Prepared by:

McKinsey & Company, Inc.

A Product of the CMS Alliance to Modernize Healthcare
Federally Funded Research and Development Center
Centers for Medicare & Medicaid Services (CMS)

Prepared For:
U.S. Department of Veterans Affairs

At the Request of:
Veterans Access, Choice, and Accountability Act of 2014
Section 201: Independent Assessment of the Health Care Delivery Systems and Management Processes of the Department of Veterans Affairs

Assessment K (Facilities)

September 1, 2015

Prepared for CAMH under:
Prime Contract No. HHS-M500-2012-00008I
Prime Task Order No. VA118A14F0373

This document was prepared for authorized distribution only. It has not been approved for public release.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Preface

Congress enacted and President Obama signed into law the Veterans Access, Choice, and Accountability Act of 2014 (Public Law 113-146) ("Veterans Choice Act"), as amended by the Department of Veterans Affairs (VA) Expiring Authorities Act of 2014 (Public Law 113-175), to improve access to timely, high-quality health care for Veterans. Under "Title II – Health Care Administrative Matters," Section 201 calls for an Independent Assessment of 12 areas of VA's health care delivery systems and management processes.

VA engaged the Institute of Medicine of the National Academies to prepare an assessment of access standards and engaged the Centers for Medicare & Medicaid Services (CMS) Alliance to Modernize Healthcare (CAMH)[1] to serve as the program integrator and as primary developer of the remaining 11 Veterans Choice Act independent assessments. CAMH subcontracted with Grant Thornton, McKinsey & Company, and the RAND Corporation to conduct 10 independent assessments as specified in Section 201, with MITRE conducting the 11th assessment. Drawing on the results of the 12 assessments, CAMH also produced the Integrated Report in this volume, which contains key findings and recommendations. CAMH is furnishing the complete set of reports to the Secretary of Veterans Affairs, the Committee on Veterans' Affairs of the Senate, the Committee on Veterans' Affairs of the House of Representatives, and the Commission on Care.

The research addressed in this report was conducted by McKinsey & Company, Inc., under a subcontract with The MITRE Corporation.

[1] The CMS Alliance to Modernize Healthcare (CAMH), sponsored by the Centers for Medicare & Medicaid Services (CMS), is a federally funded research and development center (FFRDC) operated by The MITRE Corporation, a not-for-profit company chartered to work in the public interest. For additional information, see the CMS Alliance to Modernize Healthcare (CAMH) website (http://www.mitre.org/centers/cms-alliances-to-modernize-healthcare/who-we-are/the-camh-difference).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Executive Summary

Scope

Assessment K examined "the process of the Department for carrying out construction and maintenance projects at medical facilities of the Department and the medical facility leasing program of the Department." Specifically, the team was required to (i) review the processes for identifying and designing proposals for leases and capital projects, (ii) assess the process for determining the necessity and size of a lease or capital project, (iii) assess the processes and project management of the design, construction, leasing, and activation of medical facilities, and (iv) assess the medical facility-leasing program of the department. The Assessment K team also considered two additional areas that are critical to addressing VHA's facility needs, facility management and the long term capital funding needs of VHA.

Findings

We have found that VHA is expected to face accelerating and likely unfunded capital requirements driven by maintenance to aging infrastructure, projected workload needs to serve the Veteran population, and inefficient capital management. Moreover, we observed that VA performance in capital management, design and construction, leasing, and facilities management is on par with public sector performance in most cases, yet well below private sector performance, particularly in the cost to deliver major construction projects. Consistently deploying world class practices in capital management has the potential to improve performance significantly and address some of the capital constraints VA faces, but would require a further overhaul of VA's capital program and supporting organization. However, even if VA is able to meet the significant challenge of achieving best practice performance in capital management, VA would still likely experience a significant capital funding gap that will require strategic changes in operations and additional funding to close the gap.

The capital requirement for VHA to maintain facilities and meet projected growth needs over the next decade is two to three times higher than anticipated funding levels, and the gap between capital need and resources could continue to widen.

VA has identified more than $51 billion in total capital needs over the next 10 years through its capital planning methodology.[2] These requests cover current ten-year projections; however, new projects may be added as needs change and could change the total capital requirement. Provided that average funding levels remain consistent over the next 10 years, the $51 billion capital requirement would significantly exceed the anticipated funding level of $16-26 billion.[3]

[2] The $51 billion capital requirement combines $46 billion in projects submitted through the Strategic Capital Investment Plan (SCIP) and $5 billion in anticipated outstanding funding needs for on-going major projects projected in the FY2016 VA Budget Submission. While our team did not independently verify the cost estimates for the 8,038 capital requests that make up the $46 billion requests through SCIP, we did review the process by which these requests are identified and developed. See Section 3.1 and Appendix B.3 for additional detail.

[3] Over the last four years, VA's capital funding budget has ranged from $1.6 billion to $2.6 billion each year, averaging $2 billion.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Multiple factors drive the scale of the capital need. VHA facilities are older buildings, with significant repair needs, and some are poorly suited to emerging models of care. The average VHA building is 50 years old, five times older than the average building age for not-for-profit hospital systems in the United States.[4] While many facilities have been extensively renovated, the renovations themselves have aged, and the condition of buildings shows this strain. Independent assessments of infrastructure and facilities through the VHA Facilities Condition Assessment (FCA) found that VHA facilities average a "C minus" score, meaning that much of the total facilities portfolio is nearing the end of its useful life.[5] More than 70 percent of VHA facilities correction costs result from infrastructure and facilities that are D rated, meaning that they are at the end of their useful life.

Current facilities, whether they have been maintained adequately or not, often do not match current models of care. The overwhelming majority of VHA hospitals were designed when care was focused more heavily around inpatient hospital treatments. Over the past eight years, Veteran inpatient bed days of care have declined nearly ten percent while outpatient clinic workload has increased more than 40 percent.[6] Space for outpatient care is typically housed in converted inpatient spaces or VHA's growing number of clinics. As a result, VHA's capital needs fall into a broad range of categories, including ensuring adequate facility condition, providing sufficient and appropriate space for Veteran care, and upgrading infrastructure. As facilities age further and care continues to shift to the outpatient setting, the size of the capital need could continue to grow.

Shortfalls in overall accountability, role clarity, personal ownership, internal communication, and proactive problem solving approaches limit the ability of VA and VHA to deliver the correct projects consistently on time and on budget. Facilities functions are dispersed through VA, resulting in a lack of accountability for facilities outcomes, a mismatch between planning efforts and funding decisions, and the separation of project execution and facilities management. Additionally, internal VA directives, federal procurement requirements, and stakeholder involvement impact VHA's ability to deliver and operate medical facilities at the level of private sector benchmarks.

Capital is not being consistently allocated to projects that address the greatest areas of Veteran need in the most cost effective and timely manner. Lengthy approval and funding timelines hinder the ability of VHA to meet the identified space requirements to keep up with Veteran demand and invest in facilities updates that align with changing models for care. VA has recently established the Strategic Capital Investment Plan (SCIP), a systematic approach to approve capital projects and allocate funding. However, the process does not yet ensure full

[4] The age of VHA facilities is calculated by taking the year built recorded in the Capital Asset Inventory and weighting it by the gross square footage of each property. 2013 analysis of 139 not-for-profit hospital systems in US, encompassing 1,362 hospitals (Soule & Keller, 2013). See Section 5.2.1.4 for additional detail.

[5] FCA assessments are conducted by independent evaluators at each facility every three years. More than 180,000 individual items are scored across VHA facilities, using a scale of A (like new) to F (critical condition) scale. Average score was calculated using the aggregated reports in VA's Capital Asset Database, accessed March 2015.

[6] Workload reported by VAMCs in the 2015 VSSC Trip Packs, aggregated by VISN.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

alignment with VA strategy, include rigorous business case scrubbing, or incorporate feedback on past project outcomes into the capital program assessment.

VA construction costs are similar to other public agencies in most cases, but double private industry best practice, and VA time-to-complete exceeds both public and private peers. Increased design requirements resulting from resilience, energy, security and community mandates increase the initial cost of projects over the private sector. Frequent design changes driven by users before construction contract award and during construction further increase the costs of projects and contribute to construction delays. Additionally, project teams are designed and staffed to support compliance requirements but these structures have resulted in reduced accountability for project delivery outcomes and a limited ability to develop solutions to manage cost overruns and schedule delays.

The leasing program is not effectively enabling VHA to provide facilities where and when they are required or at a reasonable cost for major leases. Lease timelines preclude VHA from benefitting from the speed and flexibility that leasing typically provides, often taking more than twice as long as private sector benchmarks. The leasing program typically achieves per square foot costs comparable to market prices for small and medium sized facilities, however, for larger build-to-suit facilities which are impacted by the same type of design and construction challenges seen in owned facilities we observed rents clustered at 40 to 50 percent higher than private sector benchmarks.

Facility management costs across VHA exceed those at comparable medical facilities. Facility management costs, including recurring maintenance and environmental services, are on the average two to three times higher than comparable private medical facilities, largely due to in-house management of these services rather than utilization of lower cost external service contracts. Facility management costs and practices are also highly variable across VHA facilities, with little incentive for individual stations to adopt cost effective measures.

Recommendations for consideration

Achieving best practice levels of performance in each of the assessment areas would require an overhaul of VA's capital program and supporting organization. Through our research, we have identified best practices from capital management organizations around the world that could be deployed to improve the total performance of capital programs of the scale and complexity of VA's. The cumulative improvement value of deploying all of these best practices in a single organization could result in savings up to 40 percent.[7] However, even world class capital management organizations do not succeed in deploying all of these best practices consistently across their organizations, which illustrates the scale of the challenge. Shifts in the model of care delivery, lengthy approval processes, organizational health concerns, and strained budgets have combined to make capital management and delivery a formidable task for VA, and even the most ambitious transformation effort at VA may not achieve this total potential. As a result,

[7] "Infrastructure Productivity How to save $1 trillion a year," by McKinsey & Company (January 2013). This report includes more than 400 case examples from around the world. For this assessment, estimated savings have been adjusted to reflect requirements and constraints specific to VA.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

we have estimated the total potential improvement opportunity for VA to be up to 25-35 percent.

Detailed recommendations for improving the capital program can be found in Sections 5 through 9, for each of the deep dives on core assessment areas. These recommendations fall into the following main opportunity areas:

VA should improve project selection and refine its project portfolio. VA should refine the SCIP process to rationalize and prioritize capital requirements by ensuring that space, energy, and condition criteria are reflective of the most critical items that contribute to Veteran care. The SCIP process, initiated four years ago, advanced VA capital project selection by creating a standardized methodology to review and approve projects which did not previously exist, but further steps are needed to improve the approach. These include a careful assessment of standards and a modification of the criteria for project selection. By focusing the criteria and approval processes for capital projects, VA could concentrate capital spending on strategic priorities and accelerate approval timelines. Capital project planning should also incorporate feedback on performance and outcomes from past projects to determine which capital programs respond to Veteran needs in the most cost effective manner possible. This would help enable a vital link between portfolio planning, project execution, and achievement of the desired outcomes in Veteran care.

VA should streamline project delivery across all construction types and leasing. VA should comprehensively address the root causes (for example, specifications, approval processes, project governance structures, team capabilities and composition) currently leading to consistent overruns in cost and schedule for construction projects and lengthy timelines for leases. This begins with modernizing and rationalizing design standards in keeping with current innovations in health care. A clear stage-gate process should be implemented to manage scope and design changes in the planning and design phases of projects and to limit scope and design changes that occur after a project receives funding and during construction. The recently launched Capital Program Requirements Management Process (CPRMP) introduced reviews during the design process to manage scope changes, another positive step which should be further developed and rolled out. To increase ownership and accountability, project delivery teams should be restructured with clear roles and responsibilities, well-defined handoffs, and adequate staffing levels. Additionally, contracting and other supporting entities should be accountable and equipped to support a fast-paced project environment and facilitate the needs of construction projects and leases.

VHA should ensure proposed projects make the most of existing infrastructure. VHA could improve the effectiveness of its infrastructure through incorporating a total cost of ownership assessment approach into design, capital planning, and facility management. This requires evaluating the operational cost implications of design choices and pursuing opportunities to optimize capital and operating costs simultaneously. Space planning programs should regularly evaluate underutilized and vacant space to identify opportunities for increased utilization or to actively divest unusable properties.

In addition to taking steps to address the above recommendations, VHA should consider more transformative options as needed to address the remaining unfunded capital

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

requirement. If VA is able to successfully implement current improvement initiatives, act on the additional recommendations listed above, and demonstrate best practice performance, VA could potentially reduce its total capital need to $33 to $38 billion over the next 10 years. Based on average funding of $16-26 billion over 10 years, an unfunded gap of $7 to 22 billion would still exist. To close this remaining gap, funding would have to increase and VA will need to consider more transformative options. When other institutions have faced similar capital shortfalls, they have considered a range of strategic and business model redesign options in addition to implementing best practices in capital project delivery. This report lays out several strategic approaches for further consideration by VHA, including:

- *Maximize operational efficiency***.** Operating improvements, such as extending operating hours, improving scheduling efficiency, increasing tele-health options, and reducing average length of stay, can provide non-capital solutions to meeting workload needs. The operating recommendations in Assessments E, F, G, and H may contribute to addressing VHA's capital need.
- *Reassess how and where to best serve Veterans***.** When facing similar circumstances to VA, other health care organizations have considered strategic operating changes that result in a realignment in their capital portfolios. This could potentially include geographic realignment, community partnerships, or a shift in service offerings. Assessments B and C may offer some further insights.
- *Explore alternative vehicles for capital delivery***.** Alternative models of providing facilities have proved productive for some organizations. These models include contracting out capital investment, outsourcing facility management, and establishing innovative public-private partnerships.

In summary, VA has taken steps to improve its capital program, but much more is required given the scale of the capital need and the gap between current performance and best practice. Even with the most ambitious expectations for improving the capital program, VA will likely face a major funding gap over the next decade that will require a combination of additional funding and transformative changes to operations in order to ensure that Veterans receive the level and quality of care VA has committed to provide.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Table of Contents

1 Introduction 1

1.1 Purpose 1
1.2 Scope 2
1.3 Terminology 5

2 Methodology 7

2.1 Approach 7
2.2 Data Sources and Analysis 10
2.2.1 External Data Sources 11
2.2.2 Internal VA and VHA Data Sources 11
2.2.3 Survey Data 12
2.2.4 Interviews and Overview of Major Facility Related Organizations 12
2.3 VAMC Site Selection 14
2.4 Construction Site Selection 15

3 Cross-Cutting Findings: Assessing VHA's Capital Need 17

3.1 VA Capital Need and Anticipated Shortfall 17
3.2 Key Findings of VA Observed Performance on Core Assessments 20
3.2.1 Shortfalls in Overall Accountability, Sense of Ownership, and Proactive Problem Solving Approaches Limit the Ability of VA and VHA to Deliver the Correct Projects on Time and on Budget 20
3.2.2 Capital Is not Being Consistently Allocated to Projects That Could Address the Greatest Areas of Veteran Need in the Most Cost-Effective and Timely Manner21
3.2.3 VA Construction Costs Are Similar to Other Public Agencies in Most Cases, but Double Those of Private Industry Best Practice, and VA Time-to-Complete Exceeds Both Public and Private Peers 22
3.2.4 The Leasing Program Is not Effectively Enabling VHA to Provide Facilities Where and When They Are Required or at a Reasonable Cost for Major Leases 23
3.2.5 Facility Management Costs Across VHA Exceed Those at Comparable Medical Facilities 24

4 Recommendations and Implementation Considerations 25

4.1 Opportunities to Increase Capital Efficiency 25
4.1.1 Improve Project Selection and Optimize Infrastructure Portfolio 27
4.1.2 Streamline Project Delivery 29
4.1.3 Make the Most of Existing Infrastructure 31
4.2 Opportunities to Reduce the Capital Gap 31
4.2.1 Maximize Operational Efficiency 32
4.2.2 Reassess How and Where to Best Serve Veterans 33
4.2.3 Explore Alternative Vehicles for Capital Delivery 34
4.3 Holistic Options to Reduce Current VA Capital Need 35
4.4 Individual Lever Prioritization 36

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

4.5 Estimating Scale of Capital Efficiency Transformation 37
4.5.1 Sizing Savings From Capital Efficiency Levers 37
4.6 Strategic Levels of Transformation 39
4.7 Implementation Challenges to Achieve Quantified Impact 39

5 Capital Planning Assessment 43

5.1 Preface 43
5.2 Findings 45
5.2.1 Outcomes 45
5.2.2 Process 55
5.2.3 People 73
5.2.4 Systems 74
5.3 Recommendations for Consideration 77
5.3.1 Reassess Project Thresholds and Authority Levels 77
5.3.2 Refine SCIP Prioritization With Clear Focus on Cost Effectiveness and Strategic Goals 79
5.3.3 Review and Streamline the Planning Processes and Calendars to Minimize Response Time to Identified Veteran Needs 82
5.3.4 Execute all Non-Capital Levers Before Proceeding With a Minor or Major Project 82
5.3.5 Increase Best-Practice Sharing Between Stations and VISNs 82

6 Design and Construction Assessment: Major Projects 83

6.1 Preface 83
6.1.1 Overview of the VA Construction Program 83
6.2 Findings 92
6.2.1 Outcomes 92
6.2.2 Process 98
6.2.3 People 118
6.2.4 Systems 122
6.3 Recommendations for Consideration 125
6.3.1 Ongoing Initiatives 126
6.3.2 Detailed Recommendations for Consideration 126

7 Design and Construction Assessment: Minor Projects and Non-Recurring Maintenance 131

7.1 Preface 131
7.1.1 Overview of the Minor and NRM Construction Programs 131
7.1.2 Numerous Parties Drive the Minor and NRM Projects Process 132
7.2 Findings 133
7.2.1 Minor Construction Program Outcomes 133
7.2.2 Non-Recurring Maintenance Construction Program Outcomes 138
7.2.3 Process 142
7.2.4 People 145
7.2.5 Systems 147

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

7.3 Recommendations for Consideration 149
7.3.1 Enhance Merit-Based Project Scrubbing to Test Scope and Overall Cost and Schedule Prior to Business Case Submission 149
7.3.2 Empower CFM and OCAMES to Effectively Share Know-How, Lessons Learned, and Design Standards 150
7.3.3 Set up Performance Management Systems That Serve as Tools for Fast Paced Decision Making, Early Risk Identification and Mitigation 150
7.3.4 Staff and Train Project Delivery Teams (PDT) According to Minor and NRM Technical Complexity and Ensure Project Delivery Success 150
7.3.5 Transform the Contracting Organization to Align Contract and Change Order Approvals Processes With a Fast-Paced Environment 151

8 Leasing Program Assessment 153

8.1 Preface 153
8.1.1 Overview of VHA's Lease Portfolio 153
8.2 Findings 156
8.2.1 Outcomes 156
8.2.2 Process 161
8.2.3 People 171
8.2.4 Systems 173
8.3 Recommendations for Consideration 174
8.3.1 Recommendations to Accelerate Timelines 175
8.3.2 Recommendations to Address Lease Cost Outcomes and Overall Efficiency of the Leasing Process 176

9 Facility Management Assessment 179

9.1 Preface 179
9.1.1 Overview of VHA's Facility Management Activities 179
9.2 Findings 180
9.2.1 Outcomes 180
9.2.2 Process 185
9.2.3 People 190
9.2.4 Systems 193
9.3 Recommendations for Consideration 195
9.3.1 Allow Facilities to Redirect Facility Management Savings to Discretionary Facilities Investments in Subsequent Years 195
9.3.2 Incorporate a Total Cost of Ownership View Into Design, Capital Planning, and Facility Management 196
9.3.3 Consider Outsourcing More Facility Management Functions 196
9.3.4 Upgrade Facility Management Systems and Ensure Broader Adoption 196
9.3.5 Create Opportunities to Share Best Practices Across Facilities 196
9.3.6 Increase the Transparency and Performance Management of key Human Resource Processes 197
9.3.7 Implement Energy Savings Opportunities That Have Positive net Present Value197

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

9.3.8 Explore Interim Steps to Reduce Reliance on Purchase Cards 197

Appendix A Detailed Methodology A-1

Appendix B Detailed Analysis B-1

Appendix C Bibliography C-1

Appendix D Acronym List D-1

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

List of Figures

Figure 1-1. VA 2015 Budget 3
Figure 2-1. Facilities Function Across VA 14
Figure 2-2. Construction Site Visits 16
Figure 3-1. 10-Year SCIP Action Plan Funding Request 18
Figure 3-2. 10-Year Capital Need 19
Figure 4-1. 10-Year Capital Funding Request 26
Figure 4-2. Facility Condition Assessment Gaps 28
Figure 4-3. Health Care Facilities Construction Costs Benchmark (I of II) 29
Figure 4-4. Health Care Facilities Construction Costs Benchmark (II of II) 31
Figure 4-5. Individual Lever Prioritization 36
Figure 4-6. Potential Capital Reduction Through Efficiency Levers 39
Figure 5-1. Capital Planning Phase Definitions 44
Figure 5-2. Changes in VHA Patient Workload, FY07-FY14 46
Figure 5-3. Outpatient Capacity Mapping Versus Projected Workload Increase 47
Figure 5-4. Inpatient Capacity Mapping Versus Projected Workload Change 48
Figure 5-5. Project Pipeline Correlation with Space Deficit 49
Figure 5-6. Needed and Underutilized Space by Type 50
Figure 5-7. Major Deficiencies Identified in FCA 51
Figure 5-8. Major Drivers of Condition D and FCA Deficiencies 52
Figure 5-9. Correlation Between FCA Costs and Average Building Age 54
Figure 5-10. Overall SCIP Process Details 56
Figure 5-11. SCIP Funding Requested by Year 57
Figure 5-12. SCIP Scoring Criteria Details 59
Figure 5-13. Assessment of Different Parameters Weighting in SCIP 60
Figure 5-14. Features of Best Practice Capital Portfolio Optimization 61
Figure 5-15. Assessment of Funding Likelihood by Program 63
Figure 5-16. Breakdown of Major and Minor Projects by Project Size 64
Figure 5-17. Breakdown of NRM Projects Requested by Project Size 65
Figure 5-18. Correlation on Gaps Addressed and Likelihood of Funding 66
Figure 5-19. Key Steps and Handoffs for NRM Projects 68

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-20. Different Approval and Funding Mechanisms for Projects 69
Figure 5-21. Timeline for Projects Funding and Approvals in NRM 71
Figure 5-22. VERA Allocation and NRM Obligations by VISN 72
Figure 5-23. Best Practices in Capital Planning Design 73
Figure 6-1. Breakdown of VA Capital Program 85
Figure 6-2. Involvement of Different Entities in Major Projects 87
Figure 6-3. Major Ongoing Projects for VHA (at 2016 Request Submission) 88
Figure 6-4. 2016 Major Construction Budget Request by Projects 89
Figure 6-5. Changes in Major Construction Budget Request 90
Figure 6-6. Recent VHA Mega Projects 92
Figure 6-7. Major Construction Costs Performance 93
Figure 6-8. Comparison of Construction Costs Versus Major Public Agencies 94
Figure 6-9. Major Construction Costs Performance 95
Figure 6-10. Comparison of VA Project with Next-Door Public Project 97
Figure 6-11. Comparison of VA Project with Next-Door Public and Private Projects 98
Figure 6-12. VA Construction Cost Drivers Estimates 100
Figure 6-13. Cost Growth for Projects Currently Under Construction 105
Figure 6-14. Cost Growth for Major Projects 106
Figure 6-15. Project Development Phase 108
Figure 6-16. Sample Project Showcasing Cost Growth over Project Lifecycle 109
Figure 6-17. CPRMP Details and Requirements for Compliance Reviews 111
Figure 6-18. Completed Major Projects Performance after Construction Contract Award 112
Figure 6-19. Contract Modification for Hospital Construction 113
Figure 6-20. Contract Modification Process for Major Projects 114
Figure 6-21. Validation of Infrastructure and Equipment Commissioning Phase 116
Figure 6-22. Project Delivery Team for Major Projects 120
Figure 6-23. CFM OHI Outcomes Against Benchmarks 121
Figure 6-24. CFM Prioritization of OHI Practices 122
Figure 6-25. Catalog of Known Tools 124
Figure 6-26. Project Review Board 125
Figure 7-1. Minor Project Performance 133

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 7-2. Minor Project Performance 134
Figure 7-3. Minor Project Cost Overruns by Phase 135
Figure 7-4: Minor Project Performance for Projects Above $5 Million 136
Figure 7-5. Minor Project Performance by VISN 137
Figure 7-6. Breakdown of Minor Projects by Project Size 138
Figure 7-7. NRM Project Performance 139
Figure 7-8. NRM Project Performance by Phase and Size 141
Figure 7-9. NRM Project Performance by VISN 142
Figure 7-10. Involvement of Different Entities in Minor Projects 143
Figure 7-11. Involvement of Difference Entities in NRM Projects 144
Figure 7-12. Timeline for Projects Funding and Approvals in NRM 145
Figure 7-13. Project Delivery Team for Minor and NRM Projects 146
Figure 7-14. Tools Used for Minor and NRM Program 148
Figure 8-1. Lease Portfolio Overview 154
Figure 8-2. Lease Portfolio by Rent and Size 155
Figure 8-3. Lease Portfolio by Geography 156
Figure 8-4. Lease Rate Benchmarking Results 158
Figure 8-5. Major Lease Rate Benchmarking Results 159
Figure 8-6. Major Lease Timelines, VA and Private Sector 160
Figure 8-7. Lease Types 162
Figure 8-8. Process and Pain Points in Phase 1 164
Figure 8-9. Process and Pain Points in Phase 2 165
Figure 8-10. Process and Pain Points in Phase 3 166
Figure 8-11. Lease Termination Dates 171
Figure 8-12. Organizational Entities Responsible for Leasing 172
Figure 8-13. Systems Pertaining to Leasing 174
Figure 9-1. Medical Facilities Obligations 180
Figure 9-2. VHA Stations Have a High Level of Facility Maintenance Obligations Per Square Foot of Space 183
Figure 9-3. Benchmarking Results Suggest VHA Medical Centers Can Significantly Reduce Spending on Recurring Maintenance and Repair 184
Figure 9-4. Trade-offs in Facility Investments 187

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-5. Corrective Maintenance Process 189
Figure 9-6. Facility Management Best Practices 192
Figure 9-7. Work Order Volume Against Facility Size 194
Figure 9-8. Work Order Completion Times 195
Figure A-1. Assessment Tool for Active Construction Site Visits A-7
Figure A-2. Selection Construction Site Visits A-8
Figure A-3. Map of Selected Construction Site Visits A-9
Figure A-4. Select Active Major Construction Projects Assessment A-10
Figure A-5. Breakdown of Total Project Costs A-12
Figure A-6. Adjustment Methodology for Time and Location of Costs A-12
Figure B-1. CFM Outcomes Against OHI Benchmark B-2
Figure B-2. CFM Value Mapping B-3
Figure B-3. Frequency of Operational Discipline Metrics B-4
Figure B-4. CFM Outcomes by Tenure B-5
Figure B-5. Aurora Replacement VAMC Timelines B-8

List of Tables

Table 1-1. Elements of Veterans Access, Choice, and Accountability Act 1
Table 6-1. Comparison of Medical Room Size Guidelines 104
Table A-1. Core Site Selection Representativeness A-4

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

1 Introduction

1.1 Purpose

With the goal of improving access, quality, and effectiveness of health care delivery for Veterans, the Veterans Access, Choice, and Accountability Act of 2014 ("Veterans Choice Act"), Section 201 mandated a forward-looking, independent assessment of current practices and opportunities for improvement. Assessment K of the Veterans Choice Act requires the review of the processes of VA for carrying out construction and maintenance projects at medical facilities and the medical facility-leasing program of the department.

Cross-cutting findings and recommendations for consideration are discussed in Sections 3 and 4 of this assessment. The specific elements of the legislation are discussed in depth in the following sections, as detailed in Table 1-1:

Table 1-1. Elements of Veterans Access, Choice, and Accountability Act

Veterans Choice Act Section 201: Assessment K	Assessment K Section
(i) Review the processes of the Department for identifying and designing proposals for construction and maintenance projects at medical facilities of the Department and leases for medical facilities of the Department.	**"Section 5: Capital Planning Assessment**": The capital planning section of this report addresses how the Department identifies and designs proposals for new capital projects, including leases
(ii) Assess the process through which the Department determines the following: - That a construction or maintenance project or lease is necessary with respect to a medical facility of the department. - The proper size of such medical facility or proposed medical facility with respect to treating Veterans in the catchment area of such medical facility or proposed medical facility.	**"Section 5: Capital Planning Assessment**": The capital planning section of this report reviews the means by which the necessity and size of a facility is evaluated **"Section 6: Design and Construction Assessment for Major Projects"** and **"Section 7: Design and Construction Assessment for Minor and Non-recurring projects"**: the design and construction sections address the means by which plans and designs for new and existing facilities are determined
(iii) Assess the management processes of the Department with respect to the capital management programs of the Department, including the processes relating to the methodology for construction and design of	**"Section 5: Capital Planning Assessment**": The capital planning section of this report reviews the management processes of the capital management programs of the

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Veterans Choice Act Section 201: Assessment K	Assessment K Section
medical facilities to the Department, the management of projects relating to the construction and design of such facilities and the activation of such facilities.	Department **"Section 6: Design and Construction Assessment for Major Projects"** and **"Section 7: Design and Construction Assessment for Minor and Non-recurring projects"**: The design and construction sections of this report address management processes involved in the design and construction of facilities and the activation of facilities
(iv) Assess the medical facility-leasing program of the department.	**"Section 8: Leasing Program Assessment"**: The leasing section of this report reviews the processes behind the medical facility leasing program, including both major and minor leases

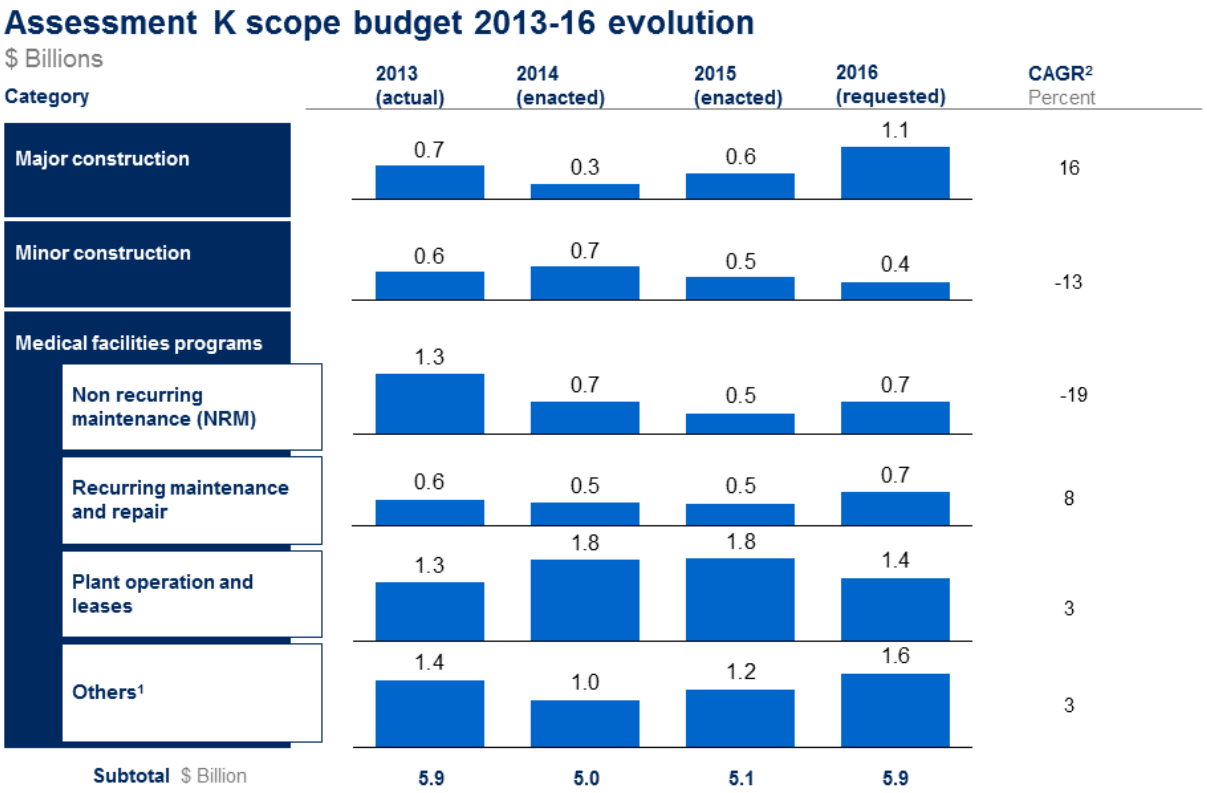
1.2 Scope

This assessment includes each element addressed in the legislation and two additional areas that are critical to addressing VHA's facility needs: facility management and the long-term capital funding needs of VHA.

Assessment K reviews the current processes that VA and VHA use to deliver medical facilities and identifies process improvement options to maximize access and quality of health care for Veterans at optimal cost. The overall capital program accounts for nearly $6 billion annually, approximately 10 percent of VHA's total budget request (see details in Figure 1-1).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 1-1. VA 2015 Budget



1 Includes Engineering and Environmental management services, Engineering Service, Grounds maintenance and fire protection, and Other Facilities Operation Support. Within the medical facilities budget, given the scope of Assessment K, it excludes Transportation Services, Textile Care Processing and Management, and Operating Equipment Maintenance and Repair
2 Compound Annual Growth Rate
SOURCE: VA Budget requests, FY13-FY16

Of the $6 billion medical facilities budget, an average of $2 billion each year is dedicated to major, minor, and non-recurring maintenance (NRM) construction. Nearly $0.5 billion additional covers annual operational lease obligations, paid out of Veterans Affairs Medical Center (VAMC) budgets to sites of care approved through VHA. The remaining $3.5 billion budget covers recurring maintenance, plant operations, and other facility management categories from VAMC operating budgets.

We have structured the assessment to focus on four main areas: capital planning, design and construction, leasing, and facility management:

Capital planning assessment: Review VHA processes for planning and budgeting, identifying best practices and potential levers to improve capital allocation to address Veteran needs. Planning efforts are conducted independently by stations (i.e., the administrative structure of a medical center and associated clinics under the same leadership) and Veterans Integrated Service Networks (VISN), supplemented by integrated planning efforts between VHA, Veterans Benefit Administration (VBA), and the National Cemetery Administration (NCA), facilitated by VA's Office of Construction and Facilities Management (CFM), and consolidated with a planning tool managed by VA's Office of Asset Enterprise Management (OAEM).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Design and construction assessment: Understand VA processes for design and construction of medical facilities and identify best practices and potential levers to prevent project overruns while ensuring required quality. Analyze outcomes and processes across all three construction programs:

- **Major construction program (9 projects, 51 percent of total[8])**: Projects that address construction, alteration, extension, or improvement of any facility, campus, or integral service, including parking construction and site acquisitions above $10 million. The program primarily includes two informally defined types of projects, discussed further in Section 6, both of which are managed by CFM and are specifically appropriated by Congress. These are (1) mega projects, typically replacement medical facilities or new medical facilities construction, and (2) major projects, normally expansions or major area renovations to existing medical centers, structural reinforcing, or supporting structures.
- **Minor Construction program (174 projects[9], 13 percent of total)**: Projects that address construction, alteration, extension, or improvement of any facility, including parking structures, site acquisition, and demolition by replacement, with costs equal to or less than $10 million, managed by local VHA engineering staff.
- **Non-Recurring Maintenance (NRM) program (866 projects, 36 percent of total):** Projects that renovate existing facilities and associated infrastructure with expansion of space not to exceed 1000 square feet. The program primarily includes three types of projects, Infrastructure Improvement, Sustainment, and Green Management, all managed by local VHA engineering staff.

Leasing assessment: Understand VA processes on facilities leasing and identify best practices and potential levers to maximize lease process agility and competitiveness. VA manages leasing through two main programs:

- **Major Leasing program (63 leases, $154 million annual rent obligations)**: Leases with annual unserviced[10] rent greater than $1 million. These leases are procured centrally through Real Property Services (RPS) in the VA Office of Construction and Facility Management and managed by VHA.
- **Minor Leasing program (1591 leases, $267 million annual rent obligations)**: Leases with annual rent obligations less than $1 million. These leases are managed by the medical centers and the VHA's Office of Procurement and Logistics.

Facility management assessment: Although not explicitly identified in the Veterans Choice Act, the extensive capital investment and interdependence of facilities operations with the capital management, design, construction, and leasing of facilities necessitated that facility management conducted by local VHA stations be included in our assessment. This aspect of the assessment is meant to understand VHA processes for conducting minor preventative and

[8] Total by amount requested in the 2016 VHA capital program of NRM, Minor, and Major construction.

[9] Per 2015 budget; 2016 plan still in progress.

[10] Unserviced rent is the base rent, including real estate taxes, insurance, and any amortized build-out, but excluding operating expenses.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

recurring maintenance of facilities. We identify best practices and potential levers to increase cost monitoring and control and ensure timely completion of activities.

1.3 Terminology

VHA's capital program is overseen and partially executed by offices elsewhere in VA. As such, this report will use "VHA" when referring to offices located under the Under Secretary of Veterans Affairs for Health, and "VA" when referring to or including any other Veterans Affairs office. "Facility" will refer to the physical structure. "Station" will be used to refer to the administrative structure of a medical center and associated clinics under the same leadership, as currently defined by VHA. "Station leadership" refers to senior leadership, including: Director, Associate Director, Chief of Staff, Assistant Director for Patient Care Services, and Assistant Director for Operations, as well as the senior facilities leadership, including the Chief Engineer and Facility planner.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

2 Methodology

2.1 Approach

To address the mandate of the Veterans Choice Act, we have taken the following approach to develop a holistic view of VHA current needs, performance, main challenges, and areas for improvement.

- **Understand the current VHA capital need:** Leverage existing VA databases to evaluate capital need over the next ten years for VHA, holding constant their current planning assumptions, portfolio of assets, and operating model.
- **Assess performance of VA facilities program:** Evaluate how VA plans, builds, leases, maintains and operates medical facilities by assessing (i) outcomes, (ii) processes, (iii) people, and (iv) systems in each of the core assessment areas.
- **Identify and propose capital efficiency levers to reduce capital need:** Within the current operating model, understand the potential efficiency levers to reduce current capital need by optimizing project portfolio and improving project delivery.
- **Review potential strategic options to fully close the funding gap:** Explore strategies similar organizations have used when facing capital shortfalls. Include a range of strategic options which go beyond efficiency gains within the current system and could help close current VA capital funding gap.

In assessing the core areas of the VA facilities program (capital planning, design and construction, leasing, and facility management), we considered the following key processes:

Capital Planning Assessment (Section 5):

- **Integrated Planning:** Launched in FY11, the Integrated Planning effort looks holistically at VHA, VBA, and NCA strategic needs over the next ten years with a focus on capital implications. Now being rolled out at the VISN level, this effort is facilitated by planners in CFM and involves heavy input from regional and local leadership as well as outside consultants. Our team interviewed national and regional CFM planning staff and VISN and station planners at the participating pilot locations and reviewed draft documents from the process provided during those interviews.
- **SCIP gap development:** The Strategic Capital Investment Plan (SCIP) is the foundational process for capital planning. This process contains several subcomponents. The first of these is gap development, where the office of Capital Assessment Management Service, located at OAEM, compiles data from across VHA to determine the gap between current status and strategic capital goal. These gaps, updated annually, are reviewed and distributed to local staff for the development of their gap-closing Action Plans. Our team conducted interviews at the national, regional, and local levels on the gaps, with particular focus on national interviews. We reviewed the methodology, metrics, and data sources involved in gap development (e.g., functional surveys, condition assessments), but did not independently evaluate the data incorporated in the gap development process.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Facility Condition Assessments (FCA):** FCAs are a key component of the SCIP gap development process. While our team did not replicate these assessments, we conducted interviews at the national, regional, and local level on the process by which they are developed and the manner in which assessments are used. This included interviews of 25 Chief Engineers across the VAMC site visits regarding how their assessments were conducted. We also reviewed the output of FCAs, as compiled in VA's Capital Asset Inventory Database.
- **Health Care Planning Model (HCPM):** HCPM provides planning tools for station use, including mapping tools, Enrollee Health Care Projection Model inputs, information on affiliated institutions, cost estimates on purchased care, and tools for considering capital and non-capital planning alternatives in advance of SCIP Action Plan development. Our team conducted interviews with the national VHA Office of the ADUSH for Policy and Planning, which manages the tool, as well as with facility planners at stations who utilize the tool. We also obtained sample outputs provided by VHA Office of the ADUSH for Policy and Planning, including 82 market reports, the instruction manual for HCPM, databases with enrollment and rurality data, and unit cost data by strategic planning category (SPC).
- **SCIP Action Plan development:** The SCIP Action Plan is compiled by every station to provide a ten-year approach to closing identified gaps. Our team conducted interviews with OAEM, which manages the plan, the Office of Capital Asset Management and Engineering Services (OCAMES), which provides key inputs and feedback into the process, and discussed the development of the plan with capital asset managers and VISN planners across 13 VISNs and engineering and station leadership across 25 VAMCs. Our team reviewed documents and databases provided by OAEM staff, including: SCIP training presentations, SCIP call memos, SCIP directives, Action Plan databases for FY14-FY16, and the space planning and space calculator spreadsheets for FY15-FY17.
- **SCIP business case development:** SCIP business cases are submitted for each project on the Action Plan requested for the first fiscal year following the planning cycle. These business cases are developed at the station level and submitted to OAEM for centralized review. As part of our review of this process, our team utilized the SCIP business case databases for FY14-FY16, the Cost Effective Analysis (CEA) template, CEA factors list, the cost estimating guides developed by CFM, and interviews with national, regional, and local staff involved in the review or development of business cases.
- **SCIP scoring:** Submitted business cases are reviewed and scored by the SCIP Board and associated panels in order to develop a prioritized list of projects for funding. To review this process, we conducted interviews at OAEM and CFM on the scoring process and regional and local interviews regarding the output of the scoring process. Our team also reviewed the SCIP scoring guides for FY14-16 and the scoring outputs for FY13-FY16 as well as internal guidance on strategic SCIP priorities.
- **Allocation of NRM funds:** After SCIP scoring establishes a prioritized list of projects for centralized funding or the allocation of design funding, funding for projects categorized as NRM are allocated at the VISN level. Because this process is decentralized, there is some

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

variation in the processes used. In assessing this process, our team conducted interviews at 13 VISNs and 25 VAMCs and analyzed budget data on the obligation of NRM dollars by VISN and station. Select VAMCs also provided supplementary data on the processes used to allocate NRM dollars, and all site visits locations provided data on in-process NRM projects at their facilities.

Design and Construction Assessment: Major Projects (Section 6):

- **Project Development process:** The project development process spans from the approval of project through the SCIP process to contractor selection. This phase is critical in developing the design of the facility and involves key activities such as the schematic design, design development, development of construction documents, and contractor selection. Our team interviewed CFM Project Managers across the regions who lead the Project Development phase for Major projects. We also interviewed support function providers, such as contracting officers and cost estimating departments, to gain further insights into the process. Finally, we conducted deep dive on select projects, where detailed data during the project development phase was documented.
- **Contract modifications (change order) process:** The contract modification process, typically known in the industry as the change order process, is the procedure to approve changes in project once the construction contract has been signed. To understand the contract modifications process, our team interviewed contracting officers who lead the process. Our team also reviewed internal directives to map the approval thresholds and processes. Finally, our team analyzed the public (Federal Procurement Database System) and private (VA's internal electronic Contract Management System) databases that manage the contract related information throughout the project.
- **Activation process:** The activation process involves activities required to make a facility operational between construction completion and day one of operations. Key activities include functional performance testing of key systems, training of facility operations teams, procurement and installation of medical equipment not included in the construction contract, and creation of a systems manual for use during the maintenance phase of the facility lifecycle. To evaluate the process, our team reviewed the latest Activation Process Guide (February 2015 version) and interviewed facilities personnel, equipment procurement personnel, and contractors at on-going projects.
- **Capital Program Requirements Management Process (CPRMP):** The CPRMP process is a recently implemented process (February 2014) to manage changes in projects at key milestones during project development and construction. The process is critical to managing changes in cost, scope, and schedule as a project evolves from project development to execution and finally to activation. Our team interviewed key personnel at VAMCs and CFM to map the adherence and applicability of the new CPRMP process. The team also compared the process to best practice stage-gate processes in the industry to understand the key differences in the process for managing changes throughout the project lifecycle.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Design and Construction Assessment: Minor Projects and Non-Recurring Maintenance (Section 7):

- **Contractor selection process:** For Minor and NRM projects, the selection of the contractor often overlaps with VA's mission of meeting certain contracting requirements for Small Disabled Veterans Owned Businesses (SDVOB). Our team interviewed contracting officers, key members of the Technical Review Committee and the Contracting Officers, and SDVOB contractors (when available) during construction site visits to assess this process.
- **Project tracking process during construction:** The Minor construction and NRM program is managed within VA's OCAMES office with execution support from VAMCs facilities personnel. The project tracking processes during construction were assessed to understand how projects evolve over time. Key activities in this process included tracking cost and schedule for project development and construction phases.

Leasing Program Assessment (Section 8):

- **Major leasing program**: To assess the major leasing program outcomes, we conducted a detailed benchmarking of major lease rental rates, retained an independent expert real estate broker who compared the terms of VA's major lease contracts against typical lease terms of comparable properties, and conducted a detailed analysis and benchmarking of the time taken to execute major leases. We then conducted a range of interviews, visits, and analyses of available data to evaluate how the people, processes, and systems of VA's major leasing program could be changed to improve the program outcomes. This included a detailed analysis of the major leasing process, which identified both strengths and pain points of the existing process.
- **Minor leasing program:** We assessed the minor leasing program using a similar approach as the major lease program, described above. This included benchmarking the lease costs, and conducting a detailed analysis of the processes used by all stakeholders (e.g., VAMCs, VISNs, the procurement and contracting organization) to execute minor leases.

An independent Blue Ribbon Panel, consisting of high-level health care industry leaders, was formed to provide expert input throughout the assessment process. The panel members possessed a thorough understanding of health care industry best practices and leading edge practices. The Blue Ribbon Panel provided advice and feedback on the emerging findings and recommendations for the assessment.

Due to the required independence of the Choice Act, Section 201 assessments, findings and recommendations were developed independently. We therefore expect these recommendations would be refined by VHA leadership and the Commission on Care.

2.2 Data Sources and Analysis

We have leveraged analysis of internal and external databases, survey data, and internal and external interviews to develop a comprehensive understanding of the current state of project planning, programming, design, construction, facilities maintenance, and leasing across the VA health system. This included more than 50 site visits and 350 interviews.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

We have also contacted leading health care entities and other federal agencies to understand how VA compares to best practices across public and private sector health systems in the United States and globally.

2.2.1 External Data Sources

External (non-VA) data sources used include:

- **Health care industry references**: Two leading health care systems in the United States covering more than 450 hospitals and medical centers
- **Leasing agencies**: A leading real estate brokerage and advisory firm
- **Federal agencies with large capital programs**: US Army Corps of Engineers (USACE), Naval Facilities Engineering Command (NAVFAC), and General Services Administration (GSA)
- **Industry benchmarks**: RS Means, Medical Construction Data, Design Build Association of America, CoStar lease database, Design Cost Data, 2013 Building Owners and Managers Association survey, and a proprietary health system database
- **Existing Reports**: Government Accountability Office (GAO), VA Office of Inspector General, OMB Circulars, "Infrastructure productivity: How to save $1 trillion a year," (McKinsey & Company, January 2013), Congressional Research Service, VHA: Community-Based Outpatient Clinics, 2010
- **Federal Procurement Database System (FPDS)**: Public database of contracts and award modifications for large capital agencies

2.2.2 Internal VA and VHA Data Sources

In order to complete several of the analyses, we used primary source data from VA taken from both centralized repositories and data collection as part of the site visit process. The source for each analysis is listed with the specific analysis. It should be noted that we did not conduct a review to validate the accuracy of data that were provided, although, where applicable, we did note potential data integrity issues highlighted during site visit interviews. If the requested data could not be provided because VHA personnel reported that the data did not exist, or did not exist in an internal consolidated data tracking system, desired analyses were replaced by interviews and other sources of data.

Some of the internal data sources used include:

- **Project field-based data**: Project Tracking Reports for NRM and Minor program; CFM internal tracking database and reports for Major Project
- **Projects contracting data**: Contract awards and modifications from internal VA contracting database
- **Projects financial data**: Financial obligations data for major projects from financial database
- **Station level data:** Station-level operating budgets; AEMS/MERS facilities management ticket data; Lease contract documents for site visit stations

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Internal planning tools:** Planning tools distributed to Stations, including the Health Care Planning Model (HCPM) and SCIP tools, as well as databases of proposed capital projects; VA Design Guide for Lease Based Outpatient Clinics (2005); Space and Equipment Planning System (SEPS) planning tool
- **Internal databases:** Capital Asset Inventory, Facility Condition Assessments, Federal Real Property Profile submission (2014)
- **Internal training handbooks and publications**: Latest available internal publications for processes, roles, and responsibilities (for example, Resident Engineer Handbook); VA Directives and Policy Handbooks (numbers 7815, 7816)
- **VA-sponsored efforts:** VA-funded studies such as the U.S. Department of Veterans Affairs Construction Cost Benchmarking Study, 2009

2.2.3 Survey Data

In addition to the Organizational Health Index (OHI) survey conducted by Assessment L (Leadership), this team launched an identical OHI survey for personnel in the Office of Construction and Facilities Management (CFM). The OHI survey was used to assess organizational practices at VHA in order to evaluate how they contribute to the organization's health and performance. The OHI is a rigorously validated tool that is independent and proprietary to McKinsey. The survey measures nine organizational outcomes and the 37 management practices that lead to those outcomes. The OHI survey is not an employee satisfaction survey. As of March 2015, the survey has been used with over 1000 organizations, 18 of which are construction organizations and 27 of which are public sector organizations. These organizations provide the benchmarks used during the course of the Assessment K analysis.

2.2.4 Interviews and Overview of Major Facility Related Organizations

Assessment K has conducted over 50 site visits and over 350 interviews including both internal and external entities:

- Internal VA entities: 25 VA medical centers, 13 VISNs, six active major construction sites, CFM headquarters, three CFM regional offices, the Office of Capital Asset Management and Engineering Services, the Office of Asset Enterprise Management, and The Office of Operations – Real Property Service.
- External entities: Two leading health care systems in North America, two federal agencies with large capital programs including medical facilities, federal agencies administrating leases, facility management organizations, and leading contractors with significant experience in medical facility construction.

Our assessment conducted interviews across VA and VHA in order to map the organizations that have any role in the delivery of medical facilities (see Figure 2-1) and develop an understanding of their specific roles and input to the process. Responsibility for delivery of the medical facilities program including capital planning, design and construction, facilities,

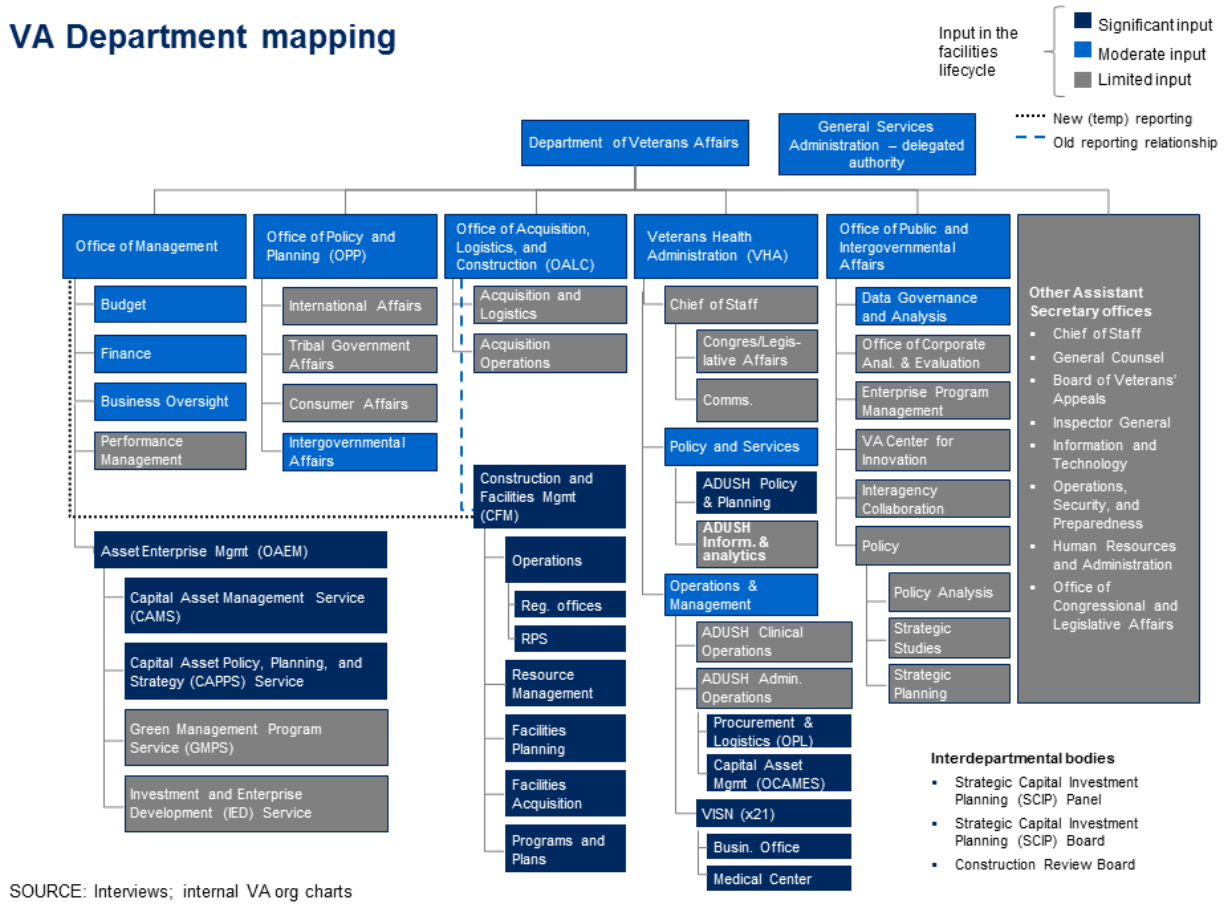
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

management, and leasing is distributed across VA and VHA organizations. Some of the key areas and departments identified were:

- **VA Office of Asset Enterprise Management** (OAEM): OAEM develops capital asset policies, consolidates the identification of capital needs, reviews proposed investments, oversees the capital asset performance management system, and evaluates the effectiveness of VA's implementation of capital asset management policies, principles, standards, and guidelines.
- **VA Office of Construction and Facilities Management** (CFM): CFM is responsible for the planning, design, and construction of all major construction projects greater than $10 million. In addition, CFM acquires property for use by VA through land purchases and leases. CFM also manages facility sustainability, seismic corrections, physical security, and historic preservation of VA's facilities.
- **VA Office of Operations – Real Property Services** (RPS): A subset of CFM, RPS oversees administration of lease acquisition for medical facilities and reviews GSA's occupancy agreements on behalf of VHA. RPS also provides support for independent negotiations as well as negotiations with GSA on issues pertaining to leasehold interests, land and building acquisitions, disposal of buildings and/or land, demolitions and related activities, licenses and permits, out-leasing, VA quarters management, parking, and compliance with the Randolph-Sheppard Act and the McKinney-Vento Act.
- **VHA Office of Capital Asset Management and Engineering Services** (OCAMES): Within VHA, OCAMES provides VHA's guidance, oversight, and technical support for capital initiatives and engineering operations. Programs supported include major construction, minor construction, non-recurring maintenance (NRM), clinical specific initiatives (CSI), leasing, sharing use of space, enhanced use leasing, energy, fleet, engineering operations, and state home construction.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 2-1. Facilities Function Across VA



2.3 VAMC Site Selection

To increase consistency of findings, the Veterans Choice Act Assessment teams have coordinated our sampling methods to the extent possible while ensuring the methodology reflected assessment-specific considerations. We selected a core set of VAMCs to visit, which are representative of the VAMC system across critical facility demographic and performance outcome metrics. (Please see Appendix A for further detail.)

The VAMC site selection process followed the following steps:

- **Stratification of facilities**: Stratified random sampling, with VISN as strata, was used to select an initial long-list of facilities. To reduce sample size, a subset of VISNs was randomly selected, from which one of the two initially selected sites was randomly de-selected.
- **Review of distribution**: Chi-square testing was used on each of the key facility profile and performance variables to ensure the distribution of scores in the sample is representative of the population. Variables were chosen to reflect anticipated drivers of facility performance, and included: VISN, rurality, adjusted admissions, complexity level (on VHA

rating scale), adjusted length of stay (LOS), adjusted patient satisfaction, cumulative access score, and facility age

- **Refinement of facility selection**: The initial facility list was vetted with internal and external subject matter experts (SME) and augmented as needed, to include facilities that are considered critical for inclusion (for example, a Polytrauma Center, facilities with innovative tools/practice) and ensure that all selected facilities had the range of services being assessed.

This method resulted in a sample of 25 VAMCs that is representative across each of the criteria used in selection. (Please see Appendix A for results of the chi-square testing, demonstrating representativeness.) While the method is not as rigorous as using stratified random sampling (SRS) alone, given our goal of including sites across VISNs and other variables and the need to limit the sample to a size that can be feasibly visited, SRS alone would have resulted in a sample representative across multiple dimensions. The Assessment K team also visited 13 of the 21 VISN headquarters, as the VISNs play a significant role in the allocation of NRM funds and the capital planning process. These VISNs were selected based on their proximity to planned VAMC site visits.

2.4 Construction Site Selection

To assess execution performance for major construction projects, the team selected a sample of active construction project sites. The design principles for site selection criteria were the following:

- The selected sample includes sites from all three CFM regions (West, Central and East)
- The selected sample includes a range of project sizes within the Major Construction program
- The sample includes projects where construction activities in the field could be observed (if possible)

Based on the criteria above, the following Major Construction projects were selected for construction site visits within the time frame of the assessment.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 2-2. Construction Site Visits

Sites visited during Assessment K

City	State	Project detail	Total estimated cost[1] $ Millions	Percent of funding before 2011[2]	Sq. ft.	Region
Palo Alto	CA	Ambulatory Care / Polytrauma Rehab	717	31	681,000 (New); 13,500 (Alt)	Western
Long Beach	CA	Seismic Corrections – Bldgs 7 and 126	130	100	191,000	Western
Denver	CO	New Medical Facility	1,730	Unknown	1,035,000	Western
Dallas	TX	Spinal Cord Injury	142	5	164,000	Central
New Orleans	LA	New Medical Facility	995	90	1,600,000	Central
Biloxi	MS	Restoration of Hospital / Consolidation of Gulfport	286	100	417,000	Central
Bay Pines	FL	Improve Inpatient / Outpatient	158	72	135,000 (New); 186,000 (Alt)	Eastern

1 TEC from Budget Request 2016 used during the planning of construction site visits
2 Percent complete approximated from percent of funding approved before 2011 during planning phase and public research

SOURCE: 2016 VA budget request and public websites

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

3 Cross-Cutting Findings: Assessing VHA's Capital Need

3.1 VA Capital Need and Anticipated Shortfall

VA has identified more than $51 billion in total capital needs over the next 10 years through its capital planning methodology. Provided that average funding levels remain consistent over the next 10 years, the $51 billion capital requirement would significantly exceed the anticipated funding level of $16-26 billion.

As part of its capital planning and allocation process, VHA undertakes an annual process, the Strategic Capital Investment Plan (SCIP), to forecast capital needs over the next ten years. Through SCIP, stations identify projects to address recognized facility deficiencies, anticipated workload changes, access gaps, and other key metrics for health care delivery.

Based on submissions as part of the Strategic Capital Investment Plan (SCIP), VHA has determined that it will require approximately $46 billion in capital investment over the coming ten years for new projects plus $5 billion to complete on-going major construction projects.[11] This number is calculated as each station develops proposals to address the gaps identified by VA managed databases. Each station identifies a series of projects which are expected to allow them to close their currently identified gaps within 10 percent over the next ten years. These projects include near-term projects intended to start in the first fiscal year of the next planning cycle, for which detailed business cases are submitted. They also include mid-term projects planned to start in the next 3-5 years for which the scope is clearly defined. Finally, they contain out year funding estimates, calculated by facilities based on the remaining gap to be closed.

Over the next ten years, it is likely the $46 billion SCIP request could increase to address needs not currently identified, as new facility assessments are completed or there are shifts in standards or Veteran demographics (see Assessment A for discussion of potential demographic shifts). Nonetheless, the combination of the top down gap analysis and the bottom up project cost estimating, all within clearly defined guidelines, offers a robust methodology for calculating the size of the capital need. While the assessment team did not independently verify the 8,038 capital requests submitted through SCIP, we have reviewed the process for arriving at the $46 billion in capital need and believe it to be the best available calculation of the scale of the capital requirement.[12]

Additionally, the VA FY2016 Budget Submission anticipates an additional $5 billion in funding for major construction projects which are already in process (see Figure 3-1).[13] Together, this $51 billion investment would enable VA to improve facility conditions and address anticipated needs in space, energy, and other key areas.

[11] SCIP funding levels taken from data provided by VA for the FY16 planning cycle, the most recent data available as of the writing of this report.

[12] The full SCIP process is discussed and assessed in detail within Section 5 (Capital Planning Assessment).

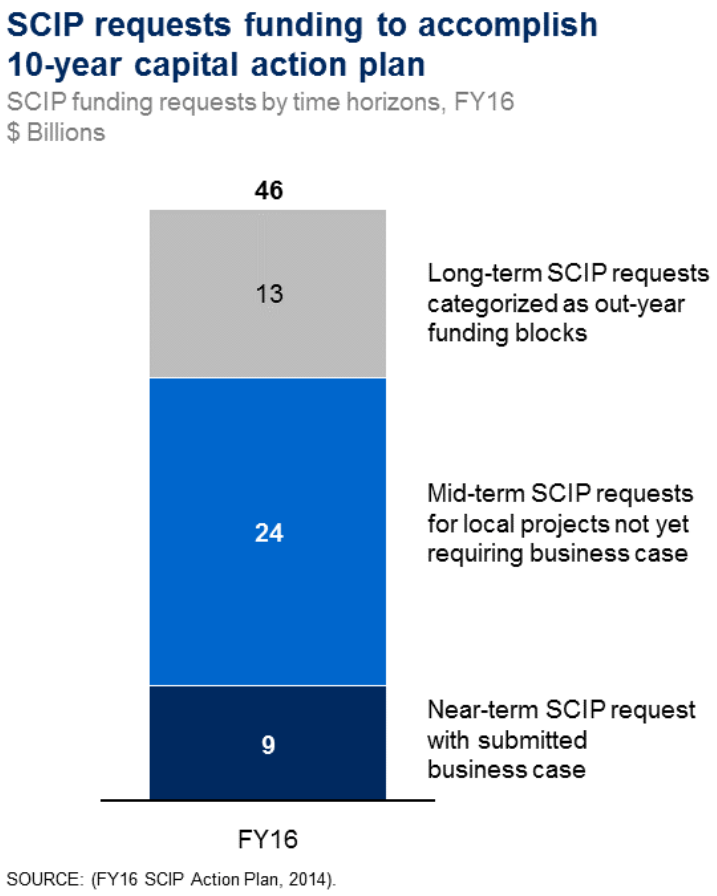
[13] Details of the SCIP request and the FY2016 Budget Submission are contained in Appendix B.3.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Over the last four years, VA's capital funding has ranged from $1.6 billion to $2.6 billion each year, averaging $2 billion. Given current objectives and current levels of program delivery effectiveness and provided that funding levels remain consistent with recent years, the $51 billion capital requirement would significantly exceed the anticipated funding level of $16-26 billion over the next 10 years. Furthermore, above the $51 billion capital requirement identified in SCIP and outstanding major construction budget requests, VA historically has experienced overruns in their major construction performance, as discussed in depth in Section 6 (Design and Construction Assessment: Major Projects). These overruns, if not averted through efficiency gains and process improvements, could increase the total need based on observed past performance. While this analysis focuses on specifically identified needs, our recommendations also identify the steps necessary to avoid additional cost from construction overruns.

Figure 3-1 details ten-year SCIP funding requests for FY 16.

Figure 3-1. 10-Year SCIP Action Plan Funding Request

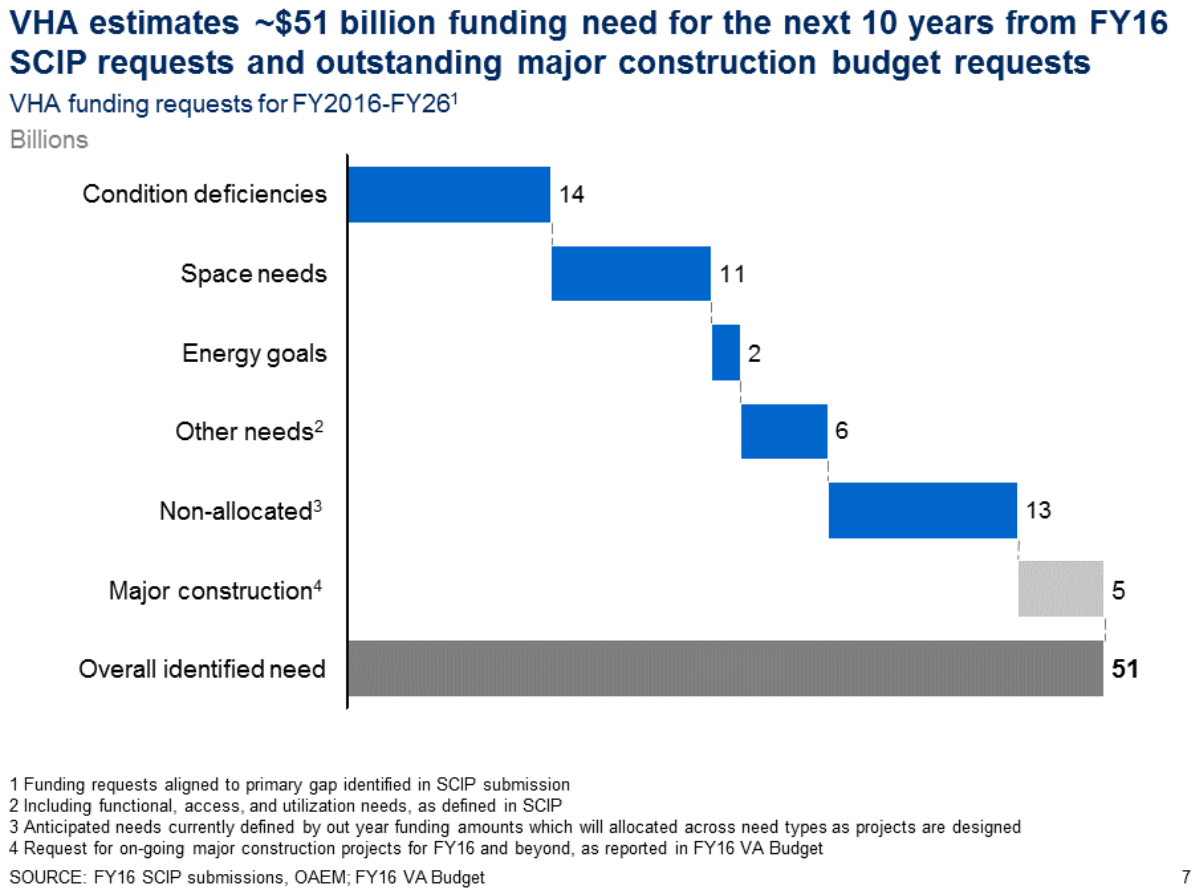


This ten-year forecast incorporates:

- Condition deficiencies (for example, maintaining current assets to desired quality and condition levels, including seismic concerns)
- Space needs (for example, ensuring adequate space increases or decreases given changing Veteran demand)
- Energy goals (for example, ensuring VHA facilities comply with energy standards for federal buildings)
- Other (for example, additional areas such as ensuring sufficient Veteran access or medical functionality)

Figure 3-2 details the breakdown of different needs within the submitted requests.

Figure 3-2. 10-Year Capital Need



These estimates showcase a representative view of the breakdown for the ten-year capital needs of the VHA system. While out year funds, which fall into the non-allocated $13 billion, are not broken out in detail, they have historically followed the same trends as the specifically identified projects, heavily driven by condition and space deficiencies. As such, they are instructive in the ability to understand the overall viability of the VHA system over the coming years. We believe it is critical for VA, VHA, and Congress to look beyond the typical short term,

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

year-by-year funding horizons to understand whether VHA will be able to maintain and increase standards of Veteran care and access over the ten-year planning horizon and beyond under its current model of health care delivery. As we have examined these needs, we find that, even with ambitious targets for improved effectiveness in managing and delivering the VHA facility portfolio, there remains a need for increased funding and changes to VHA's model of delivering facilities and health care to Veterans.

3.2 Key Findings of VA Observed Performance on Core Assessments

Performance by VA in the four core assessment areas has been on par with public sector performance in most cases, but well below private sector performance.

Without substantial changes, VA will not be able to address the existing facility requirements and the evolving Veteran needs effectively. However, we have observed opportunities for VHA to capture value and reduce their capital need in each area of the facilities program. Throughout our assessment, we have identified a number of challenges that apply across the various aspects of VHA's facilities program, as well as challenges that are specific to each aspect of the facilities program (capital planning, design and construction, leasing, facility management). These are summarized below:

3.2.1 Shortfalls in Overall Accountability, Sense of Ownership, and Proactive Problem Solving Approaches Limit the Ability of VA and VHA to Deliver the Correct Projects on Time and on Budget

- **VA's facilities program is dispersed throughout the Department, limiting oversight, accountability, and controls.** Of the $6 billion medical facilities budget, approximately $2 billion each year ($1.6 billion to $2.6 billion per year from FY13-FY16) is dedicated to major and minor construction and non-recurring maintenance (NRM), the oversight of which is split between VA's Office of Construction and Facilities Management (projects over $10 million) and VHA engineering staff (projects under $10 million). Nearly $500 million additional covers annual operational lease obligations, paid out of VAMC budgets to sites of care approved through VHA. The remaining budget covers recurring maintenance, plant operations, and other facility management categories from VAMC operating budgets. Facilities functions are dispersed through VA, resulting in a lack of accountability for facilities outcomes, a mismatch between planning efforts and funding decisions, and the separation of project execution and facilities management. (See Section 6.1)
- **The broader culture of facilities functions are characterized by silos, risk-aversion, and ambiguity of roles, often resulting in an inability to consistently advance projects in an efficient manner.** On the Organizational Health Index (OHI), VA facilities staff at CFM and in engineering departments scored their organization in the bottom quartile of all organizational health outcomes apart from motivation. This is discussed in greater depth in Appendix B. "Bureaucracy" and "fear" were among the defining organizational attributes identified by CFM staff. Despite high levels of motivation in caring for Veterans, these cultural attributes can put employees in a defensive posture and stifle innovation

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

and entrepreneurship. A fuller discussion of these cultural dynamics across VHA can be found in Assessment L. (See Section 5.2.3.1).

- **External constraints limit VHA's ability to deliver and operate medical facilities at the level of private sector benchmarks.** Directives regarding the services provided within VHA medical centers, federal and VA procurement requirements, and approvals and procedures required by external parties contribute to increased costs and delivery duration for medical facilities. (See Section 6.2.2)
- **The contracting organizations are overwhelmed and burdened by complex approvals and struggle to effectively manage construction and leasing contracts.** Interactions between the contracting organizations and their customers (for example, VAMCs) are reported as ineffective by both parties, as also discussed in Assessment J. CFM contracting officers (COs) manage contracts for major construction and leases, while all other construction, leasing, and maintenance contracts are executed by VHA Network Contract Offices (NCOs) which are aligned with, but do not report to, VISNs. Both of these organizations face challenges including a heavy workload, a lack of training for the complexities of construction and leasing contracts, and lack of integrated involvement of the contractor and customer throughout the process. Some interviewees cited that COs cover double the contract volume as counterparts in the government, have not been effectively trained to cover the complexities of construction and leasing contracts, and due to the low approval authority given to most COs must pass leases through high levels of oversight which delay programs. (See Sections 5.2.2.4, 6.2.3.4, and 7.2.3.1)

3.2.2 Capital Is not Being Consistently Allocated to Projects That Could Address the Greatest Areas of Veteran Need in the Most Cost-Effective and Timely Manner

- **Lengthy approval and funding timelines hinder the ability of VHA to meet the identified space requirements to keep up with Veteran demand and invest in facilities updates that align with changing models of care**. The time from submission to approval typically lasts several years, and may be even longer for major construction projects, during which, Veteran needs may change and new standards of care could be established, possibly changing facility requirements. VA has several different planning cycles that stretch across multiple levels, with staggered approval at the facility, VISN, and Veterans Affairs Central Office (VACO) levels, each step adding time to the process and impairing the link between VHA strategy and execution. These delays can be costly both in delivering against identified need and in ensuring projects are delivering the most current medical designs and technology. (See Section 5.2.2.4)
- **The lack of a mechanism to evaluate achieved outcomes versus promised outcomes limits accountability during project execution.** After project completion, there is no formal feedback loop to verify performance versus originally-stated goals; moreover, project outcomes are not considered in subsequent planning efforts. (See Section 5.2.2.5)
- **Capital management in VA lacks a 'scrubbing' system to ensure business cases for submitted projects contain necessary analytic rigor and economic analysis**. The sheer

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

volume of project requests, compared to the limited staff resources to review projects, prevents an effective review of business cases and potential alternatives prior to project scoring. This hampers the ability of VA to ensure an effective comparison and prioritization of projects with full consideration of the strategic merits. (See Section 5.2.2.3)

- **Capital project requests are often developed to optimize for non-strategic approval mechanisms over optimized project selection and delivery.** Competition for limited funds has led stations to make choices in developing their projects on the basis of perceived approval criteria rather than on optimal scope and execution plans, limiting the efficiency of the SCIP program. For example, VAMCs tend to combine smaller projects to address more scoring criteria in NRM and minor projects, "phase" larger construction efforts into several pieces, and focus on "hot button" issues that receive extra points rather than defining the most efficient projects to achieve specific objectives. (See Sections 5.2.2.2 and 5.2.2.3)
- **There is a significant disconnect between identified needs and funding levels.** Less than 30 percent of projects with business cases are funded each year, leaving more than 1,000 scored projects postponed for later years. Developing a competitive project submission requires significant staff resources from stations in order to develop a proposal which has a low probability of being funded and may not even receive a substantive review or feedback for improvement on merits. (See Sections 5.2.2.1 and 5.2.2.2)

3.2.3 VA Construction Costs Are Similar to Other Public Agencies in Most Cases, but Double Those of Private Industry Best Practice, and VA Time-to-Complete Exceeds Both Public and Private Peers

- **Project teams are designed and staffed to support compliance requirements but these structures have often resulted in reduced accountability for project delivery outcomes.** Particularly for major construction, project managers are responsible for overall project goals yet they lack authority over project teams (for example, resident engineers and contracting officers) to make decisions necessary to manage their teams and counterparties effectively (for example, architects, engineers, contractors). (See Sections 6.2.3.1 and6.2.3.2)
- **Scope and design criteria for major projects are frequently subjected to major changes, especially during the design phase, affecting overall cost and schedule.** Project staff indicated that there are not clear guidelines to manage project modifications that may affect delivery timing. Station leadership often seeks to introduce changes in ongoing projects, even after construction has begun. These combine to increase time to completion, which carries secondary costs, such as Veteran access delays and outdated designs. (See Section 6.2.5.3)
- **VA design standards are perceived as a critical barrier to achieving private industry best-in-class cost and schedule.** Certain technical specifications and design standards are no longer applied in private industry and are not considered cost efficient. Also, design requirements resulting from resilience (for example, backup water supply, alternative

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

sources of power, progressive collapse designs), energy, security and community mandates can increase the initial cost of projects over the private sector. These requirements are consistently applied, rather than through a specific evaluation of the site and corresponding need for emergency preparedness. Federal design standards outside of VA's control add further construction requirements. (See Sections 6.2.2.1 and 6.2.2.2)

3.2.4 The Leasing Program Is not Effectively Enabling VHA to Provide Facilities Where and When They Are Required or at a Reasonable Cost for Major Leases

- **VA's lease timelines preclude it from benefitting from the speed and flexibility leasing typically can provide**. For large facilities, the time from identifying a need to having an operational leased facility is substantially longer than comparable public and private sector organizations. While the process to secure a large leased facility often takes VA up to nine years, private sector organizations can complete leases of similar complexity in approximately three years. These timelines are driven in part by the extensive approvals required by VHA – both internally and externally – and the length of the procurement process. (See Section 8.2.1.2)
- **VA lease rates for smaller facilities are close to benchmark costs, but higher than benchmark costs for major facilities.** While VA is performing on par with benchmark rates for smaller leased clinics, it pays significantly more than benchmark rates for the larger, build-to-suit clinics. Similar to the higher costs of hospital construction, this is likely largely due to the higher design standards and stricter requirements of VA facilities. (See Section 8.2.1.1)
- **VA leasing contracts are typically favorable to VA, but are often not enforced.** While VA does an excellent job negotiating tenant favorable terms while typically remaining within benchmark rental rates, these favorable terms are often not enforced. When VHA staff identify concerns about the quality of a facility, contracting staff may not enforce these terms with lessors, given skill and capacity constraints. (See Section 8.2.1.3)
- **External influence to VHA can further limit the effective use of leasing to promote agility in delivering health care.** There are real or perceived external influences that can affect the time it takes to execute a lease. When interviewees with knowledge of major lease timelines were asked a general question about the factors influencing delays in leases, 100 percent indicated that external influence had contributed to these delays. They described the nature of these delays as typically due to pressure to consider additional sites to locate a new-leased facility, expanding the time taken in the initial market research and related early stages of the leasing process. Documents shared with the assessors during the course of this assessment indicated higher levels of approvals required for leases that were relocated from one Congressional district to another. (See Section 8.2.2.2)

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

3.2.5 Facility Management Costs Across VHA Exceed Those at Comparable Medical Facilities

- **VA does not effectively manage the total cost of ownership of facilities.** Best practice facility management organizations take a total cost of ownership perspective towards critical facility decisions. VA does not incorporate a total cost of ownership perspective into planning decisions, sufficiently involve operational staff and perspectives in design decisions that have an impact on operating costs, or ensure dynamic adjustment of operational costs as facility conditions change. (See Section 9.2.2.1)
- **VA conducts more facility management activities in-house than comparable organizations.** Facility management costs (for example, recurring maintenance, environmental services) are on the average 2 to 3 times higher than comparable private medical facilities, largely due to in-house management of these services rather than utilization of potentially lower cost external service contracts. Facility management costs and practices are also highly variable across VHA facilities, with little incentive for individual stations to adopt cost effective measures. (See Section 9.2.3.1)
- **Space-adjusted facility management costs vary widely within VHA.** VHA facilities vary widely in the amount they spend to manage facilities, even after adjusting for factors such as space and age of the facility. There is also a significant gap between average VHA costs to manage and maintain hospitals and industry comparables, with VHA paying as much as two times comparable benchmarks. (See Section 9.2.1.4)

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

4 Recommendations and Implementation Considerations

4.1 Opportunities to Increase Capital Efficiency

If VA's capital program were to achieve best practice in capital efficiency, the $51 billion capital need could potentially be reduced by approximately 25 to 35 percent.

A study of major capital programs from around the world, drawing on more than four hundred case examples, has observed a potential aggregate savings in total capital investment of up to 40 percent when all proven best practices are implemented across a capital program.[14] However, no single entity in the study was able to demonstrate this level of performance improvement across the board, which illustrates the scale of the challenge. Given the difficulties in meeting this level of improvement and having considered the structural barriers which VA faces as a public entity, we identified a potential reduction of 25 to 35 percent for VA. These potential reductions are discussed in greater depth in Appendix B.3. Achieving this reduction would require a transformative realignment throughout the capital program to deploy best practice tools. These tools can be grouped under three capital efficiency levers.

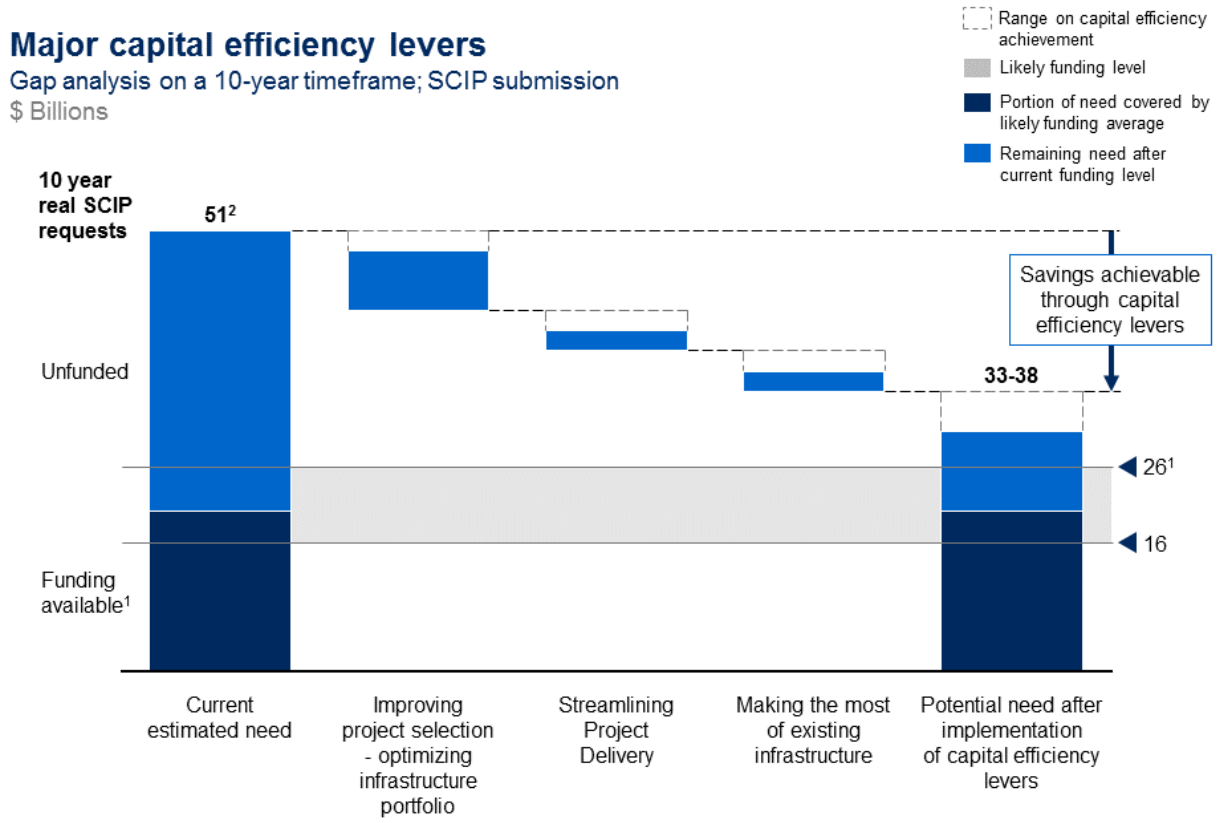
- **Improve project selection and refine infrastructure portfolio.** Experience with other public and private facility portfolios has shown an opportunity to achieve a 10 to 15 percent reduction in costs through enhancing project selection criteria and rationalizing the portfolio of projects and facilities. For VA, this would involve optimizing standards and expectations for condition, space, and energy gaps. Additionally, the SCIP process and criteria should be reevaluated to include such changes as bolstering proposal reviews, refining capital project selection, improving alignment with workload, strengthening business cases, and enhancing assessment of outcomes.
- **Streamline project delivery.** A 15 to 20 percent opportunity exists in improving the delivery of facilities. Steps such as improving project controls, especially for the design stages, increasing accountability for projects through enhancing performance management systems, and potentially outsourcing certain capital projects to other organizations could both reduce costs and increase the speed of project delivery. A clear stage-gate process should be implemented to manage scope and design changes in the planning and design phases of projects and to limit scope and design changes that occur after a project receives funding and during construction. To increase ownership and accountability, project delivery teams should be restructured with clear roles and responsibilities, well-defined handoffs, and adequate staffing levels. Additionally, contracting and other supporting entities should be accountable and equipped to support a fast-paced project environment and facilitate the needs of construction projects and leases.
- **Make the most of existing infrastructure.** Experience shows additional savings opportunities can be achieved by maximizing the use of existing facilities. This requires

[14] "Infrastructure Productivity How to save $1 trillion a year¨, January 2013 by McKinsey & Company. For this assessment, estimated savings have been adjusted to reflect requirements and constraints specific to VA.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

incorporating a total cost of ownership assessment approach into design, capital planning, and facility management which evaluates the operational cost implications of design choices and pursuing opportunities to optimize capital and operating costs simultaneously. Additionally, it may be possible to better use existing underutilized space to fill projected space needs. By either refitting or shifting existing underutilized space, VHA could address projected space needs or provide a lower-cost alternative to proposed projects. A detailed analysis should be completed by VA to determine what possibilities exist to better utilize existing infrastructure. We did not include a size of the opportunity in the estimates.

