

The Congress has stated that a “major national goal of the United States is to provide the resources, processes, and structure that will enable Indian tribes and tribal members to obtain the quantity and quality of healthcare services and opportunities that will eradicate the health disparities between Indians and the general population of the United States.” This report assesses the capacity, condition, and needs of the IHS health care facilities required to ensure crucial access to health care services for people long burdened by health disparities.

The 2016 Indian Health Service and Tribal Health Care Facilities’ Needs Assessment Report to Congress

EXECUTIVE SUMMARY	2
Purpose	2
HIGHLIGHT – Access to Health Care In or Near Indian Communities	2
HIGHLIGHT – Aging Facilities Inventory	3
HIGHLIGHT – Facilities Are Undersized for the Populations Served	3
HIGHLIGHT – The Magnitude of Need Is Enormous	3
Figure 1 – Accumulating Facility Need Due to Low Investment	4
HIGHLIGHT – Obsolete Internal Layouts and Designs	4
HIGHLIGHT – Preliminary Estimates for Newly Authorized Types of Facilities	5
HIGHLIGHT – Access Is the Basis of Effective Health Care Coverage	5
A CRUCIAL FACILITIES NETWORK PROVIDING HEALTH CARE	6
Figure 2 – Access: The Right Providers, the Right Time, and the Right Place	6
Figure 3 – IHS Facilities Need by Area, Cost, and ft ²	7
AGING INFRASTRUCTURE, RISING MAINTENANCE	8
Figure 4 – Photos of A Range of Older and Newer IHS Facilities	8
Figure 5 – IHS Facilities by Type	8
Figure 6 – Disproportionately Aged Buildings	8
Figure 7 – Maintenance and Improvement Budget	10
UNDERSIZED FACILITY CAPACITY, PENT-UP SERVICE DEMAND	10
Figure 8 – Pent-Up Demand Released After Replacing An Older Facility	11
Figure 9 – Outpatient Visits at Replacment Facilities Increased 42 Percent	11
MODERN, PATIENT CENTERED, CULTURALLY APPROPRIATE SERVICES	12
Figure 10 – Facilities Designed to Enhance Healing Environments	12
Figure 11 – IHS Facility Planning and Design Process	13
NEEDED VERSUS AVAILABLE SPACE	14
Active Authority Space and Funding Needs	15
Table 1 – Active Authorities Results – Space Needed and Estimated Costs	16
Preliminary Assessment – Newly Authorized Facilities	17
Figure 12 – Results of Tribal Survey on Facility Type Priorities	17
Table 2 – Preliminary Estimates for Expanded Authority Facilities	18
DISCUSSION – IMPLICATIONS FOR THE FUTURE	19
Figure 13 – Impacts on IHS Facility System of Five Hypothetical Funding Scenarios	19

EXECUTIVE SUMMARY

PURPOSE

The Indian Health Care Improvement Act (IHCIA), 25 U.S.C. opens with § 1601. Congressional findings, the first two of which, state:

- (1) *“Federal health services to maintain and improve the health of the Indians are consonant with and required by the Federal Government’s historical and unique legal relationship with, and resulting responsibility to, the American Indian people.*
- (2) *A major national goal of the United States is to provide the resources, processes, and structure that will enable Indian tribes and tribal members to obtain the quantity and quality of health care services and opportunities that will eradicate the health disparities between Indians and the general population of the United States.”*

Per 25 U.S.C. 1631 et seq., the Secretary for the Department of Health and Human Services (HHS) is required to submit to the Committee on Indian Affairs of the Senate and the Committee on Natural Resources of the House of Representatives an updated quinquennial report that describes the comprehensive, national, ranked list of all health care facilities needs for the Service, Indian tribes, and tribal organizations (including inpatient health care facilities, outpatient health care facilities, specialized health care facilities (such as for long-term care and alcohol and drug abuse treatment), wellness centers, and staff quarters, and the renovation and expansion needs, if any, of such facilities) developed by the Service, Indian tribes, and tribal organizations for the Facilities Needs Assessment Workgroup and the Facilities Appropriation Advisory Board.¹ This report is an update to the initial report submitted in 2011.

This report was updated in close collaboration with the Facilities Appropriation Advisory Board (FAAB). The report’s estimated cost and space requirements were determined using the same consistent methodology and data sources (updated) as in the 2011 Report including the IHS standard planning criteria, detailed planning documents and IHS Facilities Budget Estimating System (FBES).

This report shows Assessed Need, which is an estimate of need for planning level use. Before any project is approved and funded, it undergoes: refined planning; risk assessment; input from Integrated Project Teams; approvals (Tribe, IHS, local, state, participating agency etc.); environmental clearances; and strict acquisition and Project Management requirements that yield the final project scope, budget and schedule.

This report presents an estimate of the IHS health care system facilities’ needs. The term “IHS” as used in this report refers to this IHS system and includes IHS Direct Service, tribes and tribal organization’s health care facilities.² The resource need is shown in terms of space (ft²) and capital costs by IHS Area and State. This data is essential to the capital investment planning, budgeting, prioritizing and decision making processes. These facilities needs estimates are the amount of physical space and capital resources necessary to uphold the federal government’s obligations in eliminating health disparities and providing access to comprehensive, high quality, culturally competent care.

¹ 25 U.S.C. § 1631 - Consultation; closure of facilities; reports.

² As defined by the Indian Self-Determination and Education Assistance Act at 25 U.S.C. § 450b.

HIGHLIGHT – ACCESS TO HEALTH CARE IN OR NEAR INDIAN COMMUNITIES

A network of more than 650 IHS and tribal health care facilities located in or near American Indian/Alaska Native (AI/AN) communities provide health care services where alternatives are few or non-existent. Practical access to local health care sites is crucial for the AI/AN population, which is burdened by low health status compared with other Americans. The facilities of the IHS network are widely dispersed among 36 states³, primarily on or near Indian reservations where travel can be difficult, especially where transportation options are unavailable or limited by harsh climatic conditions. For most of these rural communities, IHS and tribal health care facilities offer the only feasible source of health care services.

HIGHLIGHT – AGING FACILITIES INVENTORY

The average age of IHS facilities continues to increase. The IHS hospitals now average 40 years of age, almost four times older than U.S. hospitals (10.6 years of age)⁴. Aging facilities risk code noncompliance, lower productivity, and compromises for health care services. Aging has pushed up costs of maintenance and essential repairs. Beginning in 2011, maintenance deficiencies could not be fully corrected because the IHS Maintenance and Improvement budget was insufficient. National benchmarks for operation and maintenance costs report that a 40-year old facility is about 26 percent more expensive to maintain than a 10-year old facility.⁵ Preventative maintenance and improvements have been deferred and will push up future costs of addressing further deterioration and/or breakdown. Health Care Facility Construction (HCFC) appropriations between 2010 and 2016 have averaged ~\$76 million/annually. The 2016 HCFC appropriation was \$105 million. At the current rate of HCFC appropriations, the average age of IHS facilities will continue to increase at a great rate. At the existing replacement rate, a new 2016 facility would not be replaced for 400 years. (Assumes: 14 million ft² of existing space needs replacement; appropriations adjusted for inflation; 30% of HCFC appropriation is for replacement; and replacement cost \$770/ft²: $(14 \text{ million ft}^2 / [(\$76 \text{ million/year})(1/3) / \$770/\text{ft}^2] = 425 \text{ years})$).

HIGHLIGHT – FACILITIES ARE UNDERSIZED FOR THE POPULATIONS SERVED

Existing space in IHS facilities (14 million ft²) is substantially less than required (~27 million ft²) for the 2015 AI/AN user-population. Insufficient capacity and resources severely restrict health care services that can be provided. An additional 4.7 million ft² is becoming outdated and should be replaced. Unless these needs are addressed, the growing AI/AN population and gradual deterioration of older space will further expand the need.

HIGHLIGHT – THE MAGNITUDE OF NEED IS ENORMOUS

Space capacity of IHS health care facilities is only about 52 percent of that required for the AI/AN population. Estimated costs to construct an additional 18 million ft² of new and replacement space would total \$10.3 billion in 2016 compared to \$8 billion five years ago, an increase of 25 percent. The facilities space need has accumulated over many years. Since the last report, facility construction appropriations have averaged (2010 to 2016) only about \$76 million annually. This rate is disproportionately low (\$35 per capita compared to \$374 per person for the US⁶). In coming years, accelerating obsolescence will further compromise services as the AI/AN population continues to grow faster than facility capacity to serve it.

