefits and costs using an appropriate discount rate and subtracting the total of discounted costs from the total of discounted benefits. Discounting benefits and costs transforms gains and losses occurring in different time periods to a common unit of measurement. Programs with positive Present Value increase social resources and are generally preferred. Programs with negative Present Value should generally be avoided. (Section 8 considers discounting issues in more detail.) Although Present Value is not always computable (and it does not usually reflect effects on income distribution), efforts to measure it can produce useful insights even when the monetary values of some benefits or costs cannot be determined.”</i> (OMB Circular A-94, Page 4, General Principles)</p> |
| Discount Rates | <p>PV reflects time value money; as such, benefits and costs are worth more if they are experienced sooner. All future benefits and costs should be discounted.</p> <p>Base-Case Discount Rate is dependent on the updates to the circular (OMB Circular CY21 Update).</p> <p>Federal Cost Savings and their associated investment cost are discounted at the Treasury rate.</p> <p><i>“Nominal Discount Rates: A forecast of nominal or market interest rates for calendar year 2020 based on the economic assumptions for the 2021 Budget is presented below. These nominal rates are to be used for discounting nominal flows, which are often encountered in lease-purchase analysis.”</i> (OMB Circular CY21 Update)</p> <p><i>“Real Discount Rates: A forecast of real interest rates from which the inflation premium has been removed and based on the economic assumptions from the 2021 Budget is presented below. These real rates are to be used for discounting constant-dollar flows, as is often required in cost-effectiveness analysis.”</i> (OMB Circular CY21 Update)</p> |
| Inflation Rates | <p>The CBA will use the GDP deflator from the current Administration’s economic assumptions.</p> <ul style="list-style-type: none"> • If projects extend beyond 6 years, use 6th year inflation value for analysis |
| Cost Savings, Increases in Revenue, and External Benefits | <p>CBA’s must differentiate between internal government cost savings and increases in revenue/external benefits.</p> <p><i>“Some Federal investments provide ‘internal’ benefits which take the form of increased Federal revenues or decreased Federal costs. An example would be an investment in an energy-efficient building system that reduces Federal operating costs. Unlike the case of a Federally funded highway (which provides ‘external’ benefits to society as a whole), it is appropriate to calculate such a project’s Present Value using a comparable-maturity Treasury rate as a discount rate. The rate used may be either nominal or real, depending on how benefits and costs are measured.”</i> (OMB Circular A-94, Page 10, Internal Government Investments)</p> |

| OMB Circular A-94 Key Takeaways | |
|---------------------------------|---|
| Treatment of Uncertainty | <p>The CBA will evaluate the effects of uncertainty via the sensitivity analysis.</p> <p>Sensitivity Analysis: PV and major assumptions should be tested to determine how sensitive outcomes are to changes in assumptions. Variables considered were:</p> <ul style="list-style-type: none"> ○ Status Quo benefit scores ○ Modernization benefit scores ○ VA capital costs ○ VA operational costs ○ Community care costs |

MISSION ACT

VA MISSION Act of 2018 §203 (E) PROCEDURE FOR MAKING RECOMMENDATIONS:

Section 203 of the VA MISSION Act of 2018 requires a cost benefit analysis to assess the extent to which operating and maintenance costs are reduced through consolidating, co-locating, and reconfiguring space, and through realizing other operational efficiencies, and the extent and timing of potential costs and savings, including the number of years such costs or savings will be incurred, beginning with the date of completion of the proposed recommendation.

VA MISSION Act of 2018 §203

VA MISSION Act of 2018 §203 “(E)The extent to which the operating and maintenance costs are reduced through consolidating, collocating, and reconfiguring space, and through realizing other operational efficiencies.

(F)The extent and timing of potential costs and savings, including the number of years such costs or savings will be incurred, beginning with the date of completion of the proposed recommendation.”

