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Stefan Johansson
Director

Mark Gordon
Governor

MEMORANDUM

Date: October 6, 2023

To: Joint Appropriations Committee

From: Stefan Johansson, Director
Wyoming Department of Health

Subject: Departments of Health and State Construction's response on the Veterans' Home of Wyoming

Ref: J-2023-487

The following questions were asked by the Joint Appropriations Committee regarding the domiciliary renovation proposal at the Veterans' Home of Wyoming (VHW).

1. **General background information about the VHW, including but not limited to number of residents and future projections for residents, description of population, status of health and living needs, type of care delivered, number of beds currently and under the new proposal, and availability of staffing for resident numbers.**

   1.1. Census and future projections.

   The current census of the VHW is 62. The census has steadily decreased from a high of 80 residents in January 2020.

   We project this census to increase slightly over time, but not exceed the new proposed bed capacity of 77. While the total number of veterans in Wyoming over 65 is projected to decrease from ~22K in 2023 to ~12K in 2050, the older demographics at risk of needing long-term care will likely peak between 2026 and 2034.

   1.2. Health needs and care delivery.

   The domiciliary level of care is equivalent to Assisted Living Facility (ALF), like the Wyoming Pioneer Home (WPH) in Thermopolis. Most of the clients are ambulatory, and may need assistance with only a few activities of daily living (ADLs). Staffing requirements are roughly half that of a nursing home.

The current domiciliary staff-to-client ratio, for example, is 0.5, compared with the staffing ratio of ~ 1 at the Wyoming Retirement Center (WRC), a skilled nursing facility, and 0.7 at the WPH.

1.3. Current and proposed beds

The facility currently has 116 licensed beds, but is staffed for the census. This renovation would right-size the facility down to 77 beds.

1.4. Staffing availability

Staffing remains a challenge for all our facilities. However, staffing is tied to census – not beds – and this project would keep the census the same while reducing total beds. Staffing needs would therefore not change from status quo.

2. Background information about the VHW project, specifically the type of care facility to be constructed.

2.1. Buildings and deficits

The buildings on the campus of the VHW are an amalgam of generations of construction. Of note, they include:

- The historic Fort McKinney Hospital, built in 1898;
- A two-story brick building built in 1941;
- A 1973 addition; and,
- An addition constructed in 1983.

All of these structures were assessed as part of the November 2013 Department of Health facilities' master plan, conducted by HDR Architecture and Plan One. At that time, the facility was rated in "fair" condition overall.

While the facility generally needs an overhaul due to its condition, the primary concerns of the Department include:

- Noncompliance with the Americans with Disabilities Act (ADA) requirements, particularly in the 1941 and 1973 wings. These include narrow corridors, tight corners, and short steep ramps.

- Bathroom facilities are shared between adjoining rooms. This makes privacy, room assignment by gender, and communicable disease mitigation difficult – as seen with the recent pandemic.

In addition to being recommended by the Executive Branch as part of its statutory duty to operate and maintain its facilities, these renovations will also have a significant impact on resident health and quality of life.

2.2. Project history and status (Level I, II and III).

In 2019, the Wyoming State Legislature appropriated funds for Level I and Level II studies for renovating the domiciliary campus. In December 2020, the Level II conceptual project budget was $58M. The updated projected budget in July 2021 was $71M, considering impacts due to COVID-19 and a 4% annual escalation in construction costs for a two year period

In 2022, the Legislature appropriated 35% State matching funds for Level III design and construction, as well as direction to pursue the 65% matching federal grant from the Veterans' Administration. Grant requirements were completed and submitted throughout the Level III design.

In May 2023, the State received a 100% Design Development construction cost estimate from the architect and third party estimator of $65M.

On June 1, 2023, the State was notified the project would not receive grant funding this FY, as the project was listed 69th of 73 eligible projects. On June 30, 2023 the Construction Manager at Risk (CMaR) submitted a guaranteed maximum price (GMP) of $66M for construction only (not all project costs).

3. Timeline if the project is funded.

The Level III design is complete; we just need funds to proceed.

The GMP received in June 2023 was required to be held regardless of market conditions for 60 days to facilitate securing funding and a contract negotiation period. This period lapsed September 15, 2023.

In mid-January 2024, the CMaR will reach out to the subcontractors to verify if previous bid numbers can be held. If not, these portions will be rebid and an updated GMP will be submitted for acceptance.

If an appropriation request is approved, the State Construction Department (SCD) will review the revised GMP and begin procurement of other needed service contracts for the construction phase. The CMaR will be ready to begin construction upon receipt of a notice to proceed from the SCD and final execution of all subcontracts. The construction period is estimated to be approximately 48 months.

4. The status, risk, and probability associated with federal contributions for this project.

4.1. Status.

Currently, this project is in VA State Home Construction Grant Program priority group 1.4.F., and ranked 69 out of 73 projects in priority group 1 (those with State matching

funds) on the FY23 priority list. With $150 million appropriated to the VA for this list, we estimate that only the first six projects will be funded this year.

4.2. Probability of receiving funding.

We estimate that, if Wyoming maintains its project on the priority list, VA matching funding could be received in four to ten years. This is based on four main factors:

- Figure 1 and Figure 2 on the next page show past trends in aggregate requests, appropriations, and expenditures for the VA State Home Construction Grant Program.
- The percentage of total requested dollars that can be funded depends heavily on the appropriation. During 'normal' budgets of an inflation-adjusted ~$150M per year (FY 2013 - 2017, and resuming for 2023), around 15% of project dollars are funded. When appropriations are increased to deal with a backlog, as they were in 2018 - 2019, and 2021 - 22, the funding percentages increase to 50% to 80%.
- We are unclear whether the VA program will see a return to the salad days of relatively high appropriations. Based on the current political climate, this is unlikely.
- Unfortunately, Wyoming's project is in one of the lower priority groupings. This means that newer higher-priority projects (e.g. new nursing home bed construction, life-safety remediation) will be bumped up.
- A second potentially problematic issue is the scale of Wyoming's request ($46M in matching funds) compared with the average for the 1.4.F. group (usually $1-2M). So while other 1.4.F. projects might be able to fit into the remaining space in an appropriation, it is unlikely that ours will. We are asking the VA if our classification is truly appropriate, and whether we can appeal.

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Figure 1: Nominal (top) and inflation-adjusted (bottom) project requests (light gray), appropriations (gray), and actual funded project dollars (black), by FY

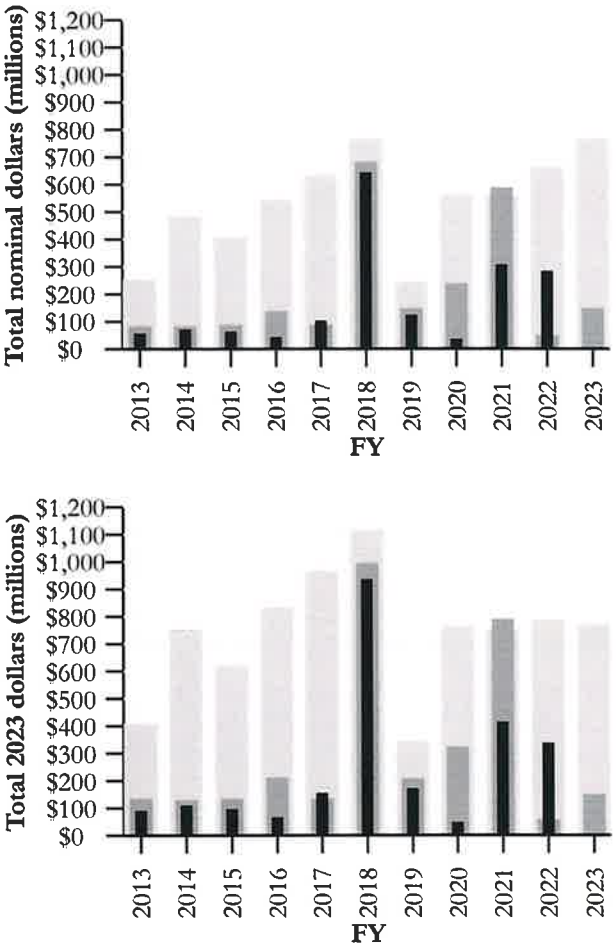
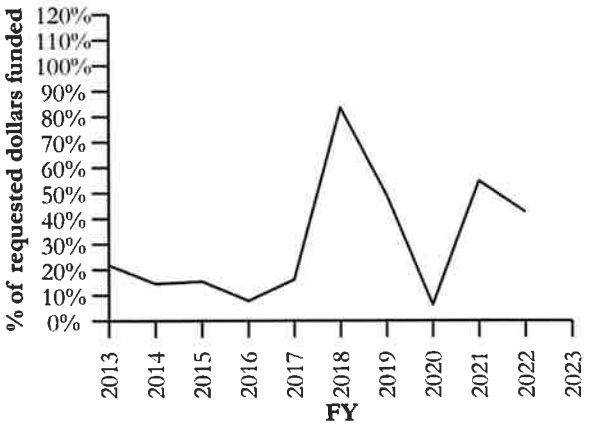


Figure 2: Percent of total project dollars funded each year

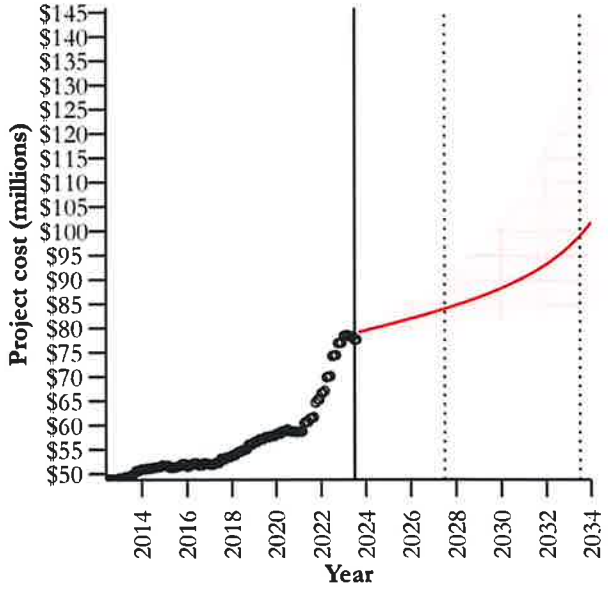


5. Anticipated implications for not proceeding in a timely manner.

The primary risk for not proceeding with construction is cost escalation in the project. Since the VA amount ($46.15M) is fixed, this means that any increase must be borne by the State, effectively decreasing the 65% match.

Figure 3 shows the estimated project cost of $77M, per bids received in July 2023 (solid black line), chained to the health facility construction producer price index (PPI). We assume this PPI measure will continue along pre-COVID trends, since the rapid inflation from 2021 - 2023 has since slowed.

Figure 3: Anticipated project inflation out ten years (shaded red region indicates 90% uncertainty)



If VA funds are not received until 2027 (4 years out from grant submission), then we estimate the project will cost ~$83M [90% uncertainty between $80 - $89]. If funds are not received until 2033 (10 years out), this model would project costs at $100M, but between $83 and $140M – a range that is not particularly helpful, especially given the assumption that inflation will trend at previous levels.

All of these additional costs will be borne by the State General Fund; the VA matching funds will be fixed (aside from a one-time 10% cost adjustment).

6. Relevant staff availability during the months of October and November for a potential tour of the existing VHW for interested JAC members and relevant personnel.

Staff will be made available. We would request a week or two of notice.

7. Previous reports relevant to the topics addressed in this memo.

Please see the attachments to this memorandum.

8. Other senior centers and veteran affairs homes in the region.

8.1. Senior Centers in the region include:

- Buffalo Senior Center
- The Hub on Smith in Sheridan
- Campbell County Senior Citizens Association

8.2. Regionally, there is only one Veterans Affairs Medical Center (VAMC) in Sheridan. The VAMC has 55 domiciliary beds and 35 nursing home beds, all at high occupancy.

9. Any other needs-based analysis if not already addressed in prior report or response to these requests.

Please see the attachments to this memorandum.

SJ/FF/jg

c: Governor Mark Gordon
Jerry Vincent, Director, State Construction Department
Legislative Service Office (electronic copy)
State Department Depository (electronic copy)

Wyoming Veterans' State Home

UPDATED NEEDS ANALYSIS

Wyoming Department of Health

October 5th, 2018

Contents

Introduction

In July of 2017, the Wyoming Veterans' Commission (WVC) requested that the Wyoming Department of Health (WDH) conduct a needs analysis regarding a new Skilled Nursing Facility (SNF), constructed along the lines of the "Green House"® model and certified as a Veterans Affairs "State Home." The original needs analysis was presented in September of 2017.

In March of 2018, the Wyoming Legislature passed Senate Enrolled Act 21, which directed the WVC, the WDH, and the State Construction Department (SCD) to pursue a Level I/II study, and appropriated $300,000 for the retention of consultants. In April, the three agencies began both the procurement process for a Level I/II contractor and a series of public meetings throughout the State. Ultimately, we held meetings at the following locations:

Table 1: WDH/WVC/SCD public meetings

City	Date Visited	Attendance	Purpose
Cody	4/3/18	2	Initial public meetings held by agencies
Riverton	4/4/18	14	
Thermopolis	4/4/18	1	
Basin	4/5/18	3	
Casper	4/17/18	42	
Buffalo	4/17/18	39	
Sheridan	4/18/18	22	
Newcastle	4/18/18	8	
Gillette	4/18/18	24	
Lander	5/3/18	8	
Rock Springs	5/4/18	16	
Cheyenne	5/17/18	7	
Laramie	5/17/18	1	
Gillette	7/10/18	24	Level I meetings held by agency and contractor
Sheridan	7/11/18	36	
Buffalo	7/11/18	13	
Laramie	7/16/18	5	
Cheyenne	7/16/18	10	
Riverton	7/17/18	63	
Lander	7/17/18	53	
Casper	7/18/18	79	
Casper	8/22/18	30	Level II meetings held by contractor
Buffalo	8/27/18	30	
Sheridan	8/27/18	55	

In addition to taking public comment at each of these 24 meetings, we provided surveys to elicit attendee's preferences regarding long-term care. For those who could not attend in person, we set up a website — vetshomestudy.wyo.gov — to promulgate information and accept additional public comment and survey data.

Due to additional information received from these meetings and surveys, the original needs analysis — completed in September of 2017 — requires an complete refresh. Like the original needs analysis, it contains six major parts:

- A purpose section that explains the motivation behind this project, and the mission of the proposed facility.

- A background section that briefly explains the "Green House"® concept and summarizes the VA State Home program and its regulatory constraints;

- A demographic analysis of Wyoming's population of veterans and a three-part estimate of how many veterans require long-term care;

- Recommendations for the location of a potential Veterans' Home SNF;

- A market analysis of trends in Skilled Nursing Facility supply and demand in Wyoming and nationally;

- An operational analysis of the proposed State Home model and the implications for cost and revenue.

Executive Summary

The results of these analyses point to the following conclusions:

(1) The primary purpose of the VA State Home is to allow Wyoming veterans access to a financial long-term care benefit that they cannot otherwise receive, in the form of a per diem payment from the VA.

- While the Department of Health is attempting to strategically shift lower-acuity individuals towards in-home services, it is not currently possible for veterans to receive the same VA financial assistance for in-home services as they do for facility-based services through the VA State Home program.

- The facility will therefore serve **all** veterans, allowing a certain percentage of beds (~10-20%) for high-needs veterans who cannot be served in private nursing homes, but opening up the rest of the beds to the general veteran population.

(2) We estimate there are 300 veterans in the State that will need Skilled Nursing Facility (SNF) level care, and that this number will remain stable between 2018 and 2030.

(3) Based on standardized criteria, the top three locations for a potential VA SNF are Casper, Buffalo, and Sheridan. Each site has its advantages and disadvantages. These are briefly summarized below, but comprehensively explored later in this report.

Casper

Strengths

- Would serve the largest number of veterans due to its central location.
- Large existing CNA workforce and access to CNA graduates.
- Many local amenities for residents and visiting families.
- Above-average access to medical specialists.
- Above-average number of veterans organizations.
- Donated land.

Weaknesses

- No consolidation potential or continuity of care with existing facility.
- Below average access to VA medical care.
- CNA graduate pools have below-average pass rates.

Buffalo

Strengths

- Above average number of Wyoming veterans served.
- Good opportunities for overhead consolidation (including reduced construction costs) and continuity of care with existing Veterans' Home.
- Good access to VA medical care.
- Relatively low labor costs.
- Most scenic location.
- State-owned land.

Weaknesses

- Smaller existing pool of CNA labor means larger potential impact to local private SNFs.
- Below-average number of amenities and veterans organizations.
- Higher than average cost of living.

Sheridan

Strengths

- Best access to VA medical care.
- Opportunity to consolidate with existing Green House Living for Sheridan. Land will be donated, and facility has the only extensive Green House model experience in the State.
- Above-average access to existing CNA workforce and graduation sources.
- Above-average scenery and outdoor recreation.
- Donated land.

Weaknesses

- Below-average number of veterans served due to location in the far north of the State.
- Higher than average cost of living.

(4) In the Level I study by MOA Architecture, the **physical sites** for these three locations were equally ranked. Note, however, that we estimate construction costs will be lower at Buffalo due to not needing an administration building.

(5) The market for nursing homes generally is shrinking both nationally and in Wyoming as home- and community-based services begin to serve a larger percent of people in need of long-term care.

(6) The Level I and Level II study projects a relatively smaller 36-bed Green House SNF. For this model, we estimate the cost per day will be $300.

(7) Despite this higher cost per day, the VA per-diem allows for favorable financial projections. We estimate a minimum viable occupancy of approximately 60%.

(8) In order to fulfill its primary mission, the VA State Home should prioritize offering a below-market rate for private-pay veterans.

Part I - Purpose

The primary purpose of the VA State Home Skilled Nursing Facility (SNF) is to allow Wyoming veterans access to a subsidized long-term care benefit that they cannot receive today.

- Long-term care is expensive; the median cost for a private room in Wyoming in 2017 was $96,725 — and growing at a five-year annual rate of 4%[1]. Most individuals needing to go to a nursing home end up depleting their assets and becoming eligible for Medicaid.

- Under current law, the Veterans Administration will pay a per-diem of approximately $107 for the skilled nursing care of all eligible veterans (e.g., even ones without a service-connected disability). This benefit cannot be supplanted or reduced by private pay or Medicaid.

- However, the per-diem can only be paid to a VA State Home SNF. The existing Veterans Home in Buffalo only has the lower-level "domiciliary" (i.e., assisted living) care available.

- While the Department of Health is attempting to strategically shift lower-acuity individuals towards in-home services, it is not currently possible for veterans to receive the same VA financial assistance for in-home services as they do for facility-based services through the VA State Home program.

A secondary purpose of the facility will be to serve as part of the State's "safety-net" of institutions for those high-needs individuals who cannot be served in private facilities.

"High-needs" clients typically fall into one of two possible categories:

- Clients that have extensive medical requirements (e.g. ventilator, tracheostomy, negative-pressure wound care);

- Clients with a high level of assaultive or self-injurious behaviors.

The mission of the facility will therefore be to serve all veterans. This means that most of the beds will be open to eligible veterans from the general population, but that a certain fraction of beds (~10-20%) will be reserved for high-needs veterans.

[1] Genworth Cost of Care Survey: https://www.genworth.com/aging-and-you/finances/cost-of-care.html

Part II - Background

The proposed Skilled Nursing Facility (SNF) is intended to be constructed along the lines of the **Green House**® model, and certified as a **Veterans Affairs State Home**. This section explains what these terms mean.

The "Green House"® model

This concept was first proposed by geriatrician Dr. William Thomas in the early 1990s, with the primary goal being to move away from the institutional nature of traditional nursing homes and towards a more home-like setting where residents could experience greater quality of life.[2] Specific differences from a traditional nursing home facility include:

- *Home-like construction*. Groups of 8-12 individual rooms are arranged around common areas, to include a kitchen/dining area, living space, and easy access to gardens and outside environments.

- Residents *have more control* over their schedules on recreation, hygiene, and meal-times. Personal privacy and space is to be respected.

- *"Live-in" workforce*. Direct care staff build relationships with a specific group of residents in a 'homemaking' capacity. In addition to providing direct care, staff do laundry, cleaning, and meal preparation.

Note that, while the proposed VA SNF is to follow these principles, it does not necessarily require the specific Green House® trademark.

The VA State Home SNF program

The Veterans Administration has operated programs to support "State Homes" for veterans since 1888. Today, support generally falls into two categories — per diem for cost of care, and matching funds for construction:

- The VA provides the facility a *basic per diem* for each eligible veteran. This per-diem cannot be used to offset Medicaid or other public-payer rates, so it comes in as additional revenue to the facility.[3] The per diem is the *lesser* of:
    - 50% of the cost of care per patient day or;
    - The basic per diem rate for the FY established by the VA [51.40(b)], which is currently $107.16. This per-diem has historically grown with inflation, and is expected to continue to do so.

  Per 38 CFR §51.41, a State Home may receive additional revenue for veterans with a service-connected disability rating of over 70% by entering into a VA provider agreement or contract with the VA. This additional revenue would likely cover all costs associated with care for these veterans.

- The VA will provide grants for a significant portion — up to 65% — of *initial construction costs*. Since 1986, these grants have been funded on a priority basis. Recently, the VA has explored increasing priority rankings for rural areas.[4]

[2] http://www.npr.org/templates/story/story.php?storyId=4713566

[3] Per 38 USC 1741(e), per diem payments cannot be considered a Third Party Liability or used to offset or reduce other payments made to the State Home (e.g. Medicaid rates).

[4]https://www.washingtonpost.com/national/health-science/va-seeks-to-funnel-more-nursing-home-money-to-rural-areas/2017/08/21/733ae44c-86c0-11e7-96a7-d178cf3524eb_story.html

The statutory authority for the VA State Home Program derives from Subchapter V (§1741-1745) to Title 38 of the US Code. Federal rules for the per diem payments to State Homes are found in 38 CFR Part 51.

Aside from SNF construction requirements, the statute and rules have some important and non-obvious regulatory constraints. These include:

- The State must document that the site is "in reasonable proximity to a sufficient concentration and population of veterans that are 65 years of age and older and that there is a *reasonable basis to conclude that the facility when complete will be fully occupied.*" [59.30]

- If a facility is constructed with VA assistance, *75% of the residents must be veterans*, and all non-veteran residents must be spouses of veterans or parents whose children died while serving in the Armed Forces [51.210(d)]. Veterans, however, will have priority.

- The maximum number of nursing home care and domiciliary care beds for veterans in Wyoming, across all facilities, is set at 154 [59.40(a)]. Less the 114 beds at the Veteran's Home in Buffalo, any new facility could have a *maximum of 40 beds*, unless changes are made to the existing Veteran's Home. Since the census at Buffalo has averaged 70 residents in the last few fiscal years, it is likely that an additional 25 beds could be reallocated to a new facility by scaling down at the Veteran's Home.

- A building with a facility recognized as a State Home must only provide nursing home care to veterans in the areas of the building recognized as the State Home [51.210(u)].

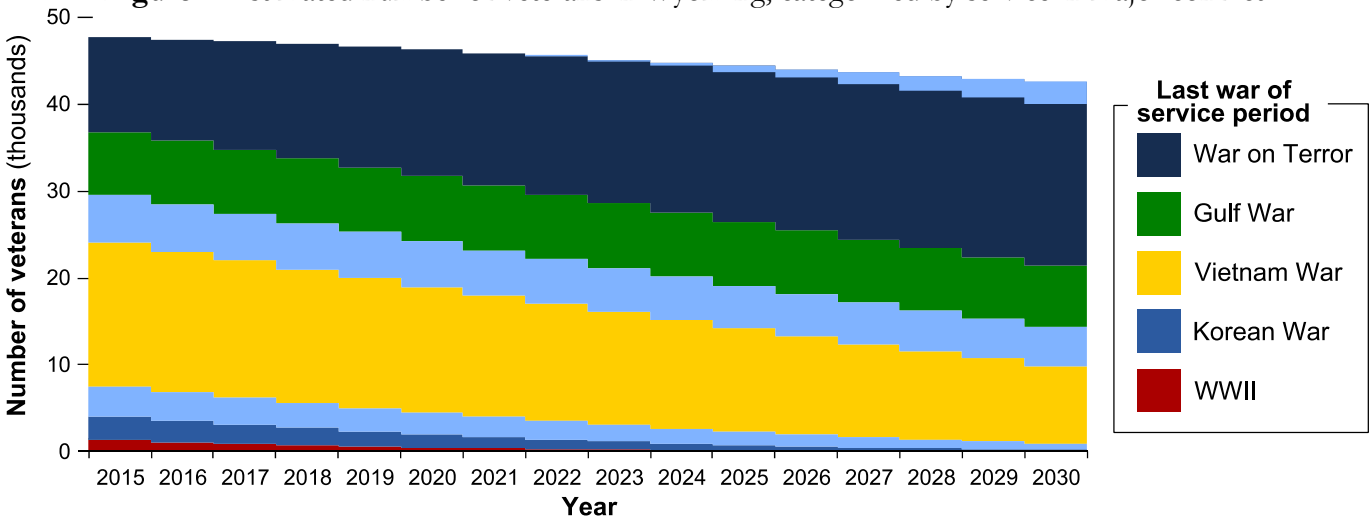
- Recognition of a State Home is conducted by survey only after the facility has at least 21 residents or the total number of residents consist of 50% of the new bed capacity [51.30(a)(1)].

- If management is contracted out by the State, the State must assign a State employee to monitor operations on a full-time, on-site basis [51.210(e)].

Part III - Demographic projections and long-term care requirements

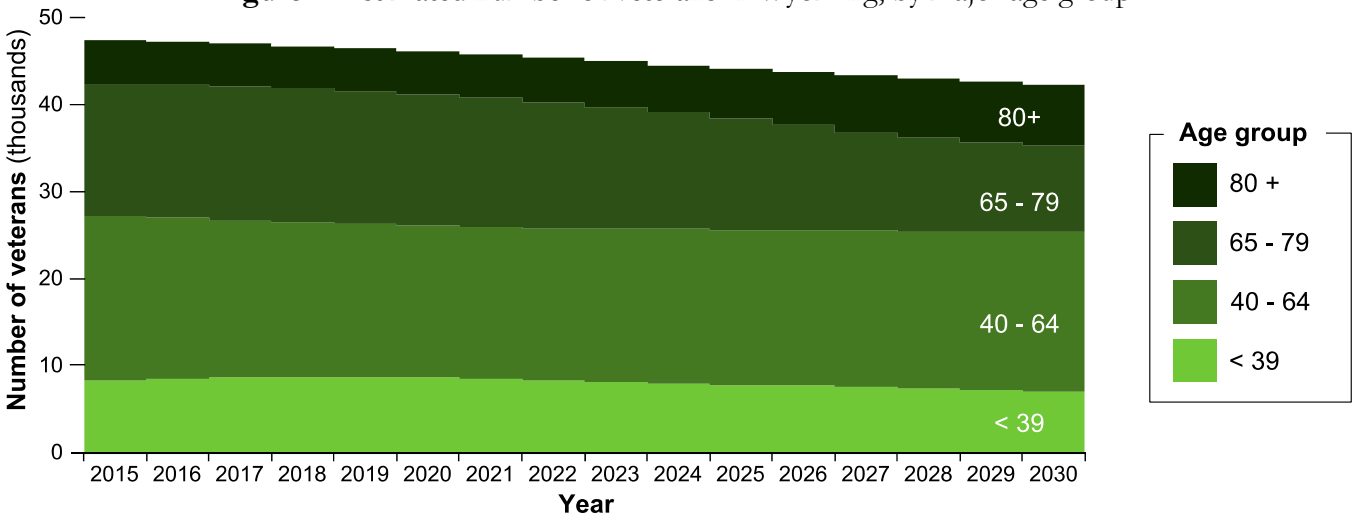
According to the best available populations models from the VA, there are approximately 48,000 veterans in the State of Wyoming today. This number is projected to steadily decrease to approximately 42,000 by 2030 as the large number of veterans who served in Vietnam gradually pass away. This trend is illustrated in Figure 1, below, which categorizes veterans by major service area.