Figure 4-1. 10-Year Capital Funding Request



1 Based on four year average funding levels of $1.6 to $2.6 billion per year
2 Capital need calculated from FY16 SCIP requests ($46 billion) and outstanding major project commitments ($5 billion)

Provided that an extensive transformation of the VA capital program is undertaken to implement best practice processes, savings between 25 to 35 percent are possible. This would result in reducing the total capital need over ten years from $51 billion to between $33 billion to $38 billion. These are extremely challenging but necessary efficiency initiatives which should be implemented before spending additional resources to address the capital need. While this would require an intensive effort to accomplish, the extent of the capital gap necessitates sweeping action.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

4.1.1 Improve Project Selection and Optimize Infrastructure Portfolio

VA could reduce its total capital requirement by reviewing which infrastructure projects are selected and rationalizing the overall capital allocation. We have identified two areas of opportunity:

Refine capital allocation. By setting strategic goals and funding limits, conducting regular performance assessments, and strengthening the quality of the business cases that are a part of SCIP submission, VA could ensure it is allocating capital to the right projects and removing unnecessary capital needs from the system. Specifically, we have identified the following options in which VA could optimize its capital planning process to focus effectively on the highest priority capital needs:

- **Refine capital allocation process (SCIP processes) to better align with VA strategic goals and realistic funding levels.** The current process is a significant step forward over past capital allocation systems, but should be refined to (i) increase transparency, (ii) simplify scoring to improve connection between results and strategic priorities, and (iii) utilize scenario modeling of the portfolio in addition to individual project assessments.
- **Strengthen business case submission process.** By increasing the analytic rigor and financial expertise involved in the development of business cases, projects could be more effectively compared and prioritized. Additional resources should be devoted to provide an independent scrubbing of project scopes and underlying assumptions as well as a deeper consideration of a project's strategic merits.
- **Develop accountability mechanisms to ensure projects meet promised objectives.** In order to ensure projects fulfill their originally stated goals, VA should develop a feedback loop in the SCIP processes whereby the performance of completed projects relative to closing identified gaps is included in subsequent capital planning efforts.

Optimize capital requirements. The overall capital need is determined by SCIP submissions that fall into condition, space, energy, or other categories. By adjusting the standards or expectations in each of these areas, VA can potentially lower the capital need. We have identified specific options in the three primary areas of capital need:

- **Shift from a focus on condition assessments of individual sub-systems to the condition of overall facilities.** Current VA expectations are that every subsystem or component in a facility receiving a D or F condition assessment be repaired or replaced to achieve an A level. Across VHA, scored components received an average grade of C minus (see Figure 4-2). By creating an overall facility score as well as evaluating the condition of individual components, VA could reprioritize and streamline condition assessments to highlight areas of greatest need. Introducing an average facility grade for consideration would make it easier to identify facilities, which, on average are scoring below a B and focus on bringing those averages to a sustainable level. This score, combined with a careful comparison to the replacement costs of the facility, would allow VA to identify structures which are no longer of sufficient condition to justify further capital investments. System critical and failing components in all other facilities should receive first priority. Further

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

discussion on these recommendations can be found in Section 5 (Capital Planning Assessment).

Figure 4-2. Facility Condition Assessment Gaps

FCA correction costs are concentrated in Grade D ratings

Facility Condition Assessment Ratings

Grade	Definition	Number items	Total correction cost $ Billions
A	Like-new condition	24,337	n/a
B	Over half of useful life remains	33,203	<1
C	Avg. condition, less than half of useful life remaining	55,841	<1
D	Poor condition, at the end of its useful life	59,919	13.5
F	Critical condition, requires immediate attention	8,574	2.4

SOURCE: Facility Condition Assessments taken from VA Capital Asset Database, March 2015

- **Focus on energy efficiency improvements that have a positive return on investment.** Utility costs are some of the largest ongoing facility operation expenses. A number of facilities have shown that utility costs can be reduced through a combination of demand reduction, efficiency, and innovative contracting methods. However often economically positive investments in efficiency (for example, LED lights, or a new cooling system) are reportedly overlooked in favor of more high profile or symbolic energy efficiency investments. VHA could remove obstacles to investing in economically positive efforts and enable extensive sharing of innovative approaches to reducing energy costs. These savings could then be used to cover capital needs. Additionally, slowing adoption of capital-intensive energy-efficiency measures with low or unclear returns in capital invested would reduce the overall capital needs associated with energy upgrades.
- **Optimize space requirements in line with current innovations in health care.** New space designs could improve the patient experience for Veterans through enhancing inpatient room designs, incorporating new medical technologies, and potentially improving nursing response times (Healthcaredesignmagazine.com, 2015). Additionally, reassessing the

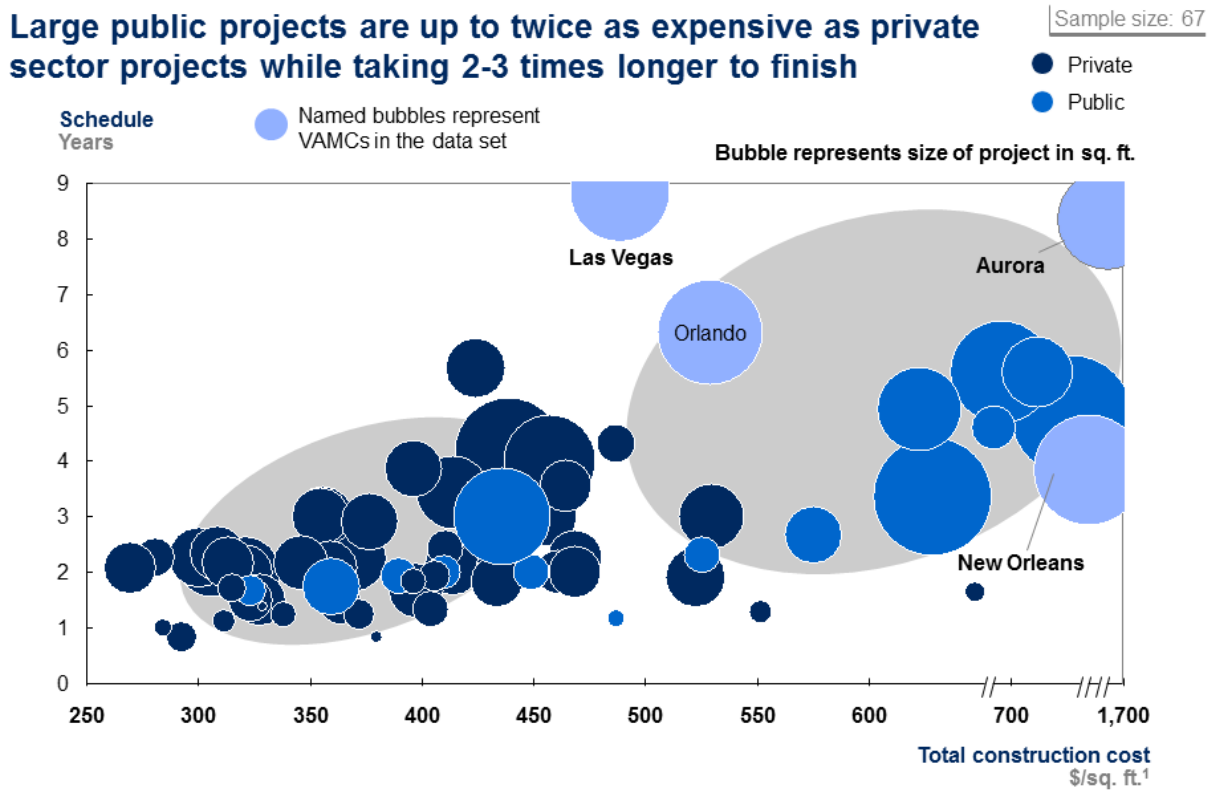
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

assumptions used in planning required space needs (for example, the number of square feet required for a certain type of medical unit as projected by the Enrollee Health Care Projection Model[15]) and reducing those expectations that are above industry best practice could reduce overall capital needs associated with expanding VHA's physical space.

4.1.2 Streamline Project Delivery

Once the need for a particular project is determined, VA has an opportunity to limit the capital investment required by delivering projects more effectively. As described in Section 6 of this report, VA facilities are up to 70 percent more expensive than planned, which is in turn up to 50 percent more expensive than comparable private sector benchmarks on a square foot basis (see Figure 4-3 and Figure 4-4).

Figure 4-3. Health Care Facilities Construction Costs Benchmark (I of II)



1 Dollars / sq. ft. adjusted to 2015 via internal factors for Design Cost Data Factors and ENR indices for others; adjusted to U.S. Nat'l avg. via RS Means CCI (2014 & 2013)

SOURCE: Internal cost benchmarking studies, proprietary construction databases, public websites (contractors, owners, designers)

Under the current model of a VA-specific construction management function for facility delivery, there are a number of opportunities that would enable it to reduce costs:

[15] The Enrollee Health Care Projection Model (EHCPM) is the primary tool utilized by VHA for workload projections based on Veteran demographic trends. It was not within the scope of this assessment to evaluate the validity of EHCPM forecasts; however, a deeper analysis of Veteran demographic trends can be found in Assessment A.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Enhance the use of early warning project controls. By improving controls to catch problems earlier rather than later in the process, the design changes and scope increases that lead to increased costs could be mitigated or reduced. A stage-gate process should be implemented to manage scope and design changes in the planning and design phases of projects and to limit scope and design changes that occur after a project receives funding and during construction. Additional details on potential specific project controls are described in Section 6 of this report, regarding major projects.

Address current facilities relationships to reduce the distributed accountability that exists today and ensure full visibility and coordination of the overall capital program. The current functional structure and its dispersed responsibilities across the organization create multiple interfaces that need to be managed, favoring the creation of silos and limiting accountability within the organization.

Review resilience requirements. Current mandated resilience requirements (for example, ability to continue to operate in the case of disasters or attacks) increase the costs of constructing and operating VHA facilities. Because of the added cost, it is important for VA to carefully evaluate the application of critical resilience standards to ensure they are consistent with its mission and disaster preparedness needs while balancing capital constraints.

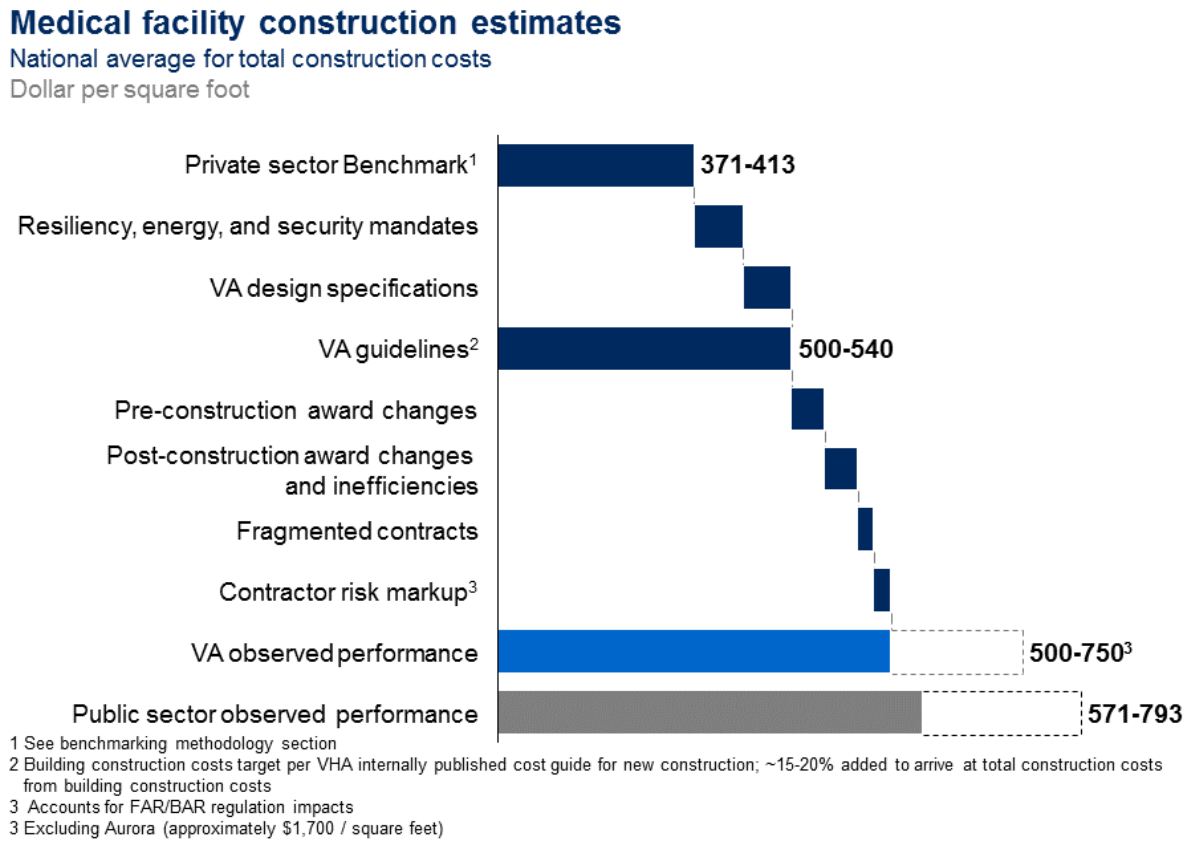
Review design standards for inefficiencies. There are a number of design standards (for example, interstitial floors, progressive collapse, green energy mandates) that increase the costs of delivering construction or major maintenance projects. These standards should be reviewed to remove outdated standards or those for which the costs exceed projected benefits.

Increase contracting efficiency. The interactions between the project and contracting organizations have often been cited as sources of delays – and thus cost increases – within VA. We have detailed a number of recommendations as to how this could be improved. Implementation of these recommendations could lead to further cost reductions for capital projects.

Develop a structured approach to best practice sharing. Ensure that the rich knowledge and innovative approaches distributed throughout the VHA network are surfaced and shared through a culture and system of continuous improvement.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 4-4. Health Care Facilities Construction Costs Benchmark (II of II)



4.1.3 Make the Most of Existing Infrastructure

By improving the utilization of its existing infrastructure, VA could address projected space needs or provide lower cost alternatives to proposed projects, reducing the overall capital need. Specifically, we have identified the following options:

Incorporate total cost of ownership (TCO) evaluations into facilities management activities to identify optimal balance between long-term renewal and short-term maintenance. By evaluating the business model of facility operations (in-house versus outsourced functions), more effectively managing operations, and sharing best practices across facilities, ongoing facility operations costs could be reduced while increasing facility quality.

Reduce lease costs both within and beyond lease term. Through rationalized geographic and technical specifications, improved contract terms, and on-time lease renewal, VHA could potentially reduce lease rental rates.

4.2 Opportunities to Reduce the Capital Gap

Even if VA were to achieve best in class operations, an unfunded gap of $7-22 billion is expected, requiring increased funding and more transformative changes.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

All of the recommendations above represent VA's opportunity to reduce its overall capital needs. By optimizing the portfolio of projects, delivering these projects more effectively, and making the best use of existing space, VA may be able to reduce its capital needs by 25-35 percent. However, this leaves $7 to $22 billion in remaining capital needs, even after the most aggressive assumptions of VA's ability to close the capital gap using the above levers. Fully closing the capital gap would require a combination of two things. Funding to VA must substantially increase over the coming decade and more fundamental changes in VHA's operating model will need to be considered.

When other institutions have faced similar capital shortfalls, they have considered a range of strategic and business model redesign options in addition to implementing the best practices in capital project delivery. This report highlights several strategic approaches for further consideration by VHA.

4.2.1 Maximize Operational Efficiency

In addition to optimizing the overall portfolio of infrastructure projects and ensuring that these projects are delivered effectively, operations should serve to maximize the efficiency with which existing space is used. By more effectively using existing space, VHA could reduce the need to expand existing facilities, or build or lease new facilities. Assessment K focused on the opportunities for improving capital efficiency, but Assessments E, F, G, and H offer recommendations on operating improvements which could reduce VHA's capital need. While VHA would need to further investigate the potential that these operating improvements could have on the capital need, other institutions have seen favorable results.

Four specific opportunities could be considered to more effectively use existing space:

Increase operating hours to balance workload requirements. Select VAMCs and Community Based Outpatient Clinics (CBOC) have already explored the use of expanded operating hours to meet heavy patient demand. Currently, VA planning assumptions are based on eight-hour days and five-day weeks for clinical operations. From the perspective of modeling capital need, this system is highly sensitive to changes in these assumptions, such as increasing the days of operation (for example, opening on Saturdays) or the hours of operation (for example, 10- or 12- instead of eight-hour days). Expanding this practice in areas with high demand for services or where Veterans desire additional flexibility in scheduling could provide an opportunity to reduce the space need. Expanding the use of this lever should be balanced against increased operating costs and staff availability and correspond with Veteran demand for and interest in expanded hours of service.

Improve scheduling efficiency. Assessment E has also identified opportunities to improve effectiveness through measures such as schedule and demand management (Assessment E [Clinical Scheduling], Section 6.2.1). More effective scheduling could increase the utilization of exam rooms and have implications on the space requirements and wait time assumptions utilized in space planning. Assessment G also discusses the implications of space on provider throughput (Assessment G [Clinical Staffing], Section 3.4.1)

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Increase telehealth options. Opportunities are increasing to expand telehealth directly to the home. While a portion of VHA telehealth offerings still requires dedicated patient spaces, there is a potential to reduce the need for physical spaces in VAMCs and clinics. Assessment H (Health IT) discusses the potential of telehealth for Veteran health care.

Reduce or shift the average inpatient stay. Assessment F has identified opportunities to shift patient care from the acute setting and potentially decrease the overall length of stay (Assessment F [Clinical Workflow], 7.2.1, 7.2.3). While the full capital ramifications of this opportunity have not been explored, it will be important to assess how implementing these changes could affect capital needs, for example, decreasing the number of acute inpatient beds or increasing alternative space needs. It should be noted that reducing the number of beds requires Congressional approval.

4.2.2 Reassess How and Where to Best Serve Veterans

In similar circumstances, other organizations have considered strategic operating changes which result in a realignment in their capital portfolios. There are several different examples VA could investigate further, including geographic realignment, community partnerships, or a shift in service offerings.

Realign geographic footprint of facilities. By limiting investment in older facilities where new needs are more than a targeted percentage of replacement costs, organizations can save considerable costs from expensive investments in aging facilities. Hospital systems traditionally replace medical facilities more rapidly than VHA, whose buildings are five times older than the typical not-for-profit hospital.[16] These replacements can allow hospital systems to shift with emerging trends, such as smaller inpatient settings, and then eliminate redundancies such as dual campuses or locations in low-demand settings. As outpatient clinics can be constructed at a lower cost per square foot than full-service hospitals, they have proved an attractive alternate construction model to larger settings with an inpatient focus. Additionally, there may be places where Veterans would be more effectively served through a combination of an outpatient clinic and community-based care rather than the traditional VAMC. VA has faced resistance in the past when seeking to close VAMCs (Nettinga, 2015; von Zielbauer, 2003; Bruce, 2012). These discussions introduce additional factors into the facilities decision making process and may reduce VA's flexibility in assessing the benefits and costs of retaining facilities, some of which may be underutilized or in too poor of condition to justify continued capital investment.

Enhance community partnerships. Within VHA, some stations have already begun piloting projects which place VHA physicians in community hospitals for Veteran care. Under this model, medical procedures such as surgeries are provided by VHA staff, while the nursing is provided by the community hospital, and the equipment and space needed are effectively rented to VHA. Additionally, VA and DoD have initiated partnerships to share medical resources and facilities. VA and DoD currently have more than 200 health care resource sharing

[16] 2013 analysis of 139 not-for-profit hospital systems in US, encompassing 1,362 hospitals.

Soule, J., & Keller, C. (2014). U.S. Not-For-Profit Health Care Systems Ratios: Operating Performance Weakened in 2013. RatingsDirect.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

agreements between their hospitals and nine joint ventures where both authorities directly provide health care services, such as those in Anchorage, Albuquerque, and Honolulu (Military Health System, 2015). In an even closer partnership started in 2010, VA and DoD established the Captain James A. Lovell Federal Health Care Center in North Chicago (Captain James A. Lovell Federal Health Care Center, 2015). The medical center integrates facilities, services and resources from the North Chicago VAMC and the Naval Health Clinic Great Lakes into a single medical center, which is jointly led by VA and DoD leadership. The health care center provides care for nearly 40,000 Navy recruits and 67,000 eligible Veterans.

Shift service offerings. Hospital systems have experienced success by specializing in select types of care and relying heavily on referrals to redirect types of care which are easily provided by other institutions in the community. VHA already relies on purchased care for certain services based on local demand and community options. Increased specialization could intensify the use of this approach.

4.2.3 Explore Alternative Vehicles for Capital Delivery

Alternative models of providing facilities have proved productive for some organizations. These models include contracting out capital investment, outsourcing facility management, and establishing innovative public private partnerships.

4.2.3.1 Contracting out Capital Investment

Currently, VA relies on leasing as a way of reducing its capital burden and shifting costs to an operating model. If VA were able to achieve best practice performance levels in capital delivery, it would also have a natural advantage in owning facilities, because of the low cost of borrowing and favorable tax structure available to government entities. However, given current levels of performance, VA is not able to fully capture these benefits and could consider pursuing different alternatives which would reduce the upfront costs to revitalize strained VHA infrastructure. Several different models exist:

- **Private entity construction and ownership facilities.** A private entity can be contracted to finance, design, build, operate, and maintain a facility through a public-private partnership. A variation of this model is already being used for build-to-suit leases within VHA. Specific financial and operating arrangements for such a model vary, however, these generally involve facility condition and service level commitments by the private entity in exchange for either upfront funding or annual payments committed over a period of time. Potential benefits of such a model include reduced capital expenditures through both efficiency and shifting capital expenditures to operating expenditures, as well as increased flexibility. This approach could be piloted for one or two facilities before being adopted in full.
- **Sale and lease-back.** Existing facilities can also be sold and then leased back from a private provider in order to raise capital and transfer the risk and responsibility for capital improvements and achieve operational savings. The new owner is then responsible for ensuring a specified condition of the facility over a given time period, operating the facility (for example, functions such as environmental services, maintenance, engineering,

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

would be operated by the new owner), and would lease the facility to the public entity to continue control over areas of core competency. This model is more common for administrative and clinic spaces.

- **Selectively outsource facility construction management, ownership, or operation**. A more narrow approach involves the outsourcing of a portion of the facility program, for example, by outsourcing construction or facility operations. This could reduce operating costs required to maintain in-house management capabilities of construction, and may reduce capital costs if contracted to a private sector entity who can more effectively deliver capital projects. There are a number of models for outsourcing construction and non-recurring maintenance, ranging from simply contracting the construction management function of certain projects to contractors, to fully outsourcing the construction management function to another agency or private sector entity. While outsourcing also raises potential concerns regarding staffing, it may provide sufficient cost savings to justify consideration.

While our assessment was in progress, the Senate passed an amendment to the National Defense Authorization Act, directing the Secretary of VA to "seek to enter into an agreement…with the Army Corps of Engineers or another entity of the Federal Government to serve, on a reimbursable basis, as the construction agent on all construction projects of the Department of Veterans Affairs specifically authorized by Congress." The Deputy Secretary for Veterans Affairs has stated, "turning everything to [the US Army Corps of Engineers] (USACE) would be a very big decision, and it would be a decision we would want to make on a very well informed basis" (Building a Better VA, 2015). At the completion of our assessment, this amendment had not been adopted by the House. Evaluating the delivery of facilities services by another agency was outside the scope of this assessment, and no resources or assessment activities were spent considering this directive.

4.3 Holistic Options to Reduce Current VA Capital Need

Following capital excellence best practices, we have identified a number of recommendations that can be used to close VA's capital funding gap. Research on a wide range of infrastructure portfolios shows that by applying these levers, there is substantial opportunity for savings. For each of these levers, we propose a set of approaches that would close the capital funding gap, and provide a high-level approach to quantifying the potential savings associated with that lever.

It is important to note that many of these recommendations are not independent and also present different capital impact, timing, and ease of capture. Some of them could also require statutory changes to be implemented. The extent of savings that could be captured by applying each lever is linked with the range of other actions that VA could take. For example, the savings associated with delivering projects more efficiently changes depending on how many projects are prioritized. As such, later in this section we present levels of performance improvement that represent internally consistent and quantified options for VA moving forward.

In order to translate the levers into actionable transformation plans, we followed a sequential process that included prioritizing the levers across impact and ease of capture and developing

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

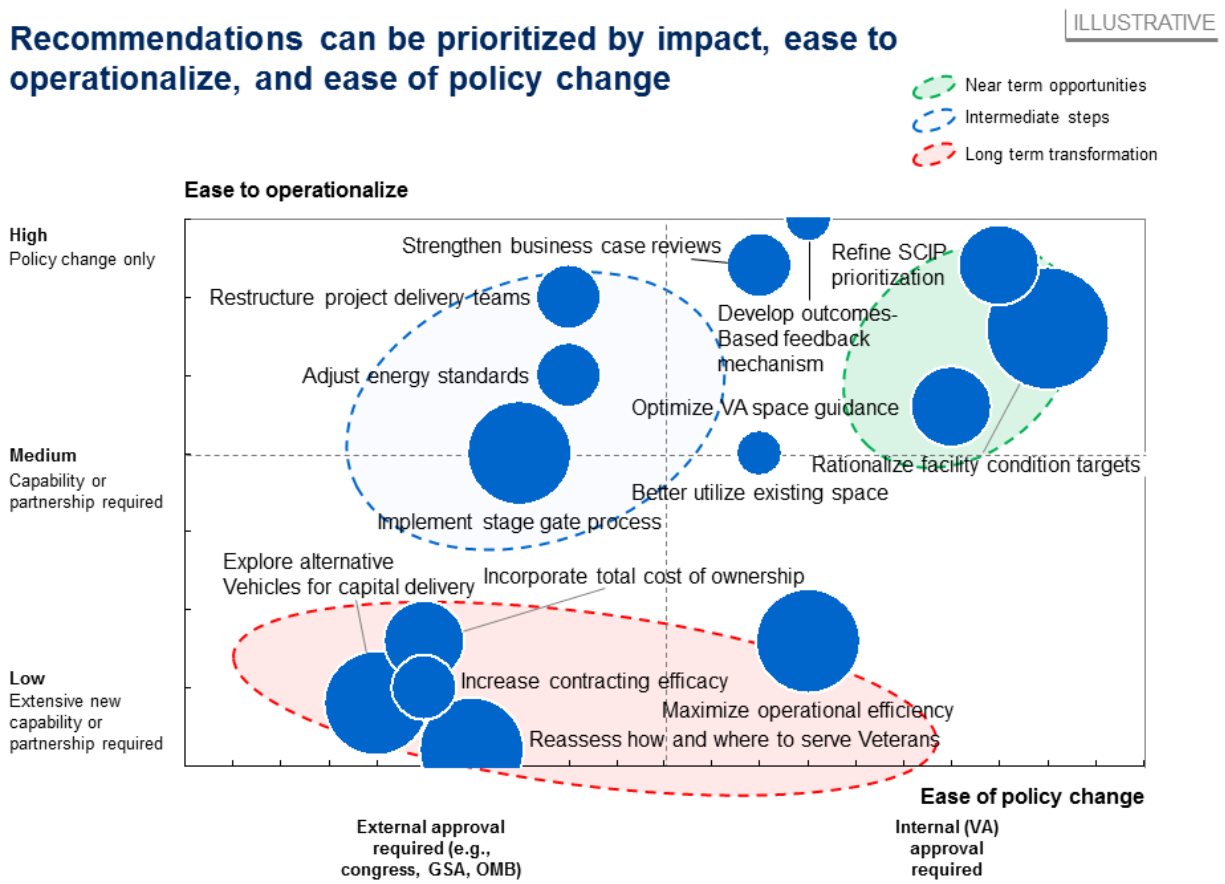
integrated sets of levers and associated quantified savings that represent different levels of transformation that VA could pursue.

4.4 Individual Lever Prioritization

As a first step, the levers were prioritized along three major dimensions:

- **Ease to operationalize**: Understand whether the proposed lever requires new capabilities or partnerships to be implemented increasing the difficulty to capture the estimated impact.
- **Ease of policy change:** Consider whether the proposed initiative could be carried out just with VA internal approval or requires external stakeholders consent (for example, Congress, GSA).
- **Overall capital Impact:** Estimate the overall impact over a 10-year period for the proposed lever.

Figure 4-5. Individual Lever Prioritization



The prioritization exercise allowed the classification of the levers in three major categories that are illustrated in Figure 4-5 and described below:

- **Near term opportunities**: Levers that could be easier to implement and represent significant capital improvement , such as rationalizing SCIP criteria, optimizing space design ratios, and outsourcing facilities management.
- **Intermediate capital efficiency opportunities**: Levers with significant interdependencies or which may be difficult to institutionalize across the entire portfolio, such as restructuring project delivery teams, deploying a portfolio wide stage gate process, and revising design standards.
- **Long term transformative opportunities for consideration**: Levers that require significant capabilities and external stakeholder involvement needed such as selling and leasing back facilities, reducing footprint of underutilized facilities, or changing operating approaches.

4.5 Estimating Scale of Capital Efficiency Transformation

Given this prioritization, we then estimated the size of the opportunity if maximum capital efficiency was achieved. The potential value from each of these levers cannot be calculated independently and then added together in different combinations to identify the potential savings because of interdependencies in implementation, but we have developed a sizing which represents internally consistent combinations of savings levers and the potential value associated with these levers being used in conjunction. We have selected these levers based on a combination of their ease of implementation, the authority VA has to implement the change, and the potential value from making the change.

4.5.1 Sizing Savings From Capital Efficiency Levers

In the short term, and regardless of the strategic choices VA might make, VA and VHA should undertake a holistic effort to maximize the efficiency of their capital program. This effort could have the potential to reduce the capital requirement by $13 billion to $18 billion against the current estimated VHA capital needs (from $51 billion to between $33 and $38 billion).

A high level description of the associated potential savings is provided in chapters 4.5.1.1 to 4.5.1.3 while an in depth explanation of the sizing methodology is provided in Appendix B.3 of the report.

4.5.1.1 Improve Project Selection and Refining the Project Portfolio to Reduce Total Forecasted Capital Requirements by $7 to $8.5 Billion Over 10 Years

To size the potential impact of project selection and portfolio optimization in VA, we focused in three main areas:

- **Refine project prioritization:** By focusing the criteria and approval processes for capital projects, VA could concentrate capital spending on facility condition strategic priorities in order to invest first in critical repairs and high risk facilities reducing the capital need by $5.5 to $6.5 billion.
- **Increase scrutiny and scrubbing of projects:** We assumed that the top priority projects in the access, energy or functional need can be optimized by extensive review and refining

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

processes to achieve improved project design and scoping, leading to a 10-15% reduction in capital need in these areas.

- **Space planning criteria:** By optimizing design standards to current industry design standards for medical rooms and improving the architectural design at the department level, square footage requirements could be reduced by 10 to 15% from current VA standards.

4.5.1.2 Streamline Project Delivery to Reduce Planned Capital Costs by $6 Billion to 9 Billion Over 10 Years and Avoid Potential Cost Overruns

We assumed the following efficiencies from the different construction programs if best practice efficiency levers are adequately deployed:

- **Major construction program:** Public and private sector case studies and expert interviews suggested an improvement potential from up to 50%. We assumed a range of approximately 25-30% improved cost performance for VA, which would bring their performance in line with their current internal cost objectives.

  Additionally, we assumed a decrease of historical overruns in major projects over the last five years as a result of the improved process and recommendations, generating an overall cost avoidance of $5.5 to 9 billion, over the $51 billion of capital need estimates.
- **Minor Construction program:** Based on existing research and expert interviews we assumed a conservative reduction of 10 to 15 percent of the final project cost, which would partially address the observed cost increases in the minor project program.
- **Non-Recurring Maintenance:** Similar to minor projects, we assumed a partial reduction in the observed average cost increases for NRM projects which would achieve an overall optimization of 5 to 10 percent in the overall portfolio over the next 10 years.

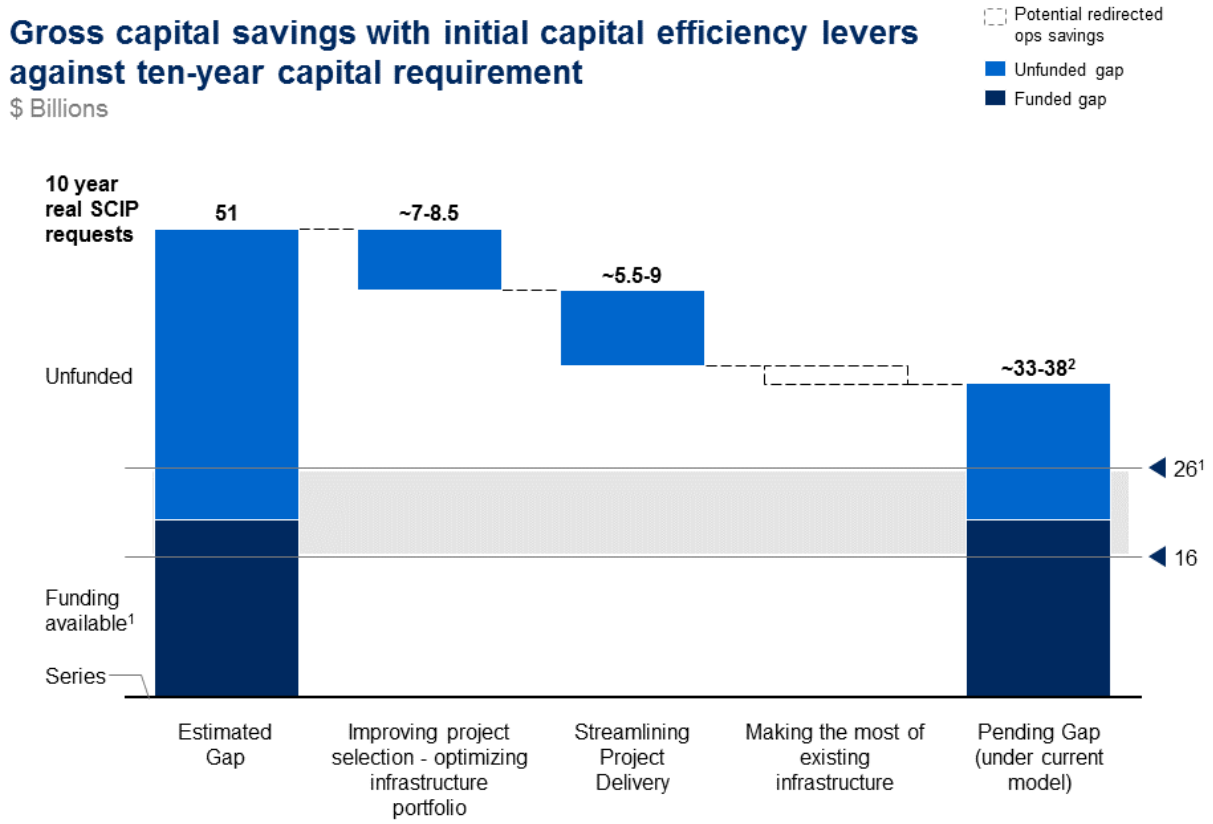
4.5.1.3 Make the Most of Existing Infrastructure and Capture Potential Savings in the Operating Budget by Reducing the Ongoing Operational Expenses in Line With Industry Standards

VHA could improve the utilization of its infrastructure ensuring that space planning programs regularly evaluate underutilized and vacant space to identify opportunities for increased utilization or to actively divest unusable properties. While most of these potential levers would fall outside the scope of Assessment K, experience shows that 10-20% opportunity capital reduction may exist from associated levers. We have not included this reduction in our sizing.

In summary, we estimate that the $51 billion capital requirement for VA could be reduced by $13 to $18 billion, or 25 to 35 percent of total need.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 4-6. Potential Capital Reduction Through Efficiency Levers



1 Based on four year average funding levels of $1.6 to $2.6 billion per year
2 Final capital requirements shown in rounded numbers

4.6 Strategic Levels of Transformation

If VA is able to successfully implement current improvement initiatives, act on these additional recommendations listed above, and demonstrate best practice performance, VA would have a total capital need of $33 to 38 billion over the next 10 years. Based on average funding of $16 to $26 billion over 10 years, an unfunded gap of $7 to $22 billion would still exist. To close this remaining gap, funding would need to be increased and VA will likely need to consider more transformative options. Applying many of these strategic changes would require external approvals and significant, multi-stakeholder conversations around the future of VHA. While sizing the opportunity of these levers is not within the scope of Assessment K, we believe that the case studies discussed offer a real opportunity to close VHA's capital shortfall while still providing quality care to Veterans.

4.7 Implementation Challenges to Achieve Quantified Impact

Achieving the identified savings requires concerted leadership efforts at every level and a comprehensive effort to implement recommendations at scale. VHA is a massive organization composed of multiple capital programs which currently operate at varying levels of

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

sophistication. Many of the challenges we and other assessment teams have observed are interrelated and highly complex. Implementing solutions to long-standing challenges will require collaboration among Congress and the Executive Branch, VA leadership (VACO, VISN, and VAMC) and staff, as well as external stakeholders. This assessment should be seen as an opportunity for improvement, to be achieved by all stakeholders through a combination of local, regional, and national action. Addressing these challenges will require sustained commitment as a part of an integrated transformation effort for the system as a whole.

While some changes may be more quickly enacted than others, it is important to develop an integrated, thoughtful approach to implementing the recommendations in this report. As previously noted and in alignment with Section 201 of the Choice Act, Section 201 assessments, findings and recommendations were developed independently. We therefore expect these recommendations will likely need to be refined and integrated by VHA leadership and the Commission on Care into the ongoing efforts. In order to effect the necessary change, the following enabling factors would need to be addressed.

- **Empower VA and VHA leadership to implement necessary changes.** Under current law, VA is not empowered to carry out all of the recommendations contained in this report. For example, changes to the appropriation mechanisms for NRM, minor, and major construction projects, described in Section 4, require Congressional action. Additionally, major alterations to VHA's operating model require Congressional support. This support goes beyond statutory changes. Real or perceived external influence is such that VHA, VISN, and station leadership feel constrained in making strategic choices around opening, moving, and closing facilities. As one example of the heightened external sensitivity around such issues, internal VHA guidelines[17] requires any changes that shift the services of an outpatient clinic across Congressional boundaries be approved by the Undersecretary of Health, adding another layer of complexity and extending the timeline needed to make changes in response to shifting Veteran needs.
- **Clarify strategic priorities.** Capital decisions should serve as an extension of a clear and consistent VHA mission. Historically, capital projects at VHA have suffered from the multitude of priorities layered into the process. Stations alter projects in order to achieve perceived priority criteria, shifting between security, access, and patient experience to respond to changing priorities. Without greater clarity and consistency of strategic priorities, project development may continue to be reactive, leading to jumbled and inefficient projects and capital plans. Assessment L covers the importance of mission alignment in greater depth.
- Promote a culture of innovation. Across VHA's capital program, transformative change is stifled by a culture oriented around compliance. Reliance on the status quo consistently trumps new approaches. Without best practice sharing or capability building, local leaders have little insight into new practices for their capital management program and little incentive to better their performance. Instead of focusing on opportunity, local leadership

[17] Guidelines for Notification for Community-Based Outpatient Clinics (CBOC) Changes.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

becomes concerned with the risk of failure. In order to reorient the capital program, local innovations should be encouraged, endorsed, and shared.

- **Implement recommendations on an integrated timeline.** The different levels of transformation discussed above can be understood as steps along a process towards transforming VHA's approach to capital assets and management. Levers should be implemented as the groundwork is laid through policy changes, capability building, and stakeholder consensus. Relying only on quick wins or attempting to rush through the transformation could result in confusing an already complicated capital management program.
- **Develop systems and structures for accountability.** While performance management systems exist for leaders across VHA, those systems are typically focused on specific tactical metrics rather than outcomes, limiting flexibility for creative and innovative approaches. Instead of these narrow performance metrics, leaders and systems should be held accountable for comprehensive outcomes. In order to motivate leaders to accomplish the sort of systemic transformation discussed in this assessment, leadership evaluation would need to be tied to key milestones and outcomes, and leadership could be empowered to accomplish those goals. Under the current system, outcomes are difficult to track and responsibility is unclear.

Implementing systemic efficiency improvements and strategic changes requires an investment of time, resources, and energy. The potential to close the gap in capital need will be proportionate to VA's ability to address the challenges facing implementation.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left page.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

5 Capital Planning Assessment

5.1 Preface

The capital planning process creates the structure by which VHA can strategically allocate resources to capital projects in order to enhance the capabilities, capacity, and quality of a medical facility to deliver care to Veterans. At its best, capital planning is deeply linked to broader strategic planning efforts which incorporate non-capital solutions as well. This process stretches across all levels of the agency.

Capital planning begins with the systemic identification of patient needs through VHA's Health Care Planning Model (HCPM). In coordination with Veterans Benefits Administration (VBA) and National Cemeteries Administration (NCA), the Integrated Planning effort, launched by the Office of Construction and Facilities Management (CFM) in FY11, takes a 10-year view of needs across each region, the current ability to respond to those needs, and the potential projects to execute against those needs. Stations and networks have also historically developed their own strategic and capital master plans in order to provide a long-range view towards effective project development. The Integrated Master Planning effort has been piloted in four VISNs so far and will replace the more ad hoc planning process as it is rolled out across the country.[18]

These planning efforts are coordinated across the country through the Strategic Capital Investment Plan (SCIP), by which stations across VA (including VBA and NCA as well as VHA) submit 10-year Action Plans in response to identified gaps in the system, such as access, condition, utilization, and space. These gaps pull from data collected throughout the year, including Facility Condition Assessments (FCA) which are completed by independent assessors every three years and measure what it would take to bring all aspects of current facilities up to like-new condition. These Action Plans are supplemented with business cases for projects within the first fiscal year, all of which are evaluated and scored for funding.

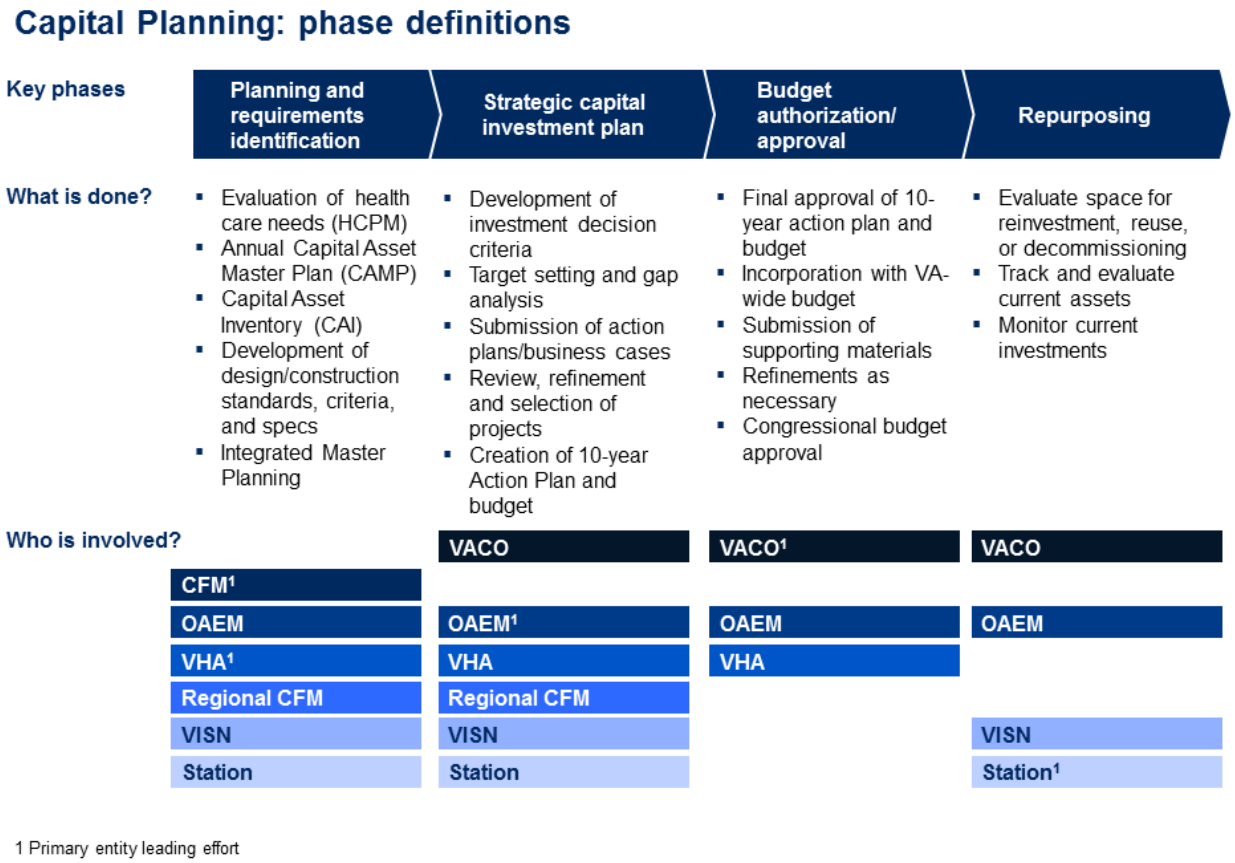
These funding needs are then weighed against other needs within VA and across federal agencies for submission as part of the budget package. Funds are allocated through various mechanisms, including: (1) major construction projects coming from line-item Congressional allocation and held at VACO, (2) funds for minor construction projects allocated as a lump sum and distributed through VACO, (3) funds for non-recurring maintenance (NRM) distributed to VISNs through Veterans Equitable Resource Allocation (VERA) funding allocations, (4) major leases authorized by Congress and funded through station operation dollars and (5) funds for leases coming from station operating dollars allocated by VERA funding.

Figure 5-1 illustrates some of the key phases of capital planning, and who plays a key role at each stage.

[18] VA Integrated Planning presentation, 2015.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-1. Capital Planning Phase Definitions



This assessment looks across all of the capital planning phases and is structured to address the following set of questions:

- **Outcomes:** How effectively do capital planning efforts respond to Veteran needs? Are capital funds effectively allocated to areas of greatest need within an adequate window? Does the current quality and capacity of facilities reflect this strategic allocation?
- **Process:** What are the processes for capital allocation? How are these processes integrated across regions and organizational levels? What are the key pain points or sources of inefficiency in the current process? Where are best practices or areas of strength evident?
- **People:** Are the right people involved in capital planning responsibilities? What training are they given to execute these responsibilities? Do people have sufficient time, resources, and authority to execute their responsibilities?
- **Systems:** Are the right tools in place for developing capital projects? What are the current limitations of those tools, and how might they be enhanced?

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

5.2 Findings

5.2.1 Outcomes

For VHA facilities, the gap between needs and resources continues to widen. The current 10-year capital need for VHA is approximately $51 billion. Over that time period, if additional needs are identified, the capital requirement could grow. Of the total, approximately $46 billion comes from the 10-year action plan developed through the SCIP process, and $5 billion comes from commitments to ongoing major capital projects. Average annual funding levels are well below that, at approximately $2 billion, leaving a $31 billion deficit from anticipated funding to 10-year identified need. Additionally, above the $51 billion identified in SCIP and outstanding major construction budget requests, VA historically has experienced significant overruns in their major construction performance, as detailed in-depth in Section 6. These overruns, if not averted through efficiency gains and process improvements, could escalate the total capital requirement to $56 to $64 billion.

Even with recent infusions of funds from the American Recovery and Reinvestment Act and the Veterans Choice Act, the scale and condition of facilities, combined with emerging needs, is such that VHA may not be able to construct, lease, and maintain medical facilities at a level to serve the entire Veteran population. Were VHA able to improve to best practice levels in each of these areas, there would still be a substantial funding gap unless there is a significant strategic shift and a marked increase in resources. As is illustrated by the four key findings below, the current capital management program does not keep pace with reported needs.

5.2.1.1 Investments in Facilities Are not Effectively Linked to Workload Growth

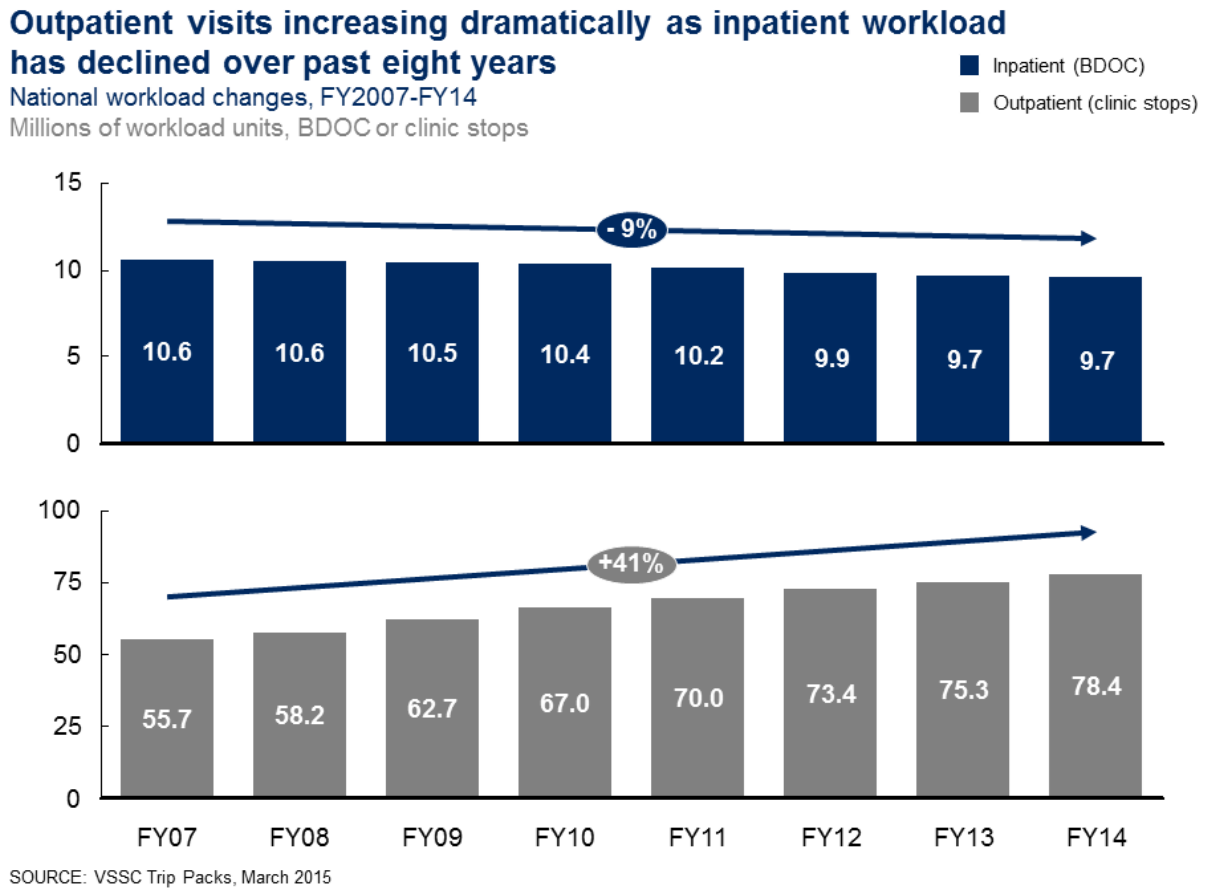
Facility needs are changing rapidly across VHA, with trifold pressures of shifts in care models, population centers, and medical standards. First, for both VHA and the health care industry, the model of care is shifting from intensive hospital treatments to outpatient care, often housed in the growing number of Community Based Outpatient Clinics (CBOCs). Between 2007 and 2014, outpatient visits increased 41 percent while inpatient Bed Days of Care (BDOCs) declined nine percent, see Figure 5-2. HCPM projects these trends to continue across the board. Some VISNs have experienced these swings even more dramatically. Outpatient clinic visits have increased as much as 70 percent (VISN 6), with five VISNs seeing growth rates above 50 percent. Inpatient bed days, however, have dropped as much as 21 percent in some VISNs.[19] Over the next twenty years, inpatient BDOC is expected to decline an additional 50 percent or more.[20]

[19] VSSC Trip Pack II Reports, aggregated 2007-2014 data.

[20] Health Care Planning Model, BY13 Gap Analysis tool, June 2014.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-2. Changes in VHA Patient Workload, FY07-FY14



Second, Veteran population shifts have mirrored shifts in the greater population, concentrating growth in the southern and western United States, while VISNs 1-4, located in the northeastern United States, are projected to face declining enrollment over the next 20 years.[21] Third, advances in medical equipment and facility standards across the industry, such as the move to private patient rooms, require corresponding changes within facilities in order to ensure Veterans receive the highest quality of care. Space requirements have gradually increased to reflect these changes. As the workload mix has adjusted, space within medical centers has been repurposed from inpatient to outpatient uses, often requiring significant remodeling.

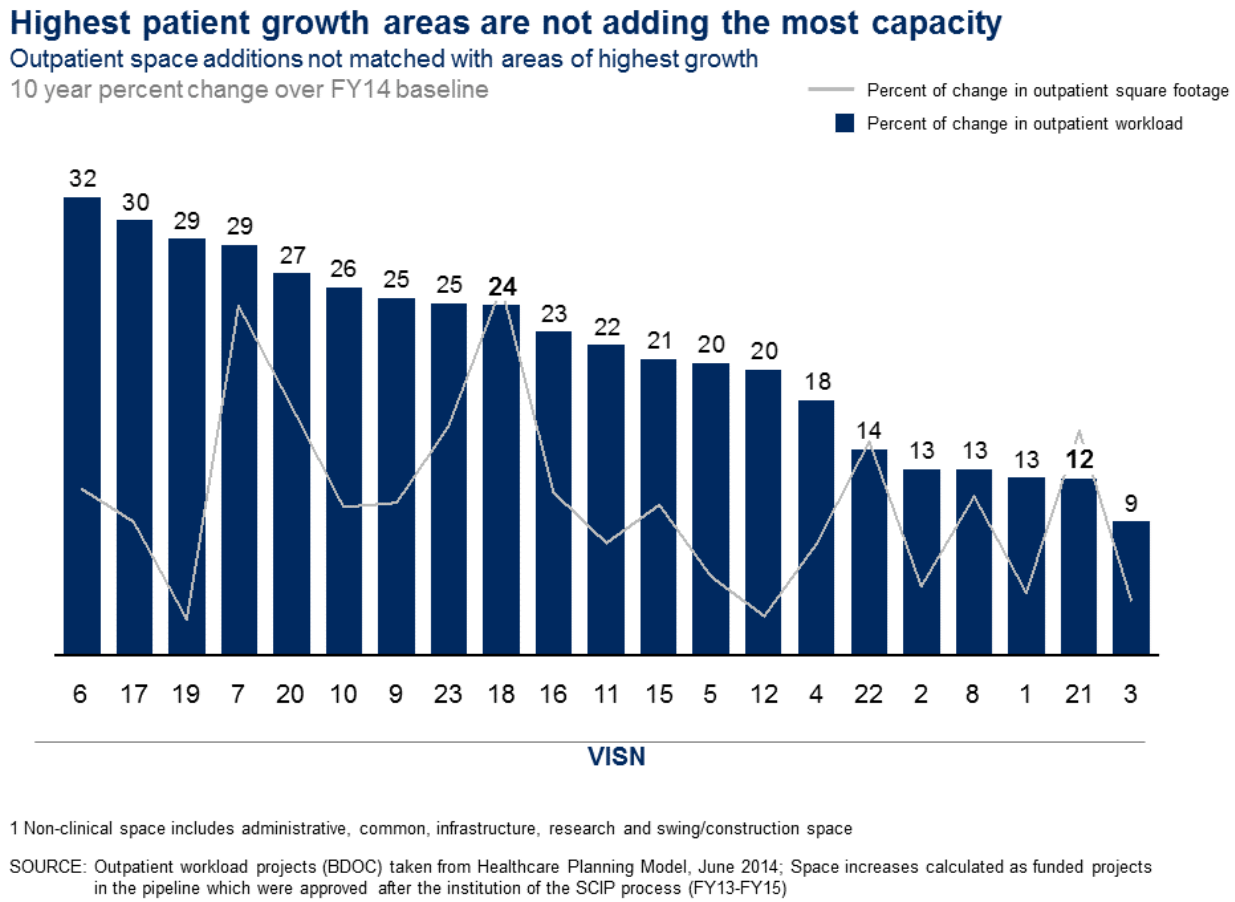
This level of change would challenge the capital planning efforts of any medical system, but lengthy approval processes, construction delays, and modest budgets have combined to make this a formidable task for VHA. Capital investments significantly lag behind workload increases, or may be out of sync entirely. Projects currently in the pipeline to increase clinical space for outpatient needs, approved and under construction projects of all types, are not expected to meet the emergent growth in outpatient care. Figure 5-3 illustrates the mismatch between

[21] Enrollee Health Care Projection Model Figures, 2014.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

facility growth (in square feet) and workload growth (in clinic stops). Some of this mismatch may be attributable to delayed responses to long-standing needs.

Figure 5-3. Outpatient Capacity Mapping Versus Projected Workload Increase

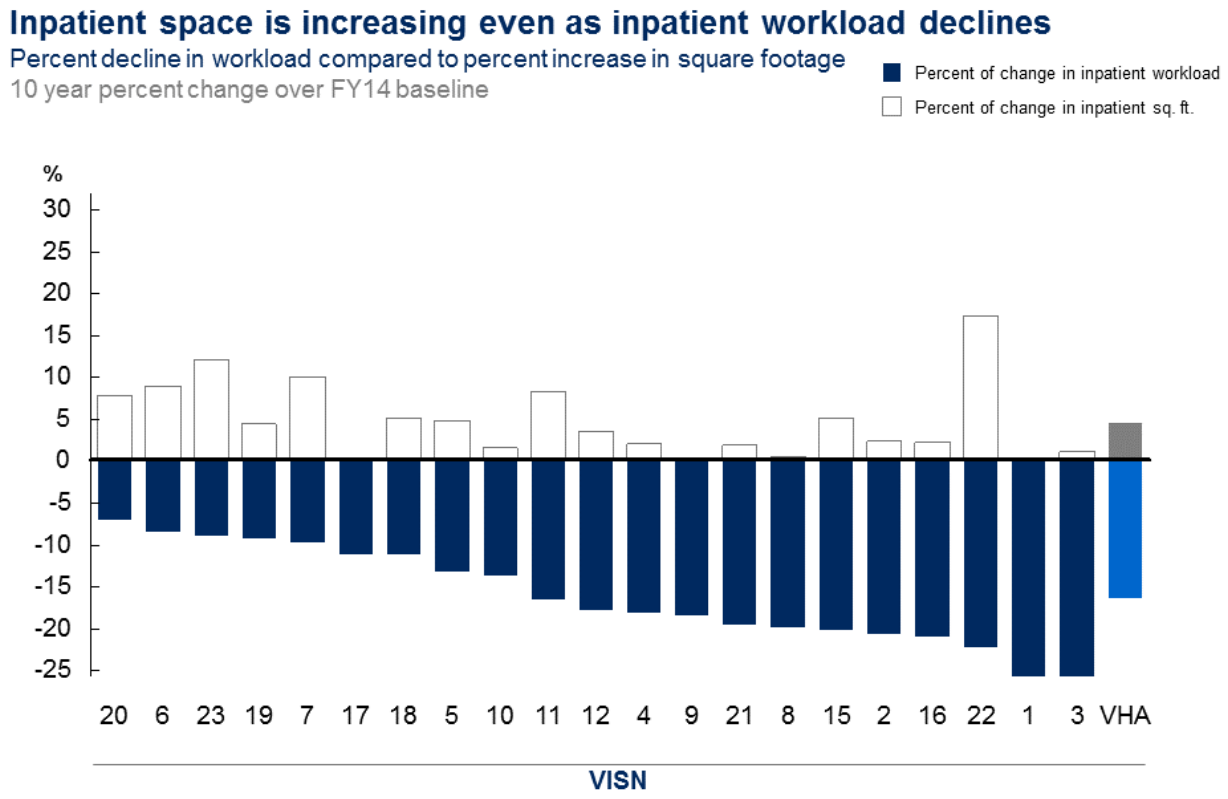


At the same time, inpatient space is still being added to stations, despite consistently declining inpatient workloads. As seen in Figure 5-4, across the system, in-process inpatient space averages a five percent increase over existing inpatient space. Some of this is the result of changing space standards, such as the emphasis on private rooms and bathrooms for patients. More than 35 percent of the increase in inpatient space is driven by new or expanded Community Living Centers to provide long-term care.[22] Even with these considerations, the contrast between inpatient and outpatient workload and space expansions is striking.

[22] Data regarding in-pipeline projects taken from SCIP database for all projects which have been funded for design and/or construction. Only projects approved for funding after the induction of the SCIP process in FY13 were consider in the analysis, in order to ensure only the consequences of the current planning process were considered.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-4. Inpatient Capacity Mapping Versus Projected Workload Change

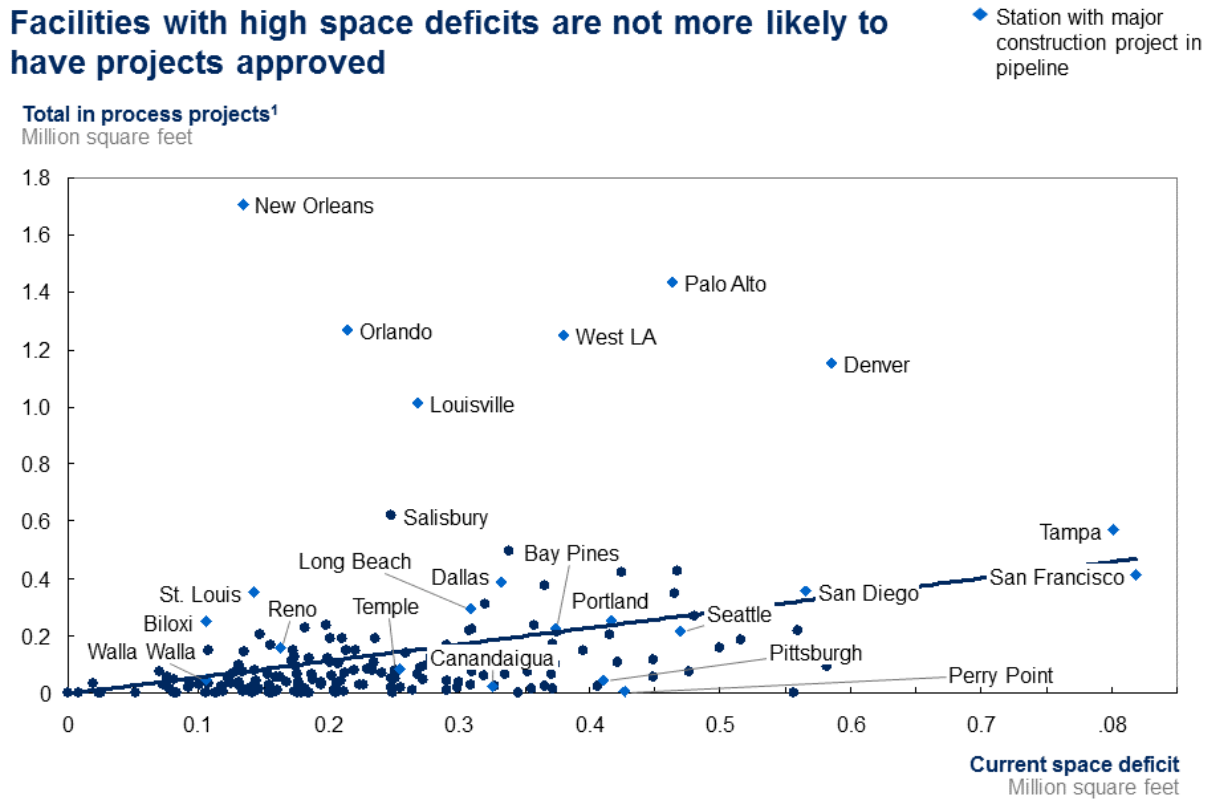


SOURCE: Inpatient workload projects (BDOC) taken from Health care Planning Model, June 2014; Space increases calculated as funded projects in the pipeline which were approved after the institution of the SCIP process (FY13-FY15)

A portion of the planned construction has a justification apart from workload increases. For example, VISN 22, an obvious outlier, has multiple on-going major construction projects and is also responding to seismic concerns, which are scored highly in the SCIP process. Nonetheless, the system-wide trend of significant construction efforts appears at odds with significant workload growth needs. Figure 5-5 illustrates the relationship between current station level space needs, based on currently acceptable medical square footage requirements, and pipeline projects to add square footage. While a slight connection between the space deficit and the in-process pipeline at a station exists, that correlation accounts for less than 30 percent of the planned construction. Moreover, major construction projects, expansion projects costing more than $10 million are even less connected with space needs than other construction and leasing types.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-5. Project Pipeline Correlation with Space Deficit



1 Defined as projects which are in progress, including those having received funding or design or construction (not all scored projects)

SOURCE: Source: FY2017 VA Space Analysis tool

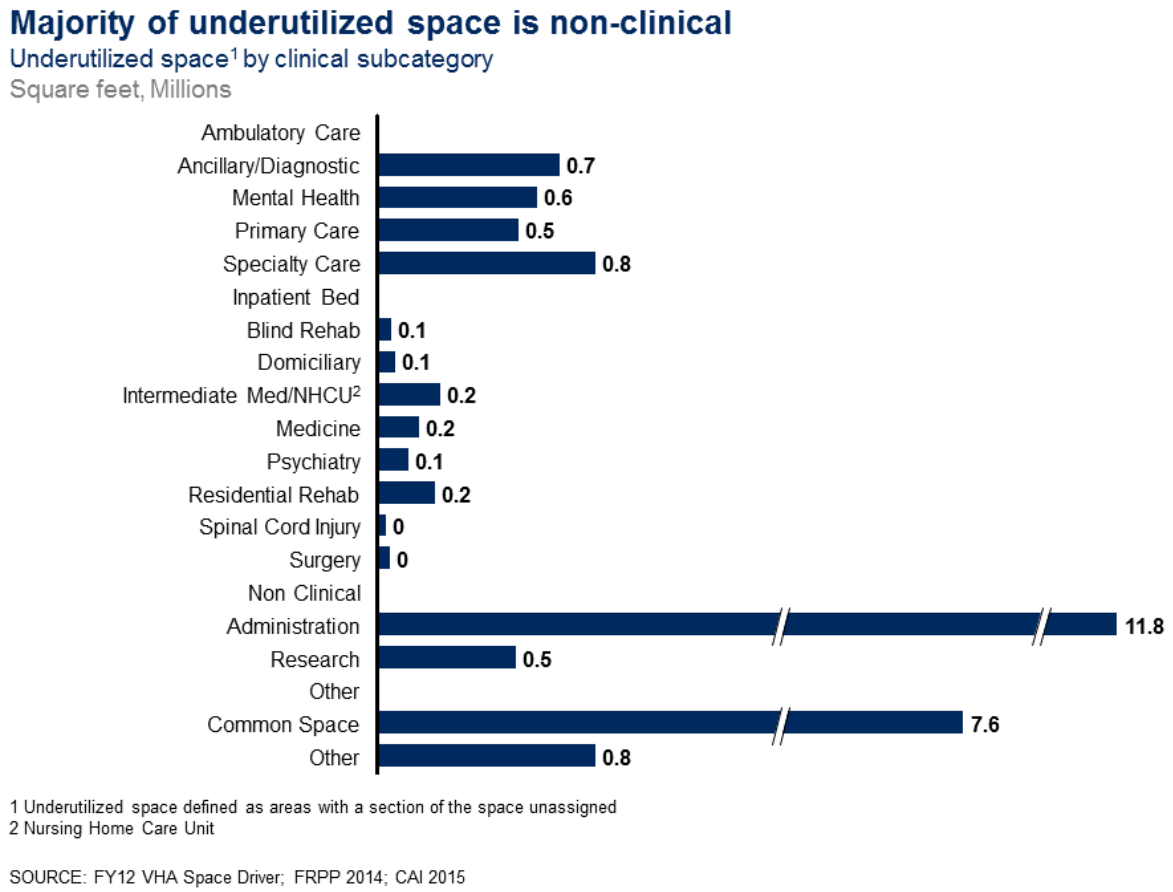
5.2.1.2 Existing Space Is not Being Used at Its Highest Efficiency

Using VHA space guidelines for medical facilities, VHA records indicate a current need of 44 million additional square feet, while simultaneously recording 25 million square feet of underutilized space and 6.5 million square feet of vacant space (FRPP, 2014 and CAI, 2015; see Figure 5-6). The bulk of the underutilized space is administrative space. Some of the underutilized space is not easily repurposed because of age, condition, layout, or location. In many cases, one station will record excess space while another records a need. Sometimes this occurs even between two facilities in a dual campus station, meaning the existing excess space cannot be easily matched to patient needs.

In many instances, underutilized and vacant space may simply be unusable. The buildings currently being left vacant are, on average, ten years older than the typical VHA building and are typically non-medical space (VA Capital Asset Inventory, 2015). Older buildings, not designed to current medical standards, may be difficult or impossible to remodel to effectively meet current needs. Even where there are good reasons for not using this space, however, keeping vacant or heavily underutilized buildings within VHA's portfolio requires an unnecessary investment in upkeep which could be avoided by divesting these properties (Federal Asset Management, 2011).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-6. Needed and Underutilized Space by Type



5.2.1.3 Facilities Are Being Pushed Well Past Their Useful Lifespans

VHA's system is dominated by older structures which require significant investment to maintain. The ability of the system to adjust to shifting needs is currently constrained by the cost of more basic upkeep demands. Moreover, the scale of the updates and repairs needed is such that funding levels are insufficient to meet the existing need. As a result, the gap between needs and investment is widening, and already aging facilities are only deteriorating further.

According to Facility Condition Assessments (FCAs), VHA systems average a C- on an A to F scale, as detailed in Figure 5-7 (Capital Asset Database, 2015). These independent assessments are completed on a rolling basis, with each facility being inspected every three years. Nearly 40 percent of scored components received a D or F rating. VHA facilities do not receive an overall grade, but their component parts are scored with accompanying costs to upgrade components. These inspections have identified $15.9 billion dollars in needed repairs to bring all facilities back to like-new condition. Executing these repairs would include additional costs, such as contractor fees, and raise the total dollar number needed to correct FCA deficiencies.[23]

[23] Project costs include the labor, overhead, and associated costs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-7. Major Deficiencies Identified in FCA

FCA correction costs are concentrated in Grade D ratings

Facility Condition Assessment Ratings

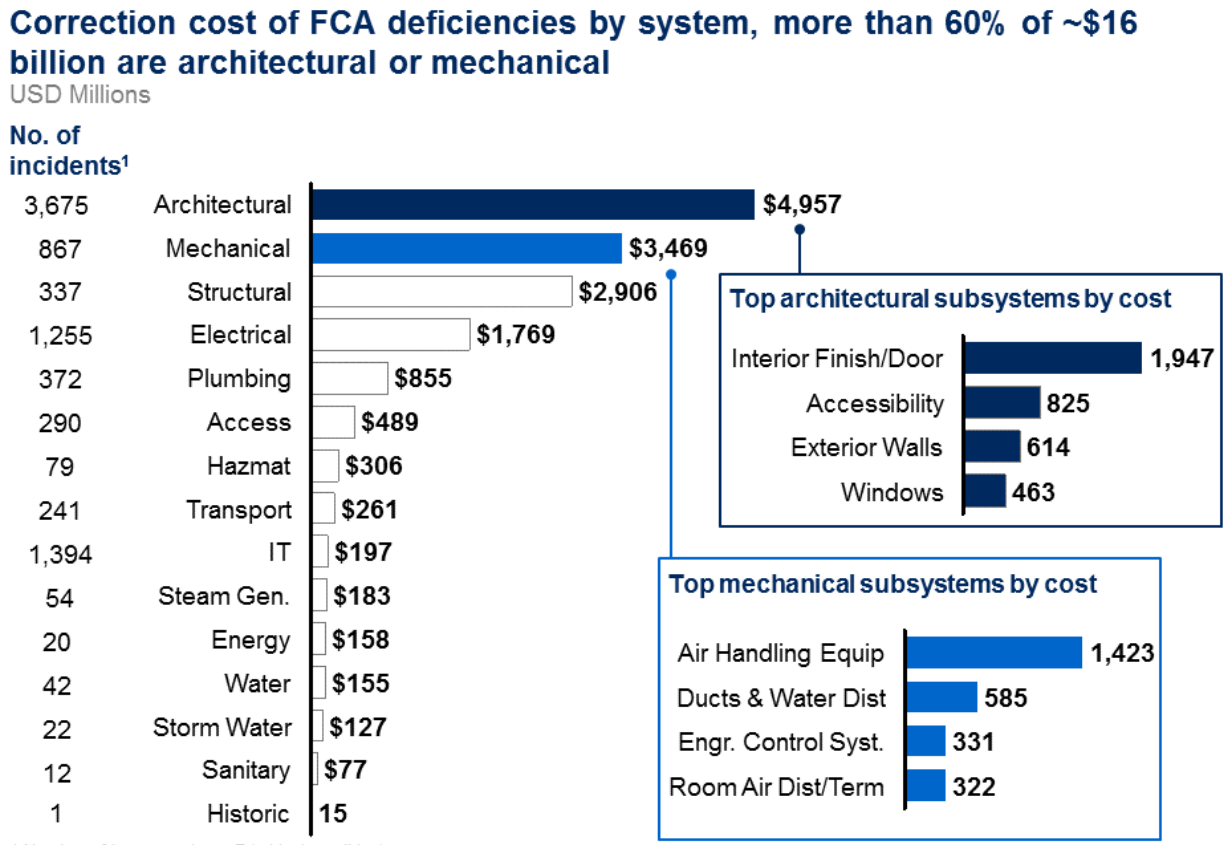
Grade	Definition	Number items	Total correction cost $ Billions
A	Like-new condition	24,337	n/a
B	Over half of useful life remains	33,203	<1
C	Avg. condition, less than half of useful life remaining	55,841	<1
D	Poor condition, at the end of its useful life	59,919	13.5
F	Critical condition, requires immediate attention	8,574	2.4

SOURCE: Facility Condition Assessments taken from VA Capital Asset Database, March 2015

While some of these deficiencies are more superficial, many address critical infrastructure needs. Figure 5-8 illustrates the number of deficiencies across systems and the key drivers of cost.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-8. Major Drivers of Condition D and FCA Deficiencies



While architectural and mechanical deficiencies make up the bulk of the cost, nearly $2.8 billion of the structural costs are driven by seismic concerns. Many of the other top-dollar categories, such as air handling equipment, consist of high-dollar projects, which can be challenging to work through the approval process because they hit a very narrow subset of the approval criteria for capital projects and therefore may not score high enough to be funded, as discussed further in Section 5.2.2.2.

5.2.1.4 Aging Infrastructure Negatively Affects Veteran Care

The average year of construction for VHA properties was 1965. The average building age in VHA is 50 years (Capital Asset Database, 2015).[24] In comparison, the building average of not-for-profit hospital systems in the United States is 10.5 years (Soule and Keller, 2014).[25] While most facilities have been extensively renovated, the renovations themselves have aged, and often

[24] In order to control for varying facilities sizes, data on year built was weighted by square footage on a building level. This avoids skewing the data by given the same weigh to small, older structures, such as guard buildings or storage buildings, as to large hospital campuses. Year built, square footage, and historic designation were taken from VA Capital Asset Database, accessed March 2015.

[25] 2013 analysis of 139 not-for-profit hospital systems in US, encompassing 1,362 hospitals.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

were directly towards cosmetic rather than structural updates. Even when incorporating the renovation dates listed in the Capital Asset Inventory (CAI), the average age is still estimated to be approximately 41 years.[26] More than simply an issue of structural integrity, dated hospitals are built with designs which do not incorporate new models of care and cannot be easily adjusted to new approaches, such as the Patient Aligned Care Team (PACT) model.

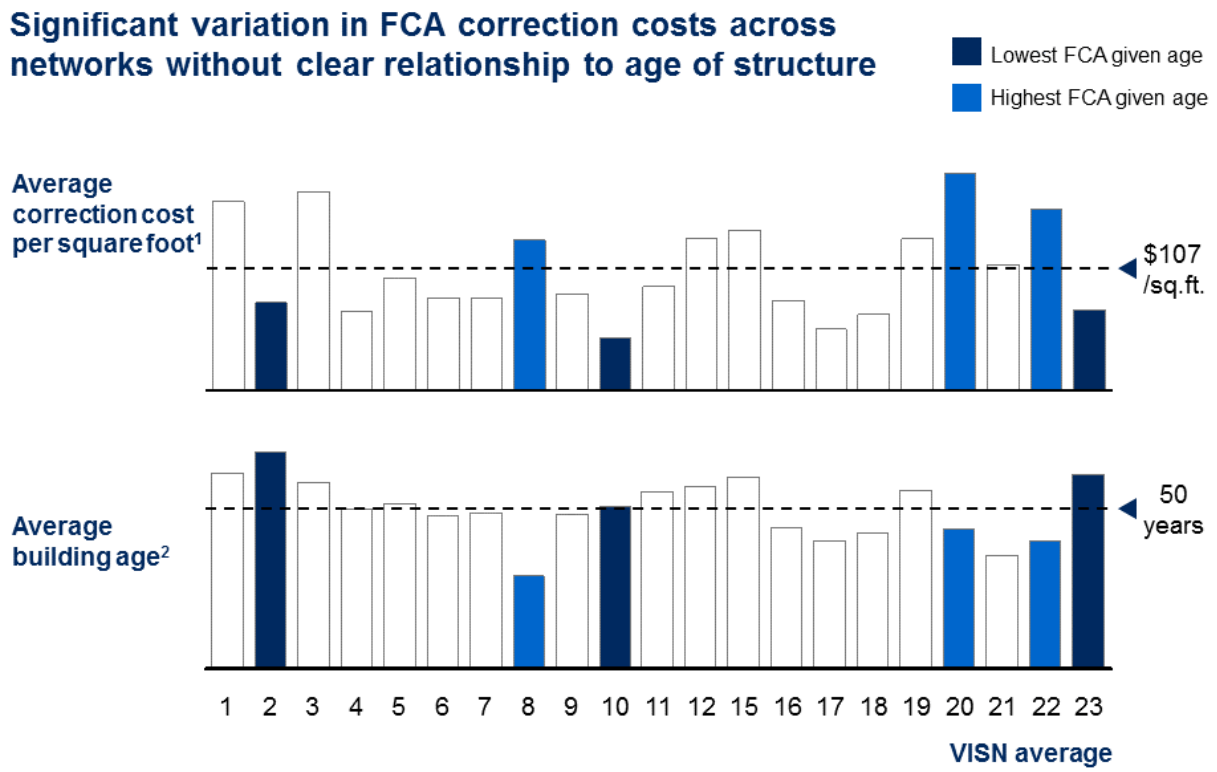
A large percentage of VHA properties are further restricted. More than 20 percent of the square footage owned by VHA is designated as either a National Historic Landmark or a National Register Listed property, limiting the manner of renovations which can be done to the property and the potential for resale or demolition. As a result, when these properties are no longer usable for clinical purposes, VHA may be obligated to maintain these properties or go through a burdensome process to dispose of them.

The age of a facility is not a clear proxy for condition. While there are some clear relationships between younger facilities and fewer condition deficiencies – VISN 17's relatively recent facilities have lower than average correction costs – there is not a consistent relationship. Age contributes to the facility condition, which is also exacerbated by such factors as neglected or underfunded maintenance needs, unfavorable climate, and building typologies. Figure 5-9 evaluates the connection between facility age and FCA correction costs per square foot on a VISN level.

[26] Renovation years are often inconsistently applied in the CAI, and so should not be taken as a replacement for the year constructed when evaluating the age of the building.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-9. Correlation Between FCA Costs and Average Building Age



Under FEMA guidelines, buildings are considered eligible for replacement when the fully-loaded correction cost is more than half of the replacement value of the facility (OIG-14-123-D, 2014).[27] VHA calculates a replacement value for each building in their inventory as part of the CAI. This replacement cost does not include the cost of land, but does include the full project costs of constructing the building, as determined by estimates developed by CFM. The correction costs used for the CAI, however, do not include these project costs, but are based on the value of replacement systems, or construction dollars only. Because of this, these estimates underestimate the ratio of correction to replacement. The design and execution of those projects typically adds an additional 25 to 35 percent to the total cost.[28]

The differing calculation methods makes it difficult to fully apply the 50 percent of replacement value principle, but we can use the inventory numbers to arrive at a conservative estimate for the number of buildings which are in too great a state of disrepair to justify further repair.

[27] This guideline is applied for public assistance grants to properties damaged by disasters. While the Office of the Inspector General (OIG) has identified challenges to effectively implementing this guidance, the general principle is widely held.