Appendix E: Operational Cost Estimation Methodology

Overview

The CBA team collaborated with the department of Enrollment and Forecasting (E&F), the Allocation Resource Center (ARC), and Managerial Cost Accounting Office (MCAO) to compartmentalize the operational costs associated with medical care delivered by VA and in the community. The E&F, ARC, MCAO, and CSO teams met over the course of multiple months to isolate the necessary cost and workload data, outline potential solutions, and construct a viable cost estimation methodology. From November 2020 through March 2021, these teams met to finalize the cost and workload inputs and determine how to leverage E&F and ARC data in the context of the CBA effort. The work resulted in the creation of the Operational Unit Cost Data, outlined below. This work allows proper cost estimation of the operational costs associated with the COAs.

CBA Application

The CBA team estimated the costs of the COAs by calculating the cost of GRVU workload units associated with each COA. GRVUs are the preferred method of workload allocation and cost estimation because they allow the CBA team to conduct a one-to-one comparison between Community Care (CC) and VA workload.

The costs of Community Care Administrative costs are calculated based on the Community Care Network (CCN) Administrative Per Member Per Month (Admin PMPM) fee schedules for each of the CCN health care regions.

Operational Unit Cost Data

The Office of Enrollment & Forecasting leveraged several tools to develop the base year unit costs for the VA Enrollee Health Care Projection Model (EHCPM) to provide base year 2019-unit cost data for the CBA.

- As part of the EHCPM unit cost development, a methodology was developed to align VA ambulatory cost data, which is reported based on utilization metrics unique to VA, to private sector utilization metrics. The foundation of this methodology is the EHCPM Global RVUs.
- The EHCPM Global RVUs build on the Centers for Medicare & Medicaid Services (CMS) Resource-Based Relative Value Scale (RBRVS). The EHCPM Global RVUS assign RVU values to all utilization and costs associated with providing care, both physician and facility. This process aligns VA facility and community care utilization and cost on a comparable basis. This data was used to incorporate 2019 expenditure data provided with the 2019 utilization data for VA care and community care. The EHCPM expenditure basis used in the EHCPM to project expenditures for the VA budget is not appropriate for this analysis since it includes/excludes costs that are budgeted outside of the EHCPM.

Base year 2019 cost per EHCPM Global RVU was provided for the ambulatory and inpatient Health System Planning Categories (HSPC) by parent facility. Seven subcomponents of unit cost were provided for VA facility care and four for community care (see below).

Table 15 - Cost Categories and Definitions

| | Cost Category | Definition |
|--------|------------------------|---|
| VA | Direct | The medical center specific staff and service expenses, primarily Medical Service costs |
| | Fixed Direct | The costs of direct patient care that do not vary in direct proportion to the volume of patient activity. The word "fixed" does not mean that the costs do not fluctuate, but rather that they do not fluctuate in direct response to workload changes. Examples of a Fixed Direct Cost include: Service and Section Chief supervisory time, program assistant positions, administrative positions, office supplies, travel, training, etc. |
| | VA Special Direct | The cost of items not generally found in the private sector cost basis, such as the cost of residents, the cost of durable medical equipment, and care coordination for telehealth and inpatient dental |
| | Indirect | The administrative and facilities cost to maintain medical care operations (primarily medical support, compliance, and medical facilities costs) |
| | Research and Education | The cost of supporting the education program, especially instructional time. The cost to support a research mission, especially the salary of the principal investigator for VA sponsored research |
| | VA Special Indirect | The cost of items not generally found in the private sector cost basis, such as beneficiary travel, patient travel, homeless Veterans' support, police and fire service |
| | Overhead | National program costs, VACO stepped down costs, and cost of the VISN offices |
| Non-VA | Direct | Direct payments for health care services |
| | Indirect | Care coordination and delivery and operations costs |
| | Overhead | National program costs, VACO stepped down costs, and cost of the VISN offices supporting community care |
| | Administrative PMPM | Administrative Per Member Per Month (PMPM) costs associated with the CCN's Third Party Administrators (TPAs) facilitation of community care |

Source: Allocation Resource Center (ARC) and Managerial Cost Accounting Office (MCAO)

The specific subcomponents of unit cost need to be added together to calculate an appropriate total unit cost for each VA Recommendation.

