

Petersburg Medical Center

Community Health Needs Assessment

April 2022



Table of Contents

				• • • • •

Executive Sur	nmary
About Peters	ourg
Medical C	enter
Assessments	

.1 4. 11

Assessme	ent Metho	dology	17
Collabora	tions & Co	ommunity	Input. 17

Petersburg Medical Center Overview

Hane realized

I

Programming	.25
Wellness Activities	20
Staffing	.23
New Hospital Building	36
PMC Usage	39

4

11

Community Survey Individual Focus Interviews Master Plan Volumes Fand 2

Introduction

Petersburg Medical Center (PMC) in Petersburg, Alaska

- Mission: Excellence in healthcare services and the promotion of wellness in our community
- Vision: Petersburg Medical Center will remain committed to excellence in healthcare and responsive to community needs by being the best place for patients to receive care, employees to work, and physicians to practice medicine.
 - Professionalism Dignity Integrity Teamwork Quality

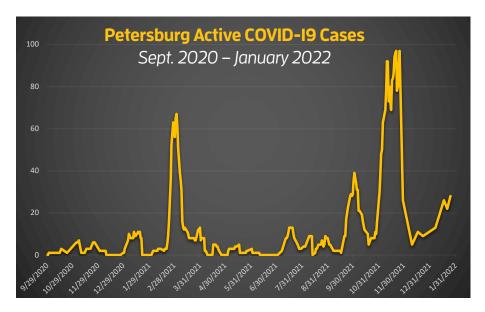
Executive Summary

Petersburg Medical Center-2018 to 2021

COVID-19

Over the past two years, rural community healthcare facilities around the country were critical in maintaining routine operations of preventative, chronic and emergency care while mitigating the ever-changing risks of Covid-I9. Petersburg Medical Center (PMC) was no exception.

PMC's efforts through the pandemic to educate, vaccinate, treat, and care for patients protected the community. Testing, vaccinations and monoclonal antibody treatment prevented severe illness and death. PMC reacted rapidly to outbreaks in the community minimizing delays in providing treatment.



PMC maintained prevention and treatment efforts to address Covid-I9 and will continue to do so until the pandemic is no longer a threat to Petersburg's community members. PMC played a key role in assisting the Borough Emergency Incident Command for COVID-I9 in keeping its citizens, workers, schools, and economy safe from the potential disastrous results of Covid-I9.

New and Ongoing Operations

PMC is a community based Critical Access Hospital. This report provides an overview of new services and projects since 2018, health care usage data the past three years, and the results from survey and community interviews conducted for this report. The information in this report is intended to help guide conversations for planning of future health care needs in Petersburg.

Community Input

As a community based Critical Access Hospital, PMC welcomes your input. Board of Director meetings are held monthly and are open to the public. Do not hesitate to contact Board Members or Phil Hofstetter, CEO with any questions, or if you would like additional information on any of the programs or services described in this report.

Questions/Comments: please email us at: pmcweb@pmc-health.org

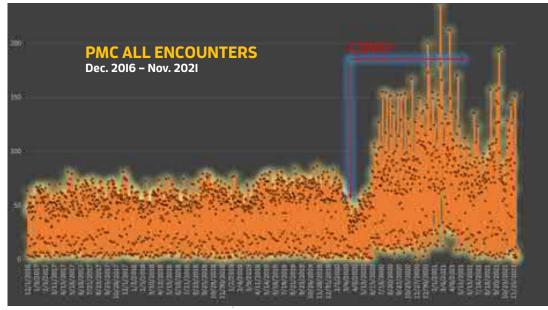


About Petersburg Medical Center

Petersburg Medical Center (PMC) is a 50I(c)3 non-profit comunity-based Critical Access Hospital (CAH) in Southeast Alaska. Located on Mitkof Island, PMC covers a territory of ~3,800 square miles with a population of ~3,200 which includes Petersburg Borough, Hobart Bay and Kupreanof census areas. Petersburg Medical Center (PMC) has been serving the Petersburg Community for over IOO years. Committed to excellence in healthcare and responsive to community needs, PMC's mission is to improve the health and well-being of the Petersburg community by being the best place for patients to receive care, employees to work, and physicians to practice medicine.

PMC was established in 1917 and came under community ownership in 1921. Petersburg, Alaska is an isolated rural community located in central Southeast Alaska's famed Inside Passage and can only be accessed by boat or plane. With a population base of 3,200, its center is located on the northern portion of Mitkof Island and Frederick Sound. The nearest city is Wrangell; accessible by ferry with flights only available that are originating from Seattle, Washington, Juneau or Anchorage, Alaska.

PMC is a I2-bed CAH, Emergency Room (ER), I5 bed Long Term Care Unit, Home Health Agency, and Primary Care Clinic. The average inpatient bed census is I-2 acute care patients per day, and 2 swing bed patients per day. Inpatient beds are also utilized for outpatient services such as overnight observation stays and infusion services (eg., chemotherapy, blood transfusions, COVID monoclonal antibody, IV medication); ER volumes are on average 70 patients per month and the clinic volumes range from 800-1000 visits per month. All 4 physicians are certified for a waiver of Medication Assisted Treatment (MAT) and have treated patients extending into other areas of southeast Alaska that include Ketchikan, Wrangell, Juneau, Kodiak, Auke Bay and Sitka. In fact, due to Petersburg's location on the inside passage ferry line and seasonal cannery production, there are people seen and treated for a variety of reasons from various demographics of the United States. PMC served 2,150 unique patients in 2018; 2,294 unique patients in 2019; and 2,625 unique patients in 2020. Since the pandemic the patient encounters in general have doubled, as is shown in the graph "patient encounters from 2016 through 2021".





Petersburg Medical Center provides the following comprehensive services:

- 24 Hour Emergency Care
- Joy Janssen Clinic Primary care center that offers routine and preventative patient care.
- Laboratory Full service CLIA certified
- Home Health State licensed, Medicare certified agency.
- Community Aging in Place Advancing Better Living for Elders (CAPABLE) Program
- Imaging Same or next day diagnostic testing.
- Long Term Care Unit 5 Star rating from the US Government's Medicare system.
- Wellness Prevention Program
- Behavioral Health Program
- Chiropractor Services
- Rehabilitation, Physical and Occupational Therapy, and Speech Language Pathology.
- Medical/Surgical Critical access hospital with I2 acute care/swing beds.
- Visiting Specialties Program: The clinic can offer colonoscopies, ENT and optometry.
- Medically Assisted Therapy (MAT) PMC is a hub for patients seeking MAT.

The program follows evidence-based guidelines for treatment protocols that physicians follow when prescribing Buprenorphine/Naloxone treatment.

Critical Access Hospital

Petersburg Medical Center is a community based Critical Access Hospital (CAH). PMC received the CAH designation in July 2001. Critical Access Hospital is a designation given to certain rural hospitals by the Centers for Medicare and Medicaid Services (CMS). This designation was created by Congress in the I997 Balanced Budget Act in response to a string of hospital closures in the I980s and early I990s. The CAH designation is designed to reduce the financial vulnerability of rural hospitals and improve access to healthcare by keeping essential services in rural communities. This is accomplished through cost-based Medicare reimbursement. There are eligibility requirements for CAHs:

- A CAH must have 25 or fewer acute care inpatient beds
- It must be located more than 35 miles from another hospital
- It must maintain an annual average length of stay of 96 hours or less for acute care patients
- It must provide 24/7 emergency care services

Previous Community Health Needs Assessment (CHNA) Findings

In June 2017, Previous Community Health Needs Assessment (CHNA) findings explored the community's priorities for its health care system and expectations for future health services. Information gathered was intended to facilitate the hospital and community in long-term strategic planning for Petersburg Medical Center, particularly in regard to construction of a new hospital. The 202I CHNA will explore how those efforts have been pursued since 2018.

2021 CHNA Methodology

A survey was conducted via Survey Monkey, with 189 respondents. To better contextualize the survey results, a series of 36 individual interviews were conducted with key stakeholders in July/August 2021. Responses were categorized into a situational assessment often referred to as a Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis. By permission, the list of the individuals is provided in the appendices of this report, as well as the full response categorization.



SERVICES

Clinic

- Acupuncture
- Audiology
- Botox
- Chiropractor
- Family Medicine
- Prenatal Care
- Behavioral Health
- Community Wellness
- Telehealth
- Nutrition Counseling
- Medication Assisted
 Treatment
- Women's health and obstetrical care
- Diabetes screening, education, and monitoring
- Department of Transportation and sports physicals
- Well-child visits
- Minor surgical procedures
- · CAPABLE TM

Rehabilitation Department

- Occupational Therapy
- Physical Therapy
- Speech Therapy

Laboratory

- Chemistry
- Hematology
- Immunohematology
- Blood Gases
- Toxicology
- Microbiology
- Immunology
- Special Chemistry

Endocrinology

- Coagulation
- Pulmonary Function Tests
- ECG
- Drug Screening

Radiology

- Diagnostic X-Ray
- General Ultrasound
- Obstetrical Ultrasound
- Vascular Ultrasound
- CT Scan
- Mammography
- DEXA Bone Density

Home Health

- Care or therapy after an operation or hospitalization
- Wound or ostomy care
- Education about the client's disease process
- Medication management
- Home Health services include:
- Skilled nursing care
- Laboratory/in-home blood draws
- Physical therapy
- Occupational therapy
- Speech therapy
- Personal care
- Aide for personal care
- Patient Navigator/Social Worker- to assist in navigation of Medicaid
- VA benefits
- Additional available resources







Acute Care Services

- Inpatient hospitalization
- Swingbed program
- Skilled inpatient
- Nursing care
- Wound care
- Rehabilitation

Outpatient Treatment

- Cardiac Stress Test
- Outpatient fluid & medication infusion
- Blood Product infusion
- Chemotherapy
- Non-Stress tests (OB)
- Wound Care

Long Term Care

- Personalized Nursing Home Care
- Individualized Activities
 Program
- Skilled Nursing Care (Medicaid only)

Emergency Services

- 24-hour Emergency care
- Medically Necessary Observation



PETERSBURG MEDICAL CENTER HISTORY

- **1917** Three-story wooden home on 2nd street was purchased and used as the local hospital.
- **1922** Facility was turned over to the City of Petersburg. A Sevenmember board of directors was voted on. The board establishes policies, hiring of the CEO and medical staff, and making financial decision regarding the hospital.
- **1954** New hospital was built.
- 1969 I2-bed long-term care wing was added
- **1984** Current acute care nursing floor and outpatient services were formed

- 1994 Physicians clinic now known as the Joy Janssen Clinic was completed and began operation.
- **2011** Joy Janssen Clinic was remodeled and expanded with a larger waiting room, and more exams rooms. The grand opening was held August 6th, 2011.
- **2017** PMC Board voted to proceed with exploration of building a new hospital. Please view our website for the latest updates.
- 2020 The new Pharmacy room completed.

2021 Survey

Standardized background information and survey questions were used to give information to and gather information from Key Informants in one-onone interviews. Some Key Informants chose to submit answers electronically or in paper form.

To better understand the concerns and perspectives of the Petersburg community relating to healthcare, the Survey Monkey in June/July 202I was widely distributed, again with I89 responses. The average responder was between the ages of 35 and 54, had completed high school and some secondary education, and identified as a white female with a household income of more than \$75,000. Some 94% of respondents had health insurance. About half had

children living at home. See the full results in the appendix.

The goal of the SWOT Analysis was to determine what in the community is missing for a healthy lifestyle all around. Sometimes you will find that homelessness is prevalent and not being addressed, people in recovery from drug or alcohol abuse have no treatment available, or there are not enough activities for youth resulting in them engaging in unsafe behaviors.

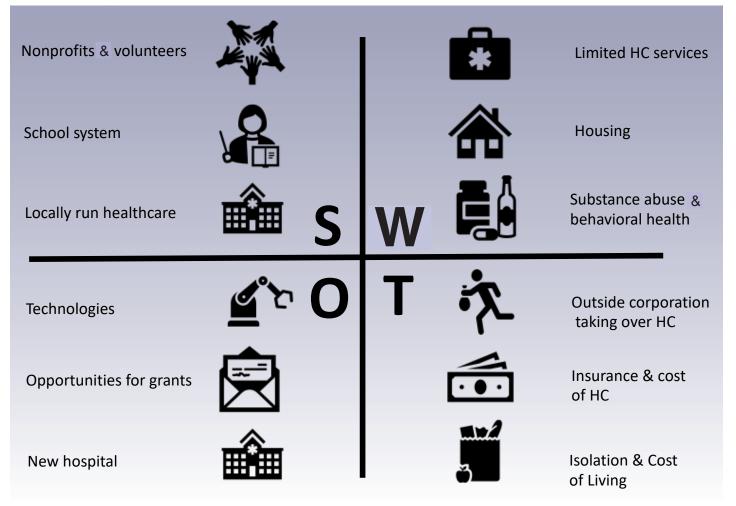
To dig into those types of issues, the goal was to determine which wraparound services community



Introduction

members believe need to be addressed and supported. The SWOT Analysis focused on not only the healthcare system, but the strategies used to address preventative healthcare issues in the community. PMC aims for excellence as a hospital, with its doctors and healthcare services, and also strives for excellence in all services that help keep the community safe, healthy and thriving.

2021 Findings



Introduction





Leadership

From The Chief Executive Officer



Phil Hofstetter PMC Chief Executive Officer

On New Year's Eve of 2021, Phil Hofstetter, the CEO of Petersburg Medical Center sent an email to his staff. With Phil's permission, his message is being shared in this report.

We are nearing the last hours of 202I, and despite the enormous challenges this year in managing COVID, PMC was able to withstand, endure, excel and in some cases, thrive. We have both lost and gained staff, been criticized and revered, grown and downsized, but at the end of the second year of a pandemic we have grit, and although we've struggled, we've accomplished.

The struggles of the pandemic have allowed PMC to successful-

ly manage two major outbreaks, vaccinate most of Petersburg against COVID, treat patients, and work countless hours to prevent COVID death and severe outcomes. Prevention has always been hard to measure in healthcare, and never rewarded.

It is common for us as humans to reflect on our past experiences to help us overcome current challenges. This past year, I often pulled from this image taken in 2009. I took the photo of my fellow competitor and friend Jeff Oatley during a trip where a group of 8 of us got caught in a huge snowstorm over Rainy Pass on the Iditarod trail. We were in many feet of snow pushing bikes. It took us I7 hours to go I mile. Teamwork, grit and ridiculousness of sharing a common challenge got us through it.

That experience seems a lot like healthcare in 202I. Imagine what we can overcome in the future!



2022 will be absolutely absurdely awesome!!!!



Board of Directors

PMC Board members are elected annually in the Petersburg Borough Elections in October. Donating their time and talents, the meetings are held on the 4th Thursday of each month at 5:00 p.m. in the PMC's Dorothy Ingle Conference Room.



Kathi Riemer Board member since October 2018. Retired Educator. Term Expires October 2024 kriemer@pmcak.org



George Doyle, Vice President Board member since October 2016. Owner/Broker Petersburg Properties LLC . Term Expires



Marlene Cushing, Secretary Board member since November 2014. Retired Public Health Nurse. Terms Expires October 2023 mcushing@pmcak.org



Jerod Cook, President

gdoyle@pmcak.org

October 2022

Board member since October 2017. Former NOAA/Nat'l Marine Fisheries/Offices of Law Enforcement. Self Employed Sawmill Operator. Term expires October 2023 jcook2@pmcak.org



Cindi Lagoudakis Board member since November 2017 Retired Forest Service. Self Employed Artist. Term expires October 2022

clagoudakis@pmcak.org



Joe Stratman

Board member since October 2019. Alaska Fish and Game. Shellfish Project Leader SE Alaska. Term expires October 2022 jstratman@pmcak.org



Heather Conn

Board member since October 2021. Principal, Rae C. Stedman Elementary School . Term expires October 2024 hconn@pmcak.org





Community Health Needs Assessment Process

Assessment Methodology

Since 2018 new programs and services at the Petersburg Medical Center have addressed priorities in the community's health care system that were presented in the 2006-2017 Community Needs Assessment. Programs have included treatment of substance abuse and behavioral health services, and PMC has also increased the number of healthcare providers and made improvements to delivery

of services with the implementation of telehealth and a new Electronic Health Records System. Many of these new projects were grant funded, and can be reviewed in the Overview section of this report.

In addition to identifying priorities for Petersburg's health care system, the 2018 report purpose was to gather information to facilitate the hospital and community in long term strategic planning for the construction of a new hospital. The next steps for planning were to conduct a Master Plan that could address the feasibility of that step. The Master Plan was funded by a grant from the Denali Commission and completed by the NAC Architect Team in 2020. Highlights of the Master Plan are provided in this report, and a copy of the full Master Plan is available in the appendices.

In the 2018 Community Health Needs Assessment, individual focus group interviews were conducted. In 2021, in addition to conducting interviews with key stakeholders, a survey was developed to expand input throughout the community. The Preceptors of Community Health Survey was conducted via Survey Mon-

key. (See the full questionnaire and results in the appendices).

Collaborations and Community Input

Focus Interview Results

The individual interviews were conducted in an analysis format known as a Strengths, Weaknesses, Opportunities and Threats (SWOT) format. The results are shown in the following graph. The full report and list of the 36 key stakeholder participants is available in the appendices.

	STRENGTHS	WEAKNESSES
INTERNAL TO PETERSBURG	 Locally Run Healthcare School System Non-profits, volunteer, and partnerships Long-term physicians and nurses we know and trust Healthcare services PMC Staff and Management Access to subsistence foods and outdoor recreation Local COVID Response Community Infrastructure Close Knit Community that Cares PHC Billing/Insurance: Local Businesses Local Media 	 Substance Abuse & Behavioral Health Housing Limited Healthcare Services Social and Economic Divide/Lack of Diversity PMC Patient Experience Childcare PMC's Aging Facility Workforce shortages (local/national) Awareness of Resources PMC Management and Public Perception Borough Parks & Recreation Food availability and insecurity Assembly & Borough Leadership Volunteer Base Services for Elders Generational Shifts (Locally) Accessibility
	OPPORTUNITIES	THREATS
EXTERNAL TO PETERSBURG	 Technologies Opportunities for Grant Funding New Hospital Partnership with Outside Healthcare Organization Increasing Healthcare Services & Visiting Specialists Local Business Opportunities Partnerships Locally PMC Public Relations Insurance Involve/Inform Community on Considering Outside Healthcare Agency Job Training and Education 	 Outside Corporation Taking Over Local Healthcare Insurance & Cost of Healthcare Isolation/Climate & Cost of Living COVID State/Federal Funding Cost of New Hospital Shifting Demographics Community Uninformed Regarding Outside Healthcare Corporation Options Technology Local Economy



Survey Results

Both the survey and focus group responses agreed on several key elements. Those that are a main concern in community conversations today, include the following priorities: I) Maintain a community run hospital; 2) support for a new building.

There were I5 questions in the community survey. A copy of the questions and results are provided in the appendices, which include graphs to visually describe the responses to the survey.

The survey was open for several weeks in the summer of 2021; I89 community members participated. The average responder was between the ages of 35 and 54, identified as a white female, had completed high school and some secondary education, and had a household income of more than \$75,000. Some 94% of respondents had health insurance. About half had children living at home.

State of the Community

Respondents overwhelmingly cited Petersburg's school system (84%), and the community's natural beauty (96%) as strengths, and, nearly as overwhelmingly, named housing as an area that needs improvement (90%). Other areas of strength included community aspects such as helping each other (89%), religious and spiritual opportunities (88%), cultural and arts opportunities (61%), and social networks (59%). Areas members marked for improvement included access to job training (83%), substance abuse treatment (82%), childcare (84%), and housing.

To a question about the factors that had most negatively impacted the health of respondents and their families and the health of the community, respondents overwhelmingly (98%) thought that substance abuse had a negative impact on the community [though little on their own families (I3%)]. The biggest concern for families of the respondents was the availability of specialists (69%). Other factors that were rated as being of high negative impact to the respondents themselves and their families were dental health (65%), obesity (65%), physical activity (59%) and age-related issues (56%). Factors that were rated as highly negatively impacting the community included sexually transmitted diseases (97%), infectious diseases other than COVID-I9 (88%), COVID-I9 itself (91%), and tobacco use (85%).

PMC Usage

Ninety percent of the people surveyed responded that they used the Joy Janssen physician's clinic, and 60% used the laboratory service in the last year, some of which are new PMC services since 2019. Forty percent of respondents utilized radiologic imaging in the last year, while about a third of the respondents indicated that they or a family member had used the emergency department last year, and about the same proportion used physical, occupational, or speech therapy.

Other new services established since 2019 used by the respondents included behavioral health/mental health services (IO%), home health care (6%), audiology (I2%), and medical nutrition therapy (2%).

COVID-I9 Pandemic Response

The ongoing COVID-I9 pandemic also featured in respondents' answers, with three-quarters indicating they or a family member had used PMC services for COVID-I9 testing and vaccines. Twenty percent of respondents used the local telehealth service, and another 5% used telehealth to access out-of-town specialists. An averaged 43% of respondents also used PMC and the local Emergency Operation Center's expanded pandemic services, which ranged from assistance during quarantine to consulting the COVID Information Hub website. In all,

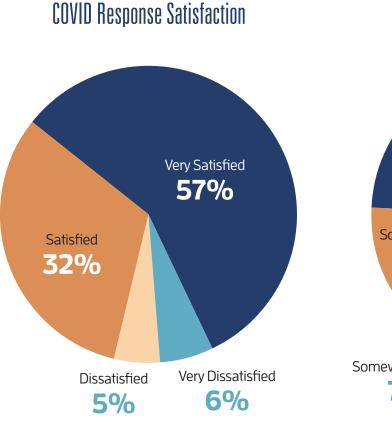


89% of respondents reported that they were satisfied or very satisfied with the community response to COVID-I9.

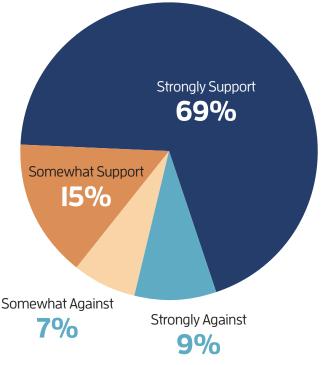
Services with the lowest percentage of respondents indicating they had used them in the past year logically tended to be those that served narrow demographics: prenatal care (5%), in-patient acute care (6%), long-term care (2%), and the aging-in-place service (1%).

Implications for the Future

Survey respondents were highly in favor of maintaining a rural, community-run hospital, with 83% answering the "supported" or "strongly supported" PMC's efforts.



Support for PMC Efforts to Maintain a Rural Community-run Hospital





Historical: Previous Community Needs Assessments

The Petersburg community was last surveyed for a Community Needs Assessment in 2018. In the resulting report (Petersburg Medical Center Long Term Planning: Community Needs Assessment and Forces of Change Analysis FY 2018), the findings are also displayed grouped in a SWOT analysis, which is useful for seeing patterns of concerns. It should be noted, however, that the 2021 results do not include the 189 community members that were surveyed. Comparing the 2018 and 2021 recommendations by the 36 focus group members interviewed, we can see that the 2021 key interview respondents of 36 members took a much broader

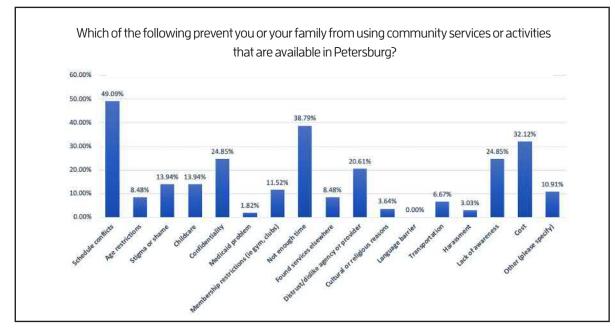
Based on the 2018 Community Assessment, it was noted that some issues of concern for Petersburg as determined by the 36 individuals interviewed have remained constant. A 1991 community needs assessment recommended recruiting more full-time physicians and developing mental health services, in addition to other services. Behavioral/mental health and substance abuse are still among the top concerns of residents, as they were in 2013, when that analysis noted that Petersburg residents value a sense of community and that substance abuse was a priority concern. Also, While 2021 recommendaview of the health care situation in Petersburg than their 2018 counterparts, including more than just the PMC in their analysis of the community's factors that impact health. The potential for a new hospital is still high on the list of opportunities present, but now the chances for funding are seen as more optimistic, with new grants available and new technologies and services able to keep financially beneficial services local. Where the 2018 recommendations were concerned with keeping the hospital solvent, the 2021 recommendations are focused on keeping the hospital under local, community control.

	2018	2021
Strengths (top 3)	 PMC provides a vital function in community PMC provides quality care PMC is in a stable economic state 	 Locally run healthcare School system Non-profits, volunteer, and partnerships
Opportunities (top 3)	 Transparency appreciated during interviews Land potentially available for building site Build the hospital we want 	 Technologies Opportunities for grant funding New hospital
Weaknesses (top 3)	 Ambivalence in replace vs remodel decision Borough relationship unclear Financing Issues 	 Substance abuse & behavioral health Housing Limited healthcare Services
Threats (top 3)	 Petersburg Borough assembly & community not supportive of increase in taxes and new buildings Medicaid funding at risk Petersburg residents often leave town for health care 	 Outside corporation taking over local healthcare Insurance & cost of healthcare Isolation/Climate & cost of living

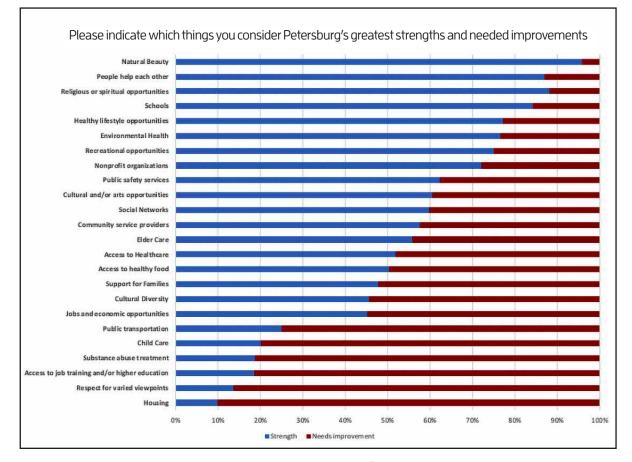
tions took residents' cost of living and healthcare/ insurance costs into account, a 200I assessment focused on hospital finances, recommending add-

ing or expanding feasible PMC services and collaborating with other health facilities, in addition to other issues.



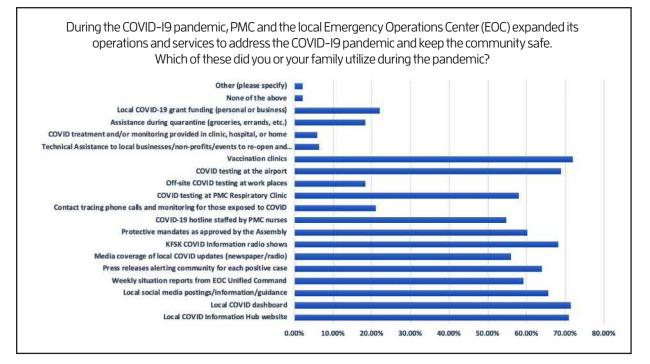


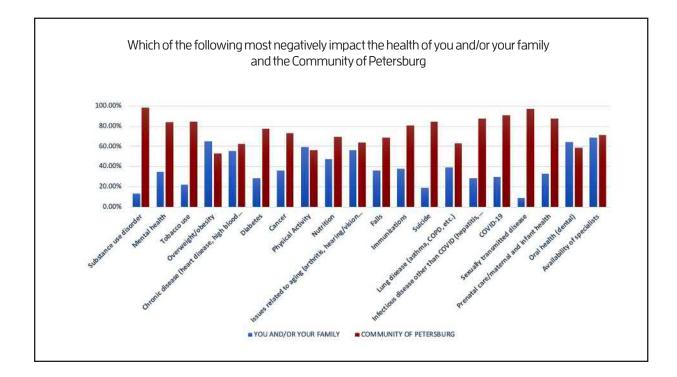
These graphs provide results from the 2021 Community Survey included in this report





These graphs provide results from the 2021 Community Survey included in this report









Petersburg Medical Center Overview

1

RIN

9

New Programs since 2018

Programming

Behavioral Health

In 2018 Petersburg Medical Center and Petersburg Mental Health Services (PMHS) partnered to begin an integrated Primary Care and Behavioral Health Project to identify the possibilities and benefits of implementing a formal integrated model of care within the PMC's outpatient Joy Janssen Clinic. In 2019 after the full demand and need for behavioral health services became apparent, PMC obtained grant funding for the program and hired a full-time Licensed Clinical Social Worker (LCSW) to work with individuals who needed support for substance use or behavioral health issues. With other clinicians, including a physician in the Joy Janssen Clinic, the team works together to address treatment needs of clients in Petersburg's unique, geographically isolated population with priorities on efficacy and culturally sensitive practices.