Figure 1: Estimated number of veterans in Wyoming, categorized by service in major conflict[5]



While the total population of Wyoming veterans is projected to decrease, the population most at risk of needing long-term care services will likely increase. Figure 2, below, illustrates demographic trends by age group. Note that while the total population of veterans under 79 years of age decreases from approximately 42,000 to 35,000, the population over 80 is projected to increase from 5,000 to 7,000.

Figure 2: Estimated number of veterans in Wyoming, by major age group

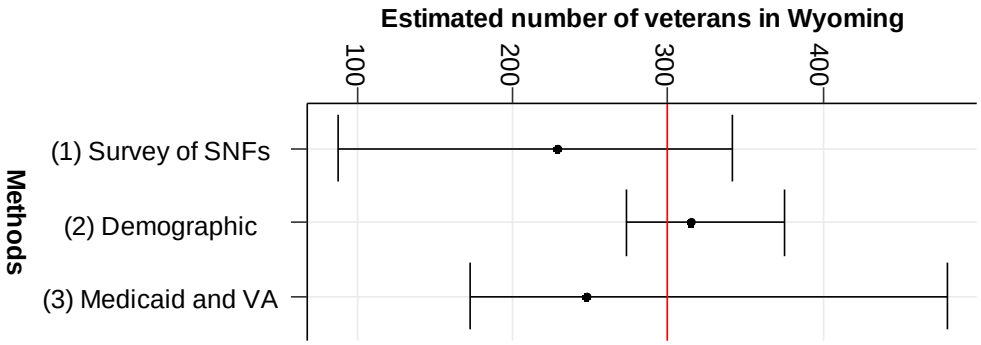


[5] Data from the VA Veteran Population Model 2016. VA service era categories are consolidated based on the last major conflict for that group; i.e., group "(k) WWII, KC, VNE" would be categorized as 'Vietnam War' in the graph. Service eras in between conflicts are colored in light blue. Note that the VA uses an actuarial model to project the total number of veterans by state, county and age group based on best-available census data. While anecdotal information indicates that the model tends to undercount veterans, it is the best available tool for trends, particularly when looking at detailed age groups and county-level data.

Estimated number of veterans requiring Skilled Nursing Facility (SNF)-level care

This analysis estimates that **300 veterans** in Wyoming currently require SNF-level care. We arrived at this number by combining the results of three separate estimates and choosing a round number where they overlapped, as shown in Figure 3, below.

Figure 3: Methodologies for estimating the number of veterans in Wyoming. Dots represent the best prediction, and bars represent low and high estimates for each method.



The three methods are briefly described below:

1. An **online survey of private Wyoming long-term care facilities**. As part of the recent outreach effort, the Department sent a survey to all SNF and assisted living facilities (ALFs) throughout the State.

   - Of the 65 requests, we received 28 responses.
   - Among other questions, we asked each facility to estimate a count of the average number of veterans served on a daily basis. Data from the survey was merged with county-level population estimates and VA model estimates, based on the city of the responding facility.
   - A series of models was fit on the survey data to estimate the average count of veterans.
   - The model with the best fit was applied to data from every nursing facility in the State to estimate the distribution of total veterans in SNF beds. 50 veterans were added to account for those in VA facilities in Sheridan and Cheyenne.

2. A **demographic analysis** similar to that of the original needs analysis, in which the ratio of Wyoming Medicaid nursing home member-months to overall demographic groups was applied to VETPOP demographic groups. There were, however, some key differences from the original estimates that lowered the previous estimate from around 500 to 315:

   - The original needs analysis averaged across sexes; this was incorrect since most SNF residents tend to be female due to differences in longevity, while most veterans tend to be male. The updated analysis splits the demographic groups by age and sex.

   - The original analysis assumed member-months of eligibility translated into an Average Daily Census (ADC). This was also incorrect, since members can both enter or leave a nursing home within the month. Using Medicaid claims data, we determined that the ADC was equivalent to 85% — 89% of a member-month. This factor was applied to the new analysis.

- From the survey of SNFs (Method 1, above), the percentage of veterans on Medicaid was estimated at between 69% and 89%, with a best estimate at 79%. This rate is higher than the previous estimate of 70%.

3. An analysis of **Medicaid eligibility data on VA income**. While this captured precisely the number of veterans on Medicaid receiving VA compensation and pension (80 — 100, depending on the month), these numbers have to be adjusted to account for:

- Veterans not on Medicaid (i.e., using the same 69% - 89% range derived from the survey); and,
- Veterans who do not receive VA income.

This last detail was particularly complicated; compensation and pension data is only available for large age groups in VETPOP, not specifically for veterans in long-term care. In Wyoming, an estimated 24.6% of veterans over age 65 receive income.

Since disabled veterans may disproportionately go into long-term care, this number was used as a lower bound, with 40% and 50% making up the middle and upper bounds. These numbers were purely an educated guess, however, which unfortunately casts significant uncertainty around otherwise precise Medicaid eligibility data.

Estimated number of Veteran Home SNF beds, based on other states

In addition to these demographic estimates, data from the National Association of State Veterans Homes was analyzed to determine the average count of Veterans Home SNF beds by state.

Considering factors like total number of SNF beds, total number of veterans over 65, average SNF occupancy, average wages, level of institutionalization in the State, and population density, the model predicts that Wyoming would have **approximately 90 SNF beds** if it had a State Veterans' Home, though the 89% credible interval ranges from 0 to 270.

90 SNF beds for 300 veterans currently requiring nursing care might seem low, but it is important to consider two points:

- The VA currently cares for approximately 50 veterans between its two Medical Centers in Sheridan and Cheyenne.

- The private sector still plays a significant role — veterans might, for example, prefer to stay close to home in a private SNF rather than travel a potentially long distance towards a State Home.

This brings us to the third part of the analysis: where the State Home should be located.

Part IV - Location criteria

The Department of Health, Veterans' Commission, State Construction Department, and the contractor, MOA Architecture initially considered twelve (12) major sites, distributed around the State. Generally speaking, these sites were selected due to potential competitive advantages: Riverton, for example, is in close proximity to the Wind River Reservation; Basin, Lander, Buffalo and Thermopolis each have existing State facilities; Casper and Cheyenne are large population centers, and so on. After evaluating these sites during the Level I process, we decided to complete the Level II study on three (3) final sites: Casper, Buffalo, and Sheridan.

This ranking was the result of a two-stage process: (1) data on multiple indicators were combined into overall criteria, which were then (2) weighted by importance. Table 2, below, illustrates the indicators used, how they nest into criteria, and how they were weighted. Discussion on the methodology behind each indicator can be found on the page number listed in the right-most column.

Table 2: Decision criteria

Criteria	Weight	Sub-Weight	Sub-Weight	Final Weight	Indicator	Page
Proximity to family	31.1%	70%	-	21.8%	Est. number of WY vets served	16
		20%	-	6.2%	Est. percent out-of-state vets served	16
		10%	-	3.1%	Continuity of care	18
Low-cost long-term care	25.2%	80%	10%	2.0%	Existing workforce in city	19
			10%	2.0%	Access to CNA graduates	20
			10%	2.0%	CNA graduate quality	20
			30%	6.0%	Median CNA wage	22
			10%	2.0%	Median RN wage	22
			30%	6.0%	Overhead consolidation potential	22
		20%	100%	5.0%	Free land potential	22
VA proximity	14.1%	75%	-	10.6%	Drive time to closest VAMC	23
		25%	-	3.5%	Drive time to closest CBOC or VAMC	23
Low-cost communities	7.0%	100%	-	7.0%	Cost of living index	24
Outdoor recreation	6.3%	50%	-	3.2%	Trees — percent forested	25
		50%	-	3.2%	Mountains — Terrain Ruggedness Index	25
Local amenities	6.1%	100%	-	6.1%	Count of amenities	27
Veterans organizations	5.1%	100%	-	5.1%	Count of VFW and AL posts in city	27
Access to specialists	5.1%	100%	-	5.1%	Specialist depth score	28

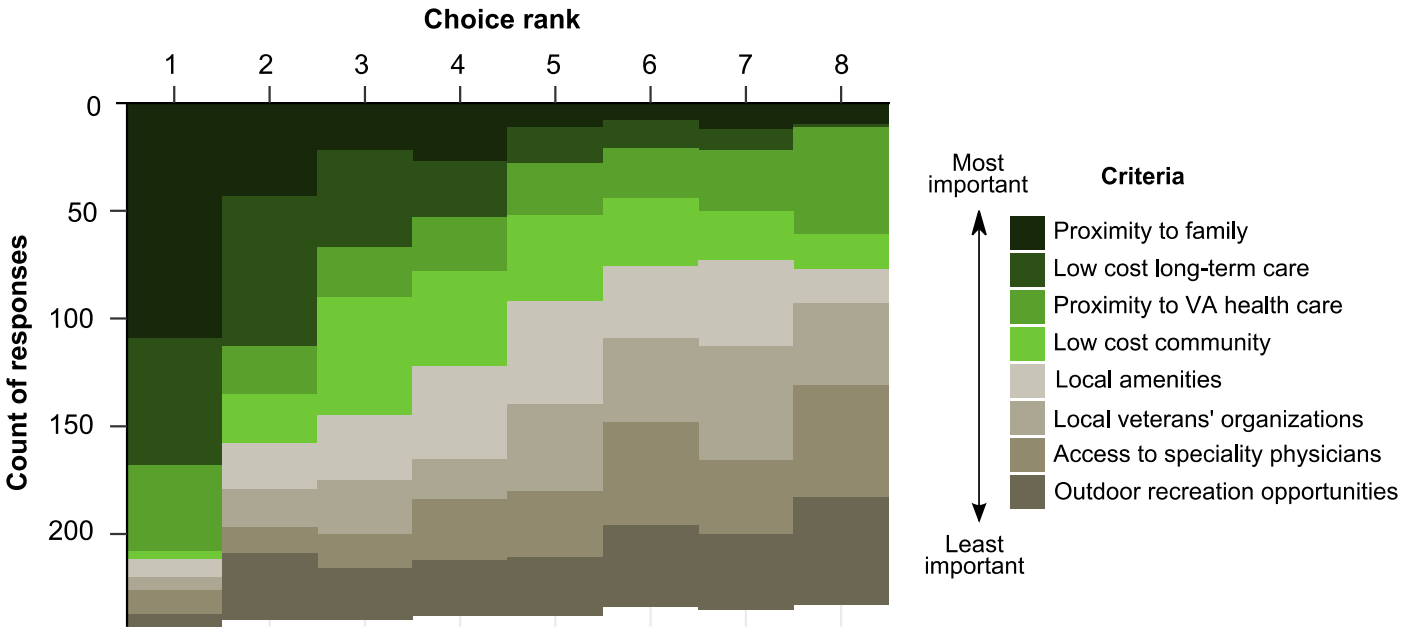
Developing criteria and weights

The criteria listed in the table above were initially developed in brainstorming sessions between the Veterans' Commission and the Department of Health.

We then solicited feedback at the 24 public meetings held around the state. Feedback came in the form of both general public comments, but most helpful was a one-page paper survey, where respondents were asked to rank eight different criteria from 1 (most important) to 8 (least important). In addition to passing out paper surveys at the public meetings, we developed a website — vetshomestudy.wyo.gov — and posted an online version of the survey there.

In total, we received 247 useable responses; 149 were from veterans. The results from the survey are shown in Figure 4, below. By average rank, the three most important criteria were: (1) proximity to family, (2) low cost of long-term care and (3) proximity to VA health care.

Figure 4: Survey results for ranked location criteria



Note, however, that responses differed by veteran status. Non-veterans were much more likely to rank family proximity as most important, for example, while ranking distance to VA health care lower.

Table 3, below, shows how we calculated overall weights for location criteria by weighing first, second, and third ranked picks proportionally (e.g. 1, ½, ¼), and then weighing veteran responses by 2/3 and non-veteran responses at 1/3.

Table 3: Relative weights for location criteria

Criteria	Veterans				Non-Veterans				Final
	First	Second	Third	Overall	First	Second	Third	Overall	
Proximity to family	34%	19%	9%	26%	61%	16%	9%	41%	31%
Low cost LTC	27%	32%	16%	27%	20%	26%	23%	22%	25%
VAMC proximity	23%	11%	11%	18%	7%	7%	7%	7%	14%
Low cost community	2%	8%	24%	7%	1%	11%	21%	7%	7%
Outdoor recreation	3%	8%	10%	5%	2%	19%	10%	8%	6%
Local amenities	3%	8%	13%	6%	3%	10%	13%	7%	6%
Veterans' orgs	3%	7%	11%	5%	1%	8%	9%	4%	5%
Specialty care access	5%	7%	6%	6%	4%	2%	7%	4%	5%

Measuring each criteria

The tables on the next two pages show both the actual data for each indicator (Table 4), which is then standardized in Table 5. Standardizing (subtracting out the mean and dividing by the standard deviation) allows us to compare indicators to each other without the magnitude of the number itself affecting any of the conclusions. You simply see the number of standard deviations above or below the average (0, for all indicators).

Table 4: Data for each indicator, by site

Indicator	Site											
	Buffalo	Casper	Cheyenne	Sheridan	Gillette	Lander	Riverton	Laramie	Thermopolis	Rock Springs	Newcastle	Basin
Est. number of WY vets served	109	133	119	97	99	93	98	113	97	93	89	79
Est. percent out-of-state vets served	0.9%	1.5%	54.2%	2.0%	3.9%	0.0%	0.0%	28.5%	0.0%	5.1%	12.7%	1.3%
Continuity of care	1	0	0	0	0	0	0	0	0	0	0	0
Existing workforce in city	104	861	692	527	321	119	159	169	77	125	143	179
Access to CNA graduates	79	138	130	82	68	41	58	107	45	80	22	34
CNA graduate quality	72.6	66.3	75.2	72.2	76.0	63.7	64.4	77.6	69.5	85.2	78.9	75.4
Median CNA wage	$12.16	$13.80	$13.87	$12.77	$14.34	$14.45	$14.45	$11.72	$14.15	$13.98	$14.34	$14.36
Median RN wage	$28.62	$28.73	$31.98	$32.01	$30.71	$29.85	$29.85	$27.57	$30.88	$28.12	$30.71	$30.04
Overhead consolidation potential	1	0	0	1	0	1	0	0	1	0	0	1
Free land potential	1	0.5	0	0.5	0.5	1	0	0	1	0	0	1
Drive time to closest VAMC	45.2	171.3	1.9	10.2	100.3	332.2	317.6	53.4	228.7	173.4	93.1	143.2
Drive time to closest CBOC or VAMC	45.2	8.7	1.9	10.2	3.4	43.3	2.2	53.4	52.0	2.6	93.1	47.3
Cost of living index	97	95	103	99	98	96	96	99	93	98	90	90
Trees — percent forested	23%	7%	0%	15%	1%	15%	0%	5%	2%	0%	26%	0%
Mountains — Terrain Ruggedness Index	9.6	6.2	3.6	10.6	5.3	9.8	3.7	5.1	9.8	7.8	6.6	5.0
Count of amenities	149	480	498	263	264	167	145	257	81	267	74	66
Count of VFW and AL posts in city	2	3	8	2	2	3	3	1	2	1	2	2
Specialist depth score	-2	5.2	11.6	0.3	2.9	-7.7	-5.6	6.6	-3.8	-2.4	-3	-2.2

Table 5: Standardized data for each indicator, by site

Indicator	Site											
	Buffalo	Casper	Cheyenne	Sheridan	Gillette	Lander	Riverton	Laramie	Thermopolis	Rock Springs	Newcastle	Basin
Est. number of WY vets served	0.51	2.15	1.19	-0.31	-0.18	-0.59	-0.25	0.78	-0.31	-0.59	-0.86	-1.54
Est. percent out-of-state vets served	0.50	0.47	-2.75	0.44	0.32	0.56	0.56	-1.18	0.56	0.25	-0.22	0.48
Continuity of care	3.18	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29
Existing workforce in city	-0.71	2.19	1.55	0.91	0.12	-0.65	-0.50	-0.46	-0.82	-0.63	-0.56	-0.43
Access to CNA graduates	0.15	1.75	1.52	0.22	-0.17	-0.88	-0.42	0.90	-0.78	0.18	-1.39	-1.08
CNA graduate quality	-0.07	-1.07	0.34	-0.14	0.45	-1.48	-1.36	0.71	-0.56	1.91	0.92	0.36
Median CNA wage	1.63	-0.11	-0.18	0.98	-0.68	-0.79	-0.79	2.09	-0.48	-0.30	-0.68	-0.70
Median RN wage	0.91	0.83	-1.43	-1.45	-0.55	0.05	0.05	1.64	-0.67	1.26	-0.55	-0.08
Overhead consolidation potential	1.13	-0.81	-0.81	1.13	-0.81	1.13	-0.81	-0.81	1.13	-0.81	-0.81	1.13
Free land potential	1.20	0.09	-1.02	0.09	0.09	1.20	-1.02	-1.02	1.20	-1.02	-1.02	1.20
Drive time to closest VAMC	0.85	-0.29	1.24	1.17	0.35	-1.74	-1.61	0.78	-0.81	-0.31	0.42	-0.04
Drive time to closest CBOC or VAMC	-0.51	0.73	0.96	0.68	0.91	-0.44	0.95	-0.79	-0.74	0.94	-2.13	-0.58
Cost of living index	-0.22	0.31	-1.80	-0.75	-0.48	0.04	0.04	-0.75	0.84	-0.48	1.63	1.63
Trees — percent forested	1.62	-0.09	-0.82	0.72	-0.73	0.73	-0.82	-0.28	-0.61	-0.80	1.92	-0.82
Mountains — Terrain Ruggedness Index	1.06	-0.30	-1.32	1.44	-0.64	1.15	-1.29	-0.74	1.16	0.36	-0.14	-0.74
Count of amenities	-0.53	1.76	1.88	0.26	0.26	-0.41	-0.56	0.22	-1.00	0.28	-1.05	-1.11
Count of VFW and AL posts in city	-0.32	0.23	2.96	-0.32	-0.32	0.23	0.23	-0.86	-0.32	-0.86	-0.32	-0.32
Specialist depth score	-0.36	0.93	2.08	0.06	0.52	-1.38	-1.00	1.18	-0.68	-0.43	-0.54	-0.39

Table 6: Weighted component scores, and total score, by site

Indicator	Site											
	Buffalo	Casper	Cheyenne	Sheridan	Gillette	Lander	Riverton	Laramie	Thermopolis	Rock Springs	Newcastle	Basin
Est. number of WY vets served	0.11	0.47	0.26	-0.07	-0.04	-0.13	-0.05	0.17	-0.07	-0.13	-0.19	-0.34
Est. percent out-of-state vets served	0.03	0.03	-0.17	0.03	0.02	0.03	0.03	-0.07	0.03	0.02	-0.01	0.03
Continuity of care	0.10	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Existing workforce in city	-0.01	0.04	0.03	0.02	0.00	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01
Access to CNA graduates	0.00	0.03	0.03	0.00	0.00	-0.02	-0.01	0.02	-0.02	0.00	-0.03	-0.02
CNA graduate quality	0.00	-0.02	0.01	0.00	0.01	-0.03	-0.03	0.01	-0.01	0.04	0.02	0.01
Median CNA wage	0.10	-0.01	-0.01	0.06	-0.04	-0.05	-0.05	0.13	-0.03	-0.02	-0.04	-0.04
Median RN wage	0.02	0.02	-0.03	-0.03	-0.01	0.00	0.00	0.03	-0.01	0.03	-0.01	0.00
Overhead consolidation potential	0.07	-0.05	-0.05	0.07	-0.05	0.07	-0.05	-0.05	0.07	-0.05	-0.05	0.07
Free land potential	0.06	0.00	-0.05	0.00	0.00	0.06	-0.05	-0.05	0.06	-0.05	-0.05	0.06
Drive time to closest VAMC	0.09	-0.03	0.13	0.12	0.04	-0.18	-0.17	0.08	-0.09	-0.03	0.04	0.00
Drive time to closest CBOC or VAMC	-0.02	0.03	0.03	0.02	0.03	-0.02	0.03	-0.03	-0.03	0.03	-0.07	-0.02
Cost of living index	-0.02	0.02	-0.13	-0.05	-0.03	0.00	0.00	-0.05	0.06	-0.03	0.11	0.11
Trees — percent forested	0.05	0.00	-0.03	0.02	-0.02	0.02	-0.03	-0.01	-0.02	-0.03	0.06	-0.03
Mountains — Terrain Ruggedness Index	0.03	-0.01	-0.04	0.05	-0.02	0.04	-0.04	-0.02	0.04	0.01	0.00	-0.02
Count of amenities	-0.03	0.11	0.11	0.02	0.02	-0.02	-0.03	0.01	-0.06	0.02	-0.06	-0.07
Count of VFW and AL posts in city	-0.02	0.01	0.15	-0.02	-0.02	0.01	0.01	-0.04	-0.02	-0.04	-0.02	-0.02
Specialist depth score	-0.02	0.05	0.11	0.00	0.03	-0.07	-0.05	0.06	-0.03	-0.02	-0.03	-0.02
Total weighted score	**0.55**	**0.68**	**0.35**	**0.24**	**-0.10**	**-0.30**	**-0.50**	**0.17**	**-0.15**	**-0.28**	**-0.35**	**-0.32**

In addition to standardizing the indicators, you'll note that Table 5 also changes the sign (+/-) so that higher numbers on "good" indicators are reflected as positive, where higher numbers on "bad" indicators show up as negative numbers. This allows us to color-code higher-than-average indicators as green and lower-than-average indicators as red.

Final scores

Ultimately, each of the standardized scores were multiplied by the final weights in Table 2 — leading to Table 6 — and summed, to arrive at the final weighted average scores listed on the bottom of Table 6. Incorporating MOA's assessment of each site led to the final recommendations of Casper, Buffalo, and Sheridan. So what went into each of the criteria? How did we arrive at the numbers in the table?

Proximity to family

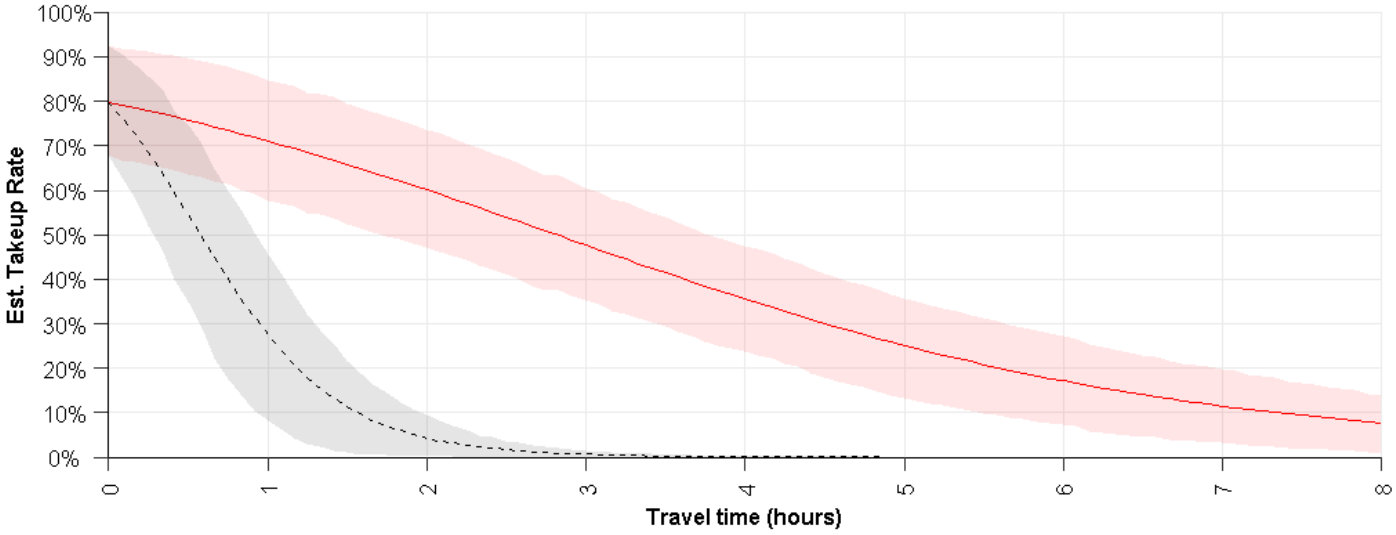
This criteria is impossible to measure directly; there is no data on the current or future locations of veterans and their families. Instead, we look at a related question: what location will serve the most Wyoming veterans? These questions are related under the assumption that travel time matters: people generally choose long-term care options that are closer to home. If this assumption is true, a facility that attracts more veterans (based on travel time alone) will also serve more nearby families of veterans.

To evaluate each of the twelve sites, we built a model to estimate the probability that a veteran in need of long-term care will travel to the State Home. To do this, the surveys offered at the public meetings and the website included a question that offered a tradeoff between two options:

- A private nursing home, costing $90,000 per year, that is 15 minutes away from home; or
- The State Home, costing $60,000 per year, that is *x* hours away from home;

... where *x* in the second option represented a random travel time between 30 minutes and 6 hours.[6] The difference in price came from our estimate (in the first Needs Analysis) of how much the private-pay subsidy would be at the State Home. Based on the survey data received, we estimated the proportion of veterans who would accept the State Home option based on travel time, summarized in Figure 5 below, where the red line and shaded region represents in-state veterans (those surveyed), and the black line and shaded region represents our estimate of how out-of-state veterans would react.