Ambulatory HSPCs

The following data was provided for the ambulatory HSPCs:

- 2019 cost per EHCPM Global RVU for the versions of unit cost listed above
- Actual 2019 EHCPM Global RVUs
- Parent station number

Notes on ambulatory EHCPM Global RVU use:

- Projected 2029 EHCPM Global RVUs are not available for the ambulatory HSPCs but can be calculated based on the 10-year growth in work RVUs. That is, if work RVUs for a given HSPC at a facility grow by 5 percent, the same growth rate can be applied to the 2019 EHCPM Global RVUs to calculate the projected 2029 EHCPM Global RVUs.
- Dental and home and community-based services – Unit costs for VA facilities and community care is provided at the national level because VA facility cost data for these services vary significantly at the local level.
- The EHCPM was used to calculate a percent change in FY19 Actual to FY29 Projected workload to ensure that Ambulatory workload was projected from FY19 Opportunity Unit Cost workload.

Inpatient HSPCs

The following data was provided for the inpatient HSPCs:

- 2019 cost per EHCPM Global RVU for the versions of unit cost listed above
- Actual 2019 EHCPM Global RVUs
- Projected 2029 EHCPM Global RVUs
- Parent station number

Notes on inpatient EHCPM Global RVU use:

- Community Living Centers and Community Nursing Home services – Unit costs for VA facilities and community care are provided at the national level because VA facility unit cost data for these services vary significantly at the local level.

Community Care Administrative Per Member Per Month Fees

Administrative Per Member Per Month (PMPM) fees are not a unit cost provided by the Operational Unit Costs and are calculated using the Admin PMPM fee schedules for each of the CCN health care regions. The Administrative PMPM fees paid to CCN contractors are based on CCN pricing contracts from the Region 1-5 CCN contracts. The data is sourced from the 2021 Administrative PMPM fee schedule and are inclusive of the contract modifications executed at the time of retainment (March 2021).

The total Administrative PMPM costs are calculated using the number of VA unique Veterans within a given market from the Veteran Service Support Center (VSSC) Patient Cube and multiplying by the PMPM fee associated with that market's tier structure. The Administrative fees are inclusive of health care delivery, dental, and transplants.

Appendix F: Present Value Calculation and Model

All costs and benefits are calculated in Present Value (PV) terms. PV reflects the time value of money based on the premise that dollar amounts decrease in value over time; as such, benefits and costs are worth more if they are experienced sooner. Therefore, all future benefits and costs should be discounted to reflect a total composite value expressed in current dollar values. The PV calculation incorporates nominal rates for operational costs and the OMB Circular A-94 real discount rate for all long-term and/or recurring capital costs.

The CBA PV tool incorporates capital cost estimation inputs from the output of the CRM Model and clinical operational unit costs from the Operational Unit Costs.

Appendix G: Non-Financial Benefits Criteria

A Benefits Analysis was conducted to evaluate the non-financial benefits of each COA. The Benefits Analysis evaluates a COA based on five key benefit domains: Demand & Supply, Access, Quality, Facilities & Sustainability, and Mission. To allow for consistent assessment of the non-financial benefits associated with each COA, VA developed a standardized set of metrics that enabled scoring on a scale of one to three within each domain. The summation of the individual domain scores equals the total benefits score and represents the denominator of the Cost Benefit Index.

An example of the output of the benefits analysis is provided below. Please note the figures below are for example purposes only and do not reflect a recommendation-based analysis.

Table 16 - Example of Benefits Scores for each COA

| Key Benefit Domain | Status Quo | Modernization | VA Recommendation |
|-------------------------------|------------|---------------|-------------------|
| Demand and Supply | 2 | 3 | 3 |
| Access | 1 | 3 | 3 |
| Quality | 3 | 3 | 3 |
| Facilities and Sustainability | 1 | 2 | 3 |
| Mission | 3 | 3 | 3 |
| Total Benefit Analysis Score | 10 | 14 | 15 |

Demand and Supply

Within the Demand and Supply domain, the CBA considers how each COA impacts VA’s ability to meet Veteran demand in the future. Each COA is assessed on two benefit components: (1) the ability to balance demand and supply; (2) the changes to facility placement or service offerings that improve VA’s ability to meet future demand.