There are currently two clinicians in the Clinic seeing patients as part of the behavioral health team – a Licensed Clinical Social Worker (LCSW) and a Licensed Masters Social Worker (LMSW). The team continues to be supported by a full-time behavioral health associate who coordinates scheduling, logistics, and provides case management. Case management allows for the coordination of community-based services by the team in order to provide quality care that is customized according to an individual's challenges and needs to aid them to their recovery. Also, since 2018, telehealth has been a component of the delivery of the program for those individuals who preferred the privacy of telehealth to access support when needed.

Medication Assisted Treatment Program (MAT)

Petersburg Medical Center has been a hub for pa-

tients seeking Medication Assisted Treatment (MAT) since 2014 and was awarded the 2019 Golden Stethoscope Award by the Alaska State Hospital & Nursing Home Association for its medication assisted treatment program for opiate or substance abuse. The treatment aims to keep patients from relapsing and reduce the need for acute care and emergency room visits by this population.

The program, which is partially funded through grants, follows evidence-based guidelines for treatment protocols that physicians follow when prescribing Buprenorphine/Naloxone treatment. PMC has a policy that is congruent with I2.AAC 40.975 Section 67 of the Alaska State Medical Board Policies and Procedures to ensure responsible, controlled, and informed prescribing of opioid medications for chronic pain.

The PMC MAT Team consists of a behavioral health specialist, a medical assistant and four physicians—a rarity for a rural program like Petersburg's. Utilizing a motivational interviewing approach, the behavioral health provider, a licensed clinical social worker and behavioral health specialist at PMC, engages the patient and encourages an increased readiness to change. The medical assistant handles testing, and care is coordinated for treatment with a physician. Patients in the MAT program must also be enrolled for care at Petersburg Mental Health Services. It forms part of a wider spectrum of care that includes counseling, access to housing and other resources.

University of Alaska School of Nursing Partnership

In 2017, Petersburg Medical Center and the University of Alaska School of Nursing signed a memorandum of agreement that allows for the support of nursing and pre-nursing trainees who will gain experience at PMC while under the supervision of a mutually agreed upon faculty member who is also PMC staff. Trainees also have access to remote sup-



port from Anchorage-based faculty. This partnership provides skilled staffing to the medical center while also helping to train up valuable nursing staff in the unique needs of a rural Southeast Alaskan community hospital.

Much like a traditional college experience, the trainees complete coursework in semesters, including lab work and skills assessment, and graduate with an associate's degree in nursing.

Capable Program

Petersburg is the only community in Alaska that boasts the Community Aging in Place—Advancing Better Living for Elders (CAPABLE) program, which is present in I6 states. The program was made possible through a State grant followed by a grant from the Weinberg Foundation in Washington. This program is licensed through John Hopkins University and, to date, two Petersburg nurse practitioners, an occupational therapist, a handy worker and a program coordinator have received the requisite training.

CAPABLE is a participant-driven program that offers education, assistive devices and home modifications to qualified participants. It is designed to serve low-income individuals over 65 who are not eligible for Home Health Care but are at risk due to chronic conditions, such as pain medication that may cause falls, depression, addiction or other issues that will result in hospitalization, assisted living or nursing home care. Participants are 65 or older and must describe a desire to maintain their quality of life. CA-PABLE is also suitable for people who already have a support network in place but need just a bit of extra assistance.

Referrals may be made by physicians who are seeing patients repeatedly in the Emergency Room or repeated stays in the hospital for chronic illnesses that can be helped if managed properly. Participants can also self-select by contacting the hospital for information and a referral.

The goal of CAPABLE is to keep individuals independent and in their homes for as long as possible without increased medical costs. In Petersburg, the program aims to aid individuals in developing skills to problem solve on their own, and to feel safe in their homes by addressing physical, mental and structural issues. Usually, the team makes up to ten home visits. Similar to a Home Health aide, this program provides support to aging individuals so they can continue to live independently, develop skills to problem solve situations on their own going forward, and be pain free.

CAPABLE atrategies covered include:

- Improving medication management
- Problem-solving ability
 - Strength

٠

٠

- Balance
- Mobility
- Home safety
- Activities of Daily Living
- Decreasing isolation
- Decreasing depression
- Decreasing fall risk

Telehealth

Petersburg Medical Center took an early start to telehealth services, which gave PMC a head start in being able to address healthcare needs for patients isolating at home during the pandemic.

PMC Chief Executive Office Phil Hofstetter, an Audiologist, spent 20 years in Nome Alaska prior to accepting his role as the Executive Director of Petersburg Medical Center in 2018. Hofstetter has a long history with telehealth success and its ability to provide timely and affordable specialty healthcare to Rural Alaskans, which has made him a strong advocate for telehealth as a method to deliver quality healthcare. Beginning in 2018, grant funds from Premera and some state funding allowed for the structure and planning for telehealth services to be implemented in order to improve wait times, increase access to services and improve delivery. By 2020 various models had already been considered, which allowed PMC to quickly develop and implement beneficial practices during the outset of the COVID-I9 pandemic in early 2020. PMC shifted to include a community protection role.

Face-to-face encounters had to be reduced, and patient care needs had to be met in other ways. Telehealth services were greatly expanded, including the emergency hire of an additional registered nurse, which allowed the setup of a 24-hour crisis hotline. Callers could now reach an RN at any day of the day or night, which helped reduce in-person visits and allowed the community to shelter at home.

Today, telehealth adoption in fields such as audiology, behavioral health, OT, PT and SLP have been fasttracked. From a practical standpoint, two important steps were taken to promote the use of telehealth during the pandemic that weren't possible before: relaxing HIPAA regulations related to telemedicine and changing reimbursement for telemedicine, making it more widespread, consistent and closer in dollar amount to a standard visit.

Recruitment and Retention

National Health Service Corps

In 202I, the Joy Janssen Clinic's Behavioral Health Program was designated as an approved National Health Service Corps (NHSC) Site. NHSC helps health care workers find jobs in high-need communities. NHSC is a federal government program administered by the U.S. Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA), Bureau of Health Workforce (BHW). Since 1972, the NHSC has been building healthy communities, ensuring access to health care for everyone, preventing disease and illness, and caring for the most vulnerable populations who may otherwise go without care. NHSC programs provide scholarships and student loan repayment to health care professionals in exchange for a service commitment to practice in designated areas across the country with a shortage of health care professionals.

Human Resources

	2018	2019	2020	2021
Total Employees	122	130	146	145
Local Hire Rate	82%	80%	80%	75%
Voluntary Turnover	22%	23%	21%	27%
Training Hours	965.25	1598.25	I,796	1,301

NHSC's mission is to build healthy communities by supporting qualified medical, dental, mental and behavioral health care clinicians working in areas of the United States with limited access to care.

The National Advisory Council on the National Health Service Corps (NACNHSC) is a group of healthcare providers and administrators. The members of the council are experts in the issues that communities with a shortage of primary care professionals face in meeting their healthcare needs.

SHARP

Petersburg Medical Center became a SHARP-3 participant in 2021. The Health Care Professionals Workforce Enhancement Program (SHARP) addresses the increasing shortage of health professionals in the state by increasing the number and expanding the distribution of health professionals. This will help improve access to care, especially to individuals who are underserved, or in health care professional shortage areas or in rural locales. It works to enhance recruitment and retention of health professionals to serve in state-designated locations and facilities in exchange for the repay-



ment of qualifying education loans or payment of direct incentive, pursuant to a signed SHARP contract.

Wellness Activities 2018 & 2019

2018

Health & Wellness Events

PMC staff showed their support for Breast Cancer Awareness Month in October 2018 by participating in a 5k run or walk via partner organization Beat the Odds. It raised over \$20,000 to support local cancer patients. In October Petersburg Parks and Recreation hosted a community triathlon and the Halloween Hustle lifted the spirits of the Long-Term Care residents with a little spooky cheer.



Kelly Zweifel, clinic manager, checks blood pressure for Elise Kubo, RN, as part of a biometric screening.

Let Me Run, a national program for helping boys manage emotions and practice physical fitness, finished their fall season by hosting a 5k in November, followed by the PMC's debut Community Café, the first in a series of conversations encouraging community and health system cooperation. PMC rounded out 2018 by implementing lunchtime fitness sessions for center staff, via Petersburg Parks and Recreation. Available activities included circuit training, yoga, and spinning.

Mental Health First Aid

In June 2018, PMC was the site of Alaska's Area Health Education Center's (AHEC) mental health first aid training session. This eight-hour course provided staff from PMC, WAVE, Public Health, Mental Health, and the borough with resources to help recognize signs of mental illness, as well as provide initial support to individuals experiencing crisis. 2019

Hearing Screenings

PMC staff visits in January and February 2019 ensured all Petersburg elementary-age students were screened for hearing loss. Staff returned later in February to provide more in-depth testing for students who did not pass initial screenings. These students were referred for necessary care.

PMC conducted hearing screenings in 2021 that provided more in-depth testing for students who did not pass initial screenings. These students were referred for necessary care.





Community Café

PMC's Community Café meetings continued with discussion topics including technology, telehealth, and PMC's portable X-ray ("DR") machine, and featuring several prominent community speakers. The Petersburg Medical Center Foundation announced a \$25,000 endowment towards furthering PMC staff education. A popular café topic was the presentation with the advocacy director for the Alaska office of AARP, on aging and healthcare planning. Health & Wellness Activities

PMC staff took part in lunchtime fitness activities facilitated by Petersburg Parks and Recreation. PMC staff could choose from various physical training sessions during their lunch breaks, including circuit training, yoga, spin biking and Flex-Fit. A local dance studio implemented weekly adult-focused classes -in addition to its child-centric sessions, including schedules for zumba, barre, and pilates.

WAVE (Working Against Violence for Everyone) also introduced **Saturday wellness classes** for Petersburg community members in the first half of 2019. These three-hour classes met on the first Saturday of every month in the Community Center, and featured an array of seasonal themes to both build and hone new skills, as well as encourage mental clarity. Summer 2019 brought plenty of opportunities for healthy community involvement, including the Tongass Toughman Triathlon on June 29, as well as the Color Run and Bearfest Run.

The 2019 Paddle Battle

was held in July. This annual boat race, followed by a community barbe-



Paddle Battle 2019 logo Our 2019 Paddle Battle logo contest winner was Emma Engell with this logo.

cue, helps raise funds for the advanced professional health and wellness education of PMC employees. To accompany the Paddle Battle, the Petersburg Medical Center Foundation partnered with Alaska Airlines to raffle two round-trip flight tickets for 2020 travel. The drawing took place live on radio station KFSK and all proceeds went to furthering PMC staff education.

In the fall, PMC held its annual **Rainforest Run IOk** before teaming up with local partner Beat the Odds in October to host their 20th annual Race Against Cancer 5k. This walking and running event honors those who have experienced, or are currently, bat-tling cancer.



Wellness Activities in 2020 - 2021

As part of its effort to encourage a healthy community, since 2020 the Petersburg Medical Center staff holds regular wellness activities. Due to the need for social distancing during the pandemic, staff came up with some creative solutions for healthy activities that could be done at home or one on one.



Fitness Fridays

The Petersburg Medical Center Wellness Committee offered various wellness activities such as short massage sessions, fitness, and yoga routines during their lunch breaks.

Community Healthy Series

While the March onset of the COVID-I9 pandemic meant that most in-person wellness events were suspended, PMC staff and community members engaged in healthy – and socially distanced – activities following the launch of the Community Healthy Series in April 2020. The first event, an Earth Daythemed cleaning of streets, trails, and outdoor spaces took place via such local partnerships as Petersburg Public Works, as well as the local sanitation department and public school system. Subsequent activities included the virtual Circle of Life Race Against Cancer run with partner organization Beat the Odds later that month. A socially-distanced version of the beloved annual **Paddle Battle** took place at the end of June 2020, while the 202I version raised \$3000 for continued staff education.

PMC's first **Gratitude Challenge** took place in July 2020, wherein community participants engaged in three weeks of gratitude focused activities to encourage both physical and mental health.

PMC hosted its annual **Rainforest IOk** in mid-September, while the Wellness Committee highlighted Breast Cancer Awareness month in October with a designated "wear pink" day.

The weeklong ORCA (Outdoor Recreation Creation



Paddle Battle participants

PMC's wellness-centered **YouTube channel** also debuted in April 2020, which allowed PMC staff to connect directly with the Petersburg community, and June saw community and staff members participate in a "Go the Distance" challenge, wherein participants collectively logged 6,916 miles of weekly running, walking, and biking.



Phil Hofstetter, CEO and audiologist, performs a hearing screening on student Grady Walker with assistance from Bessie Johnson, medical assistant and specialty clinic coordinator, at the the Petersburg Medical Center Wellness Team's first-ever Back-to-School Health and Resources Fairs.



Petersburg Medical Center Overview

Adventure Camp) camp was also co-hosted by PMC.

The Wellness Committee debuted its first back-toschool **Health and Resource Fair**!

PMC rounded out the year in 2020 by hosting its first-ever **"Holiday Hustle,"** complete with plenty

of seasonal attire, to encourage community movement while also spreading some socially-distanced cheer to its Long Term Care (LTC) center residents.

May 202I brought a new **Employee Wellness Program**, through which PMC, in partnership with Bravo Wellness, was able to offer



Molly Platt, physical therapist, takes one of the PMC bikes out for a spin. Bikes are available for PMC employee use to encourage fitness.

its staff such resources as health coaching, fitness challenges, and recipes. Another Employee Wellness Program kicked off in November 2021 through which eligible center employees and their spouses could earn discounts on their health insurance premiums by participating in wellness programs and meeting goals, such as biometric screenings, health or wellness challenges, and preventative exams.

PMC also partnered with BetterHealth, an online counseling organization, to offer free mental health services for staff through telehealth.

PMC employees kicked the 'COVID I5' in a 6-week **"Get Physical" challenge** throughout the month of September 202I.

PMC concluded 2021 with their first-ever Thanksgiving **Turkey Trot** race that helped drive seasonal food donations.

Vaccination Clinics

PMC's Home Health staff spearheaded a drive-through free, flu vaccine clinic in 2020 and a regular vaccine clinic in 2021 and two COVID-19 vaccination clinics in January and February 2021. The latter immunized over 450 community members. PNC's Home Health staff also administered over 40 first



Jennifer Bryner, RN and chief nursing officer, joyfully opening PMC's first shipment of COVID-I9 vaccine.

COVID-19 vaccine doses to community members who couldn't leave their homes.

Hearing Screenings

PMC conducted hearing screenings in 2021 that provided more in-depth testing for students who did not pass initial screenings. These students were referred for necessary care.

New Projects

Pharmacy Project

The Petersburg Medical Center built a new Pharmacy Clean Room which will be used to store chemotherapy and other vital drugs that require special handling because they can be hazardous to staff. Funding from Rasmuson Foundation made it possible for the pharmacy to be built to the stan-



dards of the United States Pharmacopeia National Formulary. This standard is a requirement for all healthcare personnel and facilities where hazardous drugs are handled or manipulated, including their storage and distribution, and helps PMC more effectively prevent and limit exposure to hazardous materials. Without a room that meets this standard, PMC is unable to offer chemotherapy.

The Pharmacy Clean Room is now a designated area for receipt and unpacking, storage, and both sterile and nonsterile compounding. The Pharmacy Clean Room also has access to uninterrupted power sources for the ventilation systems to maintain negative pressure in the event of power loss. This now



brings PMC into compliance with new federal standards for handling and storing hazardous drugs. The hazardous drug negative pressure storage and compounding room and the associated anteroom are a core part of PMC's existing services and will allow PMC to continue to serve its population with a high quality of care.

CERNER

PMC implemented a new Cerner medical records system in 202I that increased patient security and was easier on staff to use. Cerner is one of the two largest such providers of medical records systems. A patient's medical record includes health history, physical exam information, lab results, x-rays, clinical information, notes, and many other details important to ensuring that providers understand a patient's health status and past care.

The Cerner Medical record system was implemented with the help of a team from Yellow Brick. Yellow Brick Project Managers specialize in Healthcare Project Management, using lean methodologies and change management principles. The team at Yellow Brick provided project management services and employed tools and methodologies to encourage collaboration and facilitate communications between the Cerner vendor and the PMC stakeholders. The process included implementing project-specific planning tools and establishing collaboration environments within PMC such as an intranet portal, file-sharing, distribution lists, etc.

Part of the system is a new patient portal. A patient portal is a secure online website that gives patients convenient 24-hour access to personal health information from anywhere with an internet connection. Using a secure username and password, patients can view health information such as recent doctor visits, discharge summaries, medications, immunizations, allergies, and lab results



Patients may also securely message their providers, request prescription refills, update contact information, make payments, and send and receive documents.

Information in the system is maintained by the Health Information department.

https://www.petersburgpilot.com/story/2021/12/16/ news/pmc-launches-new-electronic-records-system/II671.html

Childcare

Petersburg Medical Center was awarded a small grant through the Petersburg Community Foundation Grant Program for a "Childcare & Early Education Needs Assessment " project in 2020. The grant paid for supplies. Staff time was contributed from Petersburg Medical Center, Kinderskog/Good Beginnings, Petersburg Children's Center, and Stedman Elementary School.

The goal of the Childcare/Early Childhood Education Needs Assessment is to determine key issues and feasible solutions to strengthening Petersburg's childcare/early education system. Findings of the needs assessment and proposed solutions will be presented to community leaders in hopes of gaining support from elected officials to invest in childcare and early childhood education to improve health and wellbeing of Petersburg's youth and the economy of Petersburg.

In-kind staff time will be provided by the agencies working on this project including Petersburg Medical Center, Kinderskog/Good Beginnings, Petersburg Children's Center, and Stedman Elementary School.

Staffing

Nursing team

When patients seek any type of care at Petersburg Medical Center, they're likely to interact with at least one of PMC's 22 wonderful nurses. Where there are patients or residents, there are nurses! Nurses cover a wide range of duties. They communicate between patients and doctors; advocate for patients and residents; care for patients; administer medicine; observe and record patient behavior; perform physical exams; monitor patient recovery and progress; educate patients and their families about disease prevention and post-hospital treatment; and supervise nurse aides.

The PMC Nursing Department is led by a chief nursing officer, a long-term care manager and director of nursing, a patient care director, and a skilled nursing coordinator and case manager.

The rest of the team includes twelve full-time registered nurses, one LPN, and some traveling registered nurses. These nurses staff the long-term care, acute, skilled, and intensive care units, and care for PMC's O.B., pediat-

ric, outpatient, chemo and emergency room patients.

Long Term Care

Petersburg Medical Center's Long Term Care facility has long been an award-winning benefit to the com-



munity, earning a 5-star rating from Medicare. Residents enjoy 24-hour skilled nursing care in a cozy, home-like environment, with care provided by



licensed, caring and friendly staff. Resident safety, quality of care, and the satisfaction of our residents are the top priorities. The residents benefit from the proximity of the onsite physicians, physical therapists, speech language pathologist, audiology, and occupational therapists, laboratory and radiology suite, and a dietician. The nursing staff includes registered nurses, licensed practical nurses and certified nurse's assistants, and a full-time nurse coordinator.

Long Term Care Activities

During the COVID-I9 pandemic, the facility continued to expand and adapt its services to its residents. In 202I, with funding from a Premera grant, a new van was purchased that allows residents to ride more comfortably and can be cleaned more easily. The older van has clear dividers installed so when visitation was restricted due to COVID, care residents can visit their families without risk of spreading the coronavirus.

Activity staff are a major component of care; the Long Term Care activities staff schedule entertainment and socialization opportunities seven days a week for its residents, for example, live music, group games, baking, documentary showings, and nonalcoholic "happy hours" with mocktails, snacks and games. During the pandemic, when social distancing needed to be observed, the facility staff organized video viewings, arts and craft activities, time with the indoor garden, reading, and opportunities to keep in touch with family members and friends via phone and video chats.

Laboratory Team

The Petersburg Medical Center Laboratory is a Center for Medicare & Medicaid Services Clinical Laboratory Improvement Amendments-certified laboratory. Because of Petersburg's unique location on an island in Southeast Alaska, the PMC lab offers a diverse test menu to serve the needs of the community. The laboratory testing menu has been specifically designed to meet most routine and emergency patient needs.

Diagnostic test procedures performed on site are chemistry, hematology, special chemistry, immunohematology, blood gases, toxicology (limited), microbiology, immunology (limited), urinalysis, endocrinology (limited), coagulation, pulmonary function tests, and electrocardiogram (ECG).

Home health

Petersburg Medical Center's Home Health team is a state-licensed, Medicare-certified agency that provides doctor-prescribed, skilled services to help patients remain in the comfort of their own homes while receiving care. While patient needs and prescribed activities differ, the Home Health team's goal is for each patient to safely function independently in their own environment.

During the pandemic, Petersburg Medical Center's Home Health team went above and beyond to make sure those in the community who were not able to leave home could still receive the vaccine, and also administered the vaccine to patients at Mountain View Manor, the facility for Assistive Living and for senior living. Additionally, the home health team provided support to those with active COVID to prevent or monitor patients from developing severe illness.

The department expanded significantly during Covid-I9, and the demand for Home Health is expected to continue. The department includes three Registered Nurses (RNs), patient navigator, a team of Home Health Aides, Physical Therapists, Occupational Therapists, and Speech Therapists, who all who use their expertise to help care for people in their homes. A few examples of client needs include care or therapy after an operation or hospitalization; wound or ostomy care; education about a patient's disease process; and medication management. Rehabilitation staff also assess each patient's home setting for ways to improve safety and patient independence and daily activities. In addition, therapists design and teach home exercise programs to patients and their families, aimed at helping each patient resume normal living activities after illness or injury. A behavioral health component, infusion therapy, pediatric care, and traditional hospice services may eventually be added.

Chemotherapy team

The Petersburg Medical Center chemotherapy team focuses on cancer patient needs.

Depending on their diagnosis and individual situation, some patients come for chemotherapy treatments weekly, some come every other week, and some come every three weeks. Regardless how often they come, they spend most of their day at the facility.

PMC's Chemotherapy Team is made up of six reg-

istered nurses who work one-on-one with each patient. They coordinate with the patient's oncologist and PMC doctors to create a plan for the patient. Each patient is different. Some need intravenous or oral therapy, while others need radiation treatment. PMC offers only intravenous and oral therapies; patients needing radiation must travel to other facilities. Before a patient's scheduled appointment, the nurses spend time researching and prepping for their patient.

Three types of therapy offered at PMC are:

- Biotherapy: which is modified to target certain cells and then built to act on those exact cells;
- Immunotherapy: which is a type of biotherapy that helps the patient's own immune system target the cancer cells; and,
- Chemotherapy: which kills all fast-growing cells.

Each chemotherapy appointment can take up to 8 or IO hours of the patient's day. Staff first give the patient fluids and medication, preparing the patient's body for the therapy. The nurse mixes the medication, administers the medication, and monitors the patient throughout the day while continuing to give more medication.



PMC staff at the Friday movement class.



New Hospital Building

Master Plan Summary

The following are highlights of the Master Plan Study that was funded by the Denali Commission and conducted by NAC Architects in 2020. However, you are encouraged to review the 2-volume full Master Plan that has been included in the appendices of this report.

Summary

Though the facility has been well maintained and has benefitted from small improvements over the years, the bulk of the hospital is now 25 to 55 years old and most of the supporting infrastructure is at the end of its useful life, requiring major investment in systems replacement.

Many existing rooms are small, don't meet current requirements for accessibility, and cannot accommodate the spatial needs of equipment and technology, or the participation of family members in the delivery of care. The health benefits, and costs savings, of sub-acute preventative and rehabilitative care have increased demand for physical therapies beyond the available space. Significant modernization, expansion and re-configuration of existing rooms is needed to improve services. Given the age of the existing facility, and the disruption and risk of remodeling in place, (the Master Plan) report focuses on the option of a replacement hospital that will serve current and future needs in a new, efficient, and sustainable structure.

Starting in 2001 with the Petersburg Community Needs Assessment, PMC has engaged their community in a discussion regarding healthcare service needs that are critical to their continued residency in Petersburg. This dialogue continued as documented in the Health Needs Assessment in 2015 and the Community Needs Assessment and Forces of Change document completed in 2018. PMC continued to reach out to the community through their Community Café sessions, and regular updates aired on KFSK radio. (Master Plan Volume I: Pages 7–8).

Petersburg Medical Center, like many hospitals across the country, bears the history of a series of expansions and remodels over many years, leading to a legacy of compromised environments and aging infrastructure. The current condition of the hospital was well documented in the 2015 Facility Condition Assessment completed by Jensen Yorba Lott. That study highlighted the difficulties of providing quality services in functionally obsolescent spaces designed long before advances in medical technology and the rise of the information age. It also described the challenge of maintaining aging systems that are no longer supported by their manufacturers and for which parts are hard to find. Though 'grandfathered' as code compliant at the time of construction, many spaces are not consistent with current code standards or industry standards based on best practice.

Potential Sites

The geography around Petersburg is characterized by forests, wetlands and extensive tracts of muskeg, a soft, moisture absorbing organic material that presents unique challenges to site development. Much of the vacant land outside the town core is owned publicly by the Borough of Petersburg. FAA restrictions limit how closely the new hospital can be located near the airport. The Army Corps of Engineers will have oversight over development of land containing wetlands. For the purpose of the master plan the design team considered the existing downtown hospital site as well as four undeveloped sites offered for consideration by the Borough. The



undeveloped sites are largely made up of wetlands and muskeg, requiring extensive site preparation; however, they offer greater potential for an efficiently designed facility with ample parking due to their larger size.

Downtown Site

Though faced with significant phasing and property acquisition challenges the downtown scheme does offer the opportunity for an enclosed courtyard for long-term care, and an elevated prospect for the long-term care day room for views to Petersburg Mountain. It also provides a clear separation between the hospital and the clinic and increases the amount of parking at the hospital. Some hospital staff have expressed strong concerns about the multilevel design and having physical therapy and surgery on a separate floor than the patient wing

Note: The Master Plan team reviewed 4 sites. However, the South Haugen site is no longer an option that is being offered by the Borough for consideration for the new building. Additionally, the North Haugen site was the recommended site by the Master Plan team, and although the North Hagen Site was chosen to study site plans for a new building, the other two green sites identified by the Borough would support similar solutions, with differences primarily in access to underground and overhead utilities and proximity to already developed roads.

Selection Criteria

The Master Plan selection criteria (see details of evaluation of sites in Master Plan Volume 2)

I. Presence of and access to existing utilities Developing water, sewer, power, and telephone services can be a major expense. To the degree that existing services are already available nearby these costs can be mitigated.

2. Proximity to existing roads

Property adjacent to a major street such as Haugen will provide easy access for patients and staff. Access from adjacent residential streets is less desirable.

3. Muskeg risk and elevation of site relative to existing adjacent roads

An undeveloped site will require removal of muskeg and importation of structural fill to create a building pad and road beds. If the site is level with adjacent streets the amount of structural fill will be minimized.

4. Proximity to residential development

Most housing in Ketchikan is built on piles. If the site is adjacent to residential properties care will need to be taken when removing muskeg to avoid a negative impact to the adjacent houses through a drop in the water table or earth movement. Cost could add up for temporary barriers at the property line or for other mitigation.

5. Existing Zoning designation

If site is zoned for a use other than Public, such as residential or recreational use, it may complicate land use review and require more time to approve. Note that the size of the project will likely require a master planned development review under the current zoning code.

6. Existing Use to be displaced

If the site has an existing use that is of value to the public or to an individual property owner the costs of property acquisition and use mitigation can quickly mount.

7. Existing structures to be demolished

Demolition of existing structures is an additional cost on top of site development. Mitigation of Hazardous materials could be involved.



8. Access to views and sunlight

Distant territorial views and access to daylight are documented contributors to wellness and healing. Views are plentiful in Petersburg but if there is an existing structure or site feature that may obstruct views from patient areas or block access to daylight it should be avoided.

9. Close to Downtown

Currently the hospital is located within the center of town, making it easy for staff and visitors to walk to patronize local businesses and run errands. The further away from the city center the harder it is for staff and visitors to engage in town live without using an automobile.