Figure 5: Modeled take-up rate for in-state (red) and out-of-state (black) veterans

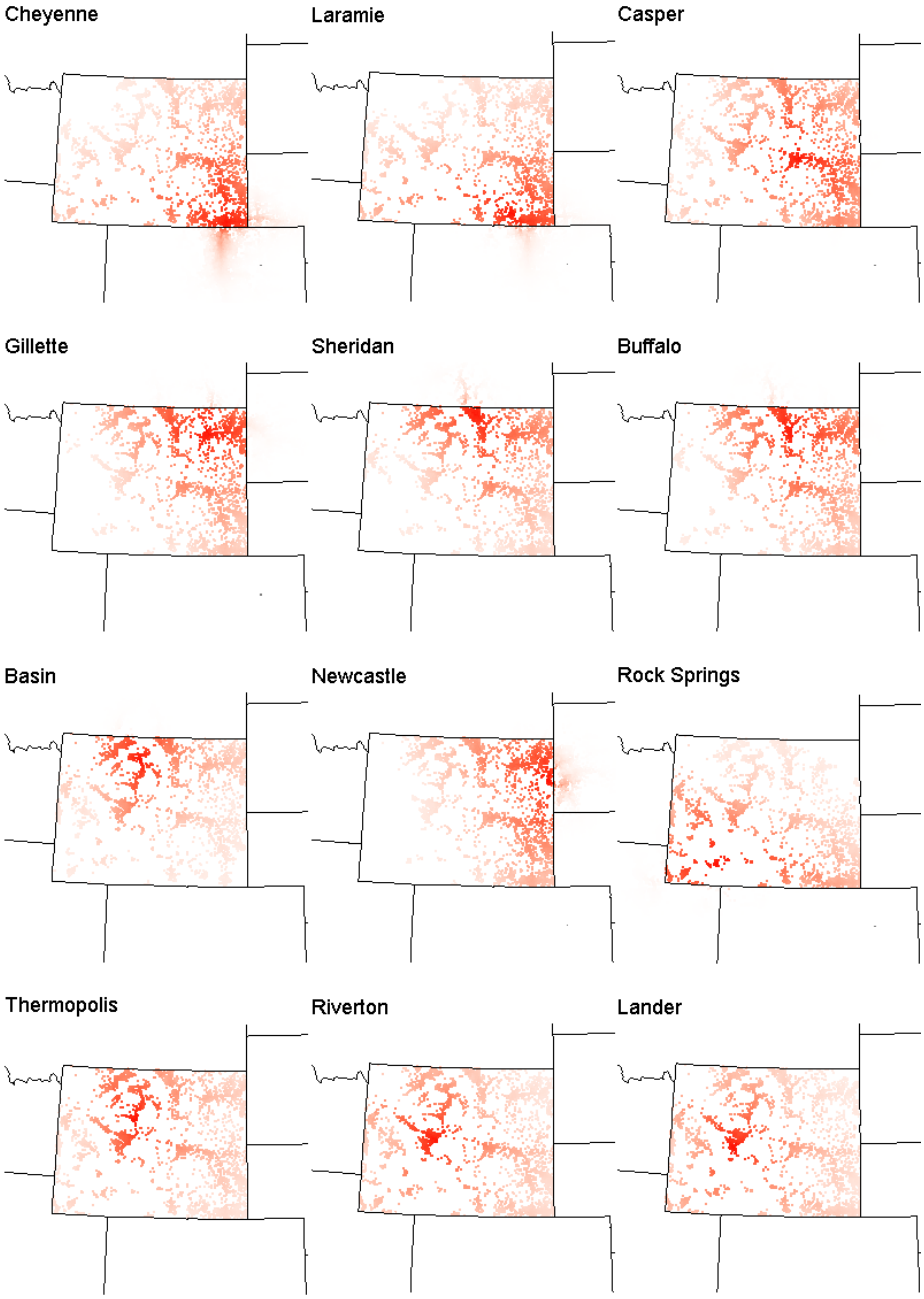


[6] Randomizing a choice in this way is part of a method known as "contingent valuation." It is a way to estimate an individual's willingness to pay for various goods and services.

The out-of-state estimate essentially assumes that if the VA State Home were right across the state line, the take-up rate would be similar between in- and out-of-State veterans — hence the common intercept at 80%. The slope of the line, however, is penalized, since the further into the other state you go (e.g., Colorado), the less likely the out-of-state veteran might be aware of, or interested in, long-term care options in Wyoming.

Figure 6, below, shows the results of applying the model to the estimated 300 veterans who might need long-term care. We assume the geographic distribution of the 300 veterans is identical to the age 65+ VETPOP county estimates, which can then be further allocated by population into census tract centroids.[7]

Figure 6: Probability of take-up by veteran centroid and site (darker red indicates higher take-up)



[7] Center for International Earth Science Information Network - CIESIN - Columbia University. 2017. Gridded Population of the World, Version 4 (GPWv4): Administrative Unit Center Points with Population Estimates, Revision 10. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). https://doi.org/10.7927/H46H4FCT.

Table 7, below, summarizes the results of this analysis. We generate two indicators:

- Modeled number of Wyoming veterans served (higher numbers being a **good** thing); and
- Estimated percent of veterans coming from out-of-State (higher numbers being a **bad** thing).

Generally speaking, Casper is the site that is projected to serve the most Wyoming veterans; Cheyenne would serve the most veterans total, but many would likely come from Colorado and Nebraska.

Table 7: Estimated market, based on 300 in-state veterans and take-up rates from Figure 5

	Wyoming Vets			Out-of-State Vets			Total Vets			% Out-of-State		
Site	Low	Est.	High	Low	Est.	High	Low	Est.	High	Low	Est.	High
Basin	50	79	108	0	1	1	50	80	109	0%	1%	1%
Buffalo	76	109	141	0	1	2	76	110	143	0%	1%	1%
Casper	97	133	168	0	2	2	97	135	170	0%	1%	1%
Cheyenne	87	119	151	20	141	267	107	260	418	19%	54%	64%
Gillette	68	99	130	0	4	8	68	103	138	0%	4%	6%
Lander	60	93	127	0	0	0	60	93	127	0%	0%	0%
Laramie	81	113	145	2	45	94	83	158	239	2%	28%	39%
Newcastle	59	89	119	2	13	25	61	102	144	3%	13%	17%
Riverton	64	98	132	0	0	0	64	98	132	0%	0%	0%
Rock Springs	61	93	124	0	5	11	61	98	135	0%	5%	8%
Sheridan	66	97	128	0	2	4	66	99	132	0%	2%	3%
Thermopolis	63	97	130	0	0	0	63	97	130	0%	0%	0%

These results should only be interpreted in a **relative** sense — e.g., "Casper would likely serve more residents than Basin", or "Cheyenne would serve more out-of-State veterans than Riverton." It would be problematic to use the absolute numbers ("Casper would serve 97 to 168 veterans") due to the many assumptions built into this model; the most problematic assumption in this regard is that individuals who took the survey (e.g. showed up to the meetings or went online) are representative of the future clientele at the State Home.

Continuity of care

For some veterans, particularly for the current residents of the Veterans' Home in Buffalo, "proximity to family" means proximity to their fellow residents.

The veterans in the current State Home in Buffalo, for example, would be able to transfer to the SNF located on site. This would be less disruptive to their care, and would allow them to visit friends on the domiciliary side of the house.

Low cost long-term care

This criteria has the largest number of indicators because of all the complexity that it entails. The criteria reflects not only the cost of constructing and operating the VA State Home, but must also factor in potential impacts to the surrounding private long-term care industry. The indicators we chose are summarized below in Table 8:

Table 8: Long-term care cost indicators

Site	CNA and RN cost indicators					Overhead and capital indicators	
	Existing workforce	Median CNA wage	Median RN wage	Access to CNA grads	CNA grad quality	Free land[8]	Overhead consolidation
Basin	179	$14.36	$30.04	34	75.4	1	1
Buffalo	104	$12.16	$28.62	79	72.6	1	1
Casper	861	$13.80	$28.73	138	66.3	0.5	0
Cheyenne	692	$13.87	$31.98	130	75.2	0	0
Gillette[9]	321	$14.34	$30.71	68	76.0	0.5	0
Lander[10]	119	$14.45	$29.85	41	63.7	1	1
Laramie	169	$11.72	$27.57	107	77.5	0	0
Newcastle[11]	143	$14.34	$30.71	22	78.9	0	0
Riverton[12]	159	$14.45	$29.85	58	64.4	0	0
Rock Springs	125	$13.98	$28.12	80	85.2	0	0
Sheridan	527	$12.77	$32.01	82	72.2	0.5	1
Thermopolis	77	$14.15	$30.88	45	69.5	1	1

Existing workforce

Construction of a VA State Home will alter the local market and possibly compete with private industry for clients and staff. To assess the magnitude of this impact, we look at the existing workforce in each community — measured by existing CNA hours per day worked — to determine its capacity to absorb additional SNF beds without detracting from private industry.

If building the VA State Home is like throwing a rock into a pond (i.e., disrupting a system), what we're trying to measure is the size of the pond. Assuming the 'rock' is the same size for all locations, a larger number here indicates a lower proportional impact to the private sector.

We calculated this indicator using newly-available Payroll-Based Journaling (PBJ) data from CMS.[13] Through this system, Skilled Nursing Facility staffing hours by type (e.g. CNA, LPN and RN) are reported on a daily basis. When CNA hours are aggregated across all the SNFs in a given city, the data looks something like Figure 7, on the next page (though only five cities are shown for illustrative purposes). To deal with weekly and monthly fluctuations in daily hours of staffing, as well as missing data (e.g. Thermopolis), we take the median, represented by the straight line.

[8] Evaluated as 1 if State owns the land, 0.5 if land has been promised by a community and 0 if no free land was identified. Per the Latin, *plus valet in manibus avis unica quam dupla silvis.*

[9] Used Northeast region for CNA and RN wages in Gillette

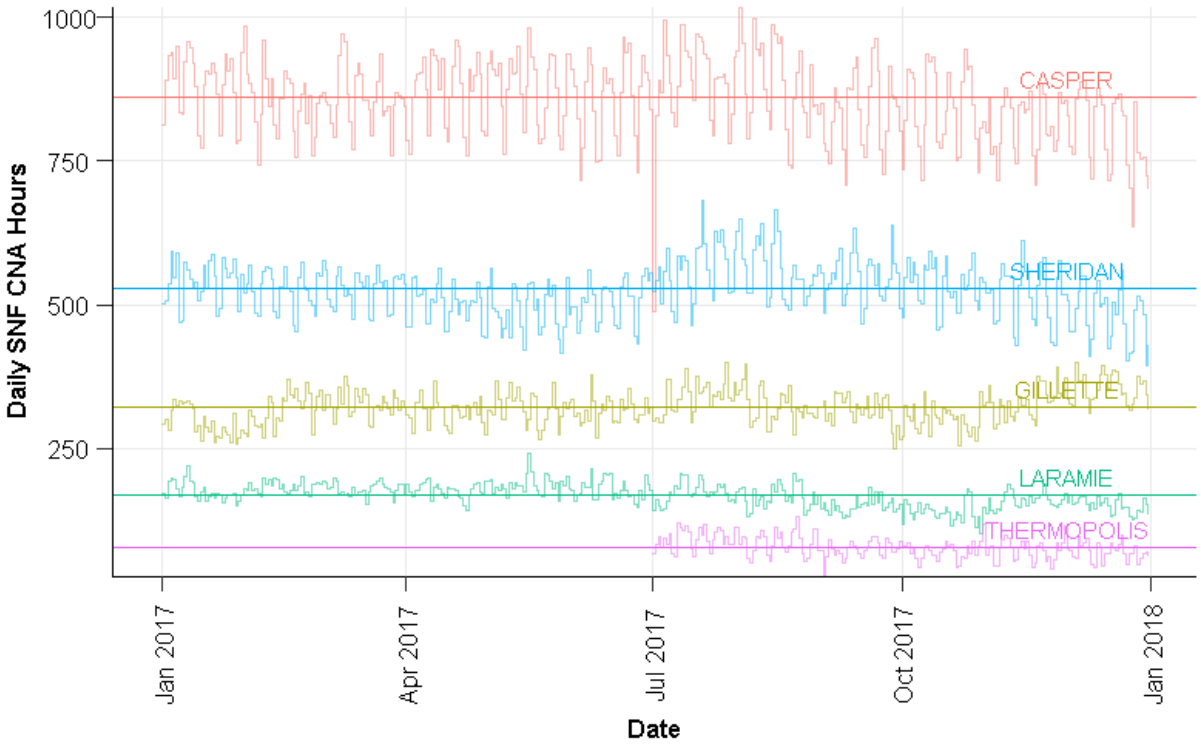
[10] Used Northwest region for RN wage in Lander

[11] Used Northeast region for CNA and RN wages in Newcastle

[12] For staffing, used hours reported from Lander SNF and adjusted for bed ratio (80:60). Used Northwest region for RN wage.

[13] Available at:
https://data.cms.gov/Special-Programs-Initiatives-Long-Term-Care-Facili/PBJ-Daily-Nurse-Staffing-CY-2017-Q2/utrm-5phx

Figure 7: Example of how median CNA hours by city were calculated from PBJ data



Access to CNA graduates and the quality of those graduates

On the labor supply side, these two indicators attempt to quantify how close the State Home will be to CNA training programs — be they at community colleges, vocational training schools, or other nursing homes — and how well those source programs prepare graduates for passing the skills portion of the CNA exam.

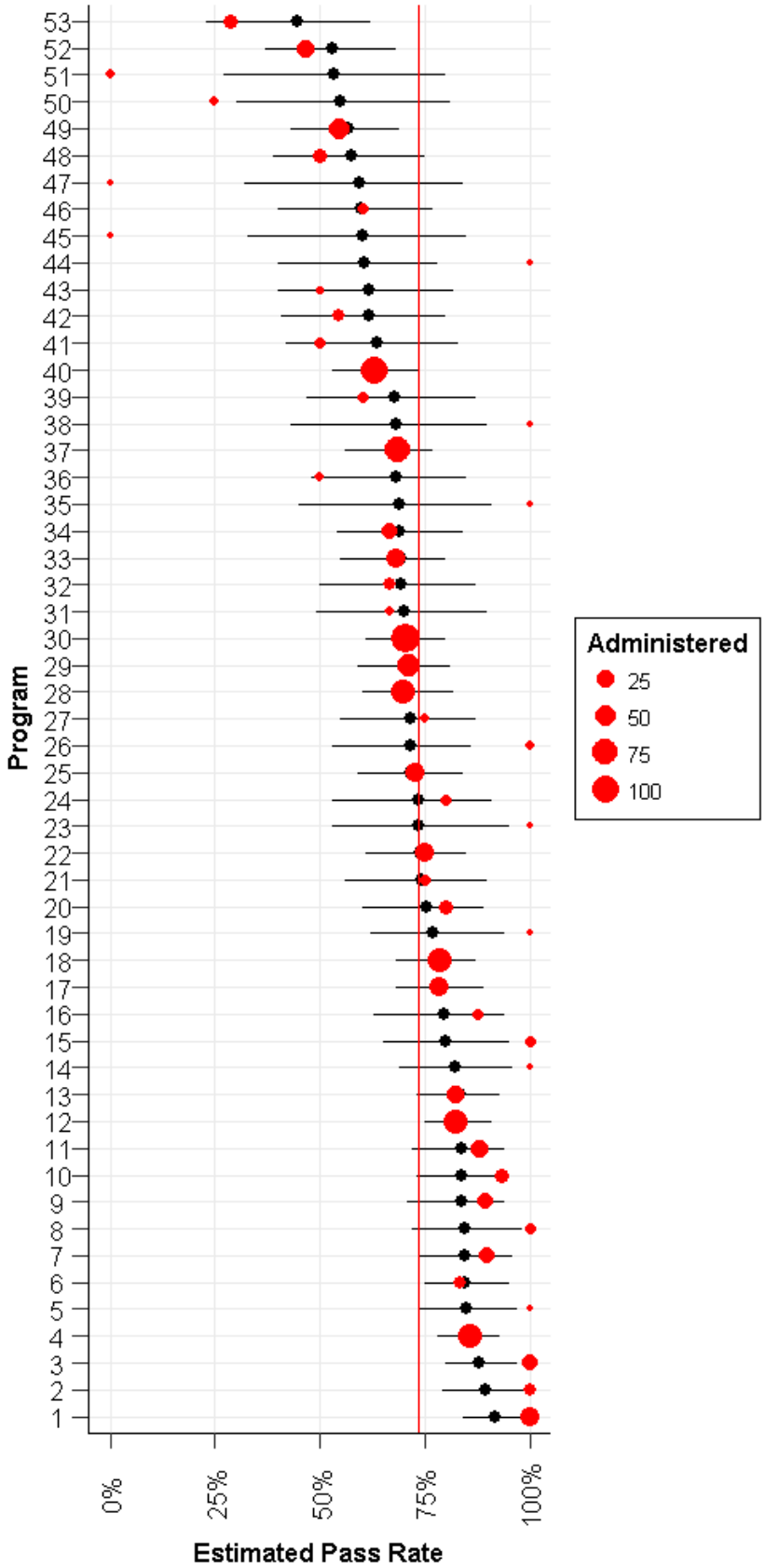
To estimate the output and quality of CNA training programs, we examined CNA exam data from the National Nurse Aid Assessment Program (NNAAP). The data covered all tests administered and passed by CNA programs between 10/1/2016 and 9/30/2017 (FFY 2017).

Because some programs have far lower throughput than others — and therefore have lower sample sizes for estimating pass rates — we use a hierarchical Bayesian statistical model to estimate the 'true' (i.e., long-run) pass rate for each program. The model works by "partially-pooling" data between the samples from each program, program city, and the entire population of exam-takers, thereby weighting population-level averages higher when individual sample sizes are small.

The effect of the model is shown on Figure 8, on the next page. Note that programs with small sample sizes (small red dots) have an estimate (black, with interval lines) that is generally "shrunk" towards the statewide pass rate (73.3%). The motivation for incorporating "shrinkage" can be visualized in a thought-experiment:

- Imagine a program had only 1 test-taker, and they passed. The observed pass rate is therefore 100%.
- If I were to bet you $100 to guess that program's pass rate over the next few years — and the amount you won was proportional to *how far away you were from the true value* — would you still go with 100%? Or some number closer to that city's average or the state average?

Figure 8: Estimated true (black) and observed (red) 2016-2017 pass rates for 53 Wyoming CNA programs. The size of the dot corresponds to how many tests were administered in FFY 2017.



After calculating these quality measures, we then calculated driving distance between each site and the 53 programs. A simplified linear model was used to weight the number of graduates from each program attributable to each site based on the distance: at 0 miles, 100% would be attributed, and at 100 miles, 0% would be attributed. Table 9, below, shows how this calculation works, using Rock Springs as an example, to arrive at the total "quantity" and "quality" metrics shown on Table 8.

Table 9: Example CNA graduate calculation for Rock Springs

Program location	Passed	Taken[14]	Est. pass rate[15]	Distance weight[16]	Graduates[17]	Percent of graduates[18]	Quality component
Rock Springs	60	70	85.7	100%	60.0	74.7%	64.0
Green River	22	25	83.9	82%	18.0	22.5%	18.8
Mountain View	1	1	84.8	25%	0.3	0.3%	0.3
Kemmerer	18	20	84.5	11%	2.0	2.5%	2.1
				Total	**80.3**	100%	**85.2**

Median CNA/RN wage

At the current equilibrium between supply and demand in each city, what is the price of labor?

We use data from the March 2017 Wyoming Occupational Employment and Wages site to answer this question[19], specifically the median wage estimates for CNAs and RNs, since medians tend to be less sensitive to outliers. Generally speaking, county data was available, but — as noted in the footnotes to Table 7 — regional estimates or approximations had to be used in some places.

Consolidation potential

In terms of human resources, fiscal, and support staff, what opportunities are there to 'add on' to an existing SNF instead of building an independent one? This indicator is measured crudely — either there is an existing nursing home where certain support services could be leveraged (in the case of existing State facilities, or the Sheridan Green House), or there is not.

Free land potential

Does the State already own — or can the State acquire — the land for free? This is also one of the simpler indicators to measure; as noted in the footnotes on Table 7, if the land is already owned by the State, the indicator gets a point, and if land has been promised by another entity, it gets half a point.

[14] Passed and administered from the CNA test result data.
[15] Estimated through the statistical model described in Figure 8.
[16] Linear function of drive time from Rock Springs, described in the preceding paragraph.
[17] Passed x Distance Weight
[18] Graduates / sum of graduates
[19] http://doe.state.wy.us/LMI/LEWISMarch2017ECI/toc000.htm

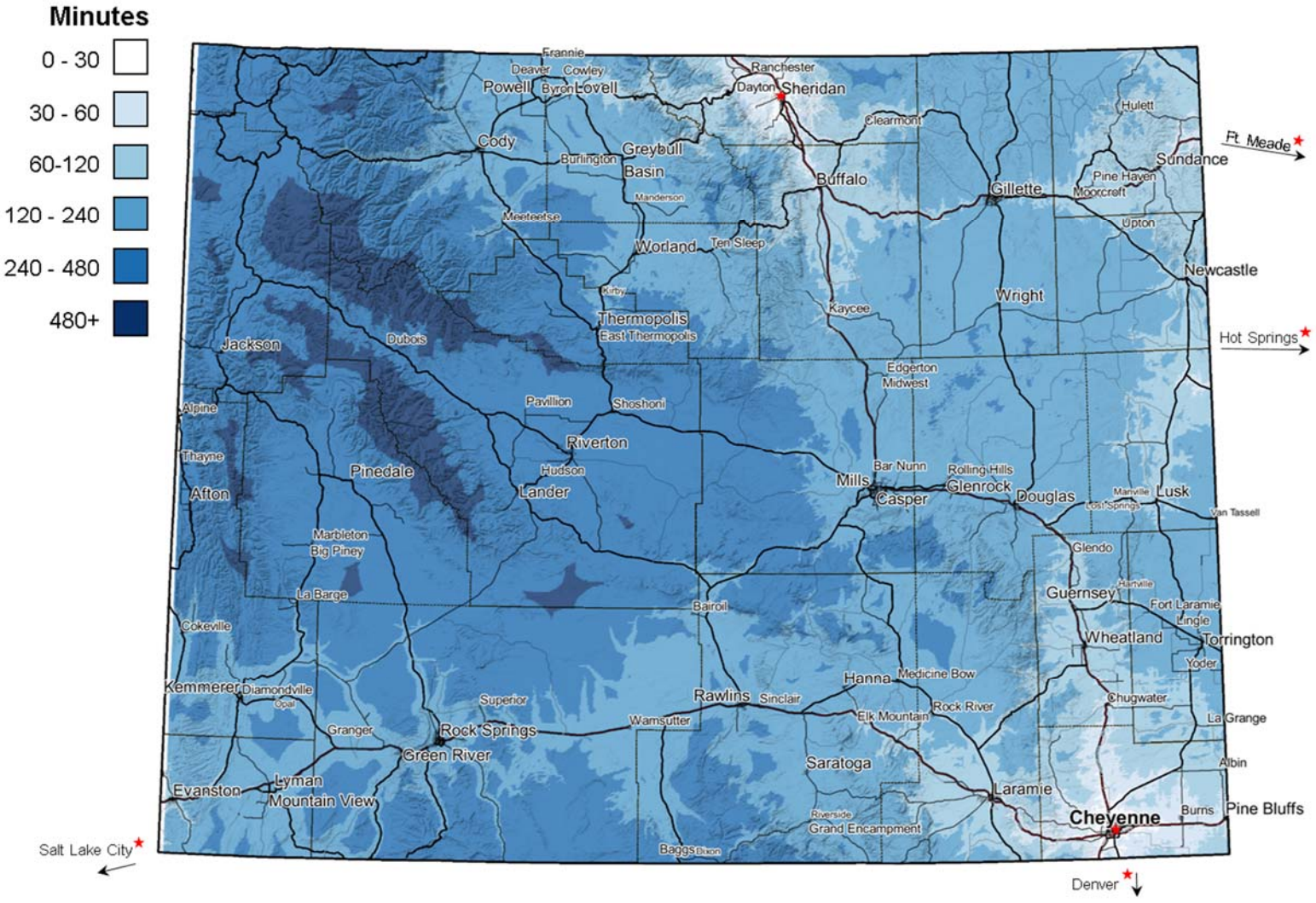
Proximity to VA health care
This measure is a composite of two different drive times:

- Drive time to the closest Veterans Affairs Medical Center (VAMC) (weighted at 75%)
- Drive time to the closest VAMC or Community-Based Outpatient Clinic (CBOCs) (weighted at 25%)

The first drive time has higher weight; while some primary and behavioral health care can be obtained locally, specialty care that is likely needed for SNF clients typically requires a VAMC.

Figure 9, below, shows how various locations in the State compare regarding travel time, in minutes, to the nearest VAMC. The methodology assumes walking to the nearest road and driving from there.

Figure 9: Travel time to the nearest VAMC



Results for each site are shown in the table below, sorted by ascending travel time in minutes.

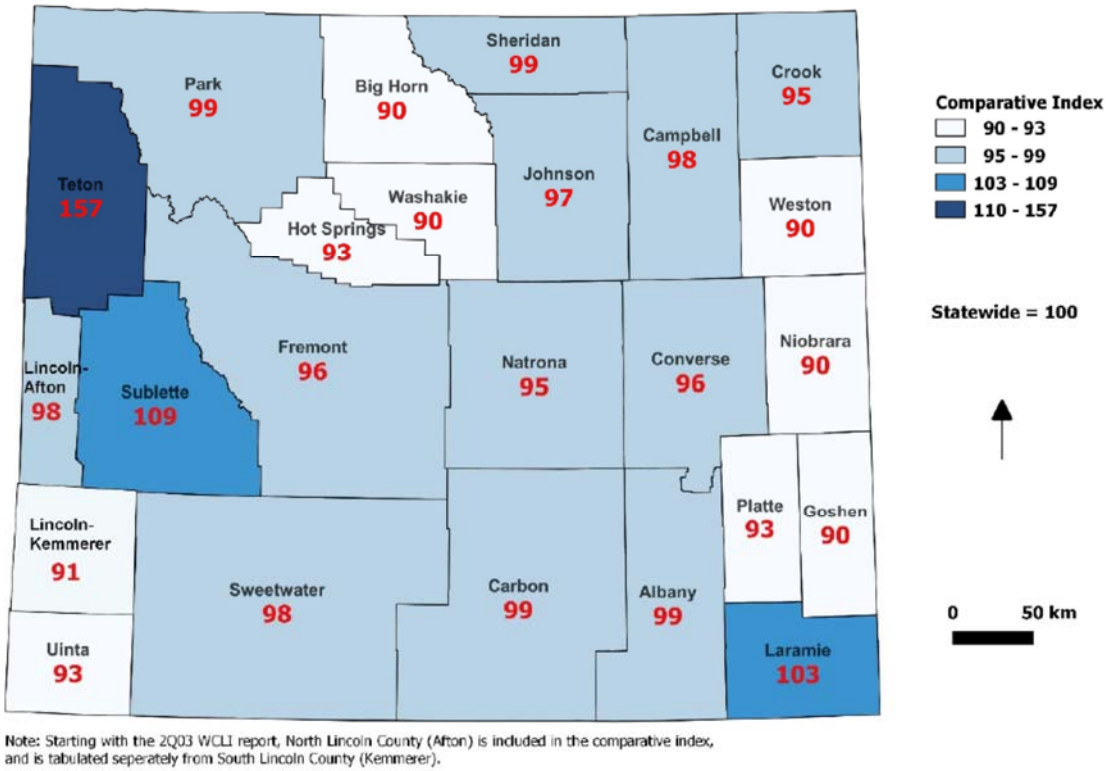
Table 10: Travel time from potential site to VA care

Site	Closest VAMC	Minutes to VAMC	Minutes to CBOC or VAMC
Cheyenne	Cheyenne	2	2
Sheridan	Sheridan	10	10
Buffalo	Sheridan	45	45
Laramie	Cheyenne	53	53
Newcastle	Hot Springs	93	93
Gillette	Sheridan	100	3
Basin	Sheridan	143	47
Casper	Sheridan	171	9
Rock Springs	Salt Lake City	173	3
Thermopolis	Sheridan	229	52
Riverton	Sheridan	318	2
Lander	Cheyenne	332	43

Low-cost communities

This indicator was pulled from the county-level comparative cost of living index compiled by the Division of Economic Analysis within the Department of Administration and Information.[20] We used the most recent index available (fourth quarter of 2017). Figure 10, below, is reproduced from the report.

Figure 10: Wyoming Comparative Cost of Living Index — 4Q2017



[20] http://eadiv.state.wy.us/wcli/wcli.html

Scenery and outdoor recreation

While this is a relatively low-ranked criteria, the Green House model emphasizes the role that outdoor spaces play in the resident experience; if you're outside, or looking outside, nice scenery can make a big difference. Outdoor recreation opportunities can matter as well if family and friends are more likely to visit due to local attractions.

It is impossible to rank potential sites by how "scenic" they are, or how many outdoor recreation activities are available, without some oversimplification. In order to quantify these aspects, we used two GIS-based measures as a proxy:

- **"Trees."** From the USGS National Land Cover Database[21] (2011), the percent of total area in a 30-km radius from the city that is forested.

- **"Mountains**." Using 1 arc-second (~30m) Shuttle Radar Tomography (SRTM) digital elevation files[22], the average Terrain Ruggedness Index[23] of a 30-km radius from each city.