A COA receives a score of:

- One (1) when demand and supply are unbalanced, and no changes to facility placement or service offerings are introduced that improve VA’s ability to meet future demand (e.g., relocation or establishment of facilities in areas with greater Veteran demand, expansion of services)
- Two (2) when demand and supply are balanced, and no changes to facility placement or service offerings are introduced that improve VA’s ability to meet future demand
- Three (3) when demand and supply are balanced, and changes that adjust facility placement or service offerings are introduced that improve VA’s ability to meet future demand

Additional information regarding the criteria by which scores are derived is provided below:

- **Ability to Balance Demand and Supply:**

To achieve an adequate balance between demand and supply, COAs must not be over or under supplied as defined by the following criteria across inpatient and outpatient services:

- Inpatient: VA bed supply meets at least 100% and does not exceed 120% of FY29 Veteran in-house demand. The analysis evaluates medical, surgical, mental health, and extended care services.
- Outpatient: VA RVU capacity meets 100% of FY29 in-house Veteran demand in at least 50% of outpatient specialties offered within the market.

Note: VA supply in the Status Quo COA is quantitatively evaluated on the above criteria. It is assumed the Modernization COA scales the capacity of existing facilities up or down to meet the projected future Veteran in-house demand. Like Modernization, it is assumed the VA Recommendation COA scales the capacity of existing and proposed facilities up or down to meet projected future Veteran in-house demand. However, the VA Recommendation COA also accounts for factors that current demand projections do not consider that may shift the future balance of in-house and community workload, such as:

- Areas with unmet Veteran demand may warrant a net new point of care
- Low-census inpatient acute programs may pose risks to quality and training programs, potentially warranting a shift to quality community providers
- Community capacity factors may warrant changes to VA capacity

Because Modernization and VA Recommendation COA are assumed to scale capacity to meet future Veteran in-house demand, they are not quantitatively assessed.

- **Changes that improve VA's ability to meet future demand:**

Changes that improve the alignment of demand and supply include at least one of the following actions:

- Establishing new (not replacement) points of care or services in locations with adequate demand
- Discontinuing a service line with inadequate demand (by facility)
- Upgrading the classification of an existing facility to provide additional services not yet offered at that location

Note: Adequate demand benchmarks are shown below:

- Demand Benchmarks:
 - Inpatient Medicine ADC greater than or equal to 20 ADC
 - Inpatient Surgery cases greater than or equal to 1,600 cases
 - Inpatient Mental Health ADC greater or equal to 8.0 ADC
- Enrollee Benchmarks:
 - Inpatient Acute VAMCs: $\geq 35,000$ overlapping enrollees
 - Inpatient CLC: $\geq 21,000$ overlapping enrollees
 - HCC: $\geq 34,000$ overlapping enrollees
 - MSCBOC: ≥ 4300 non-overlapping enrollees
 - CBOC: ≥ 2500 non-overlapping enrollees

Access

Within the Access domain, the CBA considers how each COA impacts Veteran access to care in the future. Each COA is assessed on one benefit component: change in enrollee proximity to VA-provided primary care, specialty care, and outpatient mental health care.

A COA receives a score of:

- One (1) when access to VA-provided primary care, specialty care, or outpatient mental health care is reduced by 1% or more.
- Two (2) when access to VA-provided primary care, specialty care, and outpatient mental health care is maintained within 1%.
- Three (3) when access to at least one service is increased by 1% or more while access to all other services is maintained within 1%.

Additional information regarding the criteria by which scores are derived is provided below:

- **Enrollee Proximity to VA-provided Care**

The analysis examines where enrollees are expected to live in FY2029 and how close they are to each COA's VA points of care offering primary care, specialty care, and outpatient mental health care. MISSION Act and VA National Planning Strategies drive time standards are used to assess the change in enrollee proximity within each service line, as shown below:

Primary Care and Outpatient Mental Health

- Compares the percentage of FY29 Veteran enrollees within a 30-minute drive time of current VA-provided primary care and outpatient mental health care locations with the percentage of FY29 Veteran enrollees within a 30-minute drive time of each COA's respective future state VA-provided primary and mental health care locations.

Specialty Care:

- Compares the percentage of FY29 Veteran enrollees within a 60-minute drive time of current VA-provided specialty care locations with the percentage of FY29 Veteran enrollees within a 60-minute drive time of each COA's respective future state VA-provided specialty care locations.