IO. Size

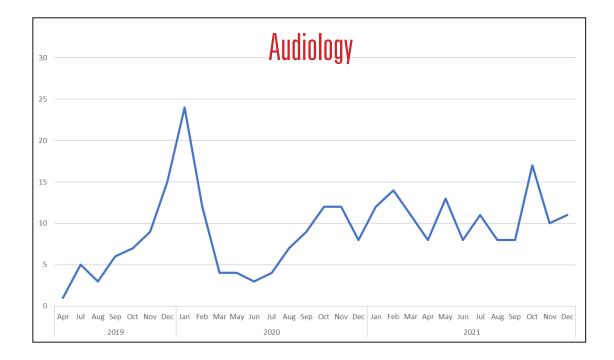
To accommodate a single-story scheme, parking, vehicle access and drives the size of the parcel will need to be roughly 350,000 to 375,000 SF. For a 2-Story scheme the size of the parcel will need to be roughly 300,000 to 350,000 SF.

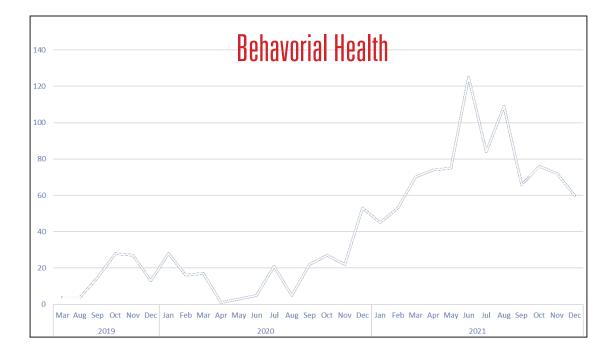


Note: The South Haugen site is no longer an option.

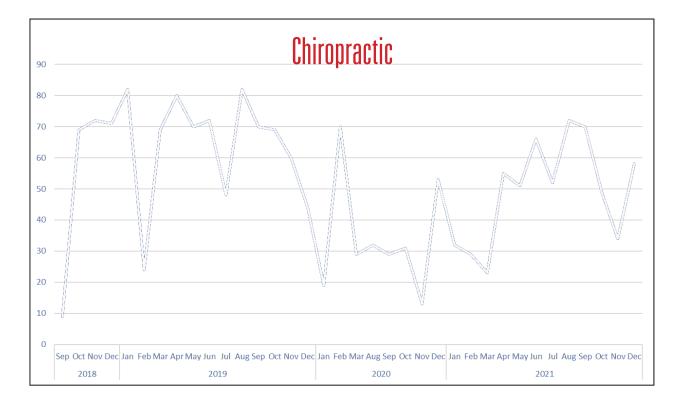


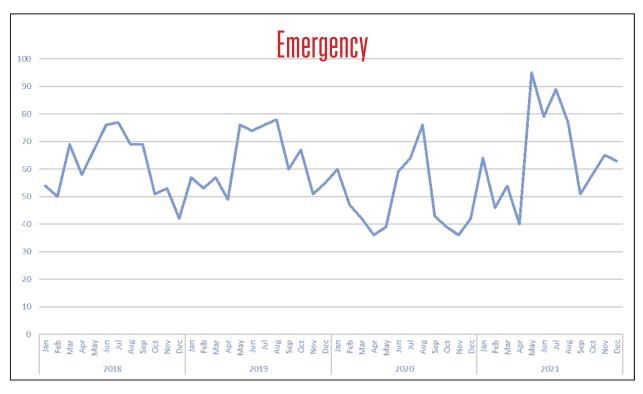
Petersburg Medical Center Usage



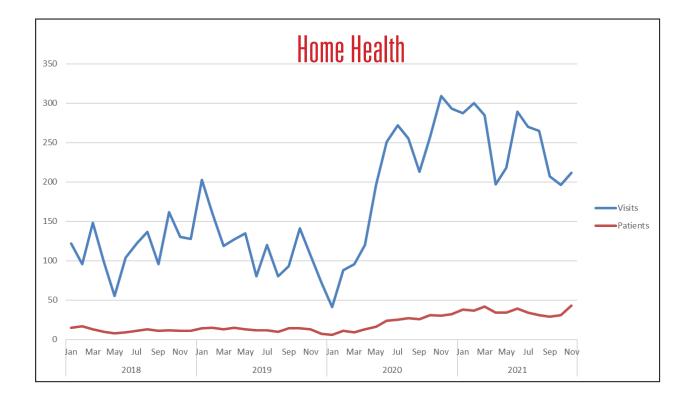


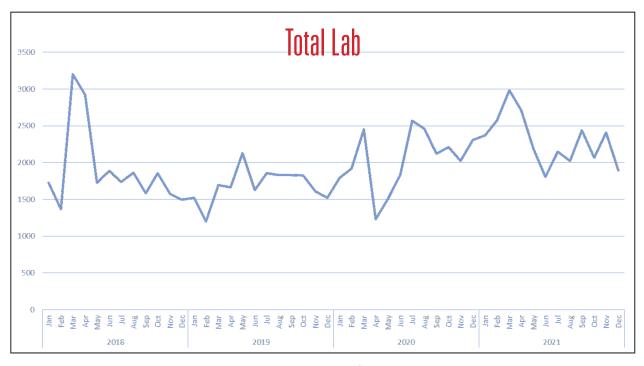




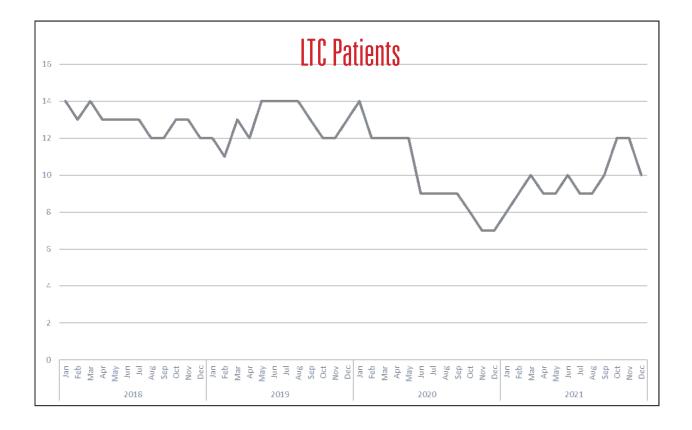


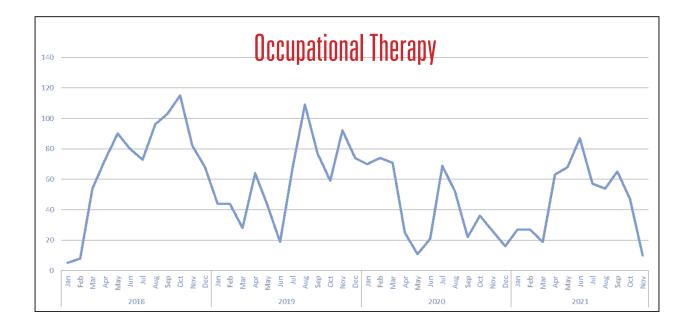




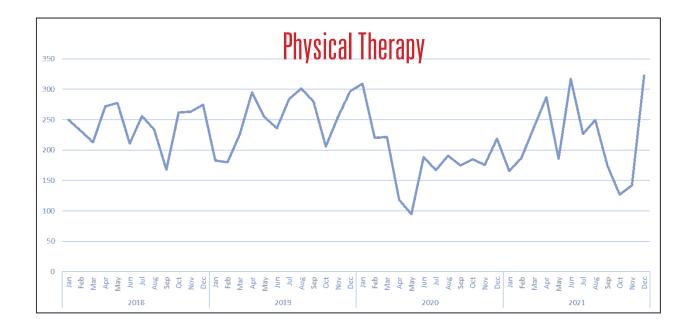


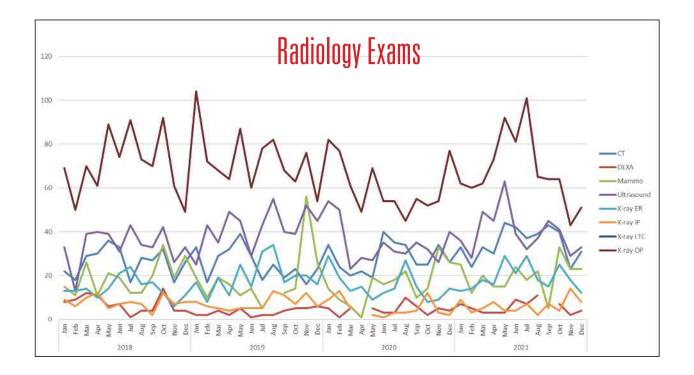




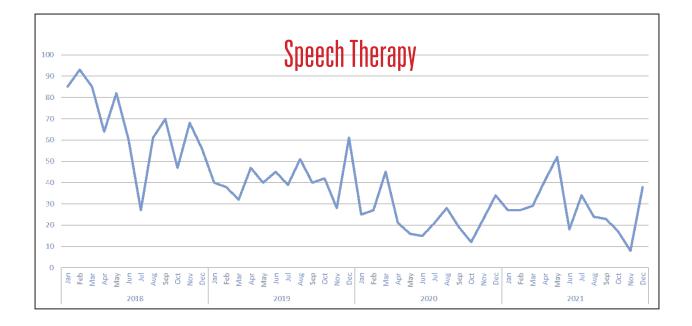


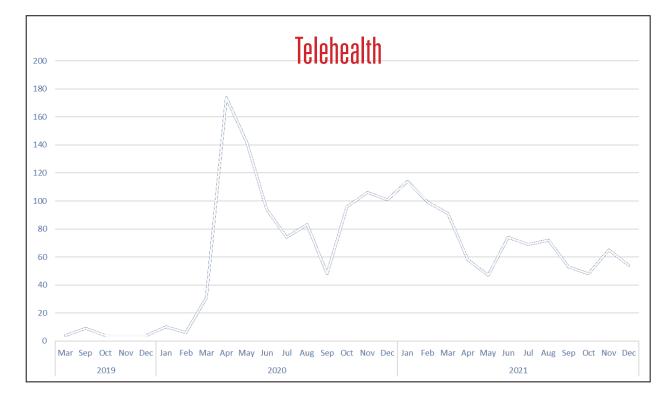














Appendices

Community Survey Individual Focus Interviews Master Plan Volumes I and 2

Please indicate which things you consider Petersburg's greatest strengths and needed improvements? (select up to three answers for each column)

	STRENGTHS	Ν	IEEDED IMPROV	'EMENTS	Total
Schools	84.21%	144	15.79%	27	171
Housing	9.93%	15	90.07%	136	151
Natural Beauty	95.88%	163	4.12%	7	170
Social Networks	59.68%	74	40.32%	50	124
Access to Healthcare	52.52%	73	48.92%	68	139
Cultural Diversity	45.86%	61	54.89%	73	133
Environmental Health	76.56%	98	23.44%	30	128
Support for Families	48.06%	62	52.71%	68	129
Religious or spiritual opportunities	88.10%	111	11.90%	15	126
Access to job training and/or higher education	18.79%	28	82.55%	123	149
Cultural and/or arts opportunities	61.36%	81	40.15%	53	132
Nonprofit organizations	72.00%	90	28.00%	35	125
Community service providers	57.94%	73	42.86%	54	126
Jobs and economic opportunities	45.59%	62	55.15%	75	136
Healthy lifestyle opportunities	77.62%	111	23.08%	33	143
Substance abuse treatment	18.80%	25	81.95%	109	133
Respect for varied viewpoints	13.67%	19	87.05%	121	139
Public transportation	25.20%	32	75.59%	96	127
Public safety services	62.30%	76	37.70%	46	122
Recreational opportunities	76.06%	108	25.35%	36	142
People help each other	88.89%	128	13.19%	19	144
Access to healthy food	51.54%	67	50.77%	66	130
Elder Care	56.93%	78	45.26%	62	137
Child Care	20.90%	28	83.58%	112	134
Other (please specify if strength or area of improvement)					11
			Ans	wered	189
			Skip	oped	0

Which of the following most negatively impact the health of you and/or your family and the Community of Petersburg? (select up to three answers for each column)

	YOU AND/OR YOU	R FAMILYOM	MUNITY OF PE	TERSBUR	Total
Substance use disorder	13.01%	19	98.63%	144	146
Mental health	34.75%	41	83.90%	99	118
Tobacco use	22.22%	16	84.72%	61	72
Overweight/obesity	65.22%	60	53.26%	49	92
Chronic disease (heart disease, high blood pressure, high cholesterol, stro	55.56%	40	62.50%	45	72
Diabetes	28.30%	15	77.36%	41	53
Cancer	36.00%	27	73.33%	55	75
Physical Activity	59.32%	35	55.93%	33	59
Nutrition	47.46%	28	69.49%	41	59
Issues related to aging (arthritis, hearing/vision loss)	56.18%	50	64.04%	57	89
Falls	35.71%	15	69.05%	29	42
Immunizations	38.10%	16	80.95%	34	42
Suicide	18.75%	6	84.38%	27	32
Lung disease (asthma, COPD, etc.)	39.47%	15	63.16%	24	38
Infectious disease other than COVID (hepatitis, flu, etc)	28.13%	9	87.50%	28	32
COVID-19	29.63%	16	90.74%	49	54
Sexually transmitted disease	9.09%	3	96.97%	32	33
Prenatal care/maternal and infant health	32.65%	16	87.76%	43	49
Oral health (dental)	64.71%	33	58.82%	30	51
Availability of specialists	68.64%	81	71.19%	84	118
Other (please specify if for you/your family or for community)					10
			Ans	wered	182

Skipped

7

Which of the following prevent you or your family from using community services or activities that are available in Petersburg (check all that apply)?

Answer Choices	Responses	
Schedule conflicts	49.09%	81
Age restrictions	8.48%	14
Stigma or shame	13.94%	23
Childcare	13.94%	23
Confidentiality	24.85%	41
Medicaid problem	1.82%	3
Membership restrictions (ie gym, clubs)	11.52%	19
Not enough time	38.79%	64
Found services elsewhere	8.48%	14
Distrust/dislike agency or provider	20.61%	34
Cultural or religious reasons	3.64%	6
Language barrier	0.00%	0
Transportation	6.67%	11
Harassment	3.03%	5
Lack of awareness	24.85%	41
Cost	32.12%	53
Other (please specify)	10.91%	18
	Answered	165
	Skipped	24

Over the past few years, Petersburg Medical Center has expanded its services significantly.Which services have you or a family member utilized in the last year (check all that apply)? (* indicates new or expanded services since 2019).

Visiting Specialists (general surgery, Ear Nose Throat, Ophthalmology, Or Telehealth (locally)*10.81%20Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cownunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81CovID testing*27.03%50COVID vaccines*77.30%143COVID vaccines*138	Laboratory* Orthopedic and General Surgical Services	60.54% 1.62%	112 3
Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Cowmunity Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*138Answered185	Telehealth (locally)*20.54%38Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81CovID testing*27.03%50COVID vaccines*77.30%143COVID vaccines*138	Orthopedic and General Surgical Services	1.62%	3
Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Telehealth (coordinated by PMC with out-of-town specialist)*5.41%10Behavioral Health/Mental Health*9.19%17CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Visiting Specialists (general surgery, Ear Nose Throat, Ophthalmology, Op	10.81%	20
Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Behavioral Health/Mental Health* 9.19% 17 CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Telehealth (locally)*	20.54%	38
CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)*1.08%2Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Telehealth (coordinated by PMC with out-of-town specialist)*	5.41%	10
CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138	CAPABLE (aging in place program for 65+)* 1.08% 2 Medical Nutrition Therapy* 2.16% 4 Audiology* 11.89% 22 Off-site services such as vaccine clinics* 43.78% 81 Community Wellness events/programs (health fair, fun runs, challenges, c 27.03% 50 COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185			17
Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Medical Nutrition Therapy*2.16%4Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185			
Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Audiology*11.89%22Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185			
Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing*27.03%50COVID vaccines*77.30%143Answered185	Off-site services such as vaccine clinics*43.78%81Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185			
Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c27.03%50COVID testing*77.30%143COVID vaccines*74.59%138Answered185	Community Wellness events/programs (health fair, fun runs, challenges, c COVID testing* COVID vaccines*27.03% 77.30%50 143 143 74.59%COVID vaccines*74.59%138 185	Audiology*	11.89%	22
COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Off-site services such as vaccine clinics*	43.78%	81
COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	COVID testing* 77.30% 143 COVID vaccines* 74.59% 138 Answered 185	Community Wellness events/programs (health fair, fun runs, challenges, c	27.03%	50
COVID vaccines* 74.59% 138 Answered 185	COVID vaccines* 74.59% 138 Answered 185	COVID vaccines* 74.59% 138 Answered 185							
Answered 185	Answered 185	Answered 185							
							COVID vaccines*	74.59%	
		Skipped	Skinned	Skipped 4	Skipped 4	Skipped 4	A	Answered	185
Skipped 4	Skipped 4						ç	Skipped	4
Skipped 4	Skipped 4	Skipped 4	Skipped 4				5	skipped	4

2021 Perceptions of Community Health Survey When thinking about the healthcare services available in Petersburg, please indicate below any that you would like added or think are not necessary.

Answer Choices	Responses	
Services not currently available that I would like provided locally	95.05%	96
Services I don't think we need to have provided locally	21.78%	22
	Answered	101
	Skipped	88

The existing medical center is nearing the end of its useful life; many of the building systems are outdated and difficult and costly to maintain. The planning for a replacement hospital has been underway for several years. The PMC Executive Director and Board of Directors are committed to obtaining grants and low interest loans and no new taxes to pay for the replacement of the existing rural community hospital in Petersburg. Do you support these efforts to maintain a rural community run hospital?

Answer Choices	Responses	
Strongly support	68.82%	128
Somewhat support	15.05%	28
Somewhat against	7.53%	14
Strongly against	8.60%	16
Comments	0.00%	0
	Answered	186
	Skipped	3

During the COVID-19 pandemic, PMC and the local Emergency Operation Center (EOC) expanded its operations and services to address the COVID-19 pandemic and keep the community safe. Which of these did you or your family utilize during the pandemic (check all that apply)?

panderme (encer an that apply):		
Answer Choices	Responses	5
Local COVID Information Hub website	70.97%	132
Local COVID dashboard	71.51%	133
Local social media postings/information/guidance	65.59%	122
Weekly situation reports from EOC Unified Command	59.14%	110
Press releases alerting community for each positive case	63.98%	119
Media coverage of local COVID updates (newspaper/radio)	55.91%	104
KFSK COVID Information radio shows	68.28%	127
Protective mandates as approved by the Assembly	60.22%	112
COVID-19 hotline staffed by PMC nurses	54.84%	102
Contact tracing phone calls and monitoring for those exposed to COVID	20.97%	39
COVID testing at PMC Respiratory Clinic	58.06%	108
Off-site COVID testing at work places	18.28%	34
COVID testing at the airport	68.82%	128
Vaccination clinics	72.04%	134
Technical Assistance to local businesses/non-profits/events to re-open an	6.45%	12
COVID treatment and/or monitoring provided in clinic, hospital, or home	5.91%	11
Assistance during quarantine (groceries, errands, etc.)	18.28%	34
Local COVID-19 grant funding (personal or business)	22.04%	41
None of the above	2.15%	4
Other (please specify)	2.15%	4
	Answered	186
	Skipped	3

Overall, how satisfied are you with the community response to COVID (see list

i	above)?				
Answer Choices	Responses				
Very satisfied	57.22%	107			
Satisfied	31.55%	59			
Dissatisfied	4.81%	9			
Very dissatisfied	6.42%	12			
	Answered 187				
	Skipped	2			

2021 Perceptions of Community Health Survey What is your age?

	U	
Answer Choices	Responses	
Under 18	0.54%	1
18-24	2.72%	5
25-34	15.22%	28
35-44	27.17%	50
45-54	21.74%	40
55-64	17.93%	33
65+	14.67%	27
	Answered	184
	Skipped	5

2021 Perceptions of Community Health Survey What is your gender?

Answer Choices	Responses	
Female	77.60%	142
Male	19.67%	36
Transgender	0.00%	0
Prefer not to say	2.19%	4
Other (please specify)	0.55%	1
	Answered	183
	Skipped	6

2021 Perceptions of Community Health Survey **What is your race?**

Answer Choices	Responses	
White or Caucasian	81.32%	148
Black or African American	0.55%	1
Hispanic or Latino	1.65%	3
Asian	3.30%	6
American Indian or Alaska Native	7.14%	13
Native Hawaiian or other Pacific Islander	0.00%	0
Other	0.00%	0
Two or more races	6.04%	11
	Answered	182
	Skipped	7

2021 Perceptions of Community Health Survey What is the highest level of education you have completed?

•		
Answer Choices	Responses	
High school or equivalent	21.74%	40
Vocational training	7.07%	13
Associate degree	14.13%	26
Bachelor's degree	32.61%	60
Master's degree	16.85%	31
Professional degree	1.63%	3
Doctorate degree	3.26%	6
Other (please specify)	2.72%	5
	Answered	184
	Skipped	5

2021 Perceptions of Community Health Survey How many people live in your household?

<i>.</i>		
Answer Choices	Responses	
1	11.96%	22
2	34.78%	64
3	20.65%	38
4	22.83%	42
5	4.35%	8
6	3.26%	6
7	1.63%	3
8+	0.54%	1
	Answered	184
	Skipped	5

2021 Perceptions of Community Health Survey If children living in the household, what age(s)?

Answer Choices	Responses	
0-5	23.47%	23
6-9	33.67%	33
10-13	38.78%	38
14-17	32.65%	32
18+	26.53%	26
Answered		98
Skipped		91

2021 Perceptions of Community Health Survey What is your approximate annual household income?

Answer Choices	Response	S
less than \$25,000	5.49%	10
\$25,000-\$50,000	15.38%	28
\$50,000-\$75,000	10.99%	20
\$75,000-\$100,000	23.08%	42
over \$100,000	31.87%	58
Prefer not to say	13.19%	24
	Answered	182
	Skipped	7

2021 Perceptions of Community Health Survey Do you have health insurance (private, public, military, Native, Medicaid, or Medicare)?

Answer Choices	Responses	
Yes	94.02%	173
No	5.98%	11
Answered		184
Skipped		5

Any additional comments about services you need to meet your health needs?

Answered 48 141

Skipped

Name (optional)Answered56Skipped133

Community Health SWOT Analysis Summary

Strengths/Weaknesses/Opportunities/Threats that impact the health of Petersburg residents

	STRENGTHS	WEAKNESSES
INTERNAL TO PETERSBURG	 Locally Run Healthcare School System Non-profits, volunteer, and partnerships Long-term physicians and nurses we know and trust Healthcare services PMC Staff and Management Access to subsistence foods and outdoor recreation Local COVID Response Community Infrastructure Close Knit Community that Cares Petersburg Indian Association: Demographics PMC Billing/Insurance: Local Media 	 Substance Abuse & Behavioral Health Housing Limited Healthcare Services Social and Economic Divide/Lack of Diversity PMC Patient Experience Childcare PMC's Aging Facility Workforce shortages (local/national) Awareness of Resources PMC Management and Public Perception Borough Parks & Recreation Food availability and insecurity Assembly & Borough Leadership Volunteer Base Services for Elders Generational Shifts (Locally) Accessibility
EXTERNAL TO PETERSBURG	 OPPORTUNITIES 1. Technologies 2. Opportunities for Grant Funding 3. New Hospital 4. Partnership with Outside Healthcare Organization 5. Increasing Healthcare Services & Visiting Specialists 6. Local Business Opportunities 7. Partnerships Locally 8. PMC Public Relations 9. Insurance 10. Involve/Inform Community on Considering Outside Healthcare Agency 11. Job Training and Education 	 THREATS 1. Outside Corporation Taking Over Local Healthcare 2. Insurance & Cost of Healthcare 3. Isolation/Climate & Cost of Living 4. COVID 5. State/Federal Funding 6. Cost of New Hospital 7. Shifting Demographics 8. Community Uninformed Regarding Outside Healthcare Corporation Options 9. Technology 10. Local Economy

STRENGTHS

1. Locally Run Healthcare

- Locally owned and operated- community directed and local control is best for our residents (11)
- PMC tied in locally with local government publicly elected PMC board (5)
- Providing many services that are important to the community that may not make money
- PMC is locally funded, staffed, and operated, which allows us to respond to community changes and needs more rapidly and be more creative in solving problems ("no red tape") (4)
- Self-sufficient healthcare facility not tax funded (3), and does not need to be taken over (4)

2. School System

• Petersburg Schools (16) - great staff, admin, school board, school breakfast/lunch/summer program (3), counseling, technology resources provided to kids, school garden, back-to-school backpacks (2), PE and swimming programs.

3. Non-profits, volunteers, and partnerships

- SHARE Coalition (8) strong collaboration and partnerships.
- WAVE (9)
- Partnerships and collaborations between agencies is good for grant opportunities (3)
- Strong partnerships between local government, PIA, PMC, school, Police/Fire/EMS (3)
- Strong core group of community volunteers/non-profits/churches willing to help (5);
- USCG collaborates well and cares about our community (2)
- Many groups working to help with basic needs (food, clothing, etc); local non-profits stepping up to fill gap in support programs left by transition of Petersburg Mental Health to SEARHC; Humanity in Progress (new non-profit) (2);
- Increased focus among several agencies on prevention and wellness (4)

4. Long Term Physicians & Nurses We Know and Trust

- Healthcare team lives here and personally know and care about the community, therefore provide individualized health care not just a name/number (12)
- Physicians are excellent trusted, strong team of doctors (6), each with their own expertise/personality (4); Nursing staff is well educated and do their jobs well (2);
- Stability and continuity of care from our physicians and nurses longevity (6)
- Communication and info sharing between providers is easy in a small organization (2)

5. Healthcare Services

- PMC provides a high level of care and lot of services for a small community hospital (6)
- Good emergent care at PMC; meets local needs and good ability and connections to refer and send patients to higher level of care when needed (9); reliable medical care (3)
- PMC expanding services: Behavioral Health & substance abuse programs (9), Patient Navigator (2), Home Health program (7), Community Wellness Programs (13)
- Community Health Fair (5)
- State Public Health Nurse is a great community resource, helps with general health of PSG, provide services to uninsured/underinsured (9)
- New positions at PMC Patient Navigator (2) and New Behavioral Health Clinician (2)

- PMC has a strong Long Term Care (5);
- Good quality/availability of primary healthcare (8); ratio of physicians is good for community (2)
- Excellent lab and radiology department (3)
- Rehab department is strong and has expanded (PT/OT/ST) (5)
- Chemotherapy locally (3); PMC hospital acute care; good inpatient unit
- Good ancillary services: Registered Dietitian, chiropractic (2), acupuncture
- Good local pharmacy that collaborates well with PMC (3)
- SEARHC Dental (3)

6. PMC Staff and Management

- PMC has a strong team Caring, talented, skilled, professional, hard-working, dedicated staff (8)
- Overall hospital operations are strong (8); high community support for PMC
- CNA program, MA, Nursing Program investment in our local workforce and creating job opportunities for our locals (5); scholarships from PMC Foundation for education
- PMC CEO is forward thinking and invested in community looking forward 15 years, planning facility and staffing needs (2)
- PMC is resourceful and innovative (2)
- PMC is one of biggest workforce locally brings in professionals, many people involved in the community (2)

7. Access to subsistence foods and outdoor recreation

- Accessible outdoor recreation trails/bike/walking paths (6)
- Access to subsistence foods (game, fish, berries) (8)
- Environment: Temperate climate, clean air, clean water (3)
- Easy access to nature promotes a high quality of life and a healthy/active lifestyle (8)

8. Local COVID Response

- COVID response was very successful (7) communication to public (3), collaboration with Borough and Assembly, unified teamwork between EOC agencies
- Vaccine PODs were very successful (3); SEARHC partnership increased access to vaccines (2)
- Community showed resiliency people found alternate ways to recreate and connect (2)
- PMC doing airport testing and COVID testing local capability
- Many people volunteered to help the COVID response

9. Community Infrastructure

- Parks and Recreation- community gym/pool facility (7), community wellness activities
- Good infrastructure Borough does a lot for a small community and has great staff
 - Library (3); Police department (4) Fire Department/EMS (2), Utilities (3), Mountain View Manor (2)
- Airport that has capacity to get medivacs in/out and supplies in/out (3), ferries can get supplies in/out

10. Close Knit Community that Cares for Each Other

• Close knit community that cares for each other (6), People are community oriented, Strong sense of community and community involvement (8)

- Community members pull together to help and take care of each other in times of need (7); This includes new community members (2) and those with different belief systems than our own (2).
- Community is especially supportive and caring towards youth (5)
- knowing our neighbors and families;
- Most people have support systems in community neighbors, family, etc. (2)
- People contribute to fundraisers very generously