From these two measures, we averaged the standardized[24] values to arrive at a "scenery index", shown in Table 10, below.

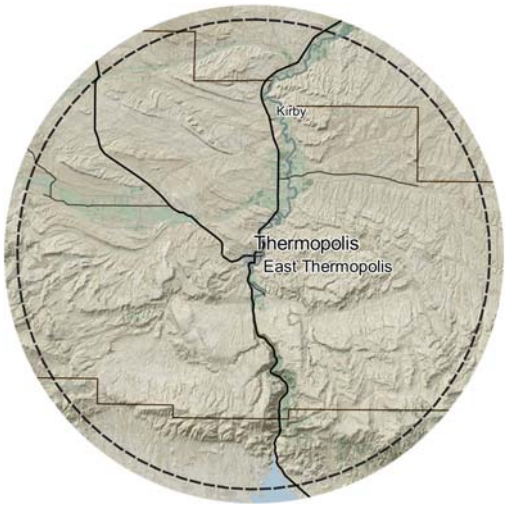
Table 11: Potential sites, sorted by "scenery index"

City	Percent forest cover	Average Terrain Ruggedness	Scenery index
Buffalo	23%	9.6	1.34
Sheridan	15%	10.6	1.08
Lander	15%	9.8	0.94
Newcastle	26%	6.6	0.89
Thermopolis	2%	9.8	0.27
Casper	7%	6.2	-0.19
Rock Springs	0%	7.8	-0.22
Laramie	5%	5.1	-0.51
Gillette	1%	5.3	-0.69
Basin	0%	5.0	-0.78
Riverton	0%	3.7	-1.05
Cheyenne	0%	3.6	-1.07

Figure 11, on the next page, shows both the terrain and land-cover data for each 30-km circle. Forest cover is indicated in dark green, and terrain data was used to create a hillshade effect.

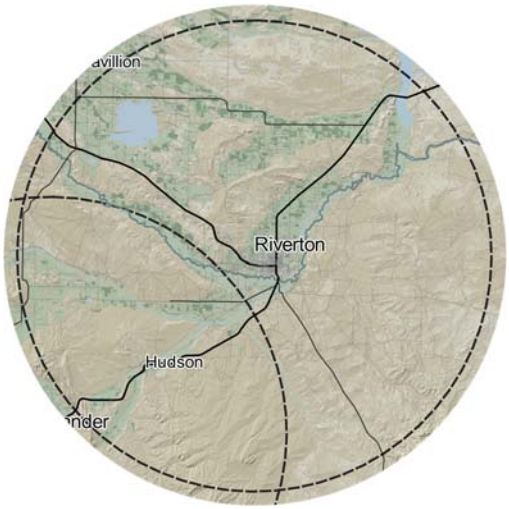
[21] Available here: https://www.mrlc.gov/nlcd11_data.php
[22] Available with an account from USGS Earth Explorer: https://earthexplorer.usgs.gov/
[23] https://download.osgeo.org/qgis/doc/reference-docs/Terrain_Ruggedness_Index.pdf
[24] Subtracting the mean from each value and dividing by the standard deviation. Also known as a "z-score".

Figure 11: Land cover and terrain data for 30-km circles around potential sites

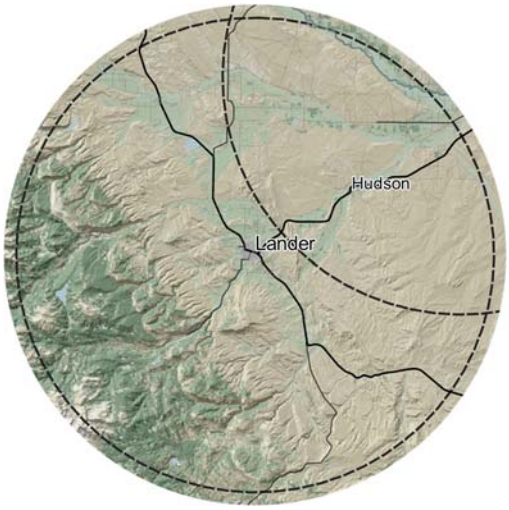


Thermopolis

Basin

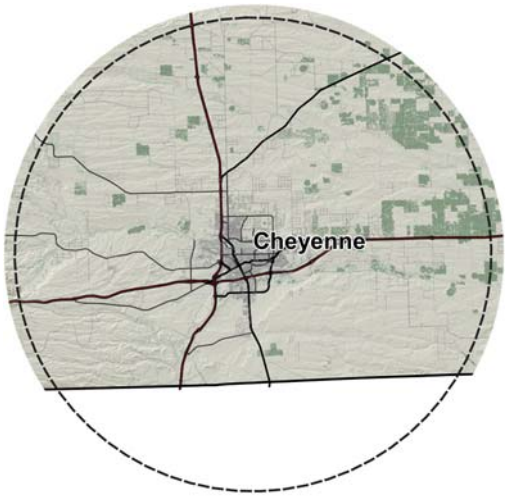


Riverton

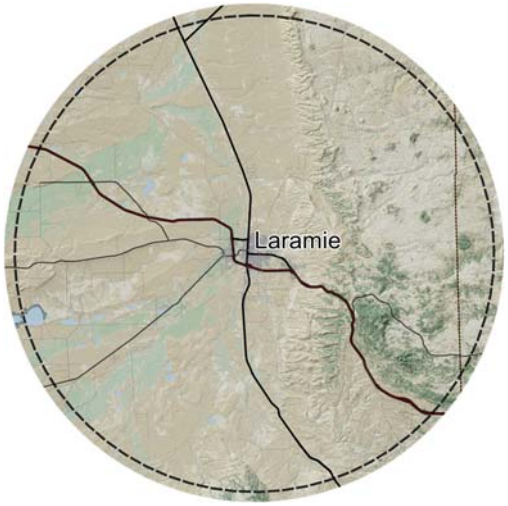


Lander

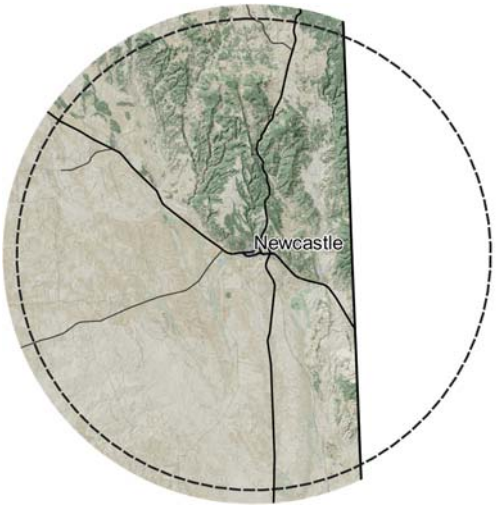
Casper



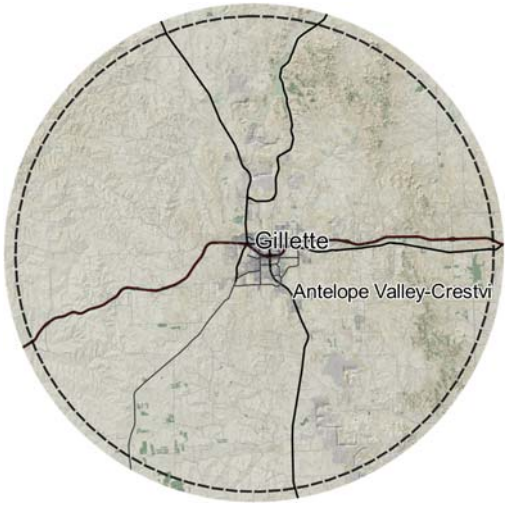
Cheyenne



Laramie

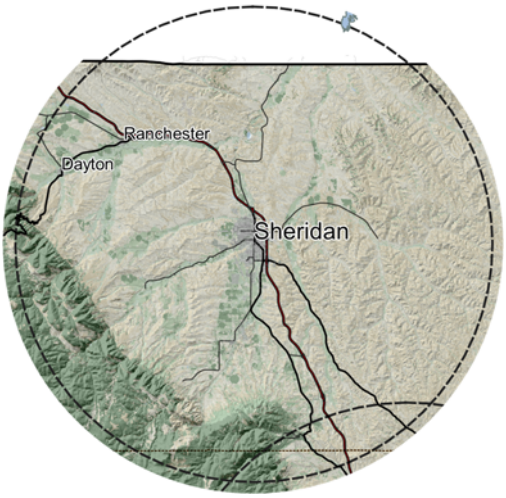


Newcastle



Gillette

Buffalo



Sheridan

Rock Springs

Local amenities

As with outdoor recreation and scenery, local amenities can improve resident's experiences in the community, as well as offering incentives for family and friends to visit.

To measure this criteria, we used the Google radar search API[25] to count the number of various amenities in each city. Unsurprisingly, the totals correlate with population, and generally break into four tiers, color coded in Table 12, below.

Table 12: Count of amenities within 30km of each city

City	Cafes	Lodging	Museums	Parks	Places of worship	Restaurants	Total
Cheyenne	32	96	21	61	116	172	498
Casper	35	71	14	80	95	185	480
Rock Springs	13	58	7	46	60	83	267
Gillette	16	48	7	57	44	92	264
Sheridan	19	59	8	41	56	80	263
Laramie	18	52	13	41	51	82	257
Lander	8	38	7	45	37	32	167
Buffalo	6	57	1	34	21	30	149
Riverton	11	29	5	14	38	48	145
Thermopolis	4	23	2	17	17	18	81
Newcastle	1	25	1	15	17	15	74
Basin	3	22	3	7	16	15	66

Veterans organizations

This indicator was simply the count of American Legion and VFW posts that were identified for each city on the organizations' respective websites.

[25] https://developers.google.com/places/web-service/search

Specialty care

We measure access to specialty care using driving distance to MD- or DO- credentialed physicians who are in Medicare's Physician Compare database and whose primary specialty is in high-demand for nursing home clients.

- We used Medicare's Physician Compare dataset[26] as a reasonable approximation of the network of specialists available to veterans in the potential State Home for three reasons:
  - VA Choice enrollment requires provider enrollment in Medicare and acceptance of Medicare rates;[27]
  - Many veterans in nursing home care will also be eligible for Medicare based on their age;
  - Medicare maintains a robust, freely-available and relatively clean dataset of its network; the VA does not.

- In order to determine what specialties are in highest demand for nursing home clients, we used Wyoming Medicaid claims data to examine how many distinct Medicaid nursing home clients had seen what type of specialist between State Fiscal Year (SFY) 2008 and 2018. Since Wyoming Medicaid covers ~ 65% of nursing home clients in the State, and since the claims data includes both Medicaid professional claims and "crossover" Medicare claims (where Medicaid pays patient cost-sharing obligations for low-income clients), we believe it provides a good approximation of the utilization profile for specialists.

  Table 13, below, shows the top 10 specialist MD/DO providers. The distinct client numbers were divided by the average to assign a weight for each specialist type. We then apply these weights to the driving distances to get a composite score for specialist access from each site.

Table 13: Top 10 specialty providers for Medicaid SNF members

Specialty	Distinct Medicaid SNF clients[28]	Assigned weight
Orthopedic surgery	1,314	1.72
Cardiology	1,313	1.71
Anesthesiology	1,182	1.54
Ophthalmology	804	1.05
General surgery	711	0.93
Urology	663	0.87
Neurology	527	0.69
Dermatology	451	0.59
Otolaryngology	382	0.50
Geriatric medicine	309	0.40

- The Physician Compare dataset (~2.7 million records) includes many different provider types, and multiple potential office locations for each provider. We first filtered the data for the primary specialties listed in Table 12, above, and only included providers with a known MD or DO credential. Further filtering the data for providers in Wyoming and surrounding states yielded a dataset of 11,606 records

[26] We downloaded the *.csv flat file on 7/25/18 (https://data.medicare.gov/data/physician-compare)
[27] https://www.hnfs.com/content/dam/hnfs/va/provider/pdf/vcp_participation_agreement.pdf
[28] Medicaid claims data, including both Medicaid professional and Medicare crossover utilization. Distinct clients for SFYs 2008 – 2018. Limited to MD/DO (physician) specialist provider taxonomies.

for providers practicing at 2,037 unique addresses. These records were geocoded using the Google Maps API.

- Using the geocoded specialist list, we first calculated geodetic (as the crow flies) distance and winnowed the list of 139,272 drive-time pairs down to 1,974 of the closest unique providers (i.e., using the closest practice location for those providers with multiple locations listed).

- Driving distances were computed for each site-provider pair. The closest 5 providers for each site and specialty were retained. Table 14, below, shows an example for the closest 5 cardiologists to Buffalo, WY. Note that providers often list multiple practice addresses; Dr. Brescia, for example, has a primary location in Colorado, but — according to Medicare Physician Compare — also practices in Sheridan.

Table 14: Example — Closest cardiologists to Buffalo, WY

Rank	Distance	First	MI	Last	Credential	Street	City	State
1	40.1	Samuel	T	Brescia	MD	1701 W 5th St	Sheridan	WY
2	71.5	Joseph	L	Tuma	MD	407 S Medical Arts Ct D	Gillette	WY
3	71.5	Drew	A	Purdy	MD	407 S Medical Arts Ct D	Gillette	WY
4	71.5	Samuel	J	Durr	MD	407 S Medical Arts Ct D	Gillette	WY
5	71.5	Lewis	N	Ferrier	MD	407 S Medical Arts Ct D	Gillette	WY

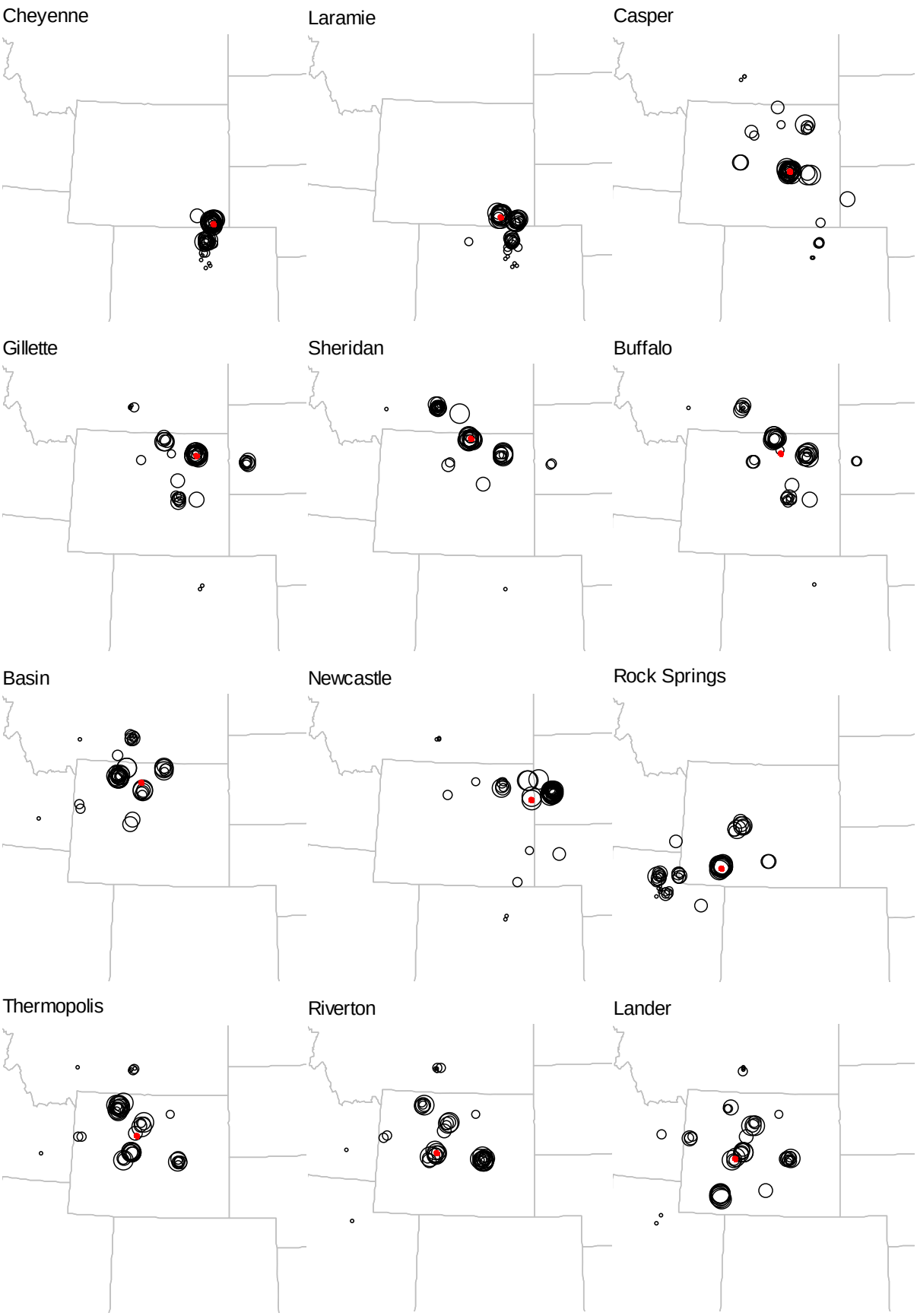
- The driving distances for each specialty and distance rank (e.g. closest provider, second-closest provider) were normalized across sites, and the assigned specialty weights were applied to the Z-scores to calculate a composite score for each site. These composite scores for each rank and site are shown in Table 15, below.

Table 15: Composite specialty access scores

Site	Composite access score for the Nth-closest provider					Average Score
	Closest provider	Second closest	Third	Fourth	Fifth	
Cheyenne	7.8	9.7	12.0	14.7	13.9	11.6
Laramie	6.7	5.8	7.2	6.1	7.3	6.6
Casper	5.6	8.0	5.5	5.8	1.1	5.2
Gillette	3.8	3.6	3.0	0.7	3.5	2.9
Sheridan	4.2	0.6	-0.7	-0.2	-2.4	0.3
Buffalo	-4.4	-4.8	-1.4	0.0	0.5	-2.0
Basin	-3.0	-3.9	-1.5	-1.6	-1.0	-2.2
Rock Springs	-3.4	-1.2	-3.0	-3.8	-0.5	-2.4
Newcastle	-10.1	-5.6	0.1	0.5	0.3	-3.0
Thermopolis	-3.2	-5.6	-3.1	-3.5	-3.9	-3.8
Riverton	-0.9	-1.6	-7.9	-8.6	-8.7	-5.6
Lander	-3.0	-5.0	-10.2	-10.2	-10.0	-7.7

Figure 12, on the next page, illustrates how the provider network varies by access score. The closest five specialists in each of the ten specialties are plotted for each site. Weights for each specialty type are indicated by larger circles. Lower access scores result from higher-weighted specialists (e.g. orthopedic surgeons and cardiologists) being further away from each site.

Figure 12: Closest fifty specialist providers, by site



Part V: SNF market trends

The gradual substitution of long-term care services from SNF care to home- and community-based alternatives has been reflected on the supply-side. Table 16, below, shows the gradual decline in Wyoming total bed capacity, average census, and occupancy rates since 1996.

Note that the average total census in Wyoming nursing homes has decreased by approximately 7%. In response, Wyoming SNFs have reduced total licensed bed capacity by approximately 5% in the same period. Occupancy rates in Wyoming have also trended downwards, though at a slower rate than the US average.

Table 16: Statewide SNF capacity totals[29]

Year	Beds	Residents	Occupancy	Occup. (US Avg.)
1996	3,124	2,611	83.6%	88.9%
1997	3,132	2,640	84.3%	87.9%
1998	3,144	2,637	83.9%	87.1%
1999	3,144	2,600	82.7%	86.1%
2000	3,110	2,600	83.6%	85.6%
2001	3,061	2,527	82.5%	85.6%
2002	3,061	2,518	82.2%	85.4%
2003	3,061	2,463	80.5%	85.4%
2004	3,061	2,490	81.3%	85.3%
2005	3,051	2,465	80.8%	85.2%
2006	3,049	2,492	81.7%	85.2%
2007	2,993	2,401	80.2%	84.5%
2008	2,993	2,420	80.8%	84.3%
2009	2,974	2,388	80.3%	83.7%
2010	2,922	2,409	82.4%	83.2%
2011	2,969	2,392	80.5%	83.0%
2012	2,983	2,415	80.9%	82.6%
2013	2,983	2,406	80.7%	83.2%
2014	2,969	2,389	80.5%	82.3%
2015	2,950	2,324	78.8%	82.3%
2016	2,950	2,296	77.8%	81.5%
2017	2,957	2,422	81.9%	80.8%

[29] Data from CMS Nursing Home compare archives. 1996 – 2013 are annual totals. 2014 – 2017 are June point-in-time snapshots.

Part VI - Operations estimates

In order to estimate how the VA State Home would fare in this market, we model potential revenue and expenditures through the following steps:

(1) Estimate the average cost per patient-day based on available national data from existing State Homes.

(2) Allocate total cost into cost categories based on the Green House® model of care.

(3) Based on those cost categories, estimate fixed and variable costs.

(4) Estimate the private-pay prices required to cover costs, as a function of occupancy.

(5) Compare private-pay prices with the existing market in order to estimate the required minimum occupancy.

(6) Develop a five-year profit and loss statement based on the model.

Throughout these steps, the model makes several key assumptions:

- The *SNF will operate on a cost-neutral basis.* Any net income (revenue in excess of cost) will be used to subsidize private-pay rates for veterans.
- The model uses *2015-16 data* to model costs. Inflation is assumed to affect costs and revenue equally.
- Occupancy, census, and public payer rates are estimated in Table 17, below:

Table 17: VA State Home Model assumptions

Assumption	Factor	Source	Value
A	Beds	Provided	36
B	Occupancy	Cost reports[30]	95%
C	Avg. Census	A x B	34.2
D	Staff: Client Ratio	Cost reports[31]	1.3
E	FTE	C x D	45
F	Medicaid rate	Cost-based	$300.00
G	VA per diem	VA[32]	$107.16
H	Avg. Medicare rate	Cost reports[33]	$252.79
I	Percent veterans	Minimum statutory	75%

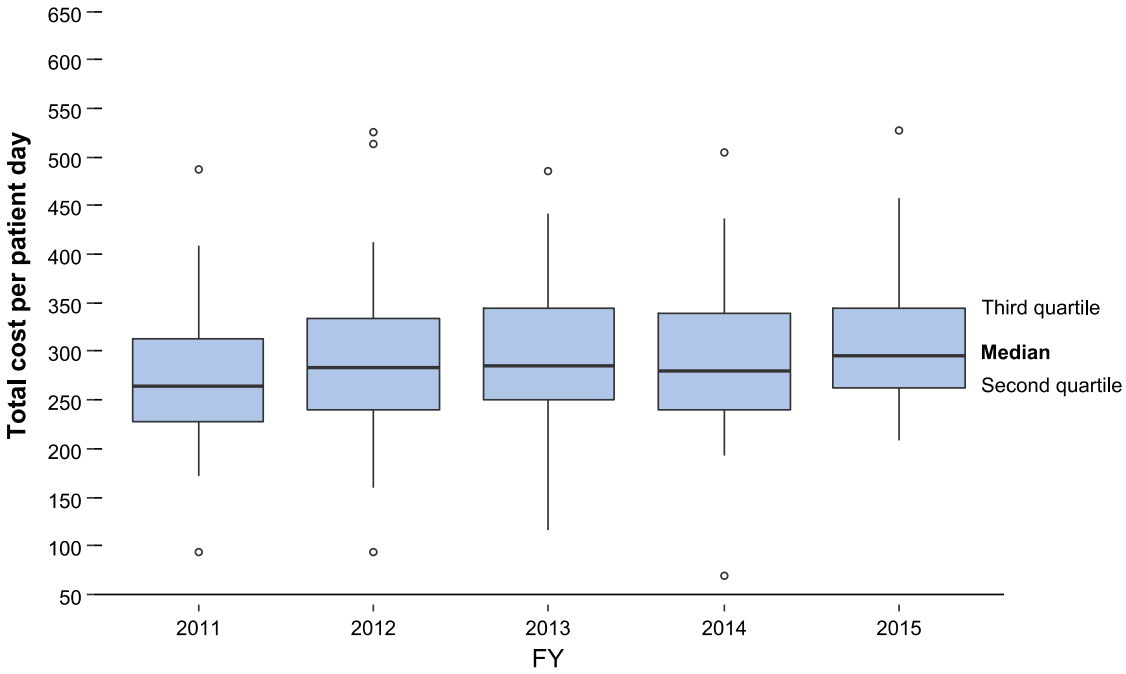
[30] Current Green House Living is 99% occupancy; given Statewide average occupancy of 82%, this assumption is adjusted downward
[31] FTE / (total patient days / 365) from Worksheet S3 Part I
[32] https://www.va.gov/COMMUNITYCARE/programs/veterans/statehome/SH_Payment_Rate.asp
[33] Medicare payments from Worksheet E divided by Medicare days from Worksheet S3 Part I

Total cost per patient-day is estimated at approximately $300.

Since there is no existing VA State Home SNF in Wyoming, data from cost reports for existing State Homes was used to estimate the national median.

As shown in the box-plots in Figure 13, below, the median for existing State Homes nationally has increased from approximately $264.56 in FY 2011 to $295.11 in FY 2015. Extending this average annual growth out to 2016, we would expect a median cost of approximately $300 per patient day in 2018.

Figure 13: Average cost per patient-day for ~55 CMS-certified State Homes[34]



Note that this cost per day is significantly higher than the cost per day for the existing Green House® model in Wyoming (approximately $256). Reasons for this difference include:

- Many veterans may have higher acuity and staffing requirements than the clients at the existing Green House® in Wyoming. **This is particularly relevant given the safety-net role of this facility.**
- VA SNF regulations may require additional costs. In particular, there is the requirement for a State employee to monitor the SNF on a full-time on-site basis.
- The additional stream of revenue from the VA may encourage cost growth.

[34] Data: CMS Cost Reports for 52 to 57 State Homes (number depends on FY).

The State Home will rely largely on Medicaid and private pay, not Medicare.

Generally speaking, nursing home care falls into two broad models:

- Short-term "rehabilitative" care, with a focus on *Medicare* revenue.
- Long-term "custodial" care, with a dominant mix of *Medicaid* and *private-pay*.

According to CMS cost reports, virtually all State Homes fall into the second category, with Medicare patient mixes rarely exceeding 4-7%. In addition, the only existing Green House® SNF in Wyoming also has a very low Medicare patient mix (see Table 6, below).

In terms of *Medicaid* reimbursement, State Homes appear to cluster into two groups — those that take Medicaid reimbursement, and those that don't. For those that do accept Medicaid, the average patient mix appears to be 40-50% Medicaid, and the remainder private-pay.

Since all nursing homes in Wyoming accept Medicaid, this model assumes that any new State Home will as well. Table 18, below, summarizes the patient mix for two existing SNFs in Wyoming, as well as the proposed model.

Table 18 — Patient mix for three different nursing home models[35]

Payer	Percent of total patient-days		
	Rehabilitative	Green House®	Model
Medicare	39.8%	1.9%	5%
Medicaid	38.6%	53.5%	45%
Private	21.6%	44.6%	50%

Note that VA is not included as a payer in the table above, since the per diem payments from the VA supplements those from all payers equally, as long as the client is an eligible veteran.

Because the proposed State Home payer mix aligns with both national data and the existing Green House® SNF in Wyoming, the model takes the approximate $300 estimated cost per patient-day and allocates it proportionally to the Green House® cost categories, shown in Table 19, below. Note, per the rows highlighted in blue, how the cost allocation between the Green House® is weighted more towards direct care, vs. providing ancillary services like the rehabilitation-focused model.