³ DHHS, Indian Health Service. Trends in Indian Health. 2014 Edition

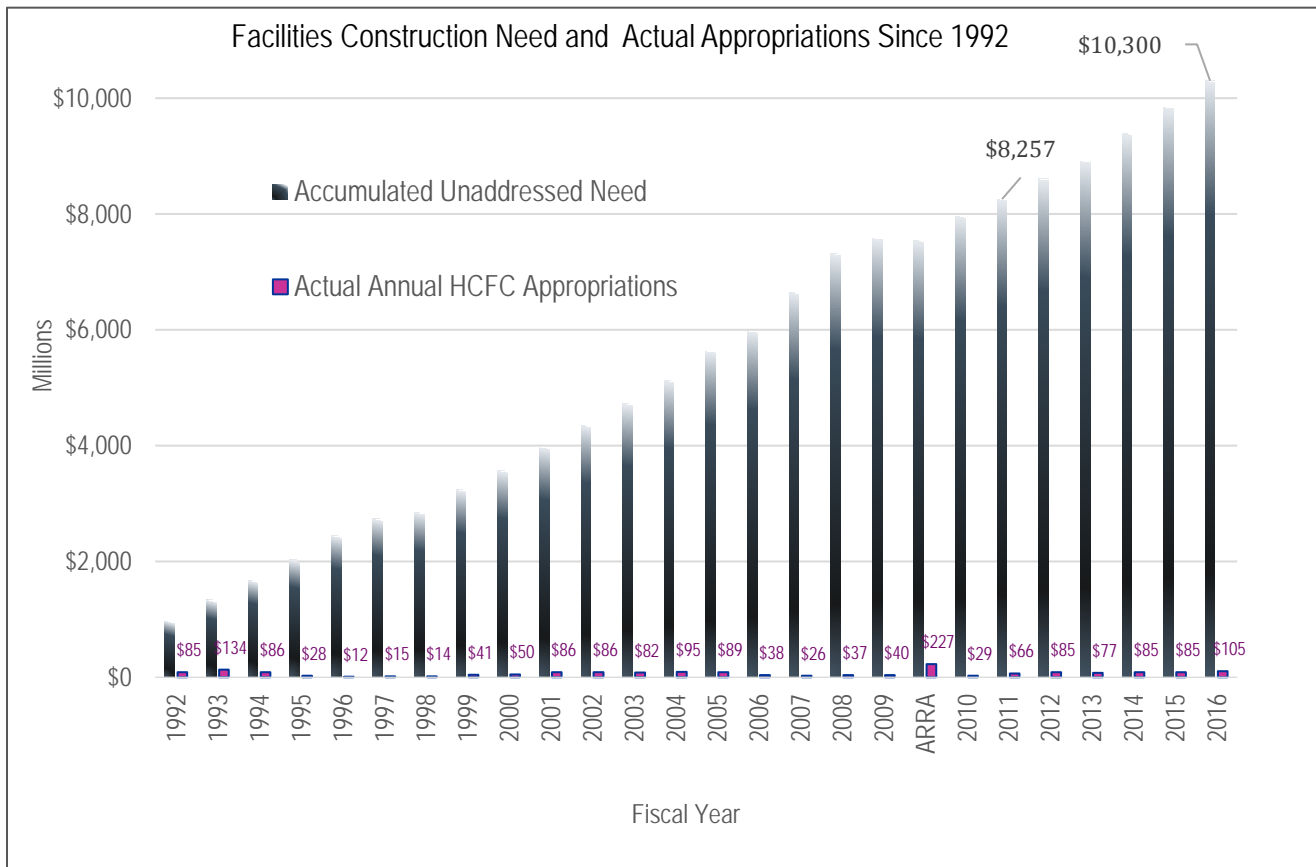
⁴ *Almanac of hospital financial & operating indicators: a comprehensive benchmark of the nation's hospitals* (2015 ed., pp. 176-179): <https://aharesourcecenter.wordpress.com/2011/10/20/average-age-of-plant-about-10-years/>

Becker's Healthcare CFO, Financial Management, 11 Statistics on Average Age of Hospital Plant by Herman, Bob, February 14, 2013.

⁵ Adams, Tim, et al. Operations and Maintenance Benchmarks for Health Care Facilities. International Facility Management Association, 2010.

⁶ Centers for Medicare and Medicaid Services. National Health Expenditure data. Accessed on September 21, 2015, at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet.html>

FIGURE 1 – ACCUMULATING FACILITY NEED DUE TO LOW INVESTMENT



The initial Capital Investment (CI) in construction and/or major renovation of a facility spread across a 30 year design life are only a small portion of annual operating costs. Most CI projects provide a return that exceeds the investment. Health care is labor-intensive, accounting for 60 to 75 percent of annual operating expenses. Consequently, modern facility layout that increases workforce productivity can lower overall costs in the long run.⁷ Similarly, improvements in facilities and ongoing maintenance reduce total life-cycle costs and extend facilities’ useful life with a relatively small up-front investment⁸.

HIGHLIGHT – OBSOLETE INTERNAL LAYOUTS AND DESIGNS

Space and layout limitations in older IHS facilities impede delivery of modern health care services. Older IHS facilities were constructed before the advent of contemporary patient care models and require modernized internal layouts and space. Contemporary facility designs benefit from decades of credible research, evidence-based design, and a host of other advances yielding improvements across a spectrum of clinical, productivity, satisfaction, and cultural measures. "A functional design can promote skill, economy, conveniences, and comforts; a non-functional design can impede activities of all types, detract from quality of care, and raise costs to intolerable levels."⁹

⁷ Carr, Robert F. Health Care Facilities. Whole Building Design Guide, National Institute of Building Science. October 2014.

⁸ FCC. Investments in Federal Facilities: Asset Management Strategies for the 21st Century. NRC, National Academy of Sciences 2004.

⁹ Hardy, Owen B. and Lammers, Lawrence P. Hospitals, the planning and design process / by Owen B. Hardy and Lawrence P. Lammers Aspen Systems Corp Germantown, MD 1977

HIGHLIGHT – PRELIMINARY ESTIMATES FOR NEWLY AUTHORIZED TYPES OF FACILITIES

The IHS has begun assessing facility space needs for a few facility types that are newly authorized in the IHCA. Based on results from a 2015 survey of facility priorities in Indian communities, five types of facilities were added into our assessment having an estimated cost of \$4.2 billion. The five facility types are:

- Inpatient Mental/Behavioral Health and Alcohol Substance Abuse Program Facilities
- Long-Term Care Facilities – Clinical
- Long-Term Care Facilities – Non-Clinical
- Specialty Medical Services Facilities
- Dialysis Facilities

HIGHLIGHT – ACCESS IS THE BASIS OF EFFECTIVE HEALTH CARE COVERAGE

The Affordable Care Act (ACA) expanded insurance and Medicaid coverage available to eligible AI/AN people. But these benefits can be realized only if newly covered AI/ANs can readily access health care sites that provide the covered services. The IHS and tribal health care facility sites offer the only feasible source of health care services for many remote and isolated AI/AN communities. Moreover, AI/ANs often choose culturally competent service providers when they have a choice. For these reasons, it is prudent to assume that IHS facilities will continue as the primary health care access point for AI/ANs seeking services covered by Medicaid or other insurance plans. Any unanticipated service and utilization impacts resulting from ACA that may develop between 2016 and 2021 will be reflected in the next edition of this report.

A CRUCIAL FACILITIES NETWORK PROVIDING HEALTH CARE

More than 650 IHS and tribal health care facilities provide crucial access to health care services for 2.2 million AI/ANs. Approximately 1.6 million actively use IHS facilities. The remainder do not regularly access IHS facilities for reasons that vary; some lack means to travel to facilities, which may be distant; some become discouraged from seeking services by waiting lists for appointments, limited capacity, insufficient staff, and other resource constraints. The annual patient utilization rate for IHS services in 2012 was 3.73 visits per year.¹⁰ The annual patient utilization rate for the U.S. population is 4.08 visits per year.¹¹ Yet the AI/AN population's lower health status should lead to a higher utilization rate. That 10%+ discrepancy in part reflects lack of access due to limited providers and facility capacity.

Meaningful access to care would ensure that AI/ANs get to “the right provider, at the right time, at the right place”¹². Meaningful access is fully realized only when necessary health care providers and resources are paired with appropriate health care facilities located within practical travel distance from AI/AN communities.

Practical local access to health care sites providing comprehensive health care services is vital for the AI/AN population. AI/ANs born today have a life expectancy that is 4.5 years less than the U.S. all races population (73.7 years to 78.2 years, respectively)¹³. They

continue to die at higher rates than other Americans for diseases such as chronic liver disease and cirrhosis (some cases are result of chronic alcoholism, obesity and exposure to Hepatitis B and C viruses), diabetes mellitus, unintentional injuries, assault/homicide, intentional self-harm/suicide, and chronic lower respiratory diseases.