Note: the CBA Access domain score is based on enrollee proximity to VA-provided care only rather than the full high-performing integrated delivery network (inclusive of VA, Community Care Network, and non-Community Care Network providers meeting quality criteria). While a COA may have a reduced access score within the CBA, the Section 203 Criteria analysis shows that the VA Recommendation COA maintains or improves access to all service lines in the future high-performing integrated delivery network.

Quality

Within the Quality domain, the CBA considers how each COA impacts the quality of Veteran care in the future. Each COA is assessed based on two benefit components: (1) the ability of the main patient care facilities to support modern healthcare; (2) the ability of demand to support clinical competency.

A COA receives a score of:

- One (1) if any of the main patient care facilities in the market were built before 1970 and any of these facilities support an inpatient acute service line with inadequate demand.
- Two (2) if any of the main patient care facilities in the market were built before 1970 or any of these facilities support an inpatient acute service line with inadequate demand.
- Three (3) if all main patient care facilities in the market were built in or after 1970 and all these facilities support inpatient acute service lines with adequate demand.

Additional information regarding the criteria by which scores are derived is provided below:

- **Ability of Main Patient Care Facilities to Support Modern Healthcare**

After 1970, modern healthcare design principles emerged and new hospitals were built with specific standards (e.g., floor-to-floor heights, corridor widths, columns spacing, and utility infrastructure requirements) to support modern medicine. While some buildings built prior to this era may be in good condition, they are not able to be renovated or modernized to meet modern healthcare standards. As a result, it is assumed that VAMCs built pre-1970 do not provide the optimal infrastructure to support high-quality healthcare delivery.

- **Ability of Demand to Support Clinical Competency**

Clinical skills sustainment requires demand. Without a reasonable volume of patients to ensure repetition and diversity in cases, it is difficult to deliver the highest quality care. As a result, the benefit analysis illustrates the COAs which meet demand adequacy standards based on VA's service line specific National Planning Strategies standards, shown below:

- Inpatient Medicine ADC greater than or equal to 20 ADC
- Inpatient Surgery cases greater than or equal to 1,600 cases
- Inpatient Mental Health ADC greater or equal to 8 ADC

Facilities and Sustainability

Within the Facilities and Sustainability domain, the CBA considers how each COA impacts the sustainability of Veteran care in the future. Each COA is assessed based on two benefit components: (1) the useful life of the VAMC(s); (2) changes that strengthen VA's ability to recruit and retain.

A COA receives a score of:

- One (1) if there are main patient care facilities in the market that have exceeded their useful life (American Hospital Association, 2018), and no changes have been introduced that strengthen VA's ability to recruit and retain providers.
- Two (2) if there are no main patient care facilities that have exceeded their useful life and no changes have been introduced that strengthen VA's ability to recruit and retain providers.
- Three (3) if there are no main patient care facilities that have exceeded their useful life, and the COA includes changes that strengthen VA's ability to recruit and retain providers.

Additional information regarding the criteria by which scores are derived is provided below:

- **Useful Life of the Main Patient Care Facilities**

The American Hospital Association estimates that a hospital's useful life, a measure which predicts the productive period of a typical capital asset before it becomes obsolete or needs replacement, is currently 40 years. As a result, it is assumed that main patient care facilities which exceed their useful life as of FY2029 may not be sustainable over the long-term (next 30 years), based on the following rules:

- If a main patient care facility was built before 1970 it has exceeded its useful life, even if it has undergone major renovation in the last 40 years.
- If a main patient care facility was built after 1970 but is still more than 40 years old (built on or after 1971 and before 1989), it must have undergone major renovation within the last 40 years to not exceed its useful life.
- If a main patient care facility was built in or after 1989, it has not exceeded its useful life.