Table 19 — Adjusted average cost areas for two different nursing home models[36]

Cost Area	Cost per patient-day		
	Rehabilitative	Green House®	Model
Direct care	$92.68	$75.38	$88.34
Ancillary services (e.g. PT/OT/Lab)	$50.03	$4.41	$5.17
Employee benefits	$35.17	$35.20	$41.25
Capital	$27.63	$28.25	$43.49
General services (e.g. plant, laundry)	$44.23	$48.18	$56.46
Supplies (drugs/equipment)	$19.04	$2.96	$3.47
Administration	$56.50	$48.78	$57.17
Other	$8.33	$12.83	$15.04
Total	**$333.62**	**$255.99**	**$310.39**[37]

[35] Data: CMS Cost Reports for two Wyoming SNFs (Cheyenne and Sheridan) with each model, averaged over SFY 15 and 16.
[36] Data: CMS Cost Reports for two Wyoming SNFs (Cheyenne and Sheridan) with each model, averaged over SFY 15 and 16.
[37] Capital costs were updated in light of the Level II report; the model therefore is not exactly at $300 cost per day.

An estimated 46% of total costs are fixed instead of variable.

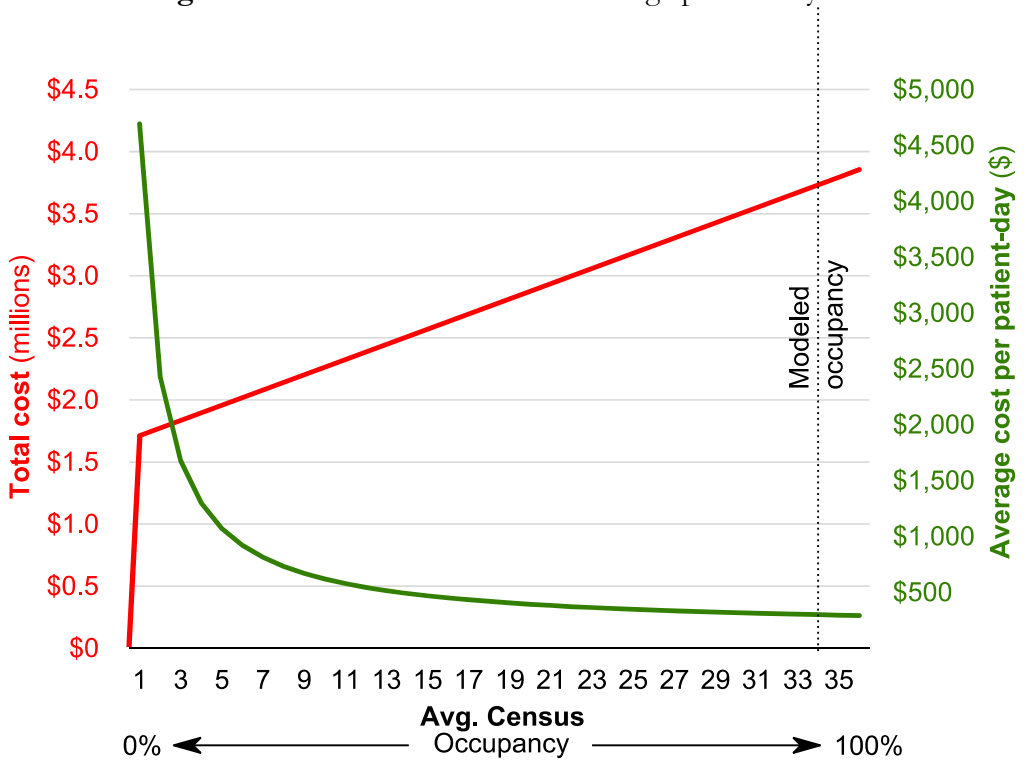
Multiplied by the expected average annual census, total expected operating costs are shown in Table 20, below. The table also makes assumptions as to what percent of each category represent fixed vs. variable costs, and, in the last column, projects the total fixed costs for the 36-bed facility.

Table 20: Est. total costs, by area, based on Green House® model and assumptions (2018)

Cost Area	Est. Annual Cost (2018)	Assumed % variable vs. fixed costs	Est. fixed costs	Variable costs per patient-day
Direct care	$1,102,741	90%	$110,274.06	$79.51
Ancillary services (e.g. PT/OT/Lab)	$64,514	90%	$6,451	$4.65
Employee benefits	$514,944	75%	$128,736	$30.94
Capital[38]	$543,000	0%	$543,000	$0.00
General services (e.g. plant, laundry)	$704,829	50%	$352,415	$28.23
Supplies (drugs/equipment)	$43,302	75%	$10,826	$2.60
Administration	$713,607	25%	$535,205	$14.29
Other	$187,691	50%	$93,845.59	$7.52
Total	$3,874,628	54%	$1,780,725.43	$167.74

Figure 14, below, illustrates the fixed and variable costs noted in Table 20, above. As occupancy increases, the average cost per patient day decreases.

Figure 14: Modeled total cost and average patient-day cost

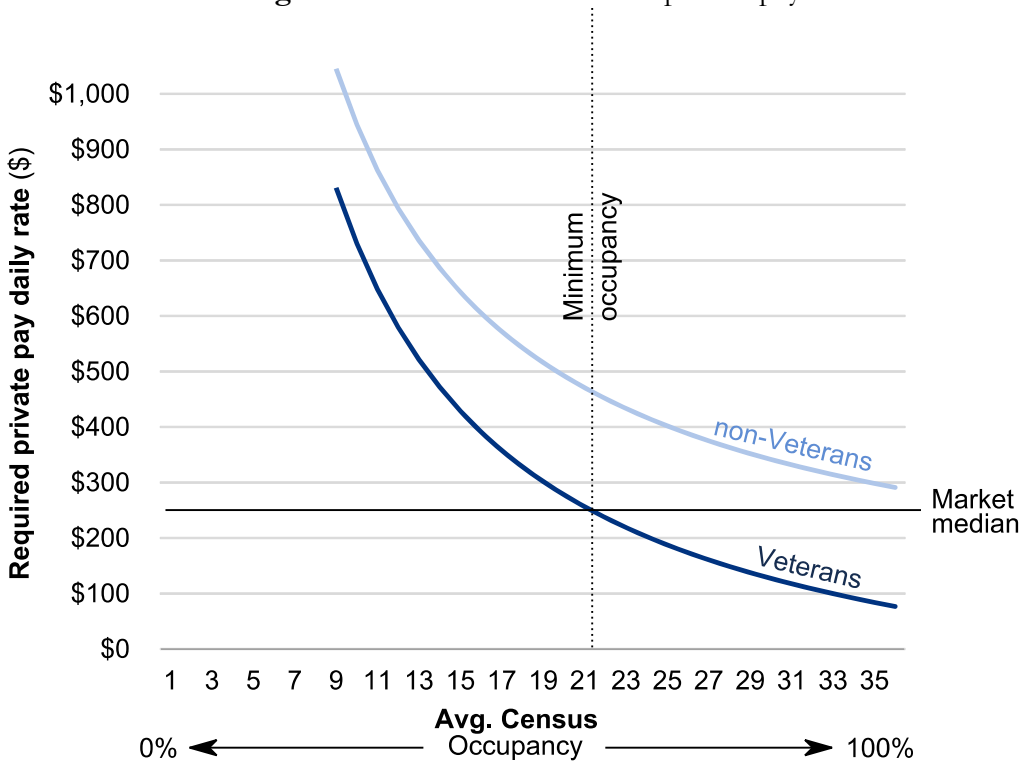


[38] Capital costs were modified from the Green House cost/day, using the Level II estimate of construction costs for the Buffalo campus (~$20M), times the state share (35%), annualized over 15 years at 2% interest rates.

Occupancy requirements

Given relatively conservative assumptions, the State Home will need to maintain approximately 60% occupancy to be able to offer a private rate for veterans under the median market rate of approximately $250 per patient-day.[39] Figure 15, below, illustrates how the minimum "break-even" private pay rates for veterans and non-veterans will need to change in order to cover costs, inclusive of the VA per diem.

Figure 15: Estimated break-even private-pay rates



Put together, the profit and loss (P&L) projection in Table 21, on the next page, illustrates how a below-market private-pay rate for veterans ($150 per day[40]) would result in break-even cash flow, assuming a cost-based Medicaid rate, which is standard for State-operated facilities.

The purpose of the cost-based Medicaid rate in this case, however, is to keep private-pay veteran rates lower than they otherwise would be in a facility that also serves safety-net clients. The Medicaid rate also allows State General Funds to be matched with federal dollars, something that is more cost-effective from the State perspective than an outright SGF subsidy.

Conversely, if Medicaid rates were set to rates similar to other SNFs in the same bed-range (i.e., closer to $215), the mission of the facility would likely need to be changed to exclude safety-net populations. This is due to the likelihood that, if the facility continued to serve safety-net clients while taking a "market" Medicaid rate, private pay rates for veterans will need to be increased to the point where they would no longer be advantageous compared with less-costly private nursing homes — many of which may be closer to home.

[39] Genworth cost of care survey. Daily rate for a private nursing home room in Cheyenne is $261; in Casper, $245, in the rest of the State, $243. https://www.genworth.com/dam/Americas/US/PDFs/Consumer/corporate/cost-of-care/118928WY_040115_gnw.pdf

[40] Note that the survey question behind the travel-time model uses this below-market rate.

Table 21: Projected profit and loss statement for first five years of operation (cost-based Medicaid rate)

Item	Year 1	Year 2	Year 3	Year 4	Year 5
Beds	36	36	36	36	36
Occupancy	80%	95%	95%	95%	95%
Average Daily Census	28.8	34.2	34.2	34.2	34.2
% Veteran	90%	90%	90%	90%	90%
Patient Days					
Medicaid – Veterans	4,730	5,617	5,617	5,617	5,617
Medicare – Veterans	526	624	624	624	624
Private Pay - Veterans	4,205	4,993	4,993	4,993	4,993
Private Pay - Non-Veterans	1,051	1,248	1,248	1,248	1,248
Total	10,512	12,483	12,483	12,483	12,483
Rates					
Medicare	$252.79	$252.79	$252.79	$252.79	$252.79
Medicaid	$310.39	$310.39	$310.39	$310.39	$310.39
Private Pay - Veterans	$150.00	$150.00	$150.00	$150.00	$150.00
Private Pay - Non-Veterans	$310.39	$310.39	$310.39	$310.39	$310.39
VA Per Diem	$107.16	$107.16	$107.16	$107.16	$107.16
Revenue					
Medicare	$132,866	$157,779	$157,779	$157,779	$157,779
Medicaid	$1,468,280	$1,743,583	$1,743,583	$1,743,583	$1,743,583
Private Pay	$957,004	$1,136,443	$1,136,443	$1,136,443	$1,136,443
Veterans Affairs	$1,013,819	$1,203,910	$1,203,910	$1,203,910	$1,203,910
Total	$3,571,970	$4,241,715	$4,241,715	$4,241,715	$4,241,715
Expenditures					
Direct care	$946,035	$1,102,741	$1,102,741	$1,102,741	$1,102,741
Ancillary services	$55,346	$64,514	$64,514	$64,514	$64,514
Employee benefits[41]	$453,964	$514,944	$514,944	$514,944	$514,944
Capital[42]	$543,000	$543,000	$543,000	$543,000	$543,000
General services	$649,185	$704,829	$704,829	$704,829	$704,829
Supplies	$38,174	$43,302	$43,302	$43,302	$43,302
Administration[41]	$685,438	$713,607	$713,607	$713,607	$713,607
Other	$172,873	$187,691	$187,691	$187,691	$187,691
Total	$3,544,016	$3,874,628	$3,874,628	$3,874,628	$3,874,628
Net Income	**$27,954**	**$367,087**	**$367,087**	**$367,087**	**$367,087**

[41] The cost of a full-time on-site State employee (among other costs) is effectively built into these items by using the $303 cost per patient-day median State Home figure instead of the $256 cost per patient-day of the existing Sheridan Green House SNF. In these two categories (administrative costs and benefit costs), the difference totals approximately $120,000 at full occupancy.

[42] Based on the cost of construction estimated by MOA in the Level II report at ~$19.9M, which requires a $6.9M loan from the State, at 2% interest over 15 years. This assumes that the building is constructed at the Buffalo site, which does not require an administration building.

Conclusion

Mission
The mission of the VA State Home SNF will be two-fold:

- To offer a subsidized long-term care benefit that veterans cannot access in Wyoming today.
- To serve as a safety-net for veterans who cannot be served in private facilities.

Capacity
The proposed facility is modeled with 36 beds.

- We estimate there are approximately 300 veterans who could be potentially be served across Wyoming.

- At a below-market rate of $150, we estimate that no more than 170 veterans will take-up the offer at any one location, due to travel time costs.

- VA limits for the total number of State Home beds limit any new SNF to between 45 – 85 beds, depending on whether the existing beds in Buffalo are re-purposed.

- 36 beds was chosen in order to:
    - Start smaller, and evaluate how the concept works before any potential expansion.
    - Allow safety-net clients to be served in a discrete 12-bed cottage.

Location
This report, coupled with the Level I and II studies conducted by MOA Architecture, suggests three best location candidates: Casper, Buffalo and Sheridan. Each has strengths and weaknesses, as noted in the executive summary and on Tables 4, 5, and 6.

Operations
Even at a relatively high cost-per day of ~$300, the VA per-diem allows a high potential for self-sufficient operation.

A cost-based Medicaid rate would further promote the mission of the facility by dramatically lowering the per-day cost to private pay residents, while allowing federal dollars to match State General Funds.

If Medicaid rates were set to "market," however, the mission of the facility would likely need to change to exclude safety-net clients in order to continue its primary purpose.

Ultimately, however, the "safety-net" veterans will have be served somewhere. Depending on the setting (e.g., State Hospital, Life Resource Center, or Retirement Center) the average cost for these clients could be higher, and there might not be any possibility of VA funding. It is therefore unclear whether or not this reduced mission (i.e., with "market" Medicaid rates) would, in fact, be more cost-effective to the State.

Technical notes

Most models in this paper were fit using the Hamiltonian Monte Carlo "No U-Turn" Sampler (NUTS) in the Stan platform[43], with R statistical software and the brms package[44] as the interface. We used the data.table[45] and lubridate[46] packages to clean and process data on either end, and the ggplot2[47] package and Inkscape to create final graphics.

Our GIS work was done with QGis[48], with drive-time and distance-matrix calculations done through an Open Source Routing Machine[49] server running a North American Open Street Map graph from geofabrik[50].

[43] Stan Development Team. 2018. RStan: the R interface to Stan. R package version 2.17.3. http://mc-stan.org
[44] Paul-Christian Bürkner (2017). brms: An R Package for Bayesian Multilevel Models Using Stan. Journal of Statistical Software, 80(1), 1-28.<doi:10.18637/jss.v080.i01>
[45] Matt Dowle [aut, cre], Arun Srinivasan [aut], Jan Gorecki [ctb], Michael Chirico [ctb], Pasha Stetsenko [ctb], Tom Short [ctb], Steve Lianoglou [ctb], Eduard Antonyan [ctb], Markus Bonsch [ctb], Hugh Parsonage [ctb]
[46] Garrett Grolemund, Hadley Wickham (2011). Dates and Times Made Easy with lubridate. Journal of Statistical Software, 40(3), 1-25. URL http://www.jstatsoft.org/v40/i03/
[47] H. Wickham. ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag New York, 2016.
[48] QGIS Development Team (YEAR). QGIS Geographic Information System. Open Source Geospatial Foundation Project. http://qgis.osgeo.org
[49] http://project-osrm.org/
[50] https://www.geofabrik.de/

OVERALL NEW
ARCHITECTURAL SITE PLAN
AS1.1 — 1/64" = 1'-0"

NORTH

KEYED NOTES

1. VETERANS' LANE & MAIN ACCESS TO VETERAN'S HOME OF WYOMING FACILITY
2. RENOVATED 1941 BUILDING
3. NEW 1973 DOMICILIARY ADDITION
4. NEW 1983 DOMICILIARY ADDITION
5. RENOVATED HISTORIC HOSPITAL
6. EXISTING SUPERINTENDENT RESIDENCE
7. DEMO MECHANICAL SHOP
8. EXISTING MECHANICAL SHOP
9. EXISTING WAREHOUSE BUILDING

WYOMING VETERAN'S HOME
CONCEPTUAL MASTER PLAN
plan one / architects

~ cheyenne, wyoming, 325 w. 18th st., suite 3, 82001 (307) 514-4575 ~ cody, wyoming, 1001 12th st., 82414 (307) 587-8646 ~ rock springs, wyoming, 4020 dewar dr., suite a, 82901 (307) 352-2954 ~

PLAN

project: 1934

date: 7/30/2020

revisions:

AS1.1

Department of Administration & Information
Construction Management

State of Wyoming
Department of Health

Facility Assessment

Veteran's Home of Wyoming

Buffalo, Wyoming

HDR Architecture, Inc.
Plan One/Architects

November 14, 2013

Department of Administration & Information
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Table of Contents

1.0 Executive Summary

1.1 Overview

The Veteran's Home of Wyoming (VHW) is licensed as an Assisted Living Facility by the State and is also under the jurisdiction of the Veterans Administration as a Domiciliary. The facility occupies the historic Fort McKinney (1877-1894) site and leases adjacent State owned lands to area ranchers. The site was originally occupied as a Veteran's Home in 1895 and has a long history of preservation of original structures and modern facilities. The facility currently has 116 beds.

This report provides a high level assessment of Structural, Architectural, Mechanical, Plumbing, Electrical, Information Technology, and Civil systems for the buildings and grounds. This assessment includes a high level assessment for compliance with Building Code, the American Disabilities Act, and Clinical standards. Finally, the buildings were reviewed for their capability to be adapted to meet requirements or accommodate renovations. Below is a summary of the assessment work, with very general classifications of "Good," "Fair," and "Poor." An overall "General Building Condition" is provided based on the team's collective comments (Table 1.1.1). This assessment is weighted for the building's purpose. Example: if the boilers are in "Poor" condition for a building dedicated to boilers, but the structure and architecture are "Fair" condition, the overall building condition will give priority to the boilers and the building will be marked as "Poor." An asterisk denotes information that is not available. Admittedly highly subjective, additional information on these assessments, including maps with building numbers and notes on our findings are provided in the Appendix and dedicated documents.

	Name	General Building Condition	Adaptable	ADA Compliant	Structural	Architectural	Mechanical	Plumbing	Electrical
VH 1	OLD HOSPITAL BUILDING	FAIR	NO	NO	POOR	GOOD	FAIR	GOOD	GOOD
VH 2	1941 EAST BUILDING	FAIR	NO	NO	POOR	GOOD	POOR	GOOD	POOR
VH 3	1973 WEST BUILDING	FAIR	NO	NO	POOR	GOOD	POOR	FAIR	POOR
VH 4	KITCHEN / DINING	FAIR	YES	NO	POOR	GOOD	POOR	POOR	POOR
VH 5	1983 NORTH BUILDING	FAIR	YES	NO	POOR	GOOD	POOR	FAIR	POOR
VH 6	2001 BUILDING ADDITION	GOOD	YES	YES	GOOD	GOOD	*	*	*
VH 7	SUPERINTENDENT HOUSE	FAIR	NO	NO	*	GOOD	*	*	*
VH 8	GAZEBO	FAIR	NO	*	*	*	*	*	*
VH 9	GREEN HOUSE	FAIR	NO	*	*	*	*	*	*
VH 10	GARAGE SHOP	FAIR	NO	*	*	*	*	*	*
VH 11	SHOP MAINTENANCE	FAIR	NO	*	*	*	*	*	*
VH 12	BUS BARN	FAIR	NO	*	*	*	*	*	*
VH 13	STORAGE SHED	FAIR	NO	*	*	*	*	*	*
VH 14	STORAGE SHED	FAIR	NO	*	*	*	*	*	*
VH 15	DAIRY BARN	FAIR	NO	*	*	*	*	*	*
VH 16	WAREHOUSE	GOOD	NO	YES	GOOD	GOOD	GOOD	GOOD	GOOD

Table 1.1.1: VHW Facility Analysis – Building Assessment Summary

As shown in the table above, the primary buildings at the VHW are in Fair Condition. As many of these buildings are older, current Building Codes, ADA regulations and Clinical standards are not fully met. The ADA compliance issues with the 1941 and 1973 buildings are of particular concern for this occupancy/use. Furthermore, several of the buildings cannot be modified due to age, structural integrity and construction type.

The site has evolved in a generally clockwise progression (Figure 1.1.1). The darker red colors indicate the oldest buildings; the yellow colors indicate the youngest. The Old Hospital Building (VH 1) is one of the oldest buildings in the Wyoming Department of Health collection, constructed in 1885.

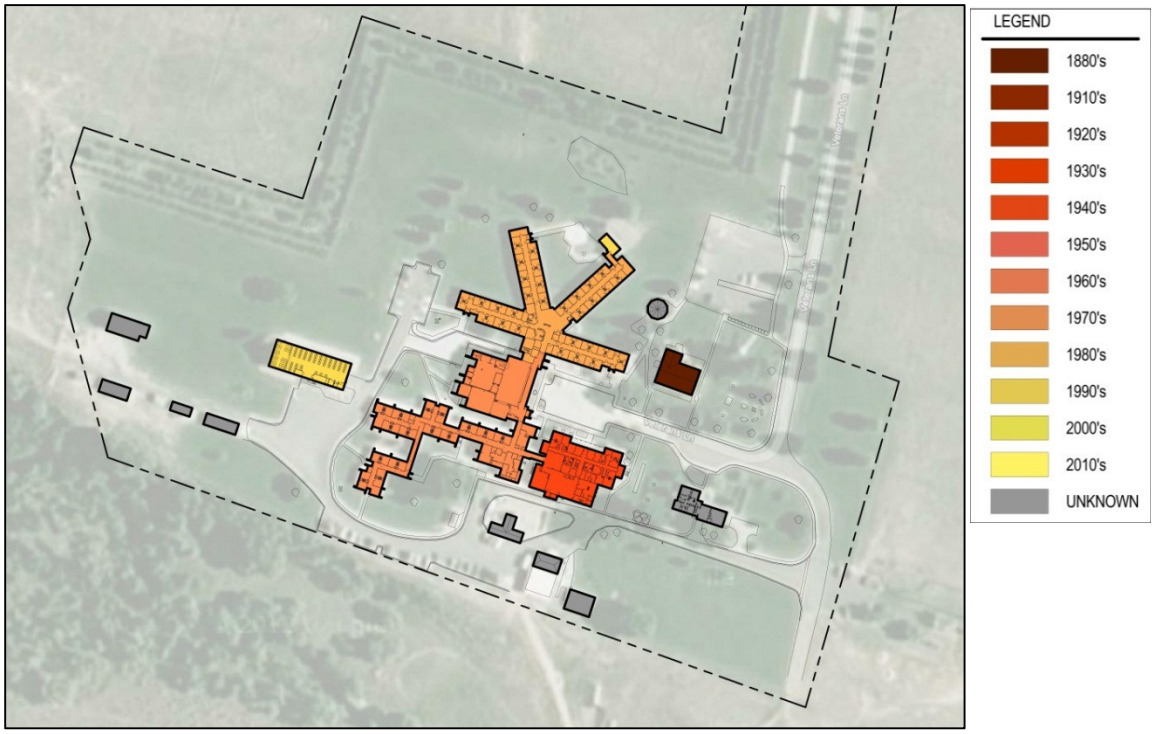

Figure 1.1.1: VHW Facility Analysis – Building Age

A high level area take-off for each facility is summarized with Table 1.1.2.

	Name	Area	Year Built
VH 1	OLD HOSPITAL BUILDING	5,616 SF	1885
VH 2	1941 EAST BUILDING	19,386 SF	1941
VH 3	1973 WEST BUILDING	13,967 SF	1973
VH 4	KITCHEN / DINING	10,681 SF	1973
VH 5	1983 NORTH BUILDING	21,119 SF	1983
VH 6	2001 BUILDING ADDITION	480 SF	2008
VH 7	SUPERINTENDENT HOUSE	2,886 SF	*
VH 8	GAZEBO	731 SF	*
VH 9	GREEN HOUSE	1,273 SF	*
VH 10	GARAGE SHOP	926 SF	*
VH 11	SHOP MAINTENANCE	1,183 SF	*
VH 12	BUS BARN	936 SF	*
VH 13	STORAGE SHED	448 SF	*
VH 14	STORAGE SHED	920 SF	*
VH 15	DAIRY BARN	1,656 SF	*
VH 16	WAREHOUSE	4,934 SF	2002
		87,142 SF	

Table 1.1.2: VHW Facility Area Summary

Whereas the main building has the appearance of being in "Good" condition, the team has assessed the primary housing buildings as "Fair" due to concerns with the kitchen, boiler room, and ADA issues (Figure 1.1.2). With due respect to the very nice restoration of this historic structure, the Old Hospital is "Fair" because of Structural concerns. The Workshop, Greenhouse and surround maintenance buildings are also of particular concern due to Structural concerns and deteriorating exterior systems.

Figure 1.1.2: VHW Facility Analysis – Building Condition

The current use of each space is straightforward and in line with an efficient Assisted Living Facility (Figure 1.1.3). Facilities Activities include maintenance shops, security, and mechanical areas. Patient Activities include areas allocated for day programming and leisure. Patient Care areas include Patient Rooms and rooms where direct care is administered. Patient Support areas include chapels, dining areas, kitchens, laundry facilities, pharmacies, labs and imaging. Staff Support includes areas allocated for staff housing, staff exercise rooms, and daycare services.

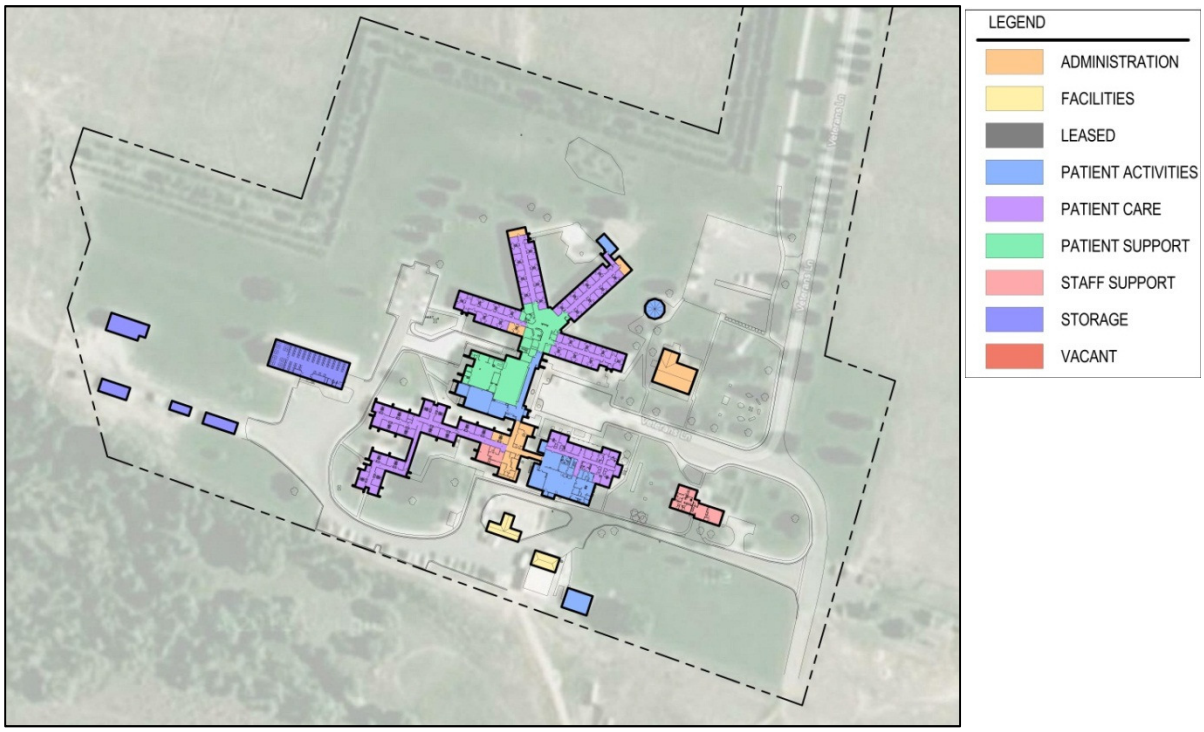

Figure 1.1.3: VHW Facility Analysis – Programmatic Space Use

The VHW is licensed as an Assisted Living Facility by the State of Wyoming, and is also under the jurisdiction of the Veteran's Administration as a Domiciliary Care. The patient Care figure is shown here as Domiciliary (Figure 1.1.4).