Health care services, accessible when and where they are needed, are essential to reduce and eliminate persistent health disparities that burden AI/AN people. The IHS's facility network is primarily located in Indian communities remote from other private and public health care sources. In fiscal year 2014, IHS facilities provided care for over 40,000 hospital admissions and almost 14 million outpatient visits for AI/ANs. Due to long distances and difficult travel, many of these services would not have been available to AI/ANs otherwise.

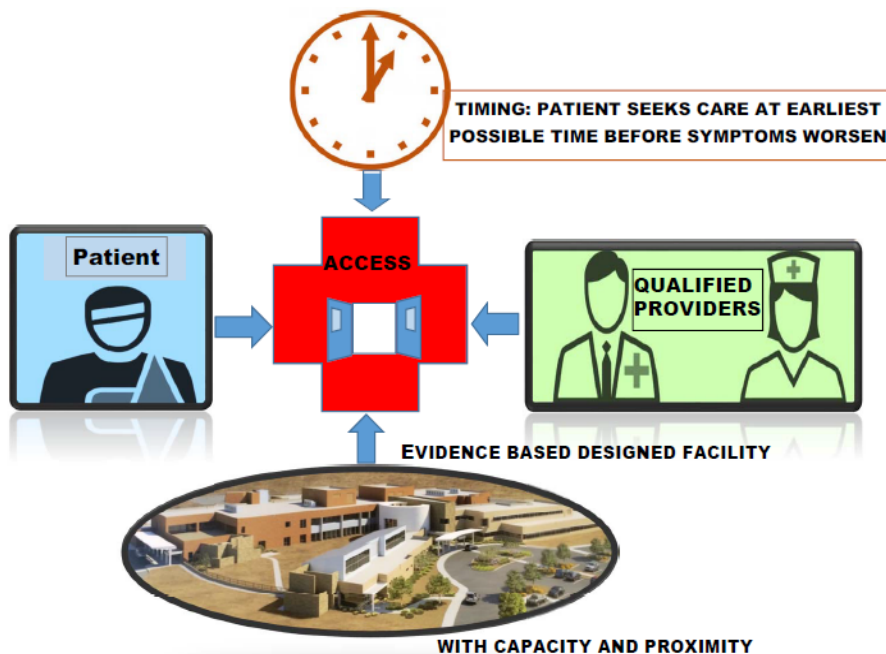


FIGURE 2 – Access: The Right Providers, the Right Time, and the Right Place

¹⁰ IHS, Health System Planning Process, Planning and Programming Manual, Notes to the Planner, Ambulatory Care, Primary Care. November 2012.

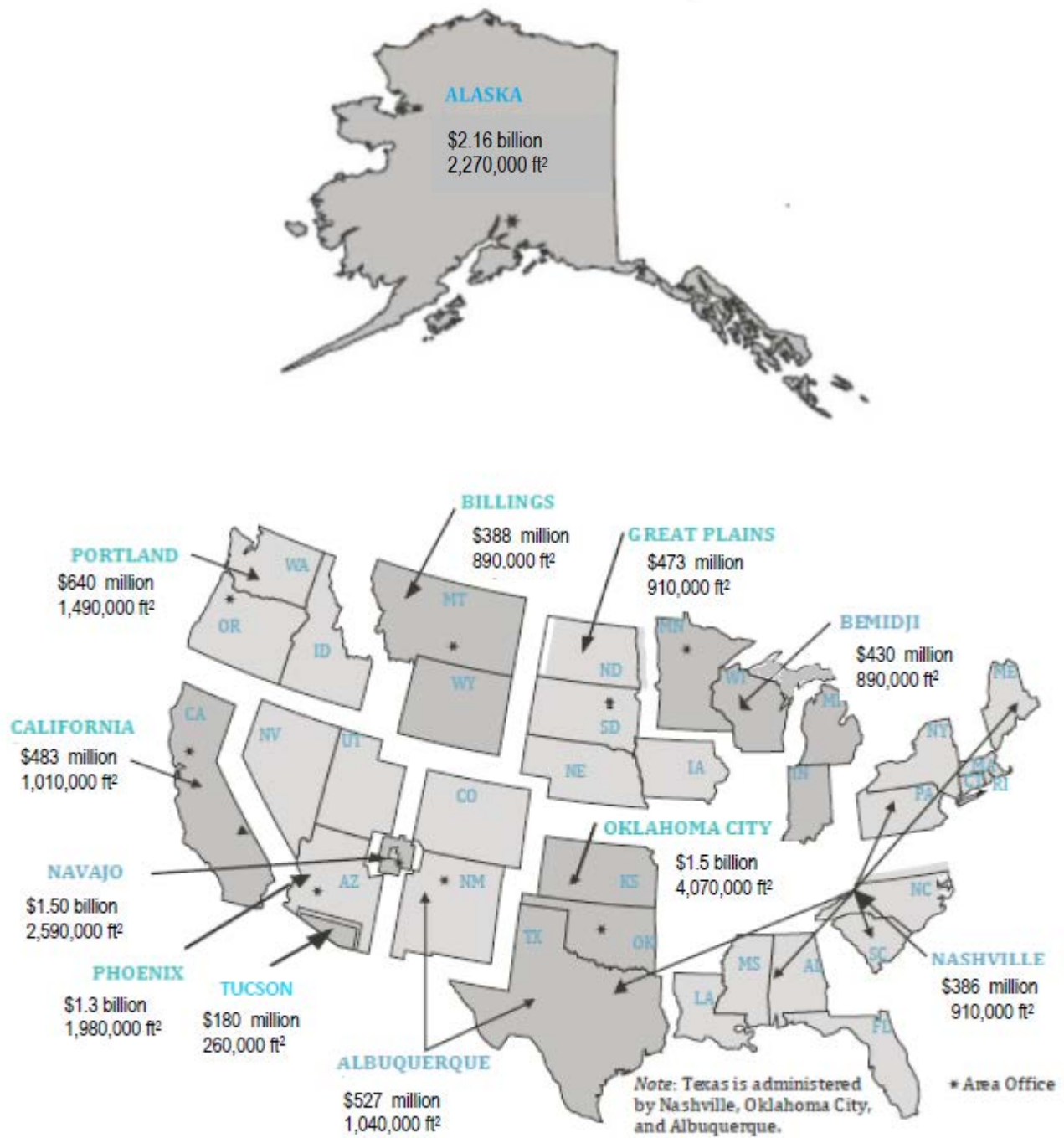
¹¹ CDC. Ambulatory Care Use and Physician office visits. National Ambulatory Medical Care Survey: 2010 Tables. Accessed on November 5, 2015 at <http://www.cdc.gov/nchs/fastats/physician-visits.htm>

¹² Department of Defense (DOD). Military Health System's Guide to Access Success. Health Care Access Professionals of the TRICARE Management Activity and Army, Navy, Air Force and Coast Guard Medicine. December 15, 2008

¹³ DHHS, Indian Health Service. Division of Program Statistics (DPS), Office of Public Health Support (OPHS). Trends in Indian Health. 2014 Edition

The Figure 3 map below displays IHS facility space and resources needed to serve widely dispersed AI/AN populations located in 36 states.