[28] The delta between construction costs and project costs is discussed more fully in the design and construction chapters.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

According to the 2014 Federal Real Property Profile (FRPP), 508 buildings owned by VHA have correction costs exceeding 50 percent of their replacement value, totaling approximately seven million square feet, or 5 percent of the property owned by VHA. An additional 198 properties are borderline, with correction costs totaling more than 40 percent of the building's replacement value, which brings the total to nearly 7 percent of property owned by VHA. For these buildings, 11 of which are active hospital buildings larger than 50,000 square feet, these data suggest that investing in minor improvements, or even significant renovation, is no longer cost-effective. This is a significant concern across the system as the fully loaded replacement value of all VHA structures at $86 billion, correction costs system-wide stand at 19 percent of that total, and goes as high as 25 percent when considering full project costs (FRPP, 2014).[29]

5.2.2 Process

5.2.2.1 Expected Funding Levels Do not Support Identified Capital Needs

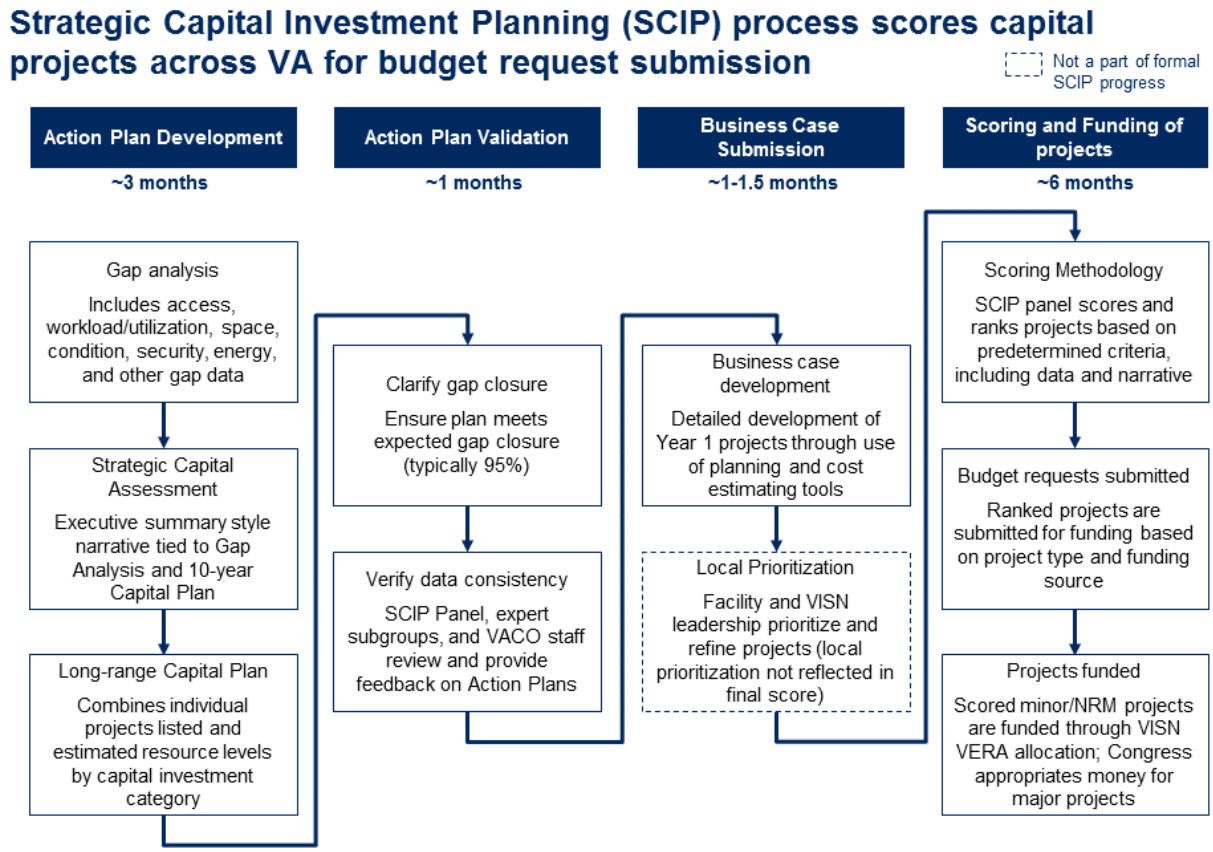
While the forecasted need for capital investment is $51 billion over the next 10 years, actual funding levels for capital projects remain far below requested levels, with current funding levels likely providing approximately $16 to $26 billion over the next 10 years (VA Budget, FY13-FY16). As a result, stations compete for limited funds. Different project types are funded through different mechanisms, but all project types are evaluated through SCIP process conducted annually at a national level.

Through SCIP, stations develop 10-year action plans to close identified gaps in such categories as access, condition, and space and provide detailed business cases for all projects applying for funding in the first fiscal year. The sizing of these gaps comes from centrally managed databases, including the Facility Condition Assessments discussed earlier. Every year, stations are given new workload projections, based on EHCPM, which projects workload at the 5-, 10-, 15-, and 20-year marks. Additionally, stations can access planning tools such as a mapping database and the Healthcare Planning Model (HCPM) and capital asset inventories (including the facility condition assessments discussed earlier) throughout the year in order to help develop their projects and business case justifications. Figure 5-10 provides an overview of the process.

[29] Of the FRPP database, only VHA properties considered.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-10. Overall SCIP Process Details



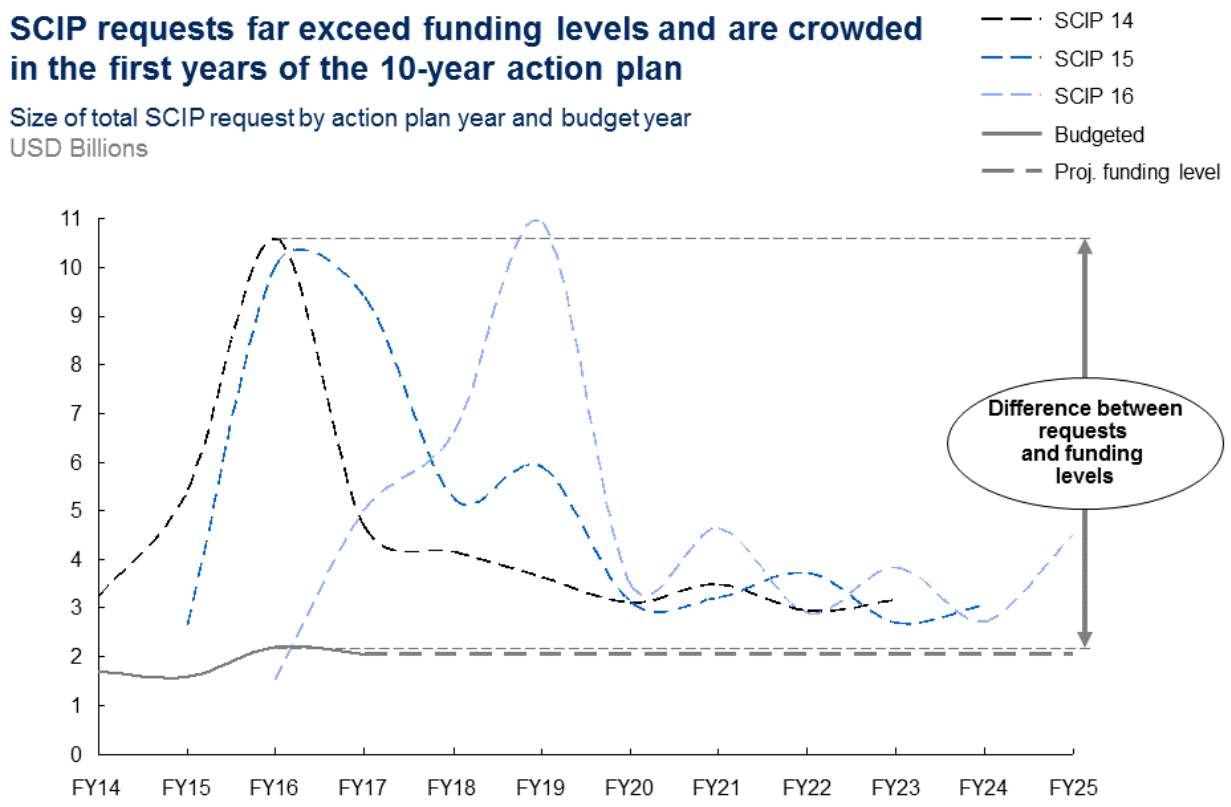
SOURCE: FY17 SCIP call memo; multiple interviews

The SCIP process, instituted for FY2013, offered a significant improvement in the level of data-based decisions used in the capital allocation process. Nonetheless, the evolving prioritization criteria and the resulting culture and process changes have created challenges throughout the system. Significantly, the lengthy time horizons from project delivery complicate any capital planning efforts, as advance planning efforts cannot be consistently implemented in time to respond to the needs they are designed to address.

While the Action Plans are designed to cover a 10-year time window, the submissions illustrate the challenges of effectively planning over a 10-year window during which facilities must compete for funds. All major and minor projects, as well as all NRM projects above $1 million, are scored and ranked across VHA. While roughly two billion dollars annually is given towards construction and maintenance projects, funding requests are consistently above this mark. This is particularly true in the first years of the Action Plan, for which facilities are developing more detailed projects (Figure 5-11).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-11. SCIP Funding Requested by Year



SOURCE: FY14-16 SCIP submissions; interviews

Less than 30 percent of projects are funded each year, leaving more than 1,000 scored and approved projects on the shelf at the end of each planning cycle (SCIP requests, FY14-FY16).[30] As each new planning cycle arises, unfunded projects and low approval rates cause stations to crowd lingering plans into the early years, diminishing the effectiveness of SCIP as a planning tool. Current estimates for fund requests four or more years out from the current fiscal year are largely based on block sums calculated as "out year funding" based on a calculation of the cost to close the remaining gap (VACO interviews, 2015). As projects remain unfunded in the near-term, those costs are then pushed out to the later years, with the "peak" funding year seen in Figure 5-11 being consistently rolled back with the submission of each new Action Plan. Interviewees reported that the uncertainty surrounding funding levels and the consistent delay of approved projects make it challenging for VAMCs to make realistic planning decisions about the best way to respond to budget constraints (VAMC/VISN interviews, 2015).

[30] Applicable in the years for which detailed project proposals exist, typically the first five years of the Action Plan.

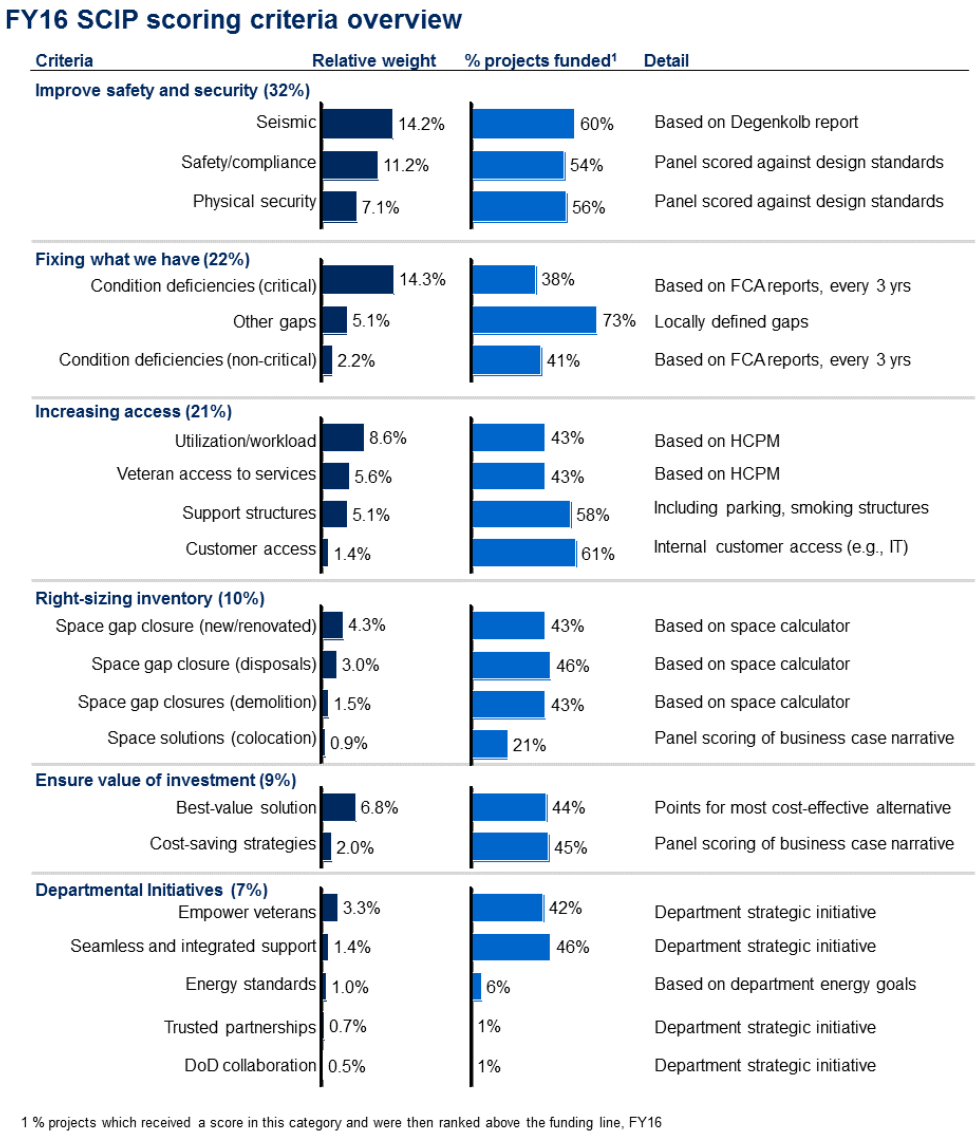
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

5.2.2.2 SCIP Scoring Does not Favor Projects With Highest Impact on Veteran Needs

The current SCIP scoring process also creates challenges in understanding which projects will rise to the top. The number of criteria alone creates a high level of complexity. Figure 5-12 details the 21 criteria used for the FY16 SCIP submission (SCIP Criteria, 2015). While these criteria are grouped into six high level priorities, they are calculated and evaluated on the subcriteria level. Each criterion is given a scoring unit, scoring methodology, and relative weight. Credit is given for the progress of each project against the total identified gap.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-12. SCIP Scoring Criteria Details



Because of the dispersed weights of the different subcriteria and the development of projects to hit a broad range of criteria, approval rates for individual projects are not closely related to the ranks of the strategic criteria they emphasize. While this diminishes the impact of the individual strategic criteria, these rankings also provide insight into the project pipeline results discussed earlier. It is not surprising that new expansions are not closely linked to workload growth when the utilization/workload criterion is only worth 8.6 percent of the total score. Similarly, the high levels of construction on the west coast, unlinked to workload, are understandable when seismic concerns are effectively tied for first in strategic terms, being worth 14.2 percent of the total score.

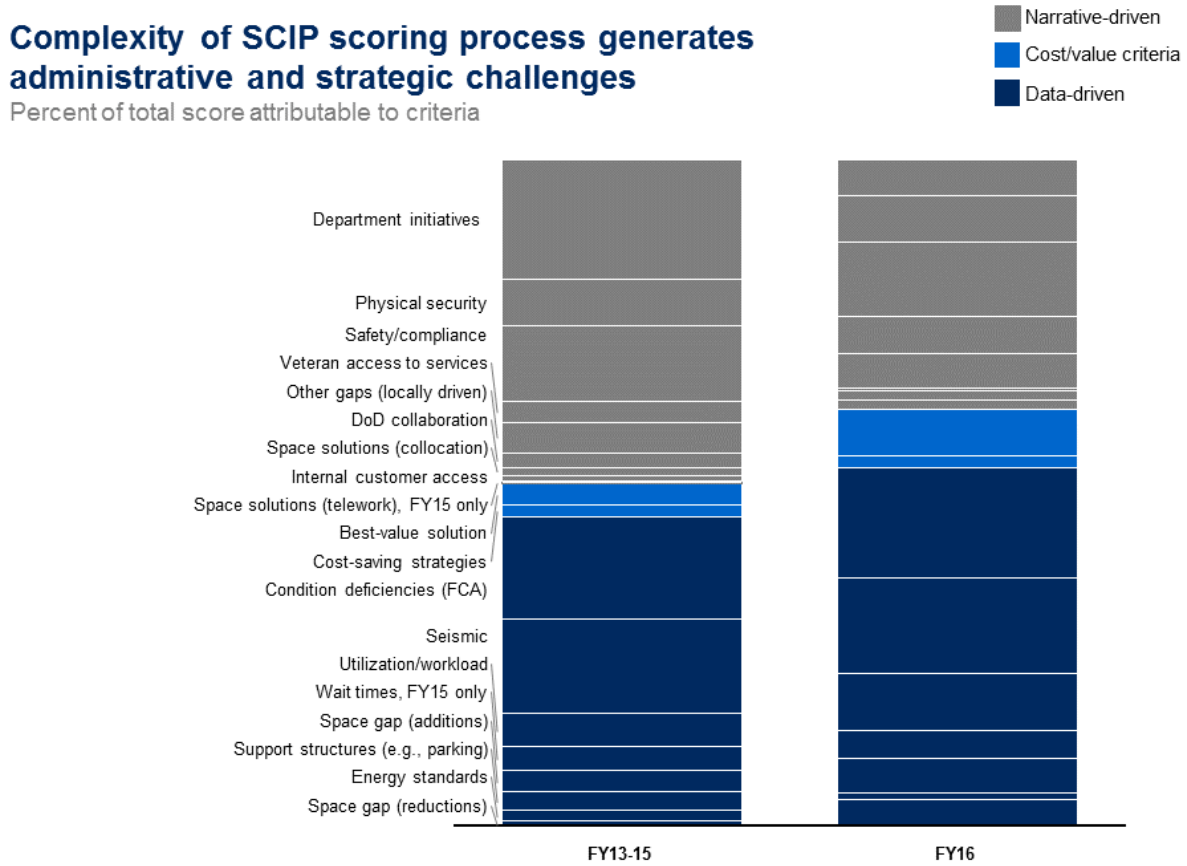
The scoring process is reevaluated annually in order to allow for VA shifting strategic needs and reflect process updates. As illustrated in Figure 5-13, more of the scoring shifts to objective data

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

inputs in FY16. Roughly 45 percent of the scoring, however, remains scored based on the business case narrative. As a result, stations have learned to place considerable emphasis on the ability to write a business cases tailored to perceived high value criteria, using both in-house staff and consultants to try and maximize these scores. This introduces an unavoidable subjectivity to the process, where presentation affects scoring independent of project merits.

While SCIP criteria and planning tools do push stations to consider cost-effective alternatives and provide a best-value business case, less than 10 percent of the total score relates to ensuring the value of the investment.

Figure 5-13. Assessment of Different Parameters Weighting in SCIP



SOURCE: Internal SCIP weighting guides, FY15 and FY16

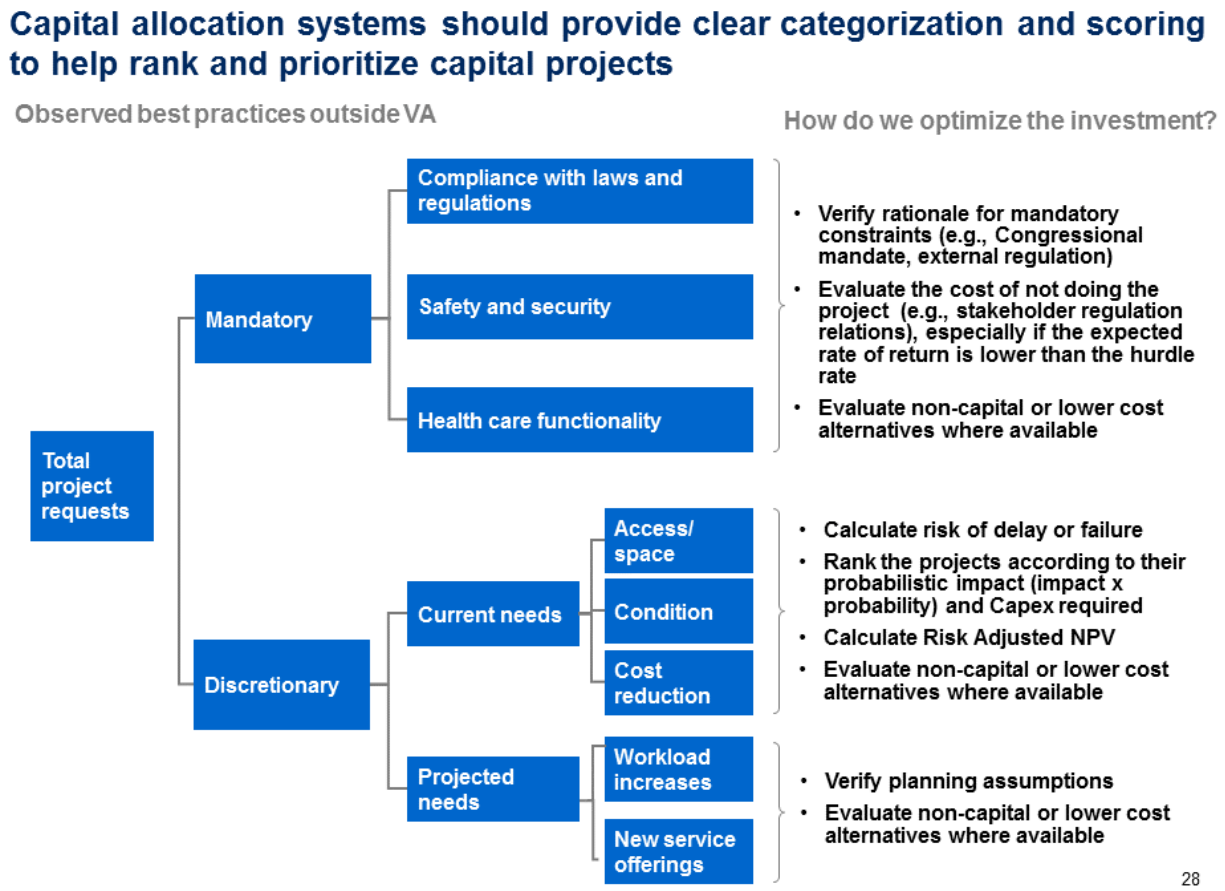
While the current SCIP framework provides a system for evaluating projects and includes several strategic assessment criteria, the system classifies and scores all project using the same methodology. However, best practice capital portfolio optimization processes typically segment projects and apply different evaluation methodologies for each category of project (see Figure 5-14 as an example).

In the sample prioritization breakdown shown in Figure 5-14, projects are divided among two main categories: mandatory and discretionary. Mandatory projects are those directly dictated by laws and regulations and are necessary for the safe operation of a facility. Mandatory

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

projects should be prioritized over discretionary. However, mandatory projects should not be automatically or immediately approved and their classification should be thoroughly reviewed. Non-capital solutions could be available which would decrease the need for capital investment, and some of the projects can be shifted in later timeframes. More importantly, mandatory projects that have very low return on investment, below the minimal expected rate of return on invested capital, should be intensely reviewed and alternative scenarios should be considered. This segmented approach can lead to reductions in the overall cost of infrastructure investments. Without a robust system of prioritization and segmentation, a portfolio of projects can become misaligned with overall strategic planning or fall short in delivering anticipated outcomes.

Figure 5-14. Features of Best Practice Capital Portfolio Optimization



Discretionary projects include operational improvements, maintenance of current facilities, and potential new projects. Discretionary projects for current needs should be prioritized based on the strategic value they provide to the organization, often using their Net Present Value (considering adjustments for risk management and probable impact) or an alternative scoring of other benefits similar to those currently included in SCIP. For discretionary projects, it is also important to verify assumptions and ensure those assumptions are consistent across submitted projects. Non-capital and lower cost alternatives should be considered and discretionary

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

projects with return on investment below the minimal expected rate of return on invested capital should not be realized.

SCIP does not currently utilize this type of project classification in its scoring process, but evaluates all projects along the same criteria.

5.2.2.3 Stations Develop Projects With a Focus on Approval Criteria and Constraints Rather Than Project Efficiency and Clinical Merits

Competition for limited funds has led stations to make a range of choices in developing projects which favor approval strategies over efficient project delivery. Station leadership and central office administrative staff at VACO and VHA universally expressed awareness that projects are packaged in in order to fit above or below key thresholds, hit perceived high-value targets, and adjust scope. While the adherence to program constraints is commendable, those constraints have had the unintended consequence of shaping projects in inefficient ways.

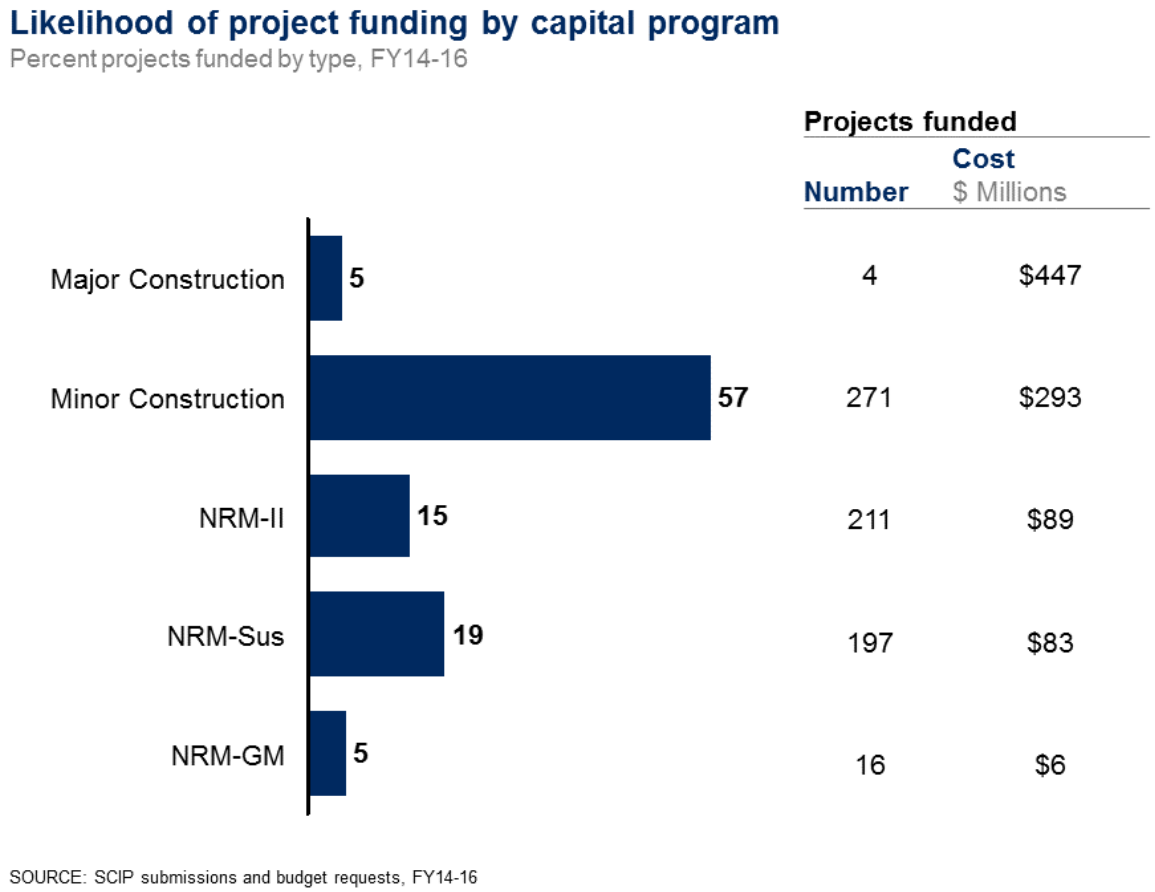
One threshold with the greatest impact has been the division between minor and major construction projects. Major and minor projects expand the square footage of the facility in some way, but minor projects must cost less than $10 million and are executed by local VHA engineering staff. Major projects are executed by VA Office of Construction and Facilities Management (CFM), with input and coordination assistance from local VHA staff. Even more significant than the different execution arms for these projects, there is a dramatic difference in the approval rates of projects at each level. In the past three years, less than 5 percent of all new major construction projects submitted have been funded. While previously approved on-going major construction projects are still being funded through various design and construction phases, no new major construction projects were approved in either FY14 or FY16 (Figure 5-15).[31] The backlog for major construction projects has reached $10 billion,[32] and it is widely held across VHA that major construction will not be approved, and so there is little value in developing and submitting these projects. As a result, stations work to fit all projects below the minor threshold, even when the scale of the need is greater than that which can be easily accomplished under that limit.

[31] Major construction funds were still appropriated during these years for previously approved and on-going projects.

[32] Backlog calculated as the FY16 major construction budget request (~$1 billion), the anticipated future budget requests for current major construction projects (~$4 billion), and major construction projects above the funding line in SCIP scoring, but not yet funded (~$5 billion in FY16).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

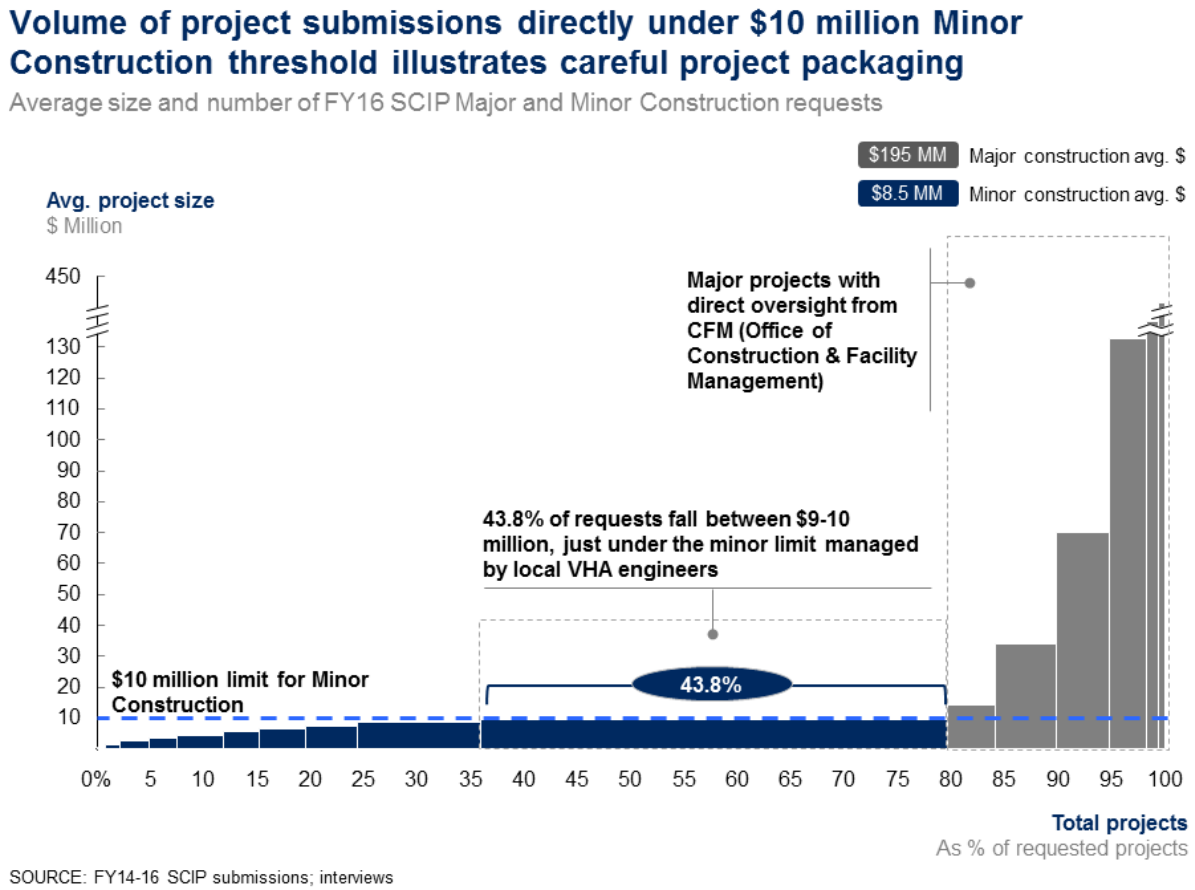
Figure 5-15. Assessment of Funding Likelihood by Program



Minor construction projects, however, are the most frequently approved project type, with 57 percent of projects receiving funding over the past three application cycles. This gives stations incredible incentive to keep their projects under the $10 million cap, or to break up projects which would typically cost more than $10 million into smaller, stand-alone projects with a better likelihood of approval. In fact, nearly 44 percent of all projects submitted in FY16 had cost estimates between $9-10 million (Figure 5-16).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-16. Breakdown of Major and Minor Projects by Project Size



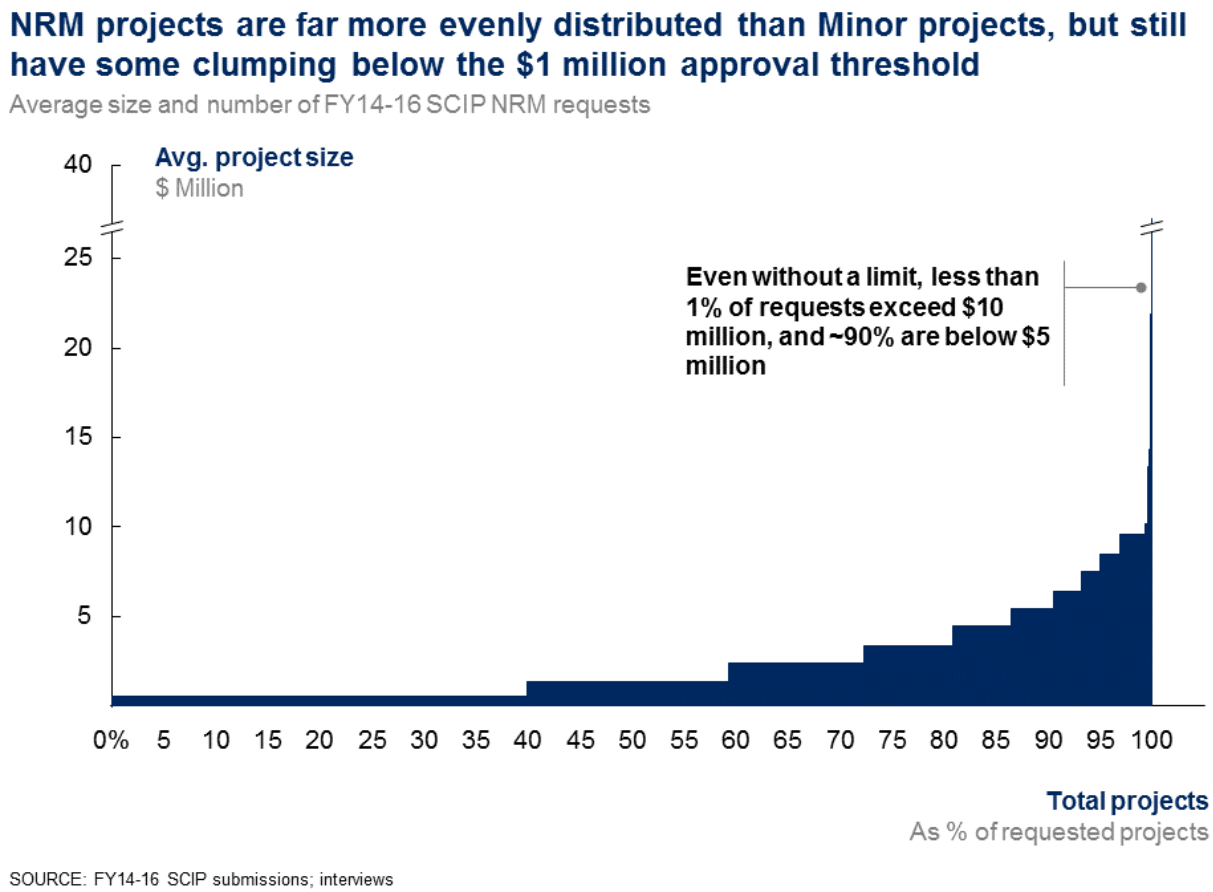
In some cases, projects are reduced in scale to fit under the threshold. Given the low likelihood of approval for projects above the threshold, stations have a strong motivation to ensure their projects fit below threshold. All minor projects are also required to write in a 20 percent potential scale reduction through "deducts," reductions in project scope which can be used to reduce the project cost if bids come in too high. It is also common to phase projects by breaking one larger construction effort into several pieces. In order to discourage phasing, rules require that one project be 95 percent complete before the next can be started, that new construction may not be modified for one year, and that design and construction may not happen in the same year. As a result, two floors of a new building may be added, only for a second, and sometimes third and fourth, separate effort to be launched in order to expand with additional floors. This type of de facto phasing results in duplicate costs (for example, design costs, project management), wasted effort (for example, building a roof to remove it the next year) and inefficient designs (for example, putting mechanical space in the building rather than on the roof).

NRM projects do not experience this same clustering under a threshold (Figure 5-17). This may be in part because NRM projects above $10 million are allowed if they are pure infrastructure projects (for example, a new boiler plant), but also because NRM projects, with the limit on additional square feet, are naturally constrained by project type, rather than by threshold.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

There is, however, some evidence of this same phenomenon, as there is a somewhat larger percentage of projects below $1 million – the level at which NRM requests are tracked through SCIP, but not scored for central approval. These projects make up roughly 40 percent of all NRM requests.

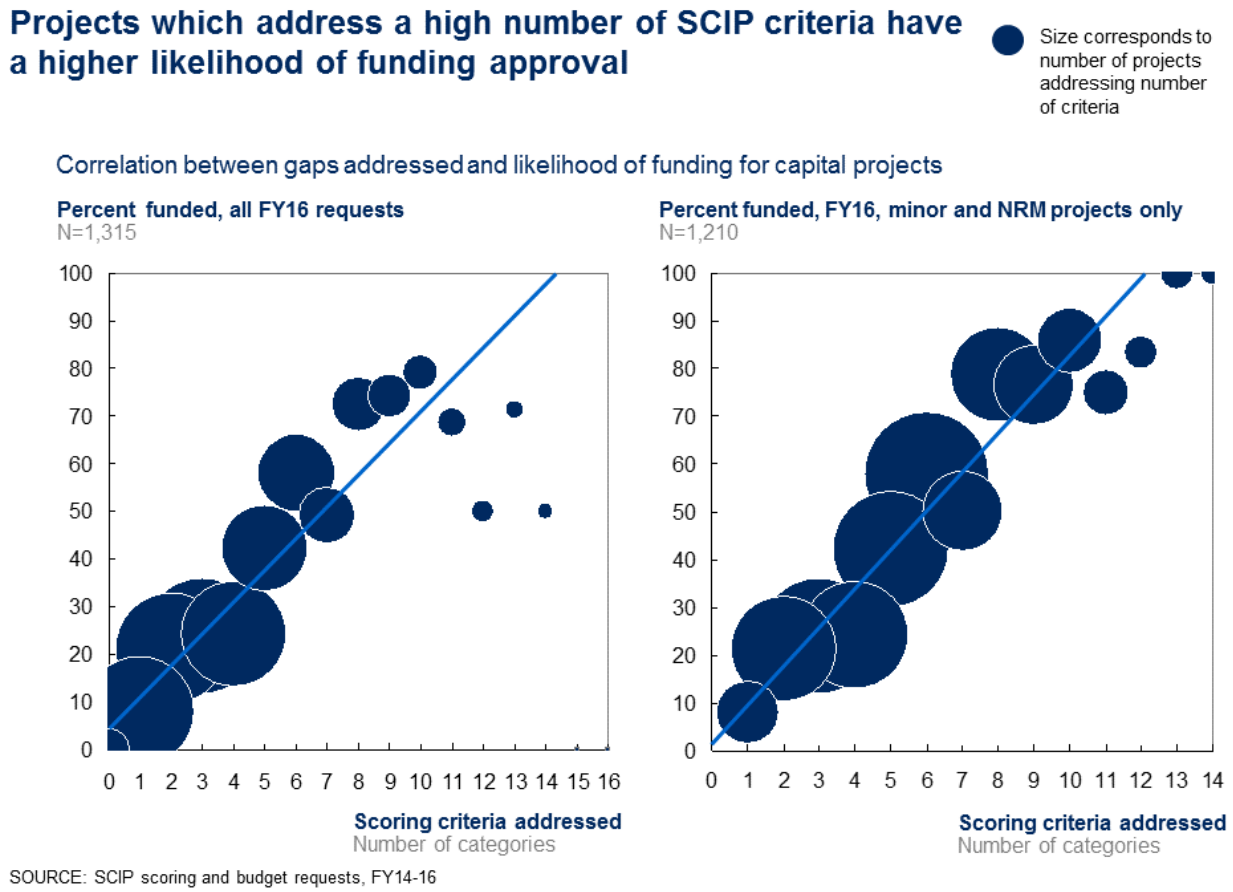
Figure 5-17. Breakdown of NRM Projects Requested by Project Size



Projects can be strategically repackaged through methods other than managing cost. Owing to the highly distributed weighting of scoring criteria, projects benefit significantly from addressing multiple criteria in their business case. Even relatively low scores in multiple categories contribute to advancing the project. As a result, projects are often designed to aggregate several smaller, related projects which address different strategic needs into one larger package with a higher chance of approval (VACO/VISN/VAMC Interviews, 2015). Figure 5-18 highlights the correlation between approval rates and number of criteria addressed in the SCIP business case. In fact, this correlation becomes even stronger when major construction projects are removed from the dataset. Because major construction projects have such a low likelihood of approval in the face of construction backlog, these projects may not be funded despite their ability to address a wide range of criteria.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-18. Correlation on Gaps Addressed and Likelihood of Funding



Given that criteria related to cost effectiveness account for less than 10 percent of the total score, projects can benefit when adding additional components to the project, even if they increase the cost of the project. Stations consistently report they have had better success with "hybrid" projects which combine multiple strategic initiatives or proposals into one entity than in having the most targeted projects approved. Charting out SCIP funding rates at different cost levels makes it clear that, up until the major construction threshold, larger projects are actually more likely to receive approval. This scale advantage actually disincentivizes efficient, targeted projects as well as pure infrastructure or preventative maintenance projects. While it is not possible to determine exactly what share of projects suffer for this sort of project packaging, the data indicate it is not uncommon and this conclusion is backed by interviews across VHA.

5.2.2.4 Protracted and Misaligned Planning Calendars Stretch Approval Process Over Multiple Years

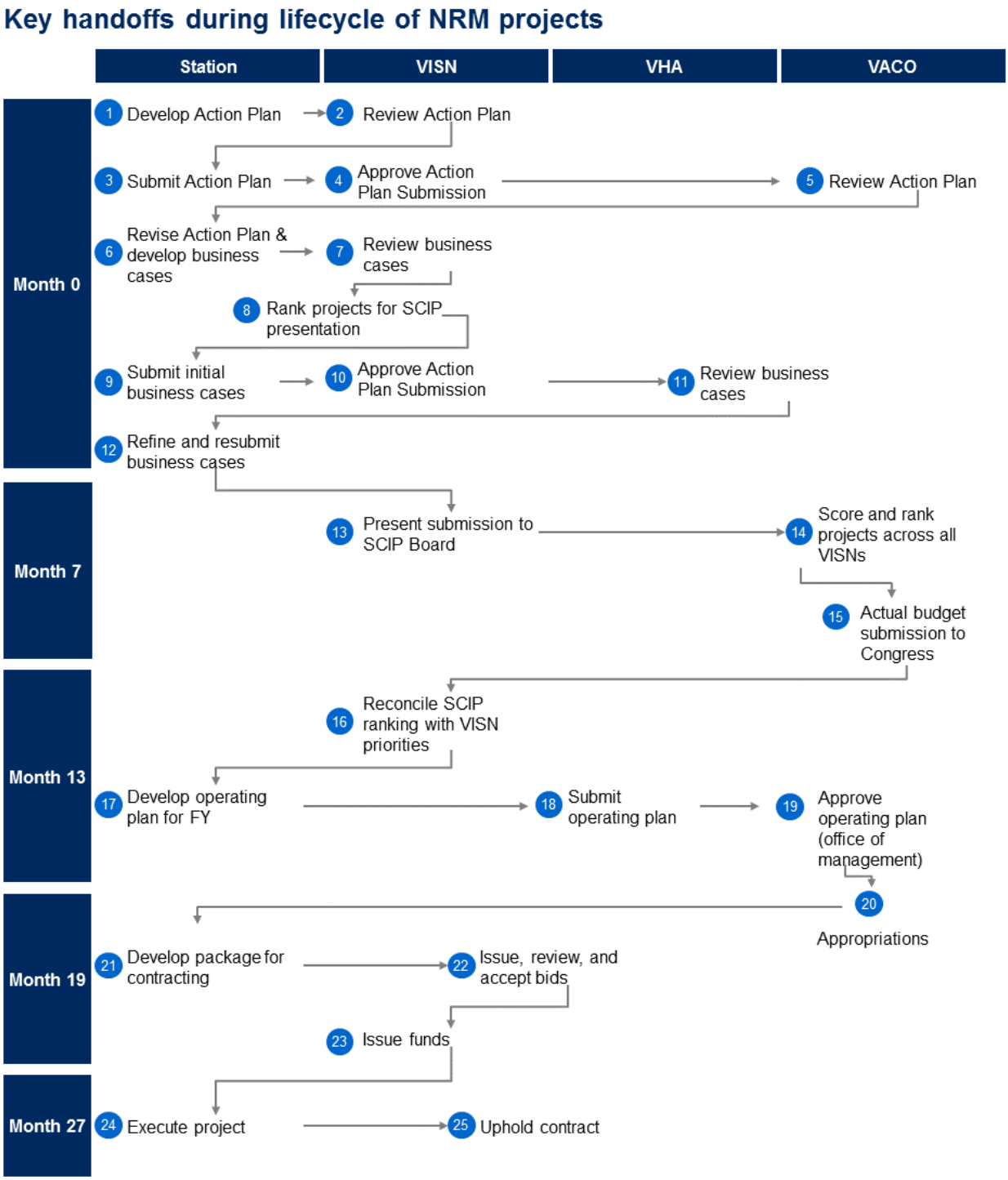
Lengthy project approval times currently limit the agility of the system and its response to patient needs. Part of this is driven by delays in the construction and leasing process, but the time from submission to approval typically lasts several years, and for major construction projects may be even longer, during which time, new standards of care or medical technologies could emerge which change project requirements. Limited funding levels force projects into

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

later years, and these delays are compounded by mismatched planning. VA has several different planning cycles, of which SCIP is the most prominent for capital projects, as well as the development of the operating plan. These multiple calendars stretch across various levels, with staggered approval at the facility, VISN, and VACO levels, each step adding time to the process. The result is the delayed response to workload changes addressed early – the system simply cannot flex quickly enough in response to changes. Figure 5-19 details the handoffs involved throughout the process. Beginning with the development of projects for SCIP submission, one project could be handed between different offices within VA or VHA as many as 25times, even without considering general tracking information and submissions developed for different offices. Whenever the project involves establishing a new site of care, the Access Expansion Plan process increases the handoffs and timeline even further.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

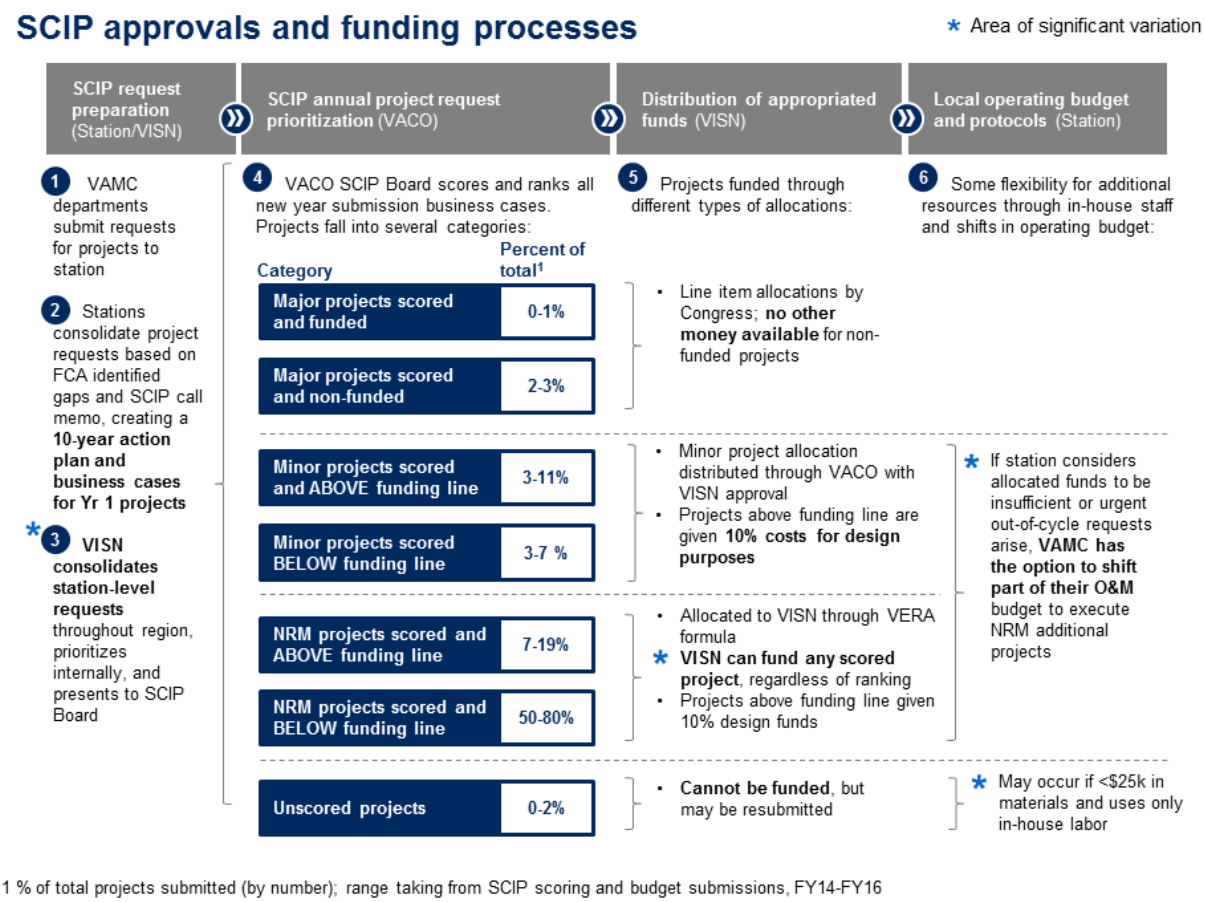
Figure 5-19. Key Steps and Handoffs for NRM Projects



The lengthiest portion of the SCIP review process occurs when SCIP priorities are combined with other funding needs across the VA system in coordination with the Office of Management and Budget, highlighted in Figure 5-20 and detailed in Figure 5-21. Each specific type of

appropriation comes with specific mandates on how the money can be used and how it will be distributed. Figure 5-21 details the how different capital projects work their way through the funding system.

Figure 5-20. Different Approval and Funding Mechanisms for Projects



Each funding stream carries its own complexity and level of competition for funds. Major projects, even when approved and given design funding, may wait for years before construction funding is issued. Minor project funds are held at VACO, and obligated as station level projects are ready. NRM projects are perhaps the most complex. They fall into two primary categories – (1) projects less than $1 million, which are tracked in SCIP but do not need scoring or approval, and (2) projects above $1 million, which are scored and can receive 10 percent of the total project cost for design purposes through SCIP. In both cases, however, the actual funding for the projects comes not through SCIP, but through VERA allocations for NRM.

The VERA allocation, which can vary significantly from year-to-year, is distributed to the VISN, which develops an operating plan delineating how these funds will be distributed to different stations. Projects above $1 million are expected to have been scored by SCIP before they are included in the operating plan, but do not have to be executed in the order prioritized through SCIP. Each VISN has its own mechanism for determining fund allocation. Some use their own scoring rubric and others allow facility leadership across the network to vote on projects.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Regardless of the mechanism chosen, the number of needed projects consistently outweighs the available funds, leading to competition and negotiations for funds.

VA Best practice case studies – Prioritization of NRM VERA funds

Several VISNs have developed sophisticated methods for evaluating NRM projects for submission to SCIP and funding distribution after scoring. These VISNs offer a best practice starting point for how funds can be effectively distributed at a network level and can provide a template for how to execute against the Section 5 recommendation for fully delegating infrastructure projects to VISN management.

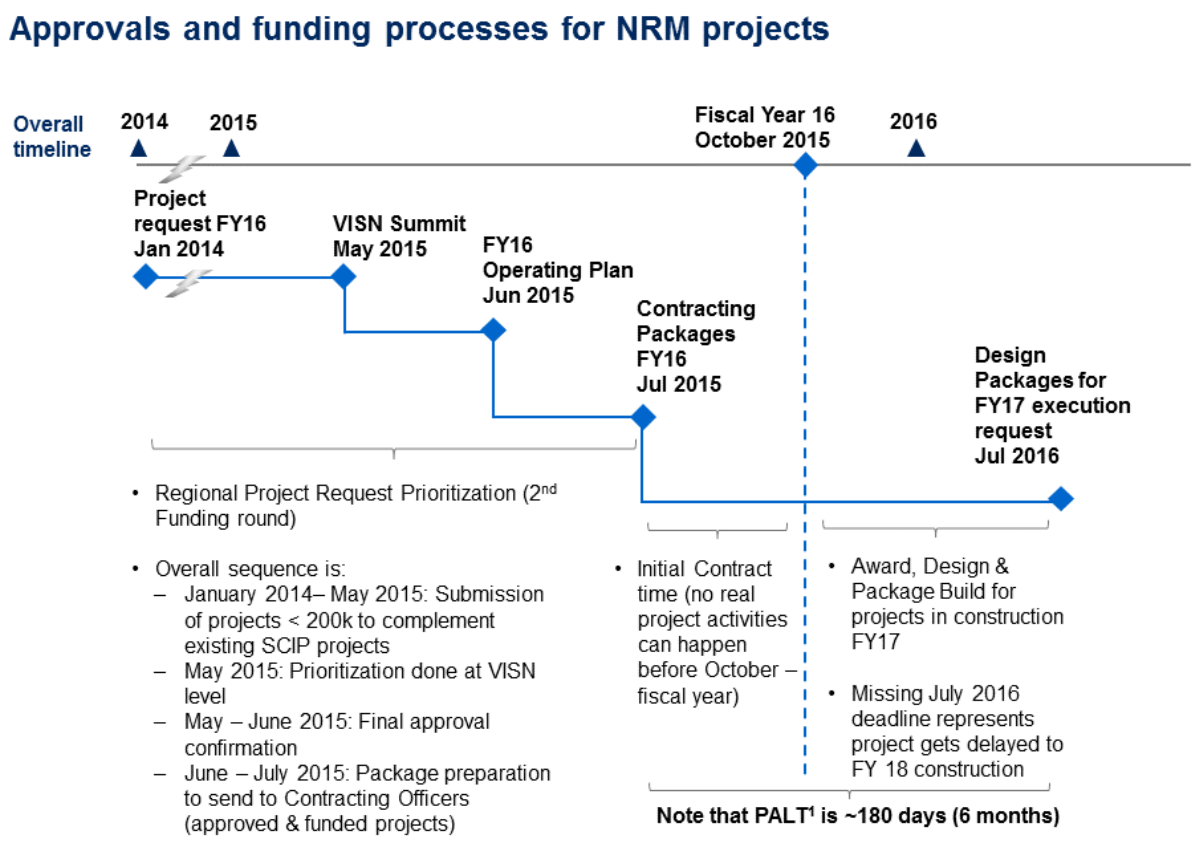
Selected examples:

- **VISN 10** reviews all NRM and minor projects from the VISN well in advance of the SCIP submission, first reviewing for internal validity and consistency and then scoring and ranking against a clearly defined scoring matrix. Particularly with NRM projects, they then look at past years to understand the likely funding cut-off and constrain their SCIP business case submissions to a modest level in relation to the expected cut-off level. These scored and ranked projects are then recommended for funding to the Capital Management Council in the VISN, which includes the VISN Capital Asset Manager, Chief Engineers, and representatives from station senior leadership and select other departments. Only then are projects submitted to SCIP, and after SCIP scoring, the VISN allocates funding according to the approved list from the Council as projects are fully ready for contracting.
- **VISN 6** allocates NRM dollars through a May meeting where station leadership gathers to distribute NRM dollars. Each VAMC Director presents brief slides on their selected projects, and then directors and chief engineers throughout the VISN are each given a vote, and cannot vote for their own projects. Votes are measured against five clearly defined voting criterion, and the results are used to develop the operating plan for the fiscal year.

As an additional layer of complexity, NRM projects also have a narrow window for execution, illustrated in Figure 5-22. Lengthy contracting times and strict parameters for what proportion of funds must be obligated by each quarter can delay or cancel NRM projects altogether. Because of this risk, stations and VISNs are allowed to oversubscribe on projects in their operating plan, so that if one project falls through, another is ready to be executed.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

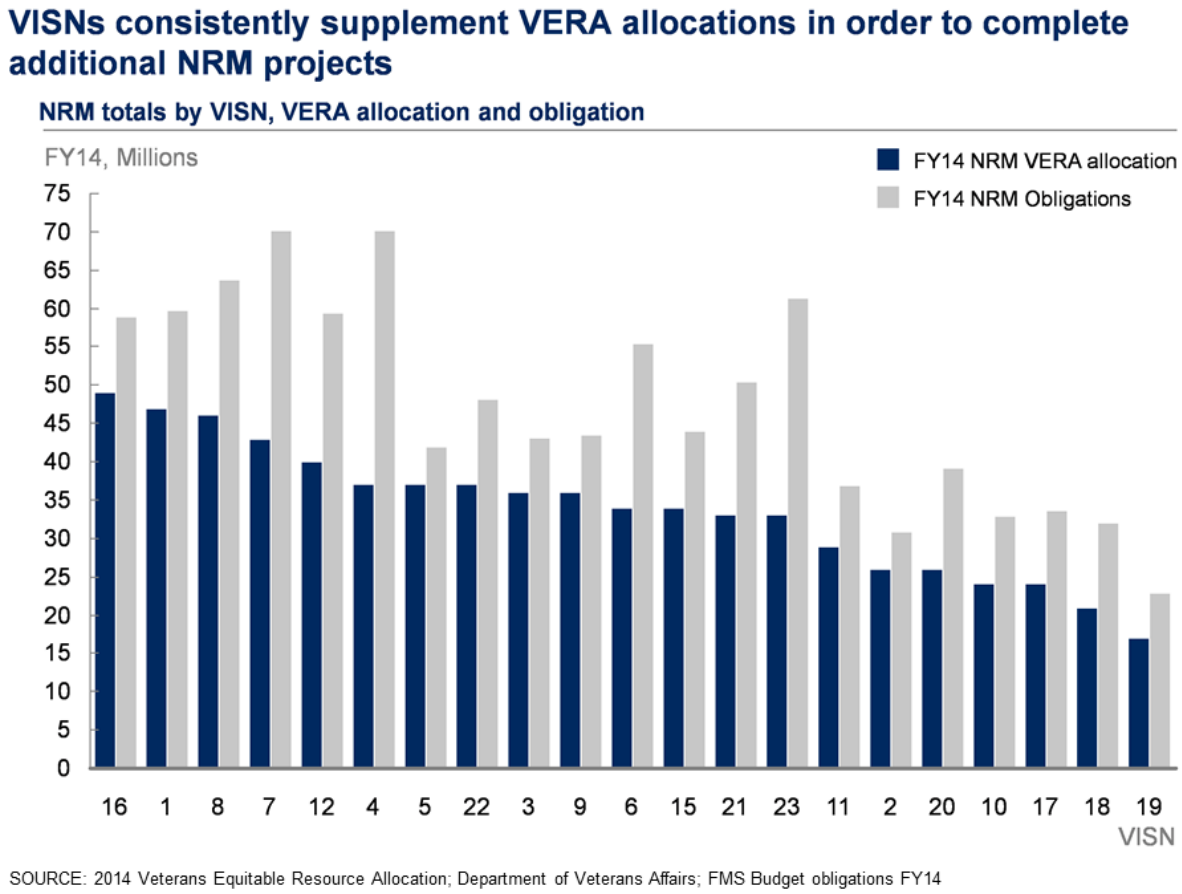
Figure 5-21. Timeline for Projects Funding and Approvals in NRM



Additionally, NRM funds may be redistributed across the Network or full VHA system later in the year, if it is apparent that some networks will not be able to obligate their allotted dollars in the time allowed. Obligations refer to the contractual commitment to spend funds which happens before the funds are actually expended. Stations then supplement VERA funds through additional money from their operating budget, or through capturing excess dollars after obligation deadlines. This can be seen in the wide variation in how much money different stations obligate each year for NRM projects, detailed in Figure 5-23. In FY14, VISNs spent between $4 and $33 million additional dollars, above VERA, on NRM projects. The consistent supplementing of NRM funds by VISN leadership indicates the depth of the current need over and above existing funding levels.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-22. VERA Allocation and NRM Obligations by VISN



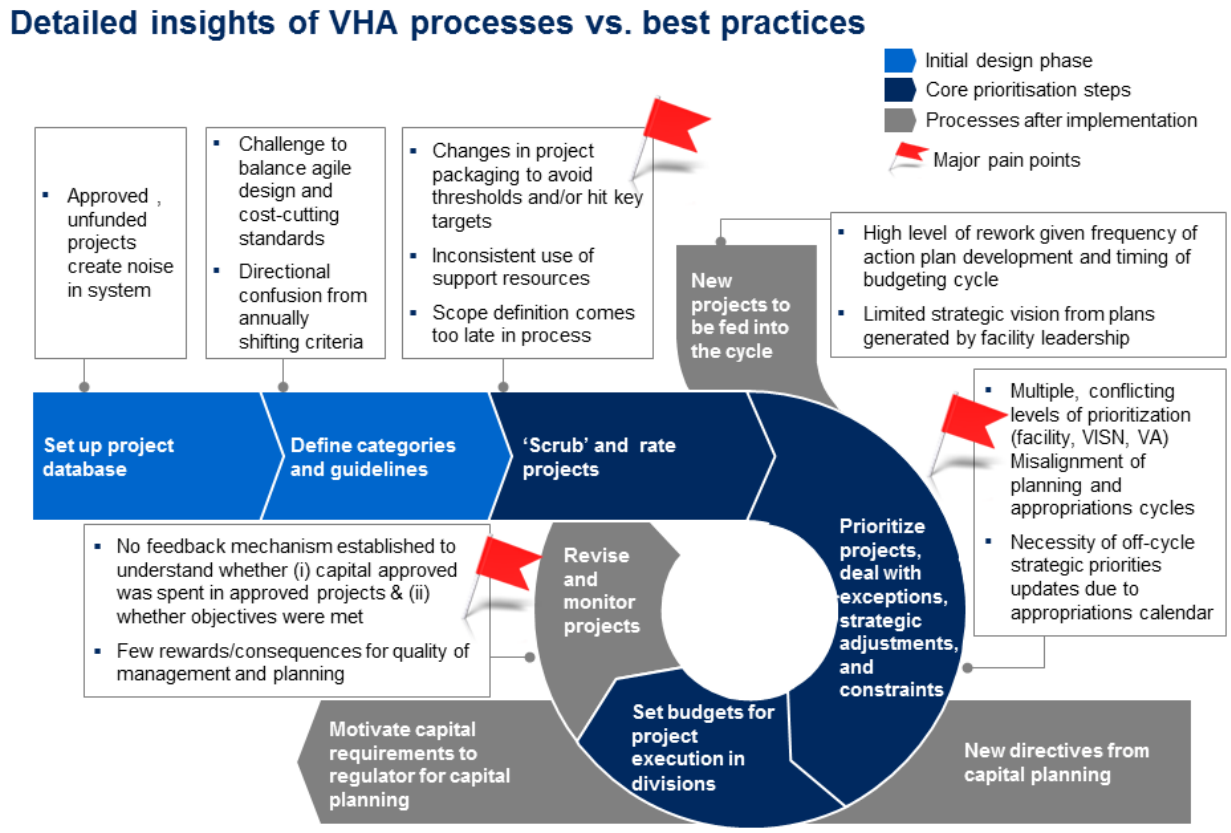
5.2.2.5 Lack of Feedback Mechanisms Results in Uncertainty as to Whether Capital Projects Have Achieved Anticipated Outcomes

The SCIP process itself includes several opportunities for specific feedback on project development, though that is primarily focused on ensuring proposals are complete and compliant, rather than engaging with the merits of the proposal or the outcomes that are ultimately achieved. When it comes to reviewing how project execution has achieved the objectives of the approved proposal, however, no formal feedback mechanism exists, and informal mechanisms are rare. Projects are approved and prioritized on the basis of their ability to close identified gaps, but if projects fall to close these gaps, that failure is not identified or addressed.

Figure 5-23 provides an overview of the key gaps between current VHA processes and best practices across the discussed spectrum, but the largest gap comes with the lack of feedback mechanism. Without accountability for project design, delivery, and operations against stated objectives, it is not possible to understand in real time the effectiveness of the planning and prioritization of projects, whether done at the local or national level. Until addressed, this gap could hinder the effectiveness of any other policy or procedural changes in the capital planning process (SCIP Directive, 2014; VACO/VISN/VAMC Interviews, 2015).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 5-23. Best Practices in Capital Planning Design



5.2.3 People

5.2.3.1 Staff Tasked With Capital Planning Are not Fully Equipped for the Task

Chief engineers and other facilities staff have the needed qualifications for the critical elements of the construction and facility management efforts; however, they may not be the best positioned to challenge the objectives of the project or the effectiveness of alternative, non-capital solutions. Despite stated VA objectives of developing cost-effective, pragmatic capital projects which consider creative methods of cost savings,[33] the responsibility for developing these projects and preparing the business cases for the SCIP process often falls on those who are not well positioned to evaluate strategic and non-capital solutions against typical capital approaches. Stations delegate this task as they choose, with some variety across the system, but most commonly this work is primarily the purview of the Chief Engineer. With an engineering and facilities background, it is natural for these staff to turn to capital solutions as the first recourse to address needs. Chief Engineers have the overall technical profile needed to speak to the practical needs of project development and how proposals would best fit in with

[33] As detailed in SCIP call memos and through the HCPM process.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

the existing structure, but may not have the training to analyze the return on the investment and the potential alternatives including non-capital solutions. Moreover, besides being outside their natural area of expertise, the addition of this responsibility on top of the numerous other tasks delegated to the chief engineer can pull focus from other important project-based and recurring maintenance responsibilities.

Perhaps reflective of this disconnect, the "capabilities" outcomes on the Organizational Health Index (OHI, discussed further in Appendix B) is the one outcome where VHA facilities staff scored significantly below both VHA as a whole (33 percent lower) and their counterparts in CFM (31 percent lower). This outcome addressed the practices of talent acquisition and development as well as process based capabilities (VHA OHI, 2015).

VA has developed a series of tools to assist in the development of these business cases, including cost estimating guides (CFM), cost effective analysis templates (OAEM), prototype designs (CFM), Space Equipment Planning System (CFM/Department of Defense) and a space calculator (OCAMES/OAEM).[34] These tools, however, would be more effectively utilized with the input of budget analysts, from the facility level through to the VACO review conducted by the SCIP Panel, including staff support from OAEM and OCAMES and input from subject matter expert committees pulled from across VA. Facility planners can also serve a vital role in the development of business cases, but the facility planner position is inconsistently staffed across VHA. At some of the selected site visit locations, the facility planner tasks were an additional responsibility for someone dedicated to another role, another location staffed a small department for this function. Confusion over how and with whom to best fill this responsibility reduces the potential of the business cases to be a truly robust consideration of all options, both capital and non-capital.

5.2.4 Systems

5.2.4.1 Tools for Developing SCIP Business Cases Rely on User Creativity and Capabilities to Consider Creative Alternatives to Capital Solutions

The tools themselves also limit full consideration of creative, cost-effective alternatives. The Cost Effective Analysis template (CEA), a required component of the business case, evaluates new construction, leasing, contracting out, and collaboration for expanded clinical space. Interviews, however, demonstrate that this tool rarely, if ever, genuinely shifts the station's preferred alternative. Some of this can be attributed to user bias – most values and assumption are user inputs at the station level, allowing for a fair level of variation in the specific terms of the analysis. For example, the cost per gross square foot and land acquisition costs included in the analysis are both user generated inputs which are only reviewed at a high level by central office staff.

Another limit to the tool is that the alternatives considered and the funding structures behind those alternatives. For example, the cost of VA purchased care is based on operating budget assumptions which do not consider the capital investment behind patient care, which removes

[34] Tools housed on VA intranet, including the Technical Information Library housed on CFM's website.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

a significant cost component from the in-house cost estimates (GAO, 2011; discussed further in Assessment B). For a station, the calculation involves losing workload reimbursement for a patient in their system and expending the cost of that care elsewhere.

5.2.4.2 Current Resources Are Inadequate to Provide Robust, Merit-Based Analysis of Business Cases

While facilities are encouraged to consider non-capital alternatives, first through HCPM and then through recommendations on the call memo and the CEA, if a station is not equipped or inclined to fully evaluate those alternate mechanisms, the review is unlikely to enhance their assessment by more than a rough compliance check against the tool and VA standards. While the act of completing the CEA is undeniably beneficial in clearly defining the scope of a project and a rough look at the possibilities, a more robust analysis is called for in order to be truly strategic with capital decisions.

Perhaps more significantly is the shortage of manpower assigned to address the volume of projects. There are nearly 1500 business cases that were submitted for FY16 and only 4-5 full-time people (both staff and contractors) assigned to review the cases in less than one month. In addition while there are subject matter experts who are drawn into the process, they are responsible for a full review of an individual project, focusing only on key themes. The SCIP board, made up of leaders from across VA, meets for 1-2 weeks to review and prioritize the full set of projects (VACO Interviews, 2015). This creates substantive review challenges for the staff tasked with reviewing SCIP requests and has led to a perception in the field that the centralized review process offers little value. While the review process developed by OAEM does involve several checks and a range of experts to consider the cases, limited resources still lead to an abbreviated review process.

5.2.4.3 The Decision to Lease Versus buy a Facility Does not Take Into Account the Full Range of Implications and Costs

There are also limitations to VA's current approach to deciding between leasing or owning a facility when new space is required. There are three default settings that apply to different types of facilities:

- **The default for on-site space expansion is owned construction.** Expansions to space on site, once proposed as construction projects, are not compared to off-site leased facilities, or to alternate on-site options such as partnerships with private sector developers that could build and operate space on-site in return for a lease payment.
- **The default for off-site clinical or administrative space is leasing.** Smaller, off-site facilities are almost always leased, with little consideration of purchasing or building new properties to own. This applies both to small clinics as well as larger, build-to-suit clinics (major leases).
- **The default for large new hospitals is owned construction.** All new major hospitals are constructed for ownership by VA.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

While, technically, both leasing and owning options are included in the CEA, which provides stations with a tool for careful cost estimation, no surveyed station reported changing a capital decision (for example, lease, build, renovate) based on the results of this tool. In lease versus buy decisions, facilities have a built-in incentive to pursue capital projects, which are funded upfront through centrally provided funds, as compared to leases which are funded annually though station operating budgets. This process is slightly different for capital leases, for which all funds for a lease must be obligated at the outset and where total rental payments amount to greater than 90 percent of the value of a new property, amongst other criteria. While this approach may make sense from an accounting perspective, in terms of recognizing what should be considered capital cost, it also diminishes the advantage leasing has in allowing projects to be enacted without bearing the capital burden up front. VA does not typically enter into capital leases, as discussed in Section 8.2.2.

Best practice tools for evaluating a lease versus buy decision include a tool for comparing these two strategic options, as well as other options, such as sell and leaseback and subletting excess owned space. Additionally, the tool should include sensitivity analysis for real estate growth rates and discount rates. VA's Real Property Services (RPS), located in CFM, developed the lease scoring template for major leases to facilitate decision making among different offerors for a specific leased project. However, this scoring template does not reflect key elements of this strategic evaluation. Instead, it primarily provides an internal check on lease rates and support compliance verification. Given this focus and the design of the tool, it does not fill the need for an analytically based strategic decision-making tool.

The template inputs include building specific metrics, such as building use, size, stories, location, duration of the lease, and lease acquisition method, and costs, such as annual rents, recurring costs, and site acquisition cost (if any). Using this input data, the NPV of the total rental cost is calculated for all the offers and compared with the fair market value (FMV) of the building, based on construction costs. This comparison allows RPS to compare NPVs across offers and verify that the proposed lease meets the standards for an operating lease, as set forth by OMB and GSA (OMB, Circular No. A-94; GSA Leasing Desk Guide, Appendix F). However, the leasing template does not compare the strategic option between leasing and VA constructing the building. The tool is also limited since it calculates FMV using RSMeans average construction costs, which are significantly lower than VA's average construction cost, and does not assign any resale value to the property.

Most importantly, this approach often does not take into account a net present value calculation of the total cost of ownership, including factors such as the potential positive disposal value of an owned asset, challenges to disposing of assets in the current climate, the costs and benefits of lessor-provided facility management, and the likelihood that VHA will renew the lease, which would increase the ratio of total rent payments to total facility value. While it does make sense to treat leasing as the default option for smaller facilities, VHA would benefit from a more detailed examination of the lease versus buy decision for larger facilities, using a complete total cost of ownership approach.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

5.3 Recommendations for Consideration

VHA capital planning efforts are currently shaped to respond to the gap between the size of the capital need and the significantly lower level of anticipated funding. Making only incremental improvements to the project development and prioritization model will be insufficient to address the overall gap and its implications for the planning process. Sections 3 and 4 discuss the full range of capital efficiency improvements and potential strategic changes for further discussion. The following recommendations are concentrated on improvements which can be delivered within the current approach to delivering health care to Veterans.

5.3.1 Reassess Project Thresholds and Authority Levels

5.3.1.1 Separate Pure Infrastructure Projects From the SCIP Scoring Process and Delegate Control Over Funding Decisions Fully to the VISNs

Currently, the definition of NRM projects includes any project which does not increase the square footage of the facility by more than 1,000 square feet. As a result, a project to update the elevators at a VAMC is considered with the same scoring mechanisms as a project to update an imaging suite or expand a waiting area, and both are funded out of the same category of money. These projects should not be evaluated against the same criteria, as they are fundamentally different in nature. Pure infrastructure process, currently categories as Non-Recurring Maintenance Infrastructure Improvement projects (NRM-II) are essential to ensuring the safety and usability of facilities over time. NRM Sustainment (NRM-Sus) and Green Management (NRM-GM) projects are focused on increasing the capability or capacity of a facility. Both are essential, but attempting to compare the two under the same system leads to an inconsistent application of scoring criteria and potentially incoherent project development.

This recommendation would refine how projects are categorized so that they can be reviewed and scored under different systems, tailored to that specific project type. Under the current model, VISNs control funding for all NRM projects, but are subject to SCIP scoring, and therefore longer approval timelines, for all projects over $1 million. This proposal would reduce the overall VERA NRM allocation to a level which reflects only investments in infrastructure projects. This funding level should be carefully set, and consider the age of facilities and major systems, using a usable lifecycle approach to developing NRM budgets.

5.3.1.2 Recategorize NRM-Sus and NRM-GM Projects Over $1 Million as Minor Projects

Following on the last recommendation, the NRM projects which are not geared towards infrastructure improvements, namely NRM-Sus and NRM-GM projects over $1 million, should be shifted into the same review and funding process as currently exists for minor projects. These projects address the same strategic objectives as minor construction projects, with the only substantive difference being the overall change in square footage.

Combining NRM-Sus and NRM-GM and minor construction projects would remove the distinction of whether additional square footage is being added and class all capability and

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

capacity projects together and evaluate them under the same strategic criteria. Additionally, the two-year money model of minor projects would be extended to include everything in this category, rather than the NRM one-year money approach. Projects would still be executed by station-level engineering staff, but money would flow from VACO rather than through VISNs. This removes some of the challenges of one year money, described in Section 7.2.1.2, and tightens the link between project scoring and funding.

Small rehab projects, including those previously described as NRM-Sus, which fall under $1 million could be completed out of station level ops budgets at the discretion of station leadership. Projects would still be reported through SCIP for tracking purposes, but funds could be obligated and projects initiated on timelines set up at the facility, independent of any national review or approval.

5.3.1.3 Remove Hard Line Threshold Distinction Between Major and Minor Projects

In addition to modifying the classifications of NRM projects, described above, VA should reassess the threshold between minor and major projects. As described in Section 5.2.2.3, these project thresholds significantly impact the development of proposals, the likelihood of approval, and the on-time and on-budget percentage of projects. Given the scale of these ramifications, it is vital to set these thresholds thoughtfully, or to retool the implications of these thresholds so that they do not exert the same level of force throughout the process.

VA is currently reviewing proposals to increase the minor project threshold from $10 million to $25 million. While this may remove some of the constraints in project development, it does not sufficiently address the implications of having such clear thresholds on project design, and VA would likely see the same sort of project clustering under the $10 million threshold to develop under the $25 million threshold in the near future. Instead, thresholds should shift to consider different factors relating to scale and complexity of projects. At minimum, this would involve pegging thresholds to the location factors provided in the CFM cost estimating guides and price changes due to inflation or deflation. More sophisticated analysis would consider the complexity of a project. For example, a $20 million parking garage is a much more straightforward project to design and execute than an $8 million inpatient space conversion or operating room suite. Given this, closer scrutiny should be given to projects given their complexity, rather than emphasizing solely dollar amounts.

By removing the hard line distinction, projects could be optimized to address the identified need rather than to meet a cost threshold. The SCIP process could serve as the mechanism for vetting whether borderline projects should fall into the major or minor category. Accomplishing this would require devoting more manpower to the SCIP review process than is currently available, but that investment in manpower could be returned in improved project efficiency.

5.3.1.4 Assign Project Ownership Based on Capacity and Capability Rather Than Funding Thresholds

The current hard line distinction in funding levels is paralleled by a hard line distinction in managing project execution. This model places a disproportionate emphasize on dollar amounts as a measure of difficulty. While scale is certainly a relevant factor, and large ticket

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

items should fall to an organization dedicated to construction, the delineation of that line is not as straightforward as current controls imply.

Instead, there should be level of projects where a review process is used to determine whether project ownership should rest with local engineering staff, CFM staff, or under a hybrid model where CFM provides a high level of technical assistance and local staff manage the day to day. This review process could directly parallel the considerations described in funding categorization above or could come as part of a supplementary review which considers the capacity of station level engineering staff to executive projects given their current project pipeline.

5.3.2 Refine SCIP Prioritization With Clear Focus on Cost Effectiveness and Strategic Goals

In order to maximize the strategic impact of SCIP, the criteria at the root of the scoring mechanism should be clear and straightforward. The current reliance on nearly two-dozen subcriteria lowers the impact of highly strategic criteria and creates a system which is perceived as a black box by the field. Additionally, projects should advance based on their ability to help achieve system-wide goals in a cost-effective manner, without reference to scale of the project or ability to address a multitude of criteria. Scenario-based optimization has proven an effective way for large systems to evaluate capital projects. This approach assesses projects by (1) link to strategic goals (focused set of clear targets), (2) likelihood of achieving objective, and (3) cost-effectiveness.

By using a scenario approach to evaluate projects, proposals which score high in 1-2 categories could more accurately be evaluated for their progress against targets. Under the current model, given two projects, (a) a project to replace steam radiators with a FCA score of “F”, and (b) a small renovation project which addresses several minor condition items, energy upgrades, and workload increases, project (b) would likely score better under the current model given its ability to address multiple criteria, even though project (a) may be far more urgent and affect a much broader range of Veteran care. A scenario model would allow each project is evaluated with consideration for the overall goal it is advancing rather than a scatter-shot criteria approach and would more effectively acknowledge the criticality of major infrastructure items. Additionally, under a scenario approach, cost-effectiveness is measured by determining which combination of projects most effectively advances the system-wide strategic goals for the same cost.

Whether as part of this change or as an interim step, local priorities should be reflected in the SCIP scoring mechanisms, as well as the integration between the proposal and any existing Integrated Plans (applied as they are rolled out through the system).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

5.3.2.1 In the Short Term, Rationalize and Prioritize Capital Requirements at a Sustainable Funding Level and Focus on the Most Critical Items That Contribute to Veteran Care

Before considering more fundamental strategic changes, there are adjustments which can be made to help reconcile the disconnect between current funding levels and identified gaps. Given the funding gap, current targets can only be described as aggressive stretch goals. When developing the focused set of targets described above, VA leadership should be sure to set realistic targets and encourage facilities to develop correspondingly realistic project packages. For example, the current expectation is that all $15.9 billion of FCA gaps will be closed within a 10-year window. At current funding levels, doing so would take every available dollar of major, minor, NRM, and recurring maintenance funding, and do so without any attention to other vital gaps such as access, space, and function. If budgets only allow for these extreme cases to be addressed, then that should be determined and acknowledged upfront.

VA can address this by incorporating an FCA score for the condition of overall facilities, both at a building and campus level, in order to reprioritize and streamline condition assessments to highlight areas of greatest need. Introducing an average facility grade for consideration would make it easier to identify facilities which, on average, are scoring below a B and focus on bringing those averages to a sustainable level. This score, combined with a careful comparison to the replacement costs of the facility, would allow VA to identify structures which are no longer of sufficient condition to justify further capital investments. System critical and failing items in all other facilities should receive first priority.

It is important to point out that any non-critical deficiency, ignored long enough, will become critical. This recommendation should not be treated as a way to simply eliminate all future repairs in certain categories. Instead, focusing on currently-failing items or high-risk building systems (such as fire protection, chillers, and generators) helps to clearly prioritize these projects. Under the current system, non-critical FCA repairs would boost the score of another project directed towards closing a space gap. By eliminating the strategic benefit of non-critical FCA projects, the condition gap would be clearly focused on the highest priority areas, at a level more in keeping with anticipated funding levels.

5.3.2.2 Regularly Assess all Facilities to Determine Their Usable Remaining Lifespan

With the rollout of the Integrated Planning efforts coordinated by CFM, every station should have the opportunity, in partnership with their VISN, to develop a long-range master plan on a five-year rolling basis. This analysis should consistently consider the likelihood that any given facility would need to be replaced in a 10-year window, based on established metrics, such as: (a) ratio of correction cost to replacement cost, (b) percentage of anticipated growth, and (c) adaptability of current floor plans and building envelope. These measures should then be incorporated into all future assessments of major project need on a competitive national basis through the SCIP process. Significant investments in aging or underutilized infrastructure should be limited, and facilities should develop projects with a view towards whether they would be eligible for consideration for a replacement project within a 10-, 20-, or 30-year time horizon.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This goes a step further than the current FCA evaluations, and instead looks a full business case review of VAMCs and clinics on a regular cycle, ideally synched with Integrated Planning.

5.3.2.3 Develop a Feedback Mechanism to Hold Project Leadership Accountable for Effectiveness in Meeting Stated Goals

In order to ensure projects are accomplishing the strategic goals set forward by VA, projects need to be evaluated for their ability to meet targets. VA does not currently have a mechanism to look back and evaluate whether a project successfully delivered its stated objectives. Without this, it is possible for those developing a project to claim achievements, and the corresponding higher score, without delivering. Project outcomes could be linked to additional flexibility or funding in future cycles, thereby increasing incentives for business accuracy. The lengthy lifecycles of project execution make it challenging to use ultimate project outcomes to evaluate staff. In order to facilitate evaluations of personnel, interim milestones can provide a measure of accountability. For example, these measures could include alignment between business case cost estimates or project deliverables and final contract. In keeping with the recommendations on performance management in Assessment L (Leadership), evaluations should be focused on outcomes.

5.3.2.4 For all Projects Addressing Access or Workload Gaps, Conduct Robust Review of the Cost Effectiveness of Different Models of Care

Ensuring the best value and quality for the money spent requires a more demanding cost and alternatives analysis than is currently conducted for capital construction efforts. While existing planning and cost estimating tools have begun moving in this direction, significant enhancement is needed to both tools and process in this area. In order to ensure adequate time and resources are invested in this analysis, this intensified analysis only need apply to potential expansion projects.