Figure 1.1.4: VHW Facility Analysis – Patient Care

1.2 Architectural

In general, the Veterans Home of Wyoming is in good condition, especially considering the varied ages of the buildings. The campus consists of a two-story 1941 resident hall; a 1973 resident hall and modest administration area; and a 1983 resident hall that also contains the nurse station, kitchen, dining hall, and activity hall. While the 1941 and 1973 sections are a bit meandering and labyrinth-like, the 1983 building is well laid out with a central core and four resident hall wings arrayed in a star fashion.

Over the years a number of remodel and MEP projects have been completed. These include a new electrical service upgrade, new multiple generator system, nurse call system, fire alarm system, and resident room remodels. Other projects have included a new free-standing warehouse building and an activity hall addition to the 1983 building. The maintenance staff at this site is very capable and conscientious, and the facility has been very well maintained.

As the team toured the buildings during a recent master plan meeting, it was noted that a number of HVAC components are ripe for replacement. Other than that, the desired project list at this facility is fairly modest.

While architecturally there are no major issues present at the site, the campus is comprised of multiple buildings of different vintages. In the future, these will require replacement at different times, leading again to partial demolition and construction of additions or wings that may result in a less than ideal functional layout. As it is currently three very different buildings joined together, it is today a bit of a puzzle from a clear circulation standpoint.

The 1941 building, although somewhat historic and stately in appearance, has many small rooms and narrow corridors. It also has many interior load bearing masonry walls, making it difficult to renovate.

The 1973 building has nice resident rooms, but the overall layout is very strung out with long corridors.

The 1983 building is the largest and has the most clear and efficient layout. The four resident room wings all converge on the centralized nurse station and the main corridor connection to the dining and activity area. The 1983 building is also the newest, and has the longest remaining lifespan.

1.3 Civil

There is currently one access point onto the campus, with an existing cattle guard. It was requested by staff that this cattle guard be removed. Roadways and parking lots are paved, and in fair condition, although cracks throughout should be sealed. Existing roadways should be extended to allow Emergency access around the 1983 building. Parking is currently adequate for staff, visitors and residents on the campus, including areas used by other agencies. Sidewalks appear adequate; however, Signage should be updated. Bicycles are currently parked on the porch of the 1941 building; a better location may be considered.

The water system is supplied from a single connection to the City's system and loops through the campus, with some dead-end mains. Fire hydrants are located throughout the campus. The sanitary sewer system discharges into the City's system. On campus, there are issues with tree roots in the sanitary sewer mains. Storm sewer mains are in place to convey stormwater away from the buildings. Improvements should be made to address stormwater at the loading dock, the garage, and the roof drain the smoking shelter. Numerous downspouts at roof drains need repair and/or reconnection.

1.4 Structural

Typically it is not possible to view a buildings structural systems first hand without doing some selective demolition work; such work is not in the scope of this study. It is possible, however, to get a very good idea about the performance of a building's structural systems by viewing the buildings exposed elements.

For the purposes of this study, structural design criteria are as follows:

Roof snow loading = 30 psf.
Floor live loads: Circulation and assembly areas = 100 psf.
Resident rooms = 50 psf.
Stairs and fire escapes = 100 psf.
Wind speed = 90 mph basic wind speed. Wind exposure = C.
Seismic response acceleration: Sds = 0.375
Sdl = 0.12

This assessment looked for existing or potential structural problems with the buildings, and evaluated how a building will perform in a seismic event.

It is not unusual for buildings to have undergone some settlement or heaving of foundations. Such movements cause damage to a building's structural systems, exterior envelope, and finishes. With the exception of the Old Hospital building and the Shop Maintenance building, no evidence of foundation movement was observed in the buildings at this site. The Geotechnical reports for two buildings at this site have been reviewed, and they indicate that the buildings were placed on conventional spread footings on native granular soils.

Movement of the floor systems can also cause damage to a building's interior partitions and finishes. The buildings at this site have both slab on grade and structural floor systems over basements or lower levels. With the exception of the Old Hospital building and the Shop Maintenance building, there is not any evidence of significant floor movement in the buildings at this site.

With the possible exceptions of the Warehouse and the 2001 Addition, none of the buildings at the site could be shown to comply with the current building code's seismic requirements. Most of the buildings at this site would probably perform adequately in a mild seismic event, with the notable exception of the Original 1941 building. It is not necessary to update the lateral load resisting systems of these buildings unless the building's use is changed or their structural systems are significantly modified.

In summary, the buildings at this site, with the exception of the Shop Maintenance buildings, have performed and should continue to perform as designed. The buildings were well constructed on a site with good engineering properties. The buildings on this site have also been carefully maintained to keep them in proper condition.

1.5 Mechanical

The following Mechanical existing conditions assessment and associated building reports are based on information obtained through input from Facility Staff and on site observations in areas accessible during survey. This is not intended to be a comprehensive list of deficiencies, due to systems and components that could not be observed without demolition.

This assessment includes code compliance items that were observed during the site survey. Code Compliance is addressed as it relates to the current installations and not items required to bring the individual buildings into compliance with current codes. When proceeding with the recommendations identified in this report or any partial or full remodel of a particular building, a thorough code review and assessment is recommended.

The facility is served by a four-pipe hydronic system. Heating water is provided from a boiler plant to finned tube radiation through-out. Chilled water is provided from a water cooled chiller to a mixture of exposed, ductless fan coils and concealed, ducted fan coils. There are ground mounted rooftop units with gas-fired heating and direct expansion air conditioning that provides ventilation to the common areas of the 1941 portion of the facility. The 1973 portion of the facility has no means of mechanical ventilation. The 1983 portion of the facility has ventilation provided to the core/common areas via the respective fan coils.

Condition of Mechanical Equipment:

- Boiler Plant – Excellent condition; revamped and replaced in 2009/2010. Designed with redundancy, and the mechanical room has space for expansion of plant.
- Chiller Plant – Fair condition, nearing end of its life expectancy. Not designed with redundancy, but the mechanical room has space for expansion of plant.
- Kitchen/Dining Air Handling Unit – Fair condition, nearing end of its life expectancy.
- Ground Mounted Rooftop Units – Poor condition, past their life expectancy. Located near the driveway creating potential for distributing carbon monoxide throughout the areas they serve.
- Fan Coil Units – Fair condition, nearing end of their life expectancy.
- Hydronic baseboard – Fair condition, enclosures have dents, scrapes, and missing parts in places.
- Smoking Enclosure Packaged Terminal Air Conditioning units – Poor condition, and have had problems since beginning. Poor energy efficiency, especially for a glass dominant enclosure.
- Administrative Office Split System – Good condition, fan coil is a ductless split type, located in the reception area. Doesn't serve the perimeter offices efficiently.
- Exhaust fans
    - 1941 portion – recently renovated.
    - 1973 portion – individual exhaust fans in resident bathrooms – Poor condition, past their life expectancy. Some are very noisy.
    - 1983 portion – central exhaust fans – fair condition, nearing or past their life expectancy.
- Temperature Controls – Good condition. System is a pneumatic system. Limited monitoring and programmability.

- Domestic Hot Water Heating Plant - Excellent condition, revamped and replaced in 2009/2010. Designed with redundancy, and the mechanical room has space for expansion of plant.
- Plumbing Fixtures – Excellent to good condition. Group bathrooms in 1941 building recently remodeled. Fixtures in 1973 and 1983 portions of the facility are older, but in good condition.
- Fire Protection System - Building is fully sprinkled. Various types of heads are used through-out the building.

1.6 Electrical

Utility power to the facility is provided by the local utility, Rocky Mountain Power, up to the building distribution equipment. The electrical distribution gear is typically fused disconnect switches and original to each of the buildings.

The entire campus is generator backed up by three 150 kW natural gas generators. The generators provide code required emergency power. Per code, the fuel source needs to be uninterruptable. The team presumes the utility company supplying natural gas to the facility considers their supply uninterruptable and the local Authority Having Jurisdiction (AHJ) agrees.

The fire alarm system was upgraded in 2001-2002 to a Notifier system. The buildings are fully sprinklered thus the buildings are not fully smoke detected.

Currently, the facilities' staff have no pending requests to modify, repair or replace the electrical distribution equipment.

The interior lighting throughout the 1941, 1973 and 1983 buildings is typically comprised of older T12 lamped fluorescent fixtures. Down lights are typically incandescent lamped.

Condition of Electrical Equipment:

- Electrical Distribution System – generally, the main electrical distribution gear is past its useful life and replacement should be considered. There are several newer branch circuit panelboards such as in the laundry that appear to be in good condition and would not need to be replaced.
- The generators appear to be in good working condition and the team was informed they are maintained on a regular basis.
- Interior lighting is typically fluorescent with T12 lamps and appears to be in reasonable condition. However, T12 lamps will soon be discontinued and are not the most efficient lamp type available. For maintenance purposes and increased energy efficiency, the T12 lamped lights should be replace with energy efficient T8 lamps or LED lighting as applicable.
- Incandescent lights could be replaced with either new LED light fixtures or retrofitted.
- Site lighting – By completion of this final report, a sight lighting project is scheduled to be completed. These upgrades are not included in this report.
- Fire alarm system – Upgraded throughout the campus in 2001-2002. No new work is anticipated.

1.7 Technology

Structured Cabling: The structured cabling system is composed of various categories of cable and terminations are located in non-ideal locations such as basements, boiler rooms, and electrical rooms. The cabling system is not able to support newer systems such as a VoIP telephone system or addition of widespread electronic medical records (EMR). A plan should be developed to update/replace the cabling system to current industry standards.

CATV System: The CATV system is traditional coax. The system distributes the Optimum (service provider) signal to TV locations with set top boxes. Cabling that is exposed coming from the ceilings and walls should be concealed and terminated properly, but the system operates satisfactorily.

Nurse Call: The nurse call system is an operational tone/visual system, which meets the needs of the current level of care. The system manufacturer is Dukane, which was acquired by GE and then by Ascom, and is no longer manufactured or supported. Since this has made it difficult and expensive to find replacement parts, a long-term plan to replace the nurse call system should be considered. If wings of the 1983 building are turned into skilled nursing, the facility could install a new nurse call system with more features in those wings and remove/reuse the Dukane parts in the 1973 and 1941 buildings. Over time, the new nurse call system could replace areas of the facility and eventually phase out the Dukane system.

Security Systems: The VHW is an open facility, which encourages residents to come and go freely. Exterior doors are unlocked during the day then lock from 10:00pm-6:00am to secure the building. There are limited surveillance cameras at entry doors to allow people through locked doors. These blurry analog cameras are not recorded. The access control system should be upgraded to allow better control of locking and allow a button to lock down the building in an emergency. The camera system should be replaced with a new IP system. Also several cameras should be added to cover parking lots and other areas to watch for slips and falls outside of the building and to watch visitors coming in and out of the grounds.

Audio/Visual Systems: The AV systems in the facility are limited to portable carts with projectors and other equipment. With the focus of improving the experience for residents, the main TV room should be upgraded with a new display. The activity/dining room could be used as a movie room with a projection screen and projector. This would also allow for presentations.

Phone/Network: The data network is a hub system, which is outdated technology. The network would need to be replaced to support higher bandwidth and newer technologies such as VoIP and EMR. The phone system is an old Comdial system that is difficult to maintain. The phone system should be replaced with a new VoIP system. There is limited wireless internet. With most EMR systems going to tablets and other wireless devices, it is be important to have good wireless coverage.

Overhead Public Address: The system is used for general pages from the telephone system and is not used very frequently. There is a single 70V TOA amp used for a single all call zone. There are some interference/buzzing issues in some speakers that should be resolved. The system operates satisfactorily.

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2.0 Detailed Systems

2.1 Civil

Drainage and Grading

The overall site drains from northwest to the southeast. The buildings disrupt this natural flow, therefore a network of storm sewer convey stormwater around the buildings to natural drainage ways. Generally, the existing grading allows for positive drainage away from the buildings, with the exception of the loading dock at the Kitchen where a storm sewer has been installed, and at the garage doors of the Garage Building. The loading dock at the kitchen also has ice build-up issues. A few roof drain downspouts at 1941 building and one at the 1983 building are disconnected. A precast concrete pipe section has been installed vertically at the 1983 building near the smoking shelter to catch runoff from the roof. This pipe section does not connected to the storm sewer system; rather it infiltrates into the ground. The landscaping is established and erosion does not appear to be a problem.

Recommendations include improving drainage and reduce ice build-up at the kitchen loading dock area. Reconnect roof drain downspouts. Connect vertical concrete pipe section to storm sewer network. Another solution could be to remove this pipe section, and install a downspout or other inlet structure and connect a new storm sewer line to the existing system. Maintain storm sewer network, grass swales, ditches and concrete curb and gutter and valley pans to convey stormwater.

Roads

There is one access, Veterans Lane, to the campus from Highway 16. Some curb and gutter was installed approximately two years ago. An asphalt paving project was completed three to four years ago. The drive lane between the 1941 building and generator enclosure is narrow. There is no access road around the north end of the 1983 building. Transverse and longitudinal cracks in the asphalt have developed. Some curb and gutter sections have cracked and/or settled. Staff would like the cattle guard at the entrance from Highway 16 removed. The joint sealant in the concrete pavement at the loading dock should be removed and replaced.

An additional access around northern portion of the 1983 building should be constructed. This access would be used for emergency vehicles only and could be constructed with grass pavers, or a similar system, that would subtly blend with the surfacing. Bollards could be installed to prevent non-approved vehicles from driving on this access road. Access for ambulances should be provided at the front of 1983 building near the nurse station. This improvement would cause parking to be modified and should be coordinated with the parking lot reconstruction. The asphalt on campus in fairly good condition, but should be to crack sealed. Remove and replace cracked and/or settled portions of curb and gutter. Remove cattle guard at entrance to campus.

Sidewalks

Concrete sidewalks are located around the main building complex and to other buildings. A concrete sidewalk extends from the main campus to Highway 16, west of Veteran's Lane. Overall, the sidewalks appear in good condition. Some cracks have developed and some stones have settled thus creating toe-catchers.

Remove and replace significantly cracked and/or settled portions of cracked sidewalk. Small cracks may be sealed or routed and sealed, depending on the size/depth of the crack. De-icing materials should be avoided on new concrete sidewalks to prevent scaling.

Ramps and Stairs
Exterior stairs to buildings and ADA ramps in sidewalks are located throughout the campus, as needed.

ADA ramps appear to have been installed at appropriate locations throughout the campus, however, none of the ramps have detectable warning. Exterior stairs appear to be in good condition.

Any improvements to ADA ramps should include detectable warning as to the current standards at the time of construction. Provide accessible access from administration parking lot into the 1983 building for emergency service vehicles.

Parking
Multiple, paved parking lots are located on the campus for staff, residents, visitors and other users of campus buildings.

Parking lots are paved with either asphalt or concrete. The quantity of parking spaces is adequate for staff, residents, visitors and other users of the campus. Numerous parking spaces at the northeast lot are excessively wide for standard passenger vehicles. Bicycles are stored on porch of the 1941 building, no other parking/outdoor storage area for bicycles is designated on the campus.

The concrete parking lot at the administration area should be reconstructed, and improvements could be coordinated with providing an ambulance (and other emergency vehicles) access location to the 1983 building. These improvements should meet ADA and Health Department requirements. An alternate location for bicycle storage should be considered rather than the porch of the 1941 building.

Signage and Markings
Signage is in place to guide visitors to the administration area of the campus. Parking stalls are marked with yellow paint. ADA accessible parking is marked with signs and/or symbols on the pavement.

Signage to other areas of the campus need to be updated. Markings and signs are inconsistent with current Manual on Uniform Traffic Control Devices (MUTCD) standards.

Signage throughout the campus should be updated to MUTCD standards. "No Parking" areas are not designated near fire hydrants, it should be verified with staff to determine if such signage is needed. Parking stall markings should be completed per MUTCD standards.

Water Distribution
Water is supplied to the campus by the City of Buffalo from a single location and through a master meter. The on-campus water system provides domestic and fire protection water, and is owned and maintained by the facility. Fire hydrants are located throughout the campus. Irrigation water is

supplied from the Snider 183 Ditch. This ditch is located south of the campus buildings, and runs west to east through the property.

The water main from the City of Buffalo's system to the campus is 8-inch and ties into both the 10-inch and 14-inch mains that area located parallel to Highway 16. Beyond the master meter, the water mains in the campus are 6-inch. Some 4-inch water mains are still in place on campus and may be located under the 1983 building. Pressures within the buildings at the fire sprinkler system connections are approximately 70 psi.

Water main size, inadequate looping and system pressure may not allow for proper fire flows to hydrants and sprinklers systems. The actual fire flow rates and associated pressures should be verified. Additionally, adequate water supply and pressures during a fire event should be verified with the City of Buffalo. Routine maintenance for the water distribution system should be completed, this should include exercising valves, flushing fire hydrants and other maintenance of the water distribution system. Hydraulic modeling should be completed to determine if up-sizing mains, increasing looping or provide additional supply to the system as necessary to provide adequate fire flows and pressures.

Sanitary Sewer

Wastewater is collected by a network of sanitary sewer mains on the campus that discharged into the City of Buffalo's conveyance system for treatment. The on-campus sanitary sewer system is owned and maintained by the facility.

Staff knows of tree roots in mains. Sizing, capacity, etc. of the sanitary sewer mains should be verified. Mapping shows the sanitary sewer system generally conveys wastewater toward the southeastern portion of the campus for discharge to the City's sanitary sewer system for treatment.

Routine maintenance for the sanitary sewer system should be completed. This may include jetting sewer lines to clean on regular basis. The tree roots within the sanitary sewer system should be properly remedied through removal and replacements of mains, pipe bursting or pipe reaming. Pipe lining methods for rehabilitation are not recommended for mains that have issues with tree roots.

Recommendations and Conclusions

Verify any requirements and/or permits for site or utility improvements with appropriate regulatory authorities (i.e. City of Buffalo, Johnson County, Wyoming Department of Environmental Quality, Wyoming Department of Transportation, State Fire Marshall, State Historic Preservation Office, etc.) The depressed area north of the 1983 building in the grass is the location of the flag pole of the original army post and should be taken into consideration with any improvements in the area.

Figure 2.1.1: VHW Depressed area north of '83 building, location of flag pole at Ft. McKinney

Figure 2.1.2: VHW Loading dock area near kitchen

Figure 2.1.3: VHW Vertical concrete pipe section used to catch roof run-off

Figure 2.1.4: VHW Cattle guard at entrance

Figure 2.1.5: VHW Settled curb and gutter section

Figure 2.1.6: VHW Concrete parking lot at administration area

Figure 2.1.7: VHW Parking lot north of historic hospital building

2.2 Technology

Structured Cabling

Infrastructure: The Veteran's Home is composed of several buildings. The main buildings (1893, 1973, 1941, and Kitchen/Dining) connect to each other. There are several buildings surrounding this main group. There is a Technology Equipment Room (TER) in the basement of the 1983 building. From there, UTP copper and multi-pair copper is distributed to other rooms in the building to serve hubs and phones. Fiber Optic cabling is not used.

Rooms: The TER is located in the 1983 building basement. The room is shared with electrical panels and switchgear. Due to interference caused by high voltage systems, current guidelines state the technology systems should not share the same room as main electrical gear. This room is below grade and shares a foundation wall which increases the likelihood of leaks and flooding. The room has a very low ceiling and is inaccessible from the rest of the building making it extremely difficult to add any additional horizontal cabling. The room is not ideal as the TER for the facility.

A main Technology Distribution Room (TDR) is located in the basement Boiler room of the 1973 West Building. The room has adequate space, but the temperature in the room caused by the boilers is very high. This room is located in the basement which makes it very difficult to add cabling in the future. The room is less than adequate as a TDR.

Backbone Cabling: The use of UTP copper (Cat 5e) as a backbone limits the data network speed to 1GbE (Gigabit Ethernet) with a distance limit of 100m between network switches. The distance limit for 10GbE (10 Gigabit Ethernet) is 55m. The use of multipair copper as the data backbone reduces this even further. The current backbone will not support increased network speeds needed to support an EMR system, a new VoIP phone system and other new computer/network based technologies.

Rooms: TER: Build out a new TER that meets current guidelines and standards. An ideal candidate is the Meds Room on the first floor located directly above the existing TER in the 1983 building. The meds room could move to the room next door where it was previously located next to the nurse station. This would allow for the technology to have a dedicated room that isn't shared with electrical equipment, allow for ample expansion space, and be above grade alleviating any flood concerns. It is centrally located between the four resident wings and the kitchen/dining area which would allow for easy cabling renovation and additions in the future as the level of patient care changes in those wings. This room would serve all the technology in the 1983 building and as distance allows the kitchen/dining areas.

The move could be done in phases:

1) Move the meds room to the north, build out the new technology room with power, cooling, new racks, ladder tray, etc.
2) In a phased approach, pull back existing cabling that can be reused (Cat 5e or better for data, Cat 3 or better for phone) from existing TER and terminate in the new TER. Label and document everything properly.
3) As cabling is moved, provide new network switches (see section below) and new phone switch (see section below). This will limit some downtime compared to doing them at different times. Transition all services over and remove old equipment from existing TER.

4) Other low voltage systems would follow the same process to move to the new TER (see sections below).

TDR: Build a new TDR on the first floor of the 1973 building. Relocate the active technology equipment from the Boiler Room to the new TDR. A location for the new TDR would need to be identified. The same phases for relocation would follow as for the TER.

Infrastructure: In order to support increased network speeds for new technologies, a new backbone consisting of fiber optic cabling should be installed to support up to 10GE speed using a minimum of OM3 multi-mode fiber. The exact locations and strand quantity would be dependent on the new network topology. The existing multipair Cat 3 copper cable would remain for analog phones to resident rooms, fax machines, etc.

Horizontal: Cat 3 and Cat 5 are the main cables installed in the facility along with some other categories of cables. Cat 3 distribution points are located throughout the facility as is common with buildings of this age. At distribution points, cables are either directly connected to a network hub/switch for data (Cat 5) or terminated on 66-style blocks for phones (Cat 3).

Horizontal Cabling: At the outlet locations, cables come free out of holes in walls and ceilings and plug directly into the device being served which is very unsightly. At the hub/switch locations, the cables plug directly into equipment. This is not per EIA/TIA and BICSI standards. 66-style phone blocks are located in several locations throughout the buildings without sufficient labeling. It would be very difficult for anyone without extensive knowledge of the facility to maintain the system.

Horizontal: At outlet locations where cable is exposed from the wall, pull back the cable and fish it in the wall. Terminate the cable in a wall mounted faceplate mounted in a cut-in backbox. From the faceplate, use a UTP patch cord to connect the end user device. At the switch location, terminate the cables in a patch panel and use UTP patch cords to patch them to the network switch. Trace and label everything per EIA/TIA guidelines. Document locations, routing, and cable labels on as-built floor plan drawings. Develop a facility standard cable installation based on EIA/TIA and BICSI standards and guidelines. A minimum of Cat 6 cable should be used for all future cable additions.

Security Systems

The Veteran's Home is intended to be a very open place where residents can come and go as they please and welcoming to visitors. The security systems are limited intentionally to encourage this openness.

Access Control: The perimeter doors have delayed egress maglocks that are locked from 10:00pm to 6:00am. This is so the buildings are secure at night but still allow exiting to occur per NFPA 101. The main entrances have intercoms that ring to the phone at the nurse station to allow entry when locked.

Access Control: The perimeter doors are locked based on a timer only. They are not controllable for an instant lockdown or able to open with a badge. This is fairly inconvenient for staff.

Access Control: Install a software system that can connect to the existing door hardware to allow staff to control timing, unlocking, instant lockdown, etc. from a PC or wireless and wired buttons. The software would also allow for the addition of badge access at the main entrance doors, meds rooms and other secure areas as required. This would give staff better control of access into the buildings.

Video Surveillance: There are (4) analog cameras on campus which view (3) main entry doors and the smoking hut. These are for local viewing only at the 24 hour nurse station on a dedicated monitor; they are not recorded.

Video Surveillance: The cameras are analog and the pictures are very fuzzy. It is difficult to identify a person's face on the single monitor used to view them. There is no camera coverage of the parking areas, exterior buildings, or other locations where events like vandalism, resident slips/falls on ice, car accidents, etc. would occur.

Video Surveillance: Install a software system that will allow the recording and viewing of cameras via the network and PCs. Replace the existing analog cameras with new IP based cameras. Provide new IP cameras at the main entrances, in the parking areas, and select exterior locations of the building. This would help staff respond to issues, better resolve issues after they occur via recordings, and prevent possible crime around the buildings.

Nurse Call

The Veteran's Home is an assisted living facility. A tone/visual nurse call system is installed and is appropriate for the level of care. A patient station is installed in each of the resident rooms to call for assistance. A caregiver is required to go to the room and cancel the call with a key. The stations are alerted to the caregiver through the phone system.

The system manufacturer is Dukane which was acquired by GE and then by Ascom. The system is no longer manufactured or officially supported. This has made it difficult and expensive for maintenance staff to find replacement parts. The equipment head end location is the TER. This location is not ideal due to the reasons listed in the TER description above.

Develop a long-term plan to replace the nurse call system. The superintendent stated that two of the wings of the 1983 building may turn into skilled nursing wings. If this happens, due to the higher level of care, a nurse call system with voice transmission, alarming, and other features would typically be required by building code. The facility would need to install a new nurse call system in those wings, requiring the removal of the Dukane system. These removed parts could be used as spare parts for the system remaining in the 1973 and 1941 buildings.

Over time, the new nurse call system could replace the remaining areas of the facility and eventually phase out the Dukane system completely. The new system head end should be installed in the new TER as described above. Depending on the life expectancy of the Dukane system, the existing head end equipment should be migrated up to the new TER as well in phases to prevent downtime. If it will be eventually removed completely, it could remain in the existing TER until that time.

Cable TV (CATV) System

The Veteran's Home has a traditional coax cable system. It distributes the service provider's (Optimum) signal to the resident and common area TVs. Each TV has a set top box typical of residential applications. A fairly new CATV distribution system is located in a closet on the first floor. The system meets the current needs of the facility.

Some of the TV outlet cabling comes directly out of the wall or ceiling and is unsightly. Due to lack of labeling, the system cabling may be difficult to trace if upgrades or demolition were required.

For locations that have exposed cabling, fish the cable in the wall, terminate the cable in a faceplate and provide a coax patch cable to the TV. Trace, label, and document the routing and system architecture at the same time as the network/phone cabling as mentioned above.

Audio/Visual Systems (AV)

The Veteran's Home utilizes limited AV equipment. A portable microphone and speaker is used in the Activity room for Bingo. There is a video conferencing cart in the 1941 conference room. There is a large rear projection TV in the activity room. A new Telehealth system is being procured and will be located in the physician's exam room next to the nurse station.