FIGURE 3 – IHS FACILITIES NEED BY AREA, COST, AND ft²



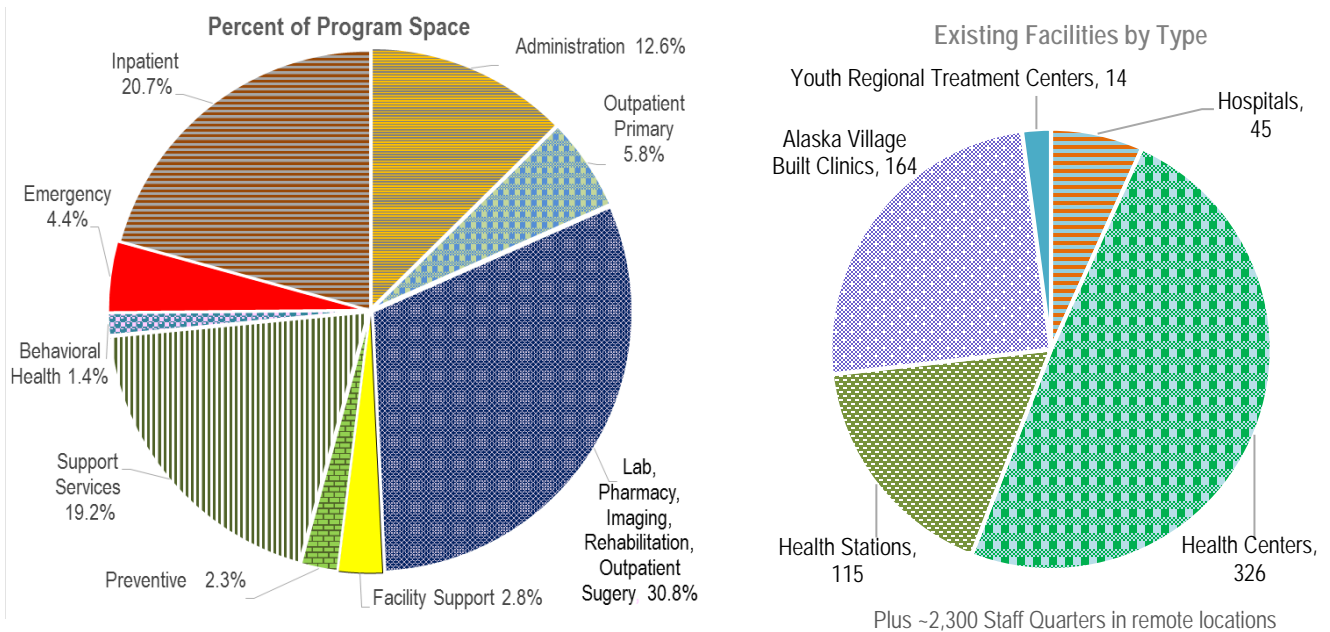
AGING INFRASTRUCTURE, RISING MAINTENANCE

The IHS facilities vary widely in age, capacity, design, and function. Some were constructed decades ago before the modern era of medical practice, standards, and codes. Some of the oldest facilities continue in use well past their expected useful life and many older facilities are overcrowded. By contrast, recent IHS facilities are designed for state-of-the-art medical practice such as patient/family center models of care. Their internal configuration is updated, which improves productivity and patient flow. Figure 4 shows photos of a range of older and newer IHS facilities. Dated external architecture is clearly evident in older facilities.

FIGURE 4 – PHOTOS OF A RANGE OF OLDER AND NEWER IHS FACILITIES

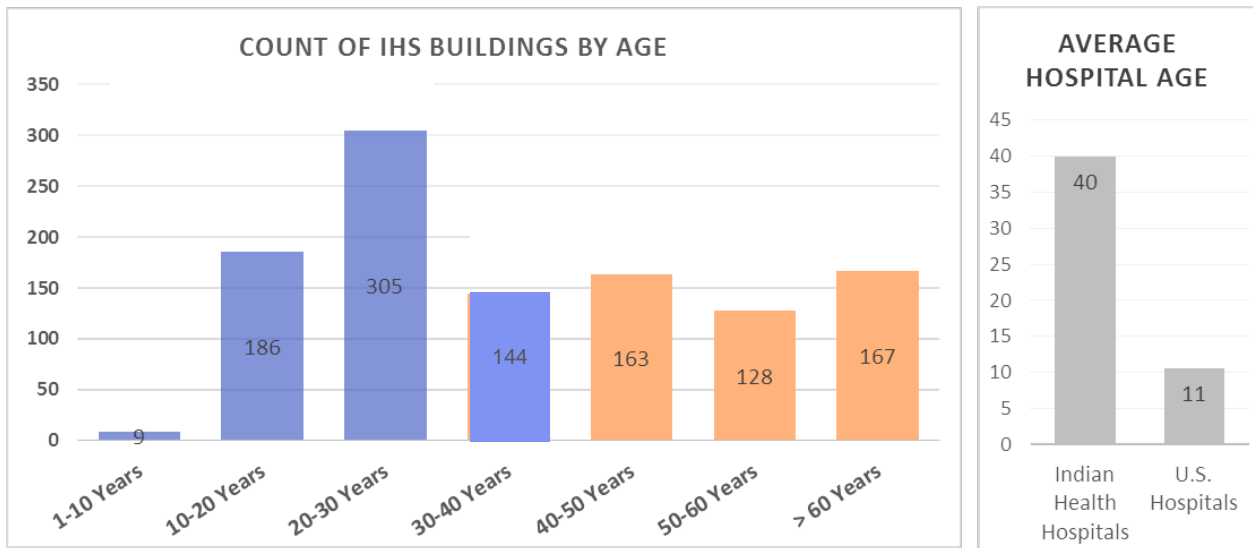


FIGURE 5 – IHS FACILITIES BY TYPE



Replacement and modernization in the IHS network has emphasized outpatient care. As a result, outpatient space in the IHS network is about double inpatient space. Because IHS hospitals also provide outpatient services, the actual outpatient space ratio to inpatient space is even higher. Expanding and modernizing outpatient space parallels a similar trend in American medical practice in general. Although the IHS facilities network is sprinkled with modern replacements, especially ambulatory care facilities, the average age across the network continues to rise. The replacement rate is not keeping up. Fifty-five percent of all IHS facilities are older than 30 years of age. The IHS hospitals, which now average 40 years of age, are almost four times older than U.S. hospitals in general (10.6 years of age¹⁴).

FIGURE 6 – DISPROPORTIONALLY AGED BUILDINGS*



*A facility or campus often consists of several buildings.

¹⁴ Source: *Almanac of hospital financial & operating indicators: a comprehensive benchmark of the nation's hospitals* (2015 ed., pp. 176-179): <https://www.optumcoding.com/Product/43409/>

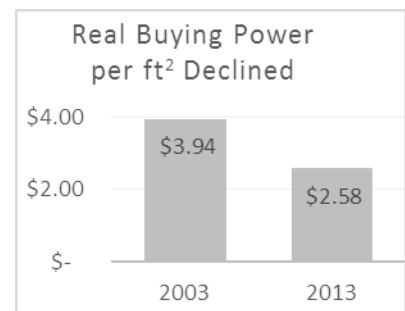
Reliability declines as buildings and equipment age. Medical and laboratory equipment, which has an average useful life of 6 years, are used over twice as long in IHS facilities.¹⁵ Aging facilities increase maintenance costs, elevate code noncompliance risk and lower productivity. Potential consequences, such as service disruptions and facility downtime, are compounded in isolated rural settings where many older IHS facilities are located.

Facility aging has increased costs of maintenance and repairs. Beginning in 2011, maintenance and repair deficiencies could not be fully corrected because the maintenance and improvement budget was insufficient. Moreover, because the budget goes to maintenance and repair, improvements to older spaces ceased, improvements that, in years prior to 2011, had been gradually modernizing some outdated space.

National benchmarks indicate that a 40-year old facility is about 26 percent more expensive to maintain than a 10-year old facility.¹⁶ Consequently, preventative maintenance and improvements are deferred and will push up future costs to address deterioration and/or breakdown.

Despite maintenance needs that rise as facilities age, the IHS maintenance and improvement budget has actually declined per square foot from \$3.94/ft² in 2003 to \$2.58/ft² in 2013 (~\$2.90/ft² adjusted for rising costs due to inflation). Consequently, preventative maintenance and needed improvements are deferred and will escalate future costs. In 2015, the maintenance budget (\$53.6 million) was sufficient to cover only 77 percent of maintenance needs arising annually even with deferring needed improvements to outdated space. The reported backlog of deferred maintenance, alteration and repair as of the end of year 2015 is approaching \$500 million.¹⁷

FIGURE 7 – MAINTENANCE AND IMPROVEMENT BUDGET



UNDERSIZED FACILITY CAPACITY, PENT-UP SERVICE DEMAND

When facilities of IHS’s aging network were designed, often decades ago, facility capacity was sized for the AI/AN population and health care practices of the time. Over the intervening years, AI/AN populations have substantially increased. This typically results in severely undersized facility capacity relative to the larger actual population, especially capacity to provide contemporary levels of outpatient services. Consequently, the older facility is incapable of handling the needed levels of services whether fully staffed or even supplemented by additional staff. The facility capacity bottleneck restricts services well below the current needed level for the population. In economics, this condition is descriptively labeled “pent-up demand.”

The IHS replacement facilities are sized and designed to relieve pent-up demand. First, the current AI/AN population and patterns of utilization is carefully measured. Secondly, annual rates of AI/AN population growth are projected for at least 10 years into the future. This realistic calculation often results in a designed capacity that is 3 to 4 times larger than the existing facility. Thirdly, the design configuration, space capacity, and layout are key to contemporary models of care which emphasize outpatient services.

When an appropriately sized and resourced facility replacement opens, a surge of new utilization often occurs. The surge includes both new patients and new levels of care. Sometimes the utilization data before and after facility replacement is quite dramatic as is demonstrated in the example seen in Figure 8. The Pawnee Indian

¹⁵ HHS, IHS, Public Affairs, Fact Sheets: Health Facilities Construction. January 2015. Accessed on December 9, 2015 at: <https://www.ihs.gov/newsroom/index.cfm/factsheets/healthfacilitiesconstruction/>

¹⁶ Adams, Tim, et al. Operations and Maintenance Benchmarks for Health Care Facilities. International Facility Management Association, 2010.