11. Petersburg Indian Association:

- PIA supports the health of local native and non-native community members (3)
- Providing opportunities for sharing cultural knowledge and traditional foods (3)
- PIA tobacco control/prevention program focused on teens (3)
- PIA transit elderly and disabled transportation (3)
- Many assistance programs (ie housing, food, heat)
- Job shadowing for teens and job placement program (2)
- Trail program PIA builds and maintains trails in PSG partnership with the Borough who owns them (this was also mentioned as a weakness that the Borough is not doing this any longer)

12. Demographics

- Longevity long life expectancy and people stay here a long time due to high quality of life (2)
- High economic status among community; people donate and a lot (3)
- Increasing number of young families in the community, many that are very involved (4);
- Community members many people from different walks of life, educations, cultures, many different professions (3); diverse economy (fishing, gov't, tourism)
- Small community allows us to identify and understand local needs and best ways to address issues locally (4)
- Geography of town Short commute times; walkability; Not crowded (2)
- Many people care about health and take advantage of healthy lifestyle opportunities here (5)

13. PMC Billing/Insurance

- PMC able to provide serve VA (2) and SEARHC patients;
- PMC is in-network with main insurance carriers in Petersburg (Aetna, TriCare, Premera Bluecross) (2); Most community members have insurance coverage
- PMC's billing has gotten a lot better; Payment plans and prompt payment discount

14. Local Businesses

- Local businesses are strong they are very involved in community and provide generous donations and support for young people (4); Businesses incorporating health and wellness opportunities (2); Chamber of Commerce partners with and supports local business and non-profits
- **15. Local Media:** Good community resources for public communication Facebook pages/groups, Public Radio (2), Local newspaper (2)

WEAKNESSES

1. Substance Abuse & Behavioral Health

- Limited availability of Behavioral Health services not meeting local need (8); need more psychiatry (2); No mental health crisis resources have to call police (2)
- Increasing substance abuse (drugs/alcohol) is a community health issue (7) and Petersburg does not have the resources to deal it (5)
 - Lack of local substance abuse programs (3)
 - Lack of support programs for those returning home from substance abuse treatment (4)
 Substance abuse treatment not available locally (4)
- SEARHC not providing the great support/prevention resources that Petersburg Mental Health previously was (5); Availability of local Behavioral Health services has decreased since SEARHC took over grant from Petersburg Mental Health (2); SEARHC only serving limited population (Medicaid and crisis patients) (2)
- Stigma/ negative perceptions regarding seeking mental health care/social support services (3)
- Lack of social opportunities in Petersburg without alcohol (2)
- Community not as willing to support those with substance abuse/mental health issues (2)

2. Housing

- Increase homeless/housing insecure people (8)
- No homeless shelter (6), warming shelter (3), or places to camp for housing insecure, Nowhere for domestic violence victims to go (2);
- Limited availability of affordable housing for all economic levels (7); especially low income (3)
- Don't have the services to help people get out of homelessness/insecure housing situation (2)
- Increase in financial insecurity within community (2)

3. Limited Healthcare Services

- Availability of specialists and higher level of care is limited and must travel (13); Decreasing pool of specialty clinic providers regionally
- Lack of services locally: Surgical (3); child births (7); colonoscopies (3); MRI's (4)
- Native healthcare is contracted out no local access to SEARHC providers have to go to Sitka. Leads to delaying care. Need improved coordination between PMC/SEARHC to help patients navigate system to get care.
- VA care is limited but has improved

4. Social and Economic Divide/Lack of Diversity

- Small community leads to everyone knowing intimate details of each other's lives (3); rumors spread quickly, people being judgmental (3)
- There was a strong divide in community and unkindness created by COVID (4)
- Long term residents vs. newer families hard for new families to establish social connections (2)
- Strong traditional views in community that are unable to accept change (4)
- Lack of cultural appreciation/respect/understanding of Alaska Native Heritage and not taking advantage of cultural diversity (4)
- Strong economic and racial divide (2)
- Divisive community on healthcare issues (childbirth, COVID, chlorinated water, vaccines, future of PMC) (2)

• Lack of diversity – non-inclusive and less accepting of other people (3)

5. PMC Patient Experience

- PMC's new billing system is not good slow turnover (3), patients don't know how much they will be billed and when (2), hard to understand (2)
- Current Electronic Medical Records system doesn't work well (2)
- Small community harder to be private/anonymous in your healthcare (5)
- Customer satisfaction (3) system needs improvements to be more patient centered
- Model of customer service (2) and valuing patient time and money not patient centered, all set up to serve the doctor's time
- Doctors are not the ones calling patients back MA's can't answer questions and are not great about getting back to patients promptly (2)
- Referral coordination is slow (3)
- PMC not able to do normal practices due to COVID taking over everything (2)
- Integration of services and coordination between services/departments could be improved to improve patient experience
- Not establishing Primary Care Provider just go to anyone available

6. Childcare

- Childcare services limited spaces (5)
- Childcare is expensive (4); impacts workforce due to parents' ability to work (2)
- Lack of available summer/after-school activities for school aged children (2)
- Childcare centers don't offer expanded operating hours; Daycares have high turnover

7. PMC's Aging Facility

• Aging facility at PMC (9); cost prohibitive to maintain current facility (2), space is limited and hinders our growth

8. Workforce shortages (local and nationwide)

- Workforce shortages (12)
- Recruiting healthcare professionals locally/high turnover all positions (EVS, Dietary, CNA) (2)
- PMC recruitment challenges not as competitive for providers as other places; PMC morale
- Burn out
- Staffing small work pool in Petersburg, difficult to find skill sets we need; Lack of job training programs; Changing demographics aging population and lack of younger workforce
- Grocery store shortages due to workforce shortages Convenience store closing
- Low minimum wage; Stimulus money does not incentivize people to work; Limited job opportunities for young people to develop a good paying career here

9. Awareness of Resources

- Residents and local service providers don't know all the services/resources available locally (4)
- Confusion and lack of community awareness of mental health services available (due to transition of Petersburg Mental Health and SEARHC) (7)

10. PMC Management and Public Perception

- Public lack of confidence in local hospital (ex: HIPPA breach (2), quality of healthcare, high turn-over, always advertising jobs in paper); mistrust re: confidentiality (2)
- PMC management no accountability except to long-term managers that are not good, poor management re: deferred maintenance
- PMC lack of public transparency
- PMC infrastructure has introduced many new services without the infrastructure to support it, not enough staff support for these or the upcoming new electronic medical record or billing system
- Community members with personal conflict with specific individuals at hospital may not access healthcare services or may target PMC as a whole (2)
- Until recent CEO, PMC was not open to SEARHC partnerships and refused to meet with SEARHC

11. Borough- Parks & Recreation

- Leadership is stabilizing at Parks and Rec, has struggled over last few years (2)
- Borough providing less funding towards health and wellness
 - P & R offering less community wellness activities being offered
 - P & R no longer offering youth camps during summer (2)
 - Limited instructor-led classes
 - Trails being built and maintained by PIA (3) (used to be under P & R)
 - Baseball field being maintained by Petersburg Little League (used to be under P & R)

12. Food availability and insecurity

- Availability of fresh fruits/vegetables (3)
- Food insecurity (2)
- Poor distributor for both grocery stores, therefore stores often short on products (2)

13. Assembly & Borough Leadership

- Lack of understanding and long-term planning and vision at Assembly level re: hospital (3)
- Weak Borough Manager (2) Lack of long-term planning and vision for Borough.
- Lack of institutional trust locally (PMC Board, School, Assembly)

14. Volunteer Base

• Core group of community volunteers is small and always same group doing everything; spread thin and get burned out (5)

15. Services for Elders

• Not enough non-medical in-home and community services to meet the needs of seniors (3)

16. Generational Shifts (Locally)

- Younger generation is not as involved in community, therefore we are losing a little sense of community
- Aging population and lack of younger workforce
- Kids are not connected to their own cultures
- Not enough young kids leave Petersburg and get a world view

17. Accessibility

• Lack of accessibility for those mobility issues/disabilities – sidewalks/buildings with ramps (3)

OPPORTUNITIES

1. Technologies

- Continue to expand telehealth (20) helps with access to specialty providers (4), substance abuse recovery programs; new regulations allowing providers to bill telehealth at full rate
- Digital technology allows remote work professionals can live in PSG and work remotely elsewhere (6). Working from home (2)
- Technology allows us to connect with others in new ways (3)
- Advancing medical technologies including diagnostic equipment (2), in-home monitoring (2)
- Internet/social media is powerful tool and good source of information (2)
- Increased availability of online education (2)
- PMC moving to new electronic medical record system Cerner (2)

2. Opportunities for Grant Funding

- Alaska grant funding (6) AK Community Foundation, Rasmussen for non-profits
- Increased State/Federal funding for childcare, social work, healthcare, health promotion (6), potentially new hospital (4)

3. New Hospital

- New hospital (8) could increase service lines (2) and new/updated technologies (2), improve healthcare, bring in more jobs; improve flow; close to EMS/Fire
- Scale down the cost of new hospital to get community buy-in
- Community education and engagement re: need for new facility, costs, and how Petersburg is going to fund a new hospital (2)

4. Partnership with Outside Healthcare Organization

- Explore partnerships and collaborations with outside healthcare organizations (SEARHC/Peacehealth) while still remaining locally run (12); to expand services lines, consulting, decrease need to refer out, visiting specialists (3)
- Sharing specialist resources with other Southeast communities (2)
- Consortium opportunities for regional community hospitals

5. Increasing Healthcare Services & Visiting Specialists

- Travelling physicians/specialty clinics at PMC (6)
- Primary Care/Hospital have opportunity for growth in services (4) wellness/health promotion (2), women's health, serving our aging population, community and home based healthcare (2), medical massage, increase acupuncture

6. Local Business Opportunities

• Increase diverse business opportunities (3) including outdoor recreation (2), visitor/cruise ship opportunities (3), trades (plumbing, electrical, building, carpenter)

• In AK it is easy to start your own business – little competition (2)

7. Partnerships Locally

- Opportunities for PMC and Borough to partner more with PIA- they have access to funding (6)
- Partnerships among local organizations (2) leads to funding opportunities, improves social services

8. PMC Public Relations

- Re-gaining trust of community members highlight values of individualized and patient centered care, success stories, etc. (2)
- Start opening PMC again business office, waiting rooms, etc. to improve patient experience

9. Insurance

- President that is supportive of Medicaid and universal healthcare (2)
- VA has making it easier to get care locally potential for VA LTC contract (2); PMC providing more services by utilizing Medicaid

10. Involve/Inform Community on Considering Outside Healthcare Agency

- Opportunity to for community education and engagement re: local vs. outside agency running our healthcare (6)
- Benefits of SEARHC operating our healthcare include: local input through a voting board member and local advisory group; access to federal resources through Indian Health Services

11. Job Training and Education

- Expand PMC training programs beyond CNA/Nurse to include maintenance, clerical, community wellness
- Partnering with universities and trade schools job training programs
- Connecting people with employment training opportunities and colleges outside of Petersburg

THREATS

1. Outside Corporation Taking Over Local Healthcare

- Outside entity taking over operations of our local healthcare system (28);
- Would lose local control and input on our community's unique needs (13), SEARHC would not have to be accountable to Assembly; hospital management would not be accessible
- Employee dissatisfaction and turn-over (10); Less interpersonal connection with our providers if they are not local (3);
- Will would hurt local businesses and impact their ability to give back to the community (3);
- Decreased quality and reliability of care (2); May limit service lines and require Petersburg residents to go to regional hub in Sitka/Juneau for services we currently have locally (3).
- Petersburg would eventually have all corporate healthcare mental health, dental, hospital/LTC/clinic, then eventually pharmacy (4)
- SEARHC has created conflict in town and division among community members (2)
- If we build a hospital beyond our means then we are at risk of being taken over by non-Alaskan corporation later

2. Insurance & Cost of Healthcare

- Lack of universal healthcare (5) creates unequal access to healthcare (7)
- High cost of healthcare/health insurance (7); leads to not taking care of health needs
- Insurance system controls patient care (2) prior authorizations, not covering certain medications, insurance coverage for travel to medical appointments (2), preferred vs. non-preferred providers (2)
- Medicare changes every year, impacts billing and increased documentation time less time for patients, more work for staff
- VA healthcare system is difficult to navigate to access care at a non-VA facility

3. Isolation/Climate & Cost of Living

- Cost of travel in/out of Petersburg (7); coordinating travel to higher levels of care/specialties is challenging (5)
- Weather (5) affects mental and physical health (2); medical evacuations (3)
- Isolation affects mental health; difficult and expensive to get things in/out of Petersburg (4);
- Cost of living here is high (8) especially groceries (4)

4. COVID

- Division and political stress created by COVID (locally and nationwide) (6); some people angry with schools, borough, PMC (2); people being unkind to those that believe differently than them (2); masks/vaccines exposed our personal/political values to everyone (2)
- COVID negatively impacted our local economy due to limited visitors
- Misinformation re: COVID (5); Those that do not think COVID is real, or conspiracy (2); immunization hesitancy limiting our ability to get back to normal (2). Maintaining trust in scientific knowledge is difficult with so much other information out there. (2)

5. State/Federal Funding

- State funding cuts (14)
 - State Ferry Lack of reliable and affordable transportation to higher level of care (7)
 - State Health nurse no longer fully funded
- Federal Funding always changing and lots of cuts (6)
- Pending federal financial crisis recovery from all the money given out during COVID (2)
- State is unstable and unpredictable (3) political, funding, high turn-over rate
- Grant funded positions/programs not stable and sustainable (3)

6. Cost of New Hospital

- Funding for new hospital is needed but not currently available (5)
- Community wants new hospital but not willing to pay for the cost through local taxes (6)
- Cost of new medical center community may not be able to afford it
- Public perception of PMC not needing a new facility
- New medical technology is very expensive
- Even if outside funding for construction, locals will end up paying for hospital in the long run through increased maintenance/operation costs

7. Shifting Demographics

- Outsiders moving Petersburg to retire (3) don't share local values, not joining our workforce, not integrating into community, not paying taxes, increased burden on healthcare system
- No young families coming to live here cost of living and tax burden is too high (2)

8. Community Uninformed Regarding Outside Healthcare Corporation Options

- Community uninformed on potential opportunity:
 - PMC Board is not willing to explore or have conversation re: outside entity providing healthcare
 - Community not aware of opportunities that could be provided by an outside agency delivering healthcare (2)
- Community uninformed on potential repercussions:
 - Community members do not having a full understanding of what SEARHC take-over would mean
 - SEARHC having funding for building new hospital is enticing for many community members although they are aware that a takeover would be detrimental to Petersburg

9. Technology

- Social media and internet powerful tool for spreading misinformation (4)
- GCI is only local internet vendor (4), very expensive

10. Local Economy

- Unstable and dwindling local economy
 - Local canneries merged and bought by outside entity (2); Very few local workers anymore, loss of local control and sense of community.
 - Large local entities leaving Petersburg could negatively impact our communities' economy and health (USCG, USFS, Cannery); USCG has transferred some local jobs to larger communities

Additional SWOT Analysis Comments

Below is a list of strengths/weaknesses internal to Petersburg and opportunities/threats external to Petersburg that impact our health. These comments did not fall within a common theme among the key informants so are captured in this additional document.

STRENGTHS

Healthcare Strengths:

- PMC leaders are transparent and not afraid to engage and educate community on healthcare Community Cafes; meeting with VA hospital leadership
- PMC values our employees as individuals- example: not requiring vaccines of employees
- PMC providing many services that are important to the community that may not make money
- Mobile health care model COVID and flu vaccines
- Substance abuse programs are more available here than other small communities
- PMC has travelling providers and visiting physicians/specialists
- Regular visits from Prism Optometry;
- We have Mental Health providers in PSG that are good (2)
- SEARHC mental health services

Other Strengths:

- Adult Protective Services, Foster parent program
- Two grocery stores
- Kids travel on ferry for sports instills independence and confidence in our youth social
- Reuse/repurpose things less waste buy sell trade resourceful
- Lack of shopping opportunity don't waste time going around looking for things
- Being creative and meeting needs of community
- People are pretty technology savvy
- Pride for the past and optimism for the future of what PSG can be
- We know our local funders PSG Community Foundation
- Culturally independent people open to trying new things and open to change
- Economic opportunities jobs are very available
- Institutional knowledge and skills in specific individuals in the community
- Lighthouse Church focus on youth;
- Small population in Petersburg allows for remote wilderness experiences.
- Small enough community that Assembly was receptive to EOC guidance and moved promptly on things
- Borough Karl Hagerman EOC manager, People stayed in their jobs through COVID longevity is good among EOC leadership
- Borough wi-fi, cell phone service, electrical, finance, public works, sanitation
- Harbor services and Fish and Game staff are very good
- USFS
- Ability to find middle ground on disagreements with other community members
- PIA: Funding for safety issues in community (ie sidewalks)
- Quality of childcare is good, reliable agencies (2)

- Community Social Groups: Many community based social support mom's groups, play groups, gardeners clubs (2)
- Safety of Community: Low crime & theft; Safe place for kids (2)
- Art Community: Strong, thriving arts community (2)

WEAKNESSES

Healthcare Weaknesses:

- Lack of education within healthcare system and community members about prevention and the compounding social determinants of health (mental health, DV, protective factors) (2)
- Rexall is not a preferred provider for Bluecross (USFS insurance), so they have to pay more for medications
- Mental/social health Lack of support groups grandparents raising grandchildren, weight loss, care takers for elders, marriage counseling
- Medical needs, but not on Medicare/Medicaid limited resources
- Wellness programs constrained by funding and personnel time;
- Mental health services not promoting wellness and physical activity
- Behavioral health care services quality of services is low
- Perceptions of hospital just a big business trying to make money;
- Services available for elder care collaboration with MVM/PMC not strong
- Difficult to access rehab treatment travel, bed availability
- Weakness in coordination between mental health service providers and substance abuse recovery programs

Other Weaknesses:

- Community is not looking ahead and putting resources and efforts towards prevention
- No health education after freshman year b/c not required by State; Limited sex education for kids
- Lack of family support for new families, no birth classes, lactation, parenting support (2)
- Services not available to those outside of city limits transportation may be an issue for them
- Transportation not having cars and the ability to get to store/medical appointments (2)
- Only 1 veterinarian –pets are important for quality of life
- People don't know how to cook/prepare food
- Restaurants do not serve a lot of healthy foods; Junk food at school lunch/breakfast
- Grocery stores close early difficult for working families
- Businesses are seasonal summer population goes up, volume of healthcare needs goes up
- Adult Protective Services only avalable remotely, negative perceptions
- Local newspaper wants to stir the pot rather than make things better
- Siloed work among agencies
- Partnerships for kids screenings free vision, well child, hearing (would like to see more of this); Children's dental care
- Emergency Management limitations due to only one road that comes into town
- Dispatch system inadequate for emergency events communication to PMC is lacking
- Volunteer power to sustain volunteer-run EMS/Fire

- Need another boat launch in town
- Hesitancy and misinformation re: COVID
- People getting sucked into national political loss of community
- Difficulty in economics lack of access to financial security, leads to unhealthy health behaviors
- Funding limited resources
- Lacking non-medical services housing/food/mental health resources for vulnerable populations
- Lack of social interactions for seniors and families
- Senior housing has long waiting list
- No diversified economy here mostly just fishing/canneries and government
- Unwilling to discuss the factors contributing to community health and wellness issues
- Cost of Parks and Recreation is prohibitive prices went up recently
- Parks and Recreation Gym/Pool facility in use by school all day and not open to public
- Borough does not have enough land available for sale need to develop this. People are just moving out the road
- Borough doesn't have any hired positions focused on wellness/prevention
- Borough funding cuts could impact playgrounds and community center
- Assembly is not doing what is in best interest of community, more worried about their image
- Communication between on-the-ground and decision makers is disconnected

OPPORTUNITIES

Healthcare opportunities:

- Virtual waiting rooms text when it's time to come in (more for walk in clinics urgent care does this)
- School health fair partnerships with school
- Vaccines allow us to get back to normal (2) and have anonymity in our political views
- PMC received new equipment to do telehealth
- Building relationships and serving remote areas in SE through PMC Home Health partnership
- Petersburg Medical Center as a local hub for healthcare for communities on neighboring Prince of Whales Island
- Stigma of asking for behavioral health help is decreasing
- State court ordered substance abuse treatment not in AK currently but is in other states
- COVID highlighted the need for mental health as an important part of community health
- Improve partnership with Borough and increase support for PMC
- People are more aware and appreciative of public health due to COVID
- Competition from other healthcare providers
- Can go to Seattle Children's in Anchorage they have a dept. in Anchorage

Other Opportunities:

- Infrastructure funding at federal level roads, harbors, docks
- Solar panels decrease cost and use natural resources
- Employer sponsored childcare incentivizes local workforce

- Mentoring programs- adopt a grandparent (in Ketchikan), Big Brothers Big Sisters
- Senior meals- Meals on Wheels make it more consistent
- State did a good job ramping up COVID contact tracing teams very quickly supported local response, hired two local contact tracers
- Train the Trainer opportunities good model
- Darkness into Light training
- Community Arts fun uplifting activities, visiting arts
- Girls Scouts/Boy Scouts of America could be strengthened
- Legislation moving towards to criminalize human trafficking and funding for education providers (high rates in AK, and we have it in PSG and people aren't talking about it)
- COVID was opportunity to evaluate things that are working and not working and change them -
- New hospital will mean PMC's old building will be available for other agencies
- AAU cards Discount cards help to support local businesses
- Wait until 8th wait until 8th grade to give kids phones, cyber safety
- Uninsured, self-employed people could there be an insurance co-op for these and small businesses?

THREATS

Healthcare Threats

- PMC employees lose their PERS if taken over by outside corporation
- Corporate healthcare agency would not give back to community at level that local does
- Decisions can't be made quickly in corporate healthcare due to long chain of command
- SEARHC take-over is a threat to working class who are not SEARHC or Medicaid recipients
- Preventive care needing to be accessed more– people don't know it's covered by most insurances at 100%
- SEARHC is hitting PMC while they are weak
- Weather impacts specialists' ability to get in/out
- No specialty clinics with travelling providers during COVID;
- Online medical providers may give access to inappropriate/un-safe medical care
- Obama Care discussions
- Federal Emergency Authorization allowing telehealth visits to be covered by insurance and same rates as in person could possibly go away (2)
- Federal healthcare regulations- ability to deliver babies, regulation of supplements, COVID

Other Threats

- No community oversite/checks-balances for law enforcement, assembly, other agencies
- National level- growing level of tolerance for violence against marginalized groups
- MVM turnover or no longer existing being run by Borough as a community service currently
- Mental health, sobriety, physical health goes with fishing season (bad fishing season = relapse, poor mental health)
- Not teaching kids to think critically and how to have conversations with those that disagree with them

- Millennials shifting work ethic, working less
- Declining fish stocks impact local economy (2), negatively impacts those struggling with mental health, sobriety, physical health
- Cut-off from resources in lower 48 during disaster
- Tax exemption for seniors puts burden on young families, who can't afford to live here
- Union wages grocery stores, schools, borough can't increase their wages
- COVID exposed a lot of weaknesses at PMC and within PSG
- People scared to go out and interact due to COVID caused mental health issues
- State declarations/mandates during COVID had no accountability/enforcement at State level
- Volunteerism decreased significantly during COVID
- State funding cuts taking away local control, cut continuing education scholarships
- Grant funded programs require strict criteria and paperwork this is a barrier for people to access these programs
- Social media allows people to be disconnected and unkind
- Low-income people don't have access to computers
- Risk of being cut-off if GCI went down (only provider)
- Technology infrastructure: slow internet locally
- Technology has allowed Assembly members to inappropriately engage in side-conversations during meetings
- Regulating fishing so much detrimental to our fisherman's income
- Funding State Leadership and Federal gov't rapidly changing.
- Petersburg's infrastructure is not set up to handle large cruise ships
- Institutional knowledge when one person leaves job or volunteer position it leaves a big gap

Petersburg Community Members Interviewed

	PMC Staff
Ashley Kawashima	PMC Behavioral Health Clinician, Humanity in Progress President, Mitkof Dance
	Troupe Vice President, SHARE Coalition Member
Dr. Mark Tuccillo	PMC Physician
Janet Kvernvik	PMC Health Information Management Director
Jennifer Bryner	PMC Chief Nursing Officer
Jill Dormer	PMC Chief Information Officer
Kelly Zweifel	PMC Clinic Director
Dr. Kayla Luhrs	PMC Physician
Kirsten Rioux-Testoni	PMC Home Health Manager
Liz Bacom	PMC Quality and Infection Control Manager
Megan Lister	PMC Registration Coordinator, Petersburg School District Board Member, PIA
	Johnson O'Malley Board Member
Dr. Selina Burt	PMC Physician
	PMC Board Members*
Jerod Cook	PMC Board President, National Marine Fisheries Service Enforcement Officer,
	Elks Club Board President
Cindi Lagoudakis	PMC Board Member, Clausen Museum Director
Marlene Cushing	PMC Board Member, Retired Public Health Nurse
	Petersburg Assembly Members*
Jeff Meucci	Petersburg Assembly Member
Chelsea Tremblay	Petersburg Assembly Member
	Petersburg Community Members
Annette Bennett	WAVE Executive Director, SEARHC Board Member, SHARE Coalition Member
Catherine Kowalski	Rexall Drug Co-Owner, Alaska Pharmacy Association Board, Alaska Pharmacy
	Legislative Committee
Erin Michael	State of Alaska Public Health Nurse
Heather Conn	PIA Council Member, Elementary School Principal
Hilary Hunter	WAVE Direct Services Advocate (former)
John Haverlik	Retired Community Member
Kara Wesebaum	PIA Social Services Grant Director/ICWA Director and Mental Health Clinician
Karen Malcom	Borough Public Works Administrative Assistant, KFSK Board Member
Kari Peterson	Borough Public Library Program Coordinator
Karl Hagerman	Borough Utility Director, Borough Emergency Operations Center Incident
	Commander for COVID response
Molly Taiber	Borough Mapping Technician
Nathan Lopez	Lighthouse Assembly of God Church, Pastor
Paul Anderson	Commander of Veterans of Foreign War (VFW) Post 1002
Rick Dormer	Petersburg High School Principal, SHARE Coalition Member
Rikki McKay	Kinderskog Mentor, SHARE Coalition Member
Sue Erickson	Petersburg Wrangell Insurance Owner
Tara Alcott	Borough Public Library Librarian
Ted Sandhoffer	United States Forest Service Petersburg District Ranger
Tracy Welch	PIA Tribal Administrator
Will Ware	Tlingit and Haida Chief Development Officer, Owner of Cedar Box

* All current PMC Board members and Petersburg Assembly Members were invited to participate in an interview, though not all responded to the invitation

PETERSBURG MEDICAL CENTER Replacement Hospital Master Plan



January 31, 2020



Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center

Table of Contents

Summary	•••	·	• •	•	•	• •	• •	•	•	·	•	·	·	•	·	·	•	•	•	·	•	·	•	·	•	•	·	•	•	•	5
Exec	utiv	/e	Sui	nı	na	iry	,																								
Stak	eho	old	er	Те	ar	n																									

- NAC Team
- PMC

Petersburg Geography Petersburg Noise Analysis

Petersburg View Corridors

- Petersburg Climate
- Petersburg History and Community

Potential Sites

- Downtown Hospital Site
- **Alternative Sites**
- **Selection Criteria**

Consultant Reports									
	Seismic Evaluation Report								
	Inundation Study								
	Market and Financial Analysis								
	Demographic and Workload Analysis								
	Market and Service Line Analysis								
	Financial Projection and Debt Capacity Analysis								
Pro	ram4	1							
	Hospital Program								
	Code Considerations								
Sit	Planning	5							
	Downtown Site								
	Greenfield Sites								
	Greenfield Site 7A								
	Greenfield Site 7B								
Bu	get5	7							
	Cost Estimates								
	Construction Type Considerations								
	Narrative Descriptions								
	Local Conditions								

- Cost Estimate Structure
- Indirect Costs

Assuring Petersburg Medical Center can remain a viable partner and provide the best possible community healthcare well into the future.







Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center



Executive Summary

Petersburg Medical Center (PMC) has been providing medical services to the Petersburg community for more than 100 years. The current hospital was originally built in 1955. Significant hospital expansions and remodels were completed in 1969 and 1984. The physicians' clinic was added in 1994 and remodeled in 2011. PMC became a certified federally designated Critical Access Hospital in 2001.

Petersburg Medical Center is a vital part of the community, providing critical medical services to town and regional inhabitants and, in its capacity as a major employer, bringing significant economic benefits to the local economy. Access to quality medical care is central to keeping people in Petersburg and attracting and retaining other employers and businesses to the area. Assuring that PMC provides the needed, appropriate, and financially viable services necessary to maintain and improve community health and wellness is of paramount importance to the hospital and the design team.