The large TV in the activity room is very old and has a fuzzy picture. It most likely doesn't support HDTV.

The focus of the Veteran's Home is to increase the experience of the residents. Improving the audio visual systems would coincide with that approach. Replace the Activity Room TV with a new large flat panel HDTV with Blu-Ray/DVD player and HDTV cable box. This could be used for movies and sporting events to bring residents together. A surround sound system should be installed with the TV.

The intention of the dining and activity room was for it to open up using movable partitions into one large room. Utilize this space as a gathering and presentation area. Install a large projection screen and projector to show movies, presentations, etc. to a large group of residents. Provide a wireless microphone and more advanced sound system to allow for public speakers, bands, children's choruses, etc.

Public Address System

The system is a 70V paging system using a single TOA amplifier location in the main IT room. The system is used for general pages over a single zone from the telephone system and is not used very frequently. The pages also come through the speakers on the telephones if the phones are programmed to allow it. The system meets the needs of the facility.

Some speakers were buzzing. This was mainly noticed at the end of longer hallways where the signal power would be lower and interference would be higher.

A public address contractor should investigate the buzzing issues in the speakers. Some common causes of this are:

- Too many speakers on a main line of cabling causing a weak signal at the end of the line
- A speaker wire is too close to or laying on a high voltage device like a light fixture, VAV, etc.
- The termination points on a speaker are exposed allowing interference
- The speaker wire runs parallel with electrical cable for a long distance causing interference

Data Network

The data network is composed of several hubs located throughout the buildings. Locations that use the data network are limited to offices and computer rooms. The wireless network is composed of two consumer grade access points that have limited use. There is no public Wi-Fi.

Hub technology is very old and is typically no longer used. Users most likely have very slow connections internally and externally most likely either 10 Mbit/s or 100Mbit/s. This system will not be able to support the increased load for an EMR and VoIP telephone system. The lack of an extensive wireless network will quickly become an issue as residents adopt newer technology like smart phones and tablets. EMR systems also rely heavily on wireless for using tablets, computers on carts, and other mobile devices.

Replace the data network completely with managed PoE switches. The network should allow a minimum of 1GbE (Gigabit Ethernet) to end user devices. Install a robust 802.11 wireless system to accompany the new network with ceiling mounted access points distributed throughout the buildings. The new core/distribution network switches should be installed in the new TER with edge switches in the 1973 and 1941 buildings (exact locations TBD) connected via fiber optic cabling. The new network should support any current and new systems such as VoIP, IP cameras, and EMR. At the same time the new network is installed, the facility should evaluate their service connection speed.

Phone System

The phone system is a Comdial DX-80 system with model 7260 digital phones. The system has standard features such as voicemail, integration with paging, caller ID, etc.

The Comdial phone system is intended for a small office and is limited to a max of (48) digital phones and (8) analog stations. The maintenance staff finds it very difficult to maintain.

The current phone system is adequate for the existing needs, but it won't be able to support increased users and more advanced features as the level of care increases in the facility. As the network is replaced, the phone system should be replaced with a new VoIP system. This will allow connecting to a new nurse call system, the use of staff wireless phones, and newer features like mobility and visual voicemail to email. The equipment should be located in the new TER as mentioned above.

Emergency Shelters

The designated emergency shelters are the pool table room and basement laundry room of the 1941 building. There has never been a need to seek emergency shelter.

Radios

There is a large antenna, but the FCC license has not been maintained. There is a Ham radio located at the nurse desk. These are not used and no further improvements are needed. Cell phones are used for communication between staff, and coverage is sufficient.

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3.1 Old Hospital VH 1

Architectural

Recommendations and Conclusions

Generally this building is in great condition and serviceable well into the future with continued maintenance. This building houses various state agencies, and has a large conferencing facility upstairs which is used not only by the Veterans' Home Staff, but other state agencies as well. This building is a historic icon of the campus, and greets visitors as a beautiful first impression as they arrive on campus. Consideration should be given to relocating and restoring the lost segment of this structure into a similar use, or possibly as a visitor's center and museum for public enjoyment at the front of the campus.

Facility Description

The Historic Hospital Building is the one of the original buildings from the historic Fort McKinney on this site. It was previously built on another location on the Fort, has been moved to its current location in modern times. It was previously joined with another segment of the building known as the old dairy barn, which still exists on site as well. It is a two story structure that has interior and exterior stairs, as well as a handicap accessible lift system. It recently enjoyed a through interior and exterior remodel in 2001 – 2002.

Interior

The majority of the interior of the building consists of wood stud walls with gypsum board and a painted finish. The floor coverings are primarily carpet, which has been regularly replaced and kept up to a nice new appearance by the staff. The ceilings are primarily painted gypsum board.

Exterior

The exterior cladding of this building is the original wood siding, with a painted finish. The siding has been provided with spot replacement and repair, and has been kept up to a very nice appearance

considering its age. The windows have been replaced with modern double paned windows. The exterior porches were rebuilt as a part of the historic preservation. Landscaping is limited, and is generally grass up to the foundation. Access to this building is by either the exterior ramp or stair system, and is ADA accessible.

Roof

The architectural asphalt shingle roofing is in excellent condition, and has many years left in the current warranty.

Floors/Ceilings/Walls

The floor, wall & ceiling finishes in this facility are in good to excellent condition, as a result of the recent remodel. This facility is in excellent condition as the result of recent remodel efforts and excellent maintenance standards by the facility.

International Building Code

This building appears to be in good condition and in compliance with the code for the facilities current use.

Compliance with Americans with Disabilities Act

There is handicapped access to this building with the use of an external ramp, and a handicap lift to the second floor. The toilets in this facility are recently remodeled and are ADA compliant.

Structural

The structural systems of the Old Hospital building are described as follows:

Foundations: conventional spread footings on native soils.
Floors: Wood framed.
Roofs: Wood framed.
Walls: Wood framed.
Code Compliance: The Old Hospital Building does not comply with the 2012 IBC.

This building is in good condition. The building received a preservation project in 2004. I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing adequately as there is no evidence of any recent settlement or heaving in the building. The floors are performing adequately. The floors do not show any signs of recent settlement or heaving. The roof framing is also performing well.

This building was not specifically designed to have positive load paths for transmittal of lateral wind and seismic loading. The weak link in such a historic building is the connection to the foundation, the roofs, walls and floors have inherent load path continuity due to the type of construction. This building would probably not perform well in a significant seismic event due to the lack of an adequate connection to the foundation.

This building does not have an area that could be used as an "Emergency Shelter". The area that is probably the best place to be in such an emergency would be the basement of the adjacent 1973 building. There is not an area within this building that could meet the code requirements of an "Emergency Shelter".

Mechanical

Plumbing Water

The building's facilities were renovated in 2001/2002. Electric hot water is provided by a dedicated domestic hot water heater in basement mechanical room.

Fixtures are in good shape. No point-of-use temperature limiting devices were seen at the individual fixtures. No problems with hot water supply or cold water supply were reported by facility staff upon inquiry. Recommend installing individual temperature limiting devices at the hand sinks to provide 110oF max. water. The water heater is nearing the end of its service life expectancy. Recommend replacing.

Plumbing Sewer

The building's facilities were renovated in 2001/2002. There is a ground water sump pump in the basement.

No problems with the sanitary sewer drainage were reported upon inquiry. The sump pump is a simplex system and is equipped with an alarm.

HVAC

The building is served by a ground mounted air cooled chiller fan coil units. The air cooled chiller is in good condition and has about 10 years of service life expectancy left. Recommend replacing the chiller and fan coils in 10-12 years.

Heating is provided by a heating coil in each of the fan coil units and hydronic fin-tube radiation. The fan coil units are in good condition and have about 10 years of service life expectancy left. Recommend replacing the finned tube radiation units, cabinet unit heaters and exhaust fans in 10-12 years.

Mechanical ventilation is provided by the aforementioned fan coil units. Temperature controls are an electronic system.

The hydronic baseboard is in good condition and has about 20 years of service life expectancy left. Electronic controls are in good condition. However, they are a proprietary system (Trane) and therefore, the facility has very little control/programmability without calling Casper or Billings Trane offices. Recommend replacing existing electronic controls with non-proprietary DDC controls and tying into a Campus Automation System for campus wide monitoring/trending/control capabilities.

Comfort issues in the building were reported by the facility staff upon inquiry. Upper level gets hot in the summer.

Fire Sprinkler

The building is not provided with a fire sprinkler system.

Code Compliance

IPC requires fixtures utilized for handwashing purposes to be limited to 110oF supply water temperature by an ASSE 1070 compliant temperature limiting device.

Electrical

Power System

The power distribution system was replaced during the 2002 remodel. The main building disconnect is fed from the MDP in the 1983 building. The electrical distribution system appears to be in good working order.

The entire building, including the other buildings of this facility, is generator backed up via three on site paralleled natural gas generators installed in 2001. Panelboard directories are present and appear to be accurate.

Power is provided by the local utility company via the 1600 amp distribution board in the Boiler Room which serves the MDP in the 1983 building. Branch wiring is typically NM (Romex) copper and in good condition. Branch wiring appears in good condition and can remain. Receptacles are not labeled to indicate the circuit serving them. Provide an electrical one-line diagram. Provide circuit labeling for receptacles.

Lighting System

The lighting has been upgraded during the 2002 remodel. Typically, the lighting consists of fluorescent luminaires with T-12 lamps. Limited incandescent lighting was observed. Replace the luminaires in their entirety with up to date fluorescent T-8 lamping or as an option, retrofit the existing luminaires with new electronic ballasts and T-8 lamps. Replace the limited incandescent lighting with LED sourced luminaires or as an option, replace the incandescent lamps with compact fluorescent lamps.

There is no building wide lighting control system. Wall mounted toggle switches are used to control the lighting. Provide a building wide lighting control system for areas not controlled via wall mounted occupancy sensors. Recircuit existing branch lighting circuits to be controlled by the new lighting control panel. Replace wall mounted toggle switches with occupancy sensor controls for smaller rooms, offices, janitor closets, etc.

Emergency egress lighting and exist signs are present.

Fire Alarm

The fire alarm is a stand alone Notifier system upgraded in 2002 remodel.

The fire alarm system consists of a Notifier fire alarm control panel, limited smoke detection, manual pull stations at exits and horn strobes. The system appears to be in good condition. Verify fire alarm system is tested per NFPA guidelines.

Code Compliance

Ground Fault Receptacles (GFI) were not typically installed adjacent to sinks per the National Electric Code. Replace standard receptacles with GFI type per NEC requirements.

Because a battery inverter system is installed for the life safety loads, any changes to the generator or emergency distribution system on the campus should not affect this building.

3.2 1941 Building VH 2

Architectural

Recommendations and Conclusions

Generally this building is in good condition and serviceable well into the future with continued maintenance.

Facility Description

The 1941 Building is the original modern building on campus, preceded only by the previous historic fort buildings from old Fort McKinney. It is a two story structure, with partial basement. It is currently used primarily as resident rooms on both floors. It also contains a newly remodeled conference room, hobby shops and activity areas for the residents, and a few staff offices. The 1941 Building, although somewhat historic and stately in appearance, has many small rooms and narrow corridors. It also has many interior load bearing masonry walls, which makes it difficult to renovate.

Interior

The majority of the interior of the building consists of masonry coated with plaster and a painted finish. Remaining walls are painted gypsum board stud walls, which have been the result of recent remodeling efforts and new wall construction. The floor coverings are carpet tile in the corridors and resident rooms, and porcelain tile in the newly remodeled bathrooms. The ceilings are a mixture of painted plaster and gypsum board, and SAP (suspended acoustical panels).

Exterior

The exterior cladding of this building is brick. The exterior doors are aluminum and hollow metal. Landscaping is very limited, and is generally grass up to the foundation. Access to this building is by either the front exterior entrance, or internally through the adjacent 1973 building. The exterior finishes of this building are in good condition for their age.

Roof

The roof of this building is comprised of the original slate shingles. There are also several small areas of flat roofs with a membrane roofing system. The slate shingles are in fair condition for their age. It was noted the entire roof drainage needs to be replaced.

Floors/Ceilings/Walls

The floor, wall & ceiling finishes in this facility are in good to excellent condition as the result of recent remodel efforts and excellent maintenance standards by the facility. Limited amounts of asbestos have been removed in the past during the remodels, and it is believed that asbestos still exists in limited amounts and types throughout the facility, most notable on piping and flooring.

International Building Code

This building appears to be in good condition and in compliance with the code for the facilities current use.

Compliance with Americans with Disabilities Act

There is handicapped access to this building with the use of an external and internal ramp and corridor systems. There is an elevator for access to all floors. The toilets in this facility are in compliance with ADA requirements due to recent remodel efforts.

Figure 3.2.1: VHW South Side of 1941 Building

Figure 3.2.1: VHW West side of the 1941 building

Figure 3.2.1: VHW Conference room and staff training area

Figure 3.2.1: VHW New vanities in resident rooms from 2009 remodel

Figure 3.2.1: VHW Recently renovated resident toilet rooms

Figure 3.2.1: VHW New porcelain wall tile in remodeled bathrooms

Figure 3.2.1: VHW Non ADA toilet room door

Structural

The structural systems of the 1941 building are described as follows:

Foundations: conventional spread footings on native soils.
Floors: Main floor slab on grade and cast in place structural concrete over basements, upper floor cast in place structural concrete, basement floor slab on grade.
Roofs: Wood framed.
Walls: Un-reinforced multi-wythe masonry.
Code Compliance: The 1941 building does not comply with the 2012 IBC.

This building is in remarkably good condition, especially considering its age. I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing well as there is no evidence of any damaging settlement or heaving in the building. The floor framing is performing well. The floors do not show any excessive deflection or vibration under foot traffic. The roof framing is also performing well. There is no evidence of excessive deflection of roof framing members.

There is some minor maintenance that should be performed on the masonry mortar joints in isolated areas. Some mortar joint damage is evident that can be repaired by re-pointing.

This building lacks the positive load paths for transmittal of lateral wind and seismic loading required by current building codes. The building also lacks vertical shear elements required by such codes. The building would not fare well in a significant seismic event due to this lack of continuity, and to the heavy weight of the upper floor system and masonry walls. It is not necessary to update these systems provided that the buildings use is not changed, and that no existing structural elements of the building are significantly revised.
There is not an area of the building that is officially designated as an "Emergency Shelter" to be used in case of emergency such as severe windstorm or tornado. The area that is probably the best place to be in such an event would be the basement of the adjacent 1973 building. There is not an area within this building that could meet the code requirements of an "Emergency Shelter".

Mechanical

Plumbing Water

The building's bathrooms (which are community bathrooms) were renovated in 2010. At that time all of the water distribution piping was replaced. Hot water is provided by main domestic hot water heater plant in basement mechanical room of the 1973 Building which was renovated in 2009/10. A temperature limiting device on piping main in the basement provides tempered water to residence fixtures.

All fixtures are in good condition. The temperature limiting device is supplying 120oF tempered water according to the thermometer on the discharge of the device. No point-of-use temperature limiting devices were seen at the individual fixtures. No problems with hot water supply or cold water supply were reported by facility staff.

Piping and fixtures are in great shape. Recommend installing individual temperature limiting devices should be installed at the lavatories to provide 110oF max. water.

Plumbing Sewer

The building's restrooms were renovated in 2010 and all fixture piping was replaced. No problems with the sanitary sewer drainage were reported. Roof drainage discharges above grade at/near the building's foundation. Recommend providing means of discharging roof drainage away from building foundation.

HVAC

Heating is provided by hydronic finned tube radiation fed by the central boiler plant in the basement mechanical room of the 1973 Building which was renovated in 2010. The finned tube cover is old and damaged (scratches, dents and missing end caps) in places. The age of the finned tube is unknown but is anticipated to be past its service life expectancy of 25 yrs. Terminal heating equipment and cooling only fan coils are past their expected service life span as are the ground mounted rooftop units. Recommend replacing the finned tube radiation units, cabinet unit heaters, fan coils and replacing and relocating ground mounted rooftop units to avoid introducing carbon monoxide from vehicles in the drive area.

Option: install sensors at outside air intakes of RTU's to shut intake dampers and sound alarm upon detection of carbon monoxide. Provide manual reset to return the RTU's to normal operation once the source of carbon monoxide is no longer in the vicinity.

Cooling is provided by ceiling surface mounted, horizontal fan coils with chilled water coils fed by the central chiller in the basement mechanical room of the Kitchen-Dining Building. The horizontal fan coils are in fair condition, estimated by facility staff to be installed in the early 1990's and are past their service life expectancy of 15 yrs.

Restroom exhaust was renovated in 2010. Recommend providing mechanical ventilation for the residences.

The woodshop on the ground level is equipped with a dust extraction system. The woodshop dust extraction system is in fair condition. Facility staff indicated that the woodshop is for residents' use, however it rarely gets used.

Mechanical ventilation is via a combination of ground mounted rooftop units and natural ventilation (operable windows). The ground mounted rooftop units are in poor condition. The age of the units is unknown and no nametag information could be found. They are anticipated to be past their service life expectancy of 15 yrs. The units only provide mechanical ventilation for the public spaces on the first level and the laundry room in the basement.

Temperature controls are a pneumatic system. Pneumatic controls are in good condition. Recommend replacing existing pneumatic controls with DDC controls and tying into a Campus Automation System for campus wide monitoring/trending/control capabilities. No comfort issues were reported by the facility staff.

Fire Sprinkler

The building is fully sprinkled with a wet system. The sprinkler system appeared to be in good condition. However, the heads were a different type than other buildings on the campus. Recommend replacing heads to provide a consistent head type throughout the campus.

Code Compliance

The ground mounted rooftop units are located directly adjacent to the drive. Vehicles could easily stop/park within five feet of the outside air intakes. IMC requires minimum ten feet, if services/license is expanded to provide Skilled Nursing, then the Guidelines will require 25 feet.

IPC requires fixtures utilized for handwashing purposes to be limited to 110oF supply water temperature by an ASSE 1070 compliant temperature limiting device.

Electrical

Power System

The power distribution system is original to the building and consists of two 400 amp distribution boards and branch panelboards. The building is fed from the MDP in the boiler room. The electrical distribution system has typically exceeded its useful life expectancy and doesn't have physical capability to add breakers/switches for expansion if necessary. However, the laundry panelboards that are fed from the distribution board are relatively new. The MDP in the boiler room that feeds this building was installed in 2002 and appears to be in good condition. Replace the existing electrical distribution in it's entirety including main distribution and branch panelboards except for the two Laundry panelboards. Include spare capacity for potential future work.

The entire building, including the other buildings/wings of this facility, is generator backed up via three on site paralleled natural gas generators installed in 2001. The natural gas generators appear to be in good working order and we understand they are tested regularly. The generator remote annunciator is located in the boiler room. Relocate the existing remote generator annunciator to a monitored location. (It was noted that by final report, the Generator Annunciation Panel was moved to the Nurse's Station.)

Power is provided by the local utility company via the 1600 amp distribution board in the Boiler Room. Panelboard directories are present however, their accuracy cannot be verified. Provide accurate panelboard directories. Branch wiring is typically copper and in good condition. Branch wiring appears in good condition and can remain. Receptacles are not labeled to indicate the circuit serving them. Provide one-line diagrams for each building. Provide circuit labeling for receptacles.

Lighting System

The lighting is original to the building, except the resident rooms which were remodeled in 2010. Typically, the common area lighting consists of fluorescent luminaires with T-12 lamps. Limited incandescent lighting was observed. Replace the common area luminaires in their entirety with up to date fluorescent T-8 lamping or as an option, retrofit the existing luminaires with new electronic ballasts and T-8 lamps. Replace the limited incandescent lighting with LED sourced luminaires or as an option, replace the incandescent lamps with compact fluorescent lamps.

There is no building wide lighting control system. Wall mounted toggle switches are used to control the lighting. Replace wall mounted toggle switches with occupancy sensor controls for smaller rooms, offices, janitor closets, etc. Provide a building wide lighting control system for areas not controlled via wall mounted occupancy sensors. Recircuit existing branch lighting circuits to be controlled by the new lighting control panel.

Emergency egress lighting and exist signs are present.

Fire Alarm

The fire alarm system consists of a Notifier fire alarm control panel, limited smoke detection, manual pull stations at exits and horn strobes. The system appears to be in good condition. Verify fire alarm system is tested per NFPA guidelines.

The building has full fire suppression via a wet sprinkler system.

Code Compliance

It has been our experience that authorities having jurisdiction (AHJ) do not consider natural gas generators as reliable because the fuel source is not on site and can be interrupted. Therefore, AHJ's typically do not allow natural gas generators to be used to serve life safety loads. For life safety emergency power there are two choices; 1. Provide an on site diesel generator, associated transfer switch, distribution panelboard and re-circuit the existing life safety loads to this panelboard. We anticipate a single generator would be used to provide power to all the connected buildings.

Because the entire electrical distribution system is generator backed up it doesn't serve as a legally required emergency system per the NEC. The implication is that required emergency systems must be provided by other means, such as battery back-up power to emergency egress lighting. Provide battery back-up for all legally required life safety loads including emergency egress lighting, exit signs and fire alarm control system.

Ground Fault Receptacles (GFI) were not typically installed adjacent to sinks per the National Electric Code. Replace standard receptacles with GFI type per NEC requirements.

3.3 1973 Building VH 3

Architectural

Recommendations and Conclusions

Generally this building is in good condition and serviceable well into the future with continued maintenance.

Facility Description

The 1973 Building is the first major addition that took place on this campus, and adjoins the previous original 1941 Building. It is a single story structure, with slab on grade. It is currently used primarily as resident rooms in a series of sprawling wings. It also contains the administrative offices, and bookkeeping offices for the facility, as well as a pool room for the residents. The 1973 Building has nicely remodeled resident rooms, but the floor plan layout is rather strung out and the corridor systems are lengthy. Many of the interior finishes are showing their age, and the especially the corridors could use a facelift with new modern finishes.

Interior

The majority of the interior of the building consists of stud walls with gypsum board and a painted finish. The floor coverings are carpet tile in the corridors and resident rooms, which has been regularly replaced and kept up to a nice new appearance by the staff. The corridor ceilings are primarily SAP (suspended acoustical panels). The resident room finishes are a stained wood finish.

Exterior

The exterior cladding of this building used to be a wood T-111 siding finish. The staff has completed a complete exterior refinish to an EIFS system over the past few years. Brick accents also exist. This has provided a modern look, and provided for a more maintenance free exterior finish system. The exterior doors are aluminum. Landscaping is limited, and is generally grass up to the foundation. Access to this building is by either the front exterior entrance, or internally through the adjacent 1941 and 1983 buildings.

Roof
The roof of this building is comprised of a membrane roofing system, which is in good condition.

Floors/Ceilings/Walls
The floor, wall & ceiling finishes in this facility are in good condition. The resident rooms are in better condition as the result of recent remodel efforts and excellent maintenance standards by the facility. The corridor finishes are somewhat dated and could benefit from a remodel. Limited amounts of asbestos have been removed in the past during the remodels, and it is believed that all asbestos has been removed in this throughout the facility.

International Building Code
This building appears to be in good condition and in compliance with the code for the facilities current use.

Compliance with Americans with Disabilities Act
There is handicapped access to this building with the use of external doors at grade and internal corridor systems. The toilets in this facility are shared between two resident rooms, and are not in full compliance with ADA requirements. Review of ADA compliance of the resident rooms should be undertaken and possible retrofit actions be taken as appropriate. The interior ramps also need to be reviewed for ADA compliance.

Figure 3.2.1: VHW 1973 Building

Figure 3.2.2: VHW 1973 building

Figure 3.2.3: VHW Staff entrance on west side of the 1973 building

Figure 3.2.4: VHW Interior ramps need to be checked for ADA compliance

Figure 3.2.5: VHW Corridor ceilings in need of replacement

Figure 3.2.6: VHW corridor window treatments in need of replacement

Figure 3.2.7: VHW corridor wall treatments in need of modernization

Figure 3.2.8: VHW wood ceilings

Structural

The structural systems of the 1973 building are described as follows:

Foundations: conventional spread footings on native soils.
Floors: Main floor slab on grade and steel framed over basements, basement floor slab on grade.
Roofs: Wood framed.
Walls: Brick veneer on wood framed stud walls.
Code Compliance: The 1973 building does not comply with the 2012 IBC.

This building is in good condition, I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing well as there is no evidence of any damaging settlement or heaving in the building. The floor framing is performing well. The floors do not show any excessive deflection or vibration under foot traffic. The roof framing is also performing well. There is no evidence of excessive deflection of roof framing members.

There is some minor maintenance that should be performed on the masonry mortar joints is isolated areas. Some mortar joint damage is evident that can be repaired by re-pointing.

This building lacks the positive load paths for transmittal of lateral wind and seismic loading required by current building codes. The building also lacks vertical shear elements required by such codes. The building would not fare well in a significant seismic event due to this lack of continuity.

It is not necessary to update these systems provided that the buildings use is not changed, and that no existing structural elements of the building are significantly revised.

There is not an area of the building that is officially designated as an "Emergency Shelter" to be used in case of emergency such as severe windstorm or tornado. The area that is probably the best place to be in such an event would be the basement. There is not an area within this building that could meet the code requirements of an "Emergency Shelter".

Mechanical

Plumbing Water

The building's bathrooms (which are individual residence bathrooms) appear to be mostly original fixtures. Hot water is provided by main domestic hot water heater plant in basement mechanical room of the 1973 Building which was renovated in 2009/10. A temperature limiting device on piping main in the basement provides tempered water to residence fixtures.

Campus water heaters are in great shape and appear to be sized to provide redundancy. There also appears to be room for expansion of the system.

All fixtures are old but in fair condition. No point-of-use temperature limiting devices were seen at the individual fixtures. No problems with hot water supply nor cold water supply were reported by facility staff upon inquiry.

Piping and fixtures are in fair shape. Recommend replacing fixtures with make/models consistent with those recently installed in the 1941 building to standardize parts inventory for the campus and installing individual temperature limiting devices should be installed at the lavatories to provide 110oF max. water.

Plumbing Sewer

The building's bathrooms (which are individual residence bathrooms) appear to be mostly original fixtures. No problems with the sanitary sewer drainage were reported upon inquiry.

Piping and fixtures are in fair shape. Recommend replacing fixtures with make/models consistent with those recently installed in the 1941 building to standardize parts inventory for the campus.

HVAC

Heating is provided by hydronic finned tube radiation fed by the central boiler plant in the basement mechanical room of the 1973 Building which was renovated in 2010. Campus boilers are in great shape and appear to be sized to provide redundancy. There also appears to be room for expansion of the system.

The finned tube cover is old and damaged (scratches, dents and missing end caps) in places. The age of the finned tube is unknown but is anticipated to be past its service life expectancy of 25 yrs. Terminal heating equipment and cooling only fan coils are past their expected service life span. Recommend replacing the finned tube radiation units, cabinet unit heaters, fan coils and exhaust fans. Option: replace individual exhaust fans with central exhaust fan that runs continuously to reduce maintenance and noise while providing consistent odor control.

Cooling is provided by ceiling surface mounted, horizontal fan coils with chilled water coils fed by the central chiller in the basement mechanical room of the Kitchen-Dining Room Building. The horizontal fan coils are in fair condition, estimated by facility staff to be installed in the early 1990's and are past their service life expectancy of 15 yrs.

Restroom exhaust is provided by individual exhaust fans mounted in the bathroom walls. Individual bathroom exhaust fans appear to be original and are individually controlled by wall switches located

in the respective bathrooms. It was observed that some are very loud when turned on by the wall switch. Recommend providing mechanical ventilation for the residences.