¹⁷ The IHS tracks accumulating maintenance needs for functional spaces in each facility. Costs are estimated using industry standard factors and inflation.

Health Center (IHC) facility is only about 50 miles from the Pawhuska IHC facility. When Pawnee was replaced with a larger facility in 2004, the increased capacity allowed more patient visits and significantly increased access. More generally, Figure 9 shows 11 replacement facilities opened in the last 10 years for which Outpatient Provider Visits (OPVs) increased an average of 42 percent compared to the years before facility replacement.

FIGURE 8 – PENT-UP DEMAND RELEASED AFTER REPLACING AN OLDER FACILITY

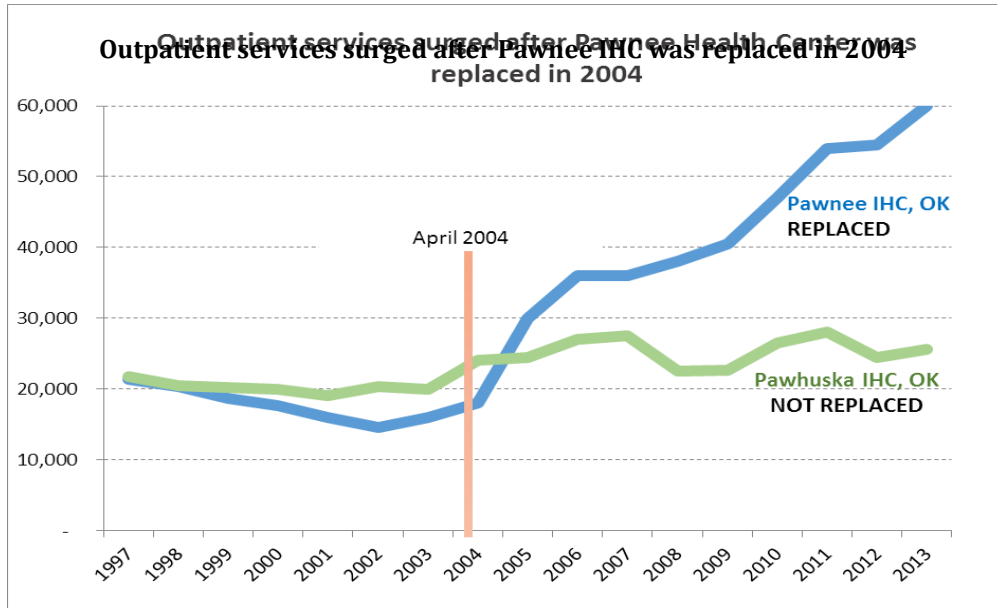
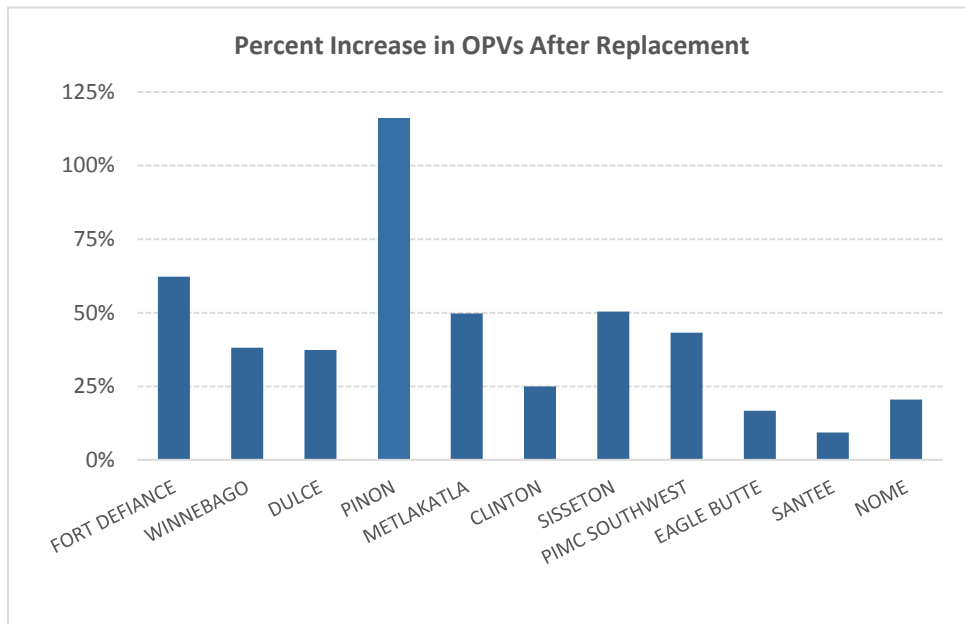


FIGURE 9 – OUTPATIENT VISITS AT REPLACEMENT FACILITIES INCREASED 42 PERCENT



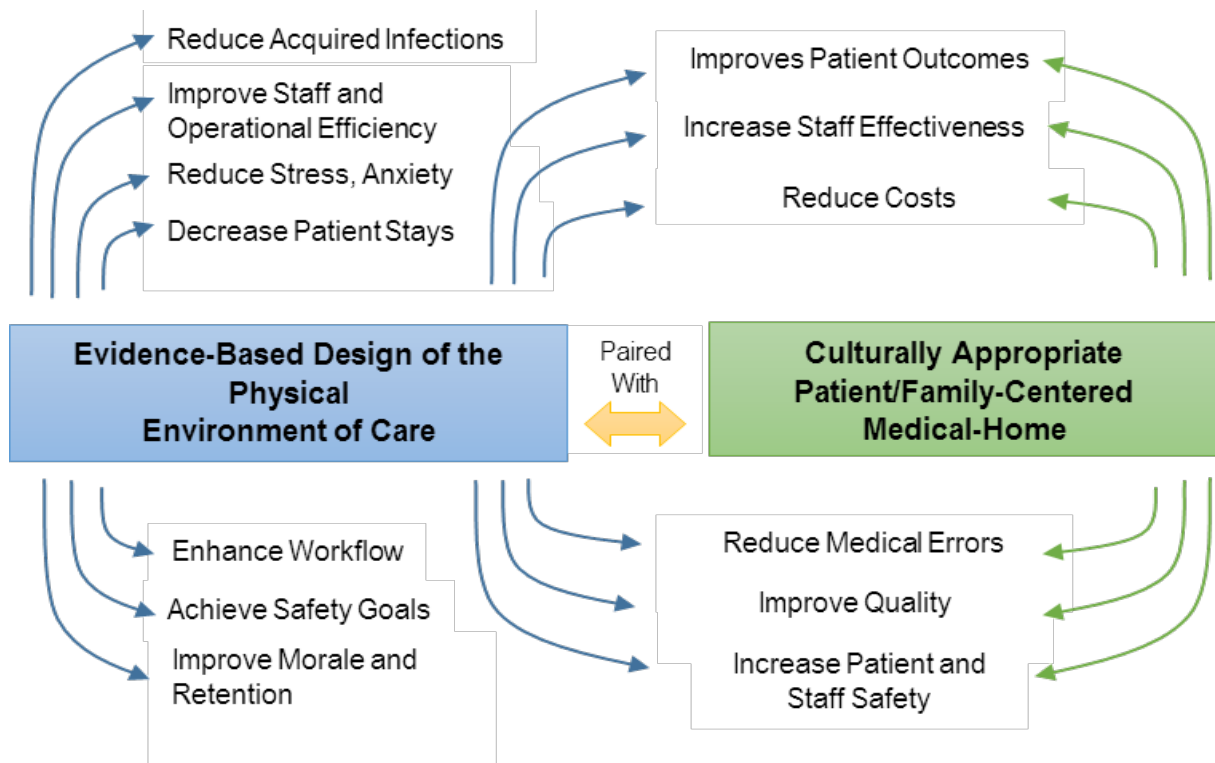
MODERN, PATIENT CENTERED, CULTURALLY APPROPRIATE SERVICES

Older IHS facilities were constructed before the advent of contemporary models of patient care. Modern health care delivery practices require suitable layouts of facility space. Older IHS facility architecture and internal layout was based on simplistic, now outdated notions, which impede efficient delivery of modern services.

When an IHS facility is replaced, its internal layout, configuration, and infrastructure are designed for a Patient/Family Centered Care model and modern technology. The Patient/Family Centered Care model can be enhanced by facility design features with some physical features being prerequisites for the Care model. The patient centered approach is founded on therapeutic relationships between all care providers, patients, and family. It depends on mutual respect and understanding among patients, clients, families, physicians, nurses, and other members of the multidisciplinary health care team.