Though the facility has been well maintained and has benefitted from small improvements over the years, the bulk of the hospital is now 25 to 55 years old and most of the supporting infrastructure is at the end of its useful life, requiring major investment in systems replacement. Many existing rooms are small, don't meet current requirements for accessibility, and cannot accommodate the spatial needs of equipment and technology, or the participation of family members in the delivery of care. The health benefits, and costs savings, of sub-acute preventative and rehabilitative care have increased demand for physical therapies beyond the available space. Significant modernization, expansion and re-configuration of existing rooms is needed to improve services. Given the age of the existing facility, and the disruption and risk of remodeling in place, this report focuses on the option of a replacement hospital that will serve current and future needs in a new, efficient, and sustainable structure.

The PMC board has pursued an extensive investigation of their position in the community and the SE Alaska region. Starting in 2001 with the Petersburg Community Needs Assessment, PMC has engaged their community in a discussion regarding healthcare service needs that are critical to their continued residency in Petersburg. This dialogue continued as documented in the Health Needs Assessment in 2015 and the Community Needs Assessment and Forces of Change document completed in 2018. PMC continues to reach out to the community through their Community Café sessions, and regular updates aired on KFSK radio. PMC has also looked closely at their internal operations and processes to identify how to improve efficiency, as presented in the 2006

Performance Improvement Consultation, and commissioned a survey of their buildings in the 2015 facility condition assessment.

In January of 2019 PMC received a Denali Grant to develop a master plan for a replacement hospital. The grant conditions require the master plan to provide several specific documents to better frame the context and requirements for a new hospital. These documents include:

- 1. A structural engineering report to better define the facility's compliance with current seismic performance requirements.
- 2. An inundation study to identify the risks of tsunami events, and if potential locations of the replacement hospital may offer greater protection from such an event.
- 3. A detailed debt capacity analysis.
- 4. Summary of workload, staffing and demographic data.
- 5. An updated market and service line analysis.
- 6. Numeric space program based on the market and service line analysis and current industry standards.
- 7. Conceptual site plans showing how departments based on the numeric space program may lay out on a new site and at the existing hospital site.
- 8. Cost estimates for direct construction costs and indirect project costs.

With the above information incorporated into a master plan the hospital will be in position to solicit funding to take the next step, conducting a site selection process with public and borough participation and completing a site development package.

Stakeholder Team

Throughout the master plan process NAC Architecture has relied on the guidance of a core stakeholder team to communicate the hospital's values and ambitions, as well as the specific needs of all departments and services. Through a series of meetings with hospital representatives the program was created and finalized, and site concepts critiqued and improved. As the project moves forward into design and construction the leadership of the core stakeholder group will safeguard the continuity of principles and vision identified in the master plan.

NAC Design Team	Petersburg Medical Center Core Team
Dan Jardine, Principal in Charge	Phil Hofstetter, CEO
Ron van der Veen, Principal Designer	Chad Wright, Executive Assistant
Michael O'Malley, Principal Planner	Ro Tejera, Controller
Steve Wescott, Project Architect	Devynn Johnson, Project Manager





Integrity

Professionalism

Dignity

Quality

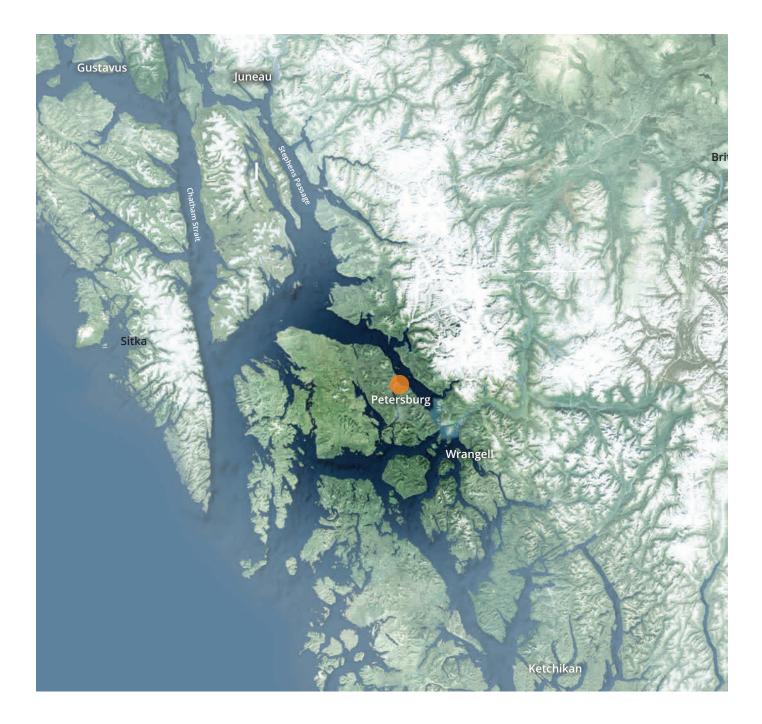
Teamwork

Petersburg Medical Center

Petersburg Geography and Climate

Geography

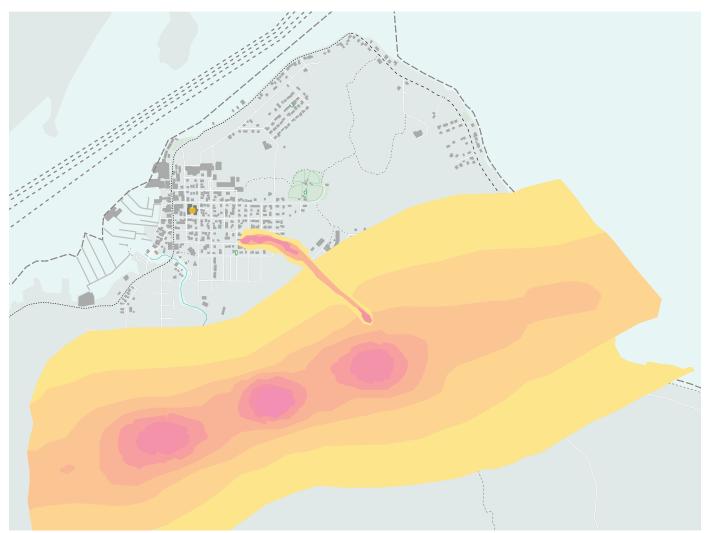
Petersburg is located on the northern tip of Mitkof Island in the Southeast Alaska panhandle, approximately midway between Ketchikan to the south and Juneau to the north. Access to Petersburg is solely by air or sea. The island airport is served daily by Alaska Airlines year-round as one of multiple stops on flights originating in Seattle and Anchorage and serving Ketchikan, Wrangell and Juneau.



Petersburg is also served year-round by the Alaska Marine Highway System ferries carrying passengers and vehicles. Winter sailings currently land in Petersburg twice a week. Price point and schedule lead most residents and visitors to favor air travel, but if someone needs to bring a personal vehicle the ferry is the only option. Bulk materials and goods typically arrive by barge at the Petersburg Port. Unlike Ketchikan, Juneau, Sitka and Skagway the narrows in Petersburg is not wide or deep enough to accommodate large passenger cruise ships. Tourism is limited to those arriving by air, ferry, or small expedition style cruise ships.

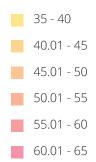


The proximity of the airport and noise generated by jet landings and takeoffs has a significant effect on areas around the airstrip plateau and down the Haugen Drive corridor. Though these noise events usually only occur twice a day and residents are conditioned to the experience, it may be worthwhile to consider triple pane glazing for greater acoustic separation for the alternative sites.

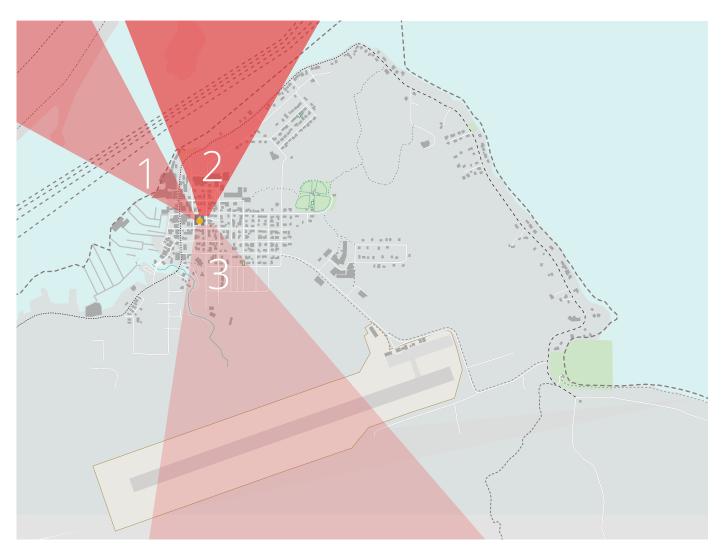


Alaska Road and Aviation

Decibels



Petersburg is in a beautiful natural setting surrounded by dramatic, forested slopes and mountain peaks. Sites with a higher elevation and fewer obstructions, either man-made or natural, will present better opportunities to take advantage of these views for the benefit of staff and patients.



View Corridors





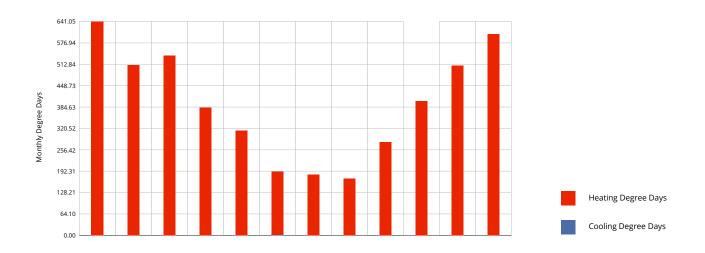


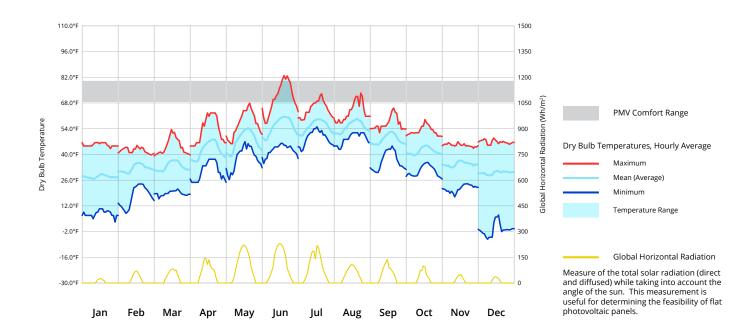




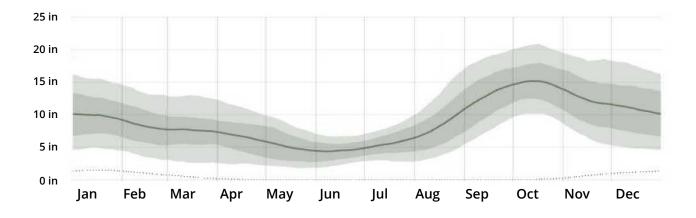
Climate

Though its location in a temperate marine environment spares Petersburg from the extreme cold temperatures experienced in other parts of Alaska, its climate still experiences heating degree days throughout the year. A heating degree day compares the mean outdoor temperatures recorded at a location with a standard temperature, usually 65 degrees F in the U.S., to discern if heating or cooling will be the predominant mode of conditioning indoor space.

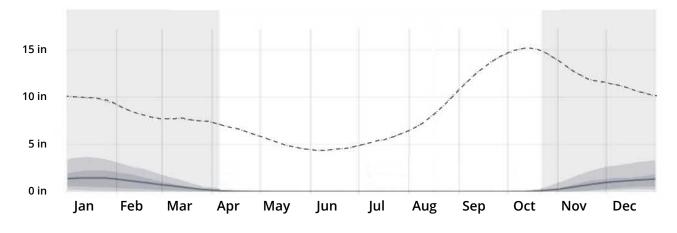




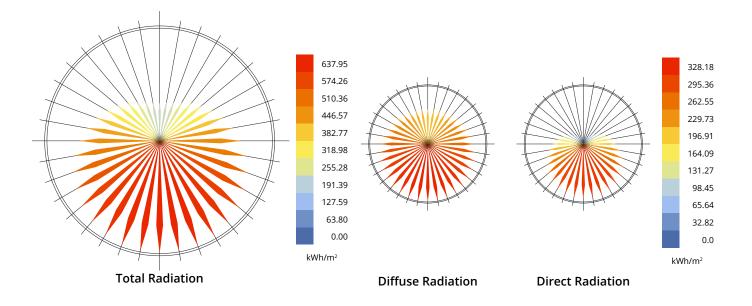
Petersburg also experiences significant cloud cover and precipitation, averaging 4-7 inches per month in the summer and peaking at 12-18 inches per month in the fall. Average annual snowfall is moderate, with Petersburg being snow free most of the year. The significant cloud cover results in more diffuse than direct solar radiation, limiting the effectiveness of photovoltaic solar panel energy generation. However, solar hot water panels tend to work well with diffuse radiation.

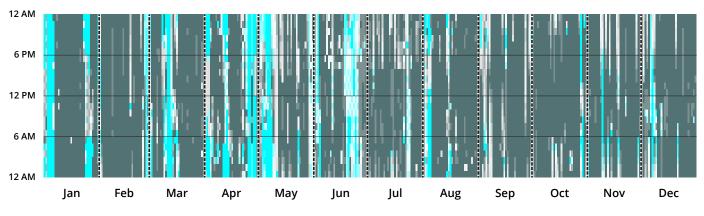


Average Monthly Rainfall

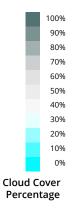


Average Liquid-Eqivalent Monthly Snowfall

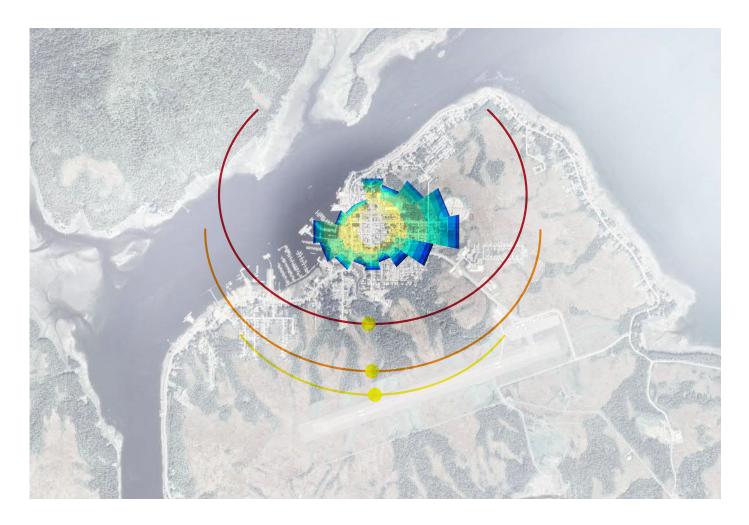




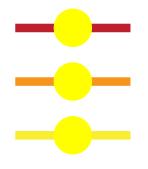
Cloud Coverage



Winds tend to predominantly come from the east, with the highest speeds experienced in spring and summer. The chart below combines a wind rose with seasonal sun paths to show relative microclimate effects. Generally, sites with north and east exposure will be cooler than those with south and west exposure, thought these effects are moderate in degree.



Sun Paths



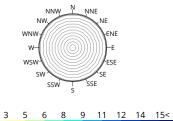
Summer Solstice June 21

Fall/Spring Equinox March 20/September 23

Winter Solstice December 21

Wind Rose

<0 2



Wind Speed (MPH)

History and Community

Fishing has historically been the primary industry in Petersburg. In recent decades the fishing industry has seen decline with fewer people employed, but those jobs that remain are stable with a higher average income. Other industries contributing to the economy are local and federal government, transportation, seafood processing, and tourism. The population census has declined from its peak of 3,400 in the late 1990's to about 3,100 today. The abundant natural resources, strength of community, and quality of life all play a part in residents' desire to live and work in Petersburg.



The majority of Petersburg residents and industries reside in the town proper and along the coastal roads that radiate out from the center of town. Haugen Drive is the main route between the town center and the airport, with other services along its length including the fire hall, post office, and grocery center. The hospital is located in the center of town, and this has been a source of convenience for both staff and patients. However, the site is restricted by its boundaries and offers few parking spots. The site is surrounded by commercial operations and a mixture of single and multi-family residences, making it difficult to expand the campus.



Site Options



Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center

Potential Sites

The geography around Petersburg is characterized by forests, wetlands and extensive tracts of muskeg, a soft, moisture absorbing organic material that presents unique challenges to site development. Much of the vacant land outside the town core is owned publicly by the Borough of Petersburg, making acquisition of property for a new hospital relatively simple. FAA restrictions limit how closely the new hospital can be located near the airport. The Army Corps of Engineers will have oversight over development of land containing wetlands.

For the purpose of the master plan the design team considered the existing downtown hospital site as well as four undeveloped sites offered for consideration by the Borough for building a new replacement hospital. Two of the undeveloped sites are located adjacent to Haugen Drive, one is off Excel Street to the east, and one is near North Eighth Street adjacent to the softball fields. All the undeveloped sites are largely made up of wetlands and muskeg, requiring extensive site preparation. They do however offer greater potential for creating an efficiently designed facility with ample parking due to their larger size.

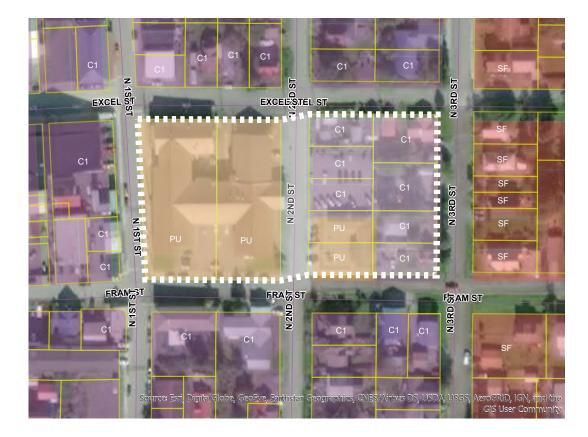


Downtown Hospital Site

The existing hospital and clinic are located on a single block downtown, bounded by Excel Street to the north, Fram Street to the south, First Street to the west and Second Street to the east. The site is currently zoned as a Public Use, which is the appropriate zone for a hospital. The site slopes from the southwest up to the northeast resulting in the main SW entrance to the hospital a floor below the NE Clinic entrance and ER entrance on the east side.

To accommodate the expanded program the design team considered the full block to the east as part of the necessary site development area, creating a 115,362 SF (2.65 acre) single large lot. This adjacent block is a mixture of Public Use and Commercially zoned properties. Current uses include surface parking for the hospital, the Clausen Memorial Museum, and residential houses. All these existing uses would need to be displaced and the stretch of North 2nd street between the two blocks vacated to create a viable site large enough for the replacement hospital.

Water and Sewer connections are available at the surrounding streets. A storm drain connection is available only at Fram Street. Storm water currently flows at the surface of the streets down to Fram where it is intercepted at catch basins and directed to subsurface culverts. Power and phone/data is elevated on power poles at the east sides of North 1st Street, North 2nd Street, and North 3rd Street, and at the south sides of Excel and Fram Streets. If North 2nd Street is vacated the power and phone/data lines will need to be relocated.



Alternative Sites

No one site was identified as the designated location for the replacement hospital. Final site selection will be the result of a process of weighing the advantages and disadvantages of each of the sites identified above, and perhaps other sites that may be made available by the Borough to consider. The process will solicit participation from the hospital, the Borough, and the community to assure that all selection criteria is properly weighted and scored to support a rational and consensus driven decision.

North Haugen Site

This site fronts Haugen Drive to the south. The other sides of the site abut residential and commercial properties and undeveloped land. Gjoa Street dead ends at the west side of the property and Fram Street dead ends at the northwest corner of the site. The land is currently zoned for Single Family and Open Space/Recreational. The site is relatively flat and slightly depressed below the Haugen Drive right of way. The site is undeveloped with a mixture of trees and shrubs and likely wetlands and muskeg. Total site area is 378,037 SF (8.68 acres.)

A 10-inch water main abuts the west property line. An 8-inch sewer line is available at Gjoa Street. There is also an 8-inch sewer line and 8-inch water line available at the south side of Haugen Drive. No storm drainage catchment system is available. Storm runoff would rely on natural drainage patterns. A stormceptor manhole would likely be required to catch any silt or oil runoff from paved areas before it is released. Power and phone/Data is elevated on power poles along the south side of Haugen Drive, requiring a crossing to serve the site.



South Haugen Site

This site fronts Haugen Drive to the north. The other sides abut residential and public properties and undeveloped land. Ira II Street and Eighth Street intersect at the west side of the site. The Fire Hall is located at the northeast corner of the site. The site is relatively flat but significantly depressed below the Haugen Drive right of way. The land is currently zoned for Public Use with a small portion zoned for Single Family. The site is undeveloped with a mixture of trees and shrubs and likely wetlands and muskeg. Total site area is 367,344 SF (8.43 acres.)

An 8-inch water line and 8-inch sewer line are available at the south side of Haugen Drive. No storm drainage catchment system is available. Storm runoff would rely on natural drainage patterns. A stormceptor manhole would likely be required to catch any silt or oil runoff from paved areas before it is released. Power and phone/Data is elevated on power poles along the south side of Haugen Drive.



Excel Street Site

The Excel Street site fronts undeveloped land on three sides and abuts commercial and retirement residential uses to the south. The Borough zoning map shows an extension of the Excel Street right of way aligned with the north side of the site and an extension of the Thirteenth Street right of way aligned with the east edge of the site. The map also shows an extension of the Twelfth Street right of way bisecting the site, but this could very likely be amended to create a single contiguous lot. The site is currently zoned for Open Space Recreational, Commercial, and Multifamily Residential uses. The site is relatively flat and level with surrounding properties. The site is undeveloped save for a nature trail, with a mixture of trees and shrubs and likely wetlands and muskeg. Total site area is 229,452 SF (5.27 acres.)

There is an 8-inch water line and an 8-ich sewer line at Thirteenth Street near the southeast corner of the property. The next closest connection point is a 10-inch water and 8-inch sewer at the corner of Tenth Street and Excel Street, 650 feet away. Like the Haugen sites there is no storm catchment system available so mitigated storm discharge to natural drainage patterns would be the expected approach. Power and phone/data are available along the west side of Thirteenth Street, and further away at the intersection of Howkan Street and Twelfth Street.



Eighth Street Site

This site is located north of the softball field, touching the intersection of Eighth Street and Aaslaug Street at its west corner. The site abuts undeveloped land on all four sides, except for a single house at the corner of Eighth and Aaslaug. The Borough zoning map shows an extension of the Eighth Street right of way on the northwest side and an extension of the Aaslaug Street right of way on the southwest side. The map also shows unnamed street rights of way bisecting the site in two locations, but it is likely these can be vacated to create a single contiguous lot. The site is currently zoned for Public Use. The undeveloped land abutting the northwest and northeast sides are zoned Single Family. Land abutting the other sides of the site to the south and east are zoned for Multifamily Residential, Public Use, and Open Space Recreational. The site is relatively flat with a mixture of trees and shrubs, and likely wetlands and muskeg. The total site area is 251,557 SF (5.78 acres.)

There are no water and sewer lines at the site. The nearest connection point is at the intersection of Lake Street and Aaslaug Street, approximately 250 feet from the site. At that location there is an 8-inch water line and an 8-inch sewer line. Like the other undeveloped sites there is no storm catchment system available so mitigated storm discharge to natural drainage patterns would be the expected approach. Power and phone/data are available at the intersection of Eighth Street and Aaslaug Street.



Selection Criteria

The following is a suggested list of selection criteria and potential scoring to consider as part of the process. These criteria weigh the relative difficulty of development of each site with the potential benefits to the healthcare experience. Higher scores are awarded to sites where development is easier and there is greater potential to create an inspirational, healing environment. This list will likely evolve and perhaps expand as the process moves forward and more stakeholders contribute to the discussion.

1. Presence of and access to existing utilities

Developing water, sewer, power, and telephone services can be a major expense. To the degree that existing services are already available nearby these costs can be mitigated.

2. Proximity to existing roads

.

Property adjacent to a major street such as Haugen will provide easy access for patients and staff. Access from adjacent residential streets is less desirable.

3. Muskeg risk and elevation of site relative to existing adjacent roads

An undeveloped site will require removal of muskeg and importation of structural fill to create a building pad and road beds. If the site is level with adjacent streets the amount of structural fill will be minimized.

4. Proximity to residential development

Most housing in Ketchikan is built on piles. If the site is adjacent to residential properties care will need to be taken when removing muskeg to avoid a negative impact to the adjacent houses through a drop in the water table or earth movement. Cost could add up for temporary barriers at the property line or for other mitigation.

5. Existing Zoning designation

If site is zoned for a use other than Public, such as residential or recreational use, it may complicate land use review and require more time to approve. Note that the size of the project will likely require a master planned development review under the current zoning code.

6. Existing Use to be displaced

If the site has an existing use that is of value to the public or to an individual property owner the costs of property acquisition and use mitigation can quickly mount.

7. Existing structures to be demolished

Demolition of existing structures is an additional cost on top of site development. Mitigation of Hazardous materials could be involved.

8. Access to views and sunlight

Distant territorial views and access to daylight are documented contributors to wellness and healing. Views are plentiful in Petersburg but if there is an existing structure or site feature that may obstruct views from patient areas or block access to daylight it should be avoided.

9. Close to Downtown

Currently the hospital is located within the center of town, making it easy for staff and visitors to walk to patronize local businesses and run errands. The further away from the city center the harder it is for staff and visitors to engage in town live without using an automobile.

10. Size

To accommodate a single story scheme, parking, vehicle access and drives the size of the parcel will need to be roughly 350,000 to 375,000 SF. For a 2-Story scheme the size of the parcel will need to be roughly 300,000 to 350,000 SF.

Scoring

The following is a preliminary score matrix that could be used to weigh each of the criteria and score each of the individual sites. Scores could range from -5 to +5 with higher scores awarded to sites that exhibit distinct advantages for a criterion, and lower scores for sites that represent fewer advantages or even serious challenges. Ultimately at the end of the selection process all participants would fill out a similar sheet and the cumulative results considered a major, but not the only factor in the final site selection.

	Criteria	Existing	North	South	Excel	North
		In Town	Haugen	Haugen	Street	Eighth
1.	Access to Utilities	-	-	-	-	-
2.	Proximity to Roads	-	-	-	-	-
3.	Site Elevation/Muskeg Risk	-	-	-	-	-
4.	Proximity to Residential	-	-	-	-	-
5.	Zoning Designation	-	-	-	-	-
6.	Existing Use Displaced	-	-	-	-	-
7.	Structures to Demolish	-	-	-	-	-
8.	Access to Views and Sunlight	-	-	-	-	-
9.	Close to Downtown	-	-	-	-	-
10.	Size	-	-	-	-	-
	Total Score	-	-	-	-	-

Consultant Reports



Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center



Seismic Evaluation Report

Petersburg Medical Center, like many hospitals across the country, bears the history of a series of expansions and remodels over many years, leading to a legacy of compromised environments and aging infrastructure. The current condition of the hospital was well documented in the 2015 Facility Condition Assessment completed by Jensen Yorba Lott. That study highlighted the difficulties of providing quality services in functionally obsolescent spaces designed long before advances in medical technology and the rise of the information age. It also described the challenge of maintaining aging systems that are no longer supported by their manufacturers and for which parts are hard to find. Though 'grandfathered' as code compliant at the time of construction, many spaces are not consistent with current code standards or industry standards based on best practice.

The 2015 assessment looked at all major components of the hospital, including structural. However, performing a seismic analysis was beyond the contracted scope of work at that time. The report recommended that a full structural analysis be performed to determine what upgrades may be needed to bring the facility up to current seismic code.

As part of the current Master Plan KPFF Structural Engineering was engaged to perform an American Society of Civil Engineers (ASCE) 41 Tier 1 evaluation of the existing structure. A Tier 1 evaluation is an initial screening of the building's potential seismic deficiencies in the event of an earthquake. The evaluation is conducted through review of historical structural drawings coupled with non-destructive visual inspection, using a standard Tier 1 checklist. Though not the full structural analysis recommended in the facility condition assessment, it is the standard first step towards identifying seismic risks. The evaluation was completed for the 1967 long term care wing and the 1983 hospital addition. No drawings were available for the 1990 clinic, so it was not included in the evaluation.

Deficiencies

Potential seismic deficiencies were found at both the long-term care building and the hospital. Though these conditions may have been acceptable at the time, seismic design awareness and code development have advanced greatly over the last decades, bringing into question past solutions.