The office area is cooled by a single ductless split-system with the fan coil unit located in the reception area. The ductless split-system serving the office areas relies on convection to provide cooling to the individual spaces sense there is only one fan coil unit with no ductwork distribution. Occupants indicated comfort issues due to this configuration.

Mechanical ventilation is provided by a "whole-house" fan installed through the roof in the office area hallway. All other ventilation is provided by natural ventilation (operable windows). Occupants indicated that the "whole-house" fan had not been utilized in years. It was observed that with the wind blowing the backdraft damper inlet at the ceiling clattered.

Temperature Controls are a pneumatic system, in good condition. Recommend replacing existing pneumatic controls with DDC controls and tying into a Campus Automation System for campus wide monitoring/trending/control capabilities.

No comfort issues in the residences were reported by the facility staff upon inquiry.

Fire Sprinkler
The building is fully sprinkled with a wet system. The sprinkler system appeared to be in good condition. However, the heads were a different type than other buildings on the campus. Recommend replacing heads to provide a consistent head type throughout the campus.

Code Compliance
IPC requires fixtures utilized for handwashing purposes to be limited to 110oF supply water temperature by an ASSE 1070 compliant temperature limiting device.

Showers are provided with ADA grab bars, but no hand-held showers.

Electrical

Power System

The power distribution system is original to the building and consists of one 600 amp distribution board and branch panelboards. The building is fed from the MDP in the boiler room. The electrical distribution system has typically exceeded its useful life expectancy and doesn't have physical capability to add breakers/switches for expansion if necessary. The MDP in the boiler room that feeds this building was installed in 2002 and appears to be in good condition. Replace the existing electrical distribution in it's entirety including main distribution and branch panelboards. Include spare capacity for potential future work.

The entire building, including the other buildings/wings of this facility, is generator backed up via three on site paralleled natural gas generators installed in 2001.

Power is provided by the local utility company via the 1600 amp distribution board in the Boiler Room. Panelboard directories are present however, their accuracy cannot be verified. Provide accurate panelboard directories.

Branch wiring is typically copper and in good condition. Branch wiring appears in good condition and can remain. Receptacles are not labeled to indicate the circuit serving them. Provide one-line diagrams for each building. Provide circuit labeling for receptacles.

Lighting System

The lighting is original to the building except for the resident rooms which were remodeled in 2010. Typically, the common area lighting consists of fluorescent luminaires with T-12 lamps. Limited incandescent lighting was observed. The resident room lighting is newer and can remain. Replace the common area luminaires in their entirety with up to date fluorescent T-8 lamping or as an option, retrofit the existing luminaires with new electronic ballasts and T-8 lamps. Replace the limited incandescent lighting with LED sourced luminaires or as an option, replace the incandescent lamps with compact fluorescent lamps.

There is no lighting control system. There is no building wide lighting control system. Wall mounted toggle switches are used to control the lighting. Replace wall mounted toggle switches with occupancy sensor controls for smaller rooms, offices, janitor closets, etc. Provide a building wide lighting control system for areas not controlled via wall mounted occupancy sensors. Recircuit existing branch lighting circuits to be controlled by the new lighting control panel.

Emergency egress lighting and exist signs are present.

Fire Alarm

The fire alarm is stand alone Notifier system upgraded in 2001. The fire alarm system consists of a Notifier fire alarm control panel, limited smoke detection, manual pull stations at exits and horn strobes. The system appears to be in good condition. Verify fire alarm system is tested per NFPA guidelines.

Code Compliance

Ground Fault Receptacles (GFI) were not typically installed adjacent to sinks per the National Electric Code. Replace standard receptacles with GFI type per NEC requirements.

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3.4 1983 Building (VH 4-5)

Architectural

Recommendations and Conclusions

Generally this building is in good condition and serviceable well into the future with continued maintenance. A concept has been offered in which one or two of the current resident rooms in this facility could be converted to Skilled Nursing Wings. This is a feasible and viable option as this is the newest and most modern building on campus, and the easiest to convert and remodel for this new proposed use.

Facility Description

The 1983 Building is the largest and newest building on campus. It also has the most clear and efficient layout. The four resident room wings all converge on the centralized nurse station, the main corridor connection, and the kitchen, dining and activity area. A smoking shelter was added to the end of one of the resident rooms recently in an effort to centralize resident and staff smoking. As the 1983 Building is the newest facility on campus, it has the longest remaining lifespan left in its future.

Interior

The majority of the interior of the building consists of stud walls with gypsum board and a painted finish. There are also limited areas of interior brick finish, and vinyl wall covering. The floor coverings are primarily carpet tile in the corridors and resident rooms, which has been regularly replaced and kept up to a nice new appearance by the staff. The corridor ceilings are primarily SAP (suspended acoustical panels).

Exterior

The exterior cladding of this building is full height brick veneer. The exterior doors are aluminum. Landscaping is limited, and is generally grass up to the foundation. Access to this building is by either the two front exterior entrances, or internally through the adjacent 1983 buildings. The exterior finishes of this building are in good to excellent condition.

Roof

The roof of this building is comprised of a metal standing seam roofing system. Small areas of flat roof structure with membrane roofing also exist. The metal and membrane roofing is in good condition. One leak has been noticed in the Activity Hall at the intersection of the membrane roofing and the metal roofing.

Floors/Ceilings/Walls

The floor, wall & ceiling finishes in this facility are in good to excellent condition. The nurse station has benefited from a recent remodel. New VCT flooring has been installed at the outer edges of the nurse station. This facility is in excellent condition as the result of recent remodel efforts and excellent maintenance standards by the facility. Some areas of linoleum flooring have exhibited splitting of the heat welded seams. These areas are in need of replacement. No known asbestos is believed to exist in this facility.

International Building Code

This building appears to be in good condition and in compliance with the code for the facilities current use. The use of this building should continue as is there are no code compliance issues.

Compliance with Americans with Disabilities Act

There is handicapped access to this building with the use of external doors at grade and internal corridor systems. The toilets in this facility are shared between two resident rooms, and are not in full compliance with ADA requirements. Review of ADA compliance of the resident rooms should be undertaken and possible retrofit actions be taken as appropriate.

Figure 3.4.1: VHW Main southern facade showing galleria

Figure 3.4.2: VHW Typical resident room wings

Figure 3.4.3: VHW Activity hall Addition

Figure 3.4.4: VHW Activity hall Addition

Figure 3.4.5: VHW Service area

Figure 3.4.6: VHW Kitchen facility

Figure 3.4.7 VHW Nurse Station

Figure 3.4.8 VHW Linoleum flooring with split seam

Figure 3.4.9: VHW Roof Leak

Figure 3.4.10: VHW Main Entrance


Figure 3.4.11: VHW Doors at Wings

Figure 3.4.12: VHW Kitchen

Structural

The structural systems of the 1983 building are described as follows:

Foundations: conventional spread footings on native soils.
Floors: Main floor slab on grade and steel framed over basements, basement floor slab on grade.
Roofs: Steel framed.
Walls: Brick veneer on steel stud walls.
Code Compliance: The 1983 building does not comply with the 2012 IBC.

This building is in good condition. I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing well as there is no evidence of any damaging settlement or heaving in the building. The floor framing is performing well. The floors do not show any excessive deflection or vibration under foot traffic. The roof framing is also performing well. There is no evidence of excessive deflection of roof framing members.

There is some minor maintenance that should be performed on the masonry mortar joints is isolated areas. Some mortar joint damage is evident that can be repaired by re-pointing.

This building was designed to have positive load paths for transmittal of lateral wind and seismic loading, though the loading is lower than that required by current building codes. The building also has vertical shear elements required to resist lateral loading. This building would probably perform adequately in a significant seismic event due to this continuity and to the absence of an upper floor and the lighter weight of the roof and wall construction.

It is not necessary to update these systems provided that the buildings use is not changed, and that no existing structural elements of the building are significantly revised.

There is not an area of the building that is officially designated as an "Emergency Shelter" to be used in case of emergency such as severe windstorm or tornado.

The area that is probably the best place to be in such an event would be the basement of the adjacent 1973 building. There is not an area within this building that could meet the code requirements of an "Emergency Shelter".

Mechanical

Plumbing Water

The building's bathrooms (which are individual residence bathrooms) appear to be mostly original fixtures. Hot water is provided by main domestic hot water heater plant in basement mechanical room of the 1973 Building which was renovated in 2009/10. A temperature limiting device on piping main in the basement provides tempered water to residence fixtures.

All fixtures are old but in fair condition. No point-of-use temperature limiting devices were seen at the individual fixtures. No problems with hot water supply or cold water supply were reported by facility staff upon inquiry.

Piping and fixtures are in fair shape. Recommend replacing fixtures with make/models consistent with those recently installed in the 1941 building to standardize parts inventory for the campus and installing individual temperature limiting devices should be installed at the lavatories to provide 110°F max. water.

Plumbing Sewer

The building's bathrooms (which are individual residence bathrooms) appear to be mostly original fixtures. No problems with the sanitary sewer drainage were reported upon inquiry.

Piping and fixtures are in fair shape. Recommend replacing fixtures with make/models consistent with those recently installed in the 1941 building to standardize parts inventory for the campus.

HVAC

Heating is provided by hydronic finned tube radiation and heating coils in the horizontal fan coils fed by the central boiler plant in the basement mechanical room of the 1973 Building which was renovated in 2010. The finned tube cover is old and damaged (scratches, dents and missing end caps) in places. The age of the finned tube is unknown but is anticipated to be past its service life expectancy of 25 yrs. Terminal heating equipment and cooling only fan coils are past their expected service life span. Recommend replacing the finned tube radiation units, cabinet unit heaters, fan coils and exhaust fans.

Cooling is provided by ceiling concealed, horizontal fan coils with chilled water coils fed by the central chiller in the basement mechanical room of the Kitchen-Dining Building. The horizontal fan coils are in fair condition, but are original and are past their service life expectancy of 15 yrs.

Restroom exhaust is provided by central exhaust fans mounted in the ceiling and ducted to the individual bathrooms. Central bathroom exhaust fans appear to be original and are at the end of their service life expectancy. Recommend providing mechanical ventilation for the residences.

Mechanical ventilation is provided by the horizontal fan coils serving the corridors and public spaces. Outside air is drawn from louvers through ductwork.

The smoking shelter is equipped with packaged terminal air conditioners (PTACs) mounted through the glass walls to provide heating/cooling/ventilation. The PTACs in the smoking shelter were reportedly a constant maintenance problem. The smoke build-up severely shortens their life

expectancy. The shelter is a predominantly glass enclosure which renders the system choice not very energy efficient. Recommend removing the smoking shelter PTACs and installing an energy recovery ventilator (ERV) with direct/indirect evaporative cooling.

Temperature controls are a pneumatic system. Pneumatic controls are in good condition. Recommend replacing existing pneumatic controls with DDC controls and tying into a Campus Automation System for campus wide monitoring/trending/control capabilities.

No comfort issues in the residences were reported by the facility staff upon inquiry.

Fire Sprinkler

The building is fully sprinkled with a wet system. The sprinkler system appeared to be in good condition. However, the heads were a different type than other buildings on the campus. Sprinkler system appears to be in good condition. Recommend replacing heads to provide a consistent head type throughout the campus.

Code Compliance

IPC requires fixtures utilized for handwashing purposes to be limited to 110°F supply water temperature by an ASSE 1070 compliant temperature limiting device.

Electrical

Power System

The power distribution system is original to the building and consists of one 1200 amp distribution board and multiple branch panelboards. The building is fed from the MDP in the boiler room. The electrical distribution system has typically exceeded its useful life expectancy and doesn't have physical capability to add breakers/switches for expansion if necessary. The MDP in the boiler room that feeds this building was installed in 2002 and appears to be in good condition. Replace the existing electrical distribution in it's entirety including main distribution and branch panelboards. Include spare capacity for potential future work.

The entire building, including the other buildings/wings of this facility, is generator backed up via three on site paralleled natural gas generators installed in 2001.

Power is provided by the local utility company via the 1600 amp distribution board in the Boiler Room. Panelboard directories are present however, their accuracy cannot be verified. Provide accurate panelboard directories. Provide one-line diagrams for each building. Branch wiring is typically copper and in good condition. Branch wiring appears in good condition and can remain. Receptacles are not labeled to indicate the circuit serving them. Provide circuit labeling for receptacles.

Lighting System

The lighting is original to the building. There is no lighting control system. Typically, the lighting consists of fluorescent luminaires with T-12 lamps. Limited incandescent lighting was observed.

There is no building wide lighting control system. Wall mounted toggle switches are used to control the lighting. Replace the luminaires in their entirety with up to date fluorescent T-8 lamping or as an option, retrofit the existing luminaires with new electronic ballasts and T-8 lamps. Replace the limited incandescent lighting with LED sourced luminaires or as an option, replace the incandescent lamps with compact fluorescent lamps. Replace wall mounted toggle switches with occupancy sensor controls for smaller rooms, offices, janitor closets, etc.

Emergency egress lighting and exist signs are present.

Fire Alarm

The fire alarm is stand alone Notifier system upgraded in 2001. The fire alarm control panel is located in this building. The fire alarm system consists of a Notifier fire alarm control panel, limited smoke detection, manual pull stations at exits and horn strobes. The system appears to be in good condition. Verify fire alarm system is tested per NFPA guidelines.

Code Compliance

Ground Fault Receptacles (GFI) were not typically installed adjacent to sinks per the National Electric Code. Replace standard receptacles with GFI type per NEC requirements.

3.5 Kitchen / Dining VH 5

Architectural
Refer to VH 4 1983 Building

Structural
Refer to VH 4 1983 Building

Mechanical

Plumbing Water

The building's facilities appear to be mostly original fixtures. Hot water is provided by main domestic hot water heater plant in basement mechanical room of the 1973 Building which was renovated in 2009/10. All fixtures are old but in fair condition. No point-of-use temperature limiting devices were seen at the individual fixtures. No problems with hot water supply or cold water supply were reported by facility staff upon inquiry. Piping and fixtures are in good shape. Recommend installing individual temperature limiting devices at the hand sinks to provide 110°F max. water.

Plumbing Sewer

The building's facilities appear to be mostly original fixtures. There is a ground water sump pump. No problems with the sanitary sewer drainage were reported upon inquiry. The basement floor does not contain floor drains and the floor does not slope to the sump pump. Therefore, when there is groundwater infiltration, there is standing water in much of the basement. Furthermore, the unit is a simplex system, with no alarm system. Piping and fixtures are in good shape. Recommend installing a second simplex sump pump at the low end of the basement floor and add high water alarms to both the new and existing systems, tied into the building control system to indicate pump status and alarms.

Oxygen Storage

The resident oxygen tanks are currently stored in the loading dock area. There are some oxygen tanks in the middle of the floor of the delivery area/some just outside the delivery area on the loading dock. There is no ventilation means other than the overhead and man door (both of which were closed) for the internal stored bottles. There were approximately 20 B-tanks, 16 a little larger tanks (size not verified), and 20 taller tanks (size not verified). Recommend providing a dedicated oxygen storage room with ventilation means.

HVAC

The campus chiller is located in the basement mechanical room. It is a water cooled chiller with a cooling tower located on the west side of the Kitchen-Dining Building at ground level. The campus chiller is in fair condition but is past its service life expectancy of 20 yrs. The chiller plant does not provide any redundancy as there is one chiller, one cooling tower, one condenser pump and one chilled water pump. The basement mechanical room has ample space for expansion of the system. The chiller plant is past its service life expectancy and provides no redundancy and likely no extra capacity for expansion. Recommend replacing chiller, cooling tower, and pumps with new equipment that has multiple components (i.e. cooling tower that has multiple sections, chiller with multiple compressors, duty/stand-by pumping arrangement, etc.) or multiple units. In either case, the new equipment should be sized for at least 150% the current cooling load to provide building expansion capability and better performance upon failure of a component.

Heating is provided by a heating coil in the central air handler in the basement of the Kitchen-Dining Building fed by the central boiler plant in the basement mechanical room of the 1973 Building which was renovated in 2010. The central air handler is original and in fair condition. The unit has a low rumble that can be heard in the Activities room above. It is past its service life expectancy.

Cooling is provided by the central air handling unit mentioned above with chilled water coils fed by the aforementioned campus chiller. The air handling unit is past its service life expectancy and is loud. The unit should be replaced and the new unit evaluated for the need of sound attenuation.

Kitchen hood exhaust is by roof mounted exhaust fans made-up by a gas fired make-up air unit in the ceiling of the kitchen. The kitchen make-up air unit was not observed, but the gas heat exchanger was replaced approx. 5 yrs. ago according to facility staff. The kitchen hood exhaust fans were not observed, but the facility staff indicated they are in fair condition and have no problems with them.

Mechanical ventilation is provided by the aforementioned air handling unit. Outside air is drawn from louvers through ductwork. Terminal heating equipment and fan coils are past their service life expectancy. Recommend replacing the finned tube radiation units, cabinet unit heaters, fan coils and exhaust fans.

Temperature controls are a pneumatic system. Pneumatic controls are in good condition. Recommend replacing existing pneumatic controls with DDC controls and tying into a Campus Automation System for campus wide monitoring/trending/control capabilities.

The replacement of the gas heat exchanger in the kitchen make-up air unit has extended its service life expectancy. So recommend replacing the unit in the next 5-10 years.

No comfort issues in the building were reported by the facility staff upon inquiry.

Fire Sprinkler

The building is fully sprinkled with a wet system. The sprinkler system appeared to be in good condition. However, the heads were a different type than other buildings on the campus. Sprinkler system appears to be in good condition. Recommend replacing heads to provide a consistent head type throughout the campus.

Code Compliance

IPC requires fixtures utilized for handwashing purposes to be limited to 110°F supply water temperature by an ASSE 1070 compliant temperature limiting device.

Electrical

Power System

The power distribution system is original to the building and consists of one 400 amp 84 circuit branch panelboard fed from the MDP in the boiler room. The electrical distribution system has typically exceeded its useful life expectancy and doesn't have physical capability to add breakers/switches for expansion if necessary. The MDP in the boiler room that feeds this building was installed in 2002 and appears to be in good condition. Replace the existing electrical distribution in its entirety including main distribution and branch panelboards. Include spare capacity for potential future work.

The entire building, including the other buildings/wings of this facility, is generator backed up via three on site paralleled natural gas generators installed in 2001. Refer to the 1941 Building write-up above regarding the generator. Power is provided by the local utility company via the 1600 amp distribution board in the Boiler Room. Panelboard directories are present however, their accuracy cannot be verified. Provide accurate panelboard directories. Branch wiring is typically copper and in good condition. Branch wiring appears in good condition and can remain. Receptacles are not labeled to indicate the circuit serving them. Provide one-line diagrams for each building. Provide circuit labeling for receptacles.

Lighting System

The lighting is original to the building. Typically, the lighting consists of fluorescent luminaires with T-12 lamps. Limited incandescent lighting was observed. Replace the luminaires in their entirety with up to date fluorescent T-8 lamping or as an option, retrofit the existing luminaires with new electronic ballasts and T-8 lamps. Replace the limited incandescent lighting with LED sourced luminaires or as an option, replace the incandescent lamps with compact fluorescent lamps.

There is no lighting control system. There is no building wide lighting control system. Wall mounted toggle switches are used to control the lighting. Replace wall mounted toggle switches with occupancy sensor controls for smaller rooms, offices, janitor closets, etc.

Emergency egress lighting and exist signs are present. Provide a building wide lighting control system for areas not controlled via wall mounted occupancy sensors. Recircuit existing branch lighting circuits to be controlled by the new lighting control panel.

Fire Alarm

The fire alarm is stand alone Notifier system upgraded in 2001. The fire alarm system consists of a Notifier fire alarm control panel, limited smoke detection, manual pull stations at exits and horn strobes. The system appears to be in good condition. Verify fire alarm system is tested per NFPA guidelines.

Code Compliance

Ground Fault Receptacles (GFI) were not typically installed adjacent to sinks per the National Electric Code. Replace standard receptacles with GFI type per NEC requirements

Several receptacles serving kitchen equipment mounted directly to the floor were observed. Reinstall receptacles serving kitchen equipment mounted 6" above the floor. Provide stainless steel collars to accommodate floor mopping without damaging the receptacles or inducing water into the receptacle.

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3.6 2001 Addition VH 6

Architectural
No report available.

Structural
Facility Description
The structural systems of the 2001 building addition are described as follows:

Foundations: conventional spread footings on native soils.
Floors: Main floor slab on grade.
Roofs: Steel framed.
Walls: Brick veneer on steel stud walls.
Code Compliance: The 2001 building does not comply with the 2012 IBC.

This building is in good condition. I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing well as there is no evidence of any damaging settlement or heaving in the building. The floor slabs are performing well. The floors do not show any signs of settlement or heaving. The roof framing is also performing well. There is no evidence of excessive deflection of roof framing members.

This building was designed to have positive load paths for transmittal of lateral wind and seismic loading, though the loading is lower than that required by current building codes. The building also has vertical shear elements required to resist lateral loading. This building would probably perform adequately in a significant seismic event due to this continuity and to the absence of an upper floor and the lighter weight of the roof and wall construction.

There is not an area of the building that is officially designated as an "Emergency Shelter" to be used in case of emergency such as severe windstorm or tornado. The area that is probably the best

place to be in such an event would be the basement of the adjacent 1973 building. There is not an area within this building that could meet the code requirements of an "Emergency Shelter".

Mechanical

No report available.

Electrical

No report available.

3.7 Superintendent's Residence VH 7

Architectural

Recommendations and Conclusions

Generally this building is in good condition and provides a nice complimentary function to the campus, allowing the Superintendent to stay on campus and be in close proximity to the buildings, grounds, staff and residents. Although due to the vintage of this facility it is somewhat dated in appearance and architectural style, it has been well maintained and remodeled from time to time. This building will be serviceable well into the future with continued maintenance.

Facility Description

The Superintendents Residence is a typical ranch style single family home structure. It has a full basement and a garage. It offers comfortable living quarters on campus for the Superintendent. Its location is just east of the 1941 building. It has recently been provided with a new asphalt shingle roof, and a flooring and cabinetry replacement project.

Interior

The majority of the interior of the building consists of painted gypsum board on wood stud wall.

Exterior

The exterior cladding of this building is painted residential siding. The windows are modern double paned windows. Landscaping is limited, and is generally grass up to the foundation. Access to this building is by a door with a concrete stoop. The building is not ADA accessible. Access to the basement is via interior stairs. The exterior finishes of this building are in good condition. The exterior of this building is in good condition.

Roof

The roof of this building is comprised of quality architectural asphalt shingles. The architectural asphalt shingle roofing is in excellent condition, and has many years left in the current warranty. The roofing of this building is in excellent condition.

Floors/Ceilings/Walls

The floor, wall & ceiling finishes in this facility are in good to excellent condition. It is believed that the asbestos containing materials may be present in the flooring. The floors, ceilings and walls in this facility are in good condition.

International Building Code

This building appears to be in good condition and in compliance with the code for the facilities current use. The use of this building should continue as is there are no code compliance issues.

Compliance with Americans with Disabilities Act

This building is not handicapped accessible. There is a step at the front door, there is a full basement with no accessibility, the toilets are not ADA compliant, kitchen casework and appliances are non-ADA. It is built as a typical residence, with no attempt to achieve ADA accessibility.

Figure 3.7.1: VHW Superintendent's Residence

Structural

No report available.

Mechanical

No report available.

Electrical

No report available.

3.8 Warehouse Building & Shops VH 16

Architectural

Recommendations and Conclusions

Generally this building is in great condition and serviceable well into the future with continued maintenance. There has been discussion of adding onto this facility with an addition that would house vehicle maintenance and other general maintenance functions. This would be a replacement of the dilapidated shop that now occurs near the generator sets behind the 1941 Building. Conceptual plans for this shop addition have been initiated and are being considered by the Department of Health at this time.

Facility Description

The Warehouse Building is a new structure that was built in 2001 – 2002. Its architectural form was intended to mimic the original historic barracks buildings on site, which were previously used for this warehousing function. It is a pole barn structure, with asphalt shingle roof and cementitious siding. It is a modern facility with very few if any problems. It is used for both central warehousing for the facility, and also for personal belongings storage for the residents. Other small ancillary buildings that exist on campus include;

- The old shop.
- The new shop.
- Miscellaneous storage buildings and bus barn.

Interior

The majority of the interior of the building consists of pre-finished metal panels.

Exterior

The exterior cladding of this building is cementitious siding (Hardi-Board) with an extended warranty. The windows are modern double paned windows. There is an elevated loading dock with exterior stairs to one side, and a large garage door for delivery access. Landscaping is limited, and is generally grass up to the foundation. Access to this building is by a door at grade level or the exterior stair up to the dock level. The building is ADA accessible. The exterior finishes of this building are in excellent condition due to the new construction. The exterior of this building is in good to excellent condition.

Roof

The roof of this building is comprised of quality architectural asphalt shingles. The architectural asphalt shingle roofing is in excellent condition, and has many years left in the current warranty. The roofing of this building is in excellent condition.

Floors/Ceilings/Walls

The floor, wall & ceiling finishes in this facility are in good to excellent condition, as a result of the new construction. The floors, ceilings and walls in this facility are in good to excellent condition.

International Building Code

This building appears to be in good condition and in compliance with the code for the facilities current use. The use of this building should continue as is there are no code compliance issues.

Compliance with Americans with Disabilities Act

There is handicapped access to this building via the door at grade level. No known issues.

Figure 3.8.1: VHW West Elevation

Figure 3.8.1: VHW Southwest Elevation

Figure 3.8.1: VHW South Elevation

Figure 3.8.1: VHW Old Shop

Figure 3.8.1: VHW New Shop

Figure 3.8.1: VHW New Shop

Structural

The structural systems of the Warehouse building are described as follows:

Foundations: conventional spread footings on native soils / Post Framed.
Floors: Slab on grade.
Roofs: Wood framed.
Walls: Wood framed / Post Framed.
Code Compliance: The Warehouse Building does not comply with the 2012 IBC.

This building is in good condition. The building was constructed in 2001. I did not observe any signs of distress in any of the buildings structural systems. The foundation is performing adequately as there is no evidence of any recent settlement or heaving in the building. The floors are performing adequately. The floors do not show any signs of recent settlement or heaving. The roof framing is also performing well.

This building was specifically designed to have positive load paths for transmittal of lateral wind and seismic loading. This building would probably perform adequately in a significant seismic event.

This building does not have a location that should be used as an "Emergency Shelter".

Mechanical

Plumbing Water

The building's facilities were built in 2002/2003.

Plumbing Sewer

The building's facilities were built in 2002/2003.

HVAC

The building is served by in-floor radiant heat.

Electrical

The building was built in 2001 and was not included in this report.

Appendix 4.1
Veterans Home of Wyoming — Site Map
Buffalo, Wyoming

Appendix 4.1
Veterans Home of Wyoming — Site Map
Buffalo, Wyoming

	Name
VH 1	OLD HOSPITAL BUILDING
VH 2	1941 EAST BUILDING
VH 3	1973 WEST BUILDING
VH 4	KITCHEN / DINING
VH 5	1983 NORTH BUILDING
VH 6	2001 BUILDING ADDITION
VH 7	SUPERINTENDENT HOUSE
VH 8	GAZEBO
VH 9	GREEN HOUSE
VH 10	GARAGE SHOP
VH 11	SHOP MAINTENANCE
VH 12	BUS BARN
VH 13	STORAGE SHED
VH 14	STORAGE SHED
VH 15	DAIRY BARN
VH 16	WAREHOUSE

Appendix 4.2 Project Directory

Client:	**State of Wyoming – Department of Administration & Information**			
Project:	**Department of Health – Facility Master Plan**			
Owner Project	PS0639	HDR Project	051 203605	
Purpose:	**Team Directory**	Phase:	Master Plan	
Document Date:	November 14, 2013			
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