First, current tools need to diversify the set of alternatives that facilities are asked to consider when developing a proposal. Investigation of such options as Veterans Choice, extended operating hours, and collocation with affiliates and other community clinics should be standard. In order to facilitate this analysis, users will likely require more directive tools with less user-generated inputs than the current CEA excel template and mechanisms to differentiate by clinical type. Not all of these tools need to be complex financial models. Most stations currently operate with a default choice from the alternatives, at times based in regulation (for example, Freeze the Footprint, limited approval of major construction projects), but also based on with what models leadership is most familiar and comfortable. Internal benchmarks across the country can be leveraged to understand the costs of possible gap closures. Additionally, a simple checklist which ran through the alternatives, most relevant situations, and potential considerations, would provide an important layer of genuine consideration of alternatives before staff focus on the mathematical exercise of putting assumptions into an excel template.

Second, new processes should involve facility leadership and fiscal staff in project development from the earliest stages. To increase accountability and ensure facility leadership has acknowledged the alternatives, a checklist similar to the one above could be signed off on by

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

facility staff, indicating they have reviewed cost-effective alternatives. This step, particularly if tied to real performance management, would raise the bar on the scrutiny given to capital investments. Developing the economics of the business case and alternatives investigation should not be exclusively the responsibility of the engineering department, but should be proactively supported by a budget analyst, located at either the station or VISN, who can work to provide a comprehensive look at alternatives.

5.3.3 Review and Streamline the Planning Processes and Calendars to Minimize Response Time to Identified Veteran Needs

Myriad planning cycles and approval levels extend the length of time it takes to have a project approved. Stations currently submit non-emergency SCIP requests up to two fiscal years in advance. Combined with contracting and construction timelines, this means the earliest any identified need can be met is 3-4 years, and many take longer to address. Approval times should be reviewed for any and all opportunities to condense approval cycles and eliminate duplicate work.

5.3.4 Execute all Non-Capital Levers Before Proceeding With a Minor or Major Project

Nearly one-third of the $51 billion VHA capital need is driven by space gaps. In some cases, these gaps may be closed without the construction of additional square footage. First and foremost, the clinical and scheduling efficiency recommendations offered by Assessments E and F would reduce the space required for both inpatient and outpatient care, as discussed in Section 4.2.1, could have implications for existing and projected space gaps. While these operational improvements may have varied impact on the space gap, it is important to review potential gains as a first order measure. The cost and time commitment in capital projects is such that it should be the last lever pulled to close a space gap, not the first. Space-related capital projects should not be approved for stations which have not implemented these other efficiency measures.

5.3.5 Increase Best-Practice Sharing Between Stations and VISNs

Across VHA, stations and VISNs have implemented different approaches to strategic master planning, business case development, and project selection/prioritization. Many have independently developed detailed tools to improve their processes, such as detailed guides for including users in project design and development, Veteran advisory boards, project scoring matrices, and comprehensive master planning efforts. These are laudable and proactive efforts which should be encouraged. At the same time, other stations and VISNs can learn from and adopt these approaches. By creating interest groups for engineering leadership, promoting and communicating the excellent work done at high-performing stations, and creating forums for leadership to discuss shared challenges and solutions, the entire system could benefit from existing pockets of excellence.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6 Design and Construction Assessment: Major Projects

6.1 Preface

VHA, with support from the VA Office of Construction and Facilities Management (CFM), undertakes numerous capital projects to increase and maintain its asset base of owned facilities to meet Veteran needs. Section 201 of the Choice Act calls for assessment of the capital management programs specifically relating to the design and construction management processes. This assessment is structured to address the following four aspects of the design and construction program:

- **Outcomes:** How do VHA hospital construction costs compare to the private sector? How does VHA perform in project delivery outcomes including cost, schedule, and quality across all of its construction programs? To what extent do construction projects and processes affect facility utilization or Veterans' health access?
- **Process:** What processes do VHA and CFM have in place for construction programs? What pain points exist across these processes? Do construction processes address the identified current and future needs in a timely fashion? Can VHA improve the processes or other aspects of construction to improve quality?
- **People:** How do VHA and CFM structure and staff their project delivery teams to deliver projects effectively? How does culture impact project delivery?
- **Systems:** What systems are employed in the delivery of the projects? Do they drive efficiency and enable best practice performance for project delivery?

6.1.1 Overview of the VA Construction Program

6.1.1.1 Construction and Renovation of VHA Facilities Is Executed Through Three Main Programs, Each Defined by Amount and Type of Construction

The major construction program represents approximately half of VHA's 2016 capital program and is managed centrally by CFM. The other half of the capital program is managed locally via VISN and VAMCs (OAEM, 2015; 2016 VA Budget, 2014).[35]

- **Major construction program (9 projects, 51 percent of total[36])**: Projects that address construction, alteration, extension, or improvement of any facility, campus or integral service, including parking construction and site acquisitions above $10 million. The program primarily includes two informally defined types of projects, both of which are managed by CFM and are line item appropriated by Congress:
    - **Mega projects** (approximately >$500 million, although not formally defined): Typically the largest construction project in each of the three CFM regions, mega

[35] 2016 VA Budget Request; NRM and Minor projects include oversubscription, i.e. projects approved but below the threshold of current funding limit; % total is of total budget request for VHA only (not VA).

[36] Total by amount requested in the 2016 VHA capital program of NRM, Minor, and Major construction.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

projects are given additional on-site support. These are normally replacement medical facilities like Aurora, New Orleans, and Las Vegas or new medical facilities construction, both with greater complexity than an average project.

  - **Major projects** ($10 million-500 million, although not formally defined): These projects are normally expansions or major area renovations to existing medical centers, structural reinforcing (for example, seismic projects), or supporting structures (for example, parking garages).

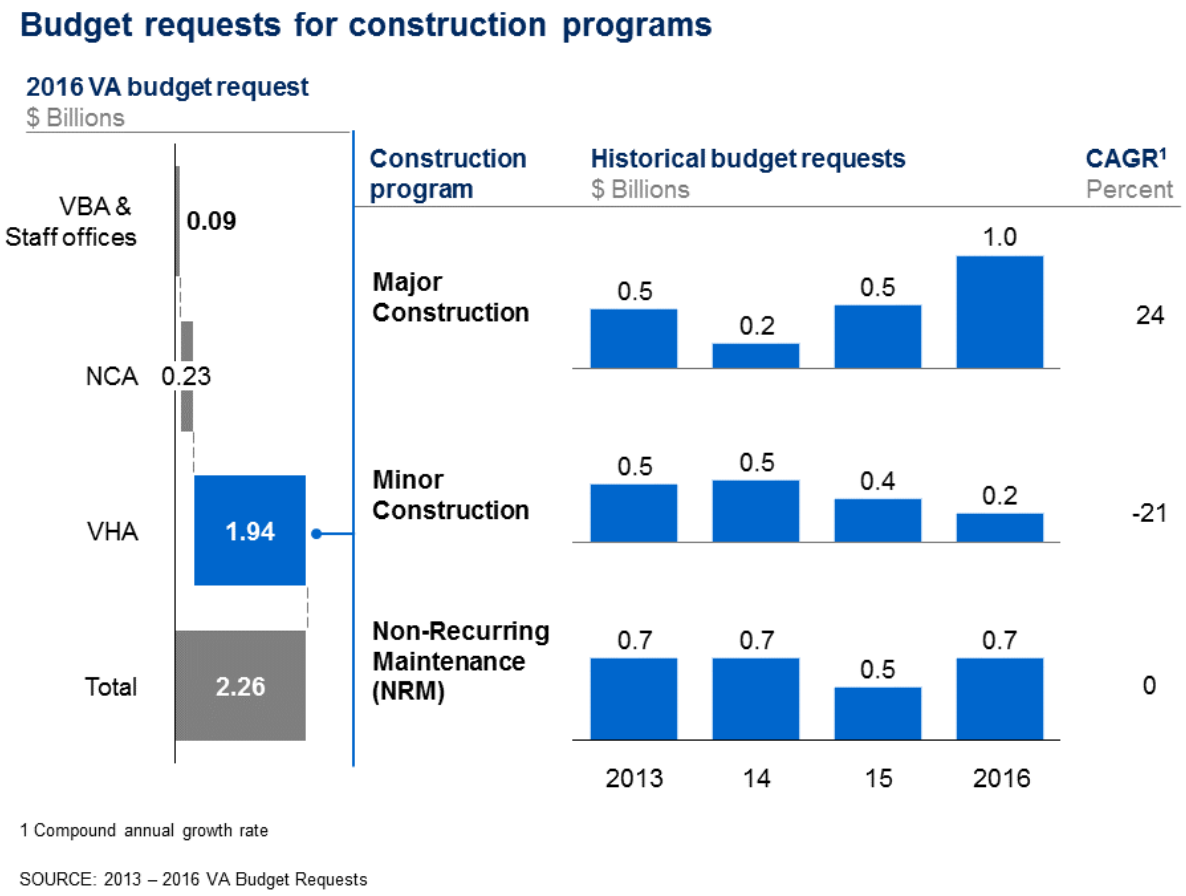
- **Minor construction program (174 projects[37], 13 percent of total)**: Projects that address construction, alteration, extension, or improvement of any facility, including parking structures, site acquisition, and demolition by replacement, with costs equal to or less than $10 million, managed by local VHA engineering staff.
- **Non-recurring maintenance (NRM) program (866 projects, 36 percent of total):** Projects that renovate existing facilities and associated infrastructure with expansion of space not to exceed 1000 square feet. The program primarily includes three types of projects: Infrastructure Improvement, Sustainment, and Green Management, all managed by local VHA engineering staff:
  - **NRM sustainment ($25,000 to $10 million):** Projects focused on renovation and modernization of existing facilities and infrastructure (for example, lab renovation). Projects in this category are often driven by national-level mandates instead of station needs (for example, upgrades for the water systems due to legionella).
  - **NRM infrastructure (Greater than $25,000):** Projects focused on replacing, upgrading or expanding infrastructure systems or focused on facility condition assessment (FCA) deficiency backlog (for example. HVAC replacement).
  - **NRM green management:** Projects include environmental, energy, green building, and fleet management-related activities in support of reducing energy (for example, upgrade to LED lighting).
  - **Clinical-specific initiatives (up to $5 million):** The CSI program is funded out of the NRM budget for up to 10 percent of the budget. The program focuses on high-profile projects that are difficult to plan but require additional space to support care for the Veteran. These projects increase space by more than 1000 square feet. Current approved CSI categories include: polytrauma, mental health, high-tech and high cost medical equipment installations, women's health, site prep for donated space, and others. It should be noted that CSI projects do not go through the SCIP process.

Figure 6-1 shows the variation in budget requests across the construction programs over the past four years. NRM and minor project funds often fluctuate due to special funding initiatives such as the American Recovery and Reinvestment Act of 2009 or the Veterans Access, Choice, and Accountability Act of 2014. For example, the Veterans Choice Act is funding $0.5 billion in minor projects and $1.5 billion in NRM projects over the next few years.

[37] Per 2015 budget; 2016 plan still in progress.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-1. Breakdown of VA Capital Program



6.1.1.2 Responsibility for the Planning, Financing, Contracting, and Executing Functions of the Three Construction Programs Is Distributed across Various Offices

- **Office of Asset Enterprise management (OAEM):** OAEM works to facilitate processes that recommend effective capital asset policies, demonstrate improved capital planning and identification of needs, ensure all investments undergo an appropriate level of analysis, oversee the analysis and monitoring of VA's capital asset performance management system, and evaluate the effectiveness of VA's implementation of capital asset management policies, principles, standards and guidelines.
- **Office of Construction and Facilities Management (CFM):** CFM is responsible for the planning, design, and construction of all major construction projects greater than $10 million. In addition, CFM acquires real property for use by VA elements through the purchase of land and buildings, as well as long-term lease acquisitions. CFM also manages facility sustainability, seismic corrections, physical security, and historic preservation of VA's facilities.

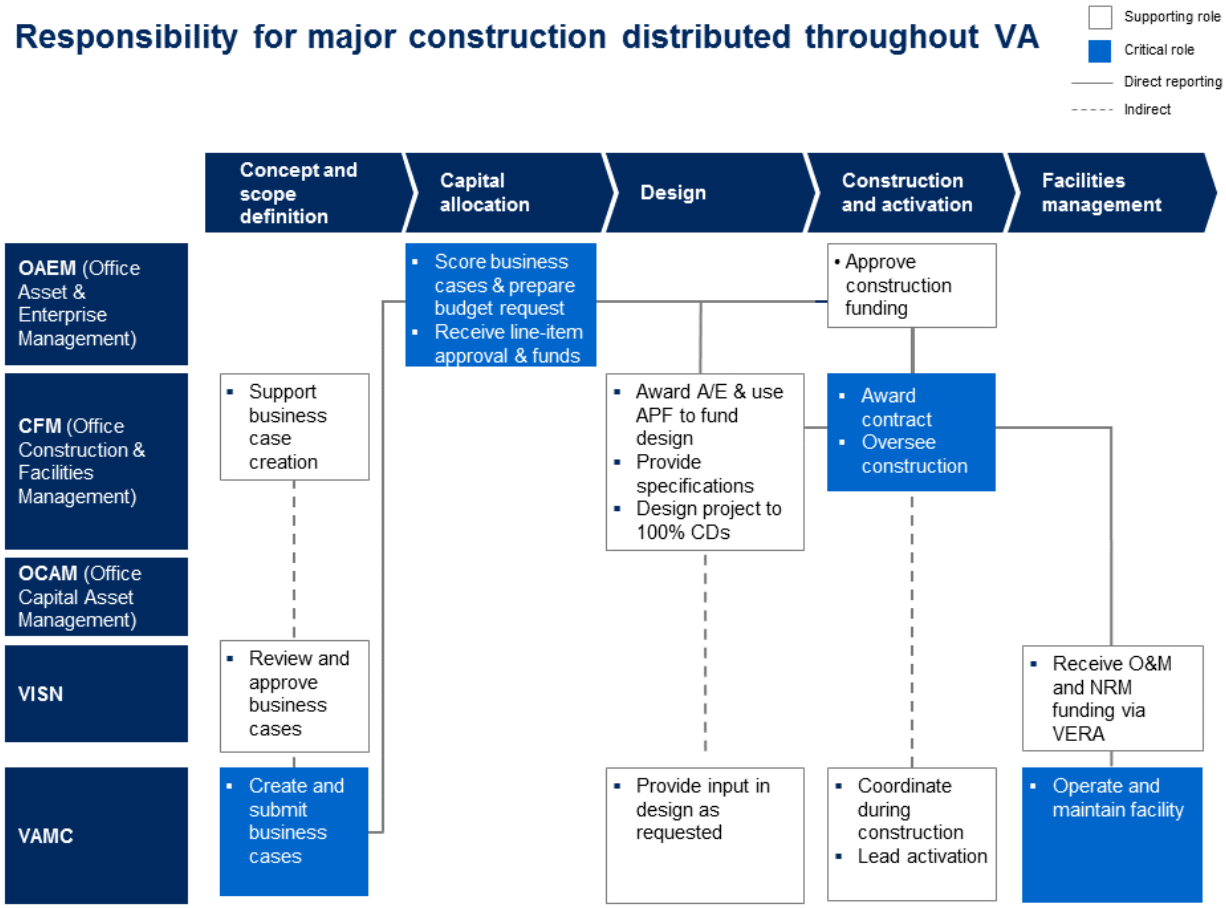
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Office of Capital Asset Management and Engineering Support (OCAMES):** OCAMES provides VHA guidance, oversight, and technical support for capital initiatives and engineering operations. Programs supported include major construction, minor construction, non-recurring maintenance (NRM), clinical specific initiatives (CSI), leasing, sharing use of space, enhanced use leasing, energy, fleet, engineering operations, and state home construction.
- **VISN:** Oversee execution of capital projects and maintenance in coordination with OAEM, CFM, OCAMES and VA Medical Facilities (VAMCs).
- **VA Medical Facilities (VAMCs):** VAMCs are involved in each construction program in defining the source of need for a business case and providing design and construction input as the eventual owner and manager of the facility delivered.

Projects are typically divided into major phases of their lifecycle including: concept and scope definition, capital allocation, design, construction and activation, and facilities management. We can observe the different approaches by type of project. For major projects VAMCs are responsible for project scope definition, business case creation including alternative stress test and cost estimation, and project SCIP submission to OAEM. Once the project is approved and funded for design, CFM is responsible for the overall design, construction and activation process, handing over the project to the station level (VAMCs) for operation and maintenance. Throughout the process, each of these organizations may play a supporting role in each step as outlined in Figure 6-2 (for example, CFM supporting VAMCs in business case definition).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-2. Involvement of Different Entities in Major Projects



6.1.1.3 Major Construction Program in VHA Include 37 Active Projects With Approximately $1 Billion Estimated Funding for 2016

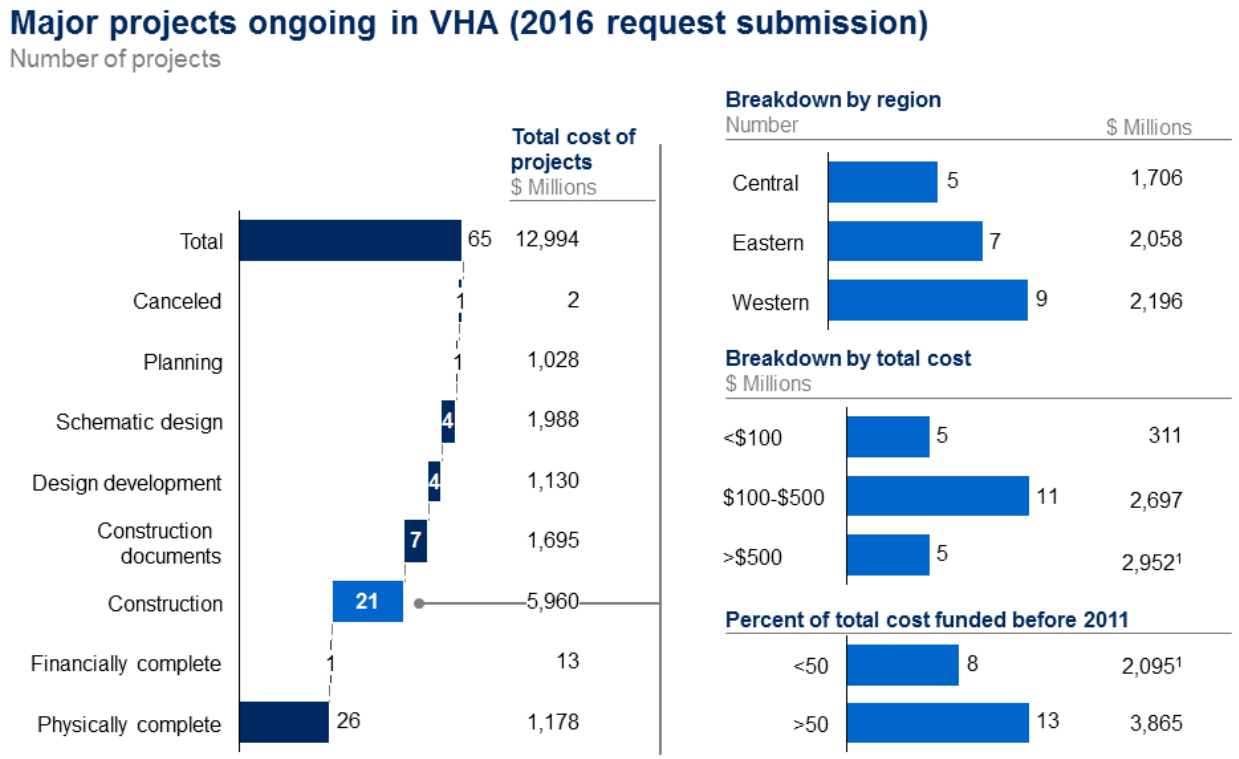
VHA reports 37 active projects[38] in various phases from planning to construction including 21 out of the 37 projects in the construction phase. From a regional perspective, there is a high concentration of ongoing major projects (9 out of 21) in the west, primarily driven by the seismicity of the region and the focus on seismic retrofits in the capital planning criteria.

As shown in Figure 6-3, 13 of the 21 projects under construction received funding for more than 50 percent of their total estimated cost before 2011. This shows the status on current projects to understand the current stages, geographic concentration, and sizes of ongoing major projects

[38] We consider active projects (37) those in the following stages: planning (1), schematic design (4), design development, construction documents (7) and construction (21).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-3. Major Ongoing Projects for VHA (at 2016 Request Submission)



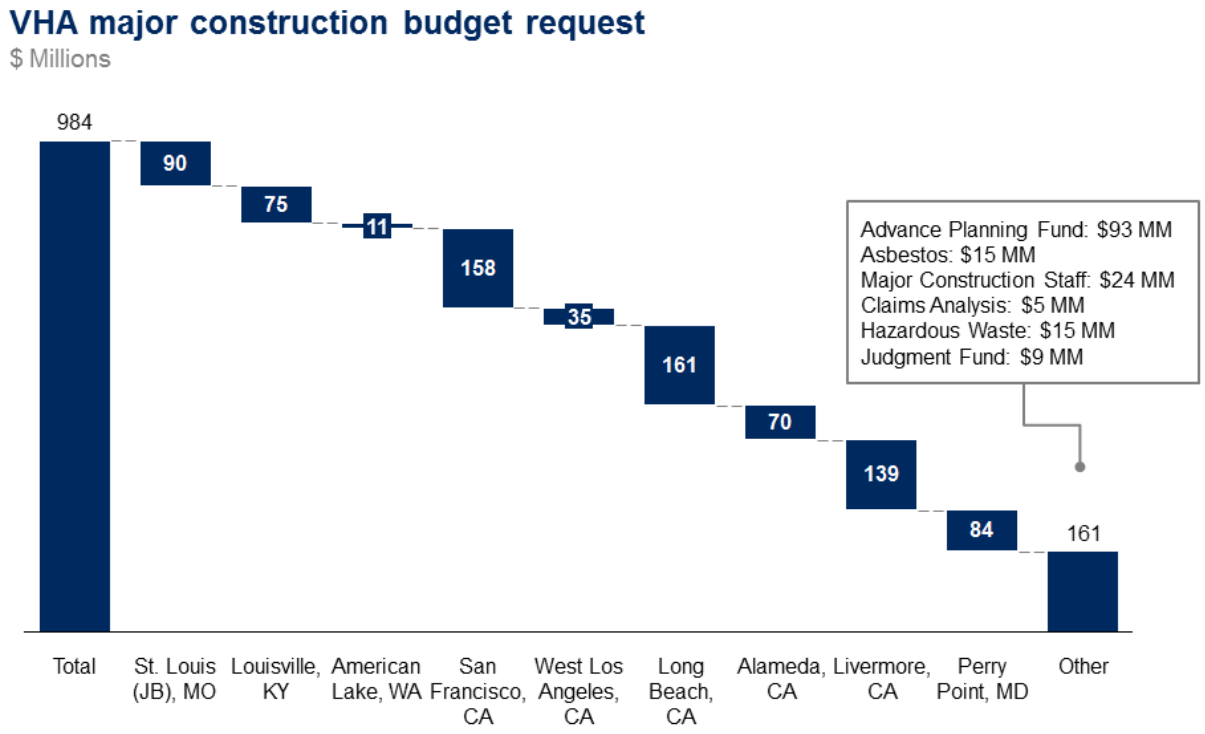
1 Cost for Aurora replacement facility is not included in the budget request and hence not included here

SOURCE: 2016 VA Budget Request, Volume IV, Appendix F (history of VHA Projects Update)

The VA budget request for 2016 includes funding for nine major projects that are active and entering the construction phase including St Louis, Louisville, American Lake, San Francisco, West Los Angeles, Long Beach, Alameda, Livermore and Perry Point (Figure 6-4). The request also includes funding for design activities on additional projects through the Advance Planning Fund that is used to support the initial phases of design of a major project before projects are approved and appropriated.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-4. 2016 Major Construction Budget Request by Projects

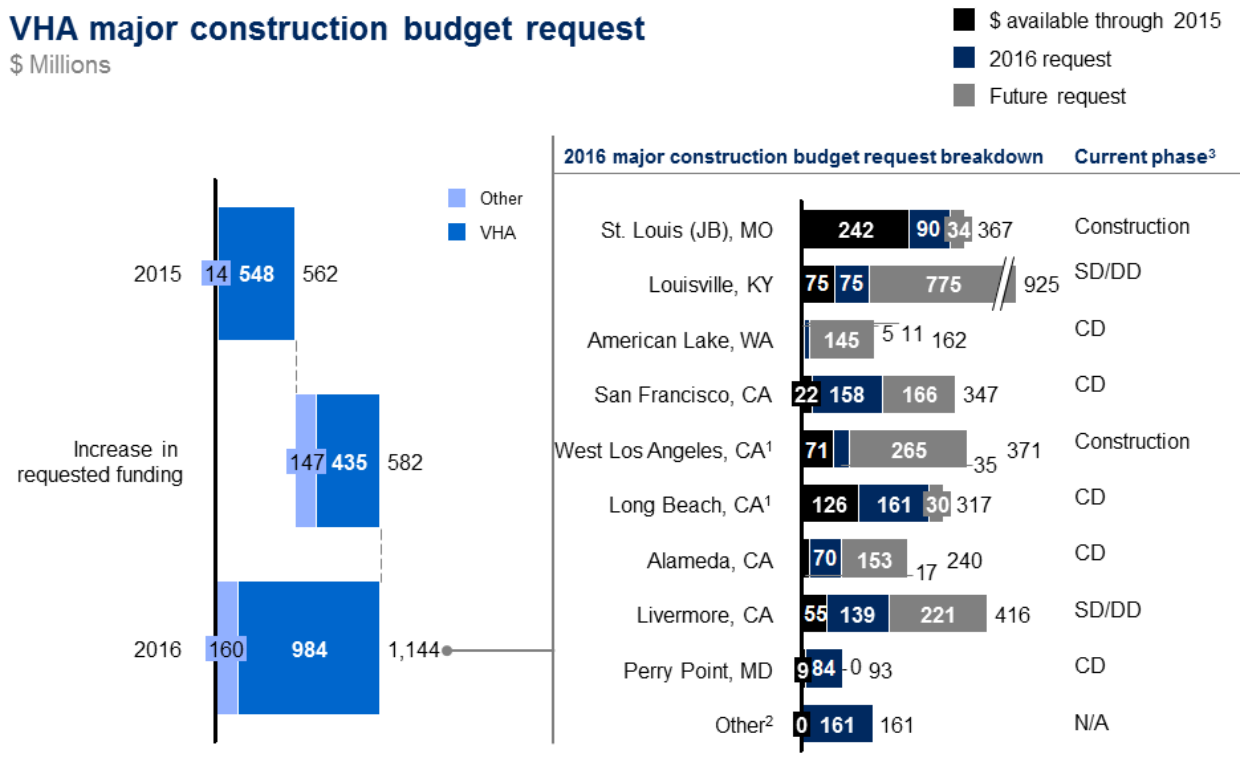


1 Of the 4 projects in 2015 budget request, Long Beach, and West LA are the only ones included in 2016. San Diego and Canandaigua, NY from 2015 are not included for 2016

VA appropriations for major construction vary significantly from year to year, as illustrated in Figure 6-5. Appropriations nearly doubled between FY15 ($548 million in VHA construction) and FY16 ($984 million). This type of variation is typically driven by either the introduction of new major projects or major transitions between projects. Between FY15 and FY16, a number of projects are expected to move into the construction phase, where the bulk of costs are incurred.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-5. Changes in Major Construction Budget Request



1 Of the 4 projects in 2015 budget request, Long Beach and West LA are the only ones included in 2016. San Diego and Canandaigua, NY from 2015 are not included for 2016
2 Other includes Advanced Planning Fund, Asbestos, Claims Analysis, etc.
3 SD is Schematic Design, DD is Design Development, and CD is Construction Documents

6.1.1.4 Five Projects within VHA Are Informally Classified as Mega Projects and Receive Additional Resourcing and Oversight due to Their Scale and Complexity

While there is no formal classification for mega projects within VA, projects are loosely classified in this category based on scale and complexity and receive additional attention. The US Army Corps of Engineers (USACE) defines megaprojects via eight key attributes ranging from size and delivery method of the project to its national significance and uniqueness of scope.

Adapted from the USACE Engineering and Construction Bulletin No. 2014-14, the following reflects some characteristics of mega projects that make them more challenging and warrant additional attention in the VHA facilities program:

- Cost and duration: Large project budgets that usually represent higher risk in achieving project outcomes and longer projects by duration which also indicate performance risk.
- Uniqueness: One-of-a-kind projects or projects involving unique and highly complex systems, processes, and technical challenges may be characteristic mega-projects.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- Acquisition strategy and delivery method: The contract type, solicitation, evaluation, and compensation methods allocate risk between the contracting parties which may drive complexity of project delivery.
- National significance: Projects of national or international significance may be characteristic mega-projects.
- Critical nature of completion date and/or funding constraints: Projects with completion dates established in law or treaty, tight or incremental funding requirements, and/or other requirements which dictate ultimate cost and completion of project
- Coordination of multiple prime contractors, architecture/engineering firms (A/Es), and stakeholders: Multiple general contractors on-site leading to complex coordination efforts. Projects requires the coordination of multiple design agents, multiple public agencies, may be characteristic of mega-projects
- Overlapping or dependent project phases: Projects where authorization, funds, or physical constraints determine the pace of execution may be characteristic mega-projects

Though CFM has not defined the attributes of mega projects, it has been observed that projects above $500 million of total estimated costs are considered large projects that require the appointment of a Project Executive. Of the ongoing major projects, five are considered replacement facility mega projects with costs above $500 million (Aurora, Las Vegas, Orlando, New Orleans, and Palo Alto).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-6. Recent VHA Mega Projects

	Description	TEC $ Million	Size Million sq. ft.	Expected completion
Aurora	▪ A tertiary care medical complex including a new inpatient medical center including a Spinal Cord Injury (SCI) Center, an Outpatient Clinic, a Community Living Center (CLC), a Research building, a Central Utility Plant, and parking facilities	1,730[1]	1.0	2017[1]
Las Vegas	▪ A comprehensive Medical Center Complex including up to 90 inpatient beds, a 120 bed Nursing Home Care Unit, an Ambulatory Care Center, administrative and support functions, and space for co-located Veterans Benefits Administration offices	585	1.1	2015
Orlando	▪ New medical center consisting of a 134-bed hospital, a large medical clinic, 120 bed nursing home, 60 bed domiciliary, and full support services on a new site	616	1.2	2015
New Orleans	▪ A new tertiary care medical complex with acute and long term inpatient beds and the full range of ambulatory services. It includes outpatient center, including primary care, mental health, specialty care, surgical capabilities, and expanded treatment, diagnostic, and ancillary services; research facility; and a parking structure	1,035	1.6	2016
Palo Alto	▪ This project will construct Centers for Ambulatory Care and Polytrauma Rehabilitation at VA Palo Alto Health Care System's (VAPAHCS) Palo Alto Division	717	0.6	2015[1]

1 Internal VA updates show TBD; latest TEC from for Aurora from April 2015 testimony by Secretary Gibson; completion dates from VA budget requests and VAMC trip packs

SOURCE: VA budget requests from 2008 through 2016 and internal VA project updates

6.2 Findings

To accurately assess the overall performance of VA's medical facilities program, we conducted a benchmarking exercise to understand the performance of comparable projects across the public and private sector and to identify the drivers of variability between projects. Using the benchmarking database, we conducted quantitative analyses based on cost per square foot and schedule duration in medical facilities construction. We have also carried out qualitative and quantitative assessment of project performance as well as assessed the processes, people, and systems used to carry out projects.

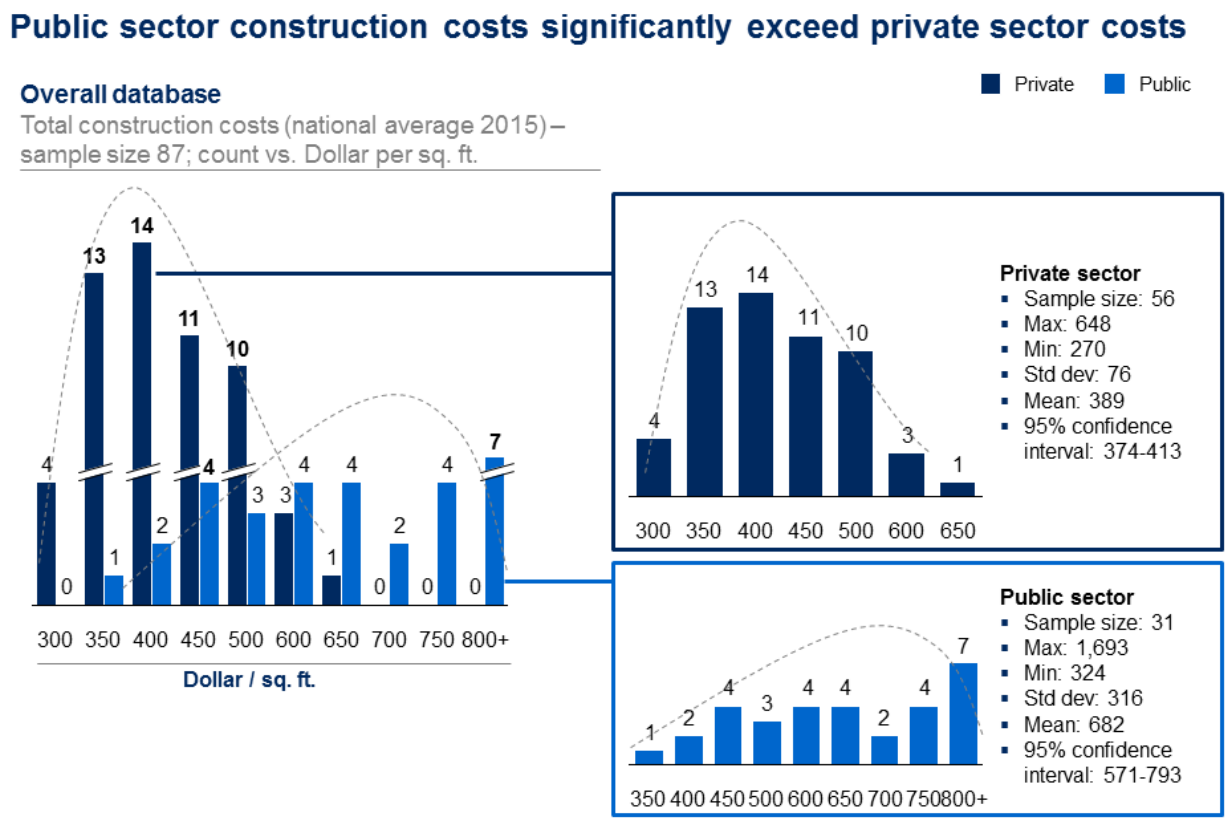
6.2.1 Outcomes

6.2.1.1 VA Construction Costs Are Typically Similar to Other Public Agencies That Deliver Health Care Projects, but Are Double Private Industry Best Practice Cost Levels

An internally conducted cost comparison effort revealed that public sector construction costs are approximately 1.5 to 1.9 times higher compared to private sector. With a 95 percent

confidence interval, based on the 87 projects in the database, we observed that public projects cost $570 to $790 per square foot compared to private sector costs at $370 to $410 per square foot (see Figure 6-7). Furthermore, the private sector experiences a much lower variation in the dollar per square foot costs compared to public sector. The standard deviation for private sector projects was $80 per square foot, whereas the standard deviation for public projects was $320 per square foot.

Figure 6-7. Major Construction Costs Performance



1 $ / sq. ft. adjusted to 2015 via internal factors for Design Cost Data Factors and ENR indices for others; adjusted to U.S. Nat'l avg via RS Means CCI

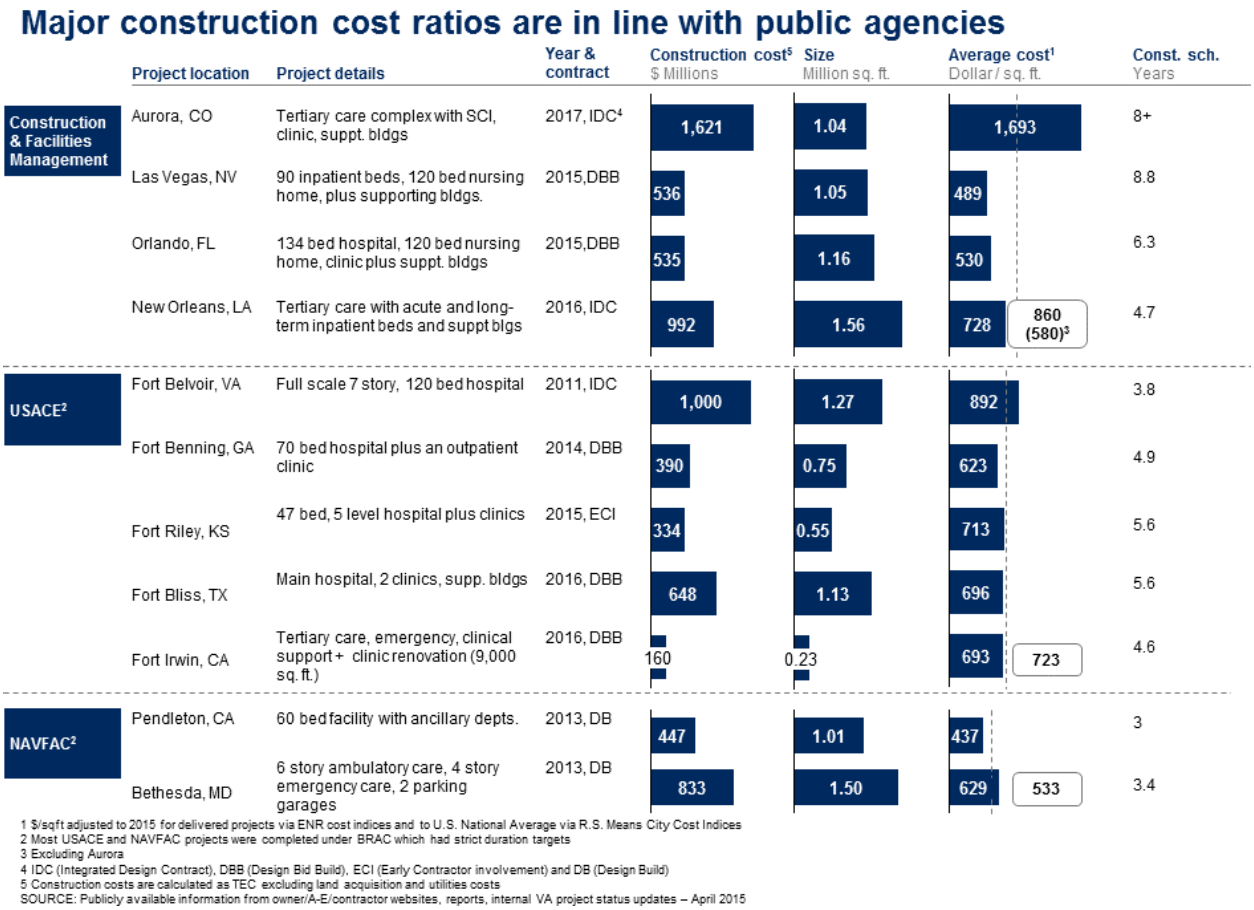
SOURCE: CII Healthcare Benchmarking Summary Report ; Department of Veterans Affairs Construction Cost Benchmarking Study by EBA Ernest Bland Associates & Skanska; Medical Construction Data; Design Cost Data database; VA budget request 2008-16; 6) public websites (contractors, owners, designers)

Public sector agencies delivering health care projects that we surveyed experienced similar cost performance, up to twice the cost of the private sector. VA estimates anticipate some of these cost levels and target $500 to $540 per square foot for new medical facilities based on Federal and VA design and construction standards.

For VA, the cost performance data obtained for major project performance ranges from $500 to $750 per square foot based on a sample of publicly available information for latest completed projects excluding Aurora. VA performance for major projects is similar to other relevant public project delivery agencies in North America (for example, USACE, NAVFAC). Data from our set of benchmark projects identified USACE construction costs, ranging from $500 to $900 per square foot, and NAVFAC costs, ranging from $400 to $650 per square foot.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-8. Comparison of Construction Costs Versus Major Public Agencies

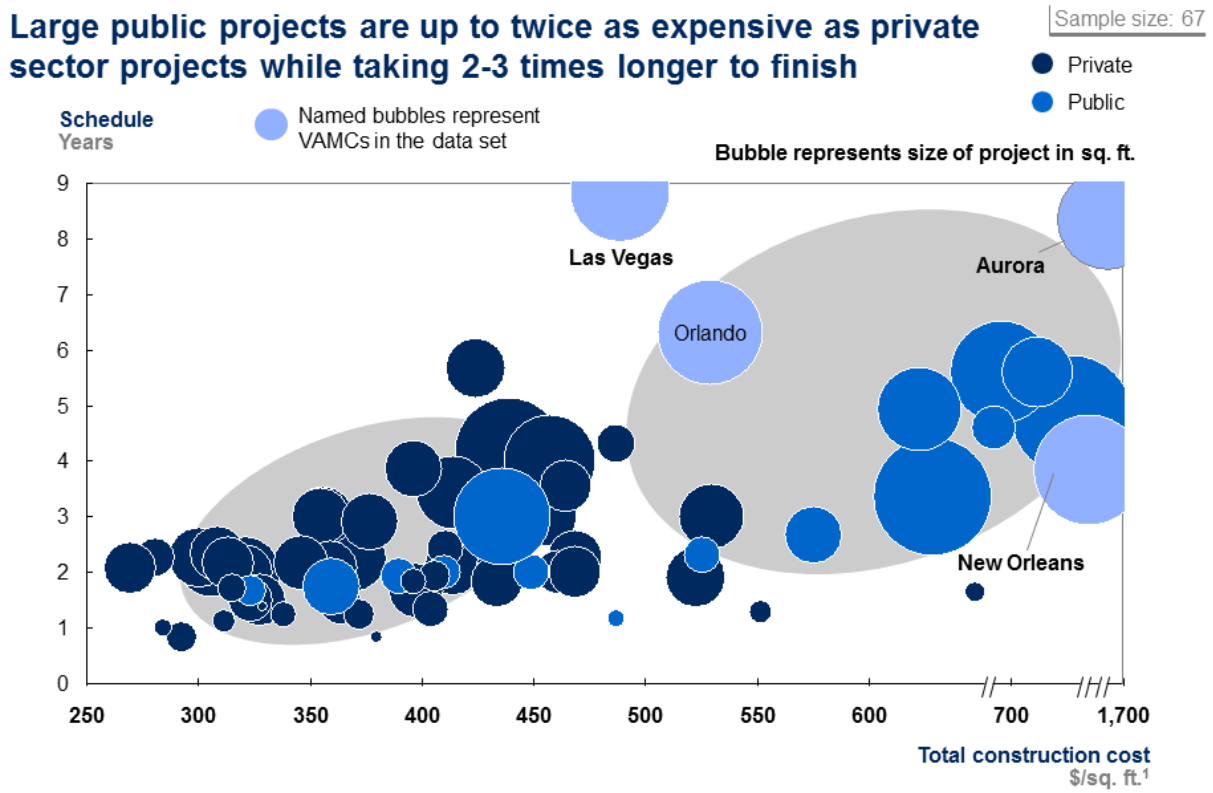


6.2.1.2 VA and Other Public Sector Health Care Projects Generally Take Twice as Long to Finish Compared to Private Sector Projects

From a schedule perspective, public sector projects also take approximately two to three times as long to complete compared to private sector projects. This is partially due to the larger scale of public projects. The majority of the private sector projects in our database were completed within two to two-and-a-half years compared to public sector projects which usually take from 2.7 to 4.6 years. More recent public sector projects have demonstrated somewhat longer construction durations. Interviewees have identified prioritization of projects and the time pressure resulting from previous Base Relocation and Closure (BRAC) schedules as a primary driver which enabled the acceleration of earlier public sector projects in our database.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-9. Major Construction Costs Performance



1 Dollars / sq. ft. adjusted to 2015 via internal factors for Design Cost Data Factors and ENR indices for others; adjusted to U.S. Nat'l avg. via RS Means CCI (2014 & 2013)

SOURCE: Internal cost benchmarking studies, proprietary construction databases, public websites (contractors, owners, designers)

6.2.1.3 VA and Other Public Sector Health Care Projects are 2 to 2.5 Times Larger Than Private Sector Counterparts

Public sector projects are generally larger than private sector projects with many of the public projects exceeding one million square feet. On average, public sector projects in the database are approximately 650,000 square feet with some projects close to one million square feet, whereas private sector projects on average are 300,000 square feet. We have observed that the number of medical services provided, the size of individual medical rooms, and the size of the circulation spaces are the main drivers that explain scale difference in public versus private projects.

As an example, public sector medical facilities usually include outpatient services and administrative offices on the same medical campus whereas private sector facilities focus primarily on inpatient services and outsource the administrative functions to locations outside the campus.

The scale of public sector mega health care projects could be a driver of construction costs and time to completion primarily due to the complexity of these larger projects. Our benchmark indicates that larger projects do correlate with longer time to completion timelines both in

public and private sector.[39] However, the private sector is able to maintain similar cost per square foot across projects of all scales, while the public sector delivers larger projects for 30 to 60 percent more on a cost per square foot unit rate compared to smaller projects.

6.2.1.4 Hospitals Constructed Adjacent to VA Hospitals Experience Similar Market Conditions but Have Been Delivered at Significantly Lower Cost and Shorter Schedule Duration

In the course of our benchmarking exercise, we identified several public and private sector hospitals being constructed directly adjacent to VA hospitals. These construction projects should experience similar market conditions and provide a reasonable demonstration of the variability in cost between VA and other hospitals. Details of these projects are included in Figures 6-10 and 6-11.

- The VA New Orleans Medical Center and the Louisiana State University (LSU) Medical Center replacement projects are both replacement projects undertaken in the aftermath of Hurricane Katrina. The projects are similar across many dimensions including size, location, time of construction, and project delivery method. However, the New Orleans VAMC is expected to be completed in 4.8 years at $661 per square foot, whereas the LSU Medical Center is expected to be completed in less than 4 years at $433 per square foot.
- In Denver, both the University of Colorado Hospital (UCH) expansion and the St. Joseph hospital expansion are being completed in close proximity to the Aurora VAMC. The UCH Hospital expansion was completed for $356 per square foot in 1.8 years. The St. Joseph hospital, a privately owned replacement hospital, was recently completed in 2.5 years and under $460 per square foot. In addition, the St. Joseph hospital provided double the bed capacity for less than half the cost of the Aurora VAMC. The Aurora VAMC is still under construction with an uncertain completion date and a current estimated cost of $1730 per square foot range based on the latest information available.[40]

It is valuable to note that both the LSU Medical Center and UCH hospital expansion are university hospital systems. These programs share characteristics of both public sector and private sector hospitals and demonstrate that construction can be completed close to private sector cost and schedule targets.

In each of these cases and as shown in our benchmarking exercise, non-VA hospitals were delivered in similar market conditions at significantly lower costs. The root causes of these differences are explored in the following sections that evaluate the process, people, and systems used to deliver VA projects.

[39] We consider large projects medical facilities to be those above 300,000 square feet.

[40] Update provided by VA on March 17, 2015.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-10. Comparison of VA Project with Next-Door Public Project

New Orleans VAMC	LSU Medical Center
Ownership: public (VA)	Ownership: public (state)
Site size: 30 acres	Site size: 40 acres
Building GSF: 1.6 million gsf	Building GSF: 1.6 million gsf
Beds: 200	Beds: 424
Type: replacement VAMC	Type: replacement teaching hospital
Delivery method: IDC (CM at risk)	Delivery method: CM at risk
Cost: $1.03 billion	Cost: $692 million
Construction start: May 2011	Construction start: Sep 2011
Construction finish: Feb 2016	Construction finish: Spring 2015
Schedule length: 4.8 years	Schedule length: <4 years
Dollar / sq. ft.: $661	Dollar / sq. ft.: $433

Note: Numerous factors drive the cost difference including but not limited to design criteria requirements (e.g., security mandates) which are explored in detail in following sections

SOURCE: public websites; VA budget requests

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-11. Comparison of VA Project with Next-Door Public and Private Projects

Aurora VAMC	UCH Hospital expansion, Aurora	St. Joseph, Denver
▪ Ownership: public (VA) ▪ Building GSF: 1.04 million gsf ▪ Beds: 182 ▪ Type: replacement VAMC ▪ Delivery method: IDC (CM at risk) ▪ Cost: $1.67 billion ▪ Construction start: Aug 2010 ▪ Construction finish: Dec 2017[1] ▪ Schedule length: TBD ▪ Dollar / sq .ft.: $1730	▪ Ownership: public (UCH) ▪ Building GSF: 735K gsf ▪ Beds: 276 ▪ Type: tower and critical care addition ▪ Delivery method: CM at risk ▪ Cost: $262 million ▪ Construction start: Feb 2013 ▪ Construction finish: Dec 2014 ▪ Schedule length: 1.8 years ▪ Dollar / sq. ft. : $356	▪ Ownership: private ▪ Building GSF: 831K gsf ▪ Beds: 360 ▪ Type: replacement hospital ▪ Delivery method: CM at risk ▪ Cost: $380 million ▪ Construction start: Sep 2011 ▪ Construction finish: Dec 2014 ▪ Schedule length: 2.5 years ▪ Dollar / sq. ft.: $457

Note: Numerous factors drive the cost difference including but not limited to design criteria requirements (e.g., security mandates) which are explored in detail in following sections; expansion projects may not involve as much site work as the replacement facilities projects; excluding land and utility costs IDC: Integrated Design Construction; DBB: Design-bid-build

1 Internal VA project updates show completion date as TBD; completion date based on VAMC trip pack

SOURCE: public websites; VA budget requests and internal project updates

6.2.2 Process

To identify the main factors that drive higher construction costs and schedule for public versus private sector, we conducted a review of major cost drivers for capital projects and the processes that contribute to these drivers. We assessed detailed project costs breakdown and identified common themes that explained the observed cost difference.

The factors below were identified from our assessment as the main drivers that result in costs differences between public projects like VA's and private projects:

- **Government resiliency, energy, and security mandates (Section 6.2.2.1):** VA is required to follow public sector mandates for energy performance, green building requirements, physical security, and mission critical facility requirements.
- **VA design specifications (Section 6.2.2.2)**: VA design specifications drive project design from space planning to specific finishes, which impact the overall cost of the project.
- **Pre-construction award changes (Section 6.2.2.3)**: Throughout the planning and design phases of a major project, we identified significant scope changes to projects resulting from input from architect/engineering firms, VAMC Directors, and the CFM Project Managers

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Post-construction award changes and inefficiencies (Section 6.2.2.4)**: During the execution phase of the project, we identified cost increases due to scope changes and execution efficiencies.
- **Phased contracts (Section 6.2.2.5)**: Due to limited financial resources based on appropriations, most major projects are phased over several years resulting in less efficiency delivery compared to simultaneous planning, design, execution, and activation of all phases.
- **Contractor risk markup (Section 6.2.2.6)**: Complicated management processes, long lead times to approve invoices and changes, Federal Acquisitions Regulations, and Veterans Acquisition Regulations are perceived by interviewees throughout the industry to require a higher effort in execution than the private sector. Many interviewees and industry experts suggest that this could lead to increased design and construction bid costs for public agencies such as VA.

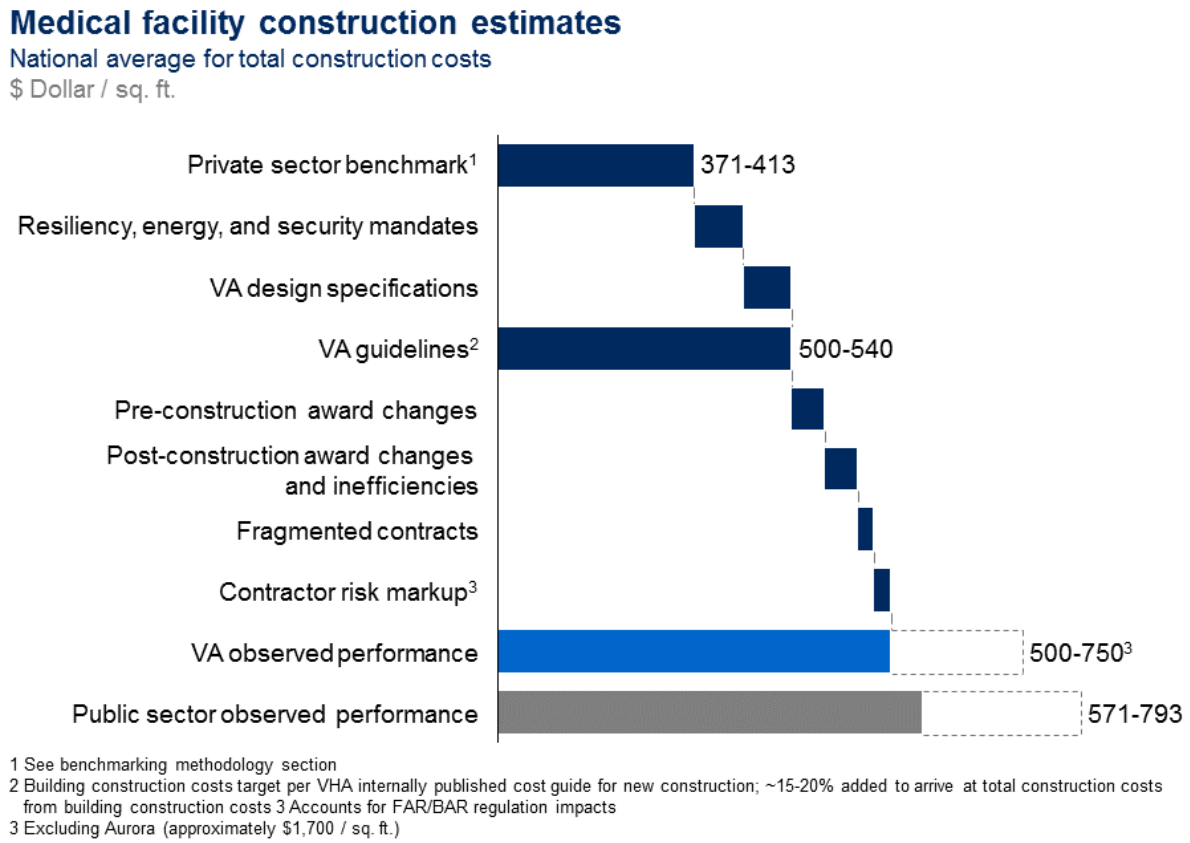
The approximate scale of each of these drivers is illustrated in Figure 6-12. Private sector targets for hospital construction range from $370-410 per square foot. However, VA guidelines which incorporate government requirements and VA design specifications lead to VA targets from $500 to $540 per square foot. Challenges in VA performance before and after contract award resulted in the observed increases in construction cost. These ranged from $500-750 per square foot (excluding the Aurora project).

VA could address some of the cost difference drivers to reduce the observed gap between private and public sector performance ($370-410 versus $500-750 per square foot). Levers detailed in Section 4.1.2, such as enhancing the use of early warning project controls, reviewing design standards for inefficiencies, and increasing contracting efficiency could address some of the cost difference drivers outlined above. Specifically, VA could reduce cost difference related to design specifications, pre-construction award changes, post-construction award changes and inefficiencies and phased contracts and risk markups.

We acknowledge, however, that if VA aims to completely close the gap versus private sector performance, there are factors such as resilience, energy, and security mandates as well as Federal and VA acquisition regulations that would need to be revisited.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-12. VA Construction Cost Drivers Estimates



6.2.2.1 Government Resilience, Energy, and Security Requirements

By mandate, VA design standards exceed those of the private industry. A 2009 study conducted by an outside construction management firm on behalf of VA indicated that energy and security mandates increase construction costs by more than 10 percent compared to similar buildings in the private sector.

Mission critical facilities are required to continue operations during a natural or manmade extreme event. Per Public Law 107-287,[41] Department of Veterans Affairs Emergency Preparedness Act of 2002 enacted November 7, 2002, the Secretary must take appropriate actions to ensure that facilities can fulfill their obligations as part of the federal response to public health emergencies. Currently, VA considers all VA medical centers and long-term care facilities, major outpatient clinics or clinics in locations where these are the only available health care facilities for a locality, research facilities, major data processing centers, and other facilities which serve a unique function for the Department as mission critical facilities. Under such classification, VA hospitals are currently required to be operational and provide shelter to

[41] Physical Security Design Manual for VA Mission Critical Facilities (January 2015 edition).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

the community in case of extreme events via appropriate planning (for example, water and fuel storage, alternative sources of power, progressive collapse and blast resistant designs) which significantly increases their costs versus comparable private industry projects.

In addition to the mission critical facilities requirements, VA hospitals must also comply with the federal security mandates which drive higher costs for the design and construction of VA buildings. The New Orleans case study below showcases some of the resiliency requirements mandated by the government for VA medical centers.

Finally, VA hospitals are federally mandated to comply with green building and energy performance mandates. VA Sustainable Buildings Program was established to comply with these mandates. Execution of such standards potentially increase construction costs for VA compared to the private sector.

New Orleans case study: Government resiliency requirements

The New Orleans VAMC was severely damaged from flooding following Hurricane Katrina. To replace the medical center, Project Legacy was created to design and construct a new medical center. The project is currently under construction and was one of the active mega project construction sites visited during the assessment.

Key information for New Orleans VAMC replacement project:

- Site size: 30 acres
- Building gross square feet (BGSF): 1.6 million square feet
- Beds: 200
- Type: replacement VAMC
- Delivery method: Integrated Design Construction
- Cost: $1.03B
- Construction start: May 2011
- Construction finish: Feb 2016
- Schedule length: 4.8 years
- $/square feet: $661

In order to meet the resiliency requirements, the New Orleans VAMC included certain features absent in the buildings of the neighboring Louisiana State University (LSU) Medical Center campus. Specifically, the following design criteria were included in the New Orleans VAMC due to the mandates for the emergency preparedness mission:

- Survivability: The campus must be able to accommodate 1,000 people for 5 days in an extreme event. The campus must also be equipped for independent power generation for standby and emergency. Finally, the campus must include a military helicopter landing area.
- Emergency storage: The campus must store fuel for power generation; water for domestic use, fire protection, and process; sewage; and meal and supplies.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- Operations: The campus must have flexibility in patient room design to shift to a 2 beds per room configuration to increase capacity. All mission critical functions must be located on or above the 2nd floor level. All buildings must be designed for a facility lockdown scenario in an emergency.
- Hurricane mitigation: The campus is designed to resist 130mph, 3 second gust (a Category 3 Hurricane) as defined by the International Building Code. The mission critical elements are designed above the current CORPS surge model levels (Category 5).
- Physical security: The campus must be compliant with all federal physical security requirements for mission critical buildings. Finally, the campus must also be able to secure its perimeter in the event of civil unrest or national emergency.

6.2.2.2 VA Hospitals Are Designed Physically Larger Than Private and Public Sector Peers

6.2.2.2.1 Mix of Space in VHA Facilities Impacts Overall Size and Has Cost Implications

VA hospitals are larger than comparable private hospitals. Differences are driven in part by incorporation of a large range of functions within a single facility or campus. Whereas private sector facilities focus space allocations primarily on clinical activities and often locate administrative functions at less expensive off-campus sites, VAMCs usually include inpatient services, administrative offices, outpatient units, community living centers (CLCs), and research spaces into the same medical center campus.

The volume of hospital space devoted to non-inpatient services is illustrated by the relatively large amount of medical center space per inpatient bed in VAMCs. The square feet per bed ratio can serve as a rough proxy for percent of space dedicated to inpatient uses. Using VAMC square footage data, compiled at the station level and excluding all off-site outpatient clinics, and authorized beds[42] to compare VHA facilities with for-profit, non-profit, and other public hospitals currently in operation across the US (AHA Hospital Statistics, 2015),[43] our analysis indicated that VHA is using approximately 130 to 140 percent more square footage per bed than private sector hospitals and 85 to 105 percent more than public and non-profit hospitals.

[42] Analysis used authorized beds by station, excluding CLC and domiciliary beds, which are not reflective of inpatient hospital care. Authorized beds are defined as "the potential bed capacity of a medical center, which is the sum of the operating beds and beds that are temporarily unavailable" (VHA Handbook, 2010). Authorized beds are likely an overstatement of the beds currently in use at the VAMCs, but as interviews raised questions about the validity of the number of operating beds reports by VAMCs, this analysis used authorized beds as a conservative number. We were not able to fully account for any issues of data integrity in bed count. See Assessment F (Clinical Workflow), Section 6.2.1.1 for a deeper discussion of inpatient bed counts.

[43] This data set includes 1,252 hospitals currently in operation across the US, regardless of year of construction, and reinforces the scale differences discussed earlier in the benchmarking of recently constructed hospitals in Section 6.2.3 and Figure 6-9.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This extra space seen in VAMCs is primarily driven by other uses in the hospital and does not specifically reflect room sizes.

VHA's integrated solution can offers some advantages, such as enhancing the continuity of care, but it also carries disadvantages in terms of cost and ease of construction. Building a hospital unit that includes subunits with significantly different architectural, safety, resilience and medical requirements likely results in building the subunits at higher standards, with their correspondingly higher costs, and can increase the cost of the whole facility. For example, a square foot of medical space costs approximately 45 percent more than a square foot of CLC space and nearly 60 percent more than administrative space (VA Cost Estimating Guide, 2015).[44] It is current design practice to separate buildings with medical use as much as possible from buildings that house less acute medical cases or administration space. For example Kaiser Permanente builds only the functions dictated by the local building code in the main hospital building and all other services and office space are located in an adjacent medical office building (Building Design + Construction, 2015). For VHA, these tradeoffs should be weighed carefully.

6.2.2.2.2 VHA Space Planning Criteria Lead to Larger Hospitals for Similar Service Levels Than Comparable Private Sector Facilities

Differences in size can also be attributed in part to VA space planning criteria and design specifications for the standard square footage of each clinical space VHA hospital designs during the conceptual phase are driven by the Space Calculator – a planning tool maintained by OCAMES. After project approval, the detailed design of the hospital is carried out via the Space and Equipment Planning System (SEPS) – a tool jointly owned by Department of Defense (DoD) and CFM. During the conceptual phase, the planner uses space planning guidelines of the space calculator which is generally aligned with SEPS programming. Planning of a hospital requires conversion of workload into specific departmental net square feet – for example, projected inpatient-days are converted into a specific number of beds for medical inpatient unit department which is then converted into a total square footage per use.

Industry space planning guidelines for the public and private sector are established by the Facilities Guidelines Institute (FGI). FGI publishes guidelines every four to five years in the Guidelines for Design and Construction of Hospitals and Outpatient Facilities. The latest guidelines available to the industry at the time of writing of this report are 2014 FGI Guidelines for Hospitals and Outpatient facilities. Because FGI guidelines are not all inclusive, local building codes also apply for design and construction of facilities.

Local building codes in general are updated every three years via adoption and amendments of the International Building Code published by the International Code Council (ICC). ICC 2015 codes have been published at the time of writing of this report and are in the process of being adopted by local jurisdictions. Similar to building codes, FGI guidelines are amended and adopted by the State in which the facility is located. Agencies such as VA and DOD have

[44] These cost estimates are for administrative space located inside a hospital, which is still significantly above typical office space construction costs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

developed their own version of the Guidelines for use in design and construction of their facilities.

VA also publishes its own guidelines on the Technical Information Library (TIL) for designing VA facilities. The TIL guidelines define the space planning requirements for 66 departments that are identified by VA. These guidelines are incrementally updated on a department by department basis every five to ten years to keep up with health care industry and best practice design. At the time of writing of this report, space planning criteria publishing dates ranged from 2006 through 2014 with majority of publications in 2008 in conjunction with a major update of SEPS.

Using these guidelines, we have observed that the current CFM guidelines prescribe approximately 10 percent more square feet on average for medical rooms than FGI guidelines (see Table 6-1). Current industry trends call for smaller, more versatile rooms, where research has validated that the same functionality levels can be achieved in a smaller space and with the same or better patient satisfaction levels. For example, in the last few years, the University of Pittsburgh Medical Center East hospital reduced patient room sizes to 10 percent smaller than the FGI guidelines after a comprehensive design study considering architectural features, medical functionality, and patient satisfaction (Healthcare Design Magazine, 2014).

Table 6-1. Comparison of Medical Room Size Guidelines

Medical Room[45]	VHA (sq. ft.)	FGI (sq. ft.)	% Difference
Medical/Surgical Room	280	250	12%
General Exam Room	120	120	0%
Office	100-120	100	10-20%
Operating Room[46]	660-900	600-800	10-13%
		Average	**10%**

Finally, more efficient architectural design at the department level can lead to significant savings in square footage in the departmental circulation space. Currently, VHA guidelines, reviewed across 24 departments, recommend approximately 4 percent larger department net to gross conversion factors than the DoD guidelines. This 4 percent is over and above any difference in room size. Department net square feet is the floor area within the boundaries of a functional department, as defined by space planning criteria, and department gross square feet is the floor area within the boundaries of a functional department, including the floor area occupied by the rooms, walls defining the spaces, and circulation corridors connecting the different rooms of the department. The department net to gross conversion factors are a measure of the efficiency of the departmental design.

[45] Values quoted for general use room only.

[46] FGI prescribes that a traditional operating room should have a minimum of 400 SF, while specialty and hybrid operating rooms can vary between 600-800 SF and we are comparing those with the VHA operating rooms.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6.2.2.3 Pre-Construction Award Changes

6.2.2.3.1 Significant Cost Growth in Major Projects Usually Occurs in the Design Phase, Before the Construction Contract Is Awarded

VHA major projects undergo significant cost growth over the course of their lifecycle. On average we have observed that projects undergo approximately a 90 percent increase in costs from their initial total estimated costs (TEC) to completion by the project contractor. More than half of the cost growth is actually incurred before the construction contract is awarded.

Figure 6-13. Cost Growth for Projects Currently Under Construction

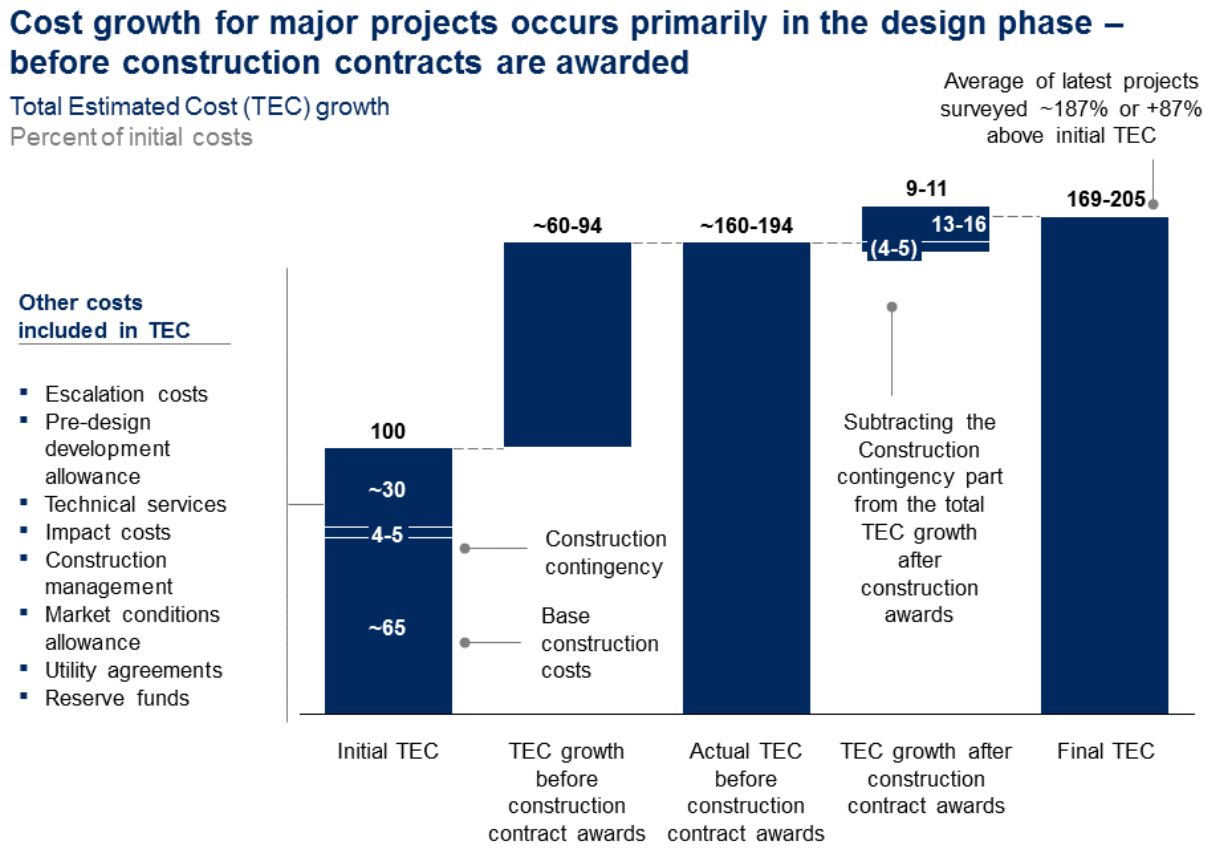
21 major projects under construction are expected at +87% of initial TEC

Project location	Project description	Initial TEC $ Millions	Current TEC $ Millions	TEC Variation Percent over TEC
Bay Pines,FL	Improve Inpatient / Outpatient	$174	$158	-9%
Biloxi,MS	Restoration of Hospital / Consolidation of Gulfport	$175	$286	+63%
Dallas,TX	Spinal Cord Injury	$89	$155	+74%
Denver,CO	New Medical Facility	$328	$1,730	+427%
Fayetteville,AR	Clinical Addition	$56	$88	+57%
Las Vegas,NV	New Medical Facility	$325	$585	+80%
Long Beach,CA	Seismic Corrections-Bldgs. 7 and 126	$103	$130	+26%
Manhattan,NY	Medical Center - Flood Recovery	N/A	$207	
New Orleans,LA	New Medical Facility	$625	$1,035	+66%
Orlando,FL	New Medical Facility	$254	$616	+143%
Palo Alto,CA	Seismic Corrections Bldg. 2	$34	$54	+59%
Palo Alto,CA	Ambulatory Care / Polytrauma Rehab	$450	$717	+59%
Pittsburgh,PA	Consolidation of Campuses	$191	$272	+42%
San Antonio,TX	Polytrauma Center	$66	$49	-26%
San Juan,PR	Seismic Corrections-Bldg. 1	$145	$277	+91%
Seattle,WA	B101 Mental Health	$179	$192	+7%
Seattle,WA	Correct Seismic Deficiencies B100, NT, and NHCU	$43	$44	+2%
St. Louis (JB),MO	Medical Facility Improvements & Cemetery Exp.	$69	$367	+432%
Tampa,FL	Polytrauma / Bed Tower	$224	$232	+4%
Walla Walla,WA	Multi-Specialty Care	$71	$71	+1%
West Los Angeles, CA	Seismic Correction of 12 Bldgs.	$155	$371	+139%
			Average	**+87%**

SOURCE: GAO-13-302, VA budget requests 2006-16, internal VA project status update as of April 30, 2015

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-14. Cost Growth for Major Projects



SOURCE: GAO-13-302, VA budget requests 2006-16, internal VA project status update as of April 30, 2015, project update documents for Palo Alto Ambulatory Care/Polytrauma Rehab project,

6.2.2.3.2 Increases in initial TEC Are Driven by Design Changes Requested During the Project Planning and Design Phase

Typically, a major project evolves significantly from the time of conception to the time of construction contract award. Design changes to ensure that projects most efficiently meet the needs of Veterans and VAMC staff should be anticipated throughout this process. However, our reviews identified significant changes in scope throughout the project development process and after projects were initially planned. These changes include the addition of major clinical uses, increases in square footage of specific uses, and changes requested by A/E firms, VAMC Directors, and Project Managers.

We have also observed that A/E firms are given significant latitude to create their own designs, sometimes converting them into signature projects and limiting the potential for standardization of designs across VHA. Furthermore, A/E firms view VAMC Directors as their client, accommodating requests and changes to initial project design. Without clear guidelines and accountability to manage scope modifications, Project Managers struggle to control costs during the design stages.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

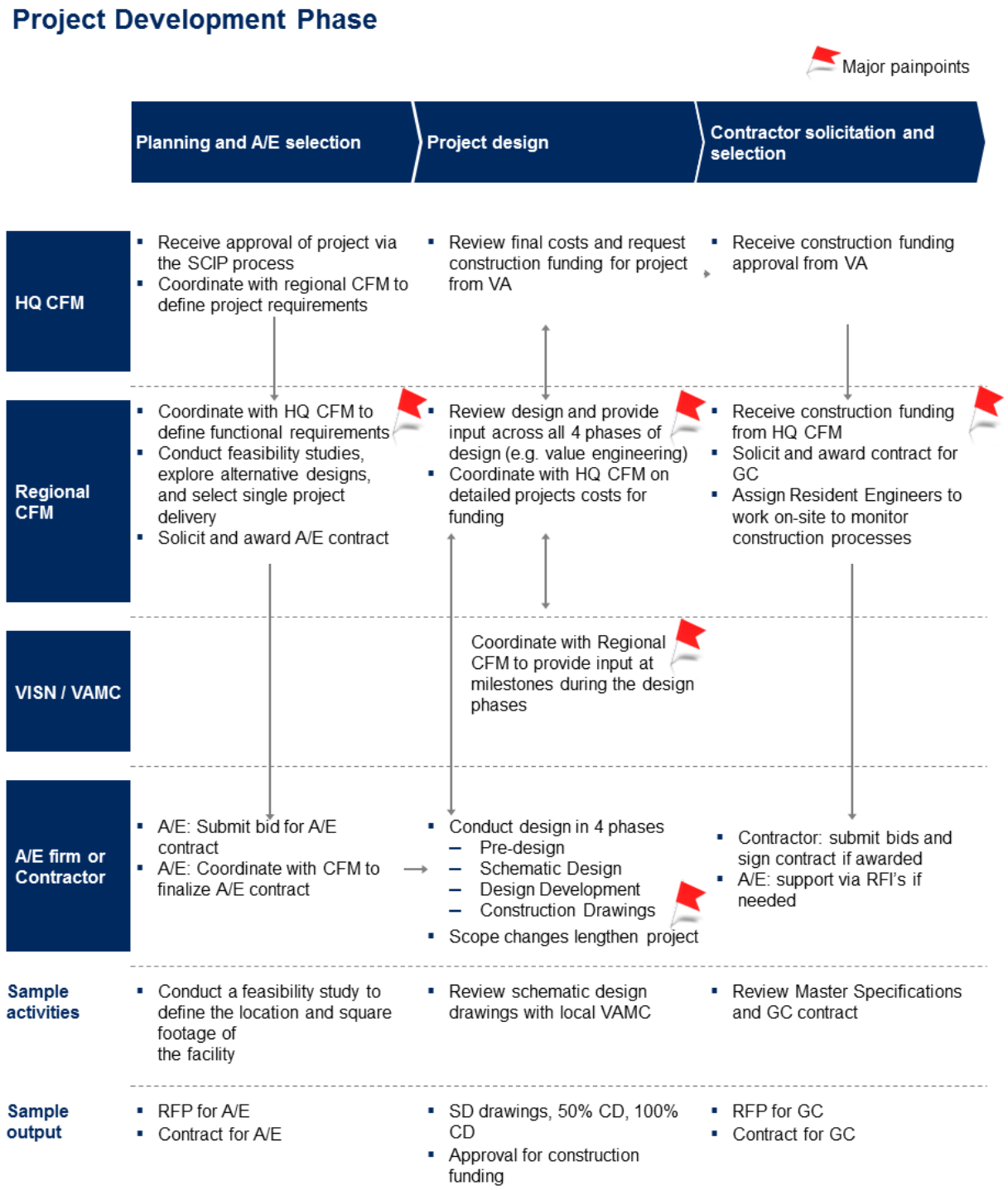
Interviewees have also indicated that project scope changes incurred during the construction of one phase can be reflected in the construction contract of a different phase, instead of being reflected in change orders.

Other organizations have mitigated these sorts of design changes through increased standardization. For example, with the development of their in-house standardized hospital design template, Kaiser Permanente was able to achieve faster delivery of new facilities and significantly reduced construction costs, while building efficient and safe hospitals. The template incorporated best practice designs for emergency departments, patient rooms, and other individual clinical spaces into a single configuration for an entire hospital. The buildings consisted of a diagnostic and treatment block, nursing units, and a separate medical office building. The template standardized the hospital from structural elements to furnishings, but allowed the necessary flexibility, such as different sizes of medical inpatient units. Kaiser Permanente simulated all design elements before the actual construction to test for a wide of spectrum of patient experiences and update and improve template as appropriate (Heatlhcaredesignmagazine.org, 2015).

An example of project scope changes during the course of the planning and design phases is included below.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-15. Project Development Phase

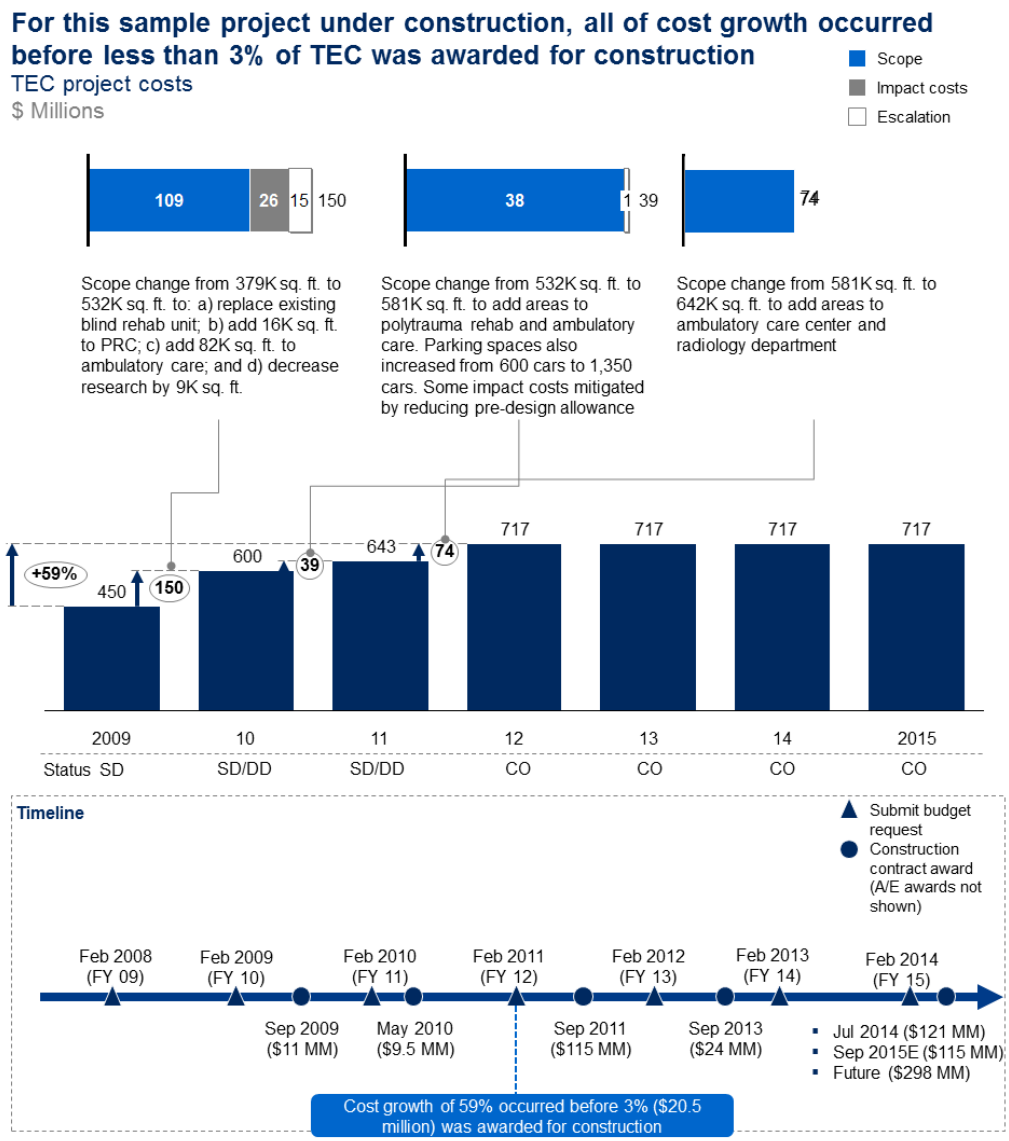


Case example for project growth during planning and design phase

In the course of our assessment we observed a number of projects that experienced significant scope increases. We have illustrated one of these cases in Palo Alto Ambulatory Care and Rehab project.

In this example, the project has experienced growth of 59 percent in total estimated costs with the majority of the scope changes occurring before the largest phases of the project were contracted out.

Figure 6-16. Sample Project Showcasing Cost Growth over Project Lifecycle



SOURCE: VA budget requests, internal VA project status update as of April 30, 2015, project update documents for Palo Alto Ambulatory Care/Polytrauma Rehab project

6.2.2.3.3 The Process for Capturing, Approving, and Changing Project Requirements Is not Well Defined, Leading to Drastic Changes After Approval

Many of the changes to project costs that we previously described arise from insufficient scoping and scope management processes during the planning and design process. The business case for projects submitted via the SCIP process is currently not scoped well enough to lead to an accurate cost and schedule estimate. This has resulted in multiple costs overruns as a result of evolving scope and design principles (as detailed in Aurora case example).

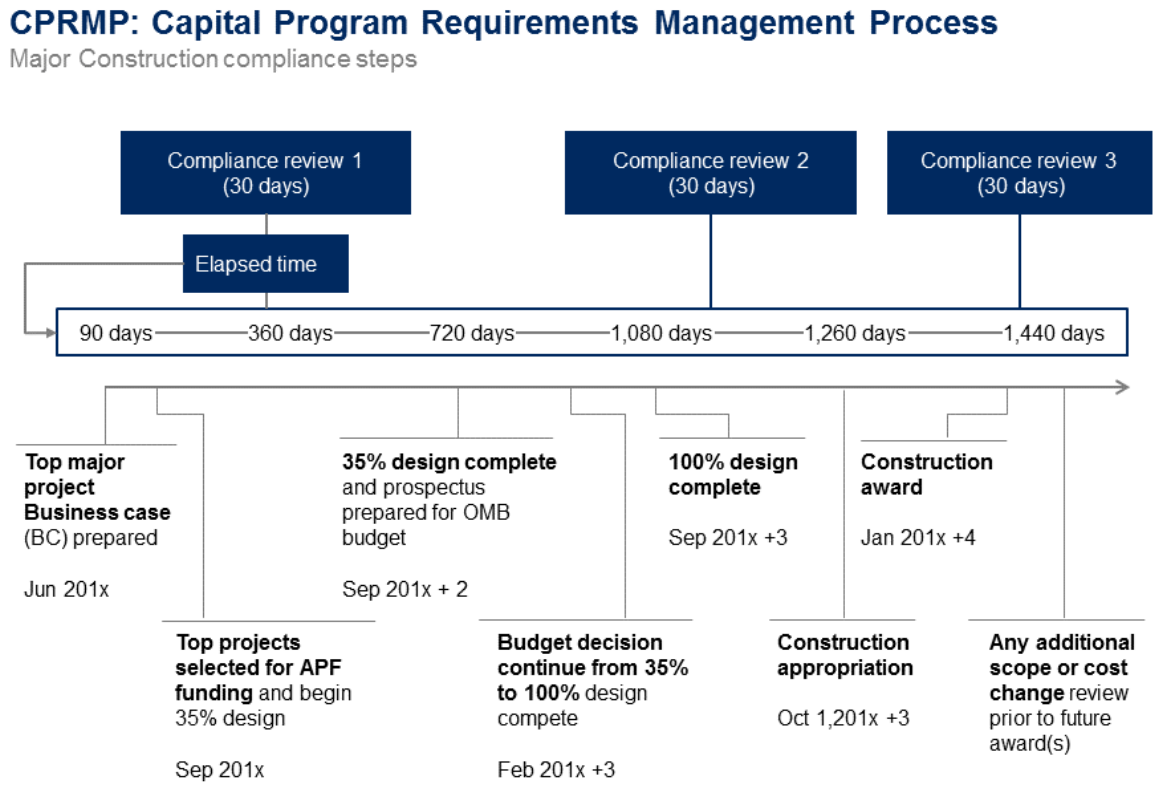
OALC (CFM) and the Office of Management, in a joint effort, recently implemented a stage gate process "Capital Program Requirements Management Process (CPRMP)" that enforces at least three compliance reviews during the project lifecycle and a 35 percent minimum design threshold for project authorization and approval (see Figure 6-17). This process could help to limit the uncertainty in scope and design principles and help control future budget increases for VHA projects.