The physical design of replacement facilities blend evidence-based design principles with tribal culture and traditions to enhance effectiveness of health care services. The IHS facility designs respect tribal culture, traditions and health care practices. Beliefs concerning illness affect how, what and when health care is sought. Cultural competence is vital to effectively assess health issues of AI/ANs. Understanding a patient’s cultural norms and practices builds trust, rapport, and enhances patient adherence to medical instructions. The IHS combines the Patient/Family Centered, Medical Home model with culturally appropriate practices to provide safe, efficient, effective, timely, and equitable care.

FIGURE 10 – FACILITIES DESIGNED TO ENHANCE HEALING ENVIRONMENTS¹⁸



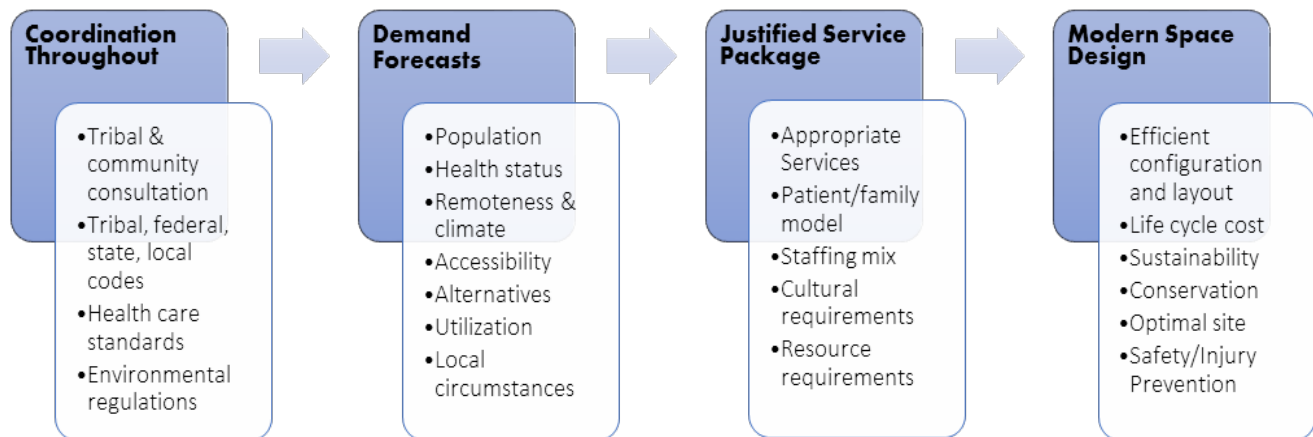
¹⁸ University of Minnesota Center for Spirituality and Healing. What is a healing environment? Kreitzer, Mary Jo, et al., accessed at <http://www.takingcharge.csh.umn.edu/explorehealing-practices/healing-environment> on 7/14/15

The Patient/Family Centered, Medical Home model has been endorsed by American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Physicians (ACP), American Osteopathic Association (AOA) and 18 other physician organizations including the Academy of Neurology and the American College of Cardiology.¹⁹ The Patient/Family Centered, Medical Home model is also the policy of the Department of Defense (DOD) and TRICARE. The model is encouraged by the Office of Personnel Management (OPM), Centers for Medicare & Medicaid Services (CMS), Department of Veterans Affairs (VA), Health Resources and Services Administration (HRSA), and the Substance Abuse and Mental Health Services Administration (SAMHSA).

Replacement facility architecture and design incorporate physical features (natural light, optimal acoustics, suitable textures and surfaces, efficient layout) to enable and enhance a patient/family centered healing environment.²⁰ The health care physical environment has long been recognized as having a substantial bearing on the care experiences and patient outcomes. There is overwhelming rigorous research, more than 600 credible studies, that links the physical environment of care to health outcomes.²¹

Multidisciplinary health care professionals work in teams sharing common workspace and leveraging technology to facilitate coordination and inclusiveness among providers, patients, and families. Space is configured jointly for patients, families, and the provider team to encourage interaction, and improve information sharing compared to traditional silo layouts. For instance, exam rooms are sized for family members along with the patient and provider. Figure 11 highlights the key factors that shape IHS facility designs and construction.

FIGURE 11 – IHS FACILITY PLANNING AND DESIGN PROCESS



Since the 2011 Report, the IHS has successfully completed six major health care facilities, consisting of almost 750,000 ft² with appropriated funding. These projects were completed with their full scope within the appropriation with schedule adjustments tied to delayed resource availability. Nine Joint Venture Projects (JV) were completed during the same time consisting of an additional 460,000 ft². In a JV project, the tribe provides a health care facility with non-IHS funds to IHS under a no cost 20 year lease and the IHS funds staff, operations, and maintenance.

¹⁹ DOD. Military Health System, Patient Centered Medical, Home Guide, June 2011. Accessed on April 18, 2016 at <http://www.usafp.org/wp-content/uploads/2013/12/MHSPCMHGuide.pdf>

American College of Physicians, http://www.acponline.org/running_practice/pcmh/demonstrations/jointprinc_05_17.pdf

²⁰ Arneill, B., & Frasca-Beaulieu, F. (2003). Healing environments: Architecture and design conducive to health. In S.B. Frampton, L. Gilpin, & P.A. Charmel, Putting Patients First: Designing and Practicing Patient-Centered Care. San Francisco, CA.

²¹ Ulrich, Roger, Xiaobo Quan, Craig Zimring, Anjali Joseph, and Ruchi Choudhary. The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity. Center for Health Design. September 2004.

The IHS adheres to strict qualification standards for personnel and contractors who participate in the planning, design, construction, and operation of its facilities, including the requirement for licensed Architects and Engineers, certified Project Managers through the Federal Acquisition Certification for Program and Project Managers (FAC-P/PM), certified Planners through the American Institute of Certified Planners (AICP) and Federal Building Personnel Training Act (FBPTA) competent Facility Managers. These requirements help to ensure that the IHS and tribal health care facilities are planned, designed, constructed, and operated as culturally appropriate health care facilities that meet programmatic requirements, incorporate proven and effective design principles, are sustainable, and that contribute to the health and healing process of the AI/ANs they are intended to serve.

NEEDED VERSUS AVAILABLE SPACE

There are two types of need, the existing “Active Authority Needs” and the “Expanded Authority Needs.” These two types of authorities are described in greater detail below.

The **Active Authority Needs** represent the amount of facility space and construction funding to support the delivery of the IHS health care services currently provided as outlined in the 2014b Health System Planning (HSP) Process for the eligible population.

The HSP is a computer database program developed for the IHS specifically to aid in the design of health facilities. Based upon the expertise of experienced IHS personnel, and the historical record of previously constructed health centers and hospitals, a statistical model was created utilizing population numbers and demographics to determine certain criteria, such as the appropriate numbers of exam rooms, dental chairs, size of pharmacy, labor & delivery, etc. to be allocated to provide care for a specific population. It then determines a proposed size for such a facility with department-by-department breakdowns. Over time the HSP is updated, enhanced and expanded to include new services, such as “Wellness Centers,” which have been incorporated into the HSP since the 2011 Report.

The “Active Authorities” are the practiced, longstanding, prevailing, authorities with established planning methodologies that include all the services integrated into the latest HSP. These Active Authority services include Ambulatory, Ancillary, Preventive, Inpatient, Behavioral Health and Support Services.

The **Active Authority Needs Methodology** used in the estimate for Active Authority Needs are from the IHS databases, established planning criteria and software, cost estimating system, and other official methodologies. The 2016 Report’s estimated cost and space requirements were determined using the same consistent methodology and data sources (updated) as in the 2011 Report:

- The amount of existing program space within each Service Unit (SU) was taken from the Health Facilities Data System (HFDS). The HFDS is a database with records for each building in the SU along facility parameters including size, age, and use.
- The estimated total amount of required space each SU should have to deliver IHS’ current programs to their user- population was taken from approved planning documents or detailed master plans when they existed and were current. Otherwise the estimated amount of needed space was calculated with the 2014b Health System Planning (HSP) process. The HSP is a database program developed for the IHS specifically to aid in the design of health facilities. The HSP can calculate a minimum facility size needed for the current user population or a design space sized for future capacity based on an estimated future population. The IHS uses a design population estimated for 10 years in the future. For this report the 2025 population based on 1.3% annual population growth was used.
- The space shortage or amount of space the SU project(s) needs are the difference between the existing program space and the required program design space.