- **Ability to Strengthen Recruitment and Retention**

Actions that strengthen VA's ability to recruit and retain providers include:

- Establishing or expanding inpatient or outpatient partnerships with Academic Affiliates
- Establishing or expanding inpatient or outpatient partnerships with community providers
- Relocating or building new VA facilities closer to health care hubs based on Hospital Referral Regions

Mission

Within the Mission domain, the CBA considers how each COA impacts VA's ability to support its statutory missions of Education, Research, and Emergency Preparedness in the future. Each COA is assessed on three benefit components: (1) the impact on training programs; (2) the impact on research programs; (3) the impact on emergency preparedness.

A COA's overall score in the Mission domain is determined by the average (unweighted) of its component (e.g., Education, Research, Emergency Preparedness) scores.

- **Impact on Training Programs (Education Mission):**

The impact on training programs, and therefore VA's Education mission, is determined by the following actions:

- Score of 1: COA impacts inpatient acute service lines and thus introduces risk to existing training programs.
- Score of 2: COA does not impact inpatient acute service lines and thus maintains existing training programs.
- Score of 3: COA does not impact inpatient acute service lines and thus maintains existing training programs and creates new outpatient specialty care or inpatient (not replacement) training opportunities.

- **Impact on Primary Receiving Center-Designated Facilities (Emergency Preparedness Mission):**

The impact on Primary Receiving Center-designated facilities, and therefore VA's Emergency Preparedness mission, is determined by the following actions:

- Score of 1: COA reduces the total number of Primary Receiving Center-designated VAMCs
- Score of 2: COA maintains the total number of Primary Receiving Center-designated VAMCs
- Score of 3: COA increases the total number of Primary Receiving Center-designated VAMCs

- **Impact on Research Programs (Research Mission):**

The impact on research programs, and therefore VA's Research mission, is determined by the following actions:

- Score of 1: COA deactivates any research program without a plan for transition
- Score of 2: COA maintains existing research programs on the campus or has a plan to transition programs to another VA point of care
- Score of 3: COA maintains existing research programs on the campus or has a plan to transition programs to another VA point of care and creates new (not replacement) research infrastructure (all point of care facility classifications)

Appendix H: Risk Analysis

Risks are inherent in the implementation of the three COAs across all markets. The Risk Analysis was used to identify relevant risks. These risks impact markets to varying degrees and a detailed risk analysis may be required at the time of implementation as VA moves from strategy to execution.

Risk types and overarching CBA Risks include the following:

Table 17 - Risk Types

| Risk Type | Example |
|--|--|
| Business/Programmatic Risk: Risks that affect the program viability and budget | Potential misalignment of projected Veteran demand, capital costs, operational costs, etc. |
| Operational Risk: Risks affecting the ability to perform the mission | Major legislation changes (e.g., drive-time standards, CCN accessibility) |
| Process Risk: Risks inherent in newly established process that could cause failure to meet the anticipated performance or standards | New operating models such as hospital within a hospital |
| Technical Risk: Risks associated with failing to develop or implement the technology necessary to institute process change or technologies that may render a COA or opportunity useless | Lack of access to key enabling technologies |
| Schedule Risk: Risks associated with time allocated for performing the defined tasks. These include the effects of programmatic schedule decisions, the inherent errors in schedule estimating, and external physical constraints | Risk of a 30-year time frame for estimating costs, construction duration, etc. |
| Organizational Risk: Risks associated with difficulties in implementing a change within an organization | Staffing consideration, public private partnerships, academic affiliates, hospital within a hospital, etc. |

Table 18 - Overarching CBA Risks

| Risk | Description |
|----------------------------------|---|
| Network Adequacy | Potential risk of the Community Care Network (CCN) not being able to absorb the VA Recommendation demand or excess demand outlined in the Status Quo and Modernization COAs |
| Staffing Concerns | Potential that adequate staffing assumptions are not met |
| Major Legislative Changes | Major legislative changes impacting healthcare delivery in the United States |

| Risk | Description |
|------------------------------|--|
| Construction Capacity | Potential risk that sufficient construction capacity does not exist to build VA hospitals in proposed timeline |
| Demand Changes | Unforeseen legislative expansions of eligibility, new service-connected conditions, and other externalities may lead to an increase in the eligible Veteran population |
| Pandemic Risk | The lasting impacts from the Coronavirus (COVID-19) Pandemic may not be accurately reflected in the data used for the CBA, resulting in construction assumptions, costs, and other externalities that are not reflected in the current analysis. |
| Community Partnership | Formal discussions with Academic Affiliates need to occur. Therefore, the business case for each partnership requires further due diligence to assess partnership development |

Appendix I: Sensitivity Analysis

A sensitivity analysis is the final step of the CBA and is used to allow measurement of how uncertainties of one or more input variables can lead to uncertainties of the output. Sensitivity analyses repeat the CBA using different input values and measuring the change in results. If the defined inputs result in changes to the outcome of the analysis, the CBA can be considered sensitive to those changes. Factors that have a strong impact on results deserve more attention than those that have less impact.