The recently implemented program should also help manage the changes in scope for major projects after they have been approved via SCIP. The CPRMP process is a step in the right direction however, we have identified a few challenges in the CPRMP process that may limit its effectiveness:

- **Scalability**: The CPRMP process is not scalable based on the size and complexity of the project. All major projects - $10M or $1B – are required to undergo the same process for approval of changes. Hence the process is more prone to being impacted by resource constraints to review all the proposed changes for major projects.
- **Resources and training**: The CPRMP process currently involves the CFM, SCIP Board, Acquisition Decision Authority, and Construction Review Council with support from OAEM as needed. Of all the above organizations, CFM and OAEM are best matched to assess the changes in project scope although they are significantly under resourced to implement the CPRMP process consistently.
- **Implementation**: The CPRMP process was implemented in February 2014 and the in-field adoption has not been fully realized. The relatively slow adoption of the process in the field, especially given all the entities involved, allows for scope changes for on-going Major projects. The process itself is complex and, as reported in interviews, has not always been effectively communicated to the field.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-17. CPRMP Details and Requirements for Compliance Reviews



SOURCE: CPRMP Directive, 2014

6.2.2.4 Inefficiencies and Changes After Construction Award

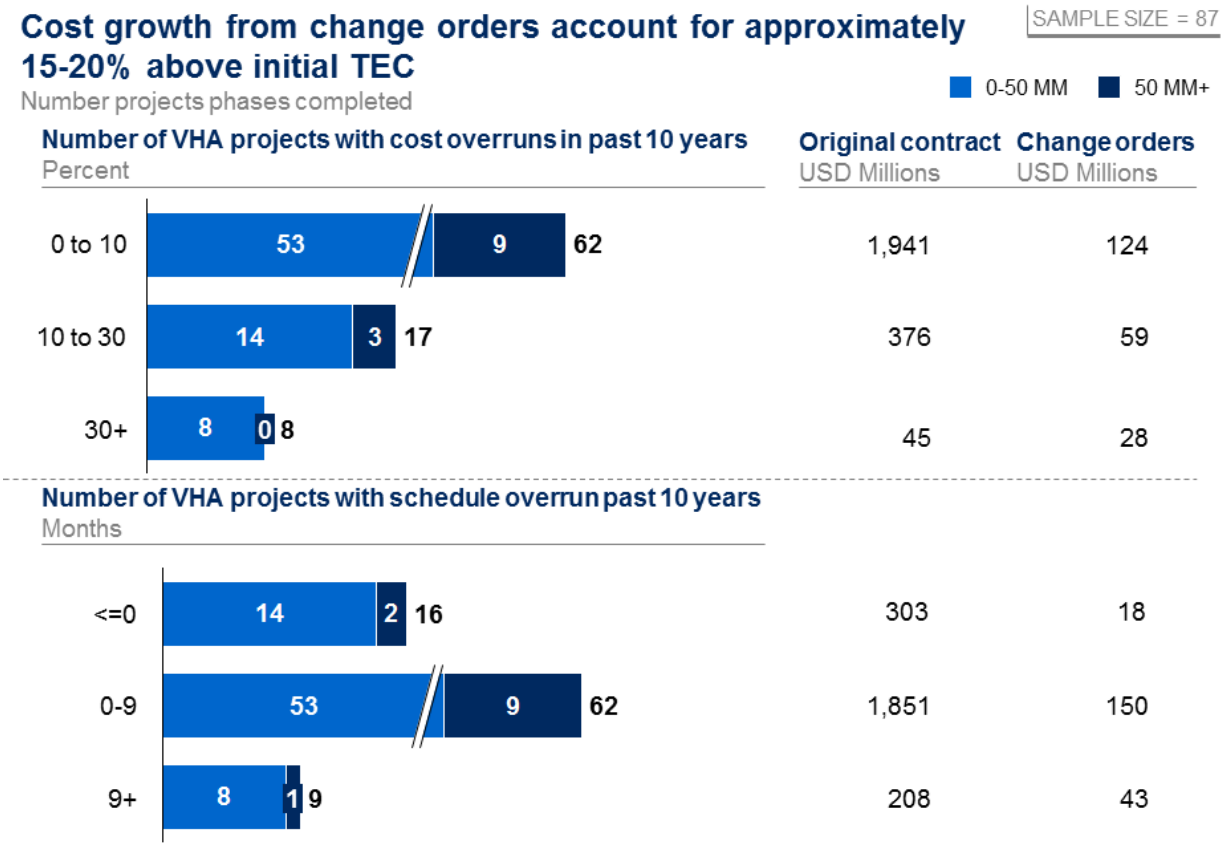
6.2.2.4.1 Contract Modifications After Construction Contract Award Still Account for 15 to 20 Percent of Increases in Project Costs

As discussed in the previous section, project cost growth occurs primarily in the design phase. However, post contract award changes are often also a significant source of project cost and schedule increases. In the past 10 years, 25 projects have experienced at least 10 percent cost increases over TEC driven by change orders, with 8 of them experiencing at least 30 percent overruns. Over 60 projects have experience delays as compared to initial plans and almost 10 projects experienced at least 9 months delay.

We define costs overruns as the total increasing funding requests over the initial total estimated costs (TEC), which includes forecasted project contingencies.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-18. Completed Major Projects Performance after Construction Contract Award



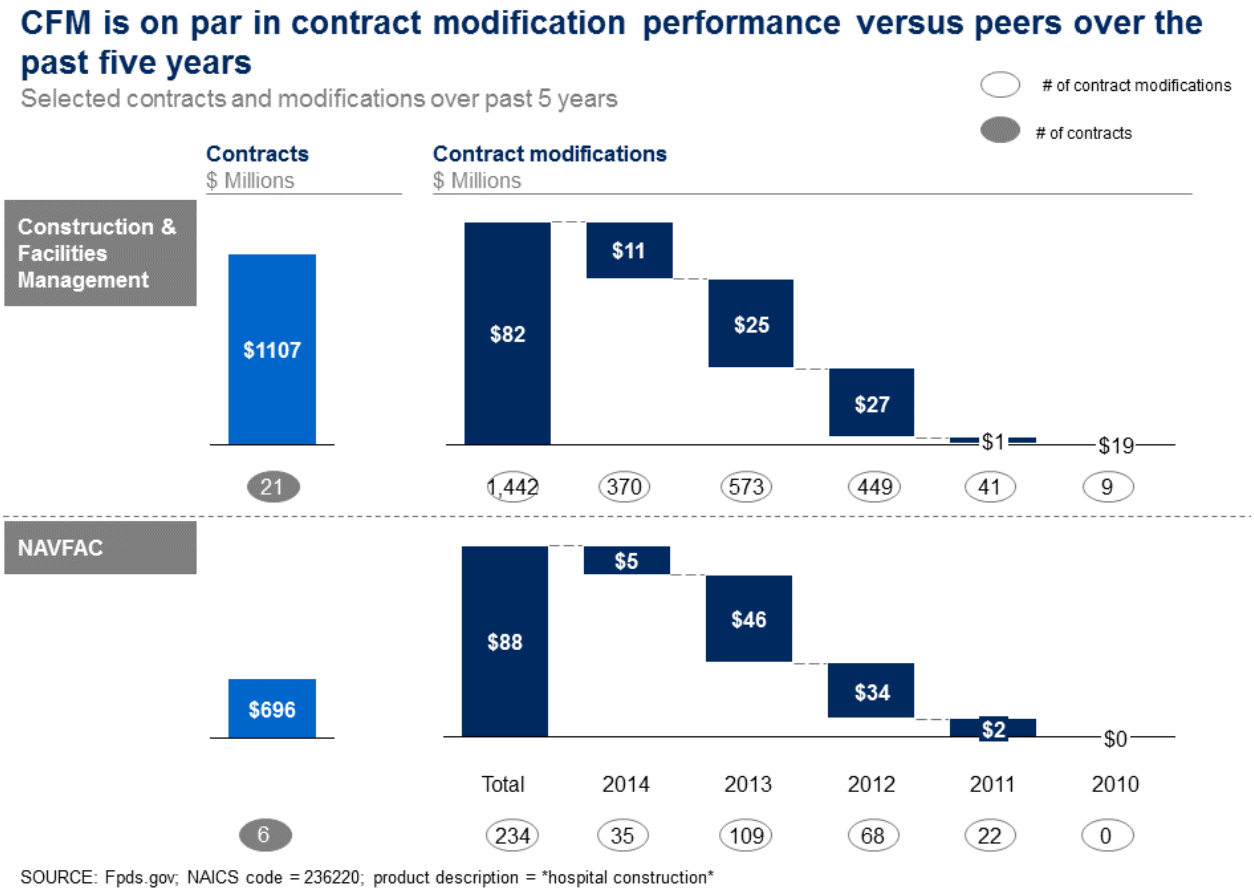
SOURCE: VA CFM project data for completed projects (and phases) from 2006 to March 2015

6.2.2.4.2 CFM Has Experienced Similar Performance in Contract Modifications Compared to Its Peers Over the Past Five Years

One of the critical factors to assess in execution of the major projects is contract management. Figure 6-19 shows that CFM is on-par with comparable entities in managing contract modifications, one key aspect of contract management. Contract modifications increased costs by 7.5 percent for CFM, whereas it increased costs by up to 13 percent for its peers. On average, CFM experiences about 1.3 modifications per million dollars of value compared to 0.34 modifications per million dollars for its peers.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-19. Contract Modification for Hospital Construction



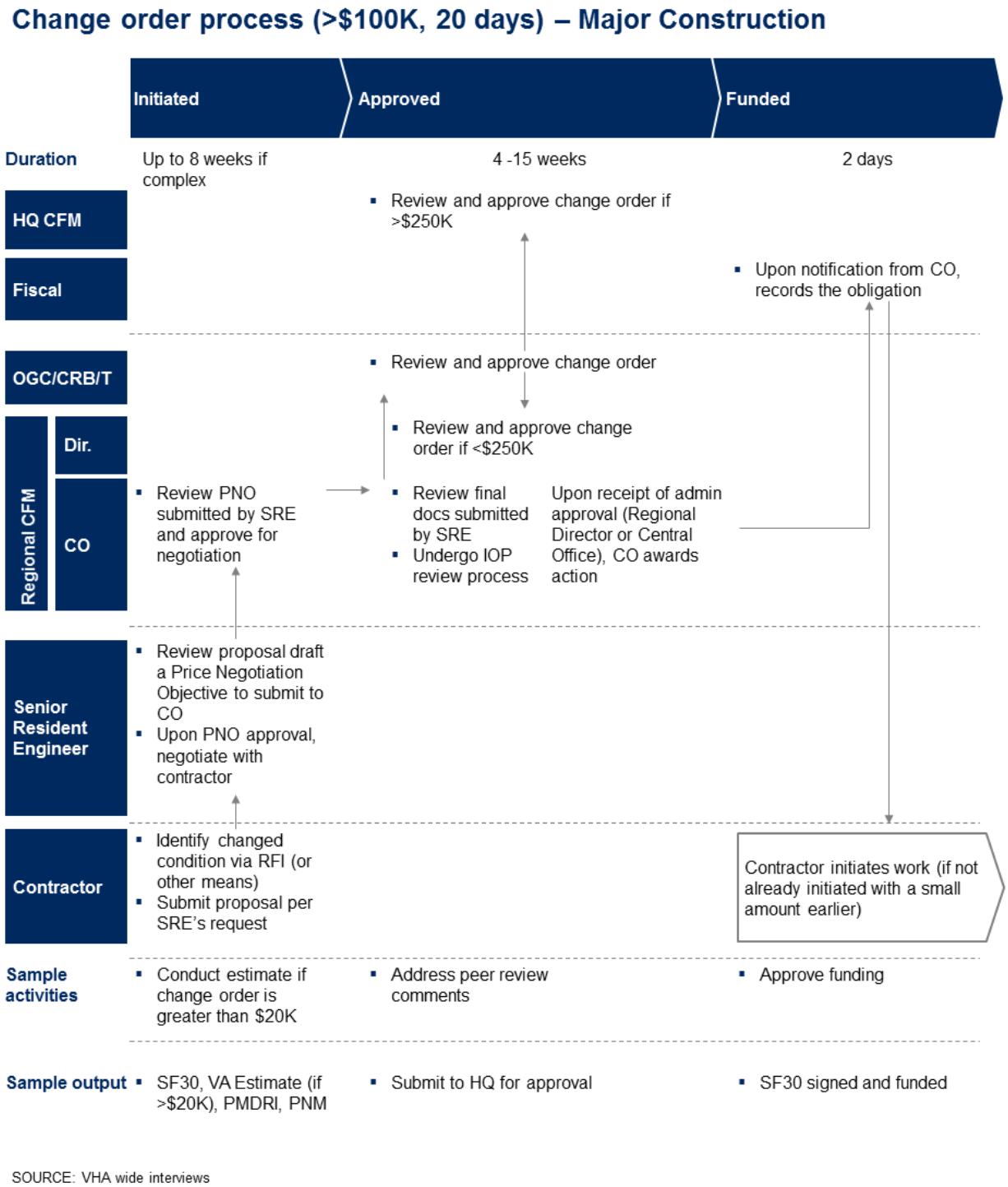
6.2.2.4.3 Complexity of Contract Modification Process Results in Cost and Execution Schedule Increases

It was shared during VA stakeholder and expert interviews that the contract modification processes is one of the major pain points for the major project delivery teams given the number of steps and stakeholders involved.

The overall contract modification process for a major project during construction involves multiple stakeholders, many of whom do not reside within CFM or even VA. For instance, as highlighted in Figure 6-20, many levels of approval are needed for relatively small-value change orders (as little as $100,000 on a multi-million dollar project). Lack of in-field approval on such change orders impacts project execution, bringing execution to a halt in many cases due to dependencies on unresolved changes. Delays and stop work orders extend the project schedule and ultimately increase the cost.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-20. Contract Modification Process for Major Projects



SOURCE: VHA wide interviews

6.2.2.4.4 The Activation Phase Encounters Funding Challenges That Drive Schedule Delays

The activation phase encompasses activities that identify, plan, manage, and execute logistical and operational requirements to bring a new facility to full planned operations.

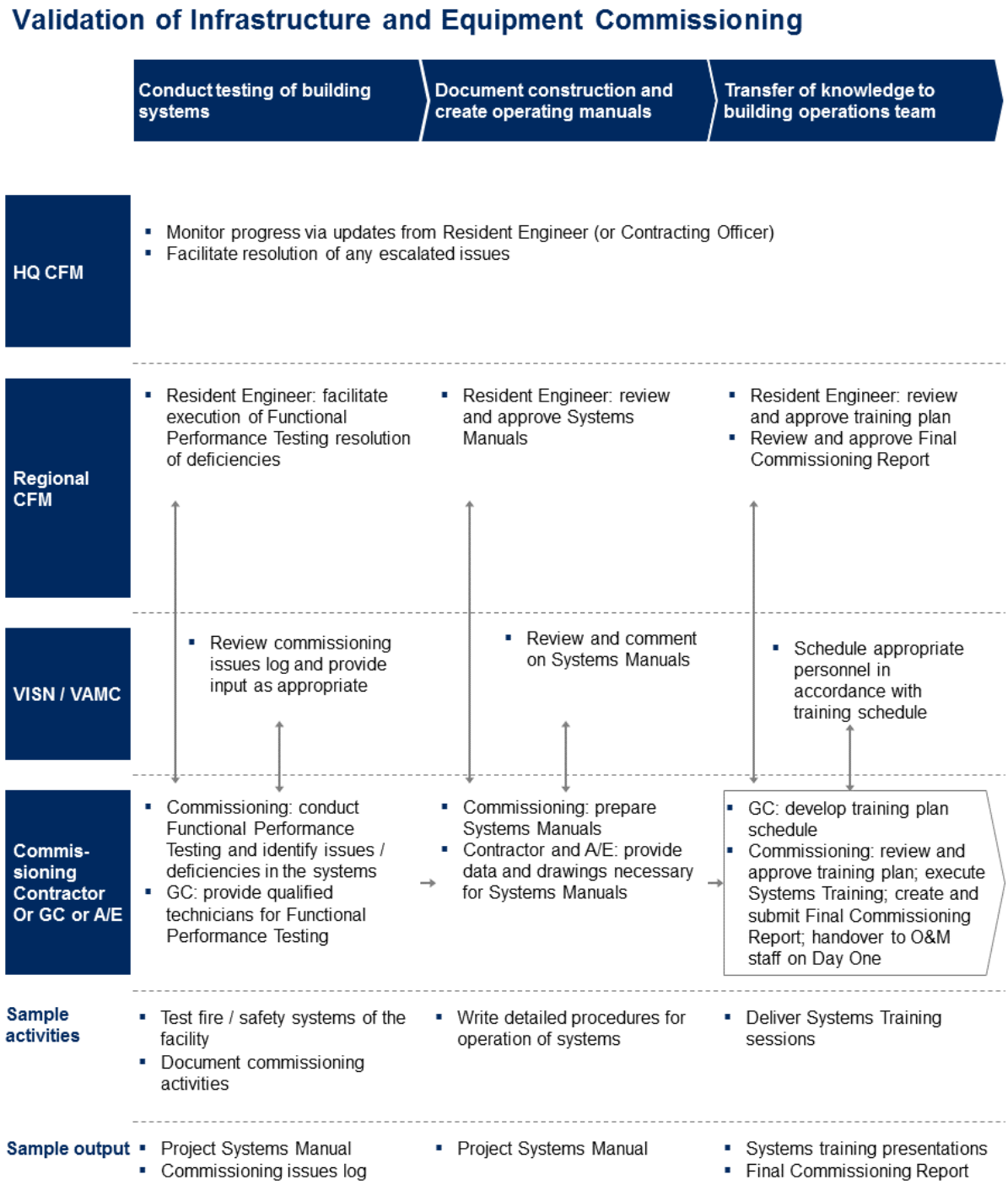
Activation activities include, but are not limited to: equipment and furniture inventory, high cost/high tech equipment procurement, recruitment, selection, staffing, orientation and training, validation of infrastructure and equipment commissioning, move planning, and in-situ simulation testing and hazard mitigation (VA Activation Process Guide, February 2015). The validation of infrastructure and equipment commissioning process in VA is outlined in Figure 6-21. The following factors have been observed which make the activation process difficult to execute, potentially leading to delays in the operation of the facility:

- Activation funding is separate from construction funding and may not be approved in a timely fashion
- Activation funding is often not identified early in the project lifecycle to account for the lead time necessary to drive to “patient day 1”
- The activation team may not be involved early enough in the project lifecycle to define commissioning requirements
- Lack of involvement of the activation team can lead to maintenance issues. Personnel may not be trained well to identify and execute recurring maintenance leading to significant spending on maintenance.

A recent initiative has been launched to establish an activation office that supports commissioning efforts throughout VHA. Based on the interviews conducted during the VAMC visits, significant impact has not been observed yet.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-21. Validation of Infrastructure and Equipment Commissioning Phase



6.2.2.5 Phased Contracts

VHA Multi-Year Projects Are Executed Under Phased Construction Contracts Limited by Funding Cycles

Funding for major projects is generally phased based on stages such as land acquisition, design, construction, and activation. Even projects in the construction phase do not receive full project funding, but have been phased across multiple years. Phased contracts increase project costs due to multiple interfaces and remobilization efforts.

The phased project approach lends itself to planning multiple projects with limited financial resources driven by appropriations. Hence, a single major project many involve multiple phases each with a different general contractor. Such fragmentation of projects leads to higher costs as general contractors demobilize and remobilize multiple times during each interface of the phase.

Furthermore, phased projects are likely to undergo personnel changes both from CFM and within VAMC, over the course of the project, making central management even more challenging and increasing the likelihood of scope and design changes.

6.2.2.6 Contractor Risk Markup

Contractors Factor in Perceived Risks in Working With VA Charging a Premium in Contract Bids

In the course of our VA contractor and industry expert interviews, it was noted that the contractor community considers VA projects to have higher design and execution risks than other public and private clients. Specifically, VA is considered by the contractor community to have:

- Strict Federal Acquisition Regulations (FAR) and VA Acquisition Regulations (VAR) contract requirements that result in increased costs in the value chain.
- Slower decision making process that impact construction (for example, response to a Request for Information [RFI], change order approvals) resulting in longer execution schedules.
- Outdated design standards and specifications that prevent contractors to maximize cost effectiveness of alternative project designs or constructability approaches.
- Reactive approaches to problem solving and contractor/owner relationship, limiting the potential synergies that could be achieved on a collaborative environment.

Contractors have indicated that they factor the issues identified above into the tendering processes, effectively building an additional contingency to account for higher risks in working with VA. Recent arbitration and litigation between VA and contractors has strongly favored contractors in the recognition of these challenges.

In summary, the main factors highlighted in this section (Government resilience, energy and security mandates, VA design specifications, pre-construction award changes, post-construction award changes and inefficiencies, phased contracts and contractor risk markup) drive public

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

sector construction costs 1.5 to 1.9 times higher versus private sector. In some cases, specific drivers (for example, pre-construction and post-construction award changes) have caused significant deviations versus initial estimated costs posing significant challenges for the VA major construction program.

While it is not the scope of our assessment to specifically review the replacement VAMC at Aurora, the assessment team visited the Aurora construction site during the week of March 9, 2015 and conducted interviews with members of VA's project delivery team and contractors that were active on site. This visit followed the same review methodology as other construction site visits completed during our assessment. During our review, we observed many of the construction challenges discussed throughout this assessment and highlighted throughout Section 6. More comprehensive reviews of the Aurora project are documented in Congressional testimony, findings of the United States Board of Contract Appeals, and reports by GAO. A brief summary of these findings is provided in Appendix B.2 (Kiewit-Turner, a joint venture, v. Department of Veterans Affairs, 2014; GAO-06-472, 2006; GAO-13-302, 2013).

6.2.3 People

In assessing the organization responsible for delivery we explored the way in which VHA and CFM structure and staff their project delivery teams (PDT) to deliver projects efficiently and what is the impact that culture may have in VHA project delivery.

In CFM, project delivery teams consist of the following key positions for a major projects:

- **Contracting officer (CO):** Responsible for overall contract compliance and approvals. They are normally involved after a project is approved via SCIP and funded
- **Resident Engineer (RE):** Responsible for the technical areas of projects. They are normally involved when projects enter the construction stage. They form different teams to cover specific trades (for example, mechanical, electrical)
- **Senior Resident Engineer (SRE):** Overall responsibility for technical areas of projects, and leading teams of Resident Engineers
- **Project Manager (PM)**: Responsible for cost and schedule oversight of the project. They are normally involved in the design phase and their involvement goes through project activation. In the case of mega projects, the PM still leads the project during the design phase with Project Executive taking the lead in the execution phase
- **Project Executive (PE)**: PE's are typically only staffed in mega projects (>$500 million), PEs are responsible for cost and schedule oversight of the project.
- **VHA VAMC Coordinator**: Responsible for coordinating project execution with the VAMC Director and responsible departments.

The composition of teams varies significantly depending on project type, while every project has a combination of Contracting Officer, Resident Engineer and Project Manager. Only Mega projects normally have a dedicated staff.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6.2.3.1 Project Teams Are Designed and Staffed to Support Compliance Requirements at Times to the Detriment of Project Efficiency

Project team structures, while designed to support compliance requirements, have resulted in reduced accountability for project delivery outcomes and a limited ability to develop solutions to manage cost overruns and schedule delays. On a major project, each of the key roles in a project delivery team (for example, CO, PE, RE) follow different reporting lines (for example, Project Managers to Director of Project Delivery, Contracting Officer to Director of Acquisition and Resident Engineers to Director of Facilities Operations, per Figure 6-22). This situation generates a coordination challenge as it generates three silos (for example, technical, contracting, cost-schedule) within a team with potentially different directions or objectives (VACO/CFM/VISN Interviews, 2015). These silos were created in order to ensure accountability to specific outcomes but result in challenges to overall leadership. For example, contracting officers' order of priorities may not be fully aligned with project execution needs impacting project timelines.

Given the different reporting structures, there are different views in the organization on who is the overall project owner (for example, Project Manager, Senior Resident Engineer, Contracting Officer) and who is accountable in the different project phases (for example, Design, Construction, Activation). Based on CFM manuals, Project Managers are effectively responsible for overall project goals. However, they lack formal authority over the other key figures in project teams (for example, Resident Engineers and Contracting Officers) and according to interviews they do not feel empowered for fast and effective decision making.

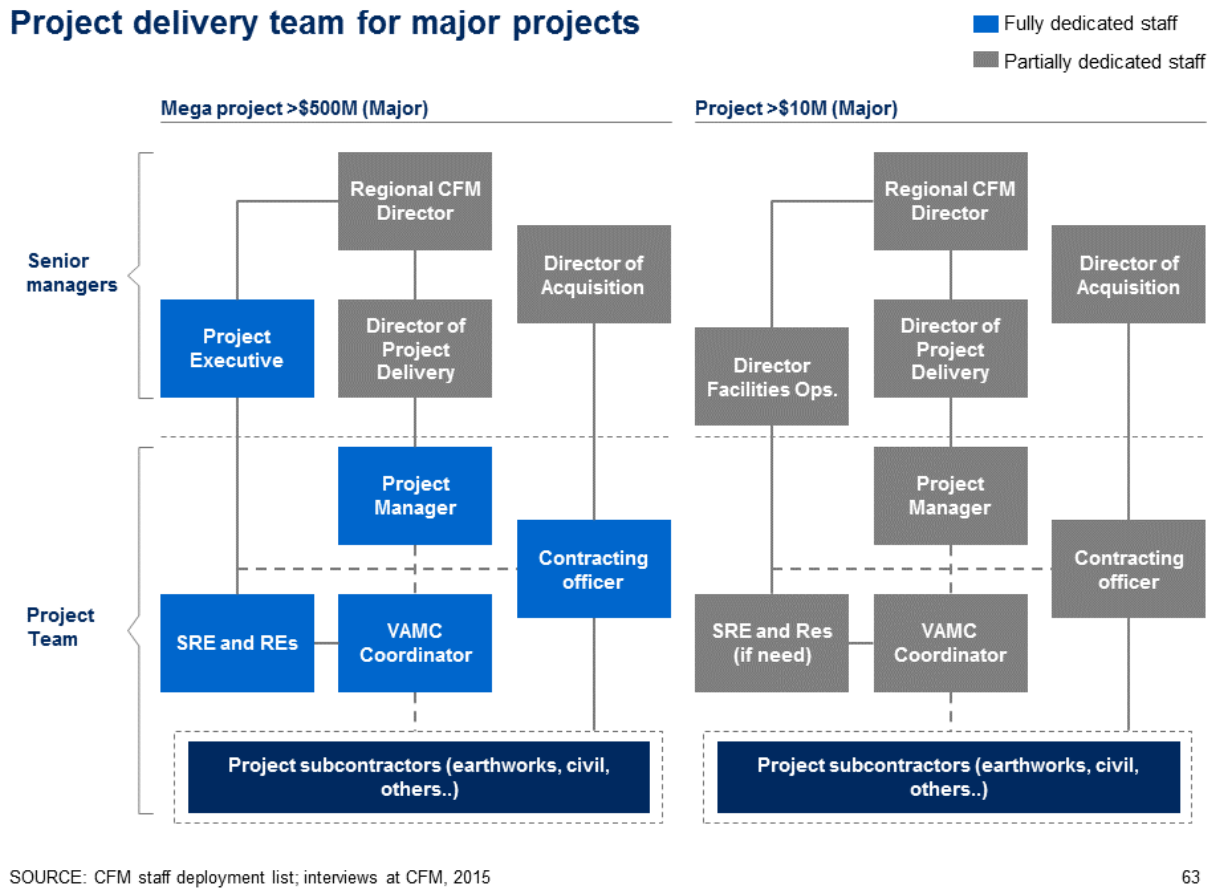
6.2.3.2 There Are not Consistent Staffing Guidelines for Major Projects That Consider Size or Complexity of Projects

There is not a clear policy that sets project staffing guidelines for major projects. Currently, there is not visibility on how critical project factors such as volume or project technical complexity are factored in to design project teams.

It has also been shared during VA stakeholder and expert interviews that VA project staffing levels are significantly below other major agencies (such as USACE, NAVFAC), especially in the Resident Engineer and Contracting side. In some projects, the relationship of CFM staff to Contractor is above 1:10, and project managers could oversee portfolios of approximately $1 billion. This situation limits the ability of CFM staff to address all issues identified in the field, thereby impacting project execution timelines.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

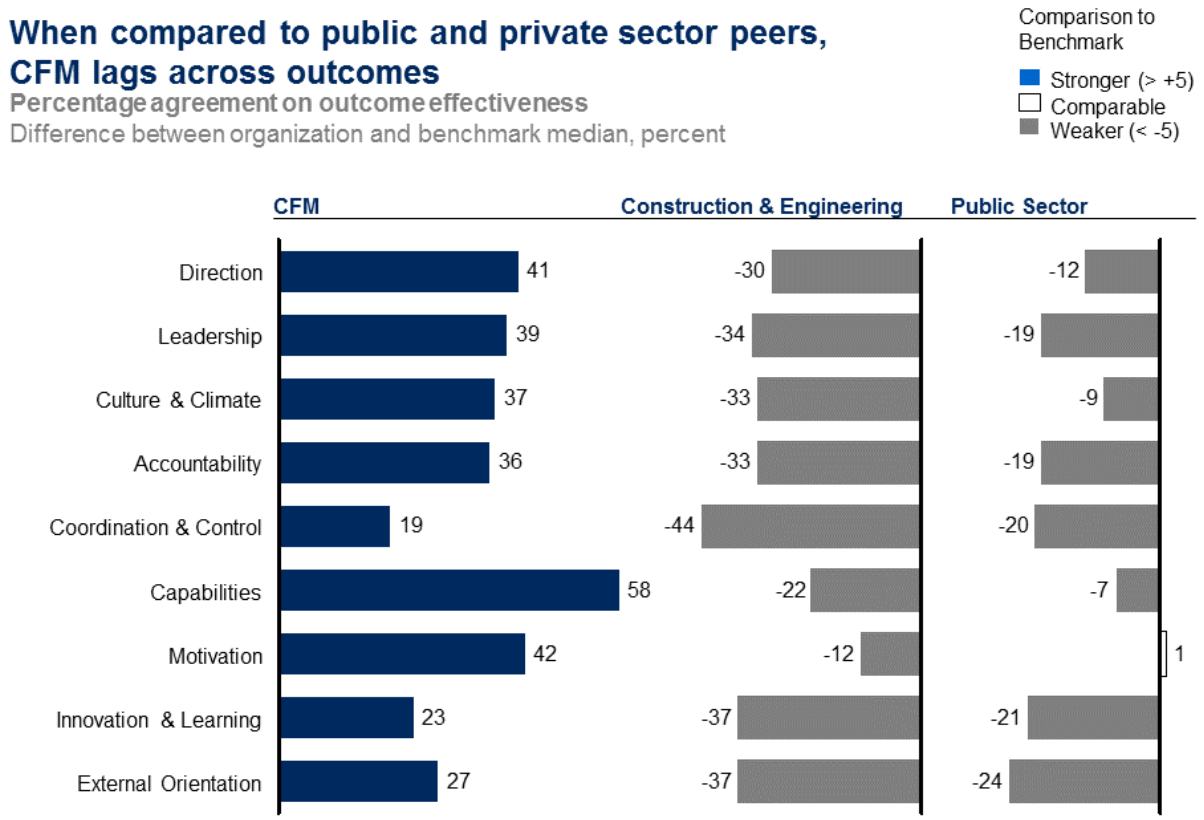
Figure 6-22. Project Delivery Team for Major Projects



6.2.3.3 Organizational Practices Limit VA's Ability to Complete Projects on Budget and Schedule

As part of Assessment K, CFM employees completed the Organizational Health Index Survey, designed to measure the health of an organization. The results were then compared to the OHI global benchmark, as well as the public sector benchmark and a health care benchmark. The public sector benchmark is comprised of 27 surveys (n=47,159), and the construction and engineering benchmark is comprised of 18 surveys (n=24,005). When compared to peers, CFM lags in every outcome, and all organizational health outcomes apart from motivation lie in the bottom quartile of all survey respondents (Figure 6-23).

Figure 6-23. CFM OHI Outcomes Against Benchmarks



SOURCE: VA-CFM (Veterans Affairs) 2015 (N=79); Public sector benchmark (N=47,159, no. surveys=27); Construction & engineering benchmark (N=24,005, no. surveys=18)

Additionally, looking internally at how practices were prioritized, key operational practices such as financial management and operational discipline were ranked among the least prioritized practices by CFM employees (Figure 6-24). While there were bright spots in how CFM prioritized vision, values, and talent, the low rankings for such important practices has concerning implications for CFM's ability to deliver projects. Interviews bore out these same concerns about role clarity, internal handoffs and operational management.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-24. CFM Prioritization of OHI Practices

CFM employees rate vision and values high, but describe role clarity, operational discipline, and financial management as underemphasized

Top 10 practices emphasized	Bottom 10 practices by emphasis
Ranked by respondents	Ranked by respondents
1. Performance contracts	28. Authoritative leadership
2. Capturing external ideas	29. Consultative leadership
3. Shared vision	30. Top-down innovation
4. Talent acquisition	31. Business partnerships
5. Talent development	32. **Role clarity**
6. Financial incentives	**33. Risk management**
7. Process based capabilities	**34. Operational management**
8. Meaningful values	35. Gov & community relations
9. Competitive Insights	**36. Operationally disciplined**
10. Rewards & recognition	**37. Financial management**

SOURCE: VA-CFM (Veterans Affairs) - 2015 (n=79)

Throughout the OHI results, it was also clear that employees had significantly more negative views on how the organization scored against key metrics. Scores dropped substantially for employees who have been with CFM for more than one year.

6.2.3.4 Contracting Organization Is Overwhelmed and Burdened by Complex Approvals for Construction

During the VA interviews it has been shared with the assessment team that CFM Contracting Officers cover higher contract volumes than their government counterparts and have not been effectively trained to cover the complexities of construction and leasing contracts, and the low approval authority given to most COs requires passing leases through high levels of oversight which delay programs.

6.2.4 Systems

This section explores the tools used by VA in the delivery of major projects. Specifically, we aim to understand what systems are employed in the delivery of the projects and whether they drive efficiency and enable best practice performance. The observations in this section are based on interviews and evaluating the type, quality and speed of data provided during our

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

assessment to provide a secondary indicator of the availability and comprehensiveness of data. Some of the key observations are presented below:

6.2.4.1 The IT Systems Used by VA Are not Well Integrated To Help Deliver Projects Efficiently

A variety of tools and databases exist in VA to capture data for upward reporting and project management.

- **Project budgeting and cost control**: to provide selected financial information, VHA leverages Tririga, CFM information system (CFMIS) and Financial Management System (FMS), Project Management Data Retrieval and Integration (PMDRI)
- **Project planning and scheduling**: to plan execution activities, VHA typically leverages Primavera (P6) and Microsoft Project
- **Contract management**: to record all contracts and relevant modifications, the contracting organization leverages the Electronic construction management system (eCMS)
- **Past project performance**: to consult past performance metrics for major projects VHA uses the CFM Information System (CFMIS)

During interviews, VA staff shared that there is little integration among the different systems, limiting their effectiveness as a project management tool. Specific observations included:

- Data capture is occurring at multiple levels and through multiple tools. (See Figure 6-25 for the list of known tools and databases and relevant pain-points for each database.) The lack of an integrated system leads to multiple “sources of truth” about the status of the capital program.
- Manual reconciliation of data across multiple systems is tedious, leading many individuals to create personal spreadsheets to track scope, schedule, and quality. Across the site visits, the team observed numerous spreadsheets by Project Managers, Senior Resident Engineers, and Project Executives to keep track of relevant data across the multiple systems. Because most of these spreadsheets are personally held, the best available source of data on the current project is often not transparent to centralized leadership.
- Central reporting relies heavily on personnel to provide information instead of retrieving data via a centrally accessible system. Interviews have indicated that frequent reporting to multiple organizations has burdened the project team with information management instead of project management.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-25. Catalog of Known Tools

The IT tools and databases used by VA are not fully integrated to help delivery projects efficiently

Tool or database	Description	Applicability and adherence	Key pain points
TRIRIGA (Oracle software)	Major project management software recently deployed by CFM to replace Paragon	▪ Major only ▪ Low adherence (waived for Denver)	▪ Steep learning curve due to recent deployment ▪ Not integrated with other systems
CFMIS (CFM Information System)	Select project details for all Major Construction projects	▪ Major only ▪ Low adherence	▪ Similar information is stored in TRIRIGA, PMDRI, FMS but not linked ▪ Manual entry to update
FMS (Financial Management System)	Financial management system to track funding obligations	▪ All ▪ High adherence	▪ Official record of spending, but not linked to other software
Primavera (P6)	Major project scheduling tools used as record of status for payments to contractor	▪ Major ▪ High adherence	▪ Is administered by a third party contractor
eCMS (Electronic Construction Management System)	"Filing cabinet" for procurement function with all contracts and relevant modifications	▪ All ▪ High adherence	▪ Limited to no access for personnel outside of contracting ▪ Link to FMS, CIFMS, and PMDRI unclear
VSSC – Capital Asset Database	Intranet database with performance metrics on currently active and past projects	▪ Minor and NRM ▪ High adherence	▪ Need manual input to link to FMS ▪ Project Tracking Reports do not include leading indicators or interim milestones
PMDRI	Financial and select project detail information	▪ Major and Minor ▪ Medium to high adherence	▪ Linked to FMS

SOURCE: CFM interviews

6.2.4.2 Systems Do not Consistently Capture Key Performance Indicators (KPIs)

The metrics are also not standardized across VA. This leads to multiple iterations of data gathering and reporting. Existing centralized information systems require manual input by Project Managers or Senior Resident Engineers and field teams expend considerable resources in data collection and management efforts. This has also contributed to the development of personal tracking tools, stored on individual desktops, by leaders through the system.

The Project Review Board (PRB) is currently being piloted to ensure that senior decision makers in CFM have consistent and relevant information to drive successful project execution to partially address the issue of standardizing key reported metrics. The initiative remains in the early stages and, according to interviewees, has not met consistently since implementation. A summary of the design of the PRB is included in Figure 6-26.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 6-26. Project Review Board

Project Review Board (PRB)

PRB objectives

- Identify opportunities for improving policies and business practices that affect project execution
- Provide forum for Project Managers to alert senior leaders to issues requiring their support and/or action
- Promote senior leader interaction with Project Managers
- Provide visibility on key metrics and milestones in project performance:
  - **Metrics**: 18 metrics across budget, schedule, safety, and quality that trigger an in-depth project review (e.g., cost growth of >10%)
  - **Milestones**: 5 key milestones identified for a mandatory briefing (e.g., 35% design complete)

PRB approach

- The project review board is conducted at two different levels, at the Office of Acquisition, Logistics, and Construction (OALC) and at the Office of Construction and Facilities Management (CFM):
  - For the **Office of Acquisition, Logistics, and Construction (OALC),** PRB is set as a monthly meeting chaired by the OALC principal director. The attendees are the associate executive directors at CFM, OGC and regional directors and project managers as requested
  - For the **Office of Construction and Facilities Management** (CFM), PRB is set as a monthly meeting chaired by the CFM executive director. The attendees are the associate executive directors at CFM, OGC and the regional directors for acquisition.

67

6.2.4.3 Field Teams Rely on a Variety of Cost and Schedule Projection Methodologies for Major Projects with Little Guidance or Support

While industry peers and other public sector agencies may often use sophisticated methods such as the Earned Value Management to forecast the potential outcomes of a project and make changes to management approaches to improve performance, VA currently relies on the field team (Senior Resident Engineers and Project Executives) and Project Managers in regional offices to develop project updates and projections with little guidance or support. In our interviews, project team members described an array of approaches that are being deployed with little standardization.

6.3 Recommendations for Consideration

VHA will likely face accelerating and unfunded capital requirements, driven by maintenance to aging infrastructure, projected growth needs to serve the Veteran population, and inefficient capital management

Consistently deploying world class practices in capital management has the potential to improve performance significantly and address some of the capital constraints VA faces, but would require an extensive overhaul of VA capital program and supporting organization.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

VA has begun to initiate programs which should contribute to improved performance in capital delivery. These initiatives are providing tools to address some of the challenges that we have observed, however, there are also likely implementation challenges with these programs that should be addressed going forward.

6.3.1 Ongoing Initiatives

VA is pursuing a set of initiatives that intend to address some of the challenges identified in the assessment, all announced within the last year. It is early to see impact from these initiatives, particularly given the long-term nature of major construction projects. Internal and external interviewees have expressed concern about VA's ability to implement all of these given current resource levels. This should be part of a broader transformation plan to ensure a sustained impact. The detailed measures are presented below:

- **Project Delivery Manual**: Create an overarching, easily-accessible document that maps all the key processes involved in project delivery. As this manual is developed, it should be written to incorporate the recommendations contained in the Assessment and continue to develop as processes improve.
- **Capital Program Requirements Management Process (CPRMP)**: Introduce a stage gate process which would include compliance and milestone reviews throughout the lifecycle of major construction projects.
- **Project Review Board (PRB)**: CFM has initiated the PRB process to: a) identify opportunities for improving policies and business practices that affect project execution, b) provide a forum for Project Managers to alert leadership to issues requiring their support, and c) ensure continuous communication via PM centric reporting (Figure 6-26).
- **Project Management Plan (PMP)**: Outline major steps to accomplish acquisition from planning through activation and ensure clear communication throughout the project. The PMP is developed by the Project Manager for each major project.
- **VHA National Activation Office**: Ensure integration of facility activation into the construction process for timely facility openings.
- **Pre-construction reviews**: Implement a Major construction projects "constructability" review by a private construction management firm to review design and engineering factors that facilitate ease of construction and ensure project value.
- **Medical equipment planner:** Integrate medical planners into the construction project teams from concept design through activation.

6.3.2 Detailed Recommendations for Consideration

Building on existing initiatives when possible, we have structured a set of recommendations for consideration, to ensure VA delivers projects better, faster, and more cost efficiently:

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6.3.2.1 Implement a Stage-Gate Process to Limit the Impact of Scope and Design Change on Overall Cost and Schedule Building on the CPRMP Program

The implementation of a stage-gate process would help CFM and control scope changes across the project lifecycle. Specifically, a stage-gate process would identify the specific points in time during the lifecycle where project objectives, scope, and project funding is approved, as well as:

- **Challenge accuracy and validity of A/E firm designs:** Ensure that the A/E design and technical solution complies with the design standards and is optimized from a cost-benefit standpoint with no superfluous elements without clear benefits for Veterans.
- **Implement "cold-eye"[47] and constructability reviews:[48]** A consistent peer and constructability review process before construction contract solicitation process could improve project scope and reduce contract modifications related to design omissions and errors.
- **Test standardization and consistency of outputs:** Ensure that the project maximizes standard and tested features from other projects that could significantly reduce procurement costs and execution times.

6.3.2.2 Design, Staff, and Empower Project Delivery Teams (PDT) to Increase Ownership and Accountability and Ensure Project Delivery Success

- **Provide clarity in the definition for individual roles and accountability for key decisions:** Create a standard project charter that includes a clear definition of roles and responsibilities, reporting lines and transparent links in outcomes and individual performance.
- **Ensure sufficient staffing of team roles at different stages of the project evolution:** Project teams require adequate staffing to oversee and provide guidance to contractors in field execution issues. Understaffing on the owner team side limits the team's ability act in a fast-paced environment and increases the risk of cost and schedule overruns.
- **Provide clear guidelines on staffing needs and skillset over the life of the project**: Project needs evolve as they progress from design to construction. Additionally, different construction stages require different technical expertise and capabilities (for example, earthworks and foundations, main structure, mechanical and electrical installation, architectural finishes). As a result, VA should define a clear staffing model that factors in differences in project size, complexity and stage (for example, design, construction, activation) to adequately resource project delivery teams.
- **Establish a clear documentation system and handover on transition points along the different stages of project:** Major projects are multi-year efforts with multiple transition stages, and different stakeholders. Decisions need to be tracked, documented and handed over in different stages to prevent delays and major cost impact.

[47] "Cold-eye" reviews are structured reviews conducted or facilitated by independent individuals with the required expertise to identify potential issues and recommend areas of improvement.

[48] Constructability reviews are structured reviews conducted prior to execution.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6.3.2.3 Develop Performance Management Systems That Quickly Identify and Mitigate Risk, as Well as Serve as Tools for Fast-Paced Decision Making

CFM-wide, standardized management tool should access data from consolidated databases to provide clear perspective to Project Delivery teams on:

- **Project costs and funding levels:** Reports should provide a perspective on initial project costs (baseline), construction progress, a detailed breakdown of real unit costs in key activities, and fact-based analysis of deviance versus initial estimates.
- **Integrated project schedule and critical path:** Reports should present an integrated master plan with a critical path and detail on engineering progress, construction, and activation activities. The overall schedule should be cost loaded to provide a detailed cash flow forecast.
- **Critical activities progress KPIs:** For each of the critical path activities, the standard report should provide progress curves to compare estimated versus real productivity and recovery plans for delayed or underperforming activities.
- **Safety standards and quality control:** Reports should include clear metrics on evolution of safety and quality parameters, as well as potential causes to trigger liquidated damages for contract non-compliance.
- **Risk matrix:** Report should include an up-to-date risk matrix, ranking different risks based on likelihood of occurrence and potential impact, as well as detailed mitigation plans for high risk & high impact identified risks.
- **Stakeholder management:** Report should include a stakeholder mapping with a clear communication plan and a detailed calendar for different committees' meeting cadence.

6.3.2.4 Transform the Contracting Organization to Align Contracting and Contract Modifications Approvals Processes to a Fast-Paced Environment

This would include:

- **Conduct an effort to map and streamline major processes and systems within the contracting organization** (for example, approval processes for contract modifications, response for RFIs) to increase agility of the decision making process and alleviate current workload levels.
- **Consider increasing warrants on site for faster decision making:** Increase skill requirements and warrant levels for SREs. For example, other delivery organizations required all SREs to have Professional Engineering Licenses and level 2 contracting warrant to reduce workload for contracting officers.
- **Adequately staff projects** with contracting officers and support teams to ensure contract compliance and rapid response, including on-site teams for mega projects.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

6.3.2.5 Periodically Revisit Design Specifications and Standards With the A/E and Contractor Community to Ensure Cost-Efficient Designs and Solutions Are Included in the VA Manuals

VA should establish periodic feedback mechanisms with leaders in the industry to ensure specifications and design standards do not become outdated and costly.

6.3.2.6 Evaluate Optimal Delivery Model for Each Project Individually Factoring Complexity, Project Size Timing Constraints, and Internal Capabilities

Different projects could benefit from alternative delivery models (for example, design build, early contractor involvement) to optimally deliver project in cost and time. The decision to choose one over another should be a conscious one, understanding the pros and cons of every alternative as well as the different risk allocations. Regardless of the final decision or choice for every project, VA should provide adequate training to their project delivery teams on the contract specifics and best practice.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

7 Design and Construction Assessment: Minor Projects and Non-Recurring Maintenance

7.1 Preface

VHA undertakes numerous minor and non-recurring maintenance capital projects to increase and maintain its asset base of owned facilities to meet Veteran needs. Section 201 of the Choice Act calls for assessment of the capital management programs specifically relating to the design and construction management processes. The assessment is structured to address the following four aspects:

- **Outcomes:** How do VHA hospital construction costs compare to the private sector? How does VHA perform in project delivery (cost, schedule, quality) across all it across construction programs? To what extent do construction projects and processes affect facility utilization or Veterans' health access?
- **Process:** What processes does VHA have in place for its minor and NRM construction programs? What pain points exist across these processes? Do construction processes address the identified current and future needs in a timely fashion? Can VHA improve the processes or other aspects of construction to improve quality?
- **People:** How does VHA structure and staff its project delivery teams? How does VHA culture impact project delivery?
- **Systems:** What systems are employed in the delivery of the projects? Do they drive efficiency and enable best practice performance for project delivery?

7.1.1 Overview of the Minor and NRM Construction Programs

VHA manages construction and renovation of its owned facilities through three main programs: major construction, minor construction, and Non-Recurring Maintenance (NRM). This section covers minor and NRM construction programs, detailed below:

- **Minor construction program (174 projects, [49] 13 percent of total)**: Projects that address construction, alteration, extension, or improvement of any facility, including parking structures, site acquisition, and demolition by replacement, with costs equal to or less than $10 million, managed by local VHA engineering staff.
- **Non-recurring maintenance (NRM) program (866 projects, 36 percent of total):** Projects that renovate existing facilities and associated infrastructure with expansion of space not to exceed 1000 square feet. The program primarily includes three types of projects: infrastructure improvement, sustainment, and green management, all managed by local VHA engineering staff:
    - **NRM sustainment ($25,000 to $10 million):** Projects focused on renovation and modernization of existing facilities and infrastructure (for example, lab renovation).

[49] Per 2015 budget; 2016 plan still in progress.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Projects in this category are often driven by national-level mandates instead of station needs.

- **NRM infrastructure (Greater than $25,000):** Projects focused on replacing, upgrading or expanding infrastructure systems or focused on facility condition assessment (FCA) deficiency backlog (for example, heating, ventilation, and air-conditioning [HVAC] replacement).
- **NRM green management:** Projects include environmental, energy, green building, and fleet management-related activities in support of reducing energy (for example, upgrade to LED lighting).
- **Clinical-specific initiatives (CSI, up to $5 million):** The CSI program is funded out of the NRM budget for up to 10 percent of the budget. The program focuses on high-profile projects that are difficult to plan but require additional space to support care for the Veteran. These projects increase space by more than 1000 square feet. Current approved CSI categories include: polytrauma, mental health, high-tech and high cost medical equipment installations, women's health, site prep for donated space, and others. It should be noted that CSI projects do not go through the SCIP process.

7.1.2 Numerous Parties Drive the Minor and NRM Projects Process

More so than for major construction projects, minor and NRM projects work through multiple parties for approval, development, funding, and execution. VAMCs take a lead role in the development of minor and NRM project, with responsibility for project scope definition, business case creation (including alternative stress testing and cost estimation), SCIP submission, and project execution.

Approval and funding, however, is a more complex process, partially handled by VACO, VISNs or stations in turn. Minor projects are approved through the SCIP process that is managed by OAEM and funded centrally through VACO as individual projects are ready to obligate. NRM projects may receive approval for design funding through SCIP, but project funds come through the VERA allocation to VISNs and may be supplemented by station operating budgets for medical facilities.

Once a project is approved and funded for design, VAMCs are responsible for the overall design, construction and activation process, but they rely on VISN support for contracting and technical oversight capabilities and may rely on OCAMES for engineering support.

CFM does not have a designated role in minor and NRM project execution, though CFM design standards and cost estimating guides are applied to these projects as well. Additionally, stations can request a CFM Resident Engineer be tasked to their facility to cover complex projects beyond the capabilities of their local engineering staff, though this is a rare request and CFM is not obligated to comply.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

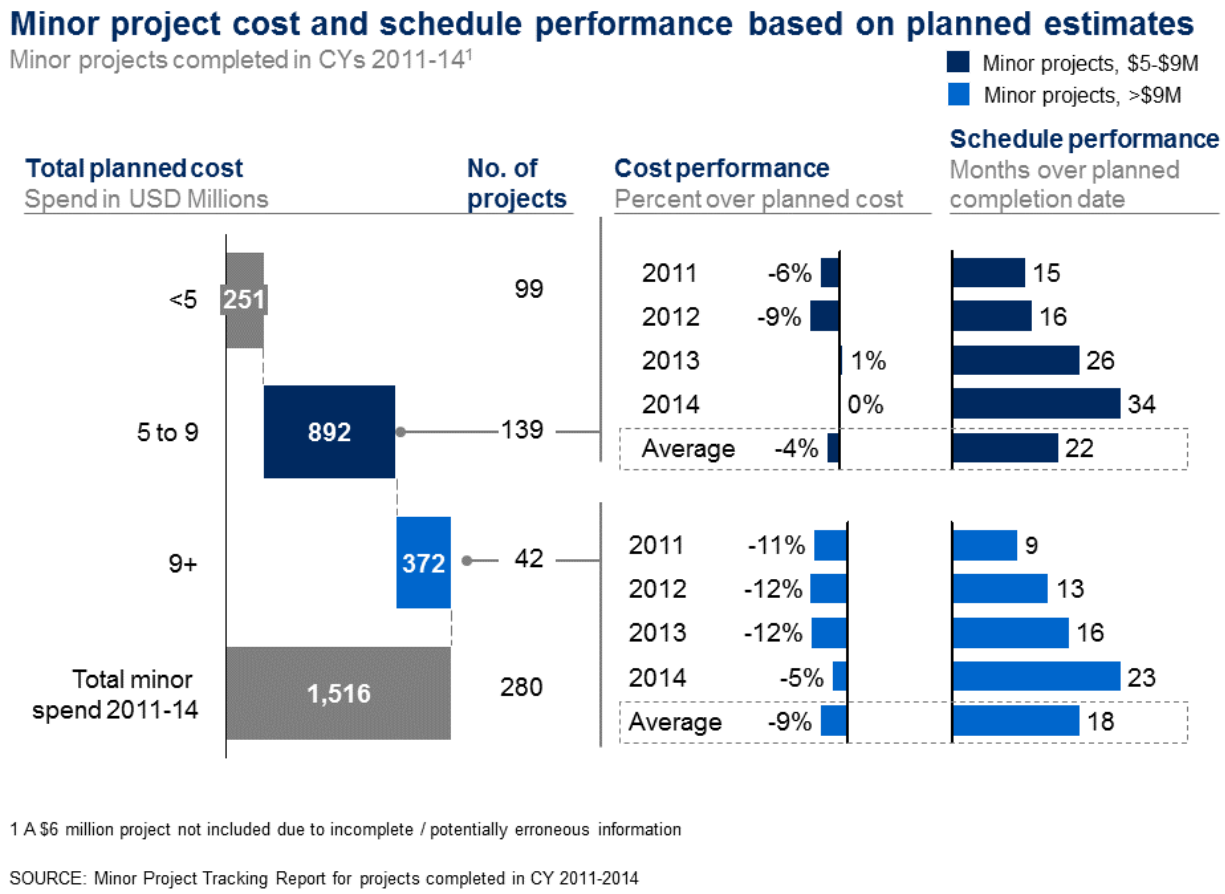
7.2 Findings

7.2.1 Minor Construction Program Outcomes

7.2.1.1 Minor Construction Projects Experience an Average Cost Overrun at Completion of 10 to 15 Percent

VHA has delivered 280 minor projects at a cost of $1.5 billion over the past four years. [50] Most of the completed minor projects fall between $5 million-9 million due, in part, to a legacy threshold of $7 million between minor and major projects (Figure 7-1).

Figure 7-1. Minor Project Performance



1 A $6 million project not included due to incomplete / potentially erroneous information

SOURCE: Minor Project Tracking Report for projects completed in CY 2011-2014

Compared with original planned costs, VHA averages 4 percent under budget for projects $5 million-9 million and 9 percent under budget for projects above $9 million. However, planned costs do not represent original construction contract costs, but the initial costs at business case submission. At the time of submission, project estimates generally include contingencies – including escalation rates – for both design and construction contracts, to ensure costs stay

[50] As a percentage of the original contracted award.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

below the final threshold. With these contingencies included, project estimates are allowed to exceed CFM cost estimating guides by up to 25 percent.

The presence of contingencies allows minor projects to keep cost overruns lower than NRM projects, which do not have such contingencies. Since most of these contingencies are percentage based, higher cost projects receive more contingencies – even more so if the project cost is close to $9 million and facilities are concerned about the $10 million threshold. In recent years, projects have been completed closer to planned costs – under budget by 1 to 5 percent. When overruns are instead measured as a percentage of the original contracted award, projects experience average overruns of 13 percent, as illustrated in Figure 7-2 and Figure 7-3.

Figure 7-2. Minor Project Performance

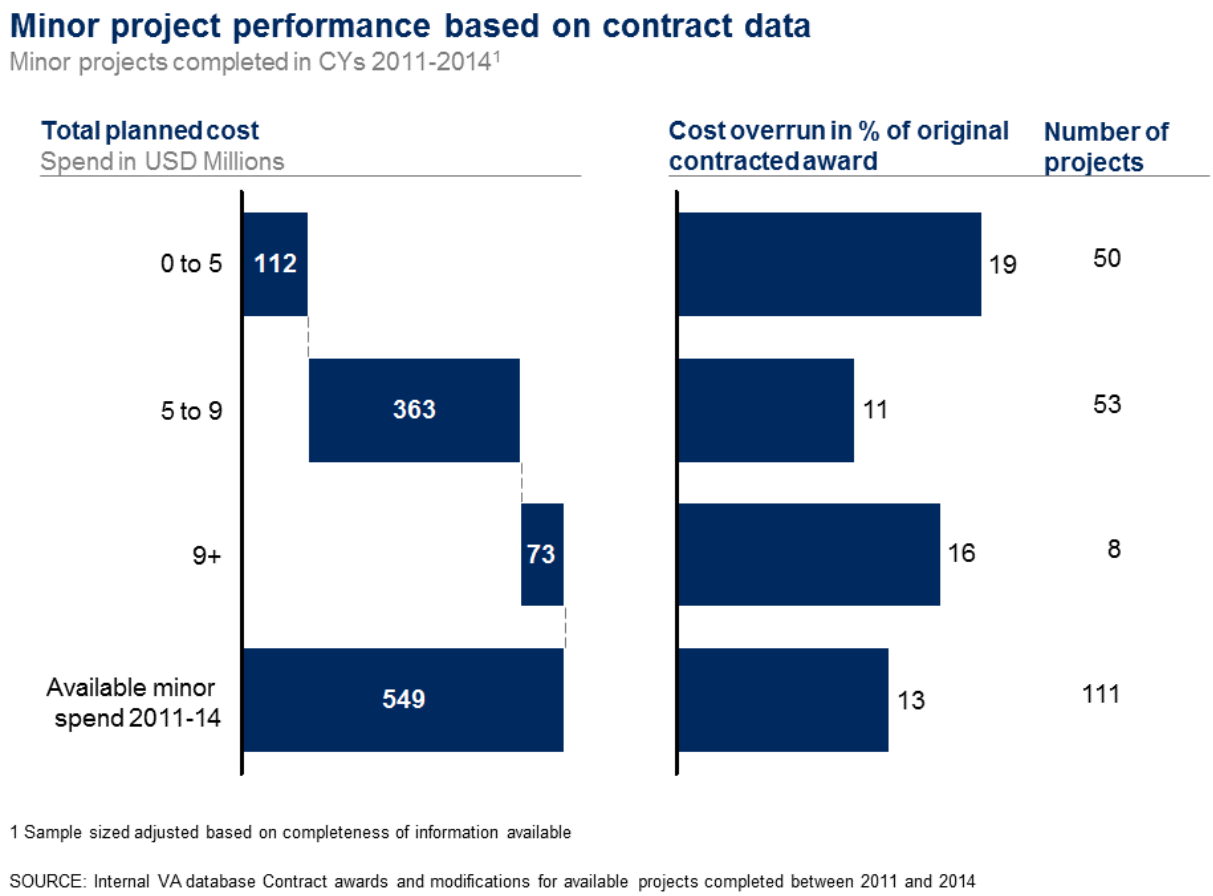
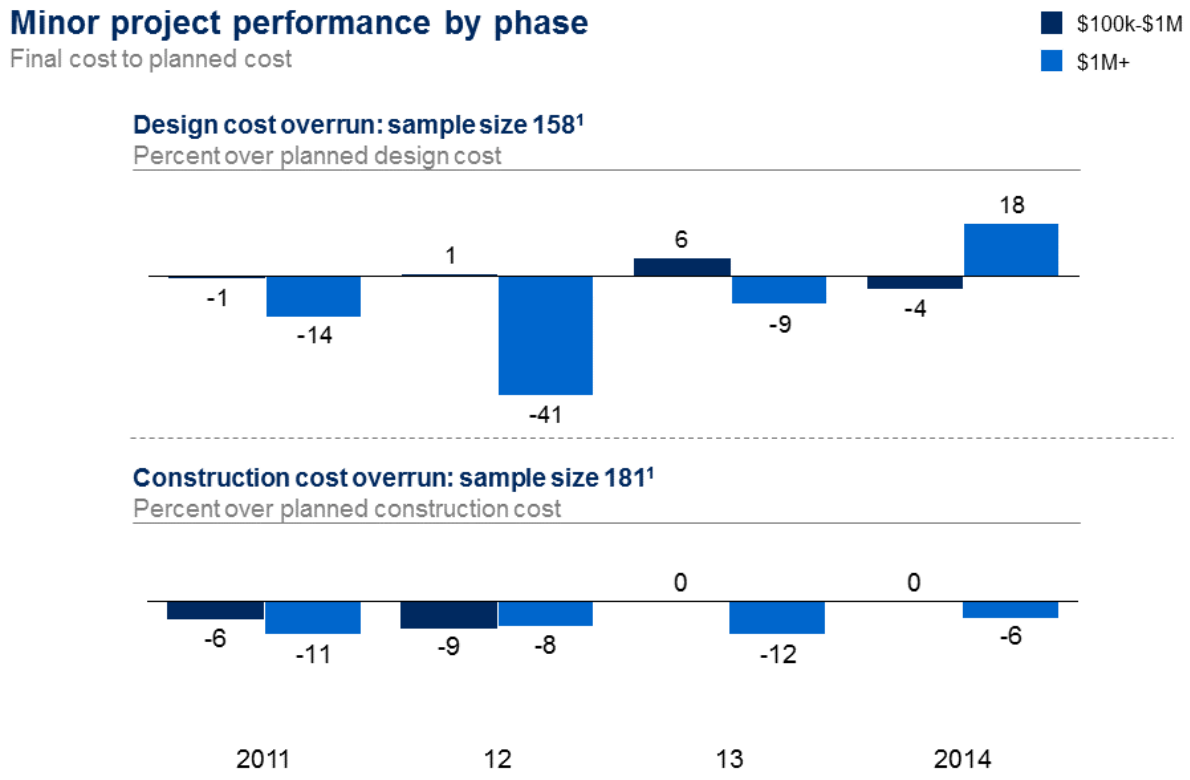


Figure 7-3. Minor Project Cost Overruns by Phase



1 Sample sized adjusted based on completeness of information available

SOURCE: Minor Project Tracking Report for projects completed in CY 2011-14

7.2.1.2 Minor Projects Increasingly Struggle to Meet Their Schedule Forecasts With Delays Ranging From 9 to 34 Months Over the Last Four Years

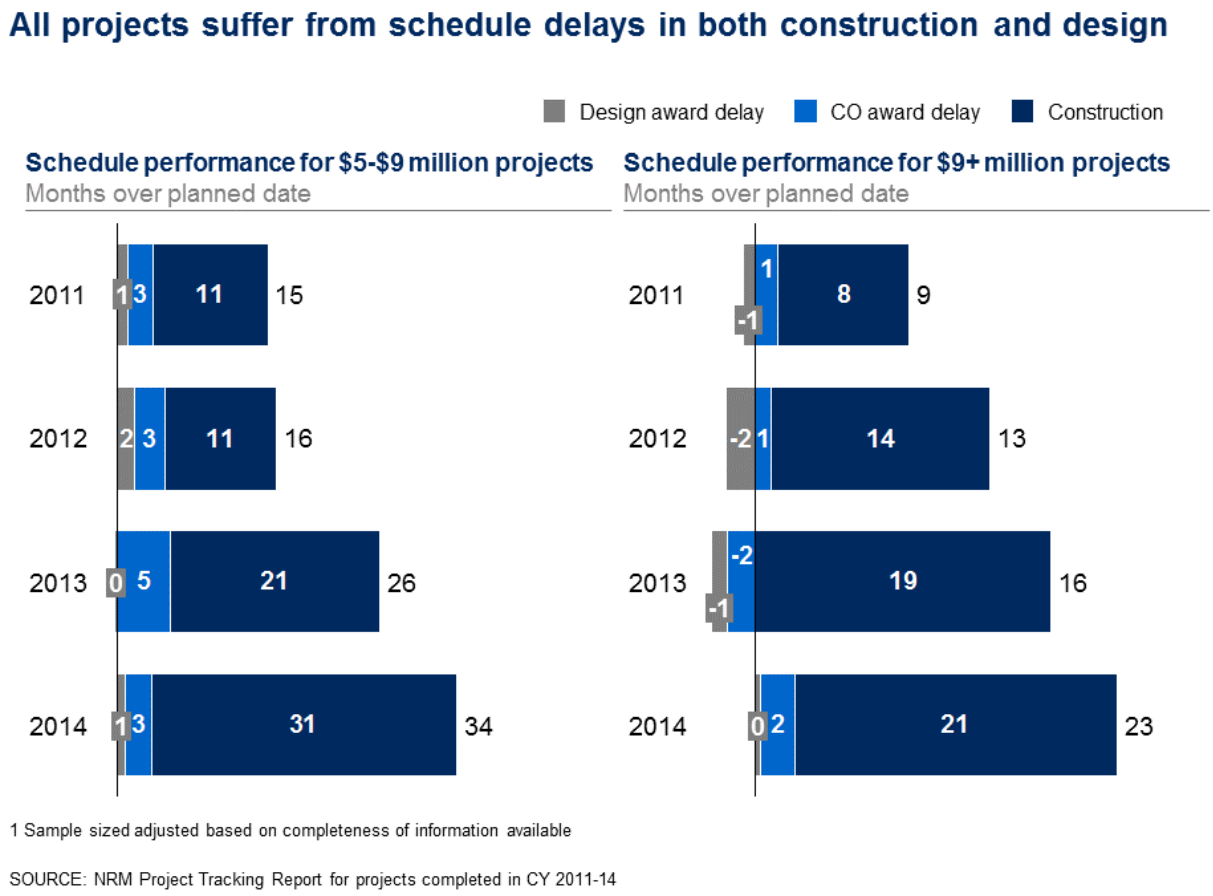
While project costs are managed aggressively on schedule performance, we observed that projects with planned costs from $5 million to $9 million were delayed for an average of 22 months, and projects with planned costs greater than $9 million were delayed for an average 18 months. Over the last four years, average minor project delays more than doubled for projects above $5 million. We observed a few consistent drivers for project delays including:

- **Forecasting errors:** Schedule delays are based on Project Tracking Reports. When a minor project is funded, the Project Engineer at the facility estimates initial schedule - which remains unaltered throughout the course of the project. Variation in the estimation approach of initial project schedules may account for part for the project delays.
- **Obligation delays:** Delays in the procurement process account for up to 5 months of overall delays including both design and construction contracts (Figure 7-4).
- **Execution delays:** Execution delays including change orders make up the bulk of the total delay period for minor projects experiencing average delays of 18 to 22 months. Within execution, we have observed a number of causes that drive delays such as differences in

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

field conditions compared to the expected designs (for example, location of electrical services is found to be different from expected once a project begins) and unexpected reshuffling clinical areas to accommodate remodeling or expansion projects among others.

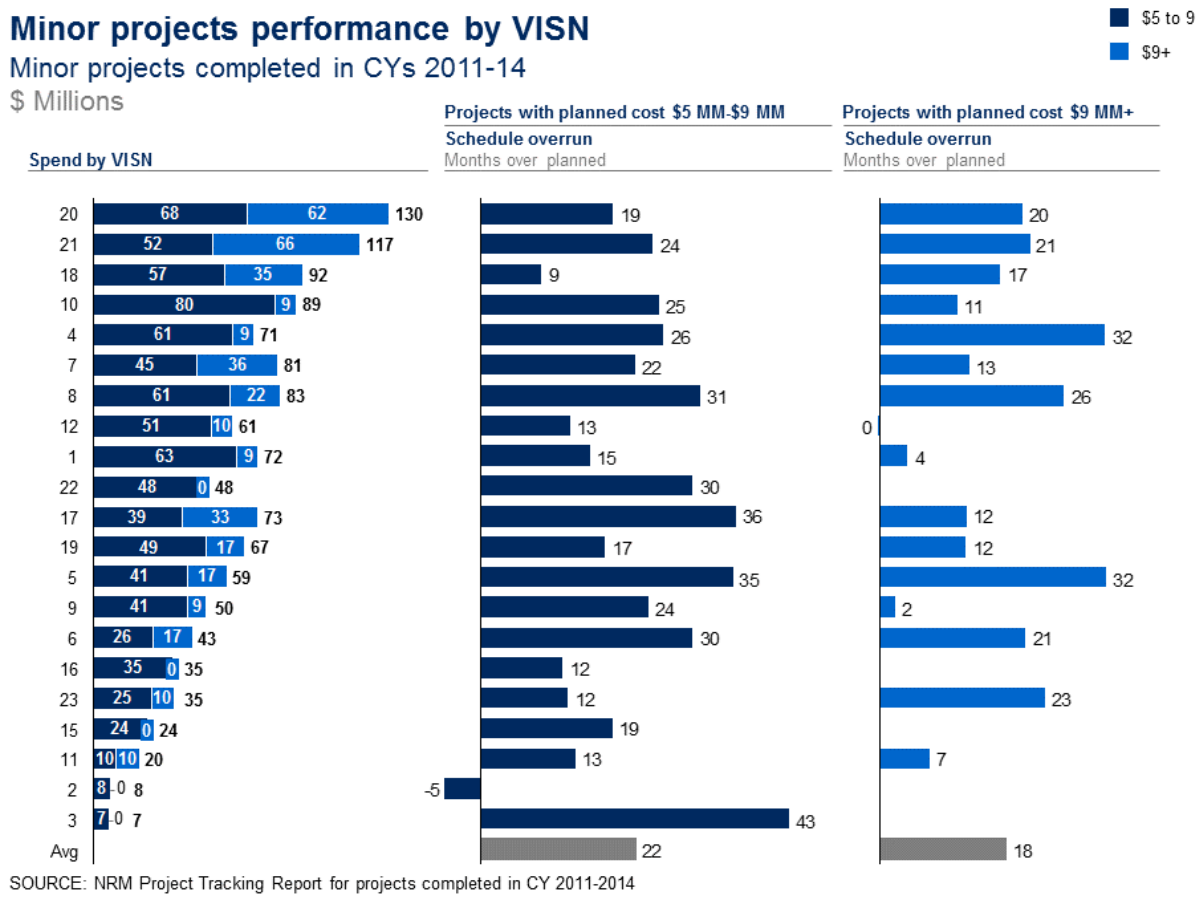
Figure 7-4: Minor Project Performance for Projects Above $5 Million



When data are assessed on a VISN level, we observed similar performance across all VISNs on minor projects except for VISN 2 which delivered projects ahead of schedule on the average. Variation in cost performance across VISNs may be indicative of forecasting errors or execution delays. We did not identify any correlation between the volume of Minor projects (by dollar value) completed by each VISN with their ability to complete a project on schedule.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 7-5. Minor Project Performance by VISN



SOURCE: NRM Project Tracking Report for projects completed in CY 2011-2014

7.2.1.3 Minor Project Scopes Are Optimized to Fall Just Under the $10 Million Threshold, Sacrificing Capital Efficiency

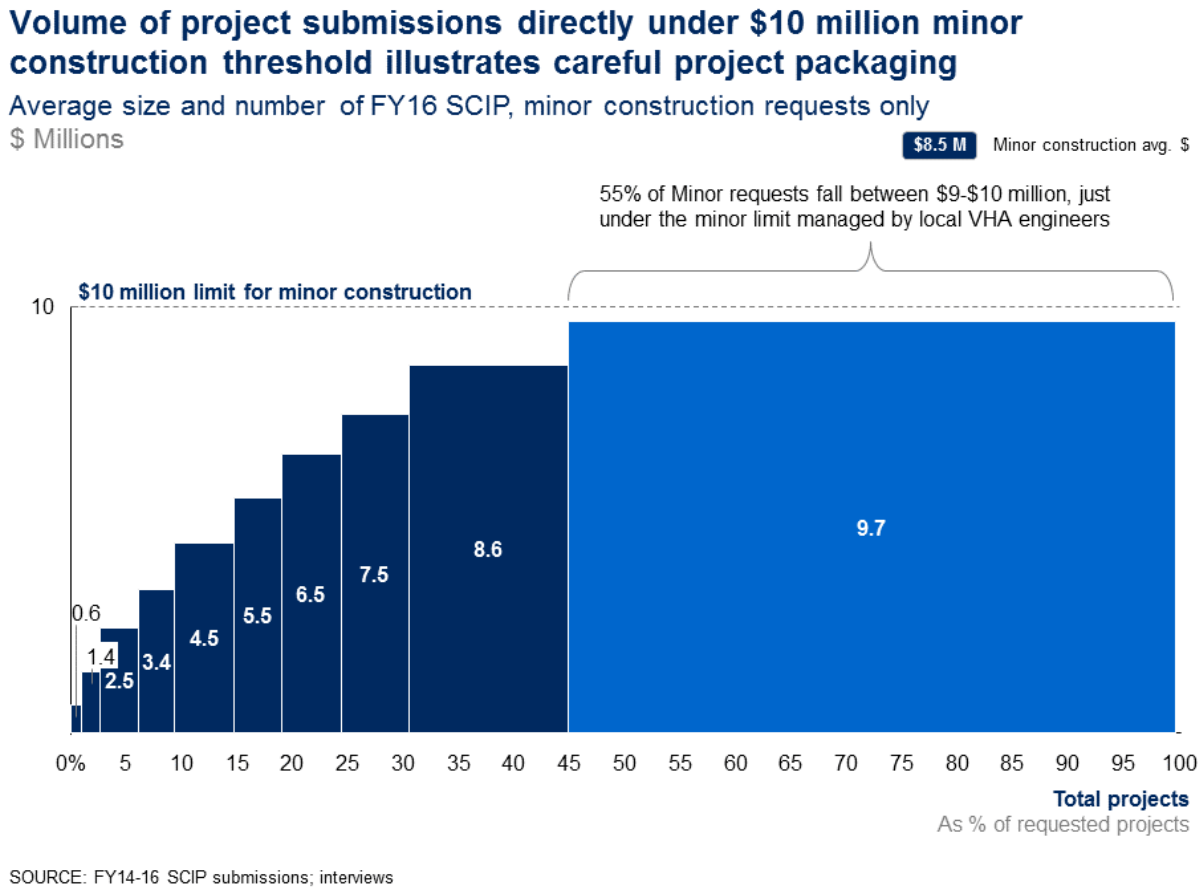
By statute, minor projects cannot exceed $10 million. Additionally, minor projects are not allowed to be designed as multi-phase projects, with each phase under the $10 million cap, but must be able to be completed on a standalone basis. This threshold has proved a challenge for station planning efforts, as discussed in Section 4.2.2. As a result, minor projects are consistently developed to stay just below the threshold. Figure 7-6 illustrates this behavior in recent SCIP submissions. These planning decisions have important implications for how projects are executed.

In some cases, projects are reduced in scale to fit under the threshold. All projects are also required to write in a 20 percent potential scale reduction through “deducts,” reductions in project scope which can be used to reduce the project cost if bids come in too high. Stations routinely accept these deducts to shrink the scale of the project, though the exact scale of these deducts is impossible to determine, as they are not closely tracked at a national level.

Additionally, the limit is strictly governed for in-process projects. While there is a defined process to receive a cost limit increase, that process is burdensome, such that stations avoid it

if possible, reducing the scale or even abandoning the project if necessary. Both were seen in projects reviewed by the assessment.

Figure 7-6. Breakdown of Minor Projects by Project Size



SOURCE: FY14-16 SCIP submissions; interviews

7.2.2 Non-Recurring Maintenance Construction Program Outcomes

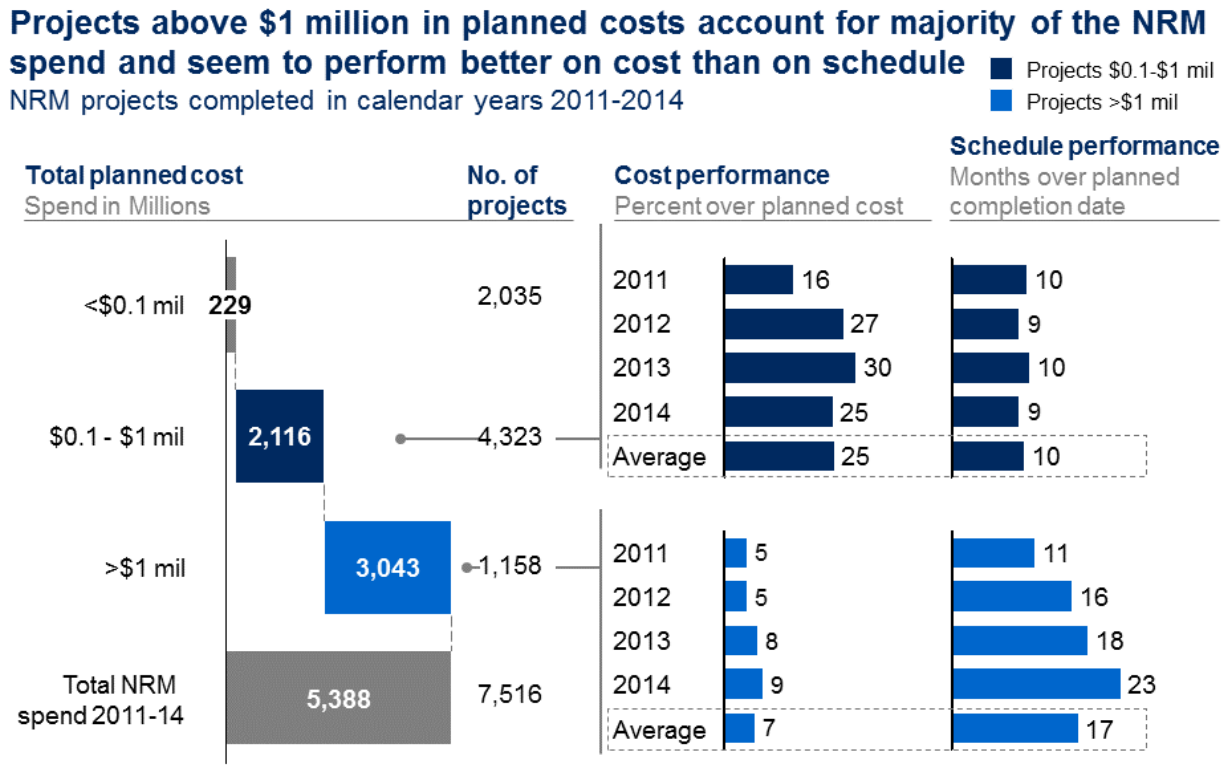
The NRM program accounts for the largest spend category over the past four years among the construction programs. NRM funding is often supplemented by stimulus-related legislation such as the American Recovery and Reinvestment Act and the Veterans Choice Act.

7.2.2.1 NRM Projects Struggle to Meet Costs and Schedule Across the Board

Over the past four years, VHA has completed more than 7,500 NRM projects with total cost of $5.4 billion (Figure 7-7). Approximately 85 percent of NRM projects are below the $1 million threshold at which NRM projects must undergo the SCIP prioritization process; however, such projects account for only 44 percent of the 2011-2014 spend.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 7-7. NRM Project Performance



SOURCE: NRM Project Tracking Report for projects completed in CY 2011-2014

Cost overruns for NRM projects between $100,000 and $1 million are more than three times compared to cost overruns for NRM projects above $1 million, 25 percent and 7 percent respectively. The consistency of overruns during the past four years is driven in part by the following factors:

- **Large projects are more likely to take scope deducts.** Projects over $1 million are more likely to deduct scope than to fund a change order due lack of resources for NRM projects. Unlike minor projects, NRM projects are not allocated project-level contingencies. VISNs facilitate change orders, and can only approve additional funds when resources are available. As NRM projects are oversubscribed, access to these funds is often limited and dependent on how these funds have built-up over the course of the year as projects either fall through or come in below estimates. Since the visibility on this available pool is limited until the end of the year, a change order approval is often dependent on size rather than importance. Often times, smaller, urgent NRM items divert money away from the fund and prevent larger blocks of funding from coming available for larger projects.
- **Projects submitted to SCIP go through more rigorous business case development and cost estimation.** Projects over $1 million require a full business case to be completed as part of the SCIP submission. This requires Chief Engineers do significant cost estimating

and project definition for these projects as compared to projects under $1 million. Regardless of any reviews through the SCIP process, this initial investment from station-level engineers may provide more reliable capital estimates for projects.

7.2.2.2 Delays in Obligation of Awards Make it Challenging for NRM Projects to Meet Project Schedule

Figure 7-8 shows the cost and schedule performance of NRM projects by phase – design and construction. Delays in obligation awards are measured against the expected date of contract award to actual date of contract award. Delays in obligation of up to four months for NRM projects between design and construction phases contribute significantly to the overall NRM delays of 10 to 17 months. Interviewees have consistently cited a lack of resources in the procurement organization as the root cause obligation delays. From a network perspective, all VISNs struggle equally to meet schedule on NRM projects (Figure 7-9).

VA best practice case studies – Contracting processes

During the course of site visit interviews, a few locations stood out as best practice examples of how to facilitate interactions between the station and VISN leadership and their contracting counterparts.

Selected examples:

- **Alabama VAMC:** The local team created an online tracker system with electronic signatures to monitor different approvals and contributions to RFIs and contracting packages. The system allowed the organization to have visibility on bottlenecks and have performance dialogues on how to optimize response times and time to approvals.
- **VISN 4**: This VISN takes a long term strategic approach to the implementation of its NRM program by using a rolling plan to strategically prioritize projects VISN-wide across fiscal years. With this system, the capital team can develop contracting packages in advance of the next fiscal year, using the historical funding levels as a predictor the volume of projects which will be funding in the coming fiscal year. This enables projects to be ready for award during the first quarter of the fiscal year, increasing the likelihood that projects will be completed as scheduled. As a result, VISN 4 is a leader in the amount of funds obligated for NRM projects, though it should be noted that this has not improved their construction execution timelines.