- Simple assumptions were consistently applied to the rate of renovation, replacement, or re-use triggered by age, and/or size:
 - Any proposed project that touches a facility over 30-years old will replace the entire facility.
 - Any project that proposes to add more than 2 times the existing space will replace the entire facility.
 - Renovations required to upgrade existing, non-replaced space to code and Joint Commission standards are added into the overall scope of need. The non-replaced remaining space is multiplied by a standard cost per unit area for renovations.
- Construction costs are from the IHS Facilities Budget Estimating System (FBES). The FBES is a database system used by IHS to estimate construction costs using different rates (inpatient, outpatient, new construction, and renovation) along with a location factor multiple to account for geographic construction cost differences and add-ons for sustainability, quarters and alternative energy.
- The resulting project need list is reconciled with the retained “Grandfathered project priority list” of pre-1993 proposed projects.

The Report shows Assessed Need, which is an estimate of need for planning level use. Every project, once it is actually funded is subject to refined planning, risk assessment, input from Integrated Project Teams, approvals (Tribe, IHS, local, state, participating agency etc.), environmental clearances and strict acquisition and Project Management requirements that can result in scope, budget and schedule adjustments.

The **Expanded Authority Needs** represent the amount of facility space and construction funding to provide specialized health care facilities (such as long-term care, substance abuse treatment, dialysis facilities, psychiatric facilities, etc.) that have been proposed in the IHClA as possible expanded services. The IHS has not yet established planning criteria for space and staff for all potential expanded authority services. The IHS selected five new facility types for preliminary assessment of needs based on a 2015 survey of tribal leaders. The survey listed a range of health care facilities types for active and expanded authorities. Survey respondents ranked the top five health care facility needs for their communities. Table 2 of this report presents an estimate of assessed need for these facility types:

- Inpatient Mental/Behavioral Health and Alcohol Substance Abuse Program Facilities
- Long-Term Care Facilities – Clinical
- Long-Term Care Facilities – Non-Clinical
- Specialty Medical Services Facilities
- Dialysis Facilities

ACTIVE AUTHORITY SPACE AND FUNDING NEEDS

Existing space in IHS facilities (14 million ft²) is substantially less than required (~27 million ft²). The shortage is a consequence of AI/AN demographic trends, especially: population growth; modern facility codes/standards; and obsolete older space.

Demographic Trends: The AI/AN population since 2001 has grown nearly 20 percent (1.8 percent annually or ~110,000 population increase since 2001). It is common for the current user population of an older facility to be 50-75 percent greater than the existing population when it was originally constructed. We showed earlier that the IHS network is older and that replacement and expansion are not keeping up with population growth. Facilities constructed 25-45 years ago and sized for the population at that time are now significantly undersized.

Modern codes/standards: We discussed earlier the evolution of health facility space standards. Even if the population had not changed, more space is needed today due to new standards and codes. Often internal reconfiguration is needed too. Modern codes and standards often require expanded space. However, this is a

less significant factor than the growing AI/AN user population. A substantial and growing portion of IHS facility space is more than 30 years of age. This space is inefficient and inappropriate for modern medical care.

TABLE 1 – ACTIVE AUTHORITIES RESULTS* – SPACE NEEDED AND ESTIMATED COSTS

IHS Facility Need by Area			IHS Facility Need by State		
IHS Area	New Construction and Replacement Space (ft ²)	Total Need (\$)	State	New Construction and Replacement Space (ft ²)	Total Need (\$)
Alaska	2,270,000	\$ 2,164,970,000	Alabama	30,000	\$10,760,000
Albuquerque	1,040,000	\$ 527,459,000	Alaska	2,270,000	\$2,164,970,000
Bemidji	890,000	\$ 430,456,000	Arizona	3,220,000	\$2,084,800,000
Billings	890,000	\$ 387,503,000	California	1,080,000	\$528,620,000
California	1,010,000	\$ 483,530,000	Colorado	100,000	\$38,680,000
Great Plains	910,000	\$ 472,771,000	Connecticut	50,000	\$19,790,000
Nashville	910,000	\$ 385,748,000	Florida	60,000	\$25,440,000
Navajo	2,590,000	\$ 1,494,800,000	Idaho	160,000	\$69,150,000
Oklahoma City	4,070,000	\$ 1,793,790,000	Iowa	10,000	\$5,660,000
Phoenix	1,980,000	\$ 1,319,324,000	Kansas	110,000	\$43,920,000
Portland	1,490,000	\$ 640,477,000	Louisiana	30,000	\$10,490,000
Tucson	260,000	\$ 180,751,000	Maine	110,000	\$42,130,000
TOTALS	18,310,000	\$ 10,281,610,000	Massachusetts	20,000	\$12,370,000
			Michigan	140,000	\$65,460,000
			Minnesota	460,000	\$238,620,000
			Mississippi	180,000	\$8,1070,000
			Montana	730,000	\$328,780,000
			Nebraska	20,000	\$16,940,000
			Nevada	210,000	\$91,030,000
			New Mexico	2,140,000	\$1,219,220,000
			New York	200,000	\$83,030,000
			North Carolina	160,000	\$77,250,000
			North Dakota	300,000	\$145,160,000
			Oklahoma	3,950,000	\$1,744,730,000
			Oregon	370,000	\$156,340,000
			Rhode Island	10,000	\$5,750,000
			South Carolina	40,000	\$13,850,000
			South Dakota	570,000	\$305,010,000
			Texas	60,000	\$20,420,000
			Utah	90,000	\$32,090,000
			Washington	970,000	\$414,990,000
			Wisconsin	290,000	\$126,370,000
			Wyoming	160,000	\$58,730,000
			TOTALS	18,310,000	\$10,281,610,000

*Includes only Active Authority services and not Expanded Authority services

PRELIMINARY ASSESSMENT – NEWLY AUTHORIZED FACILITIES

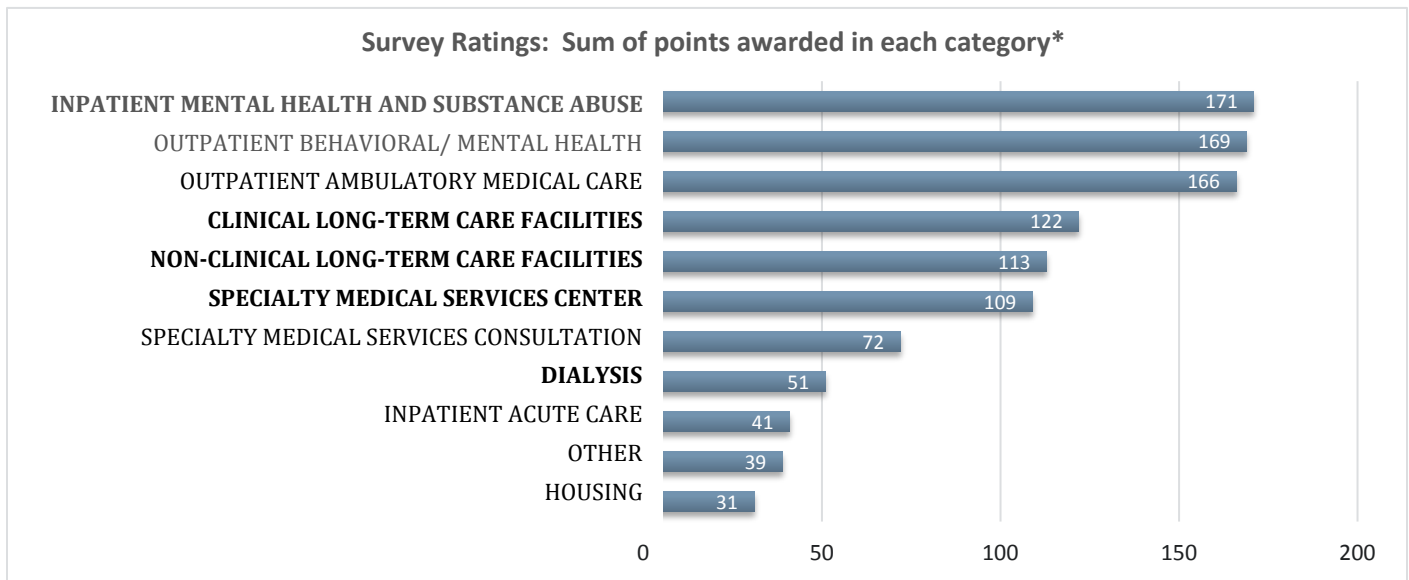
The IHS has begun assessing facility needs to provide newly authorized service types in the IHCA. These service categories have not been historically provided through the IHS health care network. These specific service types require corresponding unique facility types.