The sensitivity analysis allows stakeholders to analyze the realm of possibilities and inform others on how static the alternatives' rankings remain under realistic changes to factors and assumptions.

Below is the full list of the sensitivity analysis scenarios that are standard for each market CBA:

Table 19 - Sensitivity Analysis Scenarios

| Sensitivity Analysis Scenarios |
|--|
| Increase Benefit Scores for Status Quo and Modernization in increments of one up to three points |
| Increase VA Capital Costs in 50% increments from 0% to 300% |
| Increase VA Operational Costs in 50% increments from 0% to 300% |
| Increase Community Care Costs in 50% increments from 0% to 300% |

Appendix J: Definitions

Benefit Cost Analysis: A systematic quantitative method of assessing the desirability of government projects or policies when it is important to take a long view of future effects and a broad view of possible side-effects.

Cost Effectiveness: A systematic quantitative method for comparing the costs of alternative means of achieving the same stream of benefits or a given objective.

Cost Range Model (CRM): The CRM is a tool to provide capital planners, decision makers, and executives with rough order of magnitude (ROM) estimates for the cost of infrastructure modernization. The tool includes dynamic inputs, allowing for multiple scenarios and the defining of a modernization cost spectrum from the station to the enterprise level.

Cost Variance: The difference in cost between the Status Quo COA and the other two COAs (Modernization and VA Recommendation).

Discount Factor: The factor that translates expected benefits or costs in any given future year into present value terms.

Discount Rate: The interest rate used in calculating the present value of expected yearly benefits and costs.

Enterprise Level: Defines the services or actions of/at the entire Veterans Health Administration (VHA) – actions, assumptions, risks, etc. that affect the enterprise level and impact all VAMCs, clinics, points of care, and administrative offices across the nation.

Externality: A cost or benefit that is imposed on a third party that is not related to the initial transaction.

Nominal Interest Rate: An interest rate that is not adjusted to remove the effects of actual or expected inflation. Market interest rates are generally nominal interest rates.

Nominal Values: Economic units measured in terms of purchasing power of the date in question. A nominal value reflects the effects of general price inflation.

Opportunity Cost: The maximum worth of a good or input among possible alternative uses.

Parent Station Level: Defines the services or actions of/at an individual VAMC that is the administrative center of a given geographic area. More specifically, “parent” stations have “child” facilities that occupy the same geographic area and are under the umbrella of the “parent.”

Present Value: The discounted cashflow incurred at a future date.

Real or Constant Dollar Values: Economic units measured in terms of constant purchasing power. A real value is not affected by general price inflation. Real values can be estimated by deflating nominal values with a general price index, such as the implicit deflator for Gross Domestic Product or the Consumer Price Index.

Appendix K: Points of Contact and Subject Matter Experts

Table 20 - Points of Contact and Subject Matter Experts

| Organization | Correlating CBA Expertise |
|---|---|
| VA Office of Construction and Facilities Management | Capital Cost Estimation and Broader CBA Methodology Input |
| VHA Chief Strategy Office | CBA Methodology Input |
| VHA Finance | Clinical Per Case Cost and Cost Assumptions |
| Managerial Cost Accounting Office (MCAO) | Clinical Per Case Cost and Cost Assumptions |
| Allocation Resource Center (ARC) | Clinical Per Case Cost and Cost Assumptions |
| Enrollment and Forecasting | EHCPM and Operational Unit Cost |
| Office of Community Care | Community Care Admin Per Member Per Month Costs |
| Office of Asset Enterprise Management (OAEM) | CBA Methodology Input |