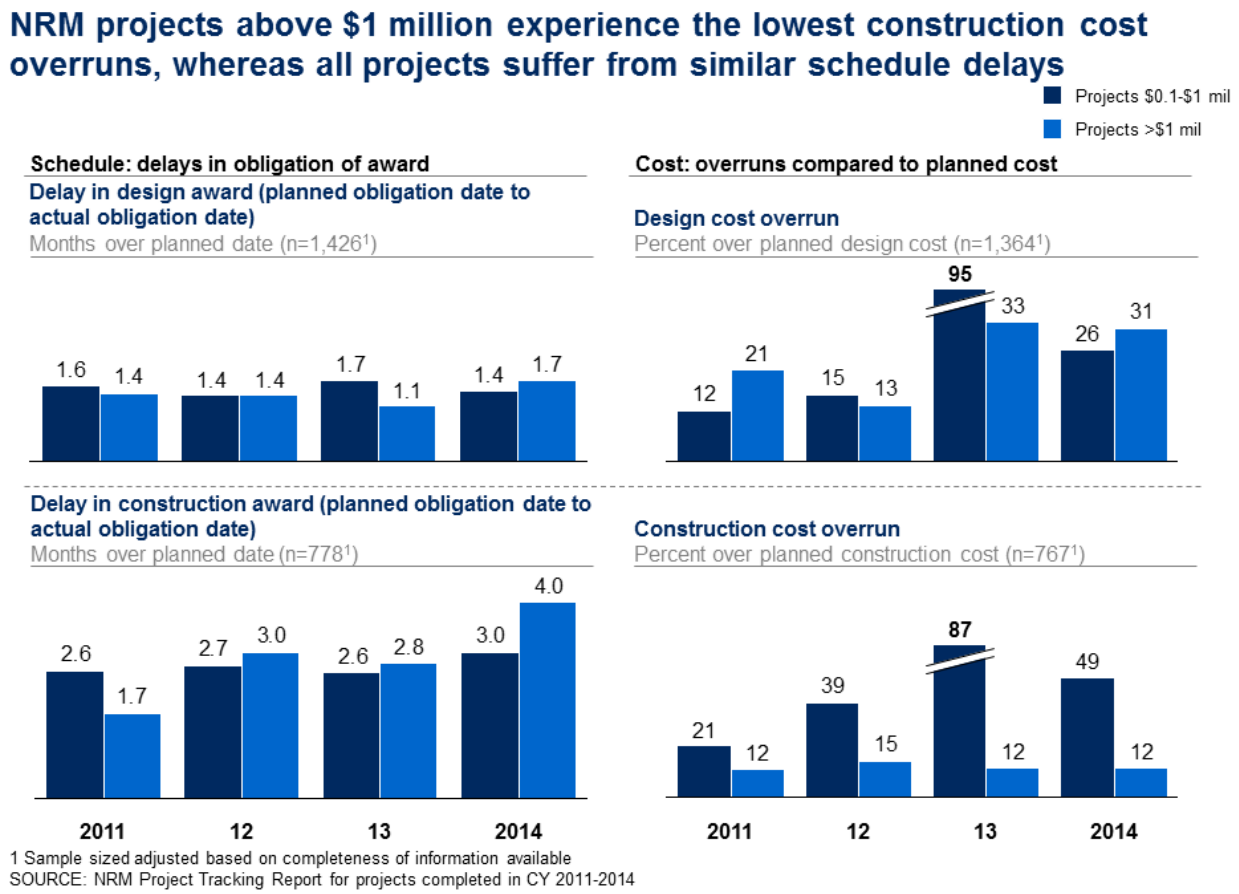
7.2.2.3 NRM Projects Experience Higher Design Cost Overruns Than Construction Cost Overruns

On cost performance, design costs overruns for NRM projects may escalate due to different factors such as unforeseen conditions for renovation-type projects and scope change depending on evolving needs. Without clear boundaries around project scope defined during business case submission, and even design completion via the design funds, NRM projects have a higher likelihood of design changes during construction. Construction costs overruns for $1 million are lower potentially due to a more rigorous approach enforced by the SCIP process.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

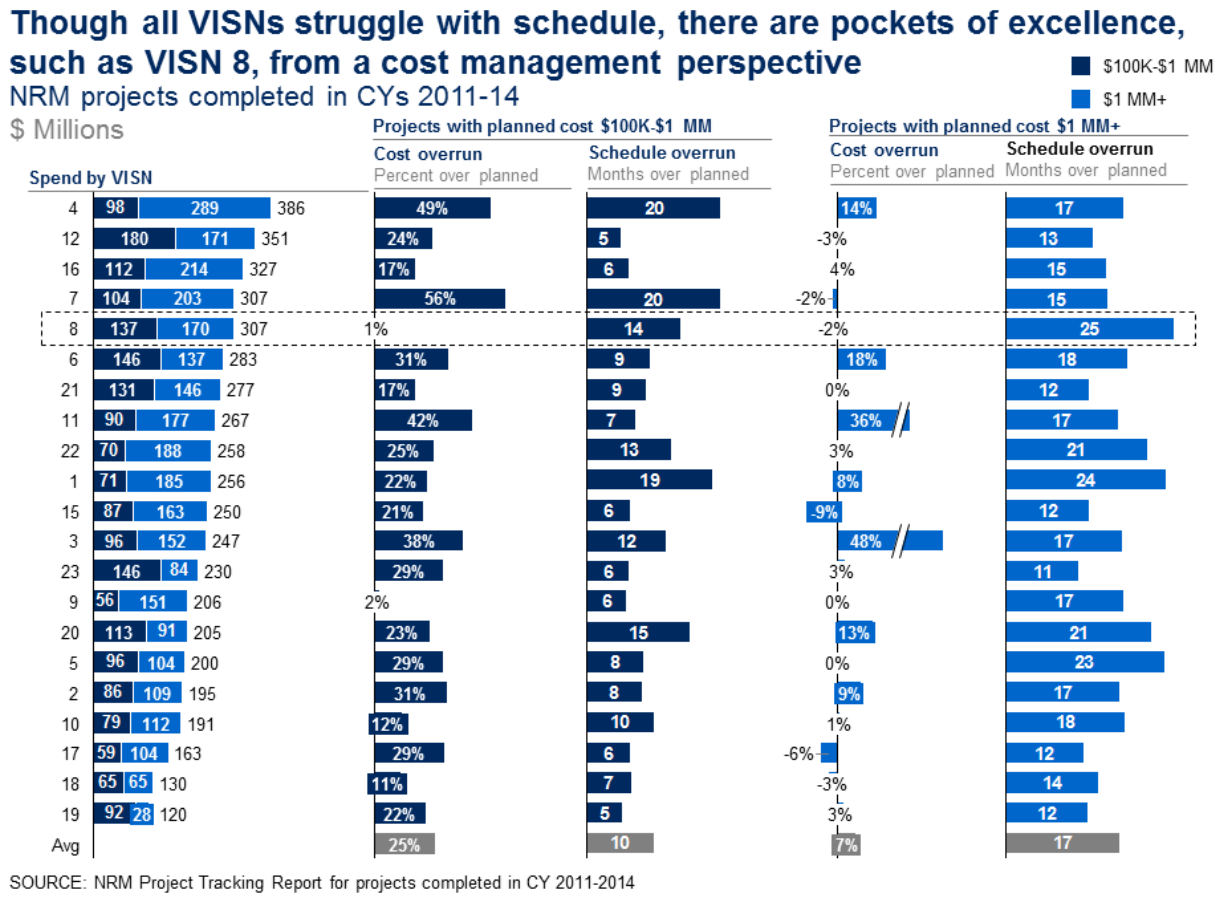
From a network perspective, cost overruns on projects greater than $1 million are limited to a few VISNs.

Figure 7-8. NRM Project Performance by Phase and Size



1 Sample sized adjusted based on completeness of information available
SOURCE: NRM Project Tracking Report for projects completed in CY 2011-2014

Figure 7-9. NRM Project Performance by VISN



7.2.3 Process

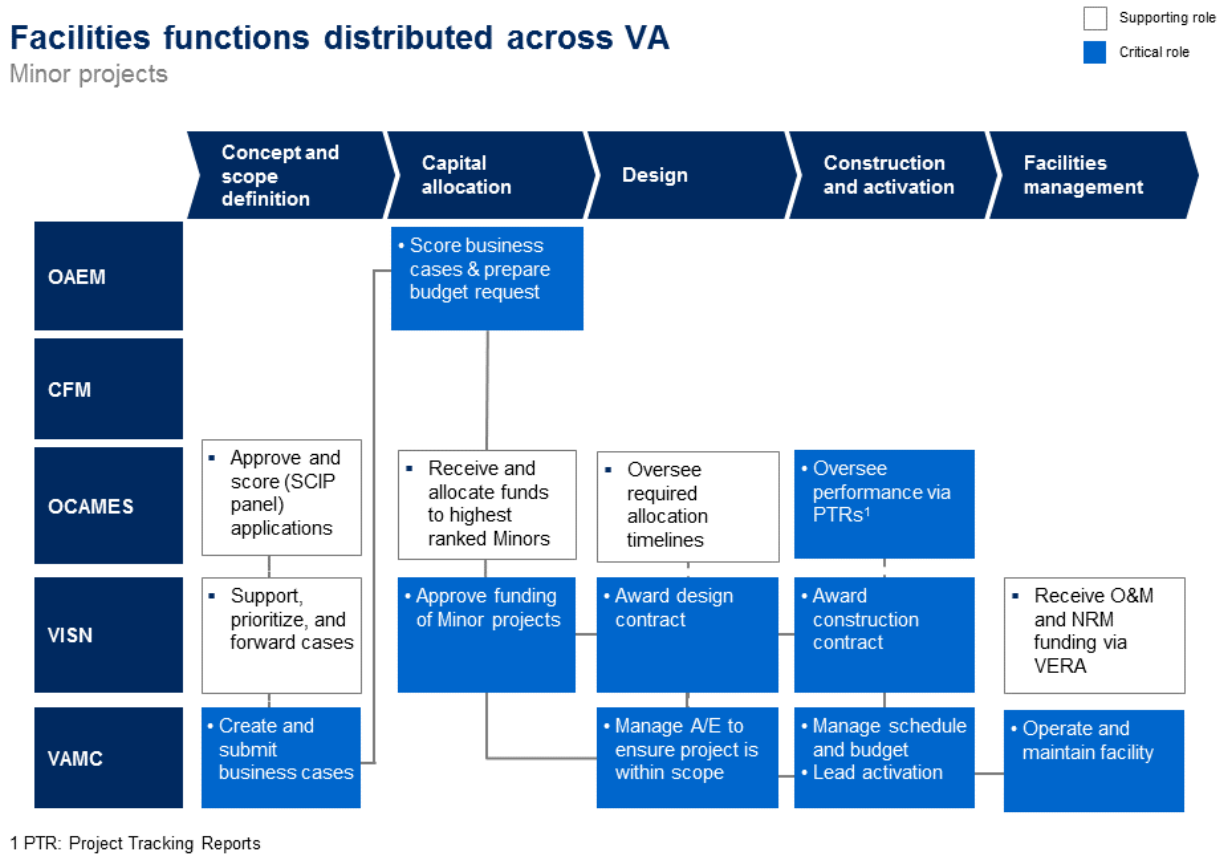
7.2.3.1 Minor and NRM Programs Follow Similar Processes and Require Complex Multi-Stakeholder Approval Impacting Cost and Schedule of Projects

Minor and NRM projects experience similar phasing from concept, approval, design and execution. However, the activities and responsibilities vary. Figures 7-10 and 7-11 describe the process across the project lifecycle from concept and scope definition, capital allocation, design, construction and activation, and facilities management and illustrate the different approaches by type of project.

For minor projects, VAMCs are responsible for project scope definition, business case creation (including alternative stress test and cost estimation) and project SCIP submission to OAEM. Minor projects are approved without accounting for the funding limitations resulting in oversubscription of approved projects. Once the minor projects funding is appropriated, VACO allocates funding to projects as projects are ready to be obligated. Once funded, the VAMCs and VISNs lead project contracting and execution. The Contracting Officers lead the contracting process with help from VAMCs as needed. Following contract award, the primary manager of a minor project in the field is the Project Supervisor under the Chief of Engineering. Capital Asset

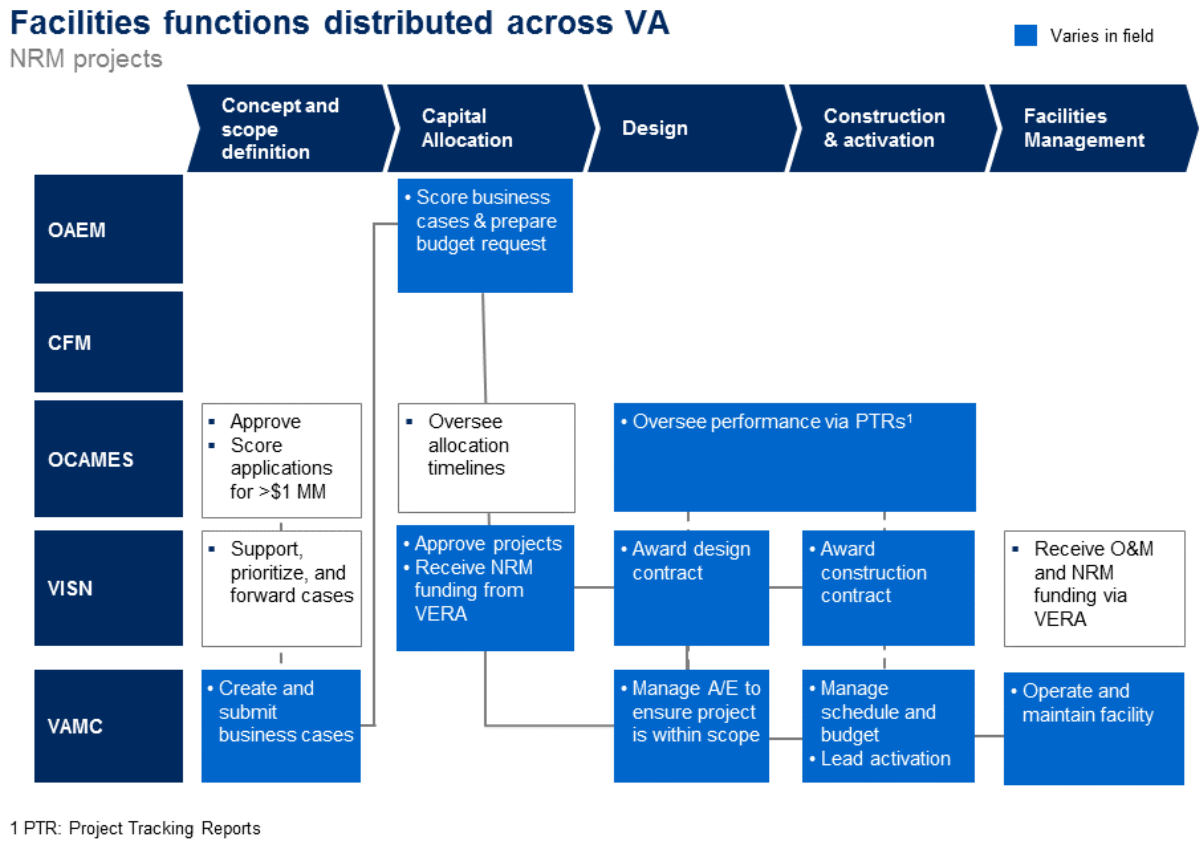
Managers at the VISNs help coordinate contract awards and modifications if necessary between Contracting Officers and VAMCs to help drive project execution.

Figure 7-10. Involvement of Different Entities in Minor Projects



1 PTR: Project Tracking Reports

Figure 7-11. Involvement of Difference Entities in NRM Projects

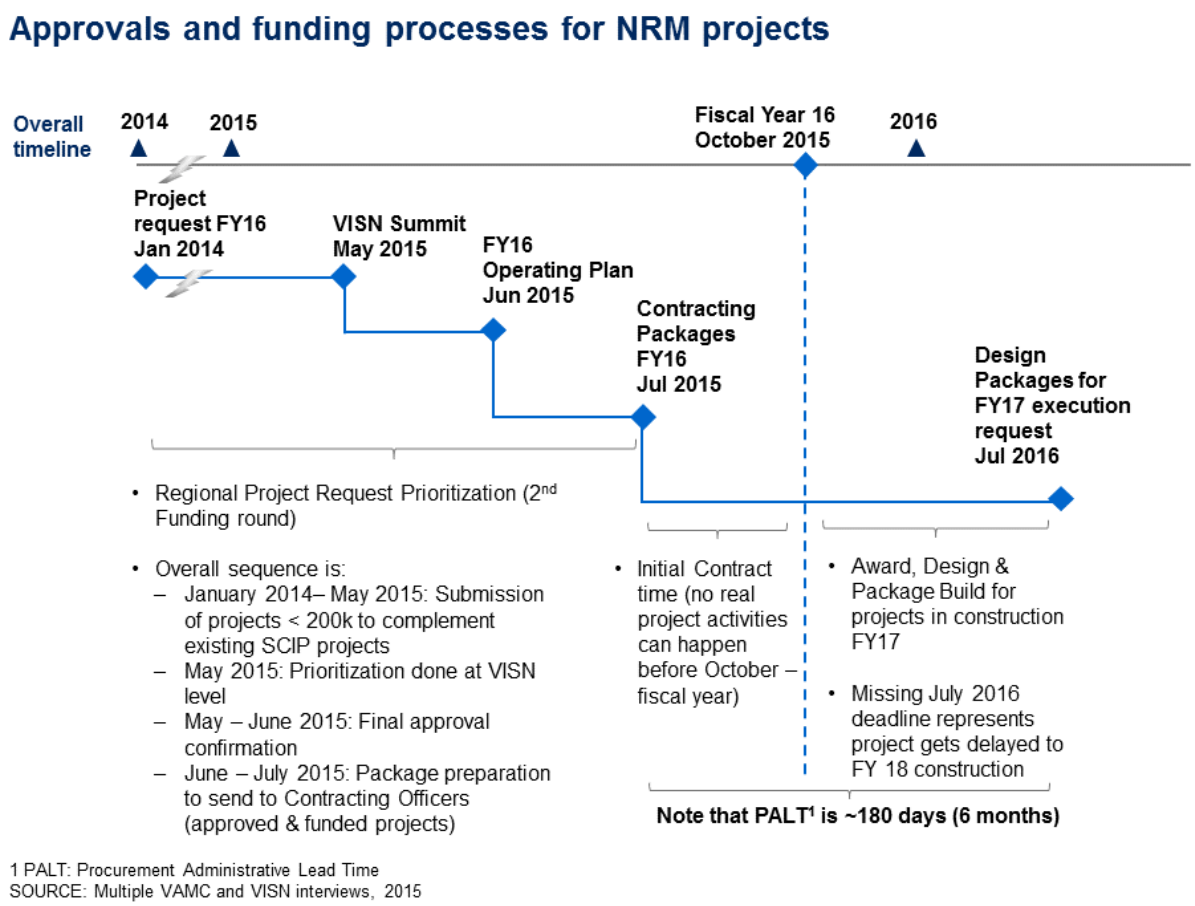


For NRM projects, the process is very similar to minor projects in project scoping and SCIP applications, but differs in funding and approval process. Once a project is approved via SCIP and is ready to be obligated, VACO funds the design phase of the project which represents approximately 10 percent of the total project cost. Once funded for design, the VAMCs fund the construction phase with VERA allocated dollars.

For both project types, change order approvals are driven by available funding. For minor projects, contingency funds are already programmed during the planning phase making the process for change orders manageable. For NRM projects, the change order process requires multiple levels of approval centrally. NRM project funds are obligated in one fiscal year but executed in the next fiscal year. The timeline for NRM projects (Figure 7-12) is tight given the contracting timelines. Because NRM appropriations expire within one year, change orders – which are approved during execution phase – for projects obligated from one fiscal year cannot be funded from the same fiscal year funds without an approval process. The prior year fund approval process requires searching for available funds within VISN and then centrally at VACO and is complex, leading to schedule delays in the field. When funds for change orders are unavailable, the most likely levers executed in the field are scope deductions.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 7-12. Timeline for Projects Funding and Approvals in NRM



7.2.4 People

In assessing the organization responsible for delivery we considered the way in which VAMCs structure and resource their project delivery teams (PDT). We also assessed the impact that culture may have in VHA project delivery. Project delivery teams consist of the following key positions for a minor or NRM project:

- **Contracting officer (CO) at VAMC, VISN, or NCO:** Responsible for overall contract compliance and approvals. They are normally involved after a project is approved via SCIP and funded. The location for COs varies between local facilities, VISN, and NCOs across the organization.
- **Project Engineer at VAMC**: Responsible for project management in partnership with Contracting Officer and Contracting Officer Technical Representative (COTR). Project Engineers are usually involved from design through execution of the project. They also provide regular updates for active projects to OCAMES via Project Tracking Reports.
- **Capital Asset Manager (CAM) at VISN**: Responsible for providing general oversight during the planning, approval, and execution phase of the project

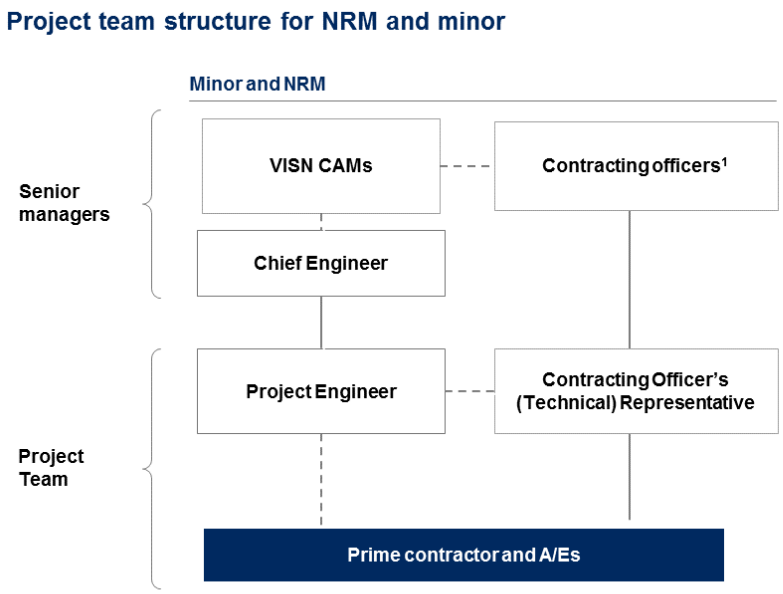
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Contracting Officer Technical Representative (COTR) at VAMC**: Responsible for oversight and tasks delegated by the Contracting Officers for the project

7.2.4.1 Project Teams are Designed and Staffed to Support Compliance Requirements but These Structures Have Resulted in Reduced Accountability for Project Delivery Outcomes and a Limited Ability to Develop Solutions to Manage Cost Overruns and Schedule Delays

Minor and NRM project experience the same challenge of dispersed accountability between technical, contracting, and operations personnel. For minor and NRM projects, the Project Engineer leads the project execution in the field (see Figure 7-13) and is often responsible for project design. However, similar to major projects, the general contractor in the field is often unclear who the primary project owner is. The dispersion of contracting and execution creates silos that lead to potentially different objectives for the project. Such silos drive schedule delays due to unresolved issues with dependencies in project execution.

Figure 7-13. Project Delivery Team for Minor and NRM Projects



1 Contracting officers may be located on-site at facility or at VISN offices

SOURCE: VAMC interviews, NRM and Minor project handbooks

7.2.4.2 Facility-Level Engineers Are Understaffed and Undertrained to Manage Multiple Complex Projects

Project Engineers (PE) are often staffed on multiple projects simultaneously and have indicated that this prevents them from addressing field execution issue that may arise is a timely manner. This staffing situation for PEs is primarily due to a lack visibility on future workload. The opacity, variability, and length of the process from project submission to project funding does not allow a station to plan its workload accurately for a given year. In conjunction with long staffing

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

timelines, the Chief Engineer can struggle to balance workload with staffing capacity (VISN/VAMC Interviews, 2015).

Furthermore, Project Engineers likely need a wide skillset to successfully deliver all the projects they are managing – from leading project design to coordinating project execution of projects as small as $25,000 (NRM) to as large as $10 million (minor). The projects require considerable coordination with the facility staff given that minor and NRM projects are executed while maintaining the operations of the facilities. To manage the project successfully, the Project Engineer has to swiftly and successfully engage all the stakeholders – facilities staff, OCAMES, VISNs, A/Es, and general contractors, Contracting Officers, and COTRs.

7.2.5 Systems

7.2.5.1 The Tools and Databases Used at VA Are not Well Integrated, Impairing the Efficient Delivery of NRM and Minor Projects

A variety of tools and databases exist in VA to capture data for NRM and minor progress reporting and project management.

- **Project budgeting and cost control**: to provide selected financial information VHA leverages Financial Management System (FMS)
- **Contract management**: to record all contracts and relevant modifications, the contracting organization leverages the Electronic construction management system (eCMS)
- **Past project performance**: to consult past performance metrics for minor and NRM projects VHA has the Capital asset database (VSSC)

Similar to our observations in major projects (see Section 6.2.3), it has been shared during our interviews that there is little integration among the different systems, limiting their effectiveness as a project management tool, with data capturing occurring at multiple levels and manual reconciliation leading to confusion on the ultimate source of truth. Specifically, interviewees reported:

- Data capture is occurring at multiple levels and through multiple tools. (See Figure 7-14 for the list of known tools and databases and relevant pain-points for each database.)
- Manual reconciliation of data across multiple systems is tedious, leading many personnel to create and rely on their own spreadsheets to track project-related data. Across the site visits, the team observed numerous spreadsheets by Project Engineers, Chiefs of Facilities, Capital Asset Managers, and Contracting Officers to keep track of relevant data across the multiple systems and stakeholders.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 7-14. Tools Used for Minor and NRM Program

The various tools and databases used by the VA are not fully integrated to help delivery projects efficiently

Tool or database	Description	Applicability	Key pain points
FMS (Financial Management System)	Financial management system to track funding obligations	▪ All	▪ Official record of spending, but not linked to other software
eCMS (Electronic Construction Management System)	"Filing cabinet" for procurement function with all contracts and relevant modifications	▪ All	▪ Limited to no access for personnel outside of contracting ▪ Link to FMS, CIFMS, and PMDRI unclear
VSSC – Capital Asset Database	Intranet database with performance metrics on currently active and past projects	▪ Minor and NRM	▪ Need manual input to link to FMS ▪ Project Tracking Reports do not include leading indicators or interim milestones
PMDRI	Financial and select project detail information	▪ Major and Minor	▪ Linked to FMS

SOURCE: VAMC interviews

7.2.5.2 VHA Has Standardized Financial Tools to Track Obligations but Limited Performance Management Systems to Track Minor and NRM Project Execution

VHA employs multiple tools for the management and execution of NRM and minor projects. Two primary tools encountered by the team are managed centrally by OCAMES: Project Tracking Reports (PTRs) and Performance Monitor Reports. Both reports are updated monthly. PTRs provide a review of the ongoing projects, and the Performance Monitor Report reviews the obligation status. Locally, the VISNs maintain a shared spreadsheet between Capital Asset Manager, Chief of Engineering, and the Network Contracting Manager with these data.

The primary purpose of the tools above is either a) tracking projects before contracts are awarded or b) tracking projects after contracts are awarded. The focus of the organization from Project Engineer to VISN and OCAMES is on meeting obligation targets throughout the year, particularly for the NRM program. Because NRM funds expire within one year, VHA has internal targets by quarter for the obligation of allocated funds. For example, each VISN must obligate 80 percent of funds by the third quarter of fiscal year. The variability in NRM funds due to stimulus funds further increases the necessity to obligate the appropriated funds in time.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Project execution tools such as PTRs contain key metrics that describe the project health, but are not well utilized in the field to drive actionable decisions. The primary challenge in executing tools such as PTRs is the accurate collection and validation of data. Project Engineers are required to initiate PTRs once the project is funded and are required to update them monthly. However, given the dispersed accountability across technical, contracting, and operations, as mentioned in the Section 7.2.3 above, Project Engineers may not necessarily have all the required information, such as the estimated date for design contract award. Finally, the systems lacks a feedback loop, either positive or negative, back to the Project Engineers from the upward reporting exercise, except for the lack of action of filling out a PTR.

7.3 Recommendations for Consideration

VA minor and NRM construction programs present a significant opportunity for increased efficiency. By shifting focus from meeting yearly obligation target to optimal project prioritization and delivery, VA can significantly optimize its capital requirements while addressing the right needs for Veterans.

The following recommendations are concentrated on improvements which can be delivered within the current minor and NRM capital program to deliver the right projects in a faster and more cost effective manner:

7.3.1 Enhance Merit-Based Project Scrubbing to Test Scope and Overall Cost and Schedule Prior to Business Case Submission

The implementation of additional control points can help VHA ensure proposed projects are adequately scoped rather than optimized for approval strategies (for example, budgeted right below the $10 million threshold) at the cost of project merits or efficiency (VACO/VISN Interviews, 2015). Specifically, items which could be tested include the following:

- **Scope alignment to identified needs:** Ensure that the business case submitted responds to initially identified needs (for example, space, access, energy) and addresses them in a holistic and cost-efficient way (for example, avoid project fragmentation to fall below the Major Construction threshold).
- **Benchmark project costs:** Assess cost efficiency benchmarks for similar projects conducted within the same VISN to ensure that budget costs and contingency are accurate.
- **Emphasize the need for adequate project design**: Lengthy approval processes can cause VAMCs to compress the aspects of the schedule within their control leading VAMCs to shortcut engineering stages to meet approval and funding timelines within fiscal years. Adequate engineering times would allow risk identification and diminish cost overruns.
- **Test standardization and consistency of outputs:** Ensure that the project maximizes standard and tested features from other projects that could significantly reduce procurement costs and execution times.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

7.3.2 Empower CFM and OCAMES to Effectively Share Know-How, Lessons Learned, and Design Standards

OCAMES could be leveraged as a "center of excellence" to provide input along the minor and NRM project lifecycles. Creating regular best practice sharing, forum, and working groups between VAMCs would enhance project definition, design and delivery.

7.3.3 Set up Performance Management Systems That Serve as Tools for Fast Paced Decision Making, Early Risk Identification and Mitigation

Leverage systems and reports included in the major project recommendations (Section 6.3) to standardize output across VA capital management program. The reports, while adjusted to minor and NRM projects characteristics, should also serve as a management tool and provide a clear perspective on:

- **Project costs and funding levels:** Reports should provide a clear perspective on initial project costs (baseline), construction progress, and fact-based analysis of deviance versus initial estimates.
- **Integrated project schedule and critical path**: Reports should present an integrated master plan with a clear critical path and detail on construction and activation activities. The overall schedule should be cost loaded to provide a detailed cash flow forecast.
- **Critical activities progress KPIs:** For each of the critical path activities, the standard report should provide clear progress curves to compare estimated versus real productivity and recovery plans for delayed or underperforming work fronts.
- **Risk matrix:** Report should include an up-to-date risk matrix, ranking different risks based on likelihood of occurrence and potential impact as well mitigation plans for high risk and high impact areas.

Additionally, the system should also include references to safety and quality control standards, as well as a clear perspective on stakeholder management.

7.3.4 Staff and Train Project Delivery Teams (PDT) According to Minor and NRM Technical Complexity and Ensure Project Delivery Success

- **Provide clarity in the definition for individual roles and accountability for key decisions:** Especially for minor and NRM projects, which rely on local staffing rather than the full team CFM uses, clarity for roles and guidance on recommended interactions is critical for project success.
- **Ensure sufficient staffing of project team roles:** Even if minor and NRM projects fall below the $10 million category, staffing and oversight from OCAMES should consider complexity of the projects (for example, construction over an existing structural, mechanical and electrical reality) and whether they require additional resources to deal with all interfaces and challenges successfully.
- **Ensure the appropriate level of coordination between medical center and construction staff:** Roles such as the construction liaison, which bridges the gap between medical staff

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

needs and construction teams, have reduced the inefficiencies and challenges that most brownfield projects face. Coordinators could also monitor changes in technology and equipment which could have an impact on projects. This and similar liaison roles should be considered.

7.3.5 Transform the Contracting Organization to Align Contract and Change Order Approvals Processes With a Fast-Paced Environment

This would include:

- **Conduct an effort to map and streamline major processes and systems within the contracting organization** (for example, approval processes for change orders, response for RFIs) to increase agility of the decision making process and alleviate current workload levels.
- **Ensure proximity of Contracting Officers with facility:** Latest centralization efforts have resulted in increased challenges for VAMCs to interact with contracting officers. Dedicating specific personnel and ensuring a clear cadence of in-person visits and interactions would help reduce system inefficiencies and speed up processes.
- **Consider the unique needs of construction contracts when incorporating structural changes to contracting organization.** Construction contracts require a high degree of specialized knowledge as well as the ability to view site conditions both before and during the project. Structural changes to the contracting organization, pursuant to Assessment J, Section 5.2.1, should reflect these needs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

8 Leasing Program Assessment

The existence of a strong leasing program is a critical component of VA's ability to adapt to changing Veteran needs. Leasing can provide the opportunity to decrease upfront capital cost and accelerate delivery of clinics, offices, research facilities, warehouses, and other facilities. Section 201 calls for an assessment of the medical facility leasing program. We have evaluated four aspects of the leasing program, and have explored a set of questions within each:

- **Outcomes:** Is VHA paying a fair price for leased facilities? Do contract terms ensure that VHA gets the most out of its leased facilities? Does the leasing program enable VHA to quickly scale capacity up and down to maximize Veteran access to care?
- **Process:** Has VA instituted an optimal process for medical facilities to acquire new or renew existing leases? How consistently is that process adhered to, and does it result in timely execution? What pain points exist and how could those be alleviated?
- **People:** Are the right entities involved, with clear roles and responsibilities? Do staff members have the right capabilities to fulfill those responsibilities?
- **Systems:** What systems are employed in the delivery of the leasing program? Do they facilitate efficiency and enable strong oversight and performance management?

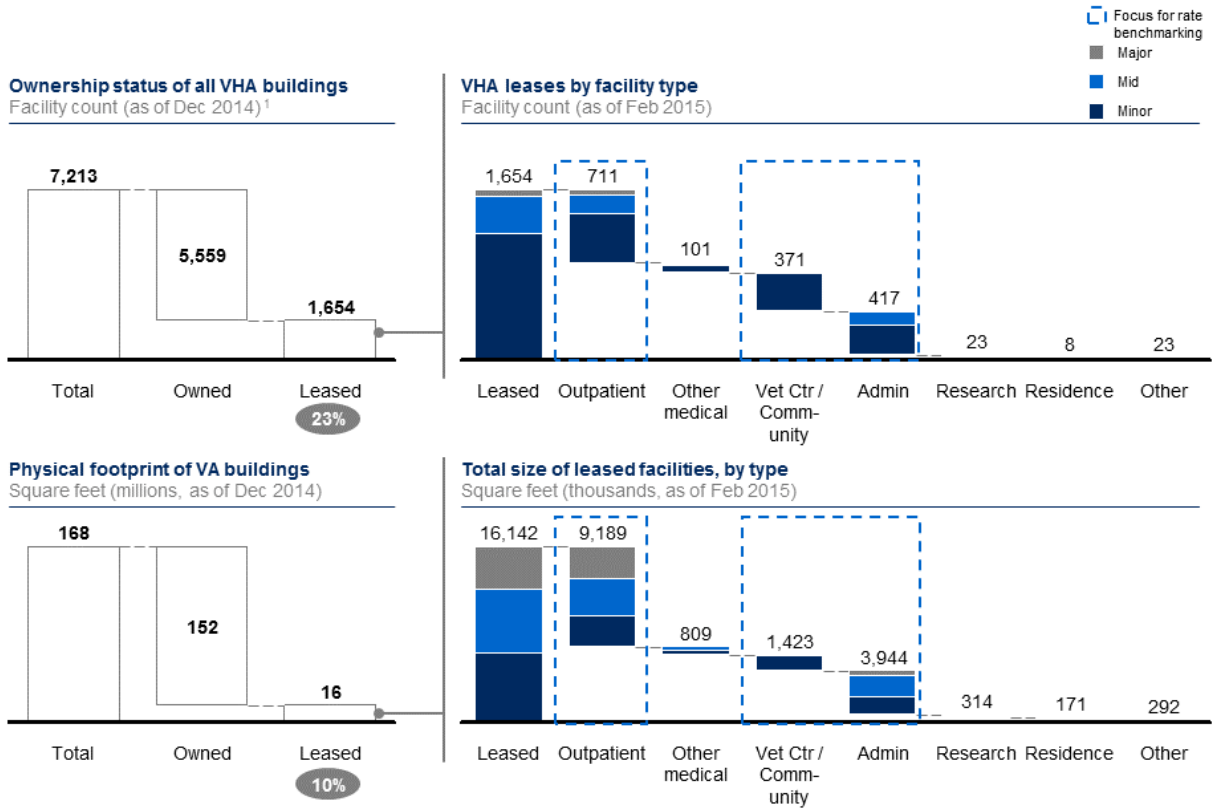
8.1 Preface

8.1.1 Overview of VHA's Lease Portfolio

While nearly a quarter of all VHA buildings are leased, these facilities tend to be smaller than owned facilities and represent just over 10 percent of the physical space VHA occupies (FRPP, 2014). Of the approximately 1,600 facilities leased by VHA, nearly half are used primarily for the direct delivery of patient care, with the remainder primarily utilized for administrative functions and Veteran community centers. A relatively small number of other medical, research, and residential properties are also leased by VHA.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 8-1. Lease Portfolio Overview



1 Data from FRPP submission adjusted to include GSA Occupancy Agreements and non-building leases (e.g., land) to reconcile figures with CAI lease data

SOURCE: OAEM data from 2014 FRPP submission; Capital Asset Inventory database

According to the Capital Asset Inventory database, existing lease contracts obligate VHA to spend approximately $420 million annually on rent for its leased properties.[51] In line with its footprint, just over half (approximately $250 million) of this spend is for outpatient care facilities such as community-based outpatient clinics, satellite outpatient centers, and other similar facilities. Medical centers typically view leasing as the default option when they need to expand their physical footprint to provide increased access to outpatient care for Veterans. Leasing is perceived as a method of acquiring space more quickly than construction, acquiring small spaces for which construction is not an option, and acquiring space without having to secure approval for a major construction project. Leased administrative space costs VHA just under $100 million in annual unserviced rent,[52] with community facilities, other medical facilities, research, and residential facilities comprising the remainder.

[51] While this represents annual obligations, lease contracts are multi-year and the long-term costs of VHA's leasing program have been estimated at $5.5 billion and growing (Government Accountability Office, 2014).

[52] Unserviced rent is defined as "the base rent, including real estate taxes, insurance, and any amortized build-out, but excluding operating expenses" (VA Directive 7815, 2012).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 8-2. Lease Portfolio by Rent and Size

Facility type ($ Millions annual unserviced rent)		Avg annual rent ($ Thousands)	Avg size (Thousand square feet)	$ / NUSF	Leases Total	Leases Majors
Outpatient ($251)	CBOC	275	10.2	23.9	575	24
	Satellite OPC	946	32.0	23.9	52	14
	Outpatient	467	13.8	23.2	26	2
	Hosp Based OPC	721	24.5	24.4	18	3
	CBOC/Vet Center	106	5.1	21.1	15	0
	Independent OPC	1,266	31.5	39.2	13	6
	Telehealth	48	2.5	20.2	7	0
Administrative ($98)	Office	212	9.6	21.8	266	3
	Parking	288	5.8	N/A	61	1
	Warehouse	99	13.3	8.3	47	0
	Administrative	349	16.1	N/A	44	3
	CMOP	662	79.7	8.2	6	0
Community ($35)	Vet Center	87	3.6	25.9	293	1
	Outreach Clinic	89	3.9	23.0	61	0
	Community	245	8.0	25.4	17	1
Other medical ($20)	Mental Health	182	7.7	22.3	63	0
	Specialty	217	8.5	24.6	36	1
	Hospital	278	12.0	23.2	1	0
	Drug Treatment	26	1.6	16.5	1	0
Research / Education ($12)	Research	570	14.6	33.4	19	3
	Education	180	9.2	19.5	4	0
Residence ($3)	Domicilary	388	18.2	21.2	6	1
	Nursing Home	524	26.0	20.1	1	0
	Residential rehab	497	36.0	13.8	1	0
Unspecified[1] ($3)	Not specified	123	6.3	N/A	21	0
Total portfolio		$420 million	16 million sq. ft.		1,654	63

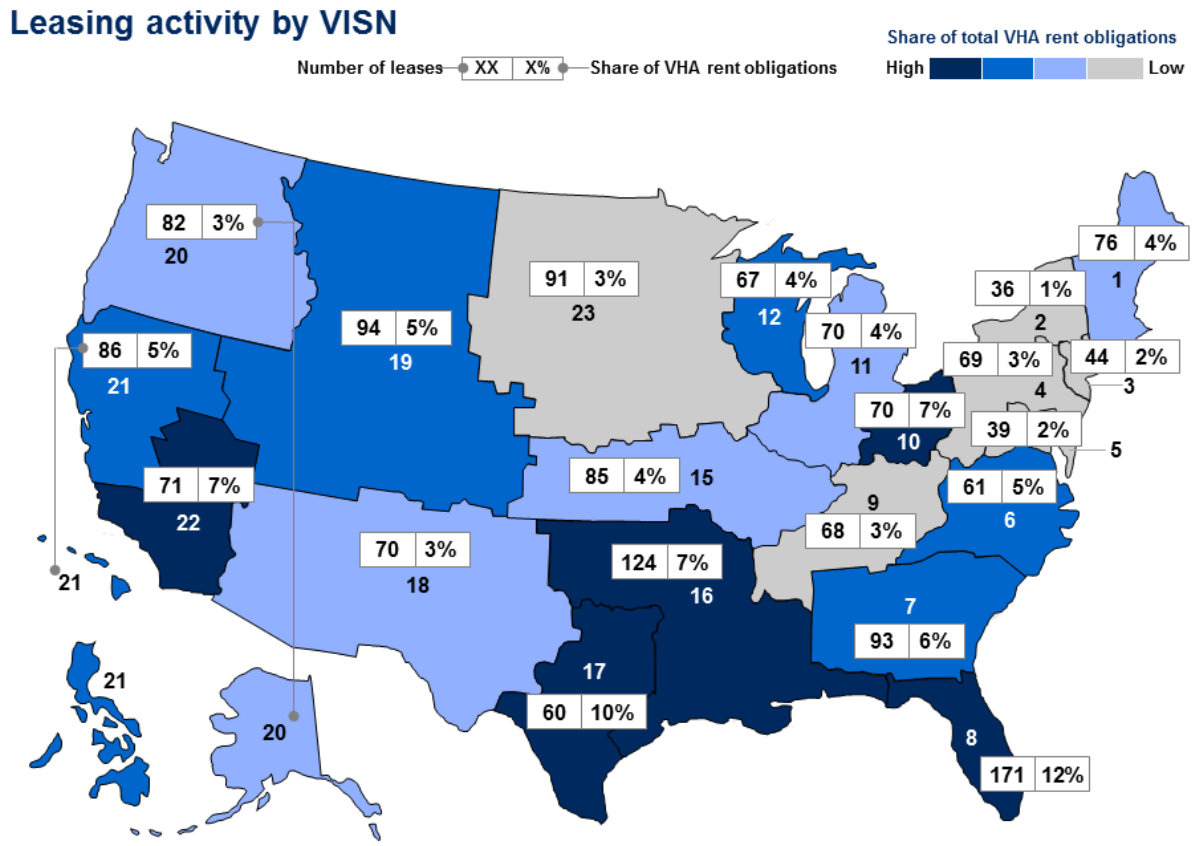
1 16% of VHA leases were originally categorized as Other and were manually recategorized based on lease name descriptions

SOURCE: Capital Asset Inventory Database as of February, 2015

Geographically, leased properties are spread across the United States. While leasing occurs in every VISN, some rely on it more heavily than others. VISN 8 (comprised of Florida, Georgia, Puerto Rico and the Virgin Islands) and VISN 17 (Texas) account for 12 percent and 10 percent of VHA's total annual rent obligations, respectively. Other small VISNs (5, 3, and 2) combined comprise less than 5 percent of total rent obligations.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 8-3. Lease Portfolio by Geography



8.2 Findings

8.2.1 Outcomes

As pressures mount for health care providers to effectively deploy capital, focus on the core business, and take advantage of cost savings associated with the transition to outpatient care, health care systems are increasingly turning to leasing to fulfill their facility needs. As such, VHA's focus on leased facilities is in keeping with current thinking in the industry. However, to be considered successful, a health care leasing program would need to achieve the following:

- **Costs:** Optimize the costs of meeting facility needs by freeing capital for more effective use.
- **Time and flexibility:** Enable more rapid and flexible fulfillment of facility needs than could be achieved through owned facilities.
- **Quality:** Provide high-quality facilities and facility-related services to patients, providers, and administrators. This is determined largely by quality stipulations in the lease contract and willingness to enforce the contract.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Our findings suggest that VHA has room for improvement in some of these areas. Below we provide an overview of our assessment of VHA's performance against these three outcomes. In the subsequent sections we explore the underlying causes of these outcomes through an assessment of the processes, people, and systems that support the leasing program.

8.2.1.1 VHA Lease Rates Are Similar to Benchmark Rates for Smaller Facilities, but Higher Than Benchmark Rates for Larger Facilities

To assess VHA's cost outcomes, we conducted an extensive cost benchmarking exercise of VHA rates. Using CoStar, a database of U.S. real estate data and price information, we benchmarked VHA rates against market rates for comparable properties of similar class and size in close proximity (within five miles) of the VHA location. We completed this exercise at the individual facility level for more than 280 leased VHA properties that were associated with the stations randomly selected for our site visits. Benchmarked facilities included major, mid, and minor outpatient facilities as well as administrative buildings and Veteran Centers.

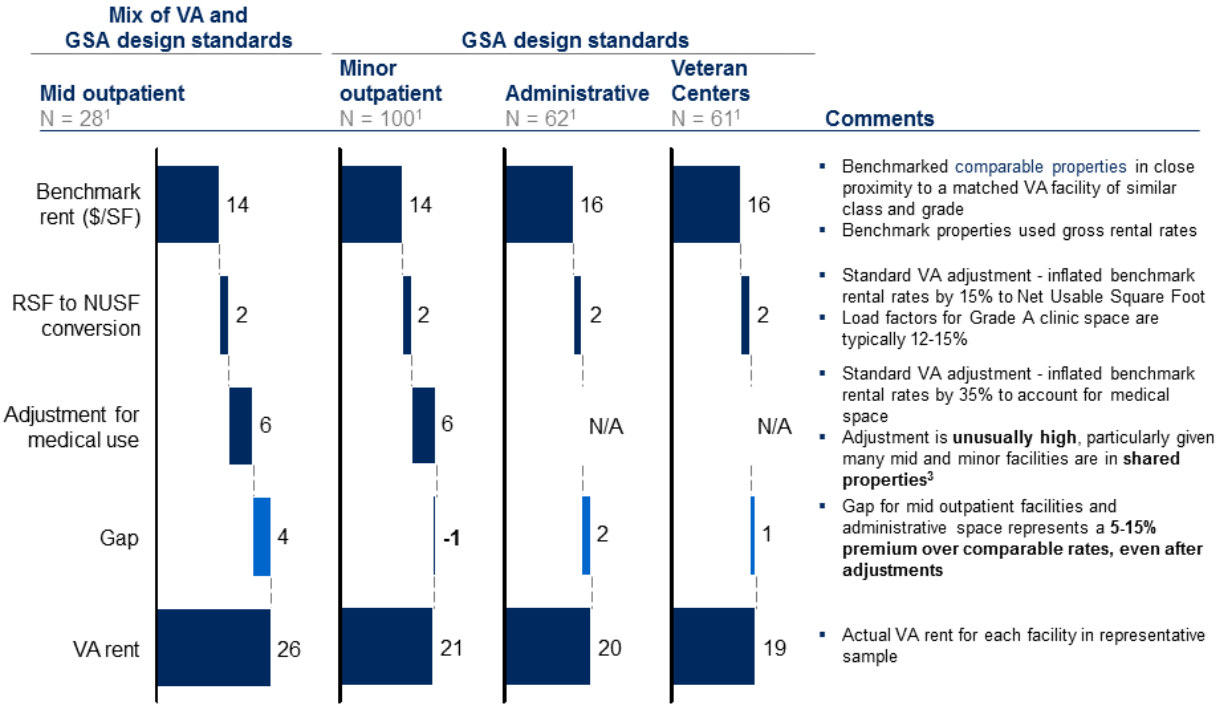
We then tested the benchmarking results of the above large-sample approach with an in-depth study of a smaller sample of leased facilities. To do so, we conducted a detailed examination of the lease contracts of this smaller sample of facilities and benchmarked adjusted rental rates against a specific set of comparable properties. We verified the comparability of these rates with real estate brokers, appraisers, and other real estate experts.

In order to ensure comparability of benchmark rental rates with the rental rates of VHA facilities, we made two adjustments to the benchmark rental rates (see Figure 8-4):

- **Rentable square feet (RSF) to net usable square feet (NUSF).** While benchmark rates in the CoStar database are denominated in RSF, the VHA database used NUSF. These are both standard approaches that measure different amounts of space in a given building, with RSF typically approximately 15 percent higher than NUSF in VHA clinical facilities. Given the benchmark rents were addressing RSF, we applied this 15 percent factor to be comparable to the smaller NUSF numbers used in the VHA database.
- **Office space to medical space.** Second, we adjusted the benchmark rental rates– to account for the increased cost to rent clinical spaces. Clinical space carries specific physical requirements to meet medical needs, such as room configuration (including private patient bathrooms), wide doorways for access, higher structural requirements, specialized ventilation, and sound control for improved patient experience and privacy. While we attempted to find comparable clinical spaces in the benchmark database, this was not always possible. VA's Office of Construction and Facilities Management (CFM) and Office of Asset Enterprise Management (OAEM) suggested a 35 percent adjustment to account for the premium paid to rent clinical space. This number was validated with a set of outside experts. As such, our benchmark rates were inflated by 35 percent to compare to VHA clinical spaces.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 8-4. Lease Rate Benchmarking Results



1 The sample included all outpatient, veteran center, and administrative leases associated with a representative sample of 24 VA medical centers which represent the VAMC system as a whole across critical facility demographic and performance outcome metrics. 251 leased VHA facilities were included
2 CoStar database was used to benchmark current VHA lease rates on a square footage basis, using comparable office or medical buildings within 2-5 miles of the leased facility and classified as 2-3 star buildings
3 Properties shared with other tenants who are paying lower rents – the only premium VA should be paying are for internal fit-outs (sinks, shelves, etc.)

SOURCE: VA Rental Rate Explanation for GREX; CoStar Database, CBRE Global Office Occupier Guide

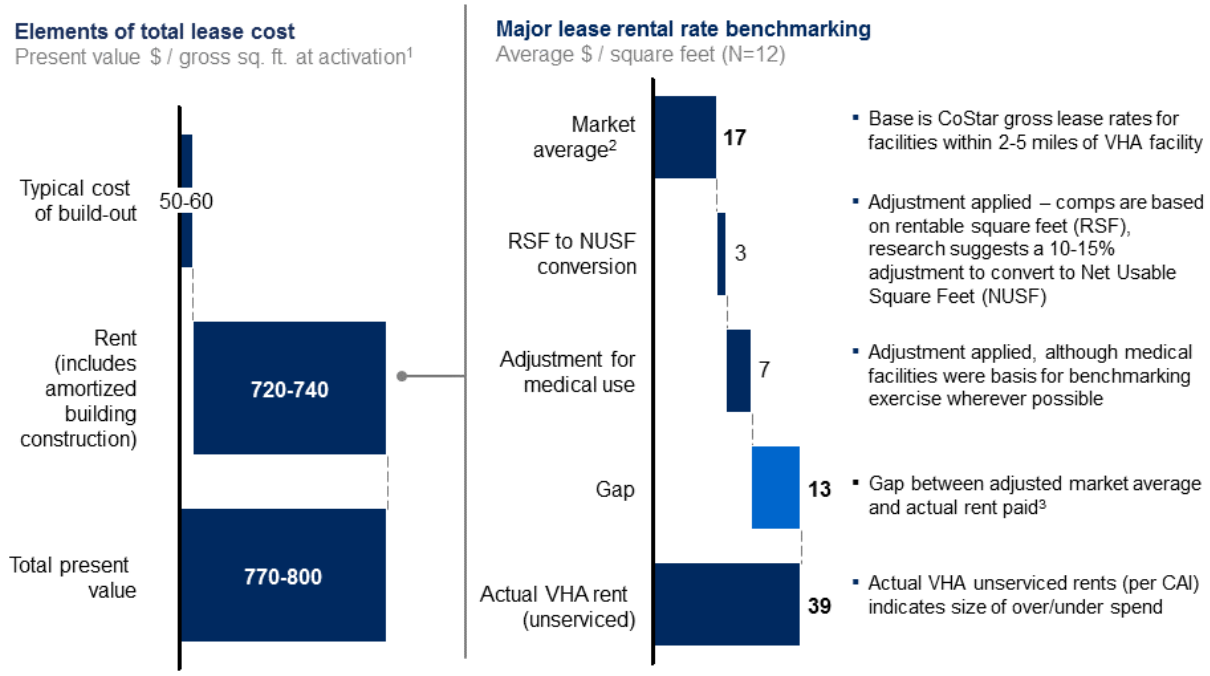
After applying the necessary adjustments we found that for the smaller and simpler facility types (minor and mid-sized outpatient clinics, administrative space, and Veteran centers) VHA rates were, on average, very close to benchmark market rates. While there are some gaps ranging from VHA paying approximately $1 per square foot less than market rates for minor outpatient clinics to $2 per square foot more than market rates for administrative facilities, these differences are within expected variability. This appears to demonstrate that VHA's approach of ensuring market competition for such leases is working well in achieving market rates for facilities that do not require significant structural customization to meet VHA-specific design standards.

Some mid-sized outpatient facilities, and nearly all major outpatient facilities, however, were built specifically to meet the design specifications of VHA. In these "build-to-suit" leases, VHA contracted a developer to design and build a customized facility, which was then leased to VHA. According to our benchmarking (see Figure 8-5), there is a gap between the VHA's rates and market comparables, which may be attributable to two characteristics unique to VHA. First, and most importantly, VHA facilities are subject to more stringent design specifications than benchmarked facilities (for example, resilience and structural security requirements, as well as environmental standards, discussed in Section 6.2.5.1). Given that the larger premiums over market rates appear with mid-sized leases – some of which are build-to-suit, and are highest for

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

the major leases – it is likely that these unique requirements for major outpatient clinics are a significant factor in the higher rental costs. Second, VA is constrained in the geographies and timing of lease activations; as a result, it may have less flexibility than private sector competitors and may be in a disadvantageous negotiating position.

Figure 8-5. Major Lease Rate Benchmarking Results



1 Average cost, derived from 28 major lease prospectuses included in the VA 2014 Budget. Using OMB A94 20-year discount rate of 3.1% and inflation rate of 2% for 20 year term and including projected build-out costs incurred at year of activation
2 CoStar database was used to benchmark current VHA lease rates on a square footage basis, using comparable office or medical buildings within 2-5 miles of the leased facility
3 For the 12 facilities, the unexplained gap clustered around 40% with 2 outliers where the VHA rate was below benchmark (Jamaica Plain [Boston, MA] and San Jose, PR)

8.2.1.2 Lease Timelines Preclude VHA From Benefitting From the Speed and Flexibility Leasing Typically Provides, Often Taking Over Twice as Long as Private Sector Benchmarks

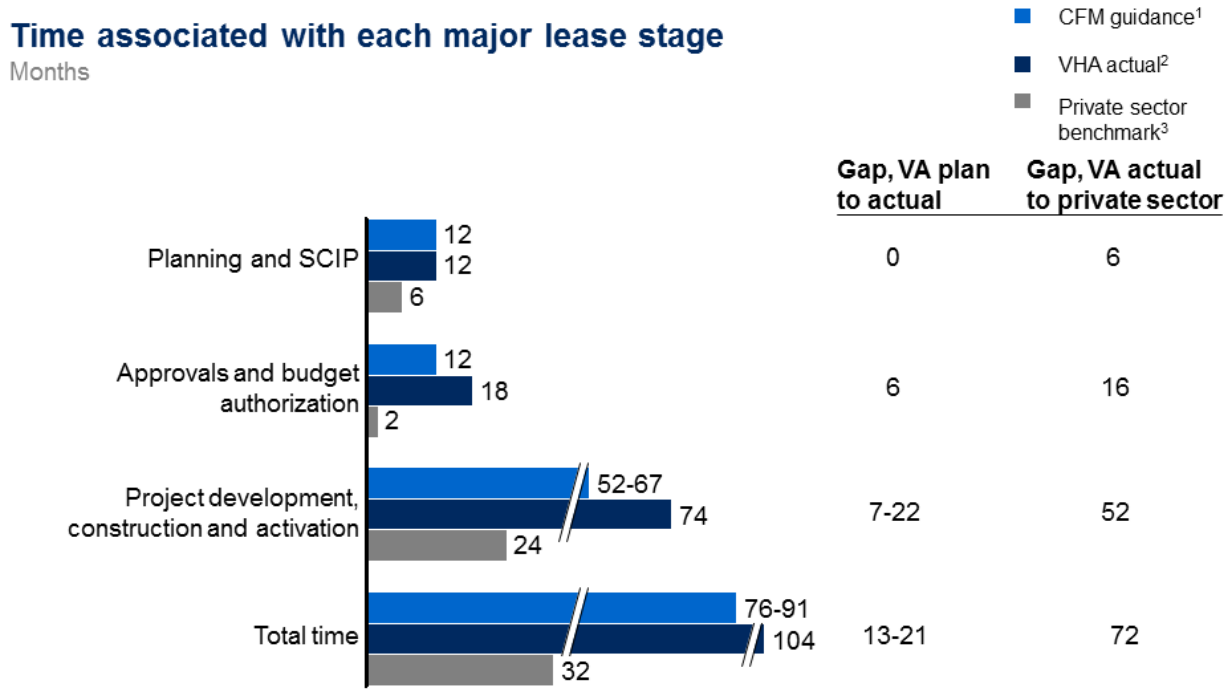
One of the primary values of a leasing program is its ability to respond to changing facility demands faster than owned properties. However the time it takes to execute a lease often precludes VHA from effectively realizing this flexibility. Including the time required for planning, approvals, budgetary authorizations, project development, construction, and activation, CFM's guidance for the total time required to secure a major lease (see below for detailed descriptions of lease types) is approximately six to eight years (Figure 8-6). In reality, major leases that have been completed are taking almost nine years.[53] These lengthy timeframes are

[53] Data on major leases provided by Real Property Services (CFM) in May 2015.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

in contrast with other public sector agencies that often complete major leases in significantly less time and private sector expectations of build-to-suit leases that often take less than three years.[54] While minor leases are much faster than major leases, largely because of the more limited approvals required, delays have been introduced as a result of the GSA delegation of authority to VHA being rescinded, and the resulting addition of required approvals for VHA leases. In an encouraging sign, the most recent major leases have been completed closer to the guideline of 65 months.

Figure 8-6. Major Lease Timelines, VA and Private Sector



1 Estimate based on published documentation and interviews with VAMC , VISN, NCO, and VACO staff
2 For Planning and SCIP, and Approvals and budget authorization, estimates are based on interviews and existing guidance; for other stages, based on the average number of months from Congressional authorization to facility activation for 20 major lease based on data from CFM Real Property Service as of May 2015
3 Based on interviews with current or former C-level executives at 5 private sector hospital groups, with experience leasing facilities of similar size

SOURCE: VA Directives; Staff Interviews; OIG Report; GAO Report "VA Real Property", CFM Real Property Service

These timelines have three main ramifications. First, and most importantly, access to care for Veterans is negatively impacted. The duration and unpredictability of the leasing process makes it difficult for VHA to adapt the scale and location of capacity to changing Veteran demographics, and – as some leases expire before others are activated – can result in gaps in the availability of care. Second, this extension of the lease process creates substantial work for employees across VA, increasing internal capacity needs and costs, and diverting resources away from other activities. For example, station and contracting staff must constantly monitor and shepherd a lease throughout a multi-year approval and contracting process, creating

[54] Expert interviews and experience of leasing brokerage firms that work extensively with the federal government.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

capacity constraints. Third, an extended leasing process increases the likelihood and volume of requests to modify the requirements of a leased property, particularly for major leases, increasing cost of the project and creating a reinforcing cycle of delays. This is particularly consequential for the high-cost, build-to-suit leases.

8.2.1.3 VHA Lease Contract Terms Are More Tenant-Favorable Than Industry Standards, but These Terms Are Often not Well Enforced

In addition to cost benchmarking, we conducted a detailed review of the contractual terms typically included in VHA leases. Based on a sample of leases selected to represent different facility types and lease values, we observed a trend of tenant-favorable provisions that are often not found in standard leases of comparable facilities (Leases for full contract analysis, OPL, 2015). Specific VHA terms that are unusually favorable are as follows:

- Broad rights to assign or sublease to another party, often with no restrictions
- No specified tenant insurance requirements
- Minimal to no restrictions on alterations to be performed by tenant during the term
- No obligations to restore the property to its original condition
- No specified penalties for tenant defaults, including late charges or interest
- Tenant receives a discount on operating expenses if tenant vacates a portion of the space

There were two areas where typical provisions were potentially unfavorable to VA:

- No right to audit landlord's books regarding operating expenses
- Renewal rights (for option years) are pre-specified; while this provides cost certainty for the tenant, it limits the ability to capture any favorable changes in market rates

On the whole, it appears that VA negotiates favorable contract terms, and for the most part, does so while paying fair market prices. However, while contracts may include favorable terms, these contracts are often not enforced (VACO/VISN/NCO/VAMC Interviews, 2015). While facility management staff generally indicated that the vast majority of lessors fulfilled their contractual obligations and provided excellent space and service to VHA, interviewees indicated numerous instances in which a lessor was not fulfilling perceived obligations in regards to maintenance activities. In no cases, however, did interviewees indicate that the contractually provided recourse was taken, and both contract officers and station staff indicated a reluctance or lack of capacity to actively enforce contracts.

8.2.2 Process

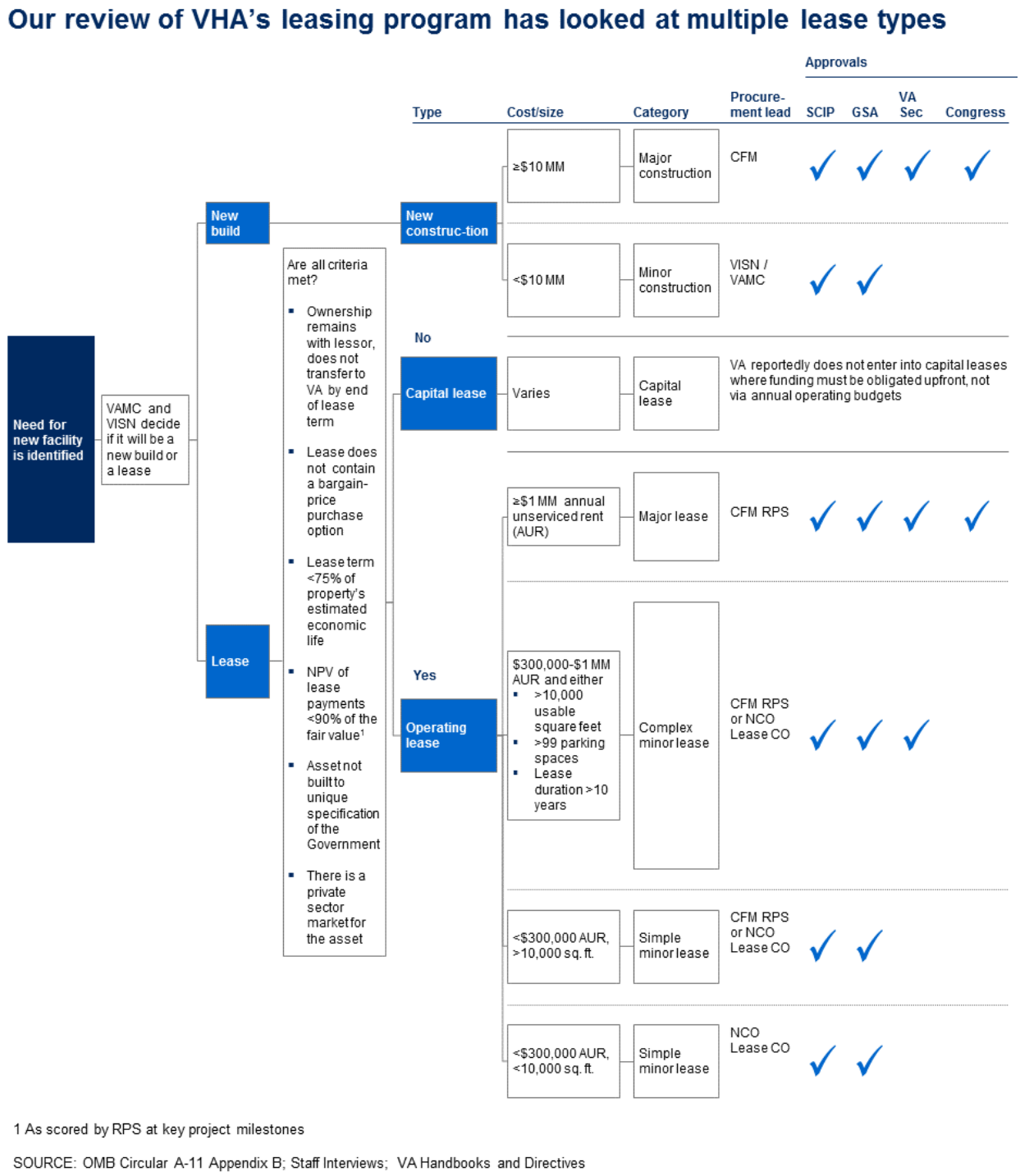
8.2.2.1 Overview of the Leasing Process

We have conducted a high-level review of the processes supporting the leasing program, which include planning and funding; procurement, construction, and activation; and ongoing management and renewal. The specific process steps a given lease goes through depend on the category into which the lease falls. The criteria that determine the lease category include

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

square footage, cost, duration of the lease contract, and other criteria such as parking spaces and portion of the building's value that is covered by the lease contract (Figure 8-7).

Figure 8-7. Lease Types



1 As scored by RPS at key project milestones

SOURCE: OMB Circular A-11 Appendix B; Staff Interviews; VA Handbooks and Directives

Broadly, there are four categories of leases, each of which follow different processes and necessitate different levels of approvals:

- **Capital leases** involve the transfer of ownership, a net present value (NPV) of lease payments greater than 90 percent of the asset's value, a purchase option, the construction of a facility that cannot be utilized by another lessee, or an ownership shift. These leases require upfront obligation of all lease costs, and are thus very rarely used for VHA facilities.
- **Major leases** do not meet the capital lease criteria, but are above $1 million in annual unserviced rent. As with leases of all sizes, stations must formally submit these leases for approval through the Strategic Capital Investment Planning process, as well as receive approval from GSA, the VA Secretary, and Congress. Once approvals are secured, major lease procurement and management is handled centrally by the Real Property Services group within the Office of Construction and Facilities Management. According to the Capital Asset Inventory database VHA has 63 major leases representing 37 percent of total annual rent obligations ($154 million).
- **Complex minor leases**, which are above 10,000 square feet, have greater than 99 parking spaces, or include a contract duration of more than 10 years, may be handled centrally by Real Property Services or by the Office of Procurement and Logistics' Network Contracting Offices (NCOs) at the discretion of the VAMC Director. However, Real Property Services has submitted a formal proposal to delegate the procurement and management of these leases to the NCOs and local medical centers. VHA has 361 leases that fall into this category, representing 32 percent of annual rent obligations ($135 million).
- **Simple minor leases**, which are below $300,000 annual unserviced rent and less than 10,000 square feet are procured and managed by the Network Contracting Offices and local medical centers. These represent the large numeric majority of VHA leases, covering 1,230 facilities and 31 percent of annual rent obligations ($132 million).

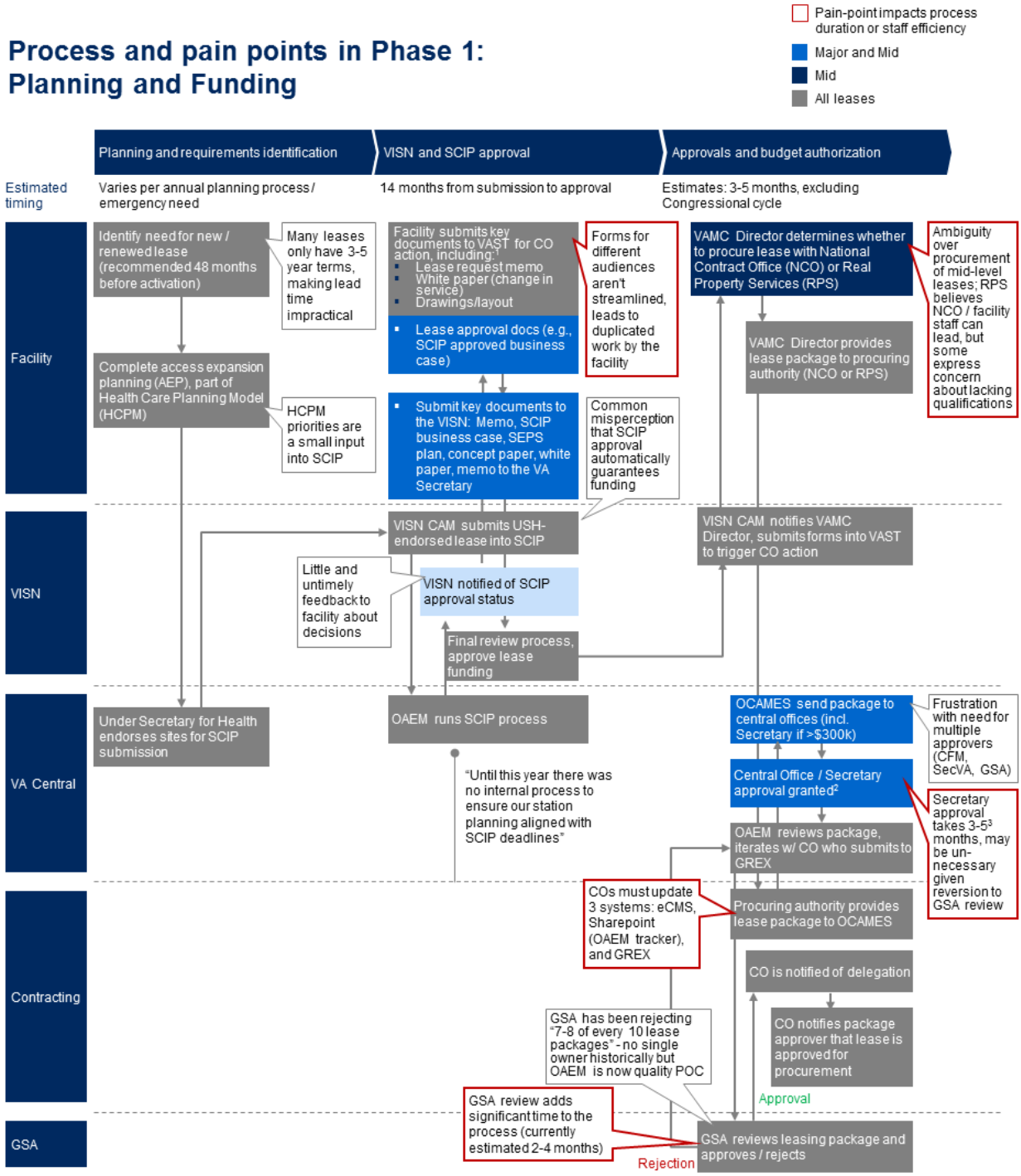
Regardless of the lease type, there are 8 stages in the end-to-end leasing process, with the following owners for each stage:

1. Planning and requirement identification – station
2. Strategic capital investment planning – VISN, OAEM and VAMCs
3. Approvals from VACO and GSA – OCAMES and OAEM
4. Lease project development – contracting officer (either NCO or CFM RPS)
5. Construction tenant improvement – VAMCs and contracting officer
6. Activation – contracting officer and station
7. Management – contracting officer and CORs
8. Renewal – contracting officer and station

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

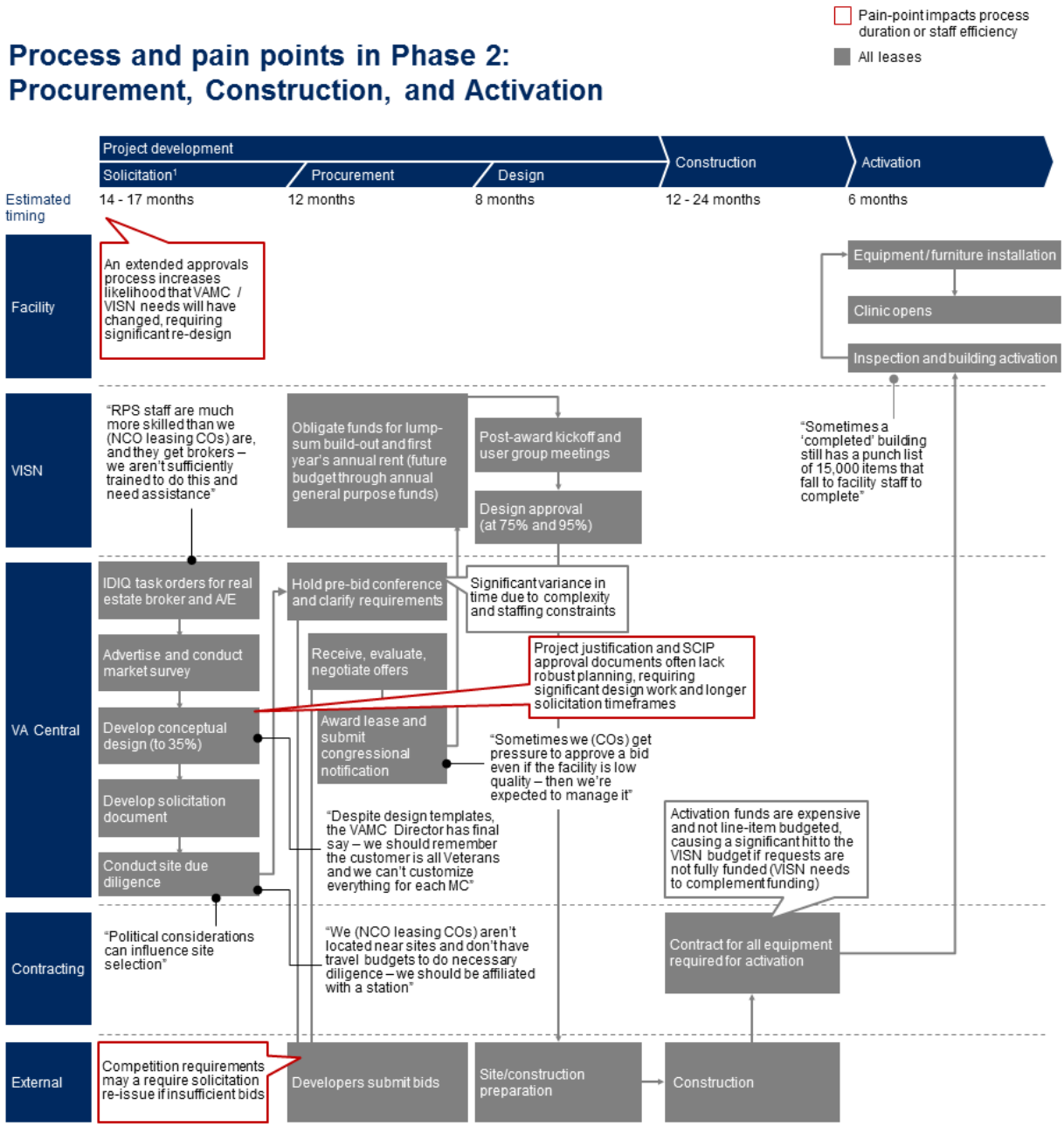
The figures below map out the end-to-end process required to complete major and minor leases, identifying challenges that VA staff described at different stages of the process.

Figure 8-8. Process and Pain Points in Phase 1



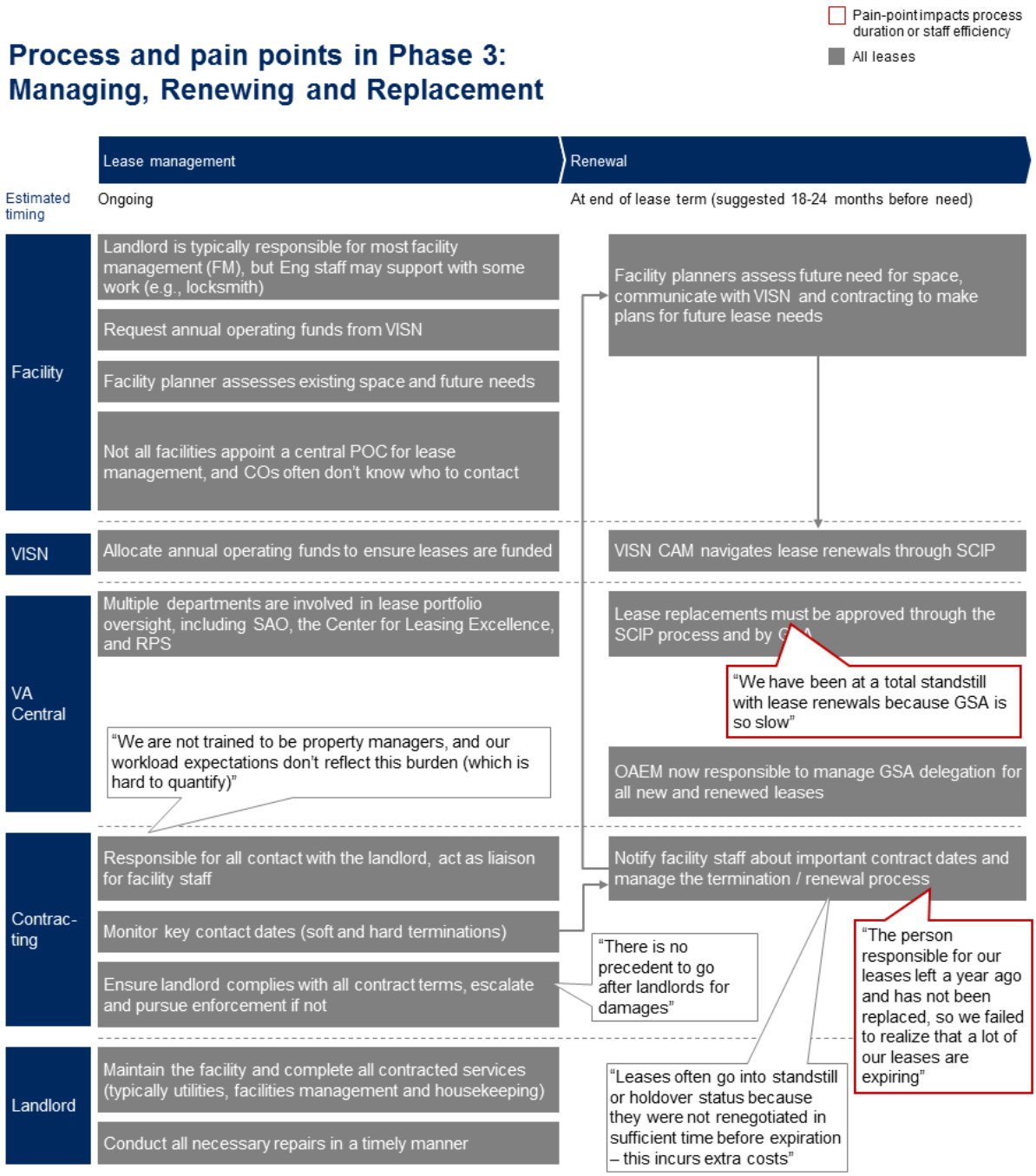
1 Major leases require additional forms: OMB 300, lease prospectus, SEPS plan
2 Major leases require Congressional action and are included in the budget request for authorization
3 Based on May 29th document "Request for Approval to Rescind and Replace the Existing Secretarial Approval Requirement for Mid-Level Lease Procurement (VAIQ 7511099), SECVA approval requirement was removed for lease packages under $1 million

Figure 8-9. Process and Pain Points in Phase 2



1 VAMC, VISN, VACO (RPS) and NCO may all be involved in solicitation depending on lease size and solicitation stage

Figure 8-10. Process and Pain Points in Phase 3



8.2.2.2 Each Step of the Leasing Process Contains Pain Points Which Either Prolong the Process or Lead to Suboptimal Outcomes for VHA

Based on our interviews with the multiple stakeholders involved in the leasing process, we have identified issues within each step of the leasing process that either prolong the time required to procure and activate leased facilities or lead to suboptimal outcomes for VHA. These are described below.

1. **Planning process must begin 48 months in advance of desired activation date.**
   According to current OCAMES guidance, facilities are advised to start the planning process for leased facilities 48 months before the desired activation date. This extensive lead time reduces the VHA's ability to nimbly respond to changes in Veteran needs and is unrealistic given the usual lengthy leasing process. The result is leases that extend beyond their contracted duration and can lead to gaps in Veteran accessibility.
2. **SCIP approval is an unnecessary and redundant approval above Access Expansion Plan (AEP) facilitated by Health Care Planning Model.**
   Interviewees described a disconnect between the Health Care Planning Model process required to secure Under Secretary for Health approval to pursue a lease and the SCIP process. The capital planning section of this report elaborates on these concerns. Station staff also explained that while all leases must be approved in the annual SCIP process, approval is not accompanied with funding which must still be allocated at the VISN level. This can lead to misunderstandings whereby a lease is "approved," but activation is still dependent on local resourcing and may be an unnecessary approval step that delays leases without significant added value.
3. **Rescindment of GSA leasing delegation has added several months to leasing process.**
   In 2014, GSA rescinded the delegation of full leasing authority it had previously granted to VHA, and now requires VHA to gain GSA approval for all leases, regardless of size. While it is beyond the scope of this assessment to evaluate the justification for this step, it is clear that this additional approval is increasing the time it takes to process a lease. Initial estimates were that it would add two to four months to the approvals process, but the impact of the policy change was compounded because the lease approval process was disrupted for months, creating a significant backlog. Furthermore GSA initially rejected the large majority of lease packages submitted for review due to their perceived incompleteness, adding even more time to the process.

   In response to these changes, the Office of Asset Enterprise Management (OAEM) has created a new process to improve the quality of lease packages submitted into GREX (the system by which the GSA receives documents from other agencies), as well as track how long it takes for leases to progress throughout the process. Given the historical absence of data and insight into how long the leasing process takes, this is a positive step. Furthermore, there is a weekly coordinating call between the various entities (GSA, Construction and Facilities Management Real Property Services, VHA Center for Leasing Excellence (CLE), VHA Office of Capital Asset Management and Engineering Support (OCAMES), and the VA General Counsel) that is credited with improving the process and

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

will hopefully increase GSA's package approval rate and decrease the time required for approvals.

An additional challenge is that for leases with annual unserviced rent greater than $300,000, approval is also required by the Secretary. OCAMES is responsible for this process and acts as the liaison between VHA facilities / VISNs and the other departments. Interviewees suggested this approval can take an additional three to five months, and were not fully clear as to the content and purpose of this review step – particularly given GSA's recently rescinded delegation of authority. Near the conclusion of this assessment, an internal directive "Request for Approval to Rescind and Replace the Existing Secretarial Approval Requirement for Mid-Level Lease Procurement (VAIQ 7511099)" was issued which removed the SECVA approval requirement for lease packages under $1 million which could help to improve lease timing.