At the long-term care building concrete shear wall dowel embedment into the foundation is insufficient, there is no tension connection between cedar piles and pile caps to resist uplift, and attic bracing is insufficient to transfer lateral forces to the shear walls.

At the hospital load paths to steel moment frames are unclear, some moment frames do not meet drift limits, attic bracing is insufficient to transfer loads to moment frames, connections of moment frame columns to the foundation are insufficient, it is unlikely that moment frame connections are able to the strength of the beams, moment frame members do not meet compact section requirements, there are no girder flange continuity plates moment frame joints, moment frame beam flanges are not braced out of plane at the attic, and there may be insufficient tensile capacity in the steel framing and connections.

The above is a condensed summary of the findings. The full report and tier 1 checklist are included in the appendix. Though not an exhaustive and conclusive analysis these findings further question the feasibility of trying to adapt the existing long-term care and hospital buildings to contemporary standards and suggest that there may be significant cost and disruption associated with correcting the identified deficiencies, and other potential deficiencies that may be found when hidden structure is exposed during corrective action.



Inundation Study

Like any waterfront community Petersburg is potentially vulnerable to shore based flood events from a variety of sources. Of interest to the city and the hospital is the relative level of flood risk associated with the current downtown site compared to other potential sites for a replacement hospital further uphill.

As part of the Master Plan the firm of Herrera was engaged to perform an inundation study to assess the risks of coastal flood events including sea level rise, storm surge, and tsunamis generated by earthquakes, glacial collapse, ground landslides or submarine landslides. Following is a brief summary of the findings.

Sea Level Rise

The impact of projected world sea level rise is tempered in the SE Alaska archipelago by tectonic uplift contributing to vertical land movement. Even without the vertical land movement phenomenon the elevation of the existing hospital in Petersburg is sufficiently above the most extreme sea level rise scenarios prior to year 2150 to avoid inundation.

Storm Surge

Storm surge is caused by wind and low atmospheric pressure and can be intensified by wave action. Wave heights are relatively modest in the areas around Petersburg. Worst case projections for storm surge height in Petersburg is 21 feet above Mean Lower Low Water (MLLW) level. The existing hospital is located 40 feet above MLLW.

Earthquake Generated Tsunamis

This most common type of tsunami is typically caused by large distant earthquakes. Petersburg, like many parts of SE Alaska, is protected by large islands to the west and the effect of this type of tsunami is greatly dissipated by the time it reaches Petersburg. The more local subduction earthquakes common to outer SE Alaska have been projected to produce tsunamis of up to 10 feet in height. But in the protected inner areas of SE Alaska like Petersburg the models indicate the potential for subduction to be less than 5 feet in height, not enough to threaten the existing hospital.

Glacial Collapse Tsunamis

Pro-glacial tsunamis occur when a large ice sheet calves at the terminus of a tidewater glacier. The tsunamis generated by these events can be quite high, and the likelihood of occurrence is probable as global temperatures rise. The closest glaciers to Petersburg that may experience this type of event are Baird Glacier and the Le Conte Glacier, both about 20 miles away. But their effect on Petersburg is expected to be minimal. This is primarily because the length and depth of the bays fronting these glaciers will quickly absorb the initial energy of the tsunamis.

Landslide Generated Tsunamis

These events are caused by a large land mass collapse from a steep waterfront slope. In Petersburg, Petersburg Mountain is the only land mass of sufficient size to produce a tsunami that would impact the existing PMC. But there is no evidence of past catastrophic land sliding, or flank collapse anywhere on Petersburg Mountain so the risk of such an event is pure speculation. If it did occur the resulting tsunami would likely inundate all of Petersburg including the uphill alternative sites.

Submarine Landslide Tsunamis

These events are caused when a large deposit of sediment at the mouth of a river suddenly slides into deeper water. Such an event occurred in Skagway in 1994 when a large amount of recently deposited sediment from the Skagway river sloughed into the deep Taiya Inlet. In Petersburg the amount of sediment contributed by Petersburg Creek is modest and the shallow depth of the narrows would not allow a rapid lateral movement of submarine sediment.

Conclusion

The likelihood of inundation of the existing PMC is very low for most of the potential source events. The one event that would impact PMC is itself so unlikely as to not be a credible risk. If it did happen then the location of the hospital is immaterial. The above is a summary of the findings in the Herrera report. The full report with study citations and comparative events is in the appendix.

PETERSBURG MEDICAL CENTER MFP MARKET ANALYSIS

SEPTEMBER 2019

NAVIGANT

Market and Financial Analysis

As they contemplate the opportunities for improved services and outcomes that a new replacement facility can offer Petersburg Medical Center must tailor their planning to address both local demographics and national trends. PMC is a progressive healthcare organization eager to incorporate strategies that have been proven to improve health and wellness on the national stage. Coordinated patient-focused care provided by a dedicated team working in a collaborative environment to assure whole health, early detection and intervention to avoid catastrophic complications of untreated chronic conditions, post procedure rehab and in-home continuity of care to assure reliable recovery, expanding virtual access to care via searchable electronic medical records and telemedicine, forging partnerships with local organizations and employers, and providing a safe, efficient environment that supports rigorous infection prevention measures are all recognized, successful approaches to enhancing community health.

The implementation of these progressive programs needs to be customized to the local population and respond to the realities of reimbursement sources. Providing programs that not only respond to the needs of the community but also align with the priorities of the Center for Medicare and Medicaid Services (CMS) and private insurers will contribute to a fiscally sound operation and assure a secure future for PMC.

Navigant, a nationally recognized healthcare operations consultant, was engaged to address the master plan requirements for a demographic and workload analysis, market and service line analysis, and an updated debt capacity analysis. Below is a condensed summary of the findings. The complete Navigant report is included in the appendix.

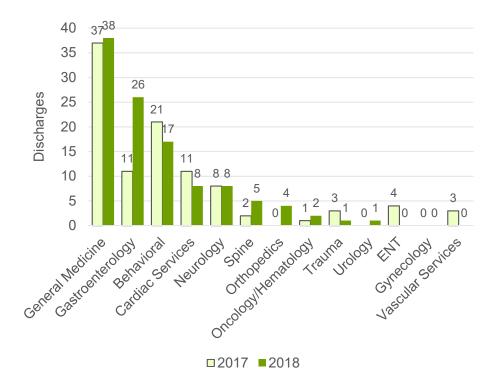
Service Area Market Demographics 2019-2024

			5 Year Growth						
Service Area Population by Age Cohort	2019	2024	No.	Percent	CAGR				
Age 0-17	721	733	12	1.7%	0.3%				
Age 18-44	1,046	1,026	(20)	-1.9%	-0.4%				
Age 45-64	940	879	(61)	-6.5%	-1.3%				
Age 65-84	456	557	101	22.1%	4.1%				
Age 85+	38	39	1	2.6%	0.5%				
Service Area Total	3,201	3,234	33	1.0%	0.2%				
Female Age 15-44	540	535	(5)	-0.9%	-0.2%				

Demographic and Workload Analysis

Drawing from public data on population trends in the SE Alaska region, hospital admission records and previous studies completed by PMC and the Borough, Navigant compiled a contemporary profile of the community. Findings included:

- Petersburg population will increase slower than the state as a whole.
- PMC service area will see a 3% increase in those over 65 in the next 5 years. Percent of Medicare recipients is expected to grow in line with aging population.
- Inpatient volumes will remain relatively flat, and remain low compared to state and national benchmarks
- Outpatient specialty volume will grow slightly in the next 5 years.
- Lab and imaging volumes will grow significantly over the next 5-10 years.
- While imaging volume will increase, MRI demand is expected decrease.
- PMC has no direct competition for acute primary care, urgent care, emergency and inpatient services.
- The number of privately insured patients is expected to decrease by 5% over the next 10 years.
- Facilities that represent possible competition for chronic care management and post-acute care include Wrangell Medical
 Center, Ketchikan Medical Center, Bartlett Regional Hospital in Juneau, and Swedish and Virginia Mason in Seattle



Market and Service Line Analysis

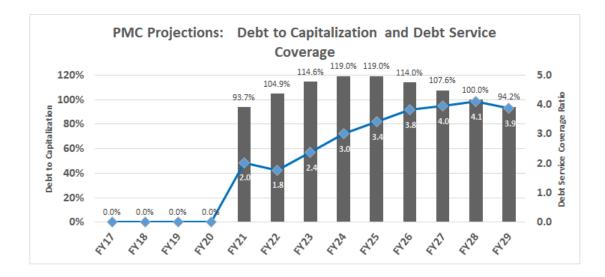
Accessing internal PMC admission and billing records Navigant completed an internal assessment of the current facility use and identified trending volumes. Findings included:

- General Medicine, Gastroenterology, Behavioral Health, and Cardiac services represent the largest volume of inpatient admissions.
- Gastroenterology, Nephrology, Substance Abuse, and Pulmonology represent the largest percentage of inpatient volume.
- Computerized Tomography (CT), Physical Therapy, Home Health and Treatment Room visits have all shown significant recent growth.
- The majority of patient days at PMC are Long Term Care.
- The Average Daily Census (ADC) in the Acute Care wing remains below 1.0.

Based on the above Navigant generated a forecast of bed needs and service line growth.

PMC Total ALL AREAS													
		Bed Need											
Bed Type	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
		Projected											
Petersburg SNF													
Patient Days	4,818	5,002	5,194	5,392	5,599	5,813	6,035	6,266	6,506	6,755	7,013		
Average Daily Census	13.2	13.7	14.2	14.8	15.3	15.9	16.5	17.2	17.8	18.5	19.2		
Population Age 65+ in Petersburg	494	513	533	553	574	596	619	642	667	693	719		
Year over Year Change		3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%		

- PMC currently operates 12 acute and swing beds. Average ADC for acute beds is 0.8. Average ADC for swing beds is 2.5.
 Given this low census the current 12 beds are more than enough to meet demand.
- There may be a slight increase in acute care admissions if surgical procedures and OB/birthing services are restored to the hospital.
- Though the number of acute beds exceeds average daily need, the surplus capacity allows PMC to respond to catastrophic events where the number of patients needing admission can spike upwards temporarily.
- PMC currently operates a 15 bed Skilled Nursing Facility (SNF) Long Term Care unit. Current ADC is 13.2, suggesting capacity for growth. Given the low number of SNF beds available in Alaska generally, and the aging population, Navigant forecasts that a growth to 20 Long Ter Care beds is sustainable.
- Ancillary services are all expected to grow over the next 10 years. But the growth is expected to be met with a single room for each of the following services:
 - o Computerized Tomography (CT)
 - o Mammography
 - o Ultrasound
 - o DEXA Bone Density Scanning
 - o X-Ray
 - o Emergency Department Exam, including observation
 - o Outpatient Surgery
 - o Endoscopy



Financial Projections and Debt Capacity Analysis

Financial projection and calculation of debt capacity rely on making assumptions about the future growth, or decline, of revenue based on current financial performance. The FY 2020 Budget recently completed by PMC was used as the baseline. It should be noted that this calculation of debt capacity is based on the PMC facility as it stands now, fully depreciated and with a depressed valuation due to its age. Essentially it calculates how much debt the hospital can take on right now to finance improvements, not considering potential grants, subsidized loans or tax revenues. Following are the assumptions and focus used in the calculation:

- PMC will retain its current constant market share of patients and services.
- The budget will continue to be approximately be break even from a total margin perspective
- Focus on how interest payments will affect the operating income/margin debt and how easily PMC can afford the debt service.
- Assumed that the capital improvement will be entirely funded over a 30-year term at 5.5% interest.
- Assumed no additional debt and limited capital spending over the term of the loan.
- Earnings Before Interest, Taxes, Depreciation and Amortization (EBIDTA) remains positive through the life of the loan.
- Assumed Days Cash on Hand will slowly build in a positive trajectory.

Based on the above the estimate of Petersburg Medical Center's debt capacity is **\$5.0 M.** This is not sufficient to fund meaningful improvements to PMC, let alone finance a replacement facility. It will fall to successful pursuit of state or federal grants to secure the capital necessary to take on a major project. If such grants are realized and a new hospital is built, the new facility can be amortized over many years, significantly improving cash flow and potentially increasing the debt capacity of the hospital to an amount that can be coupled with grant money to build a viable project budget.





Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center

Hospital Program

Building on the bed and service line forecast provided by Navigant, coupled with preferred service lines identified by the staff and community in the hospital's outreach sessions, NAC Architecture created a draft numeric program indicating the number and sizes of rooms necessary to provide the anticipated services. This program was then reviewed and modified in a series of sessions with department heads and hospital administrators to assure it met expectations and is in alignment with need and revenue projections.

The resulting program has a total facility Gross Square Foot (GSF) area 60% higher than the existing facility. The growth is due to three factors; increase in the number of rooms, additional types of rooms and an increase in the size of rooms. The increased number of rooms is driven by the expansion of the SNF Long Term Care and an increase in the number of exam and treatment rooms in the Clinic. The increase in types of rooms is driven by the need to add new services and spaces in physical therapy, dietary and admissions/entry. The increase in size of rooms is primarily driven by the need to accommodate new medical equipment modalities, and provide the backbone and distribution of Information Technology.

SPACE	XISTING		PROPOSED					
DEPARTMENTS	NSF	GF	DSF	NSF	GF	DSF		
MAIN ENTRY RECEPTION	875	1.10	966	2,525	1.15	2,904		
ADMINISTRATION	2,183	1.18	2,578	1,200	1.35	1,620		
INFORMATION TECHNOLOGY	0	0	0	1,140	1.25	1,425		
BUSINESS/MED. RECORDS	884	1.19	1,051	1,120	1.25	1,400		
LONG TERM CARE	4,430	1.38	6,094	8,460	1.50	12,690		
CLINIC	2,736	1.95	5,342	6,430	1.40	9,002		
ACUTE CARE	3,578	1.20	4,295	5,990	1.20	7,188		
EMERGENCY DEPARTMENT	954	1.10	1,053	1,440	1.50	2,160		
LABORATORY	1,683	1.12	1,881	2,060	1.25	2,575		
IMAGING	1,437	1.48	2,126	3,470	1.50	5,205		
PHARMACY	117	1.00	117	640	1.20	768		
SURGERY	1,045	1.46	1,522	1,810	1.60	2,896		
CENTRAL STERILE	480	1.09	523	760	1.30	988		
PHYSICAL THERAPY	1,096	1.14	1,253	2,682	1.25	3,353		
HOME HEALTH	1,672	1.44	2,416	440	1.40	616		
MAINTENANCE	2,376	1.26	3,000	2,376	1.15	2,580		
DIETARY	1,656	1.21	2,000	2,940	1.30	3,822		
CENTRAL SUPPLY	5,012	1.20	6,000	4,840	1.30	6,292		
OTHER SUPPORT SPACES	4,660	0.00	0	0	0.00	0		
TOTAL DEPARTMENT GROSS SQ	UARE FOOTAGE		42,217	7		67,483		
	g grossing factor		1.16			1.30		
TOTAL DEPARTMENT GROSS SQ	UARE FOOTAGE		49,000)		87,728		

Building Grossing Factor

Exterior walls, public corridors, mechanical and electrical services, stairs and elevators

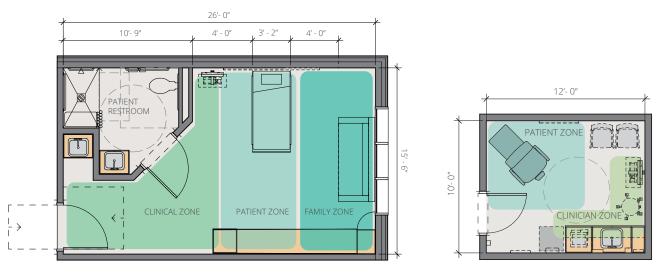
Code Considerations

The model codes that apply to healthcare environments are voluminous and in a constant state of review and update. The primary volumes referenced for this master plan include:

- National Fire Protection Association (NFPA) 101 Life Safety Code, 2012 Edition
- International Code Council (ICC) International Building Code (IBC), 2018 Edition
- Facilities Guideline Institute (FGI) Guidelines for the Design and Construction of Hospitals, 2018 Edition
- FGI Guidelines for the Design and Construction of Outpatient Facilities, 2018 Edition
- FGI Guidelines for the Design and Construction of Residential Health, Care and Support Facilities, 2018 Edition
- ICC/American National Standards Institute (ANSI) A117.1-2017 Standard for Accessible and Usable Buildings and Facilities

The above references define the code minimum compliances for the size, design and construction of healthcare facilities. In many cases industry standards recommend that the code be exceeded in some aspects for example:

For example the FGI Guidelines state that a hospital patient care room must have 120 SF of clear floor area around the bed, with a minimum of 3 feet clearance at the sides and foot of the bed. New hospitals are typically providing larger rooms to accommodate equipment, amenities, and family members. The example room below shows a typical contemporary patient room with zones for the caregiver, the patient, and the family. The clear floor area is roughly 200 SF, and the clearances on the sides are 4 feet between the bed and toilet room and more than 6 feet at the foot of the bed. The total SF area of this room including the toilet room is almost 400 SF. For the purposes of the program we assumed 350 SF per room.



Patient room example

Exam room example

For the clinic the typical exam room size is the main driver determining the overall size of the facility. The FGI guidelines establish a minimum clear floor area for a standard exam room of 80 SF, with a minimum clearance of 2 feet 8 inches at the sides and foot of the exam table or chair. In the example below clear floor area is roughly 86 SF, with nearly 4 feet of clearance at the foot of the chair. This 120 SF exam room is considered a minimum size to adequately provide effective communication between the caregiver and the patient while allowing a family member to participate in the care session.

Site Planning



Integrity

Professionalism

Dignity

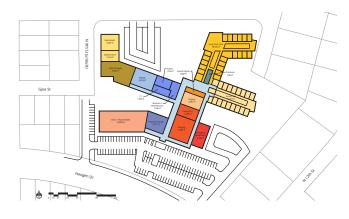
Quality

Teamwork

Petersburg Medical Center

Site Planning

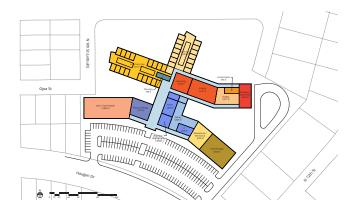
The Master Plan was tasked with determining the relative merits of building a replacement hospital at the existing hospital location, and at an undeveloped site away from the downtown core. The new numeric program was used as the basis for determining the size of the new facility. Several alternatives were generated with different locations of the various departments, patient wings, and clinic arrayed on the sites. The alternatives looked at one vs. multi story schemes, long radiating wings to maximize daylight vs. more compact arrangements to shorten walking distances, and various departmental adjacencies to enhance operative relationships. The alternatives were reviewed with hospital administration and department leaders and modified with input and insight from the participants. Two options for a greenfield site and one option for the downtown site were finalized and reviewed for potential costs.













Downtown Site

The downtown site presents many challenges and limitations. The single block occupied by the hospital is not large enough to support the expanded program. Annexation of the adjacent block to the east is proposed, as well as vacation of Second Street to provide enough building area. The existing hospital needs to remain in operation during construction so this requires that a large portion of the program be built and occupied on the adjacent block before demolition of the existing hospital can proceed. Because the site slopes significantly from southwest to northeast a stepped, multi-story solution with at grade entrances on 3 levels is required. A two-story structure will front First Street to the west, similar to the existing condition. A one-story structure will front Third Street. The facility will present one to two-story structures along Excel Street and Fram Street as it steps down from east to west.

The first phase of work will include demolition of existing structures on the adjacent annexed block, excavation, and construction of a two-story building with the lower floor completely underground on the east side and open to grade at the west side. The upper floor will house the acute patient wing, the long-term care SNF, and the emergency department. A centrally located nurse station will allow nighttime staff to monitor the long-term care wing, the acute care patient wing, and the corridor to the ER entry door. The lower floor will house admissions, administration, dietary, physical therapy, laboratory, radiology and surgery. Passenger and staff elevators will connect the two floors. The south end of Second Street will be closed to build a new main entry point for the hospital. During this first phase the existing functions of the hospital will remain operational including the ER.

The second phase of the work will include demolition of the existing hospital building but leave the existing clinic operating in place. Construction of new receiving, storage and maintenance space at the lower level will include an underground tunnel to the new hospital building to access the elevators for be topped by construction of a new clinic building above, connected to the new main entry point. Once the new clinic is opened the existing clinic will be demolished and the site developed for parking and landscaping.



First Floor Plan - Phase 1

۲



Basement Plan - Phase 2



First Floor Plan - Phase 2

 $^{\mathbb{N}}$



Second Floor Plan - Phase 2

 $\textcircled{N}{\mathbb{P}}$

Though faced with significant phasing and property acquisition challenges the downtown scheme does offer the opportunity for an enclosed courtyard for long-term care, and an elevated prospect for the long-term care day room for views to Petersburg Mountain. It also provides a clear separation between the hospital and the clinic and increases the amount of parking at the hospital. Some hospital staff have expressed strong concerns about the multilevel design and having physical therapy and surgery on a separate floor than the patient wing.

3D views of Downtown Scheme



Aerial view - Northwest



Aerial view - Northeast

Greenfield sites

The greenfield sites are much larger than the downtown site and offer greater flexibility in arranging the departments relative to each other, and allow for a single story solution. They can also accommodate more parking spaces to address more people driving to the hospital rather than walking. The sites are not consistently zoned for public use but this can be addressed in a public process with the borough planning division. The greenfield sites represent significant complications to site development with wetlands and muskeg that need to be re-mediated, but recent projects like the fire hall and library have navigated this challenge successfully.

The north Haugen site was chosen to study site plans for a new hospital. Any of the other three sites identified by the Borough would support similar solutions, with differences primarily in access to underground and overhead utilities and proximity to already developed roads.



Greenfield Site 7A

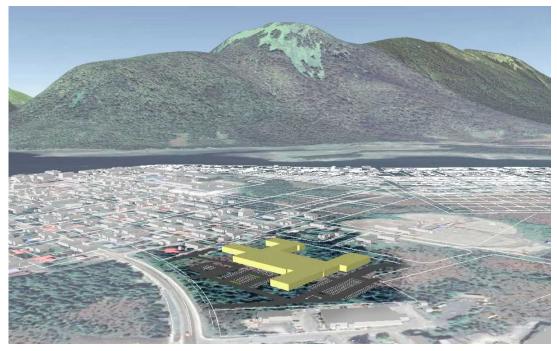
This scheme arranges the clinic, administration, and maintenance support functions in a continuous bar on the east side of the site. A central ancillary core housing imaging, laboratory, surgery and physical therapy and dietary forms the spine of the new hospital. A public corridor provides access from the main entry next to the clinic to the ancillary services and on to the patient care wings. A staff corridor connects the patient wings to surgery and physical therapy, and also connects dietary with storage. The emergency room is located adjacent to acute care with its own entry that can serve as the secure nighttime entry when the hospital is locked after hours.

Parking is placed at the main entry to the hospital and adjacent to the clinic for staff and outpatients. A separate ambulance drive is provided with additional parking near the ER entrance. The Acute care and Long-term care wings form an exterior landscaped courtyard for the residents' use, and can include sheltered exterior space so the outdoors can be enjoyed in inclement weather. Daylight can reach virtually all of the interior space.



Scheme 7A Floor Plan

3D views of Scheme 7A



Aerial view - Northwest



Aerial view - Northeast

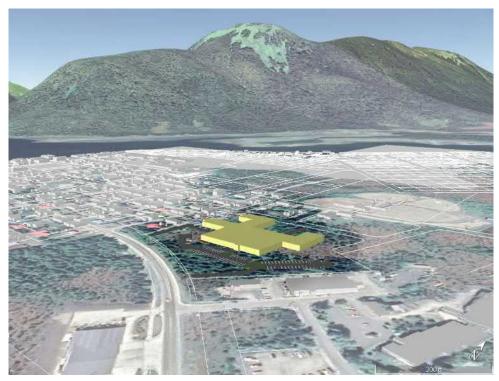
Greenfield Site 7B

This scheme is similar to scheme 7A, but the clinic is moved to the front of the hospital creating a more compact design with shorter travel distances between departments. The compact design removes access to daylight from one side of the clinic and completely from imaging, though this can be mitigated with skylights or clerestory windows. The compact design allows more of the site to be developed for parking. The ER is still close to the nurse station for nighttime management, and the patient wings still have access to an exterior courtyard.



Scheme 7B Floor Plan

3D views of Scheme 7B



Aerial view - Northwest



Aerial view - Northeast





Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center



Cost Estimates

A common benchmark to use for selecting building construction quality is to think of expected longevity. A 30-year building can be constructed at a lower cost than a 100-year building, but it may need major renovation at the end of its life. Major institutions and universities often pursue the 100-year benchmark, but they pay a significant premium for the choice. In the case of Petersburg Medical Center, we looked at creating a durable building that would approach the 50-year mark without need for major renovation. Mechanical equipment with moving parts by nature has a shorter life span, but these components can be overhauled or replaced without requiring major building modification. There is no textbook definition of what a 30 or 50 or 100-year building is, but the descriptor serves as handy framework for selecting construction methods and materials.

Construction Type Considerations

The International Building Code is written to allow increases in building height and area if it is constructed to a more fire-resistant standard. The allowable areas and height also vary by the occupancy type, with institutional 'I' medical occupancies being more restrictive than business 'B' occupancies. An 'I' occupancy is basically defined as inpatient areas and any areas that will be accessed by inpatients. A business 'B' occupancy is typically limited to outpatient areas only. For PMC the clinic, administration, and support services areas are eligible to be considered B occupancies. All other areas would be considered I since inpatients access physical therapy and imaging and the like.

Building fire resistance classifications are based on construction materials. The most fire-resistant buildings are classified as Type I and are typically made of reinforced concrete and steel. The least fire-resistant buildings are classified as Type V and are typically wood-framed construction. Types II, III, and IV are in between.

Type I buildings are generally more expensive than Type V buildings. Good practice suggests that a building should be designed to be no more fire resistant than is necessary to achieve the size of building needed. In healthcare this usually comes into play with medical clinics that can be classified as a business occupancy and be built to a lesser construction type.

The code limits the height and area of buildings relative to construction type and occupancy. The height and area limits can be increased if there is open space around the building and if the building is equipped with a fire sprinkler system. For PMC the maximum 75% increase is assumed for open frontage around the building, plus a 300% increase for fire sprinkler protection for a single-story building, or 200% increase for a multi-story building. Excerpt from IBC Table 503 showing the height and area limits for different construction types and occupancies I-2 and B is provided below:

		shawn in fa	WAELE BOIL	nnig heigh Ie plana. Siz	ry limitation	a alsown as a			B.	
					the statement of the second				-	
	2								5. Y	
NEIGHT (Jave)	UL	180	86	荷瓜	05	85	86	60	40	
S	UL	4	2	1	1	NP	1	1	NP	
A	UL	UL	15,000	11,000	12,000	NP	12,000	9,500	NP	
S	UL	11	5	3	5	3	5	3	2	
	Relight (lave)	S UL A UL	Soliding height Burdsstores choen in fo Rickeling anse linekations shown in TVPC I A B RECHT (lavg) UL 190 S UL 14 A UL UL	ALLOWAELE BUB Soliding height Builtotions choen in fact above good faciliting area limitations shown in square boot, a TYPE I TYPE A BI A RECONT (layo) UL 110 86 S UL 4 2 A UL UL 15,000	Sulficiency ineligits denizationes chosen in fact above geode plans. East Facilitien area limitations shown in aquare back, as distormilies TYPE I TYPE I TYPE I A B REIGHT (lest) UL 100 S UL 4 2 1 A UL UL 15,000 11,000	ALLOWAES E BUIL UNKO MERGINTO AND ARD Soliding height Builtotions chosen in fact above goode plasm. Every invitation Recommendations above in agove boot, as determined by the defi TYPE OF CONSTITUT TYPE IF TYPE IF TYPE IF TYPE IF TYPE IF A BB A B A RECONT (layo) UL TWO RF AS SYONNES(S) ARIEA (A) S UL 4 2 1 1 A UL UL 15,000 11,000 12,000	ALLOWACE E BUILDING MEEGNTS AND AREAS** Soliding height Builtstone chosen in fact above goods plass. Every invitations shown as a Rekeling area limitations shown in equare here, as determined by the definition of "Any TYPE I TYPE I TYPE II TYPE II A BI A B A B REIGHT (level UL 1100 A5 A5 06 95 SYONED(S) APIEA (A) S UL 4 2 1 1 NP A UL UL 15,000 11,000 12,000 NP	ALLOWACELE BUILDING MEGGMITS AND AREAS** Soliding height Benitstone chosen in fact above goode plans. Story isnitutions above as stores above Backeling area limitations shown in square live?, as determined by the definition of "Area, building," TYPE OF CONSTRUCTION TYPE II TYPE II TYPE II TYPE II TYPE II A II A B A II III REIGHT (level UL 1100 166 765 065 955 765 SYONDEN(3) AREA (A) S UL 4 2 1 1 NP 1 A UL UL 15,000 11,000 12,000 NP 12,000	ALLOWACE COULD DAVA REPORTS AND AREAS** Soliding height Benizstone chosen in fact above goade plans. Every innitiations above as staries above goade plans Backeling area Instantions shown in equare first, as distancied by the deficition of "Area, building," par atory TYPE OF COMPTRUCTION TYPE IS TYPE IS TYPE IS TYPE IS TYPE IS TYPE IS TYPE A B A B A B A B A B A B A B A B A B A B	

The simplest way to select a construction type is to determine the most restrictive occupancy designation and design the entire building with a construction type that allows the total area and height of the building. In PMC's case, the most restrictive occupancy is 'I-2' Institutional hospital, and the total desired area is roughly 80,000 SF for the Greenfield sites, and 96.000 SF for the downtown site. To build the entire hospital as I-2 it would be necessary to use a minimum construction Type I-B because the next lower construction type II-A would only allow a maximum of 78,750 (15,000 x 1.75 x 3 = 78,750 SF.) The allowable area would be less for the downtown site because it is multi-story (15,000 x 1.75 x 2 = 52,500.)