- Inpatient Mental Health and Inpatient Alcohol Substance Abuse treatment
- Long-Term Care Facilities
 - Clinical – Primarily engaged health-related care (Skilled Nursing Facility) (Rehabilitation after hospitalization), Nursing Facility, Alzheimer’s, cognitive delays or other disabilities special care)
 - Non-Clinical – Primary focus on Activities of Daily Living (ADLs). Custodial Care (Residential Care Adult Day Care, board, “group,” independent and assisted living homes and communities that provide incidental medical care)
- Specialty Care Center: Cardiology, Orthopedics, Urology, Ophthalmology, Podiatry, Bone Mineral Density, Chemotherapy, Dermatology, and Otolaryngology
- Dialysis

Because the IHS has not funded facilities for these types of services, we have not yet planned and sized facilities for them. The IHS’s facility planning and design methodology does not include criteria for such services yet; however, developing and adopting planning criteria are currently underway.

The IHS conducted a preliminary assessment of facility needs for services by surveying priorities of tribes in 2015. The survey listed a range of health care facility types, both active and newly authorized. Survey respondents ranked the top five health care facility needs for their communities. The results are tabulated in the Figure 12.

FIGURE 12 – RESULTS OF TRIBAL SURVEY ON FACILITY TYPE PRIORITIES



*NEW EXPANDED AUTHORITY SERVICES IN BOLD

The top five priority New Authority service types for tribes are as follows:

- Inpatient Mental/Behavioral Health (MHBH) and Alcohol Substance Abuse Program (ASAP) Facilities
- Long-Term Care Facilities – Clinical
- Long-Term Care Facilities – Non-Clinical
- Specialty Medical Services Facilities
- Dialysis

Existing Active Authority service types were also identified as priorities:

- Mental/Behavioral Health Outpatient Facilities
- Ambulatory Medical Care Facilities
- Specialty Medical Services Consultation
- Inpatient Acute Care
- Housing (Staff Quarters)

The IHS identified a scope of needs for five types of Expanded Authority facilities ranked highly by tribes. In the absence of official IHS planning criteria for these facility types, IHS used averages from industry standards along with health data published by other agencies to develop basic estimating criteria.

Results summarized by IHS Area are listed in Table 2. We estimate the total cost to add these highly ranked facilities to our network is \$4.2 billion (present value, 2015 dollars). These preliminary estimates will be revised as official IHS planning criteria for these types of facilities are established.

TABLE 2 - PRELIMINARY ESTIMATES FOR EXPANDED AUTHORITY FACILITIES

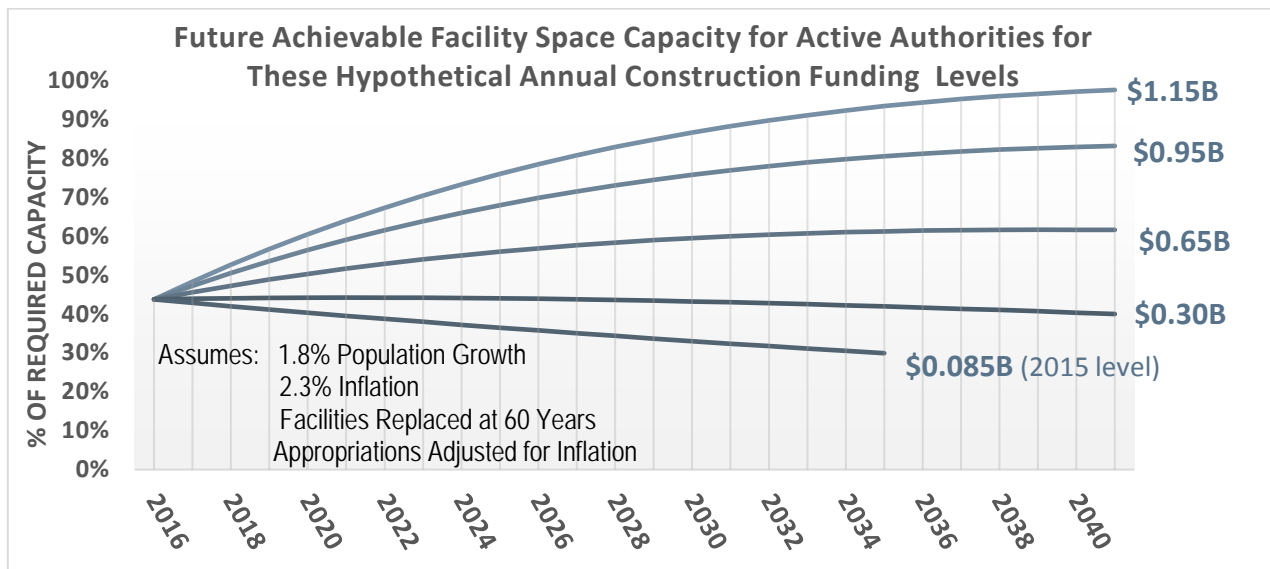
IHS Area	Inpatient MHBH/ASAP	Long-Term Care (LTC)	LTC Non-Clinical	Specialty Care Centers	Dialysis Centers	Estimated Cost
Alaska	\$178,400,000	\$109,600,000	\$71,500,000	\$179,400,000	97,100,000	\$636,000,000
Albuquerque	\$52,300,000	\$32,100,000	\$20,900,000	\$ 52,600,000	\$28,500,000	\$186,400,000
Bemidji	\$87,000,000	\$53,400,000	\$34,800,000	\$87,500,000	\$47,400,000	\$310,100,000
Billings	\$51,000,000	\$31,300,000	\$20,400,000	\$51,300,000	\$ 7,800,000	\$ 181,800,000
California	\$76,800,000	\$47,200,000	\$30,800,000	\$77,200,000	\$41,800,000	\$273,800,000
Great Plains	\$75,200,000	\$46,200,000	\$30,100,000	\$75,600,000	\$41,000,000	\$268,100,000
Nashville	\$37,500,000	\$23,000,000	\$5,000,000	\$ 37,700,000	\$20,400,000	\$ 33,600,000
Navajo	\$169,200,000	\$103,900,000	\$67,800,000	\$170,100,000	\$92,100,000	\$ 603,100,000
Oklahoma City	\$235,300,000	\$144,500,000	\$94,200,000	\$236,600,000	\$128,100,000	\$838,700,000
Phoenix	\$129,200,000	\$79,400,000	\$51,800,000	\$130,000,000	\$70,400,000	\$460,800,000
Portland	\$ 86,400,000	\$53,100,000	34,600,000	\$ 86,900,000	\$47,000,000	\$308,000,000
Tucson	\$17,000,000	\$10,400,000	\$6,800,000	\$17,100,000	\$ 9,300,000	\$ 60,600,000
TOTALS	\$1,195,300,000	\$734,100,000	\$478,700,000	\$1,202,000,000	\$650,900,000	\$4,261,000,000

DISCUSSION – IMPLICATIONS FOR THE FUTURE

This report assesses the condition of IHS health care facilities and improvements needed to assure crucial access to health care services by AI/AN people.

Our findings identify an aging infrastructure in which many facilities were constructed before the advent of contemporary health care delivery models. The aging network escalates maintenance and repair costs, risks code noncompliance, lowers productivity, and compromises service delivery. Facility space capacity is inadequate for actual and projected AI/AN user populations. The shortage is a consequence of AI/AN demographic trends, modern facility codes/standards, and gradual obsolescence of older space and equipment. The problem will worsen if current demographic trends continue in future years.

FIGURE 13 – IMPACTS ON IHS FACILITY SYSTEM OF FIVE HYPOTHETICAL FUNDING SCENARIOS



The cost to increase IHS facilities to needed capacity is enormous, about \$14.5 billion with expanded and active authority facility types. Figure 13 shows levels of facility space capacity achievable over a period of years for five hypothetical annual inflation adjusted funding levels. Clearly, augmented annual investment is needed to expand IHS facility capacity in line with needs. To maintain overall capacity at the current fraction of needed capacity (~52 percent) would require more than \$300 million annually. To raise capacity to 57 percent by 2026 would require approximately \$650 million annually. To raise the capacity to 70 percent by 2026 would require about \$950 million annually. To raise the space capacity to 78 percent by 2026 would require an annual investment of \$1.15 billion. At current funding rates, the IHS facilities network will continue to age and capacity will decline. Compared to per capita and industry benchmarks of capital investment rates, funding for replacement and expansion is disproportionately low. In 2015, only two-thirds of the 1993 facility priority list is complete.²² At this pace, even that sub-set will not be completed until 2041.

²² Cost estimates both in 1993 and now are estimates for planning. Every project, once committed is subject to refined planning, risk assessment, input from Integrated Project Teams, approvals (Tribe, IHS, local, state, participating agency etc.), environmental clearances and strict acquisition and PM requirements that can result in adjustments to scope, budget and schedule.