4. **Multiple handoffs and limited training hinder lease project development.**
   This phase is driven by the Contracting Officer (whether in an NCO or Real Property Services) and includes sub-phases of solicitation development, procurement, and design. There are a number of challenges with this stage of the leasing process:
   - **Interactions between the station and contracting.** Both station staff and Network Contract Office staff indicated that their interactions often led to significant delays in lease approvals. Station staff indicated a lack of clarity as to the specific requirements of the contracting process, and a lack of visibility into what was driving the time taken by contracting to complete lease procurement processes. Contract Officers indicated frequently attributed delays to incomplete lease packages or non-responsiveness on the part of some local station functions (for example, finance, engineering, primary care) in gathering information critical to progressing a lease. However, there were some facilities for which these interactions were not a challenge. These exceptions – where interviewees felt the interaction between the station and contracting was effective – were often in situations where there was early involvement of Contract Officers, facility management staff, accounting, and other affected stakeholders and ongoing interaction in a cross-functional team throughout the lifetime of a lease.
   - **Lack of pre-qualified brokers.** The solicitation process is longer than peers as VHA does not always maintain a list of prequalified brokers or developers to help secure leases. Using pre-qualified lease brokers is an effective way for many organizations with large facilities footprints to accelerate their leasing processes while ensuring similar or better outcomes in terms of cost and contract terms. VHA's approach to typically delivering these functions in-house may forfeit the benefits of these accelerated timeframes.
   - **Design requirements.** In the past, most build-to-suit clinics have been designed based on unique requirements for each new clinic, significantly increasing the time and costs involved in the design phase. Further, stations often adapt their design requirements after a lease is approved. Real Property Services has recently developed a limited set of design templates for leased facilities. These three templates meet different profiles of needs for outpatient facilities and should reduce

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

the time to complete a lease solicitation, as well as the time and cost required to build and activate the leased facility. Given the recent change, there is insufficient information on the results of this effort, but this, and related efforts, may operate to simplify the pre-solicitation phase of build-to-suit leases.

- **External involvement.** There are also real or perceived external constraints that affect the timeline with which leases are processed. These constraints affect the leasing process in two ways. First, they influence the time it takes to select a site for leased facilities. Second, they may influence the final location selected for a leased facility. Pressure from various stakeholders to locate a new leased facility in a particular geography may extend the process of market research while multiple locations are considered that would not be considered without such external involvement. While these external pressures certainly do not account for the entirety - or even the majority - of delays in the leasing process, interviewees unanimously indicated that they did indeed affect the time taken in the initial market research and related early stages of the leasing process. In addition, documents shared with the assessors during the course of this assessment explicitly indicated higher levels of approvals required for leases that were relocated from one Congressional district to another. These increased approval requirements by definition extend the time required to process a lease and increase the likelihood that leased facilities stay within Congressional districts. For example some internal guidelines required additional levels of notification and approval by a Deputy Undersecretary if VHA proposed to move a lease across Congressional districts. This external involvement can lead to delays in providing facilities for Veteran care (VACO/VISN/VAMC Interviews, 2015).

5. **Post-design changes, construction of leasing is typically effective and straightforward.** For major leases that require construction, once the developer is selected and designs are complete, the construction process is not typically a major driver of schedule delays. It is critical to have an active CO and COR to overlook the construction process and ensure alignment with VA quality standards, however lease contracts generally incentivize the developer and future lessor to complete the project on time and within quality standards.

6. **Often problems aligning timing of activation funding to project completion.** While facility activation did not typically drive major cost or time overruns, funding for lease activation is often an issue. Staff report that it is unclear whether these funds must be provided by the VISN or the Medical Center, yet the costs can be quite significant – especially for major leases. Furthermore, activation funds must be used within the year specified in their appropriation – and given the uncertainty associated with lease timelines – it is difficult for VISNs and facilities to plan around when to allocate funding.

7. **Management of leases adds significant additional workload to leasing COs.** Leasing is fundamentally different from other service contracts in that it requires relatively intensive ongoing management by the CO assigned to the lease. This individual is the only person authorized to interact with the lessor, and must act as an

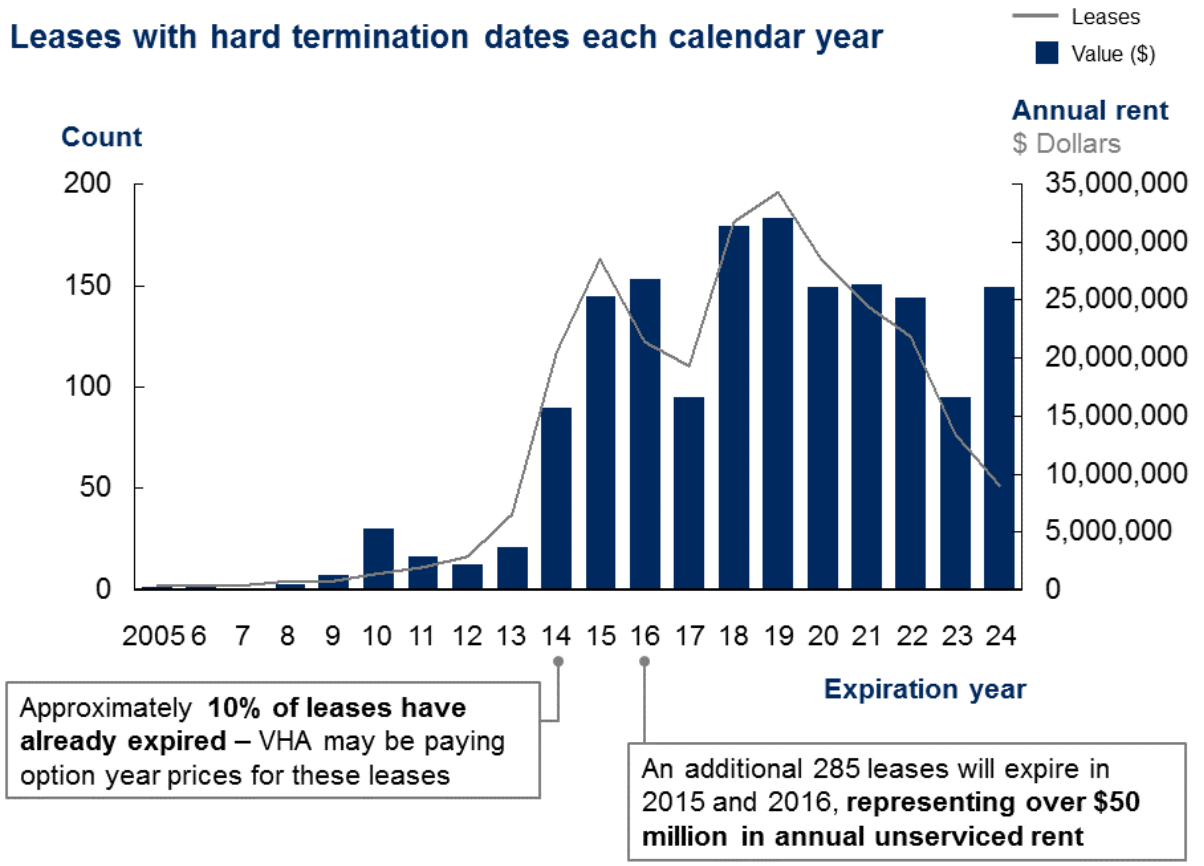
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

intermediary between the station staff who hears about facility issues from front-line staff and patients and the lessor. Given the significant demands on COs' time, it can be a challenge to balance these demands with other ongoing commitments, particularly if the CO is responsible for other lease procurements underway. Stations described numerous examples of lessors violating their contract service level agreements with no recourse because of a lack of willingness or ability on the part of COs to pursue enforcement action.

8. **The lease replacement process is unreliable, causing extensions of leases beyond the life of the contract and potentially increasing costs.**
   The lease replacement process is unreliable, causing extensions of leases beyond the life of the contract and increasing costs. Given the fragmented accountability for leases, there is often insufficient tracking of leases requiring renewal or replacement. This can lead to lapsed lease contracts, or leases that require urgent processing to ensure the leased facility can continue to be occupied. When a lease expires, VHA typically can continue to occupy the space but, beyond option years, must renegotiate the lease terms for this extension. Given the short timeframes involved, VHA is often in a weak negotiating position at this point, creating risk of rental rate escalation. According to the Capital Asset Inventory database, 10 percent of VHA leases have already expired and an additional 10 percent of the portfolio representing $50 million in annual rent will expire by the end of 2016. While there were insufficient data to quantify the costs of late renewal of lease contracts, this puts likely VHA in a position of vulnerability vis-à-vis lease renewals.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 8-11. Lease Termination Dates



Source: Capital Asset Inventory database

82

8.2.3 People

8.2.3.1 There Is a Lack of Single-Point Accountability for Specific Leases and Leasing Programs

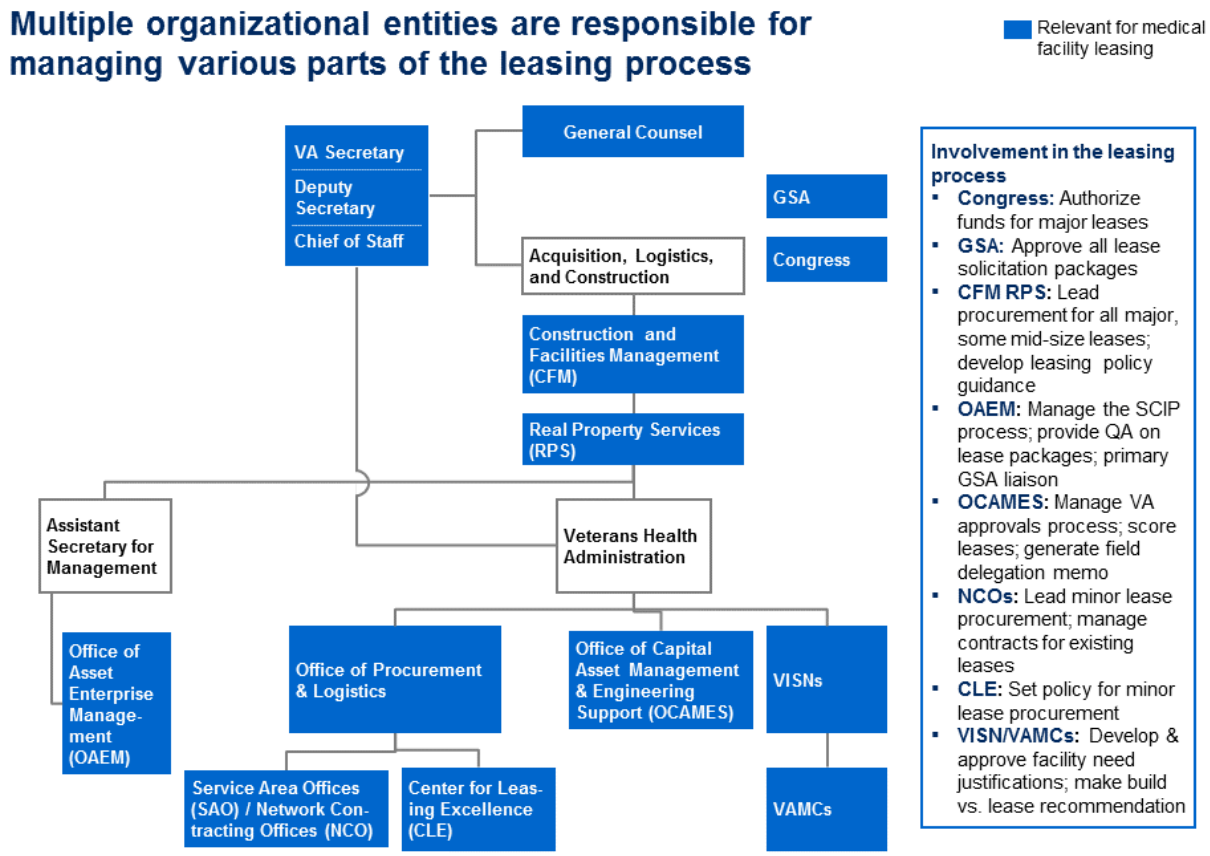
Figure 8-12 shows a number of entities involved in the leasing process. While most entities are generally clear about their role, there is no end-to-end accountability for a given lease, and it is often unclear who is ultimately accountable for a lease at any point in time. For example, no one individual or entity is held accountable for the performance of a lessor throughout the lifetime of a lease. As described above, we have observed multiple instances of lessors underperforming on important tasks such as maintenance without any recourse. This is in part due to a gap in accountability between the local station's obligation to ensure a well-maintained facility and the CO's exclusive ability to enforce the contract with the lessor.

Confusion in accountability also exists throughout the procurement process. For example, from the perspective of VAMC staff, it is often unclear during lease procurement which entity or individual should be actively seeking updates and moving the approval process along. Some VISNs have adopted effective processes, such as weekly review meetings with mandatory attendance for all critical staff from the VISN, VAMC, and NCO, or identifying a single point

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

person at the VISN responsible for all VAMC leases who is the clear point person for the NCO Contracting Officer. When adopted, these efforts result in increased accountability and visibility into the process.

Figure 8-12. Organizational Entities Responsible for Leasing



SOURCE: Staff Interviews; VA information

8.2.3.2 In Some Parts of the Organization Responsible for Procuring and Managing Leases, There Are Insufficient Specialized Leasing Capabilities

Lease procurement and contracting processes are more complicated than many other forms of procurement, require a specialized skill set, and require ongoing contract management and interactions with the lessor, even after the contract is awarded. However, most COs handling leases do not have a specific background in leases and receive minimal specialized training, nor do they consistently avail themselves of support via the use of specialized real estate brokers. In addition, they reportedly have a very high workload given the burden to actively procure new and renew leases while fulfilling a property management role for existing leases. This, combined with the fact that they are typically allocated a number of other general procurement tasks in addition to their leasing portfolio, has led multiple contracting officers we interviewed to describe conditions of low morale and a desire amongst many contracting officers to focus

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

on non-leasing related contracting. This lack of deep leasing capabilities likely results in unfavorable negotiations, contract terms, and contract enforcement.

8.2.3.3 Capacity of Contracting Staff Is Inconsistent and Unplanned

VHA has limited central visibility into the demand and capacity balance across Service Area Offices. While some NCOs report adequate staffing to meet leasing procurement and contracting needs, others report extreme constraints (VACO/NCO Interviews, 2015). Many interviewees with contracting experience from other agencies reported that VHA COs responsible for leasing (LCO) had multiple times the workload of their counterparts. While VA did provide data about LCO workloads (for example, the number of lease contracts being actively procured and actively managed) to the best of their ability, the data are difficult to interpret because there is variance in how network contracting offices manage leases. For example, in one NCO all leases in the system may technically be assigned to one supervisor but multiple contract specialists are doing the work to procure and manage each lease. In another NCO, leases may be assigned in the system only to the contract officer actually doing the day-to-day work. These discrepancies are reflected in the data – some lease contract officers only have one lease assigned to their name, while others have as many as 64 leases. Setting aside these data constraints, the average number of leases was just over 14 per contract officer. While it is difficult to benchmark the optimal number of leases each LCO should manage, and that target would naturally vary given the size and complexity of a given lease, interviews with experts from the GSA and with experience in other contracting organizations suggested that more than approximately 10 leases per LCO would be challenging to effectively manage.

8.2.3.4 Performance Management Processes Are Insufficiently Transparent and Rigorous

Best practice approaches to performance management create clear transparency into performance (for example, time to complete leases); engage in regular and rigorous performance dialogues; provide rewards and consequences for performance; and create opportunities for improvement. VHA's leasing program does not meet these standards (VACO/NCO Interviews, 2015). For example, COs are not measured rigorously on their delivery of advantageous lease terms and contracts within specified timelines. There is little regular review of whether the leasing program is effectively achieving objectives, and virtually no regular rhythm of conversations between supervisors and staff about staff performance. These themes are explored more broadly in Assessment L (VHA OHI, 2015; CFM OHI, 2015).

8.2.4 Systems

8.2.4.1 Fragmented Systems Cause Rework and Lead to Delays

VHA has no integrated system to manage the entire leasing process. The fragmentation of systems (Figure 8-13) creates significant rework for staff and does not provide comprehensive tracking or measurement of the leasing program and its outcomes (VACO/VISN/VAMC Interviews, 2015). For example, station staff must submit information about proposed leases as part of the SCIP system, then COs resubmit this information in slightly different formats as part

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

of the GREX system, then again to eCMS for contract management, all while updating the OAEM lease tracker on SharePoint to enable oversight into where each lease is in the procurement process. While each of these systems serves an important need, the lack of cross-system integration causes significant additional work at each stage of the leasing process. The resulting lack of availability of integrated data also prevents sophisticated lease management in areas such as balancing workload, enforcing contracts, and enabling continuous improvement in rates and lease terms.

Figure 8-13. Systems Pertaining to Leasing

Stage	Relevant information	System
1 Planning and funding	Lease justification documents	SCIP database
	VA approval documents / status	VAST
	GSA approval documents / status	GREX
	Lease status	Sharepoint tracker
2 Procurement, construction, and activation	Request for solicitation	No formal system
	Market research and bid documents	eCMS
	Lease contract	eCMS
	Construction status	Trirega
3 Managing and renewing	Financial terms of the lease	eCMS
	Financial obligations and payment information	FMS
	Key lease dates	eCMS and CAI
	Facility information for federal reporting	CAI

Observations

- Information is spread out across multiple systems
- Individuals often only have access to one system, limiting oversight across the leasing process
- No single point accountability
- Diffusion of information limits ability to use systems for robust performance management

8.3 Recommendations for Consideration

Given the extensive timelines involved, VHA's leasing program is failing to deliver on its core objective of providing VHA the flexibility to rapidly adjust its facility footprint to meet Veteran needs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

8.3.1 Recommendations to Accelerate Timelines

8.3.1.1 Dramatically Reduce Approvals and Associated Timelines for Leases

- **Remove SCIP from critical path for lease approvals.** VHA could remove the requirement to wait for SCIP to proceed with a lease, reducing the time required to secure a new leased facility. Leases should still be entered into SCIP to align with other space change measures and record progress towards closing identified gaps, but the lease process should not be delayed by the SCIP process. We believe this would maintain adequate oversight while accelerating lease approvals.
- **Attempt to rationalize all approvals to the minimum possible.** The leasing program is generally receiving market rates for smaller and mid-sized facilities, but is significantly slowed down by the required approvals. Congress and VHA should reconsider the required approvals (for example, GSA, Secretary), particularly for smaller and mid-sized leases.
- **Create clear performance management and tracking around approval timelines.** For those approvals that remain, there should be consistent and transparent tracking of the approval times for each lease. This tracking should include the time from when lease was first submitted to an entity for approval to the time when that approval was given, while noting any requirements to return a proposal to its submitter because of incompleteness of the submitted package. Where delays consistently occur, remedial action should be taken.
- **Ensure clear upfront design requirements, and standardize these requirements where possible to reduce pre-solicitation delays for major leases.** Initial steps to create standard major clinic designs are commendable, and VHA should continue to work to reduce delays in the pre-solicitation phase due to having to redesign clinics, and extensive customization of designs for each new clinic. To the extent possible, these templates should be used with only minimal and modular customization. VHA should also pursue steps similar to those indicated in the design and construction section of this report to ensure final designs are agreed early, and changes to these designs follow a strict and transparent stage gate process.

8.3.1.2 Manage Stakeholder Involvement in Leasing Decisions

Interviews suggest external influences affect the time it takes to execute a lease, given the often public debates around site selection. When interviewees with knowledge of major lease timelines were asked a general question about the factors influencing delays in leases, 100 percent indicated that external involvement had contributed to these delays. They described the nature of these delays as typically due to pressure to consider additional sites to locate a new leased facility, expanding the time taken in the initial market research and related early stages of the leasing process. Documents shared with the assessors during the course of this assessment indicated higher levels of approvals required for leases that were relocated from one Congressional district to another.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

8.3.2 Recommendations to Address Lease Cost Outcomes and Overall Efficiency of the Leasing Process

8.3.2.1 Rigorously Review Design Requirements for Major Leases to Reduce Lifetime Costs

Major leases are likely above market benchmark prices largely due to the unique design requirements of VHA and the federal government more broadly. We recommend including leased facility design requirements as part of the review of VHA design requirements to evaluate opportunities for streamlining or standardizing, as recommended in the design and construction section.

Rationalize existing leasing policy and guidance, establishing clear processes and decision-rights for each category of leases. Existing policy guidance about leasing is confusing, if not contradictory, and all stakeholders involved in the leasing process would benefit from clearly delineated processes, roles, and responsibilities. VA should update guidance to reflect the GSA's current involvement and authority, with a clear description of the end-to-end process that would be followed to take the idea of a leased facility through to building activation. This should cover all steps (for example, budget authorization) and actors (for example, the multiple departments and offices within VHA, VA and GSA), and clearly explain where VISNs and VAMCs retain discretion over how to pursue lease procurement. Lease categories should be simplified, with clear rules for what qualifies as a major or minor lease and resolution around who handles complex minor leases – Real Property Services or the Network Contracting Offices.

8.3.2.2 Improve the Capabilities of Leasing Contract Officers

Leasing should be established as a separate service line within the NCOs, to reflect the degree of specialization required to complete the task. VHA should make a concerted effort to recruit experienced leasing contract specialists, while continuing efforts to develop and roll-out a robust training program to ensure COs who lack experience or expertise can develop a sufficient skillset to complete their responsibilities. LCOs should have access to a centralized support team available to provide assistance with difficult or complicated lease procurement. Furthermore, NCOs should be enabled to procure external brokers to help with more challenging procurements.

8.3.2.3 Consolidate Responsibility for Reviewing Lease Packages and Liaising With all Approvers Into a Single Office

Currently OAEM, OCAMES, and the CLE are all involved in various stages of the review and approvals process. This expertise should be consolidated into a single office, which would be made responsible for active oversight and management of the leased facility portfolio, proactively identifying leases that are soon to expire, identifying any issues with the leasing program, and ensuring continuous improvement.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

8.3.2.4 Explore Options to Integrate Systems to Provide an End-to-End View of the Leasing Process and Associated Times

The recently launched OAEM lease tracker attempts to create an integrated view of leases, which may help to increase visibility and enhance lease management. Further system integration should be considered to reduce the additional workload caused by fragmentation, and facilitate improved reporting, performance management, and oversight by a central body.

8.3.2.5 Ensure Contracting and Functions at the Station Work Together From the Outset to Procure New or Renew Existing Leases

It is critical that stations and contracting staff work closely together throughout the lifecycle of a lease. These teams should include all relevant stakeholders within the facility, contracting, VISN, and central support at VACO. This integrated project team should be involved from the beginning of a lease request through to facility activation and operation.

Identify a single point of contact at the VISN and VAMC levels that would be ultimately responsible for all leasing activities associated with that station. Stations that most effectively handled their leasing program had a clear point of accountability that oversaw leases. This individual should be able to coordinate across end users (for example, Primary Care), finance, station staff, and other functions to ensure successful leases. A single point of accountability also enables the accumulation of expertise and allows that individual to share the benefit of experience across multiple leases.

8.3.2.6 Actively Monitor Upcoming Lease Expirations

This is critical to ensure that dollars are being spent in the most cost-effective manner (by avoiding escalating rents or hastily renegotiated short-term lease extensions) and to avoid the urgent review processes that can often not be accommodated by the existing process. Stations should use existing systems to actively track and monitor leases, and ensure that proposals for renewals or new leases are submitted in sufficient time to prevent gaps in facility availability or increased costs as leases expire.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

9 Facility Management Assessment

9.1 Preface

Section 201 calls for a review of the Department's process for identifying and designing maintenance projects at facilities. While Non-Recurring Maintenance (NRM) activities are prioritized and funded through the SCIP process with VACO and VISN-level input and oversight, day-to-day facility management work is conducted by station-level Engineering and Facilities Management Services (FMS) staff. Given that an effective facility management program is essential to preserving the value of VHA's infrastructure and providing quality facilities for Veterans, we have broadened the scope of our assessment to include an assessment of the VHA medical center facility management effort. Specifically, we have explored the following questions vis-à-vis VA's facility management:

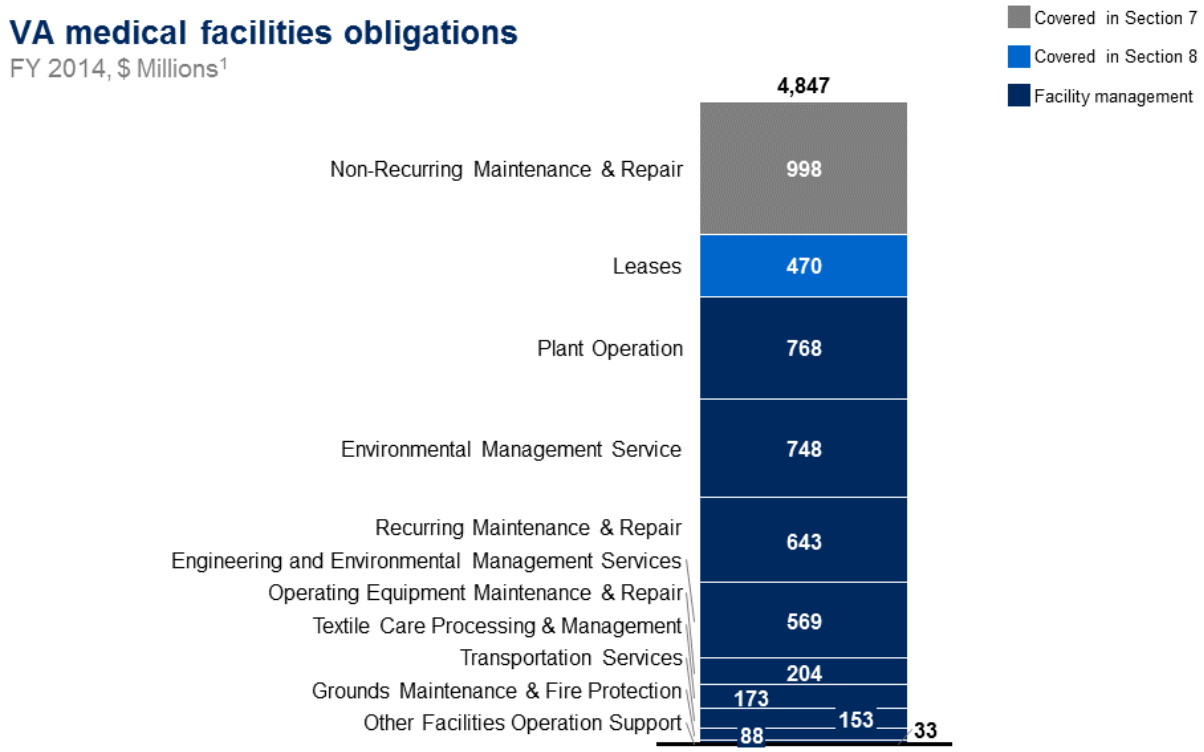
- **Outcomes:** Does VHA optimize facility management costs to ensure each dollar is spent in the most high-impact way possible? Are facilities management activities ensuring patients and staff are experiencing high-quality facilities?
- **Process:** Is there substantial variation in how different stations conduct their facilities management activities? Is there an opportunity to improve the process to complete, or prioritization of, facility management activities?
- **People:** Do facilities have the right capabilities to fulfill the necessary duties? Does VHA rely appropriately on external vendors to conduct facility management?
- **Systems:** What systems are in place to support the delivery of a strong facilities management program? Are they used consistently and effectively across VHA medical centers?

9.1.1 Overview of VHA's Facility Management Activities

In FY 2014, VA's medical facilities budget was approximately $4.9 billion. These funds are used to address a wide range of facility needs, including recurring maintenance and repair, non-recurring maintenance, plant operation, engineering and environmental management services, and service contracts for activities that are contracted out to external providers. While the design and construction section of this assessment addresses non-recurring maintenance, this section provides a high-level assessment of the remainder of these facility management activities. Responsibility for facility management is primarily with local station leadership, with minimal control at the VISN level.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-1. Medical Facilities Obligations



1 These figures represent obligations, which differ from the Figures for appropriations. The figures in this chart represent how VHA facilities have actually spent appropriated funds. As such, the $4.9 billion total here aligns with the total $4.9B enacted appropriations indicated in Section 1 of this assessment, while the totals for each subcategory of spending may not align with the appropriations, and VHA can shift funds from one subcategory to another, within the medical facilities appropriations

9.2 Findings

9.2.1 Outcomes

9.2.1.1 While Station Staff Are Attentive and Committed to Maintaining Facilities at Sufficient Quality Levels, They Are Often Challenged by Underlying Facility Issues

There are two standardized reports that assess the condition of VHA medical centers:

Facilities Condition Assessment reports are conducted by an independent entity for each medical facility every three years. These evaluate the condition of core infrastructure and primarily focus on issues that could be addressed by non-recurring maintenance activities, as opposed to reporting on the quality of the ongoing routine operation of a facility.

These reports – along with an array of other ad hoc and regular assessments of facility cleanliness and condition – provide an independent assessment of the condition of VHA facilities, which we did not attempt to replicate. Through our visits to facilities and interviews with multiple staff across clinical areas and a number of medical centers, we found, with very

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

few exceptions, VA medical center staff who were very committed and attentive, and endeavored to maintain facilities to high standards. We observed staff who responded in a timely manner to specific incidents (for example, spills in the hallway or elevator) and who were committed to maintaining excellent facilities for Veterans. Only rarely did interviewees (administrative and medical staff from various departments) indicate a lack of satisfaction with facility management staff.

However, we observed significant barriers that facility management staff faced in achieving their objectives of maintaining facilities to high quality. While some of these barriers involved immediate resource constraints (for example, budgets for staffing and conducting maintenance and janitorial tasks), the root cause of many of these issues is the general age and underlying condition of VHA facilities, described in depth in Sections 5.2.1.3 and 5.2.1.4. In cases where concerns about facility conditions arose, these were typically related to underlying structural issues with the facility that could not effectively be addressed by local facility management staff within allocated budgets and responsibilities. For example, one facility experienced difficulties maintaining its floors and hallways to their own standards. This was largely due to the facility being spread out across numerous buildings over a large campus, some of which were almost a hundred years old. Environmental services staff at this facility struggled to maintain cleanliness given the number of independent entryways coming out of parking lots and outside paths that were often covered with gravel and salt during the winter months. Another facility struggled to maintain a supply of hot water due to the age of the mechanical and plumbing systems. These underlying conditions and constraints in capital investments are a driving factor in day-to-day condition of facilities.

9.2.1.2 Most Stations Adhere to Routine Equipment Maintenance Schedules, but Are Constrained in Conducting More Resource-Intensive Preventative Maintenance

Most stations adhere to manufacturer or VHA-determined standards of routine equipment maintenance (for example, regular cleaning of air filters, maintenance of boiler systems), consistent with standard practice. In addition, recent VHA efforts to systematize facility reviews through a technology-supported, weekly Environment of Care (EOC) walk-around are an excellent effort to proactively address otherwise unnoticed preventative maintenance needs and maintain high-quality facilities. These EOC walk-arounds surface more superficial conditions of the facility that may not be systematically covered by either the high-level condition assessments or routine maintenance and environmental services work. While some VAMCs indicated challenges with the technology-enabled EOC system (for example, the tablet computers used for EOCs sometimes didn't work), this program is a positive step and should be continued.

However, interviewees reported having insufficient resources to stay ahead of non-critical preventive maintenance schedules. For example, the majority of stations visited indicated that it was difficult to secure resources to invest in improvements to pipes, utility plants, or other physical infrastructure and that is was challenging to allocate staff time to complete this type of work. This insufficient investment in preventative maintenance can lead to much more

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

expensive corrective maintenance issues that pose a risk of affecting facility quality and Veteran access. The Capital Planning section of this report addresses some of the funding constraints that limit preventative maintenance capital investments, and discusses how these investments should be reviewed and prioritized.

9.2.1.3 There Is Little Incentive for Stations to Reduce Facility Management Costs

We have examined facility management costs aggregated at the national level, as well as across specific facilities. These costs include plant operation, environmental management, recurring maintenance and repair, engineering, operating equipment maintenance and repair, grounds maintenance, and fire protection. For the purpose of these analyses, we have excluded non-recurring maintenance (addressed in the design and construction section) and leases (addressed in the leasing section).

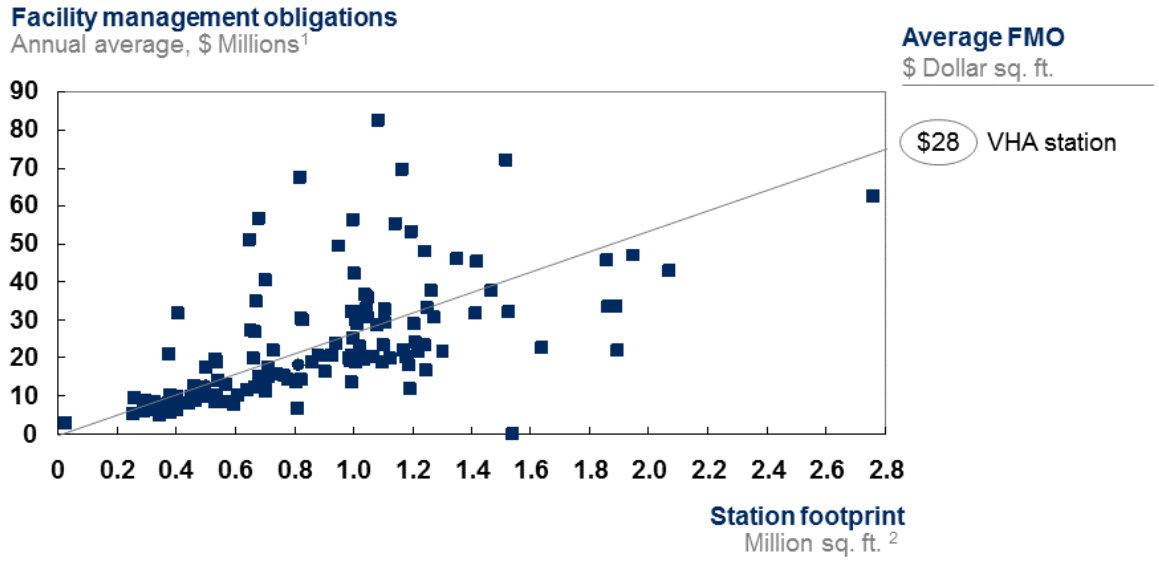
Facility management spending decisions are largely made at the VAMC level. The VISN allocates operating budgets to each medical center and station leadership determines what amount will be made available to facility management staff to conduct necessary activities. While stations were typically very aware of budgetary limitations and attempted to operate as effectively as possible within cost constraints, we observed opportunities to improve cost management. Because operating budgets are allocated on an annual basis with the general expectation they will increase three to five percent year-over-year, there is little incentive to pursue innovative methods of reducing costs. This is especially true because the current funding mechanisms for NRM and minor projects require all significant repair projects (larger than $25,000) be centrally reviewed and funded through either the VACO (for minor projects) or VISN (for NRM) level. If stations achieve significant maintenance savings, those savings could not be easily redirected to facility projects.

9.2.1.4 Space-Adjusted Facility Management Costs Vary Widely Across VHA

To better understand how facility management spend varies across VHA, we have analyzed each station's average annual spending on a few key cost categories. Figure 9-2 plots facilities' annual facility maintenance obligations per owned square footage at the facility. As seen in the chart, while most facilities cluster around the average of just under $30 per owned square foot, a number of facilities have both much higher and much lower costs than average. In some of these cases this additional spend may be reasonable given particular demands of a facility. For example, plant operations costs may be higher for facilities with in-house water treatment needs. However we believe there are opportunities to learn from those facilities that achieve below average spend and improve the facilities with above average spend.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-2. VHA Stations Have a High Level of Facility Maintenance Obligations Per Square Foot of Space



1 3 year average of annual Facility Management obligations (FY12 - FY14), including the following categories of Facility Management spending: Plant Operation, Environmental Management Services, Recurring Maintenance and Repair, Engineering and Environmental Management, Operating Equipment Maintenance and Repair, and Grounds Maintenance and Fire Protection; excludes Non-Recurring Maintenance, Leases, Textile Care Processing and Management, Transportation Services, and Other Facilities Operation Support. Data was provided by VA Resource Management Office and was available for 128 out of 193 stations
2 Includes only owned square feet

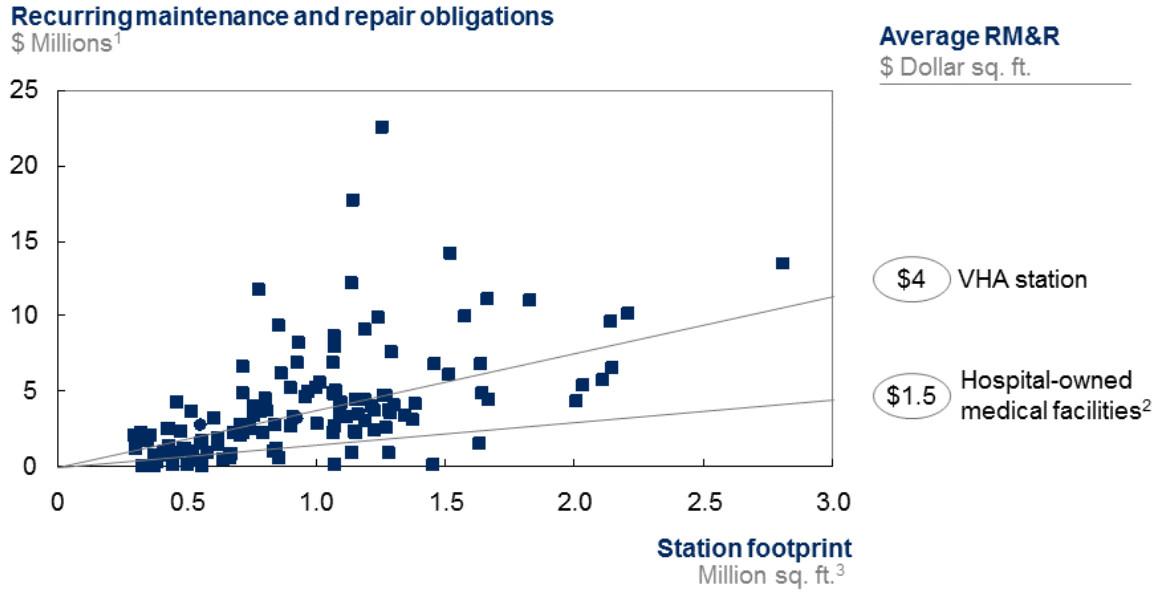
SOURCE: Data from VA Resource Management Office; 2014 FRPP Submission; 2013 BOMA survey

9.2.1.5 High-Level Benchmarking Indicates That VHA Pays Significantly More for Repair and Maintenance Than Other Medical Facilities

To further evaluate a specific component of facility maintenance spend, Figure 9-3 benchmarks stations' recurring maintenance and repair (RM&R) obligations (as defined by VA Resource Management Office, averaging annual spending from FY 2012-14 and considering facility square footage) to identify variance in costs across stations and relative to benchmarks. Across the 128 VHA stations with RM&R spend data available, the average annual spend on RM&R was $4.03 per square foot. This contrasts to benchmarks from the 2013 Building Owners and Managers Association survey, which reports that in hospitals and medical buildings, the average level of spending on routine maintenance was approximately $1.50 per square foot. Given the uniqueness and age of VHA facilities and operations, we caution against assuming that VHA should target the $1.50 per square foot without reflecting additional costs for these factors. These increased costs above benchmark are likely due to a combination of factors, including the facility condition due to age or lack of renewal capital investment (the link between facility condition and operating costs is described above in the section on total cost of ownership). However there are also operational inefficiencies that increase costs of VHA facilities management. These are described throughout the subsequent sections on processes, people, and systems challenges.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-3. Benchmarking Results Suggest VHA Medical Centers Can Significantly Reduce Spending on Recurring Maintenance and Repair



1 3 year average of annual recurring maintenance and repair (RM&R) spend (FY12 - FY14), using VHA's definition of RM&R as reported in the President's Budget Request. Data was provided by VA Resource Management Office and was available for 128 out of 193 stations
2 Benchmark from 2013 Building Owners and Managers Association survey, measuring average repair and maintenance costs per square foot. Two samples were analyzed - medical facilities with at least 75% of space dedicated to utilization by doctors (N = 810, with average spend of $1.53 / sq. ft.) and hospital-owned facilities (N = 98, average spend $1.39 / sq. ft.)
3 Includes both leased and owned square feet

SOURCE: Data from VA Resource Management Office; 2014 FRPP Submission; 2013 BOMA Survey

9.2.1.6 VHA Fails to Fully Realize the Benefit of Energy Efficiency Investments and Practices That Have Positive Returns

Many stations have pursued innovative approaches to increase energy efficiency and thus reduce costs. For example, one station sold the scrap materials generated by a building closure to generate funds to purchase a fleet of electric vehicles, substantially reducing transportation costs on their large medical campus. The same station identified an alternate on-site generator technology, avoiding a large upcoming repair cost and generating significant annual savings. A different station used energy savings performance contracts (ESPCs) to fund energy efficiency installations, while a VISN was able to capture a 30-35 percent reduction in energy costs by renegotiating its energy supply contracts. Yet another station used NRM funds to install a fiber optic network that enabled advanced monitoring of energy utilization across the medical campus, resulting in significant energy savings. Each of these examples demonstrates how innovative thinking can generate substantial savings in station operating budgets (VAMC/VISN interviews, 2015).

Such innovative approaches, however, are not applied to their full potential. Demand reduction methods (for example, encouraging users to turn off lights and unplug computers) are not applied systematically; efficiency opportunities are largely not identified or pursued; and regulations often obstruct facilities' efforts. The first station described above spent months attempting to change station and procurement standards for generators before they were

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

allowed to pursue this successful cost-reduction effort. Alternatively, high profile and high cost projects such as solar panels have been incorporated on aging structures which may not justify that level of investment. Because of the ways in which funds are allocated, projects are often not evaluated based on their long-term savings potential, but based on upfront costs, compromising VHA's ability to reduce costs over the long term. Best practices are also not effectively shared across facilities, reducing the adoption of innovative approaches to cost reduction. Finally, facility management departments are only indirectly incentivized to pursue these solutions because the savings in operating costs accrue to the general operating budget rather than to their specific departments, and future appropriations may not give credit for proactively achieving these savings.

9.2.2 Process

Delivering an effective facilities management program requires having well-functioning processes in place to achieve the following:

- Ensure needs for corrective maintenance are quickly identified, reported, prioritized, and resolved
- Proactively complete preventive maintenance work
- Procure necessary materials and service contracts in a timely and cost-effective manner
- Correctly anticipate budgetary requirements to complete facilities management tasks
- Focus investments in ways that take into account long-term costs and benefits
- Delivery on clearly defined service level agreements between the facility management department and end customers (for example, medical departments)

Given the autonomy granted to individual facilities, we observed a wide range of approaches facility management teams have employed to fulfill these functions, with varying degrees of success. While each observation will not apply to all facilities within VHA, we believe they represent systematic patterns within VHA's facilities management program.

9.2.2.1 Total Cost of Ownership Is not Calculated or Integrated Into Capital Planning Decisions

There is a tradeoff between investing in improving the condition and technology of facilities and the maintenance costs of those facilities (Figure 9-4). Best practice organizations integrate a total cost of ownership view into their planning. This means understanding not just the initial costs of constructing or installing a particular facility or piece of equipment, but the lifetime costs of operation, maintenance, and disposal or replacement. They then dynamically adjust operating models and costs as facility conditions change. However there are a number of areas in which VA does not effectively manage total cost of ownership:

- VA does not effectively calculate the total cost of ownership implications of planning decisions – either when adding new facility space that increases operating costs, or when upgrading equipment or existing space that may reduce operational costs (SCIP Criteria, 2015; VACO/VISN Interviews, 2015). As such, it cannot make decisions that minimize total

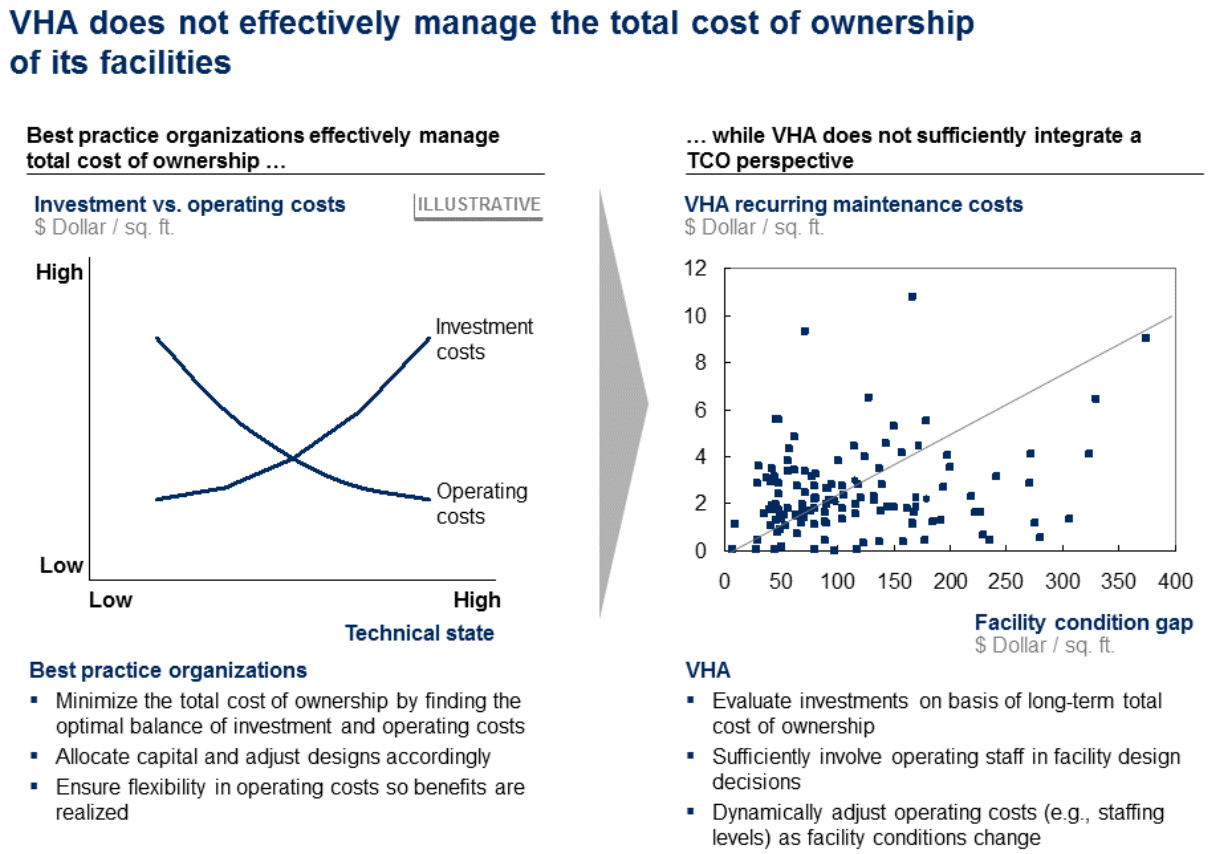
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

cost of ownership of facilities. Figure 9-4 shows the results of a regression analysis, demonstrating a clear positive effect of a larger facility condition gap (representative of facilities in need of significant repair) on the operating costs of the facility. VA does not take into account this effect when making capital allocations.

- Designs of new facilities or modifications to existing facilities only rarely take into account the implications on the long-term operating costs of these facilities. Small design choices that are neutral vis-à-vis upfront costs or quality of care can make a substantial difference in how expensive a facility is to operate. For example, small changes to exterior surfaces can reduce long-term cleaning costs; minor modifications to elevators can have a dramatic impact on the future costs to maintain them; and materials choices can affect the lifetime costs associated with cleaning and recurring maintenance. During the current design process, there is a lack of involvement of the staff that have the most detailed understanding of the implications of facility design on operating costs. Even when such staff are involved in the design, the design process often does not systematically consider lifetime operating costs.
- Finally, even when facility conditions or designs are improved, VA often does not reduce operating costs accordingly. For example, if a facility receives a large investment in its utilities equipment, it should likely be able to increase efficiency of utilities staff. Without more active management of operating costs based on facility conditions, the benefits of facility upgrades are not being realized.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-4. Trade-offs in Facility Investments



9.2.2.2 There Is Significant Inconsistency in Stations' Approaches to Resolving Corrective Maintenance Needs

Several stations interviewed consistently used an online system to report and assign corrective maintenance needs. In other stations, staff used more informal approaches to monitor submitted requests (for example, a request clipboard hanging in different units) and had no pre-agreed system to triage and prioritize requests, no standards for completion time, and no ability to systematically review and address outstanding requests (AIMS/MERS, 2015). In such facilities, interviewees reported that medical staff would often approach station management to report corrective maintenance needs in an informal capacity (VAMC Interviews, 2015). While they reported that their issues were typically resolved, this approach makes it much more difficult to deploy staff resources efficiently based on central prioritization of work, and then monitor completion of tasks.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

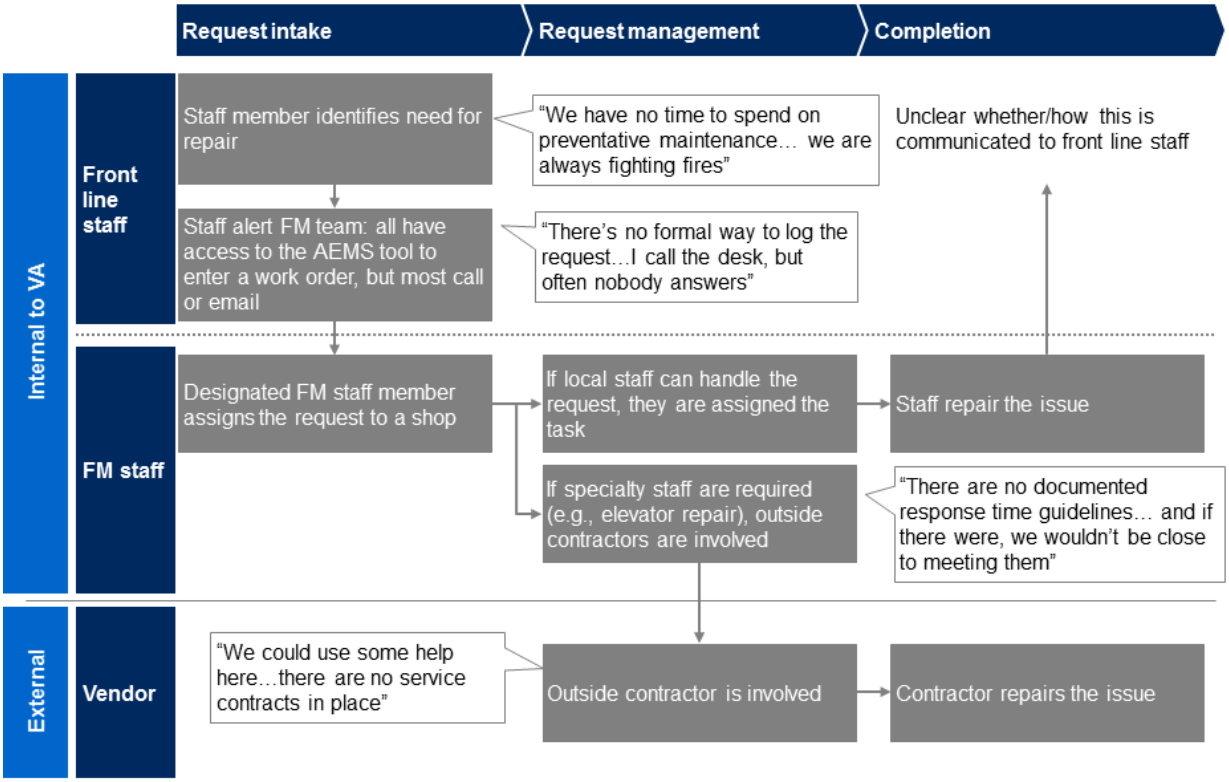
9.2.2.3 There Is Wide Variation in the Processes Medical Centers Use to Track and Respond to Corrective Maintenance Needs, With a Lack of Defined Service Levels

Among the medical centers we observed, top performing stations utilized systems that allowed VAMC staff to report corrective maintenance needs, allocated tasks to individual shops to complete, and institutionalized performance management systems to ensure tasks were completed in a timely manner. This was typically done through a combination of a work-order submission system (VISTA – Veterans Health Information Systems and Technology Architecture) and a work order processing desk that medical staff could call with urgent requests. Each service had a designated staff member to enter requests (for example, reporting a burned out light bulb) into VISTA. Facility management clerks monitored these requests and deployed staff according to a pre-defined schema to prioritize needs, instituting guidelines for time to complete each task and using daily meetings to review and address outstanding needs. In such high-performing facilities, non-facility management staff typically knew how to submit a request and had confidence that submitted issues would be addressed.

In other facilities, processes were inconsistently adhered to and there were no processes in place to monitor progress against outstanding needs or assess time to completion. In addition, few facilities had clearly communicated service levels for particular types of requests, making it difficult for FMS staff to prioritize requests or for other staff in the medical center to have clear expectations as to how quickly problems would be remedied. Figure 9-5 illustrates the typical process for handling a corrective maintenance request at these facilities, with quotes from interviewees that illustrate challenges associated with the process.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-5. Corrective Maintenance Process



1 This process reflects owned building operations. For leased facilities, facility management staff typically rely on the lessor for a large number of minor maintenance issues, and directly handle more significant maintenance issues that are not covered by the contract with the lessor

9.2.2.4 Interactions Between the Stations and Contracting Are Viewed as a Source of Delays

While facility staff with appropriate authorizations can use a government purchase card for micro-purchases below given thresholds ($3,000 for supplies, $2,500 for services), this practice is discouraged, and they are required to work with the contracting organization to procure any items exceeding that limit in an effort to increase cost efficiency in purchasing. While the contracting function was historically embedded in the medical center organizational structure, it has been centralized under the Office of Procurement and Logistics. In interviews with staff at the facilities and in the contracting organizations, it became apparent that while these organizations are working together well in some regions, there are significant challenges in the interactions between facilities and the contracting organization. We elaborate on the following observations to illustrate the types of frustrations voiced by each organization.

Station staff expressed many concerns regarding their interactions with COs in the Procurement and Logistics organization. They cited significant delays in processing contracts; lack of transparency of contracts (for example, many stations noted they had a hard time accessing actual copies of lease or service contracts); an unwillingness of COs to enforce contract remedies (for example, terminating a contract for default, pursuing compensation for poor

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

maintenance of a leased facility); conflicts between the interests of the contracting organization and those of the facility (for example, reducing contracting workload by consolidating providers versus preserving flexibility in leasing or facility management); lack of deadlines and penalties for late completion in contracts; repeated selection of under qualified contractors or contractors with a history of underperformance or non-completion because they offer the lowest price (for example, a contractor who had three projects in default at one facility was selected to do a fourth); lack of framework agreements allowing rapid processing of orders; and restrictions on who to contract with (for example, service disabled Veteran-owned small businesses (SDVOSBs) as per VAR and FAR).

Contract Officers also expressed a number of concerns. These included chronic understaffing; an inability to retain staff; lack of effective training for COs, particularly in more specialized fields such as leasing; delays and unreliable completion of materials required for the contracting process; and burdensome review processes that do not add to contract quality or value. They also point out that often CORs at the facilities do not consider this a core part of their job description, and are not evaluated on the basis of their performance as a COR.

Staff explained that these challenges had material implications on the effectiveness of facility-related tasks. These included substantial delays in time to complete lease procurement or construction projects; increased costs; loss of appropriated funds; poor quality facilities; difficulties in finding qualified contractors in future; and disruptions or risks to Veteran care. Often, staff feel forced to use the purchase card beyond its intended use (for example, by splitting a large purchase into multiple small purchases to fit within the purchase card threshold), simply to ensure that critical facility needs (for example, a door used to secure a mental health area of a hospital, a repair to an exposed piece of sharp, rusty metal) are met without the significant delays caused by the contracting process.

While the interactions between contracting and the local facility were often considered challenging, there were notable exceptions. These exceptions – where interviewees felt the interaction between the station and contracting was effective – often were in situations where there was early involvement of COs and facility management staff. Some medical centers have created a special Contracting Liaison role specifically designed to improve the quality of purchase order packages and improve communication between facility management staff and the contracting office. Individuals credited the creation of that role with a dramatic improvement in the contracting process. Other medical centers have regular meetings with all key stakeholders at the table, with the intent to check in on all priority and/or outstanding contracts and ensure progress is made toward timely procurement. In all cases, effective communication and a clear sense of ownership by all involved parties appears to drive increased satisfaction with the procurement outcomes.

9.2.3 People

All 25 medical centers visited as a part of this assessment maintain in-house facility management staff, typically ranging from as few as 50 people at smaller facilities up to 200 for larger medical centers. Based on interviews with facility management staff and other facility

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

staff at the 25 stations selected for site visits, and supplemented with available data, we have a number of observations:

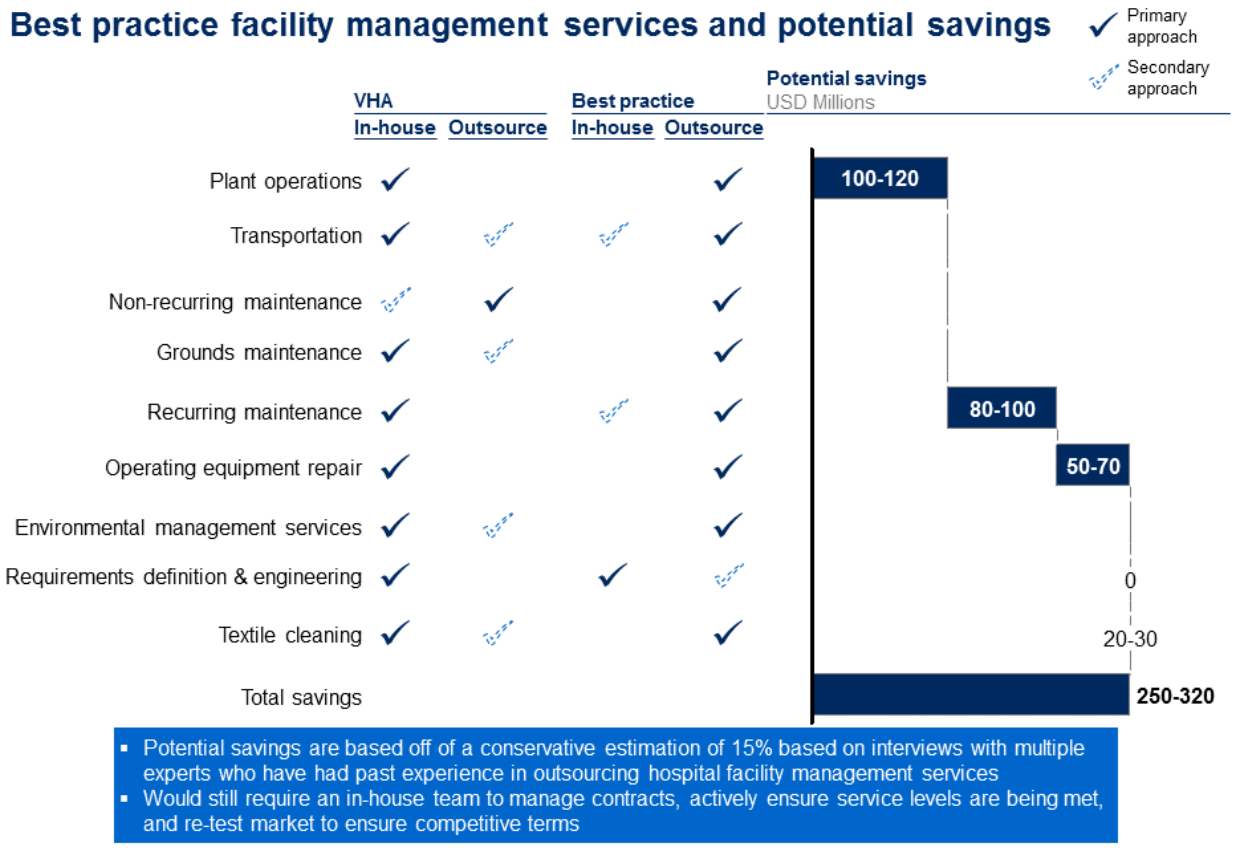
9.2.3.1 Medical Centers Conduct the Vast Majority of Facilities Management Work In-House, Increasing the Costs of Facility Management Work

Most health care organizations today outsource the majority of their facility management work. While many of the VHA facility management staff interviewed believed that it is significantly less expensive to complete facility management tasks in-house, these evaluations often did not factor in the potential to reduce total in-house staffing over time as workloads decreased (VAMC Interviews, 2015). Assessing savings from a long-term shift to outsourcing without considering labor costs generates an inappropriate assessment of the potential long-term value of outsourcing certain facility management tasks.

Facility outsourcing initiatives typically generate savings on the order of 15 percent of operating costs. These savings are enabled by the economies of scale and demand smoothing capabilities of external facility management service providers. In the below analysis (see Figure 9-6), we have calculated the value of 15 percent savings applied to those facility management categories where VHA currently deviates from the best practice approach. After applying that savings rate to the FY 2014 facility management costs, we estimate that VA could capture as much as $250-320 million per year by relying more strategically on outsourcing. However, capturing this value will require substantial changes to labor management practices, may compromise the flexibility and responsiveness sometimes afforded by in-house providers, and may be difficult to implement.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-6. Facility Management Best Practices



SOURCE: VHA Finance; Savings estimates based on interviews with real estate and hospital operators with past experience outsourcing and consolidating facility management operations; review of documented savings

9.2.3.2 Chief Engineer Recruitment and Retention Has Been a Significant Challenge in Recent Years

At the majority of facilities and VISNs, facility management staff indicated high turnover of senior engineering staff, and described the challenges of replacing those individuals with qualified staff. One interviewee described multiple examples of private sector offers to Chief Engineers, which involved substantial increases in compensation. While this continues VHA's tradition of being a training ground for both medical and non-medical staff, it poses significant challenges to VHA's ability to maintain high quality facilities. This is especially true given the high amount of responsibility assigned to the facility level with little oversight from the VISN or VACO. Assessment L describes some of the challenges with leadership retention in more detail in section 5.2.1.

9.2.3.3 There Is a Lengthy Process to Fill Open Positions, Causing Staff Vacancies in Critical Roles

It often takes significant time to fill open positions. The large majority of facilities noted challenges filling positions that were open, and for which budget had been allocated (VAMC Interviews, 2015). For example, one facility had been waiting six months to fill two critical

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

electrician roles, and had not yet been notified as to any progress by human resources. Interviewees attributed these delays to poor communication between human resources and facility management leadership, insufficiently attractive roles, and a focus on hiring Veterans which narrowed the candidate pool. Such delays exacerbate capacity constraints of facility management staff.

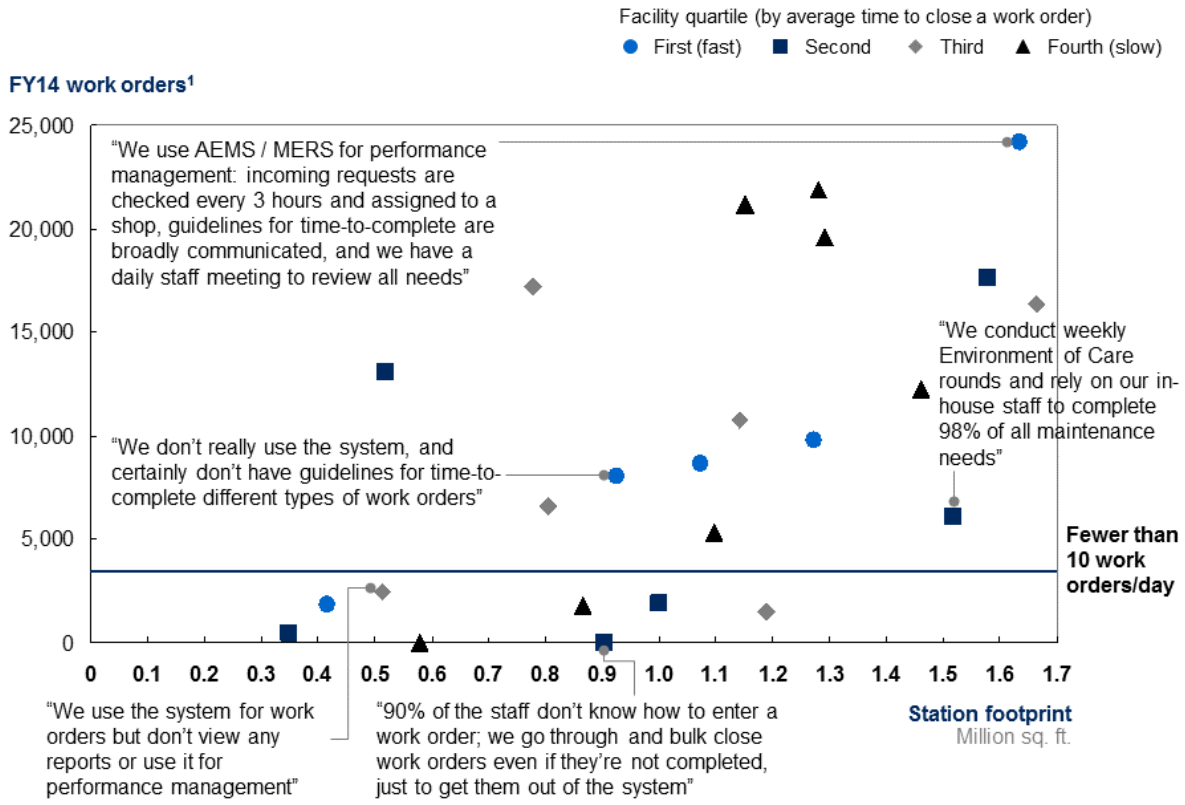
9.2.4 Systems

9.2.4.1 The VISTA / AEMS MERS Work Order Tracking System Is Rarely Used to Monitor and Improve Performance, and Many Facilities Lack Specific Performance Targets for Corrective Maintenance

While there are exceptions, many facilities do not regularly monitor the time it takes to complete different types of tasks, nor do they conduct robust analysis to evaluate their performance and reassess staffing levels. Interviewees with facility management staff indicated a lack of uniformity in the use of the existing AEMS / MERS work order tracking system to manage maintenance tasks. This wide variance in practices is reflected in analysis of ticket volumes across facilities selected for site visits (see Figure 9-7 below). If the system were used consistently across facilities, one would expect a high correlation between the size of a facility and the volume of work orders. However, while there is some correlation there are many facilities that clearly do not regularly use the system to track work orders. For example, there are a number of large facilities that have fewer than ten tracked work orders per day.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-7. Work Order Volume Against Facility Size



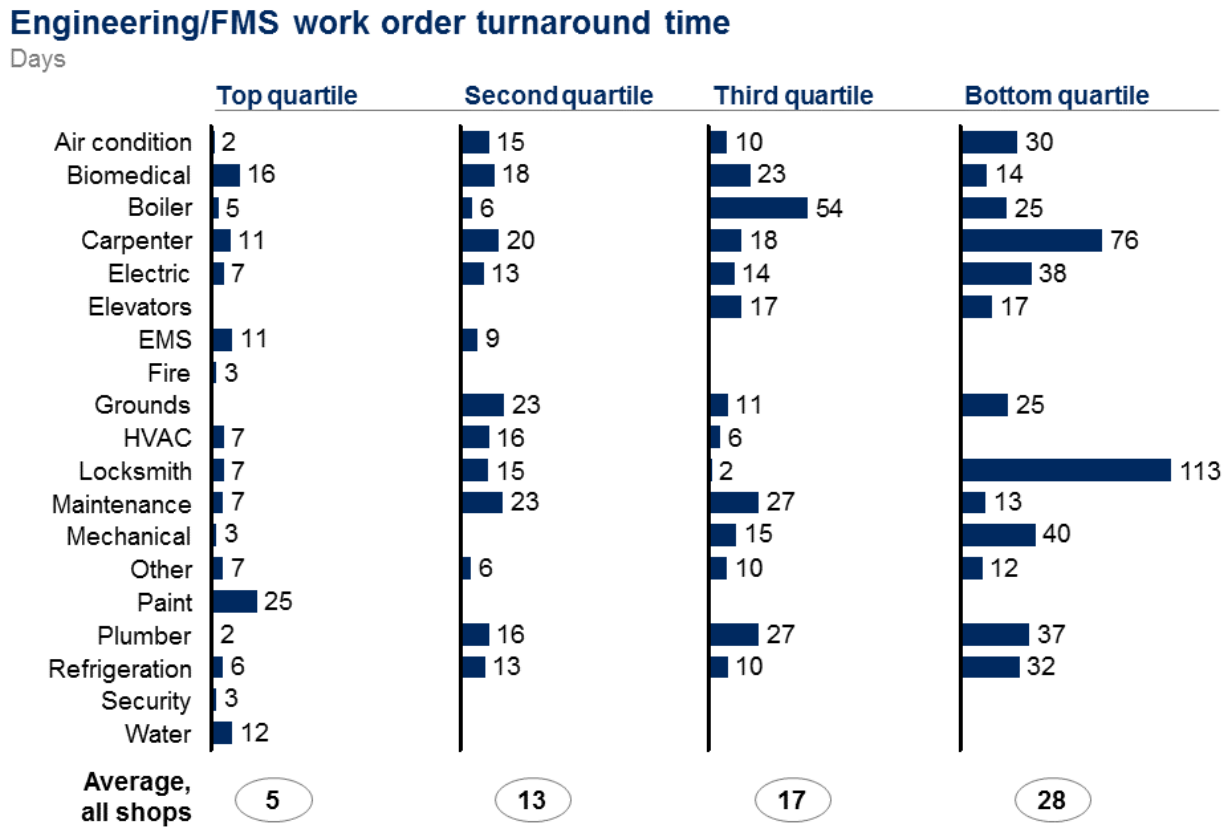
1 Includes FY2014 work orders for Building Service Equipment (that which is associated with Facility Management Services), from OP&L

Source: Office of Procurement & Logistics; 2014 FRPP Submission

Similarly, when analyzing the amount of time it takes the engineering department to close work orders there is significant variance across facilities. In the following analysis, we have classified facilities into quartiles according to the average time required to complete a work order, and then analyzed the response times to close tickets assigned to different shops. As expected there is a wide range in outcomes, from same-day turnarounds in some shops, to work order closure times of up to 113 days on tasks requiring a locksmith – yet it is not possible to determine what variance results from real differences in facility management quality and what is a result of poorly maintained electronic systems. These analytical challenges demonstrate the challenges VHA itself faces when trying to perform oversight on the facility management function across the network of facilities.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure 9-8. Work Order Completion Times



SOURCE: Office of Procurement & Logistics; AEMS/MERS data for 25 stations randomly selected for site visits

9.3 Recommendations for Consideration

9.3.1 Allow Facilities to Redirect Facility Management Savings to Discretionary Facilities Investments in Subsequent Years

Currently, individual facilities have little incentive to implement efforts to reduce facility operations costs, given the allocations to VISNs based on the VERA model, and typical allocations of operating funds to facilities based on past costs. If a facility reduces its costs, it may receive less funds the subsequent year. VHA could consider instituting a funding system that allows individual facilities to keep the majority of the cost savings achieved for investments in projects that could improve care or reduce costs over the long-term. There are a variety of ways to allocate funds while retaining this incentive, including allocating based on an annually moving average of the past 5 years, by square footage of the facility as a share of VISN level VERA funding, or through directly verifying savings numbers and ensuring the facility retains some share of these savings.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

9.3.2 Incorporate a Total Cost of Ownership View Into Design, Capital Planning, and Facility Management

There are a number of opportunities to reduce total cost of ownership. By integrating a total cost of ownership perspective into capital planning, capital investment can be prioritized not only on upfront costs, but also based on the implications on long-term costs. By evaluating the operational cost implications of design choices, VA can make cost and quality-neutral upfront design decisions that should reduce long-term operating costs. And by ensuring flexibility in facility management resourcing, these savings can be more effectively captured in reduced operating costs.

9.3.3 Consider Outsourcing More Facility Management Functions

VHA should consider relying more extensively on outsourced facility management functions, particularly in the areas of environmental services, landscaping, and transportation. While local availability of service providers, quality of service providers, and the relative costs of such providers versus an in-house approach should determine whether to outsource, VHA may be able to obtain significant value by consolidating service contracts across facilities – ideally at a national level to unlock the greatest savings, but the regional level offers potential for savings as well. When evaluating the attractiveness of outsourcing versus continuing to provide services in-house, it is important that VHA considers the total cost of both models. For example, all VHA labor costs, as well as support costs, should be considered when evaluating in-house provision, and the reallocation of tasks considered secondary by outsourced services (for example, cleaning staff performing minor corrective maintenance) should be considered when evaluating outsourced options. Because the value of outsourcing would accrue in part through labor spend reductions, either through attrition or layoffs, this may pose an implementation challenge given VHA priorities and employment agreements.

9.3.4 Upgrade Facility Management Systems and Ensure Broader Adoption

Given the lack of effective use of AEMS / MERS, VA should consider either adopting a more effective, integrated facility management solution, or enable broader adoption of existing systems. This would enable more effective tracking, management, resource-allocation, and quality control.

9.3.5 Create Opportunities to Share Best Practices Across Facilities

Facility management is an inherently decentralized effort across VHA. As such, while there are trends in terms of both challenges and opportunities, there are also numerous instances of local innovation. Efforts in energy efficiency, cost-reduction, improved corrective maintenance response times, and a number of other areas have all showed promise at some facilities without being applied nationally, but recent restrictions and increased approval requirements make it even more challenging to spread these ideas. VHA should endeavor to enable best practice sharing through both formal and informal means. Different methods, such as regular calls, email groups, newsletter mentions, and in-person sharing could be piloted to test the impact of different models.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

9.3.6 Increase the Transparency and Performance Management of key Human Resource Processes

As described above, interviewees often had little transparency into the causes of hiring delays, and facility management staff often did not maintain close working relationships with the Human Resources function. Increased transparency (for example, availability of current status on any current hiring process, metrics regarding time to fill positions) of human resources processes would make causes for delays evident. Based on this transparency, station and human resources staff can work together to overcome obstacles and improve the process on an ongoing basis. Such collaboration would require cross-functional support from senior management. This and other issues are discussed in more detail in Assessment L, Section 11.

9.3.7 Implement Energy Savings Opportunities That Have Positive net Present Value

Utility costs are some of the largest ongoing facility operation expenses. A number of facilities have shown that these costs can be reduced through a combination of demand reduction, efficiency, and innovative contracting methods. However often economically positive investments in efficiency (for example, LED lights, or a new cooling system) are reportedly overlooked in favor of more high-profile or symbolic energy efficiency investments. VHA should remove obstacles to investing in economically positive efforts and enable extensive sharing of innovative approaches to reducing energy costs.

9.3.8 Explore Interim Steps to Reduce Reliance on Purchase Cards

The FAR micro-purchase threshold which governs local purchase cards is expected to be increased on October 2015 to $3,500 as a result of the most recent review.[55] Any necessary internal policies should be adjusted to correspond with this anticipated increase. Overall, the process should be optimized to streamline procurement, rather than encouraging additional workarounds or relying on micro-purchases. These changes should be made in keeping with the recommendations of Assessment J, Section 5.2.1. As an interim step while optimizing the overall system, VHA might explore empowering trained and trusted individuals at facilities to make purchases larger than the purchase card limit but below an additional threshold without requiring a contracting-led competitive tender process (to the extent this is permitted under current regulations). With appropriate controls, this moderate increase in local authority could assist in alleviating the impact of long contracting timelines on Veteran care.

[55] Federal Register proposed rule change 11/25/2014: Inflation Adjustment of Acquisition-Related Thresholds (FAR Case 2014-022).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Appendix A Detailed Methodology

To ensure a broad range of sources, our assessment draws upon national data sets, national surveys, expert interviews, and visits to selected VAMCs across the country, at which we conducted interviews, focus groups, and observations.

A.1 VAMC Site Selection

To increase consistency and generalizability of findings, McKinsey teams have coordinated our sampling methods to the extent possible while ensuring sampling the methodology reflected assessment-specific considerations. We have selected a core set of VAMCs to visit, which are representative of the VAMC system as a whole across critical facility demographic and performance outcome metrics.

The VAMC site selection process followed the following steps:

- **Stratification of facilities:** Stratified random sampling, with VISN as strata, was used to select an initial long-list of facilities. To reduce sample size, a subset of VISNs was randomly selected, from which one of the two initially selected sites was randomly de-selected.
- **Review of distribution:** Chi-square testing was used on each of the key facility profile and performance variables to ensure the distribution of scores in the sample is representative of the population. Variables were chosen to reflect anticipated drivers of facility performance, and included: VISN, rurality, adjusted admissions, complexity level (on VHA rating scale), adjusted LOS, patient satisfaction, cumulative access score, and facility age
- **Refinement of facility selection:** Initial facility list was vetted with internal and external SMEs and augmented as needed, to include facilities that are considered critical for inclusion (for example, a Polytrauma Center, facilities with innovative tools/practice) and ensure that all selected facilities had the range of services being assessed.

This method resulted in a sample of 25 facilities is representative across each of the criteria used in selection.

A.1.1 VAMC Site Selection Variables

Variables were selected based on criteria relevant to each assessment area and assumed impact on facility performance. Variable definitions are given below:

- VISN: used VHA Support Center (VSSC) classification of VAMCs by VISN
- Rurality: used VSSC 2014 categorization of facilities as rural or urban
- Adjusted admissions: relied upon American Hospital Association (AHA) 2014 data. Adjusted admissions = Total admissions *(Admissions*(OP revenues/Total revenues)). VHA reports revenue data (gross billed revenue) to AHA to calculate this metric. Adjusted admissions scores were divided into quartiles, with the middle quartiles grouped, to produce low (<2881.75), medium (2881.75-6081.00), and high (>6081.00) adjusted admissions categories

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- Complexity level: used VSSC 2014 categorization of facility complexity. Level 1 facilities were grouped, to produce selection criteria of high complexity (levels 1a, 1b, and 1c), medium complexity (level 2), and low complexity (level 3).
- Adjusted LOS: used VA SAIL data. As only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. LOS data were divided into quartiles, with the middle quartiles grouped, producing three variables: low LOS (<4.19), medium LOS (4.19-5.14), and high LOS (>5.14)
- Patient satisfaction: used VA SAIL data. As noted above, as only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. Patient satisfaction data were divided into quartiles, with the middle quartiles grouped, resulting in low (<249.83), medium (249.83- 264.02), and high (>264.02) satisfaction categories
- Cumulative access score: used VA SAIL data. As noted above, as only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. The eight access scores included in the VA Q3 FY2014 SAIL report were assigned quartiles and added together to produce a single cumulative access score, which was then divided into quartiles. This process resulted in cumulative score quartile categories of low (<17), medium-low (17-20), medium-high (20-23), and high (>23) access
- Facility age: relied upon VSSC 2014 operational date data for each VAMC. Operational dates were divided into quartiles, with the middle two quartiles grouped, producing categories of early (prior to June 4, 1929), medium (June 4, 1929 – April 7, 1952), and recent (after April 7, 1952) establishment

In several instances, variable data were not available for each VAMC. To ensure that these cases were not excluded from the sample, we scored absences with -1 and included the -1 score as a category for each selection criterion where there were absences.

Assessment K visited a total of 25 VAMCs and 13 VISNs, listed below:

VAMC Site Visits:

1. Southeast Louisiana VAMC, New Orleans, LA
2. Togus, ME VAMC
3. Lexington, KY VAMC
4. G V Sonny Montgomery VAMC, Jackson, MS
5. Central Alabama VAMC, Tuskegee, AL
6. Malcom Randall VAMC, Gainesville, FL
7. Olin E Teague VAMC, Temple, TX
8. Cincinnati, OH VAMC
9. Long Beach, CA VAMC
10. San Juan, PR VAMC
11. North Texas VAMC, Dallas, TX

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

12. Durham, NC VAMC
13. Raymond G Murphy VAMC, Albuquerque, NM
14. Canandaigua, NY VAMC
15. Jefferson Barracks VAMC, St Louis, MO
16. Boston, MA VAMC
17. Coatesville, PA VAMC
18. Baltimore, MD VAMC
19. John D Dingell VAMC, Detroit, MI
20. Portland, OR VAMC
21. Fort Harrison, MT VAMC
22. Fargo, ND VAMC
23. Oscar G Johnson VAMC, Iron Mountain, MI
24. Gulf Coast VAMC, Biloxi, MS
25. Palo Alto, CA VAMC

VISN Site Visits:

1. VISN 1 HQ, Bedford, MA
2. VISN 3 HQ, Bronx, NY
3. VISN 4 HQ, Pittsburgh, PA
4. VISN 5 HQ, Linthicum, MD
5. VISN 6 HQ, Durham, NC
6. VISN 10 HQ, Cincinnati, OH
7. VISN 11 HQ, Ann Arbor, MI
8. VISN 16 HQ, Ridgeland, MS
9. VISN 17 HQ, Arlington, TX
10. VISN 18 HQ, Gilbert, AZ
11. VISN 19 HQ, Denver, CO
12. VISN 20 HQ, Vancouver WA
13. VISN 22 HQ, Long Beach, CA

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

At the site visits, our team typically interviewed a standard set of roles. At VAMCs, these roles included: VAMC Director; VAMC Associate Director; Chief of Finance; Chief Engineer; Chief, Facility Management Service; Chief, Environmental Management; Director, Procurement; Project Engineer, and Facility or Strategic Planner. Interviewees were accompanied by their staff as they felt appropriate. At VISNs, these roles included: Network Director, Network Deputy Director; Director, Facilities Planning; Director, Facility Operations; Director, Contracting; Network Contracting Officer; Capital Asset Manager; and Director, Fiscal. Specific titles and responsibilities varied by location.

A.1.2 VAMC Core Site Selection Representativeness

Results for Fisher's exact test demonstrate that the sample is not significantly different from the population of VAMCs:

Table A-1. Core Site Selection Representativeness

numerical_complexity_level_variable (p-value for Fisher's Exact Test: 0.80)					
	Population	percent pop	Selected	percent Selected	Difference
-1	2	1 percent	0	0 percent	-1 percent
1	88	59 percent	16	70 percent	11 percent
2	32	21 percent	4	17 percent	-4 percent
3	28	19 percent	3	13 percent	-6 percent
Total	150	100 percent	23	100 percent	
rurality_numerical_variable (p-value for Fisher's Exact Test: 1.0)					
	Population	percent pop	Selected	percent Selected	Difference
0	28	19 percent	4	17 percent	-1 percent
1	122	81 percent	19	83 percent	1 percent
Total	150	100 percent	23	100 percent	
adjusted_admissions_quartile (p-value for Fisher's Exact Test: 0.74)					
	Population	percent pop	Selected	percent Selected	Difference
-1	22	15 percent	2	9 percent	-6 percent
1	32	21 percent	5	22 percent	0 percent
2	64	43 percent	9	39 percent	-4 percent
3	32	21 percent	7	30 percent	9 percent
Total	150	100 percent	23	100 percent	
adjusted_los_quartile (p-value for Fisher's Exact Test: 0.68)					
	Population	percent pop	Selected	percent Selected	Difference
-1	39	26 percent	4	17 percent	-9 percent
1	28	19 percent	3	13 percent	-6 percent
2	55	37 percent	11	48 percent	11 percent

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

3	28	19 percent	5	22 percent	3 percent
Total	150	100 percent	23	100 percent	
adjusted_patient_satisfaction_quartile (p-value for Fisher's Exact Test: 0.83)					
	Population	percent pop	Selected	percent Selected	Difference
-1	39	26 percent	4	17 percent	-9 percent
1	28	19 percent	5	22 percent	3 percent
2	55	37 percent	9	39 percent	2 percent
3	28	19 percent	5	22 percent	3 percent
Total	150	100 percent	23	100 percent	
cumulative_access_score_quartile (p-value for Fisher's Exact Test: 0.78)					
	Population	percent pop	Selected	percent Selected	Difference
-1	32	21 percent	3	13 percent	-8 percent
1	33	22 percent	7	30 percent	8 percent
2	27	18 percent	4	17 percent	-1 percent
3	33	22 percent	4	17 percent	-5 percent
4	25	17 percent	5	22 percent	5 percent
Total	150	100 percent	23	100 percent	
operational_date_quartile (p-value for Fisher's Exact Test: 0.87)					
	Population	percent pop	Selected	percent Selected	Difference
1	38	25 percent	5	22 percent	-4 percent
2	74	49 percent	11	48 percent	-2 percent
3	38	25 percent	7	30 percent	5 percent
Total	150	100 percent	23	100 percent	

A.2 Construction Site Selection

A.2.1 Construction Site Visit Methodology

To ensure a comprehensive and consistent assessment across all active construction sites by the team, we utilized a project assessment tool that allows rating for the relevant dimensions of executing a major project. For each of the ten dimensions below, we assessed qualitative and quantitative metrics with detail descriptions for ratings of 1 to 5 (Figure A-1). Project assessments were completed on projects at different stages of project execution from mobilization to punch list. Hence, the ratings for each project that we visited were only provided for the dimensions observed.