A more nuanced approach is to select different construction types for the I-2 inpatient and B outpatient areas and essentially build them as separate buildings. Using a rough division of inpatient vs. outpatient of 50,000 SF for 'I-2' inpatient and 30,000 SF for outpatient 'B', the required construction types could be significantly different.

For the hospital 'I-2' 50,000 SF occupancy a construction type of V-A is nearly sufficient, allowing for a total area of 49,875 SF for a single-story building (9,500 x $1.75 \times 3 = 49,875$). Type HT (Heavy Timber) construction would allow for up to 63,000 SF. Since the B 30,000 SF occupancy is less restrictive it could be constructed as Type V-B (9,000 x $1.75 \times 3 = 47,250$.)

For the above scenario using Type V construction the I-2 and B buildings can be connected but they should be laid out as distinct separate buildings, and the connection point between them will need to be constructed as a 2-hour rated fire wall with 90-minute rated fire doors.

For the purpose of the cost estimate we used the conservative assumption that the building will use steel and concrete materials consistent with Type I construction. As the design moves forward there may be opportunities to reduce costs by dividing and sizing program to qualify for the less expensive Type V construction.

Narrative Descriptions

NAC Architecture and our consultants assembled descriptive narratives of the building and system components to serve as the basis of the cost estimates. Strategies to achieve minimum Gold LEED equivalency or better will be explored during design. Below is a summary of some of the basic assumptions underlying the cost estimating. More detailed system narratives are included in the appendix.

Conventional construction methods were assumed as the base line, A steel-framed structure with concrete slabs and footings was selected as it is expected to be more cost-effective than a concrete or timber framed building, and easier to modify in the future with additional equipment loads.

Building envelope materials were selected for long life, thermal performance, and rain management. Interior materials were selected for durability appropriate for a hospital environment, clean ability, and aesthetic effect.

Plumbing systems will be hospital grade for distribution piping and fixtures. Heating and ventilation systems will meet ASHRAE standards for each type healthcare environment, DDC controlled, with an emphasis on incorporating high efficiency, sustainable solutions.

Electrical power will be provided with normal and critical distribution per hospital and clinic requirements, with two emergency power generators and automatic transfer switches to enable rapid changeover when normal power is disrupted. Interior lighting fixtures will be LED type with color temperature selected to enhance visual examination and tied to occupancy sensors to shut off when not in use. Fire alarm system will be addressable.

Information Technology pathways will be distributed throughout, supported by a generous server room and distribution closets connected with fiber optic cable. Category 6A cable runs will be provided to all workstations. Wi-Fi system will provide wireless connectivity throughout the facility.

Local Conditions

Key to the cost estimating effort is incorporating adjustment factors unique to the region and economy. We consulted with Borough representatives and residents familiar with construction in Petersburg to get a better understanding of the unique local challenges. We confirmed the relatively temperate climate allows for year-round construction, something less common in more northern Alaska locations. There is a concrete batch plant on the island, but most other materials will need to be procured from outside and delivered by barge. The pool of local trades is capable but limited so most of the labor will come from outside Petersburg, with associated housing and per diem costs.

Our civil engineer consulted with an Alaska based geotechnical engineer familiar with muskeg to better understand strategies for managing the excavation of the material. The basic assumption is that no more muskeg will be removed than can be replaced the same day with structural fill in order to mitigate impacts to existing ground water flow or introduce sudden changes in the water table at adjacent properties.

Cost Estimate Structure

Below is the summary cost estimate for the three options explored in the master plan. Detailed cost estimate breakdowns are included in the appendix.

Cost Element		Gree Schei								wntown cheme	
		 Building		Site	 Building		Site		Building		Site
		72,463 SF		325,000 SF	80,170 SF	3	325,000 SF		95,414 SF	-	142,000 SF
Direct Costs											
Construction		\$ 31,436,581	\$	5,482,655	\$ 33,420,923	\$	5,223,434	\$	38,965,197	\$	5,236,493
Margins & Adjustments											
Location Factor	25.0%	\$ 7,859,145	\$	1,370,664	\$ 8,355,231	\$	1,305,859	\$	9,741,299	\$	1,309,123
General Conditions	7.5%	\$ 2,947,179	\$	513,999	\$ 3,133,211	\$	489,697	\$	3,652,987	\$	490,921
Design Contingency - Building	8.0%	\$ 3,379,432			\$ 3,592,749			\$	4,188,759		
Design Contingency - Site	15.0%		\$	1,105,097		\$	1,052,848			\$	1,055,481
MEP Market Contingency	2.6%	\$ 1,173,561			\$ 1,253,535			\$	1,439,339		
Contractor's OH & Profit	7.5%	\$ 3,509,692	\$	635,431	\$ 3,731,673	\$	605,388	\$	4,349,069	\$	606,902
Escalation to NTP	8.4%	\$ 4,225,670	\$	765,059	\$ 4,492,936	\$	728,887	\$	5,236,279	\$	730,709
Per Diem Imported Labor	2.5%	\$ 1,363,282	\$	246,823	\$ 1,449,505	\$	235,153	\$	1,689,323	\$	235,741
Total Cost		\$ 55,894,542	\$	10,119,727	\$ 59,429,763	\$	9,641,265	\$	69,262,252	\$	9,665,370
Total Estimated Construction Cost		\$ 66,014,269]		\$ 69,071,028]		\$	78,927,622]	
Indirect Costs*	40.0%	\$ 26,405,708			\$ 27,628,411			\$	31,571,049		
Total Project Cost		\$ 92,419,977			\$ 96,699,440			\$	110,498,670		

* Indirect Costs include non-construction project related expenses such as site surveys, geotechnical investigation, design fees, plan review and permit fees, inspections, finance cost, moving expenses, and furniture, fixtures, and equipment. Indirect costs on hospitals can range from 30% to 50%.

The cost estimate was built using the site diagrams and the project consultant narratives to define the construction quality level, using well known Seattle area costs for hospital and clinic construction to define the direct basic construction cost model. Then standard margins and adjustments were applied to determine the anticipated 'bid' total estimated construction cost that would be realized in Petersburg. These margins and adjustments include:

- **Location Factor –** This is an overall adjustment to convert Seattle pricing to Petersburg and reflects the cost of shipping, labor rates and other premiums typically experienced in the area.
- **General Conditions** These are the overall daily costs the general contractor experiences on a project and includes things like job trailers, storage, temporary water and power, and onsite supervision. 7.5% is an industry standard.
- **Design Contingency Building –** This factor addresses the unknowns at this point. We don't have a design yet and this allows for items that have not been identified yet to be incorporated into the project. This is applied only to the building costs. 8% is on the low side for a project in pre-design.
- **Design Contingency Site** This factor is a high percentage reflecting the unknowns at this point regarding which site will be selected and how difficult it will be to develop. It acknowledges the risk that wetlands and muskeg represent.
- **MEP Market Contingency** This factor addresses past experience that mechanical, electrical and plumbing trade costs in SE Alaska are generally higher than the overall location factor will cover.
- **Contractor's OH & Profit –** This is a standard factor the general contractor will carry to cover the cost of their office overhead and targeted profit. 7.5% is an industry standard.
- **Escalation to NTP –** All of the numbers in the cost model are based on today's dollars. The contractor will price the project based on the dollar value at the time they receive a Notice to Proceed with construction. The 8.4% represents anticipated inflation from today to a potential start of construction in mid-2021.
- Per Diem Imported Labor This factor accounts for the housing and food costs for outside laborers to reside in Petersburg during construction.

The total estimated bid cost for both site and building for each scheme is highlighted in yellow on the summary table.

Indirect Costs

In addition to the direct costs of construction there are indirect costs associated with any project. As noted at the bottom of the table these include surveys, consultant design fees, permit and inspection fees, moving fees, and notably the cost of furniture and medical equipment which can be significant. Depending on how much medical furniture and equipment can be reused (exam tables, CT, X-ray, etc.) the premium for indirect costs can vary from 30% to 50%. These total project costs will be factored in to the funding requests as the project moves forward.

PETERSBURG MEDICAL CENTER Replacement Hospital Master Plan Volume 2 Appendix







Integrity

Professionalism

Dignity

Quality

Teamwork

Petersburg Medical Center

Table of Contents

Seismic Evaluation

Inundation Study

Navigant Financial Analysis

Numeric Program

System Narratives

Architectural

Civil

Structural

Mechanical

Electrical

Cost Estimates

Downtown Scheme Greenfield Scheme 7A Greenfield Scheme 7B

Seismic Evaluation





Petersburg Medical Center

Seismic Evaluation Report

July 2019





Seismic Evaluation Report

July 2019

Prepared for: NAC Architecture 2025 First Avenue, Suite 300 Seattle, WA 98121

Prepared by: KPFF Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, WA 98101 Phone: (206) 622-5822 KPFF Job No. 10041900308.10

Table of Contents

1.	Executive Summary	1
	Overview	1
	Background	1
	Seismic Evaluation	1
2.	Building Description	2
	Long Term Care Wing	3
	Hospital	4
	Building Conditions	6
3.	ASCE 41 Tier 1 Seismic Evaluation	7
	Assessment Criteria	7
	Building Type and Checklists	8
	Information Collected	8
	Potential Seismic Deficiencies	9
4.	Conclusions	10

List of Tables

Table 3-1:	Spectral Response Acceleration Values for BSE-1N and BSE-1E	.8
Table 3-2:	Required Checklists for Tier 1 Evaluation	.8

List of Figures

Figure 2-1:	Building Layout Plan	.2
Figure 2-2:	Long Term Care Wing Floor Plan	.3
Figure 2-3:	Hospital Floor Plan	.5
Figure 2-4:	Settlement at Long Term Care Wing Exterior Stair	.6
Figure 2-5:	Cladding Damage at Long Term Care Wing Exterior Sun Room	.7

Appendices

Appendix A – Figures Appendix B – Tier 1 Checklists Appendix C – Seismic Hazard Data This page intentionally left blank.

1. Executive Summary

OVERVIEW

KPFF Consulting Engineers (KPFF) performed a seismic evaluation of the Petersburg Medical Center using American Society of Civil Engineers Standard 41-13 (ASCE 41). There were building components that were flagged as noncompliant per the Tier 1 checklists found in ASCE 41. This report summarizes the Tier 1 evaluation performed by KPFF and could be used as the basis for future evaluation of the structure.

BACKGROUND

The Petersburg Medical Center consists of three buildings: the Long Term Care Wing constructed in 1967, the Hospital building constructed in 1983, and a Clinic constructed in the 1990s. The Long Term Care Wing is a two-story building, with an attic that was added in 1983. The lateral force-resisting system consists of concrete shear walls. The Hospital building is a two-story building with an attic. Its lateral force-resisting system consists of steel moment frames. The Clinic consists of wood-framed modules on a concrete base. The Clinic was probably designed according to the 1991 Uniform Building Code (UBC), which is prior to the edition of the UBC that would enable this building to satisfy the benchmark provisions of ASCE 41, so that a seismic evaluation need not be performed. Construction drawings for the Clinic were not available, and it is not included in this seismic evaluation.

SEISMIC EVALUATION

KPFF performed a Tier 1 evaluation of the structures in accordance with ASCE 41. A Tier 1 evaluation is an initial screening of a building for potential seismic deficiencies in the event of an earthquake of specified intensity. Items found noncompliant with the requirements of the Tier 1 evaluation trigger a Tier 2 deficiencybased analysis to determine whether the structural component is deficient and requires strengthening, or if the calculated capacity of the component is sufficient to meet ASCE 41 Tier 2 requirements. No Tier 2 evaluations were performed, as they were beyond the scope of this study.

KPFF evaluated the seismic structural systems of the Long Term Care Wing and the Hospital building for a Target Building Performance Level of I-B, Immediate Occupancy, and the corresponding Structural Performance Level of S-1. This Target Building Performance Level, which is applicable to buildings considered to be essential facilities, corresponds to a building seismic response where only limited structural damage has occurred. Continued use of the building may be limited by damage or disruption to nonstructural elements, such as light fixtures, plumbing, and equipment. Evaluation of these nonstructural elements was not included in this study.

Seismic demands were evaluated using a Basic Safety Earthquake-1 for existing buildings (BSE-1E). This corresponds to a lower seismic hazard level than would be used for new construction (BSE-1N) of a similar building. Traditionally, existing buildings have been evaluated at this somewhat reduced seismic hazard level, for reasons described in Section C2.2.1 of ASCE 41.

2. Building Description

Petersburg Medical Center is located in Petersburg, Alaska, in the city block bounded by First Street, North Second Street, Excel Street, and Fram Street. The medical center consists of the main hospital, a long term care wing, and a clinic. The original hospital building, built in the northeast corner of the block in 1955, has been demolished. See Figure 2-1 below for a plan of the facility layout.

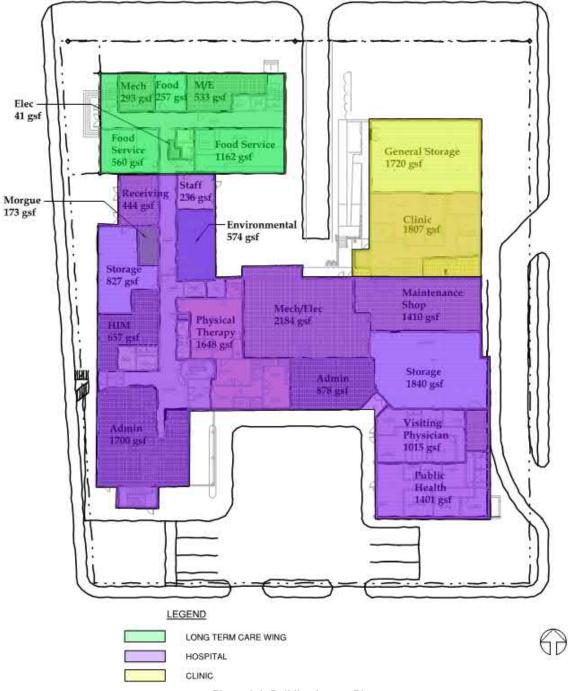


Figure 2-1: Building Layout Plan

LONG TERM CARE WING

The Long Term Care Wing was built as an addition to the original hospital building in 1967. It was constructed as a two-story building. An attic was added on top of the building when the Hospital was built in 1983.

The Long Term Care Wing consists of cast-in-place, two-way concrete slabs at the first floor, spanning to concrete grade beams and concrete pile caps. The second floor and the original building roof consist of reinforced concrete slabs on steel form deck, supported by open web bar joists. The joists span to cast-in-place concrete bearing walls at the exterior and at some interior walls at stairs and elevators. Other interior supports are reinforced concrete masonry-bearing walls or steel wide flange beams and columns.

The attic framing consists of a combination of WTs and Z-purlins at the roof and light gage channel purlins at the attic floor spanning to trusses. The trusses span to the exterior concrete walls. The trusses are composed of wide flange top and bottom chords with steel pipe diagonals. At limited areas of the attic floor, there is concrete slab on steel form deck for equipment support and to provide a walking surface within the attic. There is no structural steel deck at the attic roof or floor, except for the areas with concrete slab. The attic floor at this building is located just above the original concrete roof slab.

The lateral force-resisting system for the Long Term Care Wing consists of the concrete bearing walls acting as reinforced concrete shear walls. The concrete slabs at the second floor and the roof act as rigid diaphragms distributing lateral loads to the shear walls. At the attic roof there are light gage diagonal channels laid flat between roof framing members to serve as horizontal bracing to the exterior shear walls.

The foundation system for the Long Term Care Wing consists of cedar piling. The piles are battered underneath the exterior concrete walls in the direction parallel to the plane of the wall. The exterior grade is at or near the first floor elevation.

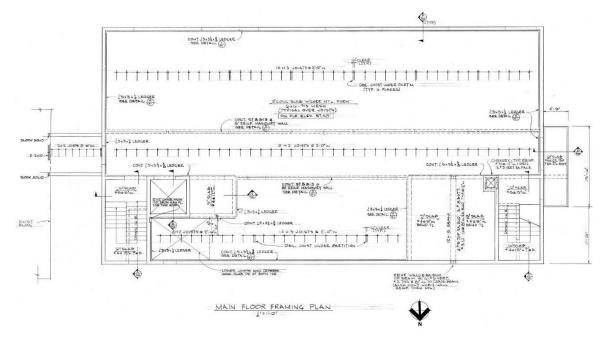


Figure 2-2 shows the second floor framing plan of the Long Term Care Wing.

Figure 2-2: Long Term Care Wing Floor Plan

HOSPITAL

The Hospital building is a two-story building with an attic that was built in 1983. Originally, the southwest area of the first floor was covered parking. This area was later enclosed.

The first floor of the Hospital consists of concrete slabs-on-grade. The second floor consists of reinforced concrete slabs spanning to composite-designed steel beams and girders, which are supported by steel wide flange columns. The attic framing consists of a combination of WTs and Z-purlins at the roof and wide flanges and light gage channel purlins at the attic floor spanning to trusses. The trusses span to the exterior steel wide flange columns. The trusses are composed of wide flange top and bottom chords with steel pipe diagonals. At limited areas of the attic floor there is concrete slab on steel form deck for equipment support and to provide a walking surface within the attic. There is no structural steel deck at the attic roof or floor, except for the areas with concrete slab.

The lateral force-resisting system for the Hospital consists of steel moment-resisting frames. The specific bays of steel moment frame are not clearly defined on the structural drawings, and are generally assumed to occur where the framing matches or is similar to the limited locations where the steel moment frame details are indicated on the framing plans. The concrete slabs at the second floor act as rigid diaphragms distributing lateral loads to the moment frames. At the attic floor and roof there are light gage diagonal channels laid flat adjacent to the attic floor and roof framing members to serve as horizontal bracing to the exterior moment frames.

The foundation system for the Hospital consists of concrete spread footings. Continuous concrete grade beams act as continuous spread footings at the grids with steel moment frames. The exterior grade transitions from the first floor to the second floor from the southeast corner to the northeast corner of the Hospital. It transitions back down to the first floor within a short distance along the north elevation of the Hospital from the northeast corner.

Figure 2-3 shows the second floor framing plan of the Hospital.

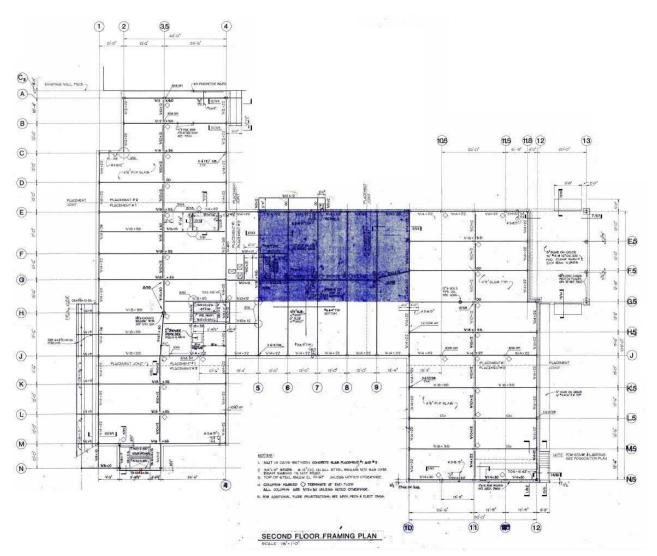


Figure 2-3: Hospital Floor Plan

BUILDING CONDITIONS

During KPFF's site visit in June 2019, the condition of the structural systems that could be observed appeared to be in good repair. No damage to the structural systems was noted. At the Long Term Care Wing, some additional openings in the exterior concrete walls had been added for windows, doors, or louvers. These additional openings were considered in the seismic evaluation.

Minor settlement of the exterior stair on the west side of the building relative to the building was noted at the Long Term Care Wing. See Figure 2-4. If these concrete stairs are supported on spread footings, whereas the building is pile supported, that could account for the settlement.

The cladding at the sun room at the west side of the Long Term Care Wing is damaged, likely due to weather and water penetration issues. See Figure 2-5. There is no apparent damage to the building structure in this area.

Minor cracking was observed in some exposed exterior concrete walls. At some locations, this cracking appeared to coincide with construction joint locations. The cracking is not considered to be evidence of any structural issues.

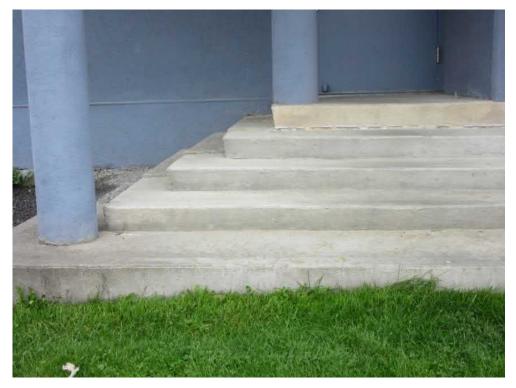


Figure 2-4: Settlement at Long Term Care Wing Exterior Stair



Figure 2-5: Cladding Damage at Long Term Care Wing Exterior Sun Room

3. ASCE 41 Tier 1 Seismic Evaluation

ASCE 41 provides a three-tiered evaluation approach: a Screening Phase (Tier 1), an Evaluation Phase (Tier 2), and a Detailed Evaluation Phase (Tier 3). A Tier 1 evaluation consists of checklists that allow for a rapid evaluation of the structural elements of the building and site conditions. The purpose of the Tier 1 procedure is to screen building components per the provisions of ASCE 41 to identify potential deficiencies. If non-compliant checklist items are identified for a building during the Tier 1 evaluation, a Tier 2 Deficiency-Based Evaluation is required for further evaluation. Tier 3 includes a more detailed evaluation of deficiencies. Neither a Tier 2 nor Tier 3 evaluation was within the scope of this study.

ASSESSMENT CRITERIA

Earthquake accelerations for use in ASCE 41 seismic evaluation are based on data provided by the United States Geological Survey (USGS) and are adjusted for site-specific soil conditions. Table 3-1 lists the acceleration response spectrum parameters for both the Basic Safety Earthquake-1 for new construction (BSE-1N) and for the Basic Safety Earthquake-1 for existing construction (BSE-1E). The BSE-1N values were used solely to determine the Level of Seismicity at the building site (High, Moderate, Low, or Very Low Seismicity) in accordance with Section 2.5 of ASCE 41. The BSE-1E values were used to evaluate seismic demands on the structure when evaluating the Tier 1 checklists. See Appendix C for a summary of the USGS seismic hazard parameters for the BSE-1N and BSE-1E earthquakes at this site.

Spectral Response Acceleration Parameter	BSE – 1N	Spectral Response Acceleration Parameter	BSE – 1E
S _{DS}	0.299 g	S _{xs}	0.197 g
S _{D1}	0.342 g	S _{X1}	0.267 g

Table 3-1: Spectral Response Acceleration Values for BSE-1N and BSE-1E

The site soil properties were assumed to be such that the site would be classified as Site Class D. This is the default site classification if soil properties are not known in sufficient detail to determine the site class. Based on the acceleration parameters, this site is classified as having a high level of seismicity.

The Hospital building is considered an essential facility, and is therefore categorized as Risk Category IV per the 2015 International Building Code. Due to its potential use as part of the hospital environment, it was determined that the Long Term Care Unit would also be considered an essential facility and be categorized as Risk Category IV. Table 2-1 of ASCE 41 states that buildings categorized as Risk Category IV for the Tier 1 evaluation shall use Immediate Occupancy Performance Level checklists.

BUILDING TYPE AND CHECKLISTS

The Tier 1 screening was conducted with the appropriate hazard checklists, based on the building type, the level of seismicity, and the required level of performance. The descriptions associated with each building type are found in ASCE 41. The Long Term Care Unit is classified as Type C2 for concrete shear walls with stiff diaphragms, and Type S4 for the attic framing with its steel, horizontally braced diaphragm system. The checklists used in the Tier 1 evaluation are listed below in Table 3-2. Refer to Appendix B for the completed checklists.

Required Tier 1 Checklist	ASCE 41 Reference
1. Basic Configuration – Immediate Occupancy	Section 16.1.2IO
2. Long Term Care Wing: Building Type C2 – Immediate Occupancy	Section 16.10IO
3. Long Term Care Wing: Building Type S4 – Immediate Occupancy	Section 16.7IO
4. Hospital: Building Type S1 – Immediate Occupancy	Section 16.4IO

Table 3-2: Required Checklists for Tier 1 Evaluation

INFORMATION COLLECTED

KPFF reviewed the original construction drawings by Olsen and Sands for the Long Term Care Wing, dated August 1967, and the original construction drawings by Ackley Jensen for the Hospital and the addition of the attic to the Long Term Care Wing, dated April 1983. The Long Term Care Wing building was designed according to the 1967 Uniform Building Code, and the Hospital building was designed according to the 1979 Uniform Building Code.

Documentation defining the geologic site hazards was not available. However, a report by the United States Department of the Interior Geological Survey, "Reconnaissance Engineering Geology of the Petersburg Area, Southeastern Alaska, with Emphasis on Geologic Hazards," dated 1978, was available from the Alaska Division of Geological and Geophysical Surveys. This report noted a low likelihood of liquefaction, slope failures, or surface fault ruptures in Petersburg, and was used as the basis for the geologic site hazard responses indicated in the checklists.

A site visit was conducted on June 18, 2019, to identify variances between the record drawings and the visible building structures, as well as to observe the condition of the buildings.

POTENTIAL SEISMIC DEFICIENCIES

The Tier 1 checklist identifies building components that may be deficient in an earthquake based on the specific building type, the level of seismicity in the region, and the desired level of performance. The completed Tier 1 checklists are included in Appendix B. A summary of noncompliant items is listed below.

Long Term Care Wing

- **Building Type C2 Foundation Dowels:** Concrete shear wall vertical reinforcement dowel embedment lengths into the foundations are less than that required to develop the strength of the walls. For reference, see Section F/S-3 shown in Appendix A, Figure A1.
- Building Type C2 Deep Foundations/Connections: Cedar pile tension capacities unknown. No tension connection between piles and pile caps to resist uplift. No top reinforcement in pile caps. For reference, see Section 1E/S-2 shown in Appendix A, Figure A2.
- **Building Type S4 Connections:** Attic horizontal bracing system has insufficient capacity to transfer lateral forces to concrete shear walls.

Hospital

- **Basic Configuration Load Path:** Steel moment frame locations unclear. Some areas of the building do not have a complete, well-defined load path to the steel moment frames. The diaphragm at the attic level is incomplete.
- Building Type S1 Drift Check: Some of steel moment frames do not meet the drift limit.
- **Building Type S1 Transfer to Steel Frames:** Attic horizontal bracing system has insufficient capacity to transfer lateral forces to steel moment frames.
- **Building Type S1 Steel Columns:** Connections of moment frame columns to foundations insufficient to develop tensile capacity of columns. For reference, see Section 4/S-7 shown in Appendix A, Figure A3.
- Building Type S1 Moment-Resisting Connections: Based on information provided on the drawings, it cannot be verified and is considered unlikely that moment frame connections are able to develop the strength of the beams. For reference, see Sections 11/S-8 and 12/S-8 shown in Appendix A, Figure A4.
- **Building Type S1:** Compact Members: Moment frame members do not meet compact section requirements.
- **Building Type S1:** Girder Flange Continuity Plates: There are no girder flange continuity plates at the moment frame joints. For reference, see Sections 11/S-8 and 12/S-8 shown in Appendix A, Figure A4.