Dimensions for project assessment:

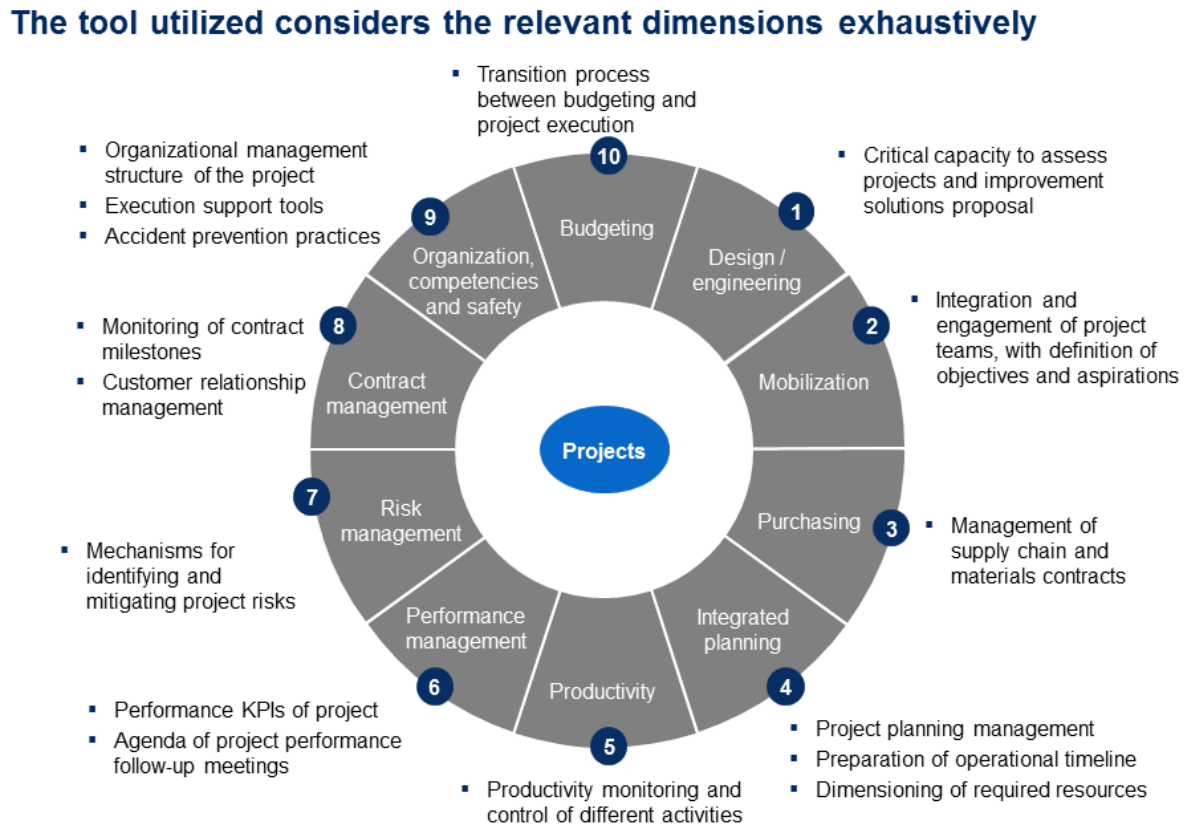
- **Design and engineering:** This criteria measures engineering performance management including the review process. It also addresses the improvement ideas, knowledge sharing, and incentives to apply knowledge.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Mobilization:** Mobilization criteria assess the initial project kick-offs and team formations, clear rules and procedures for the project, and resource plans for the course of the project.
- **Purchasing:** Purchasing criteria measure procurement processes for the project. For many active projects visited, the procurement phase was not easily assessed in the field.
- **Integrated planning:** Integrated planning criteria measure the quality and depth of coordination planning conducted on a project (for example, from critical path management across multiple contractors).
- **Productivity:** Productivity addresses the work site logistics and layout that impact the productivity of the site.
- **Performance management:** Performance management reviews the current systems in place for measuring the current and expected performance of the project.
- **Risk management:** Risk criteria measure the risks considered and the contingency plans in place should those risks materialize.
- **Contract management:** Contract management evaluates the claims management, payments, and interactions with the contractors.
- **Organization, competencies, and safety:** This criteria considers multiple aspects including team organization, capabilities, and safety.
- **Budgeting:** Budgeting evaluates the forecasting and cost estimating processes including efforts to minimize costs via value engineering.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure A-1. Assessment Tool for Active Construction Site Visits



SOURCE: Field observations; team analysis

The findings above are reflective of challenges faced across major projects in general. The Aurora case study is an example where many of the findings above have manifested in cost overruns and schedule delays. Several factors contribute to execution challenges for CFM including, but not limited to, impact of appropriation cycle, continuously changing scope of the project, and an evolving organization structure. The sections – process, people, and systems – will explore the execution challenges for the Major Construction Program in detail.

A.2.2 Observed Performance on Active Construction Sites

To assess performance and processes implementation for major construction projects, the team selected a sample of active construction project sites. The design principles for site selection criteria were the following:

- Sites include projects covered by all three CFM regions (West, Central and East)
- Included a range of project sizes within the major construction program (such as, to include projects of all different sizes)
- Observable/active construction in the field (where possible)

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Based on the criteria above, the following major construction projects were selected for construction site visits within the timeframe of the assessment:[56]

Figure A-2. Selection Construction Site Visits

Table for construction site visits

City	State	Project detail	Total estimated cost[1] $ Millions	Percent of funding before 2011[2]	Sq. ft.	Region
Palo Alto	CA	Ambulatory Care / Polytrauma Rehab	717	31	681,000 (New); 13,500 (Alt)	Western
Long Beach	CA	Seismic Corrections – Bldgs 7 and 126	130	100	191,000	Western
Denver	CO	New Medical Facility	1,730	Unknown	1,035,000	Western
Dallas	TX	Spinal Cord Injury	142	5	164,000	Central
New Orleans	LA	New Medical Facility	995	90	1,600,000	Central
Biloxi	MS	Restoration of Hospital / Consolidation of Gulfport	286	100	417,000	Central
Bay Pines	FL	Improve Inpatient / Outpatient	158	72	135,000 (New); 186,000 (Alt)	Eastern

1 TEC from Budget Request 2016 used during the planning of construction site visits
2 Percent complete approximated from percent of funding approved before 2011 during planning phase and public research

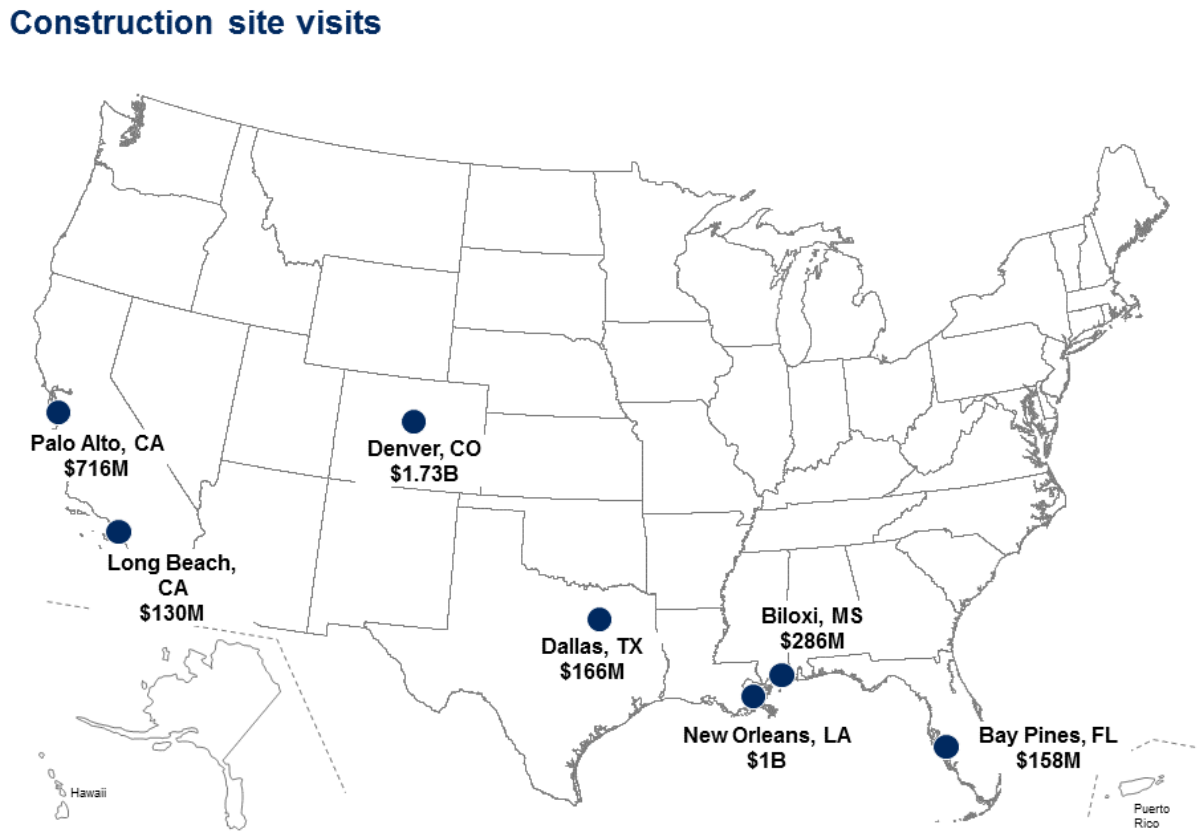
SOURCE: 2016 VA budget request and public websites

56 TEC from Budget Request 2016 used during the planning of construction site visits. Percent complete approximated from percent of funding approved before 2011 based on 2016 VA Budget Submission and public research.

Note: Dallas, TX project was funded 26% by FY 2013.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure A-3. Map of Selected Construction Site Visits



A.2.3 At Active Construction Sites, We Observed Variability in Project Delivery Processes

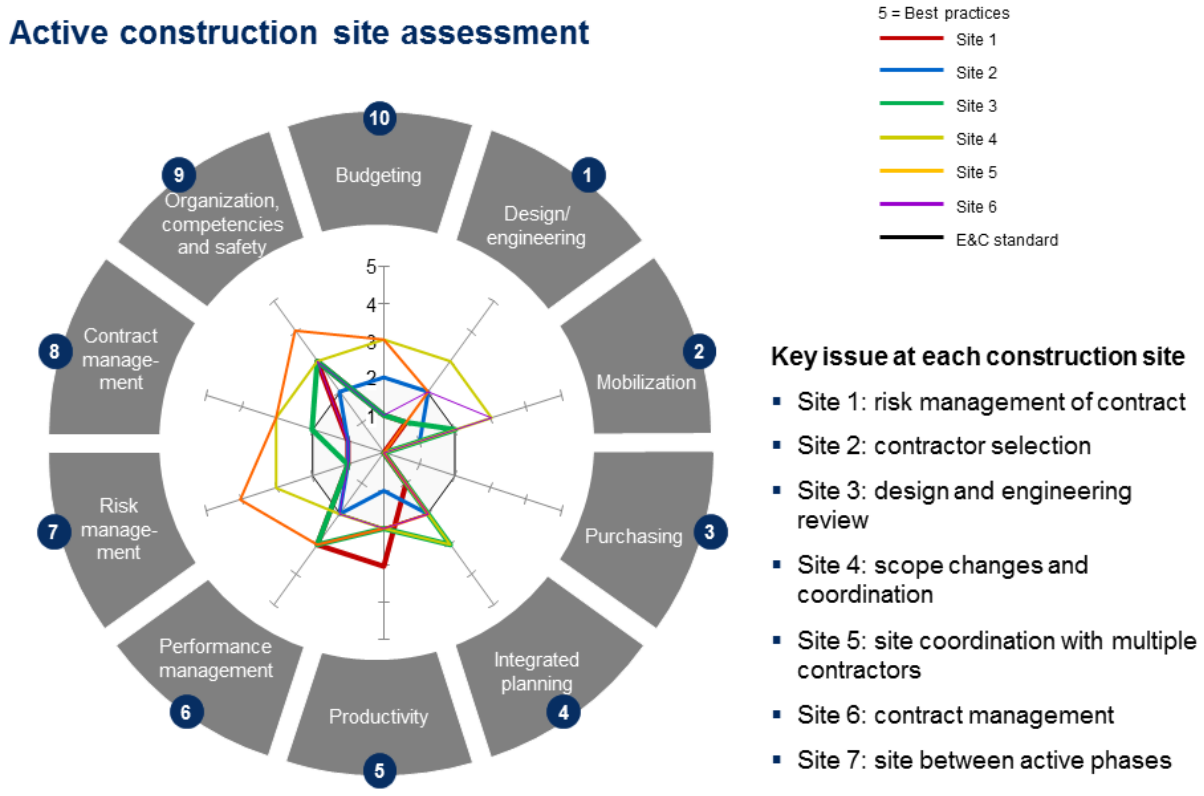
Site visits to active major construction sites during the assessment revealed that the lack of a defined process has led to multiple challenges – each unique to the site – in project execution. Figure A-4 summarizes key assessment areas for the projects visited.

From the construction site visits, the following key themes emerged:

- The lack of a defined process for major projects leads to significant variation in roles, responsibilities, and interactions among stakeholders for the project.
- The length, variability, and opaqueness of the existing undocumented processes leads to considerable delays on the projects
- Coordination – specifically between the VAMCs and CFM – is challenging in absence of a defined process.
- Certain pockets of excellence, such as a safe and secure site, exist at multiple sites

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure A-4. Select Active Major Construction Projects Assessment



SOURCE: Field observations; team analysis

A.3 Benchmarking Methodology

A.3.1 To Accurately Assess the Cost and Time to Completion of Major Projects, We Conducted a Benchmarking Exercise to Understand Key Drivers of Variability Between Projects

Variation in construction costs and time to completion across and within private and public sector required a benchmarking to understand key drivers of variability. Our benchmarking effort and have extensively reviewed completed hospital construction data from multiple public and proprietary databases, cost benchmarking studies, and internal experience. We created a database of recently completed projects for medical facilities construction to assess cost and schedule implications for VHA construction projects.

Using the database, we conducted quantitative analyses to identify key drivers of variability in dollar per square foot costs and schedule in medical facilities construction. To understand the differences in construction costs, we defined which costs should be included in the benchmarking analyses for a construction project (see Figure A-5). Our effort focused on total

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

construction costs to leverage all available projects data most of which is reported only at total construction costs. Because the projects in the database are largely greenfield projects for new facilities as opposed to renovations, such costs are also more beneficial in understanding the total construction costs of a campus. Based on the projects for which the detailed cost breakdown was provided, the site work and indirect costs accounted for 10-25 percent of the total construction costs.

The construction costs for projects in the database were adjusted to U.S. national average and 2015 dollars using Engineering News Record indices and R.S. Means City Cost Indices to minimize variation due to location and time of project delivery (see Figure A-6). However, the total construction costs are expected to vary due to a multitude of factors including, but not limited to: design specifications, type of facility (for example, mental health versus OR), geography (for example, seismic areas), contracting method (fixed price versus cost reimbursable), project delivery method (design-build versus design-bid-build), construction market dynamics, size and complexity, and execution finesse. Though the above factors can drive large variations in costs, it is valuable to document the range of construction costs so we understand the project specific drivers and the delivery specific drivers – which are explored in process, people, and systems.

A.3.2 Key Definitions

Building construction costs: Building construction costs for the benchmarking are defined as all costs to erect structures with the perimeter of the buildings. These costs include all electrical, plumbing, and mechanical systems, but exclude specialty health care equipment costs.

Total construction costs: Total construction costs include all costs of the project except planning and design related costs. These costs included – in addition to building construction costs – all site development costs, financing costs, general conditions, and insurance and bonding costs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure A-5. Breakdown of Total Project Costs

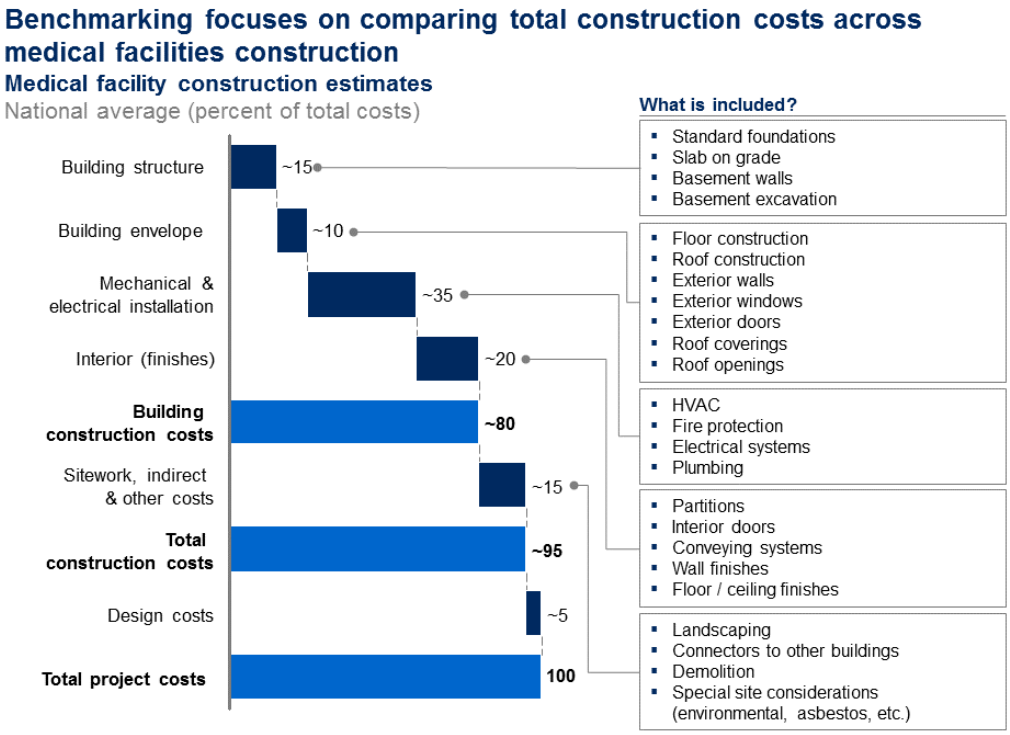


Figure A-6. Adjustment Methodology for Time and Location of Costs

All construction costs were adjusted for time and location using the following methodology for an "apples-to-apples" comparison

Time adjustment

Completed projects (majority of projects in the database)

- Construction costs ($ / sq. ft.) were **adjusted to 2015** using the ENR's Construction Cost Index History (1908-2015)
  - 200 hours of common labor at the 20-city average of common labor rates, plus 25 cwt of standard structural steel shapes at the mill price prior to 1996 and the fabricated 20-city price from 1996, plus 1.128 tons of Portland cement at the 20-city price, plus 1,088 board ft. of 2 x 4 lumber at the 20-city price

In progress projects

- No change as escalation costs are included in the project estimates

Location adjustment

All projects were adjusted to the **National Average** using **R.S. Means City Cost Index (CCI)**

- CCI is a **composite index** that relies on **9 structures** (including a hospital)
- CCI currently consist of
  - Specific quantities of 66 commonly used construction materials
  - Specific labor-hours for 21 building construction trades
  - Specific days of equipment rental for 6 types of construction equipment (normally used to install the 66 material items by the 21 trades)
- CCI was applied with the closest city if known or average of the sate if unknown

SOURCE: ENR Construction Costs Index History; R.S. Means Online

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Appendix B Detailed Analysis

B.1 Organizational Health Index

B.1.1 Overview of Results

The Organizational Health Index (OHI)™ survey was a key input for this assessment. Our team conducted and analyzed OHI surveys that were issued to CFM specifically and also to VHA as part of Assessment L (see Assessment L for more information). The survey results from VHA were segmented to include only facilities staff in our assessment. The CFM's response rate to the OHI survey was approximately 20 percent. The OHI survey is designed to measure the health of an organization, reflect what is working well, and offer actionable information on areas needing improvement. The survey examines current organizational strengths and weaknesses, with a special emphasis on leadership. This tool has been used across leading health care institutions and other government agencies.

Most employee surveys focus on satisfaction and engagement. The OHI survey does not try to do this. Instead, it evaluates nine elements of organizational health (outcomes) and their associated practices to create a thorough picture of how 'healthy' an organization is and allows results to be benchmarked against similar institutions. The OHI provides quantitative benchmarks against a database of more than 1,300 surveys of other organizations and more than 1.3 million employees. The usefulness of OHI also comes from the research behind it - it is statistically proven that 'healthy' organizations are more likely to outperform their industry peers.

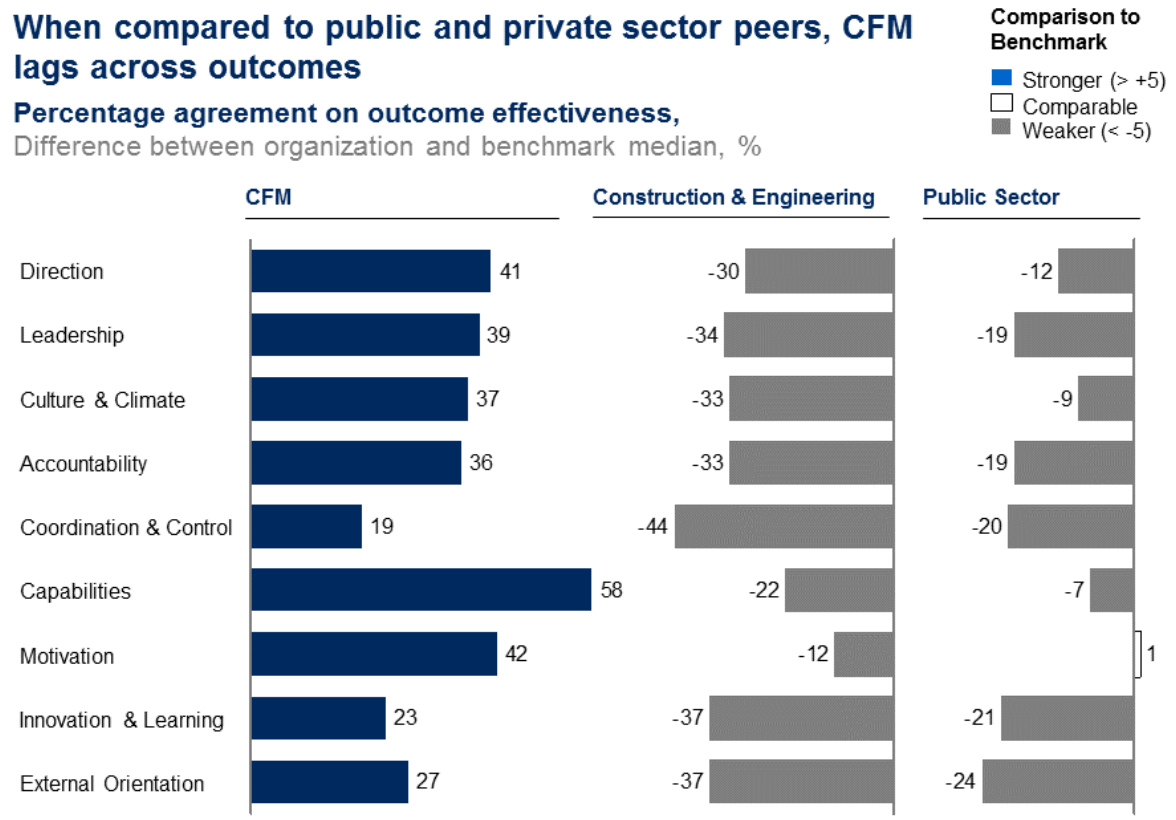
This analysis highlighted several areas of concern for the ability of VA's construction program, both at CFM and VA, to respond to the challenges they face in moving towards a best practice organization. When compared to peers, CFM lags in every outcome, and each organizational health outcome apart from motivation lies in the bottom quartile of all survey respondents.

The motivation outcome, scoring in the third quartile, reflects a strong commitment to the purpose of caring for Veterans, a sentiment echoed resoundingly in interviews as well. This care for the Veteran and commitment to work on their behalf is powerful, but it alone is insufficient to fuel the organization's performance.

We have compared CFM and VHA to the OHI global benchmark, as well as a public sector benchmark and a construction and engineering benchmark. The public sector benchmark is comprised of 27 surveys (n=47,159), and the Healthcare Systems and Services benchmark is comprised of 18 surveys (n=24,005). CFM scores lag both benchmarks. Again, outcomes are slightly better in motivation. However, their peers in construction and engineering score nearly twice as well in outcomes such as leadership, culture and climate, accountability, and innovation. CFM scores particularly poorly against benchmark organizations in coordination and control, where their outcome score was 19. This is half that of the public sector and less than a third of scores in construction and engineering (Figure B-1).

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure B-1. CFM Outcomes Against OHI Benchmark



The 37 individual practices which make up the OHI illustrate a similarly consistent set of low scores. Every practice scored by CFM ranked in the bottom quartile against the global benchmark. In seven practices (capturing external ideas, challenging leadership, consultative leadership, financial incentives, open and trusting, rewards and recognition, and supportive leadership), CFM scored above VHA's results. In all other practices, CFM scored on par or below VHA.

B.1.2 Climate and Values

One aspect of the OHI Survey addresses organizational values. This "value mapping section" gives respondents the opportunity to identify those values or characteristics that most represented the current state of CFM as well as those desired values or characteristics they would like to see VHA move towards in the future. Six values, including two of the I-CARE values, were identified as both current and desired: Veteran focus, being of service to others, commitment, caring, making a difference, and fulfilling work (Figure B-2).

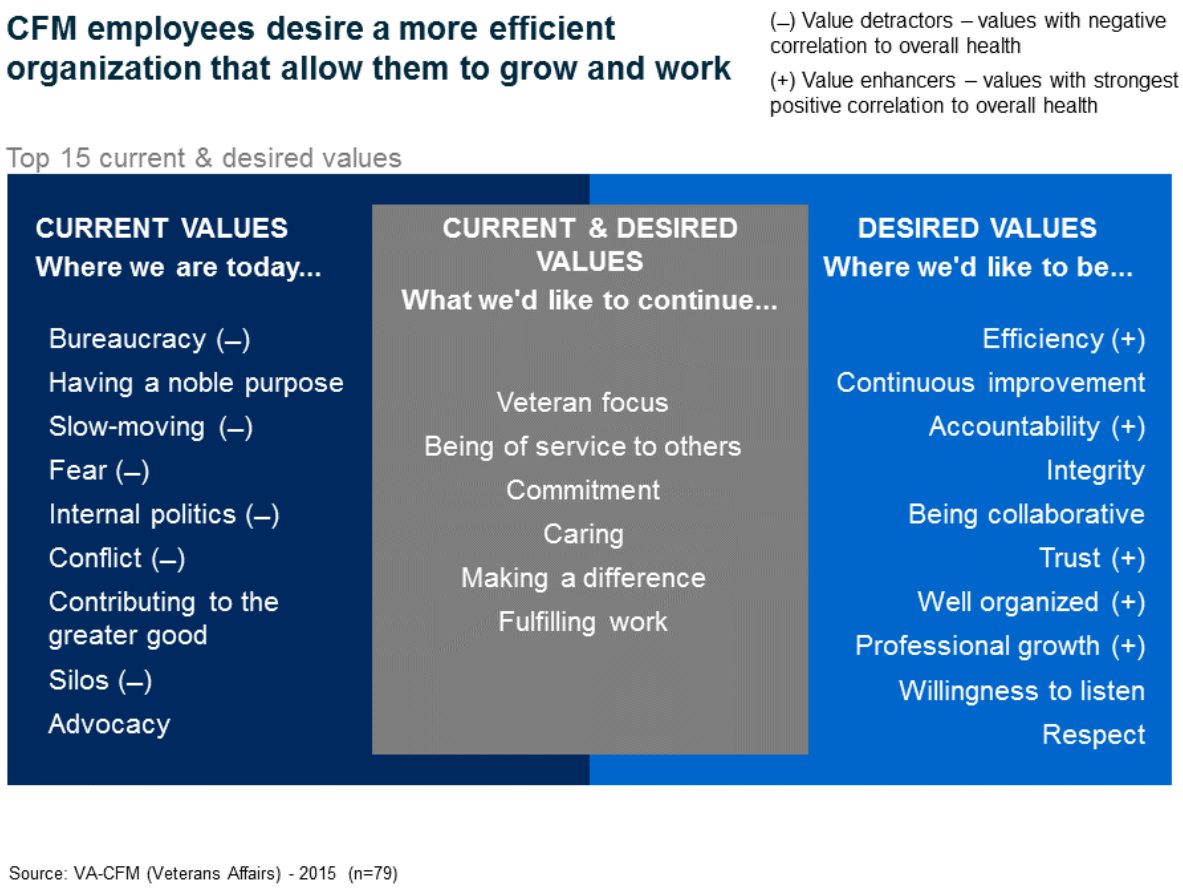
However, among the values most commonly seen in the current state, employees also mentioned "bureaucracy," "internal politics," "slow-moving," and "siloed." Of particular note, "fear" and "conflict" were both listed by CFM as values most commonly seen. Neither of these

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

were represented on VHA's value mapping, and both speak to a particularly difficult climate at VA's construction arm. In our experience with OHI, it is unusual to see this concentration of value detractors in the value mapping exercise. In interviews across CFM, our team consistently heard employees express tremendous discouragement and concern regarding the climate of CFM given recent issues with sizeable project overruns and discussions around the organization's future. The more favorable motivation outcome is even more notable in the light of these concerns.

There is reason for encouragement when looking towards the desired values. CFM employees clearly state they hope to move toward an efficient and accountable culture, with an emphasis on continuous improvement, integrity, trust, and respect.

Figure B-2. CFM Value Mapping

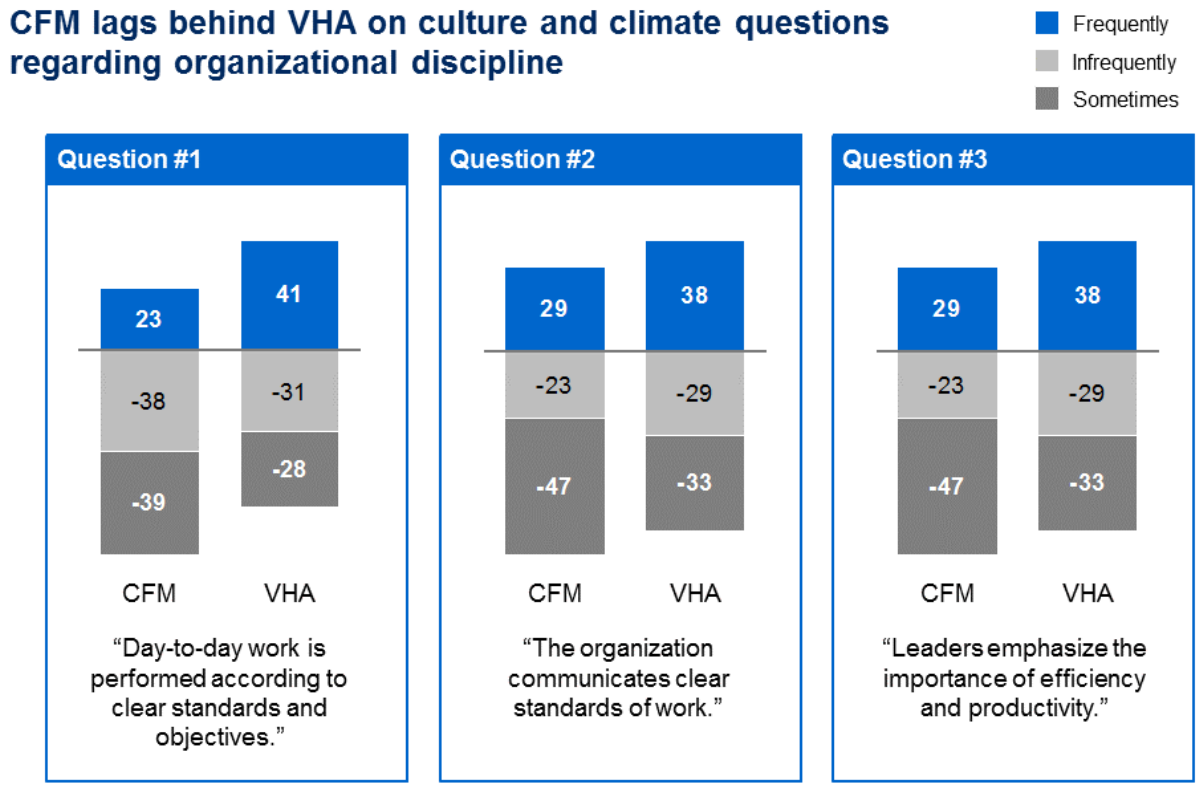


Source: VA-CFM (Veterans Affairs) - 2015 (n=79)

Within the culture and climate outcomes, CFM lags behind VHA in several key questions measured by OHI. Only 23 percent of CFM respondents reported that day-to-day work is consistently performed according to clear standards, and only 29 percent reported the organization reported standards clearly and leadership emphasized efficiency and productivity frequently (Figured B-3). For the operationally discipline practice as whole, CFM scored 29 and VHA 44.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure B-3. Frequency of Operational Discipline Metrics



Source: VA-CFM (Veterans Affairs) - 2015 (n=79); Benchmark (n=1,259,322, no. surveys=737); VHA OHI 2015 (n=13,712); Benchmark (no. surveys=737)

B.1.3 OHI Results by Tenure

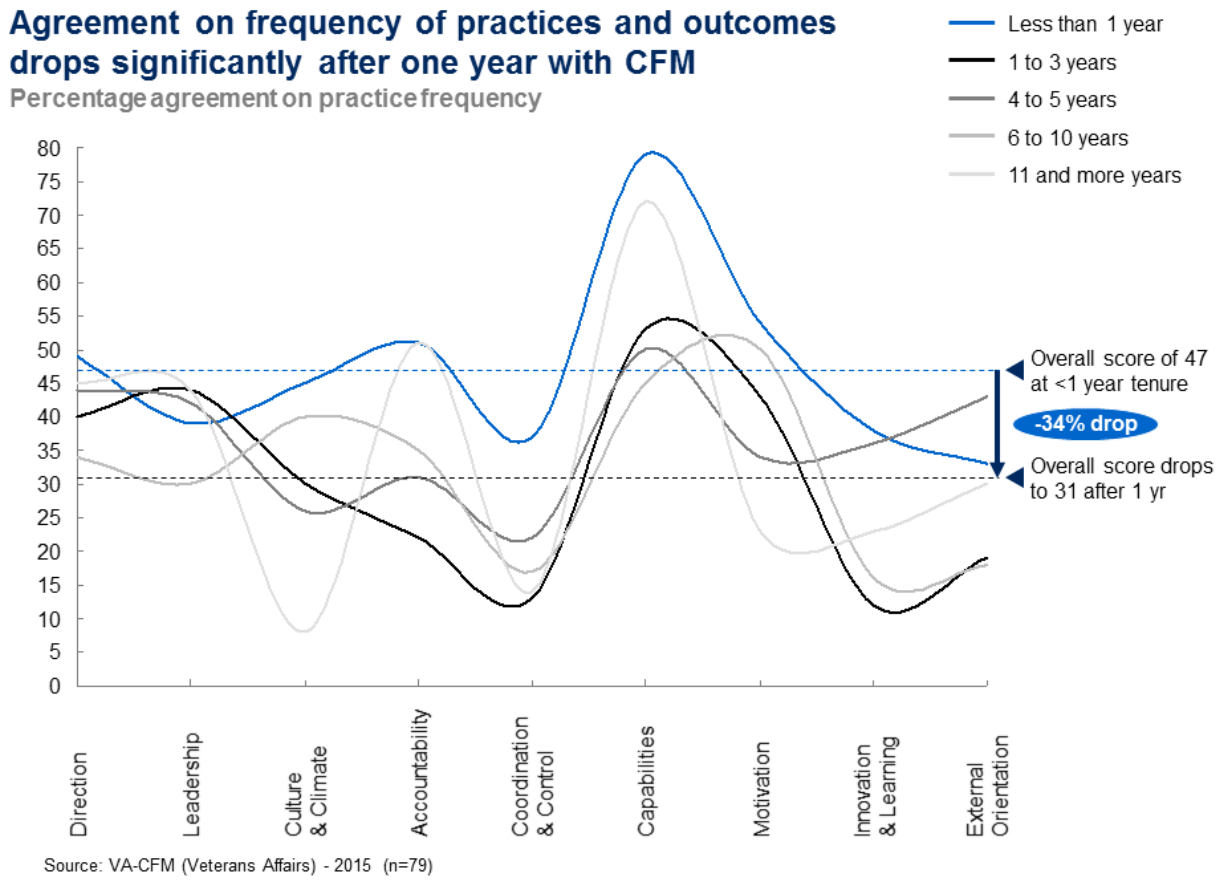
Across the global database, it is common to see very early tenure employees express more positive views on the organizational health than more tenured employees. For CFM employees, there is a 34 percent difference in the average score of employees with less than one year of tenure compared to those with between one and three years of tenure (Figure 10-4).

This difference is particularly large in select practices. Under culture and climate, agreement on the CFM's operational discipline differs from 72 to 20 and agreement on creativity and entrepreneurship differs from 46 to 13. Under accountability, agreement on role clarity differs from 53 to 18, personal ownership differs from 53 to 18, and consequence management differs from 25 to 11.

On average, these scores continue to differ when looking at even later tenure employees. There are some slight upticks, particularly in accountability, for employees with the longest tenure. The results, particularly regarding role clarity and consequence management, were borne out by interviews, the implications of which are discussed further within the people findings in each of the core assessment areas, Sections 5.2.3, 6.2.6, 7.2.4, 8.2.3, and 9.2.3.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure B-4. CFM Outcomes by Tenure



A deeper look at the VHA OHI results can be found through Assessment L, with particular detail in Sections 3.3 and 7.2.6.

B.2 Overview of Aurora Replacement VAMC

The Aurora project will provide a new inpatient medical center including a Spinal Cord Injury (SCI) Center, an Outpatient Clinic, a Community Living Center (CLC), a research building, a central utility plant, and parking facilities. The project includes the remodeling of the recently purchased University of Physicians, including building and the disposal of the current medical center. The original public cost estimate was $328 million and the project was expected to be completed by February 2014. At the conclusion of our assessment, the public cost estimate for the project was $1.73 billion with an uncertain completion date.

Prior to our on-site visit to the Aurora project, Assessment K reviewed relevant public reports such as Congressional testimonies, United States Civilian Board of Contract Appeals documents (Kiewit-Turner, a joint venture, v. Department of Veterans Affairs, 2014), GAO reports (GAO-06-472, 2006; GAO-13-302, 2013). In the reports, critical aspects were identified as driving cost and schedule growth (Figure B-5) such as scope changes and the project delivery method selected:

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

1. **Scope changes:** Based on information from VA Budget Requests, Congressional testimonies, findings of the United States Board of Contract Appeals, and GAO reports, the original project cost estimated at $328 million represented a Joint Federal Facility with 1,060,000 square feet of space on leased land from University of Colorado Health (UCH).

   VA's estimate based on its space requirements led to two design options for 20 acres and 38 acre campuses – both of which would require more space than available adjacent to UCH. The estimated space available at UCH was 18 acres of land based on UCH reports in August 2004 or 12 acres accounting for easement and setbacks as mentioned in GAO-06-472 report.

   VA decided to pursue the design option for 38 acres and ended discussions for a joint facility. Over the years, the scope of the project changed multiple times growing up to 1,400,000 square feet (including new construction and alterations) before scaling back to 1,030,000 square feet. In 2004, the project was expected to include 188 inpatient beds with 30 spinal cord injury beds and a 60 bed nursing home care unit. Today, the project is expected to include 114 inpatient beds with 52 bed spinal cord injury and community living center. Though some of these changes scale the facility back in terms of scope, the timing of the changes has had a significant impact on the overall cost.

2. **Project delivery method:** Based on expert interviews, the selection of the project delivery method is driven primarily by the risk and complexity of a mega project along the time horizon for completion. Generally, there are three primary project delivery methods used at VA for major projects:

   a. Design/bid/build: Owner contracts separately with contractor and the architect / engineer (A/E) and most frequent delivery method at VA based on conducted interviews.

   b. Design/build: Owner procures engineering and construction services under a single contract.

   c. Integrated Design Construction (IDC): Owner contracts with A/E to initiate design and simultaneously contracts with a contractor before design is complete. The contractor provides input into the design through completion. At completion, the contractor provides a Guaranteed Maximum Price for the construction of the facility. In the industry, similar delivery methods may also be known as CM at risk or Early Contractor Involvement.

      Based on the GAO report and the United States Civilian Board of Contract Appeals decision research, VA chose IDC as a project delivery method for the Aurora project to benefit from contractor input on a complex project. VA had previous experience in administering this delivery model through smaller projects such the Polytrauma center in San Antonio, TX with a cost of $66 million but had no experience leveraging this model on such a large project.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

To benefit most from IDC projects, the owner ensures contractor input is being solicited and implemented in the design phase. In Aurora, the design phase lasted 6 years, from 2005 to 2010 as mentioned in USCBCA decision and VA Budget requests. However, the contractor was not brought into the project until 2010 well after the design was underway. As a result, VA did not benefit from early contractor input, a key benefit of IDC. Additionally, VA faced challenges in accepting and enforcing cost-reduction suggestions by the contractor in the design, limiting a potential benefit from IDC.

The interviews conducted on our visit to the Aurora project reinforced the observations throughout Assessment K and also highlighted the process and personnel challenges impacting execution on a project of this scale and complexity.

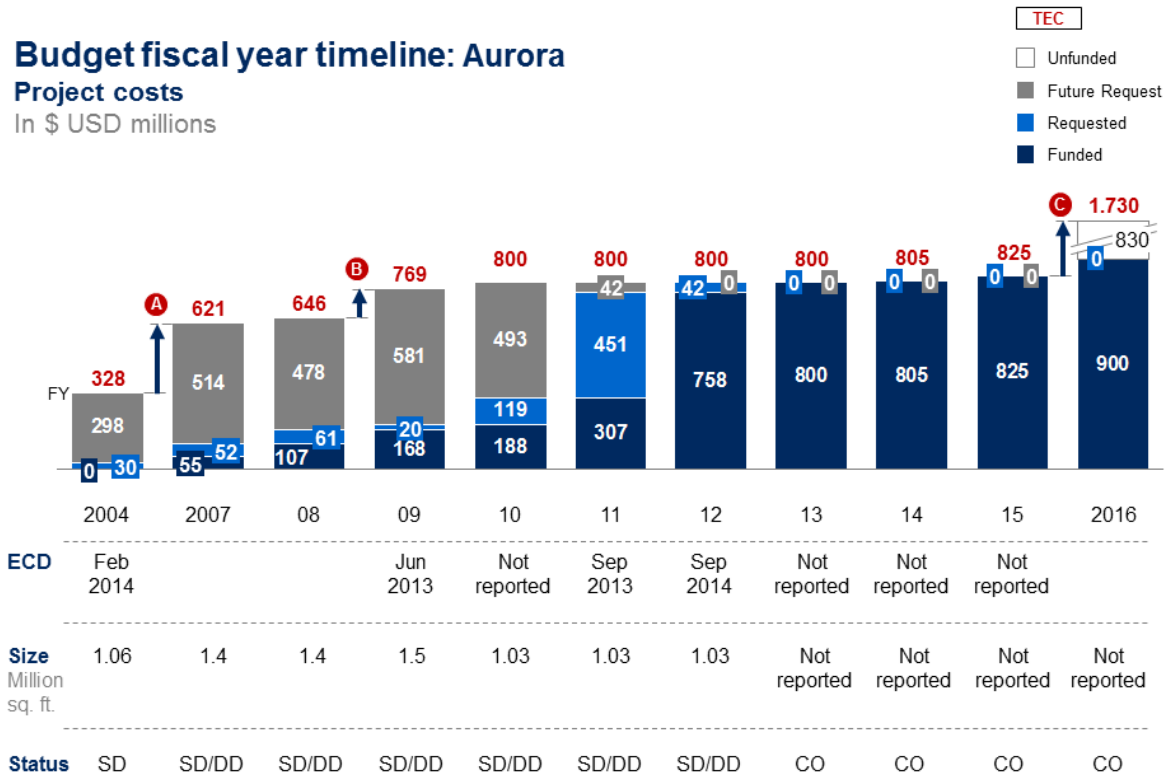
3. **Execution challenges:** The light initial staffing from CFM plus a lack of well documented process, roles and responsibilities and sub-optimal systems posed significant challenges in the project early stages.

   To adequately manage the project workload and manage the different stakeholders involved (a joint venture of 4 A/E firms, external construction managers, and the general contractor joint venture), the CFM team had to expand almost five times the original size to better accommodate the workload and address the complexity of the project.

The elements presented in the case example are highlights of the challenges identified during our assessment and the insights obtained informed and influenced the overall assessment recommendations for consideration.

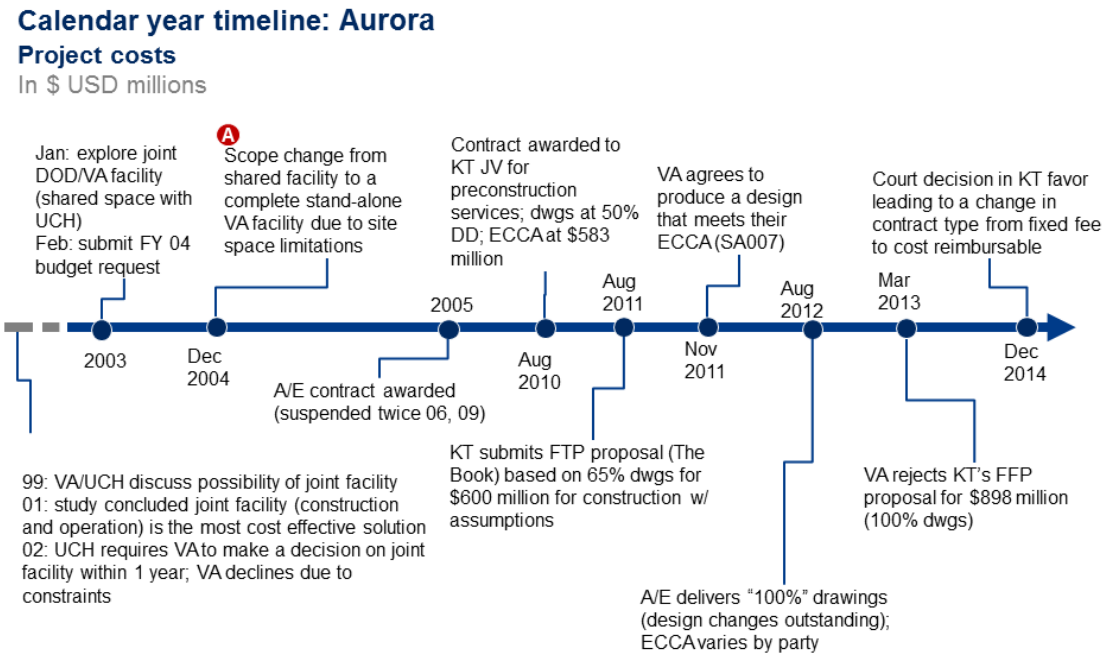
The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Figure B-5. Aurora Replacement VAMC Timelines



Note TEC: Total Estimated Cost; ECCA: Estimated Cost at Construction Award; ECD: Estimated Completion Date; UCH: University of Colorado Hospital; FTP: Firm Target Price; SD/DD: Schematic Design, Design Development; CO: Construction; FFP: Firm Fixed Price; KT: Kiewit Turner

SOURCE: VA budget requests 2004, 2007-2016; GAO-13-302; GAO-06-472; CBCA 3450



B.3 Detailed Approach to Capital Reduction Sizing

VA has identified more than $51 billion in total capital needs over the next 10 years through its capital planning methodology.[57] This combines $46 billion in projects submitted through the Strategic Capital Investment Plan (SCIP) and approximately $5 billion in anticipated outstanding funding needs for on-going major projects projected in the FY2016 VA Budget Submission:

- **SCIP Submission ($46 billion):** The $46 billion SCIP submission is made up of more than 8,000 capital requests. While our team did not independently verify the cost estimates for these capital requests, we did review the process by which these requests are identified and developed. During the data validation exercise, reviewers highlighted that approximately $2.5 billion of projects in the $46 billion in the SCIP were 'not-approved' or de-prioritized by VISNs. However, the lack of a formal scrubbing process for project selection or a formal feedback mechanism to link completed projects with addressed gaps suggests that projects that are incorporated in SCIP but not approved may still be prioritized in subsequent years.
- **On-going major construction projects ($5 billion)**: The VA has identified approximately $5 billion in capital requirements for on-going major construction projects based on our assessment of the FY2016 VA Budget Submission Appendix F: History of VHA Projects Update. Our analysis of this request include four distinct elements:
  - Active major projects: The FY2016 Budget Submission identifies 15 VHA major construction projects that have satisfied the criteria to be in the CFM 'active development list'. These projects represent approximately $4.3 billion in funding requirements for FY16 and beyond.
  - Other on-going major projects: The FY2016 Budget Submission identifies 7 VHA major construction projects which have received funding in prior years and are expected to receive future funding. However, these projects have not satisfied one of the criteria to be considered an 'active development project'. The total estimated value of these projects is approximately $1.5 billion.
  - Additional funding needs for the Aurora Medical Center: The future construction cost of the Aurora Medical Center is listed in the FY2016 Budget Submission as TBD. Based on the most recent internal VA updates and Congressional testimony, the total cost of this project is expected to be $1.73 billion. Of this total cost, $825 million is accounted for prior to FY16 which leaves approximately $905 million in future funding requirements.
  - While assessing the total capital requirement in the SCIP and the value of on-going active construction projects in the FY2016 Budget Submission, we identified 7

[57] This combines $46 billion in projects submitted through the Strategic Capital Investment Plan (SCIP) and $5 billion in anticipated outstanding funding needs for on-going major projects projected in the FY2016 VA Budget Submission. SCIP funding levels are taken from data provided by VA for the FY16 planning cycle, the most recent data available as of the writing of this report. See Section 3.1 for additional detail.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

projects which are include in both the SCIP and the FY2016 Budget Submission. These duplicated projects represent approximately $1.7 billion in future expected project costs. To avoid double counting these projects in the total capital required by the VA, we have excluded these projects from the on-going major construction projects total and included them in the total value of the SCIP submission.

These requests cover current ten-year projections; however, new projects may be added as needs change and could change the total capital requirement. Given the gap between this capital requirement and anticipated funding levels, our team worked to develop a preliminary estimate of how much this $51 billion capital requirement could be reduced by implementing best practice capital management processes.

For VA, we have estimated an approximately 25-35 percent reduction potential in the estimated need if capital efficiency best practices are successfully applied. This section illustrates the methodology used to calculate the potential reduction in capital requirement. This was done by (1) consulting established research to develop a broadly applicable estimate based on best practices in capital management and (2) developing high level estimates based on VA capital requests and applying levers identified throughout the recommendations in this assessment.

B.3.1 Aspiration Setting: Best Practice Capital Optimization Research

To define the optimization aspiration, we identified best practices and potential efficiency levers based on comprehensive reports assessing best practices from different capital management organizations worldwide, utilized more than 80 case examples and lessons learned from health care facilities delivered in the United States over the past 5 years, and interviewed industry experts, including health care industry networks and leading agencies with large capital programs.

Research identified best practices from capital management organizations around the world that could be deployed to improve the total performance of capital programs for organization of a similar scale and complexity to VA (McKinsey, 2013). The cumulative improvement value of deploying all of these best practices in a single organization could result in savings up to 40 percent. The main areas of opportunity are:

- **Improving project selection and optimize infrastructure portfolio.** Experience with other facility portfolios has shown opportunity for 10-15 percent reducing in costs through improving the portfolio of facility assets. Specifically, portfolio levers would enable the flexibility to rationalize the portfolio to ensure facilities of the right kind are in the right place.
- **Streamlining project delivery.** A 15-20 percent opportunity exists in improving the delivery of facilities. Steps such as improving upfront design, enhancing accountability for projects, and increasing project controls can both reduce costs and increase the speed of project delivery.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

- **Making the most of existing infrastructure.** Experience shows another 10-20 percent opportunity through maximizing the use of existing facilities. Effectively managing the use of space can reduce the overall facility need.

To understand and assess potential impact of different efficiency levers and its impact on cost and schedule, we studied 87 projects delivered in the United States over the past five years. The projects assessed included public and private owned projects, different delivery and contracting methods (design-bid-build, design-build and early contractor involvement) and geographies. Some of these projects were delivered in geographic proximity to VA projects in similar timeframes to serve as a reference benchmark.

To validate the different potential efficiency estimates we also extensively relied on industry benchmarks such as RS Means, Medical Construction Data, Design Build Association of America, Design Cost Data, 2013 Building Owners and Managers Association survey. As part of validating these numbers, our team conducted interviews with two leading health care systems in the United States (covering more than 450 hospitals and medical centers) and leading federal agencies with large capital programs (US Army Corps of Engineers, Naval Facilities Engineering Command, and then General Services Administration).

B.3.2 Impact Sizing for VA: Applicable Levers

Using this information on best practices and information obtained from VA on the $51 billion requirement, our team carefully assessed what could be the overall potential capital reduction in VA depending on different levers applied.

Capital management and delivery is a challenging task. Even the best capital management organizations do not succeed in deploying all best practices consistently across their organizations. For VA, even the most ambitious transformation effort may not achieve the total potential outlined in capital management best practices. As a result, our high level estimate for VA's potential capital reduction is approximately 25 to 35 percent reduction over the next ten years, a decrease from the 40 percent reduction potential identified in best practice research. For VA, this could reduce the overall $51 billion capital need to between $33 and $38 billion.

To quantify for the impact for capital efficiency levers, we aggregated potential savings from representative case studies and extrapolated potential to the overall baseline. We first calculated the average and range of impact for the relevant case data expressed as a percentage of potential savings, and then use expert input to validate impact sizing. We then scaled up the savings potential based on the overall baseline. They are provided in the following subsections:

B.3.2.1 Improving Project Selection and Optimizing Portfolio

This could reduce capital need by $7 to $8.5 billion. To size potential impact in VA, we focused on three main optimization levers (a) Refine project prioritization (b) increase scrutiny and scrubbing of projects, and (c) optimize space planning criteria:

- **Refine project prioritization:** By focusing the criteria and approval processes for capital projects, VA could concentrate capital spending on strategic priorities in order

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

to invest first in critical repairs and high risk facilities. To evaluate the potential impact of portfolio optimization , the team conducted hypothetical prioritization of the facility condition assessment project needs based on identified case example best practices, where projects are classified as mandatory (needed to comply with current regulation, safety and security and health care functionality) and discretionary (which includes meeting with current and projected needs). This could result in a reduced capital need of $5.5 to $6.5 billion.

- **Increase scrutiny and scrubbing of projects:** We assumed that the top priority projects in the access, energy or functional need can be optimized by extensive review and refining processes to achieve improved project design and scoping, leading to a 10 to 15 percent reduction in total capital. This would result in a reduced capital need of $0.5 to $0.7 billion.
- **Space planning criteria:** By optimizing design standards to current industry design standards for medical rooms and improving the architectural design at the department level, square footage requirements could be reduced by approximately 10 to 15 percent from current VA standards. This could result in a reduced capital need of $1 to $1.3 billion.

B.3.2.2 Streamlining Project Delivery

This lever could reduce capital need by $5.5 to 9 billion and lead to cost avoidance of an additional $5.5 to $9 billion in potential overruns.[58] By addressing comprehensively the root causes leading to consistent overruns in cost and schedule for construction projects, VA could both reduce overall cost to build and limit potential future overruns.

After accounting for optimization derived from portfolio optimization and calculating a post-optimization baseline of reduced capital need, we have assumed the following efficiencies from the different capital programs if all the levers above are adequately applied:

- **Major construction program:** We assessed the average current budget requests of latest major projects for VA, excluding future overruns. Public and private sector case studies and expert interviews suggested an improvement potential from up to 50%. We assumed a range of approximately 25-30% improved cost performance for VA, which would bring their performance in line with their current internal cost objectives. This reduces per square foot construction estimates of $650 (the level of the most recent project requests) to VA target of $450. This performance improvement would achieve a range of capital need reduction of $3.5 to $5 billion over a ten year timeframe.

  Additionally, we assessed historical overruns in major projects over the last five years, which added up to 87% over initial project requests. Based on existing best practices and case examples we assumed that the improved processes and recommendations will also contribute to reduce the 87% average overrun to a range of maximum of 25-

[58] Overruns calculated based on historic performance of major construction program, where projects average a total of 187 percent of initial total estimated cost.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

50%. This performance improvement will generate an overall cost avoidance of approximately $5.5 to 9 billion preventing additional requests over the $51 billion of capital need estimates.

- **Minor Construction program:** Data collected by our team indicated that minor projects experience an average increase of 18 to 22 percent over initially contracted costs, as discussed in Section 7.2.1.3. We assumed a conservative reduction of 10 to 15 percent of the final project cost, which would partially address the observed cost increases. This estimate relies on existing research, our optimization track record in small and medium capital expenditures optimization, and expert interviews. This performance improvement would contribute to $1 to $ 1.5 billion in overall capital need reduction.
- **Non-Recurring Maintenance:** Similar to minor projects, we assume a partial reduction in the observed average increases of 25 percent for NRM projects between $100 thousand and $1 million and the average increases of 7 percent in NRM projects above $1 million, which would achieve an overall optimization of 5 to 10 percent in the overall portfolio over the next 10 years. This performance improvement would contribute to $1 to $2.5 billion in overall capital need reduction.

B.3.2.3 Making the Most of Existing Infrastructure

VHA could improve the utilization of its infrastructure ensuring that space planning programs regularly evaluate underutilized and vacant space to identify opportunities for increased utilization or to actively divest unusable properties. While most of these potential levers would fall outside the scope of Assessment K, experience shows that 10-20% opportunity capital reduction may exist from associated levers. We have not included this reduction in our sizing.

In summary, our analysis estimate that out of the $51 billion capital need for VA capital $12 to $17 billion, or approximately 25 to 35 percent of total need, could potentially be reduced through improving project selection, refining the project portfolio, and streamlining project delivery. In addition to the above, the successful implementation of the recommendations could prevent additional funding requests of $5.5 to $9 billion derived from potential overruns.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Appendix C Bibliography

2015 CEA Tool Dashboard - 10yr.xls, VA Intranet, accessed April 2015.

2015 SCIP Criteria FINAL.pptx, OAEM, February 2015.

20150202_Master Lease Portfolio Dataset_core data.xlsx, Office of Asset Enterprise Management, Feb 2015

20150326_AEMS MERS Ticket Data_Site Visit Stations.xlsx, Office of Procurement and Logistics, Mar 2015

20150330_Station Level Service Contracts.xlsx, Office of Procurement and Logistics, Apr 2015

20150331_Major Lease Procurement Timing and Costs.xlsx, Office of Construction and Facilities Management, Office of Operations, Real Property Services, May 2015.

20150409_Lease CO Workloads.xlsx, Office of Procurement and Logistics, Apr 2015

20150421_Closing the facilities gap.xlsx, Internal analysis, Apr 2015

2017 Construction Program Definitions.doc, OAEM, February 2015.

2017 Construction Program Definitions.pdf, OAEM, February 2015.

2017 SCIP Training Summary v3.pptx, OAEM, February 2015.

American Hospital Association. (2014). *AHA Annual Survey Database, 2014.* Retrieved from www.aha.org

Activation Guide (Feb 2015 version), CFM, 3/17/2015

Bruce, Marc D. (2012). Rally to protest closing of Erie VA hospital's ICU, ER. Erie Times-News. Retrieved from http://www.goerie.com/article/20120912/NEWS02/309119895/rally-to-protest-closing-of-erie-va-hospitals-icu-er#h to save VA hospital in Hot Springs attracts 150 people. Rapid City Journal.

"Building a Better VA: Assessing Ongoing Major Construction Management Problems within the Department." Testimony of Sloan Gibson, Congressional Testimony, January 21, 2015.

Building Design + Construction, (2015). Kaiser Permanente's Template for Success. Retrieved from http://www.bdcnetwork.com/kaiser-permanente%E2%80%99s-template-success

Buildings, Structures, Objects. Capital Asset Inventory, VA Intranet, February 2015.

Captain James A. Lovell Federal Health Care Center, I. (2015). Historic VA/DoD Integration Accomplished - Captain James A. Lovell Federal Health Care Center. Lovell.fhcc.va.gov. Retrieved from http://www.lovell.fhcc.va.gov/features/integration.asp

Change order approval charts, CFM, 1/27/2015

Committee on Veterans' Affairs. (2013). Department of Veterans Affairs Major Medical Facility Lease Authorization Act of 2013. Committee on Veterans' Affairs.

Congressional Budget Office. (2014). Comparing the Costs of the Veterans' Health Care System With Private-Sector Costs. Congressional Budget Office.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

CPRMP Memo, CFM, 1/27/2015

Department of Veterans Affairs. (2003). VA Directive 4085 - Capital Asset Management. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2003). VA Directive 4086 - Investment Matrix. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2003). VA Directive 4086 - Investment Matrix. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2003). VA Handbook 7816 - Lease Management Procedures. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2003). VA Handbook 7816 - Lease Management Procedures. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2005). Design Guide - Lease Based Outpatient Clinic. Department of Veterans Affairs - Office of Facilities Management.

Department of Veterans Affairs. (2009). Lease Based Outpatient Clinic Template SFO (appendix B). Office of Construction & Facilities Management.

Department of Veterans Affairs. (2011). VA Directive 0011 - Strategic Capital Investment Planning Process. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2011). VA Handbook 0011 - Strategic Capital Investment Planning Process. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2012). VA Directive 7815 - Acquisition of Real Property by Lease and by Assignment from General Services Administration. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2012). VA Directive 7815 - Acquisition of Real Property by Lease and by Assignment from General Services Administration. Washington, DC: Department of Veterans Affairs.

Department of Veterans Affairs. (2013). 2013 Survey of Veteran Enrollees' Health and Reliance Upon VA. Burlington, VT: ICF International.

Department of Veterans Affairs. (2013). Review of Management of Health Care Center Leases. Department of Veterans Affairs.

Department of Veterans Affairs. (2013). Review of Management of Health Care Center Leases. VA Office of Inspector General - Office of Audits and Evaluations.

Department of Veterans Affairs. (2014). Call for FY 2017 Action Plans: Gap Analysis, Strategic Capital Assessment, and Long Range Capital Plan (VAIQ 7546257). Assistant Secretary of Management, Department of Veterans Affairs.

Department of Veterans Affairs. (2014). Functional Organization Manual - v2.0a. Department of Veterans Affairs.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Department of Veterans Affairs. (2014). FY 2014-2020 Strategic Plan. Department of Veterans Affairs.

Department of Veterans Affairs. (2014). Office of Asset Enterprise Management. Department of Veterans Affairs.

Department of Veterans Affairs. (2014). Space Planning Criteria Index. Department of Veterans Affairs - Office of Construction & Facilities Management.

Department of Veterans Affairs. (2015). Response to Chairman Jeff Miller on the Construction of the Denver Replacement VA Medical Center. Washington, DC: Sloan D. Gibson, Deputy Secretary of Veterans Affairs.

Department of Veterans Affairs. VA - Office of Construction & Facilities Management (CFM). Department of Veterans Affairs.

Draft Internal Major Project Update April 2015, CFM, 5/6/2015

DRAFT SCIP FY2017 Space Analysis Tool - In Process - 9 Jan 2015.xlsb, OAEM, February 2015.

Executive Office of the President. (2014). Circular No. A-11 - Preparation, Submission, and Execution of the Budget. Washington, DC: Executive Office of the President - Office of Management and Budget.

Facility Condition Assessments. Capital Asset Inventory, VA Intranet, February 2015.

Federal Asset Management: Eliminating Waste by Disposing of Unneeded Federal Real Property. Hearings before the Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security, Senate, 112th Cong. (2011) (Testimony of James M. Sullivan)

FEMA replacement standard, Office of the Inspector General (OIG 14-123-D), July 2014.

FGI Guidelines for Design and Construction of Hospitals and Outpatient Facilities. (2014).

FY 2016 Call for SCIP Business Cases VAIQ 7453485.pdf, OAEM, 1/20/15.

FY12toFY14_AllStationsOperatingBudgets_ByBOC.xlsx, VACO, April 2015.

FY17 space calculator.xlsx, VACO, February 2015.

FY2015 Signed Business Case Call Memo w Attachments.pdf, OAEM, 1/20/15.

FY2016 Action Plan Call Memorandum - Signed.pdf, OAEM, 1/20/15.

Health Care Planning Model Market Reports, all markets. ADUSH for Policy and Planning, May 2015.

Health Forum, (2013). AHA hospital statistics 2014 combination book and Microsoft excel tables on cd. [S.l.]: AHA Press.

Healthcaredesignmagazine.com, (2015). Best of 2014: Increasing Patient Satisfaction By Decreasing Patient Room Size. Retrieved from http://www.healthcaredesignmagazine.com/article/increasing-patient-satisfaction-decreasing-patient-room-size

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Healthcaredesignmagazine.com, (2015). Stakes Are High For Patient Room Design. Retrieved from http://www.healthcaredesignmagazine.com/article/stakes-are-high-patient-room-design

Healthcaredesignmagazine.com, (2015). The Next Generation of Kaiser Permanente's Small Hospital, Big Idea. Retrieved from http://www.healthcaredesignmagazine.com/article/next-generation-kaiser-permanentes-small-hospital-big-idea

Healthcaredesignmagazine.com, (2015). Trends in Surgery-Suite Design, Part One. Retrieved from http://www.healthcaredesignmagazine.com/article/trends-surgery-suite-design-part-one

House Veterans' Affairs Committee. (2015). Transcripts from witness testimony at a House Veterans' Affairs Committee hearing on the fiscal year 2016 budget request for the Department of Veterans Affairs. Department of Veterans Affairs.

Hulse, C. (2015). Washington Talk; Closing V.A. Hospitals Has Congress Squirming. Nytimes.com. Retrieved from http://www.nytimes.com/2003/08/16/us/washington-talk-closing-va-hospitals-has-congress-squirming.html

Industry experts in North America, multiple interviews, 2015.

Innovative and Cost-Effective Approaches to Meeting VA's Critical Infrastructure Needs, Office of Asset Enterprise Management, April 2013

Lease Cost Estimating Guide, VA Intranet, accessed April 2015.

Leases for full contract analysis.xlsx, Leases requested from the Office of Procurement and Logistics, Apr 2015

Lee, S. (2003). CAPITAL AND OPERATING LEASES - A RESEARCH REPORT (1st ed.). Federal Accounting Standards Advisory Board. Retrieved from http://www.fasab.gov/pdffiles/combinedleasev4.pdf

Lemmon, Ricky L. (2014). VHA Office of Procurement & Logistics. Department of Veterans Affairs.

Major Projects Data – contracts and modifications database, OALC, 4/30/2015

Major Projects Data – financial database, CFM, 3/27/2015

Major Projects Data – projects database, CFM, 3/27/2015

Military Health System, (2015). Direct Sharing with the VA. Retrieved from http://www.health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Access-to-Healthcare/DoD-VA-Sharing-Initiatives/Joint-Resource-Sharing/Direct-Sharing-with-the-VA

Military Health System, (2015). DoD/VA Sharing Initiatives. Retrieved from http://www.health.mil/Military-Health-Topics/Access-Cost-Quality-and-Safety/Access-to-Healthcare/DoD-VA-Sharing-Initiatives

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Minor – contracts and modifications, OALC, 3/30/2015

Minor – Project Tracking Reports, OCAMES, 3/18/2015

Nettinga, C. (2015). March to save VA hospital in Hot Springs attracts 150 people. Rapid City Journal. Retrieved from http://rapidcityjournal.com/news/local/march-to-save-va-hospital-in-hot-springs-attracts-people/article_e9455061-73e3-599b-8322-352313ac47d5.html

NRM – contracts and modifications, OALC, 4/20/2015

NRM – Project Tracking Reports, OCAMES, 3/18/2015

NRM Handbook 2012 Draft.doc, VACO, March 2015.

Office of Asset Enterprise Management, multiple interviews, 2015.

Office of Capital Asset Management and Engineering Services, multiple interviews, 2015.

Office of Construction and Facilities Management, Central Region, multiple interviews, 2015.

Office of Construction and Facilities Management, Eastern Region, multiple interviews, 2015.

Office of Construction and Facilities Management, Headquarters, multiple interviews, 2015.

Office of Construction and Facilities Management, Office of Operations, Real Property Services, multiple interviews, 2015.

Office of Construction and Facilities Management, Western Region, multiple interviews, 2015.

Office of Procurement and Logistics, Center for Leasing Excellence, multiple interviews, 2015.

Office of Procurement and Logistics, multiple interviews, 2015.

Office of Procurement and Logistics, Network Contracting Offices, multiple interviews, 2015.

Office of Procurement and Logistics, Service Area Offices, multiple interviews, 2015.

Office of the Inspector General. (August 2014). FEMA's Progress in Clarifying its "50 Percent Rule" for the Public Assistance Grant Program. (OIG-14-123-D). Washington, DC: Department of Homeland Security.

Palo Alto project discussion paper (incl. exhibits), CFM, 3/31/2015

Panangala, S., & Mendez, B. (2010). Veterans Health Administration: Community-Based Outpatient Clinics. Congressional Research Service.

PMHandbook.doc, CFM, February 2015.

SCIP 101.pdf, OAEM, 1/20/15.

SCIP 2016 space calculator.xlsx, OAEM, 1/20/15.

SCIP Action Plan - All_Projects_FY2014.xlsx, VACO, received 1/20/15.

SCIP Action Plan - All_Projects_FY2015.xlsx, VACO, received 1/20/15.

SCIP Action Plan - All_Projects_FY2016.xlsx, VACO, received 1/20/15.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

SCIP End User Training, OAEM, December 2014.

SCIP FY13 Scoring List.xlsx, VACO, received 1/20/15.

SCIP FY14 Scoring List.xlsx, VACO, received 1/20/15.

SCIP FY15 Scoring List.xlsx, VACO, received 1/20/15.

SCIP FY16 Scoring List.xlsx, VACO, received 1/20/15.

SCIP Gap Info.pptx, OAEM, 1/20/15.

Space Calculator Excel Version, VA Intranet, April 2015.

Space Driver - All VISNs.xlsx, VA Intranet, April 2015.

Space Planning Guide, TIL, accessed April 2015.

Station operating budgets by budget object code.xlsx, VA Resource Management Office, Mar 2015

Station operating budgets by medical facility appropriation category.xlsx, VA Resource Management Office, Mar 2015

The White House. (2014). Appendix B - Budgetary Treatment of Lease-Purchases and Leases of Capital Assets. The White House - Office of Management and Budget.

TripPack II, FY07-FY15, VA Intranet, February 2015.

Turner & Townsend. (2012). International construction cost survey. Turner & Townsend. Retrieved from http://www.turnerandtownsend.com/construction-cost-2012/TT_ICC_Report_Single_Pages_j98uI.pdf.file

Turner & Townsend. (2013) International Construction Cost Survey 2013. Turner & Townsend. Retrieved from http://www.turnerandtownsend.com/pdf/icc-13/files/assets/basic-html/index.htm#1

U.S. Department of Veterans Affairs - Office of Construction & Facilities Management. (2010). VAFM Transformation Initiative. Washington, DC: National Institute of Building Sciences.

U.S. Department of Veterans Affairs, (2015). VA-SEPS Net to Gross Sq Ft Conversion - Office of Construction & Facilities Management. Cfm.va.gov. from http://www.cfm.va.gov/til/SEPSNTG.asp

U.S. Department of Veterans Affairs, (2015). VA-SEPS Net to Gross Sq Ft Conversion - Office of Construction & Facilities Management. Cfm.va.gov. Retrieved from http://www.cfm.va.gov/til/sepsNTG.asp

U.S. Department of Veterans Affairs. (2012). The VA Construction Review Council Activity Report. U.S. Department of Veterans Affairs.

U.S. Department of Veterans Affairs. (2013). Individual VAMC Cost Guides. U.S. Department of Veterans Affairs - Office of Construction & Facilities Management.

U.S. Department of Veterans Affairs. (2014). Architectural Design Manual. U.S. Department of Veterans Affairs - Office of Construction & Facilities Management.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

U.S. Department of Veterans Affairs. (2014). Veterans Access, Choice, and Accountability Act of 2014 Section 601 & 602: Major Facility Leases. Washington, DC: Office of Public Affairs - U.S. Department of Veterans Affairs.

U.S. Department of Veterans Affairs. (2014). *VSSC data.* Provided by The MITRE Corporation 2014.

U.S. Department of Veterans Affairs. (2015). Volume IV - Construction, Long Range Capital Plan and Appendix. U.S. Department of Veterans Affairs.

United States Army Corps of Engineers. (2015). Testimony of Lloyd C. Caldwell, P.E., U.S. Army Corps of Engineers before the Committee on Veterans Affairs United States House of Representatives. United States Army Corps of Engineers.

United States Congress. (2014). Veterans Access, Choice, and Accountability Act of 2014. Washington, DC: United States Government Printing Office.

United States General Accounting Office. (2003). Improved Planning Needed for Management of Excess Real Property. United States General Accounting Office.

United States Government Accountability Office, (2011). VA Uses a Projection Model to Develop Most of Its Health Care Budget Estimate to Inform the President's Budget Request

GAO-11-205: Published: Jan 31, 2011. Publicly Released: Jan 31, 2011"

United States Government Accountability Office. (2004). Resource Sharing at Selected Sites. United States Government Accountability Office.

United States Government Accountability Office. (2005). Important Steps Taken to Enhance Veterans' Care by Aligning Inpatient Services with Projected Needs. United States Government Accountability Office.

United States Government Accountability Office. (2005). Preliminary Information on the Joint Venture Proposal for VA's Charleston Facility. United States Government Accountability Office.

United States Government Accountability Office. (2007). VA Should Better Monitor Implementation and Impact of Capital Asset Alignment Decisions. United States Government Accountability Office.

United States Government Accountability Office. (2008). Additional Efforts to Better Assess Joint Ventures Needed. United States Government Accountability Office.

United States Government Accountability Office. (2008). Improvements Needed in Design of Controls over Miscellaneous Obligations. United States Government Accountability Office.

United States Government Accountability Office. (2008). Progress Made in Reducing Unneeded Property, but VA Needs Better Information to Make Further Reductions. United States Government Accountability Office.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

United States Government Accountability Office. (2009). Challenges in Budget Formulation and Execution. United States Government Accountability Office.

United States Government Accountability Office. (2009). GAO Cost Estimating and Assessment Guide. United States Government Accountability Office.

United States Government Accountability Office. (2009). Long-Term Care Strategic Planning and Budgeting Need Improvement. United States Government Accountability Office.

United States Government Accountability Office. (2009). Long-Term Care Strategic Planning and Budgeting Need Improvement. United States Government Accountability Office.

United States Government Accountability Office. (2009). Overview of VA's Capital Asset Management. United States Government Accountability Office.

United States Government Accountability Office. (2009). VA is Working to Improve Initial Project Cost Estimates, but Should Analyze Cost and Schedule Risks. United States Government Accountability Office.

United States Government Accountability Office. (2009). VA is Working to Improve Initial Project Cost Estimates, but Should Analyze Cost and Schedule Risks. United States Government Accountability Office.

United States Government Accountability Office. (2010). Long-standing Weaknesses in Miscellaneous Obligation and Financial Reporting Controls. United States Government Accountability Office.

United States Government Accountability Office. (2010). Preliminary Observations on the Purchasing and Tracking of Supplies and Medical Equipment and the Potential Impact on Veterans' Safety. United States Government Accountability Office.

United States Government Accountability Office. (2011). Issues Related to Real Property Realignment and Future Health Care Costs. United States Government Accountability Office.

United States Government Accountability Office. (2011). Issues Related to Real Property Realignment and Future Health Care Costs. United States Government Accountability Office.

United States Government Accountability Office. (2011). Realignment Progressing, but Greater Transparency about Future Priorities Is Needed. United States Government Accountability Office.

United States Government Accountability Office. (2011). Weaknesses in Policies and Oversight Governing Medical Supplies and Equipment Pose Risks to Veterans' Safety. United States Government Accountability Office.

United States Government Accountability Office. (2013). Additional Actions Needed to Decrease Delays and Lower Costs of Major Medical-Facility Projects. United States Government Accountability Office.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

United States Government Accountability Office. (2013). Improvements Needed to Ensure That Budget Estimates Are Reliable and That Spending for Facility Maintenance Is Consistent with Priorities. United States Government Accountability Office.

United States Government Accountability Office. (2014). Action Needed to Improve the Leasing of Outpatient Clinics. United States Government Accountability Office.

US federal agencies, multiple interviews, 2015.

VAMC Cost Guide, CFM Central, 1/27/2015.

Veterans Health Administration. (2004). VHA Handbook 1006.1 - Planning and Activating Community-Based Outpatient Clinics. Washington, DC: Department of Veterans Affairs.

Veterans Health Administration. (2013). Healthcare Engineering and Capital Asset Management Guidebook. St. Louis, Missouri: VHA Center for Engineering & Occupational Safety and Health (CEOSH).

Veterans Health Administration. (2014). Audit of the Non-Recurring Maintenance Program. VA Office of Inspector General - Office of Audits and Evaluations.

VHA appropriations description.pdf, VACO, February 2015.

VHA Directive 1037 Randolph Sheppard Act.pdf, VACO, February 2015.

VHA Directive 2005-019 - SEISMIC SAFETY OF VHA BUILDINGS.pdf, VACO, February 2015.

VHA Lease Process 01-26-2015.pptx, VACO, February 2015.

VHA Major Lease Info - Request Memo and Checklist.docx, VACO, February 2015.

VHA_STRATEGIC_PLAN_FY2013-2018.pdf, VACO, February 2015.

VISN 16 Integrated planning study, CFM, January 2015.

VISN 17 master plan_Executive summary.pdf, CFM, January 2015.

Wbdg.org, (2015). Construction Criteria Base - Military Health System (MHS): DOD Space Planning Criteria for Health Facilities | Whole Building Design Guide. Retrieved from http://www.wbdg.org/ccb/browse_cat.php?c=261

Worksheet in OoC Lease Checklist.xlsx, VA Intranet, accessed April 2015.

Zielbauer, P. (2015). Talk of Closing Manhattan V.A. Hospital Prompts Campaign to Save It. *New York Times.* Retrieved from http://www.nytimes.com/2003/11/12/nyregion/talk-of-closing-manhattan-va-hospital-prompts-campaign-to-save-it.html

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

This page intentionally left blank.

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Appendix D Acronym List

A/E	Architect/ Engineer
AEP	Access Expansion Plan
BDOC	Bed Days of Care
BRAC	Base Relocation and Closure
CAGR	Compound Annual Growth Rate
CAI	Capital Asset Inventory
CAM	Capital Asset Manager
CAMH	CMS Alliance to Modernize Healthcare
CBOC	Community Based Outpatient Clinic
CCI	City Cost Index
CEA	Cost Effective Analysis
CFM	VA's Office of Construction and Facilities Management
CFMIS	CFM Information System
CLC	Community Living Center
CMS	Centers for Medicare & Medicaid Services
CO	CFM Contracting Officer
COR	Contract Officer Representatives
COTR	Contracting Officer Technical Representative
CPRMP	Capital Program Requirements Management Process
CSI	Clinical Specific Initiatives
DoD	Department of Defense
eCMS	Electronic Construction Management System
EHCPM	Enrollee Health Care Planning Model
EOC	Environment of Care
ESPCs	Energy Savings Performance Contracts
FAR	Federal Acquisition Regulation
FCA	VHA Facilities Condition Assessment
FFRDC	Federally Funded Research and Development Center
FGI	Facilities Guidelines Institute
FMS	Financial Management System
FPDS	Federal Procurement Database System
FRPP	Federal Real Property Profile
GAO	Government Accountability Office
GSA	General Services Administration

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

GSF	Gross Square Feet
HCC	Health Care Center
HCPM	Health Care Planning Model
HHS	Department of Health and Human Services
HVAC	Heating, Ventilation and Air Conditioning
IDC	Integrated Design Construction
KPIs	Key Performance Indicators
LCO	Leasing Contracting Officer
LOS	Level of Significance
LSU	Louisiana State University
NAVFAC	Naval Facilities Engineering Command
NCA	National Cemetery Administration
NCO	VHA Network Contracting Office
NPV	Net Present Value
NRM	Non-Recurring maintenance
NRM-GM	NRM Green Management
NRM-II	NRM Infrastructure Improvement
NRM-Sus	NRM Sustainment
NUSF	Net Usable Square Feet
OAEM	Office of Asset Enterprise Management
OALC	Office of Acquisition, Logistics and Construction
OCAMES	Office of Capital Asset Management and Engineering
OGC	Office of General Council
OHI	Organizational Health Index
OIG	Office of the Inspector General
OMB	Office of Management and Budget
PACT	Patient Aligned Care Team
PALT	Procurement Administrative Lead Time
PDT	Project Delivery Team
PE	Project Executive
PM	Project Manager
PMP	Project Management Plan
PRB	Project Review Boards
PTR	Project Tracking Report
RE	Resident Engineer
RIF	Request for Information

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

RM&R	Recurring Maintenance and Repair
RPS	Real Property Services
RSF	Rentable Square Feet
SAIL	Strategic Analytics for Improvements and Learning Value Model
SCIP	Strategic Capital Investment Plan
SDVOSBs	Service Disabled Veteran-Owned Small Businesses
SEPS	Space and Equipment Planning System
SMEs	Subject Matter Experts
SPC	Strategic Planning Category
SRE	Senior Resident Engineer
TCO	Total Cost of Ownership
TEC	Total Estimated Cost
TIL	Technical Information Library
UCH	University of Colorado Hospital
USACE	US Army Corps of Engineers
VA	Department of Veterans Affairs
VACO	VA Central Offices
VAMC	Veterans Affairs Medical Center
VAR	VA Acquisition Regulation
VBA	Veterans Benefit Administration
VERA	Veterans Equitable Resource Allocation
VHA	Veterans Health Administration
VISNs	Veterans Integrated Service Networks
VISTA	Veterans Health Information Systems and Technology Architecture
VSSC	VHA Support Service Center

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.