- **Building Type S1:** Bottom Flange Bracing: Moment frame beam flanges are not braced out-of-plane at the attic level.
- **Building Type S1 Plan Irregularities:** Based on the information provided on the drawings, there may be insufficient tensile capacity in the steel framing and connections to develop the diaphragm tensile forces at floor- and attic-level re-entrant corners.

ASCE 41 also includes an extensive checklist for nonstructural components, such as HVAC equipment and systems, ceilings, and cladding, particularly for a Risk Category IV facility like a hospital. These nonstructural components were not reviewed as part of this seismic evaluation. However, given when these systems were constructed, it is expected that many of the nonstructural components would not be compliant.

4. Conclusions

It was found that the Long Term Care Wing and the Hospital building have noncompliant components according to an ASCE 41 Tier 1 evaluation. These noncompliant components are mainly related to the concrete shear wall foundations at the Long Term Care Wing, the steel moment frames at the Hospital building, and the attic diaphragms at both buildings. A Tier 2 or Tier 3 evaluation would be required for further review of these components, but it is expected that some components would still be determined to be deficient and would require strengthening and/or retrofitting. In addition, it is expected that some of the nonstructural building components would also require retrofitting or replacement.

Appendix A

Figures

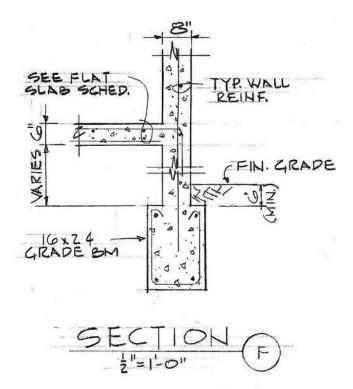


Figure A1: Long Term Care Wing – Foundation Dowels (Section F/S-3)

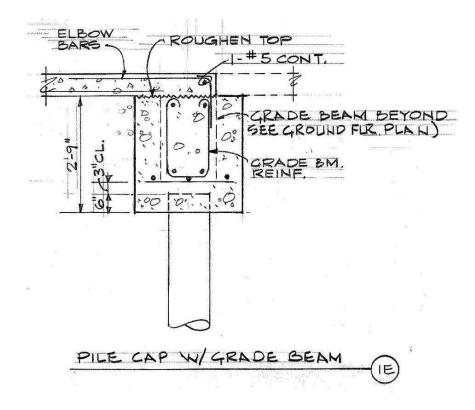


Figure A2: Long Term Care Wing – Deep Foundations/Connections (Section 1E/S-2)

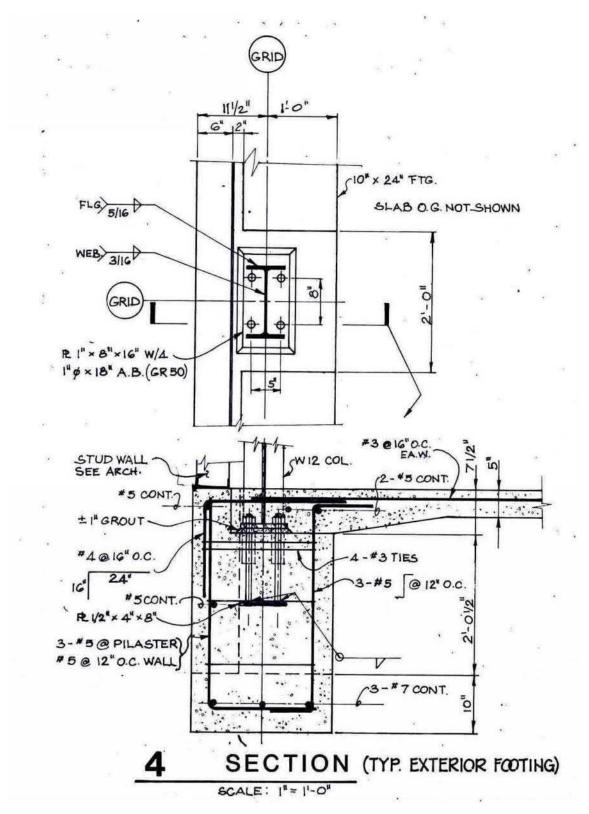


Figure A3: Hospital – Steel Columns (Section 4/S-7)

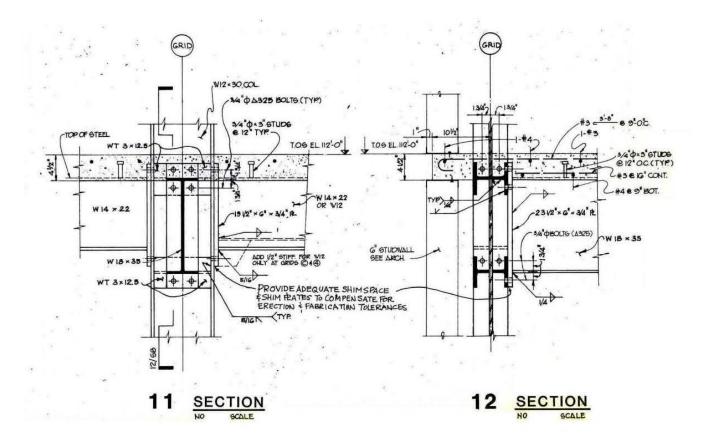


Figure A4: Hospital – Moment-Resisting Connections/Girder Flange Continuity Plates (Section 11/S-8 and 12/S-8)

Appendix B

Tier 1 Checklists

Refer to the following pages for Tier 1 Checklists associated with our study of the Petersburg Medical Center. Tier 1 Checklists were based on Immediate Occupancy Structural Performance Level (S-1). Each of the evaluation statements are marked as follows:

C - Compliant

NC - Noncompliant

N/A - Not Applicable

U – Unknown

BASIC CONFIGURATION – IMMEDIATE OCCUPANCY

Very Low Seismicity

Building System

Gen	eral			
(c)	NC	N/A	U	LOAD PATH: The structure shall contain a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Commentary: Sec. A.2.1.1. Tier 2: Sec. 5.4.1.1)
C	NC	N/A	U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 4% of the height of the shorter building. This statement need not apply for the following building types: W1, W1A, and W2. (Commentary: Sec. A.2.1.2. Tier 2: Sec. 5.4.1.2)
С	NC	(N/A)	U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. (Commentary: Sec. A.2.1.3. Tier 2: Sec. 5.4.1.3)
Buil	ding C	Configura	ation	
(c)	NC	N/A	U	WEAK STORY: The sum of the shear strengths of the seismic-force- resisting system in any story in each direction shall not be less than 80% of the strength in the adjacent story above. (Commentary: Sec. A.2.2.2. Tier 2: Sec. 5.4.2.1)
(c)	NC	N/A	U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story shall not be less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic- force-resisting system stiffness of the three stories above. (Commentary: Sec. A.2.2.3. Tier 2: Sec. 5.4.2.2)
С	NC	N/A	U	VERTICAL IRREGULARITIES: All vertical elements in the seismic- force-resisting system are continuous to the foundation. (Commentary: Sec. A.2.2.4. Tier 2: Sec. 5.4.2.3)
C	NC	N/A	U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. (Commentary: Sec. A.2.2.5. Tier 2: Sec. 5.4.2.4)
(c)	NC	N/A	U	MASS: There is no change in effective mass more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. (Commentary: Sec. A.2.2.6. Tier 2: Sec. 5.4.2.5)
C	NC	N/A	U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. (Commentary: Sec. A.2.2.7. Tier 2: Sec. 5.4.2.6)

Low Seismicity	(Complete the following items in addition to the items for Very
	Low Seismicity)

Geologic Site Hazards

C NC	N/A	U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building. (Commentary: Sec. A.6.1.1. Tier 2: Sec. 5.4.3.1)
C NC	N/A	U	SLOPE FAILURE: The building site is sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or is capable of accommodating any predicted movements without failure. (Commentary: Sec. A.6.1.2. Tier 2: Sec. 5.4.3.1)
C NC	N/A	U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated. (Commentary: Sec. A.6.1.3. Tier 2: Sec. 5.4.3.1)

Moderate and High Seismicity

(Complete the following items in addition to the items for Very Low and Low Seismicity)

Foundation Configuration

C NC N/A U OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than 0.6S_a. (Commentary: Sec. A.6.2.1. Tier 2: Sec. 5.4.3.3)

NC N/A U TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Commentary: Sec. A.6.2.2. Tier 2: Sec. 5.4.3.4)

Very Low Seismicity

Seismic-Force-Resisting System

(c)) NC	N/A	U	COMPLETE FRAMES: Steel or concrete frames classified as secondary components form a complete vertical-load-carrying system. (Commentary: Sec. A.3.1.6.1. Tier 2: Sec. 5.5.2.5.1)
C	NC	N/A	U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. (Commentary: Sec. A.3.2.1.1. Tier 2: Sec. 5.5.1.1)
C	NC	N/A	U	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 4.5.3.3, is less than the greater of 100 psi or $2\sqrt{f'_c}$. (Commentary: Sec. A.3.2.2.1. Tier 2: Sec. 5.5.3.1.1)
C	NC	N/A	U	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area is not less than 0.0012 in the vertical direction and 0.0020 in the horizontal direction. The spacing of reinforcing steel is equal to or less than 18 inches. (Commentary: Sec. A.3.2.2.2. Tier 2: Sec. 5.5.3.1.3)
Co	nnectio	ons		
C	NC	N/A	U	WALL ANCHORAGE AT FLEXIBLE DIAPHRAGMS: Exterior concrete or masonry walls that are dependent on flexible diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 4.5.3.7. (Commentary: Sec. A.5.1.1. Tier 2: Sec. 5.7.1.1)
(c)	NC	N/A	U	TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of loads to the shear walls and the connections are able to develop the lesser of the shear strength of the walls or diaphragms. (Commentary: Sec. A.5.2.1. Tier 2: Sec. 5.7.2)
С	NC	N/A	U	FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation and the dowels are able to develop the lesser of the strength of the walls or the uplift capacity of the foundation. (Commentary: Sec. A.5.3.5. Tier 2: Sec. 5.7.3.4)
Fou	undatio	on Syst	em	
C	NC	N/A	U	DEEP FOUNDATIONS: Piles and piers are capable of transferring the lateral forces between the structure and the soil. (Commentary: Sec. A.6.2.3)
(c)	NC	N/A	U	SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story high. (Commentary: Sec. A.6.2.4)

IMMEDIATE OCCUPANCY – STRUCTURAL CHECKLIST FOR BUILDING TYPE C2 AND TYPE C2A

Low, Moderate, and High Seismicity

(Complete the following items in addition to the items for Very Low Seismicity)

Seismic-Force-Resisting System

С	NC	(N/A)	U	DEFLECTION COMPATIBILITY: Secondary components have the shear capacity to develop the flexural strength of the components and are compliant with the following items: COLUMN-BAR SPLICES, BEAM- BAR SPLICES, COLUMN-TIE SPACING, STIRRUP SPACING, and STIRRUP AND TIE HOOK in the Immediate Occupancy Structural Checklist for Building Type C1. (Commentary: Sec. A.3.1.6.2. Tier 2: Sec. 5.5.2.5.2)
C	NC	N/A	U	FLAT SLABS: Flat slabs/plates not part of the seismic-force-resisting system have continuous bottom steel through the column joints. (Commentary: Sec. A.3.1.6.3. Tier 2: Sec. 5.5.2.5.3)
С	NC	(N/A)	U	COUPLING BEAMS: The stirrups in coupling beams over means of egress are spaced at or less than d/2 and are anchored into the confined core of the beam with hooks of 135 degrees or more. The ends of both walls to which the coupling beam is attached are supported at each end to resist vertical loads caused by overturning. Coupling beams have the capacity in shear to develop the uplift capacity of the adjacent wall. (Commentary: Sec. A.3.2.2.3. Tier 2: Sec. 5.5.3.2.1)
C	NC	N/A	U	OVERTURNING: All shear walls have aspect ratios less than 4-to-1. Wall piers need not be considered. (Commentary: Sec. A.3.2.2.4. Tier 2: Sec. 5.5.3.1.4)
C	NC	N/A	U	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements are confined with spirals or ties with spacing less than $8d_b$. (Commentary: Sec. A.3.2.2.5. Tier 2: Sec. 5.5.3.2.2)
Ċ	NC	N/A	U	WALL REINFORCING AT OPENINGS: There is added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. (Commentary: Sec. A.3.2.2.6. Tier 2: Sec. 5.5.3.1.5)
(c)	NC	N/A	U	WALL THICKNESS: Thickness of bearing walls are not less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. (Commentary: Sec. A.3.2.2.7. Tier 2: Sec. 5.5.3.1.2)
Cor	inectio	ons		
С	NC	N/A	U	UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles are anchored to the pile caps, and the pile cap reinforcement and pile anchorage are able to develop the tensile capacity of the piles. (Commentary: Sec. A.5.3.8. Tier 2: Sec. 5.7.3.5)

KPFF Project No.: 1900308

Diaphragms (Flexible or Stiff)

(c)	NC	N/A	U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split- level floors and do not have expansion joints. (Commentary: Sec. A.4.1.1. Tier 2: Sec. 5.6.1.1)
(c)	NC	N/A	U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 15% of the wall length. (Commentary: Sec. A.4.1.4. Tier 2: Sec. 5.6.1.3)
(c)	NC	N/A	U	PLAN IRREGULARITIES: There is tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. (Commentary: Sec. A.4.1.7. Tier 2: Sec. 5.6.1.4)
(c)	NC	N/A	U	DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. (Commentary: Sec. A.4.1.8. Tier 2: Sec. 5.6.1.5)
Fle	xible I	Diaphrag	gms	
С	NC	(N/A)	U	CROSS TIES: There are continuous cross ties between diaphragm chords. (Commentary: Sec. A.4.1.2. Tier 2: Sec. 5.6.1.2)
С	NC	N/A	U	STRAIGHT SHEATHING: All straight sheathed diaphragms have aspect ratios less than 1-to-1 in the direction being considered. (Commentary: Sec. A.4.2.1. Tier 2: Sec. 5.6.2)
C	NC	(N/A)	U	SPANS: All wood diaphragms with spans greater than 12 feet consist of wood structural panels or diagonal sheathing. (Commentary: Sec. A.4.2.2. Tier 2: Sec. 5.6.2)
С	NC	N/A	U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 30 feet and aspect ratios less than or equal to 3-to-1. (Commentary: Sec. A.4.2.3. Tier 2: Sec. 5.6.2)
С	NC	N/A	U	NON-CONCRETE FILLED DIAPHRAGMS: Untopped metal deck diaphragms or metal deck diaphragms with fill other than concrete consist of horizontal spans of less than 40 feet and have aspect ratios less than 4-to-1. (Commentary: Sec. A.4.3.1. Tier 2: Sec. 5.6.3)
C	NC	N/A	U	OTHER DIAPHRAGMS: The diaphragm does not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Commentary: Sec. A.4.7.1. Tier 2: Sec. 5.6.5)

KPFF Project No.: 1900308

Very Low Seismicity

Seismic-Force-Resisting System

C) NC	N/A	U	COLUMN AXIAL STRESS CHECK: The axial stress caused by gravity loads in frame columns subjected to overturning forces is less than $0.10F_y$. Alternatively, the axial stress caused by overturning forces alone, calculated using the Quick Check procedure of Section 4.5.3.6, is less than $0.30F_y$. (Commentary: Sec. A.3.1.3.2. Tier 2: Sec. 5.5.2.13.)
С	NC	N/A	U	BRACE AXIAL STRESS CHECK: The axial stress in the diagonal braces, calculated using the Quick Check procedure of Section 4.5.3.4 and neglecting the steel moment frame, is less than $0.50F_y$. (Commentary: Sec. A.3.3.1.2. Tier 2: Sec. 5.5.4.1)
C) NC	N/A	U	COMPLETE FRAMES: Steel frames classified as secondary components form a complete vertical-load-carrying system. (Commentary: Sec. A.3.1.6.1. Tier 2: Sec. 5.5.2.5.1)
C	NC	(N/A)	U	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 4.5.3.3 and neglecting the steel moment frame, is less than the greater of 100 psi or $2\sqrt{F'_c}$. (Commentary: Sec A.3.2.2.1. Tier 2: Sec. 5.5.3.1.1)
С	NC	N/A	U	REINFORCING STEEL: The ratio of shear wall reinforcing steel area to gross concrete area is not less than 0.0012 in the vertical direction and 0.0020 in the horizontal direction. The spacing of reinforcing steel is equal to or less than 18 inches. (Commentary: Sec. A.3.2.2.2. Tier 2: Sec. 5.5.3.1.3)
Co	nnectio	ons		
C	NC	N/A	U	STEEL COLUMNS: The columns in seismic-force-resisting frames are anchored to the building foundation. (Commentary: Sec. A.5.3.1. Tier 2: Sec. 5.7.3.1)
С	NC	N/A	U	TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls. (Commentary: Sec. A.5.2.1. Tier 2: Sec. 5.7.2)
С	NC	N/A	U	FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation, and the dowels are able to develop the lesser of the strength of the walls or the uplift capacity of the foundation. (Commentary: Sec. A.5.3.5. Tier 2: Sec. 5.7.3.4)

KPFF Project No.: 1900308

Low Seismicity				(Complete the following items in addition to the items for Very Low Seismicity)
Sei	smic-F	Force-Re	sisting S	System
С	NC	N/A	U	DRIFT CHECK: The drift ratio of the steel moment frames acting alone, calculated using the Quick Check procedure of Section 4.5.3.1 using 25% of V_c , is less than 0.015. (Commentary: Sec. A.3.1.3.1. Tier 2: Sec. 5.5.2.1.2)
С	NC	(N/A)	U	REDUNDANCY: The number of lines of braced frames or shear walls in each principal direction is greater than or equal to 2. The number of braced bays in each line is greater than 3. (Commentary: Sec. A.3.2.1.1. and A.3.1.1.1. Tier 2: Sec. 5.5.1.1)
С	NC	N/A	U	INTERFERING WALLS: All concrete and masonry infill walls placed in moment frames are isolated from structural elements. (Commentary: Sec. A.3.1.2.1. Tier 2: Sec. 5.5.2.1.1)
Co	nnecti	ons		
С	NC	(N/A)	U	TRANSFER TO STEEL FRAMES: Diaphragms are connected for transfer of seismic forces to the steel frames, and the connections are able to develop the lesser of the strength of the frames or the diaphragms. (Commentary: Sec. A.5.2.2. Tier 2: Sec .5.7.2)
Moderate Seismicity				
M	odera	<u>te Seis</u> i	<u>micity</u>	<i>(Complete the following items in addition to the items for Very Low and Low Seismicity)</i>
		<u>te Seisi</u> Force-Re		Low and Low Seismicity)
				Low and Low Seismicity)
Sei	smic-F		sisting S	Low and Low Seismicity) System MOMENT-RESISTING CONNECTIONS: All moment connections are able to develop the strength of the adjoining members based on the specified minimum yield stress of the steel. (Commentary: Sec. A.3.1.3.4.
Sei C	smic-F NC		sisting S U	Low and Low Seismicity) System MOMENT-RESISTING CONNECTIONS: All moment connections are able to develop the strength of the adjoining members based on the specified minimum yield stress of the steel. (Commentary: Sec. A.3.1.3.4. Tier 2: Sec. 5.5.2.2.1). Note more restrictive requirements for High Seismicity. PANEL ZONES: All panel zones shall have the shear capacity to resist the shear demand required to develop 0.8 times the sum of the flexural strengths of the girders framing in at the face of the column. (Commentary:
Sei C	smic-F NC NC		sisting S U U	 Low and Low Seismicity) System MOMENT-RESISTING CONNECTIONS: All moment connections are able to develop the strength of the adjoining members based on the specified minimum yield stress of the steel. (Commentary: Sec. A.3.1.3.4. Tier 2: Sec. 5.5.2.2.1). Note more restrictive requirements for High Seismicity. PANEL ZONES: All panel zones shall have the shear capacity to resist the shear demand required to develop 0.8 times the sum of the flexural strengths of the girders framing in at the face of the column. (Commentary: Sec. A.3.1.3.5. Tier 2: Sec. 5.5.2.2.2) COLUMN SPLICES: All column splice details located in moment frames include connection of both flanges and the web, and the splice develops the

KPFF Project No.: 1900308

С	NC	N/A	U	GIRDER FLANGE CONTINUITY PLATES: There are girder flange continuity plates at all moment-resisting frame joints. (Commentary: Sec. A.3.1.3.10. Tier 2: Sec. 5.5.2.2.6)
С	NC	(N/A)	U	OUT-OF-PLANE BRACING: Beam-column joints are braced out-of- plane. (Commentary: Sec. A.3.1.3.11. Tier 2: Sec. 5.5.2.2.7)
С	NC	(N/A)	U	BOTTOM FLANGE BRACING: The bottom flanges of beams are braced out-of-plane. (Commentary: Sec. A.3.1.3.12. Tier 2: Sec. 5.5.2.2.8)
С	NC	(N/A)	U	COMPACT MEMBERS: All brace elements meet section requirements set forth by AISC 360, Table B4.1. (Commentary: Sec. A.3.3.1.7. Tier 2: Sec. 5.5.4).
С	NC	N/A	U	COLUMN SPLICES: All column splice details located in braced frames develop 100% of the tensile strength of the column. (Commentary: Sec. A.3.3.1.3. Tier 2: Sec. 5.5.4.2)
С	NC	N/A	U	SLENDERNESS OF DIAGONALS: All diagonal elements required to carry compression shall have Kl/r ratios less than 200. (Commentary: Sec. A.3.3.1.4. Tier 2: Sec. 5.5.4.3)
С	NC	N/A	U	CONNECTION STRENGTH: All the brace connections develop the buckling capacity of the diagonals. (Commentary: Sec. A.3.3.1.5. Tier 2: Sec. 5.5.4.4).
C	NC	N/A	U	OUT-OF-PLANE BRACING: Braced frame connections attached to beam bottom flanges located away from beam-column joints are braced out-of-plane at the bottom flange of the beams. (Commentary: Sec. A.3.3.1.6. Tier 2: Sec. 5.5.4.5)
С	NC	(N/A)	U	K-BRACING: The bracing system does not include K-braced bays. (Commentary: Sec. A.3.3.2.1. Tier 2: Sec. 5.5.4.6)
С	NC	N/A	U	TENSION-ONLY BRACES: Tension-only braces do not comprise more than 70% of the total seismic-force-resisting capacity in structures more than two stories high. (Commentary: Sec.3.3.2.2. Tier 2: Sec. 5.5.4.7)
C	NC	(N/A)	U	CHEVRON BRACING: Beams in chevron, or V-braced, bays are capable of resisting the vertical load resulting from the simultaneous yielding and buckling of the brace pairs. (Commentary: Sec. A.3.3.2.3. Tier 2: Sec. 5.5.4.6)
С	NC	N/A	U	CONCENTRICALLY BRACED FRAME JOINTS: All the diagonal braces frame into the beam-column joints concentrically. (Commentary: Sec. A.3.3.2.4. Tier 2: Sec. 5.5.4.8)
С	NC	(N/A)	U	COUPLING BEAMS: The stirrups in coupling beams over means of egress are spaced at or less than d/2 and are anchored into the confined core of the beam with hooks of 135 degrees or more. All coupling beams shall comply with the requirements above and shall have the capacity in shear to develop the uplift capacity of the adjacent wall. (Commentary: Sec. A3.2.2.3. Tier 2: Sec. 5.5.3.2.1)

KPFF Project No.: 1900308

		_		
С	NC	N/A	U	OVERTURNING: All shear walls shall have aspect ratios less than 4-to-1. Wall piers need not be considered. (Commentary: Sec. A.3.2.2.4. Tier 2: Sec. 5.5.3.1.4)
С	NC	(N/A)	U	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements are confined with spirals or ties with spacing less than $8d_b$. (Commentary: Sec. A.3.2.2.5. Tier 2: Sec. 5.5.3.2.2)
C	NC	(N/A)	U	WALL REINFORCING AT OPENINGS: There is added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. (Commentary: Sec. A.3.2.2.6. Tier 2: Sec. 5.5.3.1.5)
С	NC	N/A	U	WALL THICKNESS: Thickness of bearing walls is not less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. (Commentary: Sec. A.3.2.2.7. Tier 2: Sec. 5.5.3.1.2)
Dia	phrag	ms		
С	NC	N/A	U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 15% of the wall length. (Commentary: Sec. A.4.1.4. Tier 2: Sec. 5.6.1.3)
С	NC	N/A	U	OPENINGS AT FRAMES: Diaphragm openings immediately adjacent to the braced frames or moment frames extend less than 15% of the frame length. (Commentary: Sec. A.4.1.5. Tier 2: Sec. 5.6.1.3)
С	NC	N/A	U	PLAN IRREGULARITIES: There is tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. (Commentary: Sec. A.4.1.7. Tier 2: Sec. 5.6.1.4)
C	NC	(N/A)	U	DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. (Commentary: Sec. A.4.1.8. Tier 2: Sec. 5.6.1.5)
С	NC	N/A	U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split- level floors and do not have expansion joints. (Commentary: Sec. A.4.1.1. Tier 2: Sec. 5.6.1.1)

KPFF Project No.: 1900308

<u>High Seismicity</u>	(Complete the following items in addition to the items for Very
	Low, Low, and Moderate Seismicity)

Seismic-Force-Resisting System

C	NC	(N/A)	U	MOMENT-RESISTING CONNECTIONS: All moment connections are able to develop the strength of the adjoining members or panel zones based on 110% of the expected yield stress of the steel per AISC 341, Section A3.2. (Commentary: Sec. A.3.1.3.4. Tier 2: Sec. 5.5.2.2.1)
С	NC	(N/A)	U	COMPACT MEMBERS: All moment and braced frame columns and beams shall meet section requirements set forth by AISC 341, Table D1.1 for highly ductile members. Braced frame beams meet section requirements for moderately ductile members. (Commentary: Sec. A.3.3.1.7 and A.3.3.1.8. Tier 2: Sec. 5.5.2.2.4 and 5.5.4)
С	NC	(N/A)	U	CONNECTION STRENGTH: All the brace connections develop the yield capacity of the diagonals. (Commentary: Sec. A.3.3.1.5. Tier 2: Sec. 5.5.4.4)
Co	nnecti	ons		
С	NC	(N/A)	U	STEEL COLUMNS: The columns in seismic-force-resisting frames are anchored to the building foundation, and the anchorage is able to develop the least of the tensile capacity of the column, the tensile capacity of the lowest level column splice (if any), or the uplift capacity of the foundation. (Commentary: Sec. A.5.3.1. Tier 2: Sec. 5.7.3.1)

BASIC CONFIGURATION – IMMEDIATE OCCUPANCY

Very Low Seismicity

Building System

Ger	neral			
C	NC	N/A	U	LOAD PATH: The structure shall contain a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Commentary: Sec. A.2.1.1. Tier 2: Sec. 5.4.1.1)
(c)	NC	N/A	U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 4% of the height of the shorter building. This statement need not apply for the following building types: W1, W1A, and W2. (Commentary: Sec. A.2.1.2. Tier 2: Sec. 5.4.1.2)
С	NC	(N/A)	U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. (Commentary: Sec. A.2.1.3. Tier 2: Sec. 5.4.1.3)
Bui	lding C	Configure	ation	
(c)	NC	N/A	U	WEAK STORY: The sum of the shear strengths of the seismic-force- resisting system in any story in each direction shall not be less than 80% of the strength in the adjacent story above. (Commentary: Sec. A.2.2.2. Tier 2: Sec. 5.4.2.1)
(C)	NC	N/A	U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story shall not be less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above. (Commentary: Sec. A.2.2.3. Tier 2: Sec. 5.4.2.2)
(c)	NC	N/A	U	VERTICAL IRREGULARITIES: All vertical elements in the seismic- force-resisting system are continuous to the foundation. (Commentary: Sec. A.2.2.4. Tier 2: Sec. 5.4.2.3)
(c)	NC	N/A	U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. (Commentary: Sec. A.2.2.5. Tier 2: Sec. 5.4.2.4)
(c)	NC	N/A	U	MASS: There is no change in effective mass more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. (Commentary: Sec. A.2.2.6. Tier 2: Sec. 5.4.2.5)
(C)	NC	N/A	U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. (Commentary: Sec. A.2.2.7. Tier 2: Sec. 5.4.2.6)

Low Seismicity	(Complete the following items in addition to the items for Very
	Low Seismicity)

Geologic Site Hazards

C NC	N/A	U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building. (Commentary: Sec. A.6.1.1. Tier 2: Sec. 5.4.3.1)
C NC	N/A	U	SLOPE FAILURE: The building site is sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or is capable of accommodating any predicted movements without failure. (Commentary: Sec. A.6.1.2. Tier 2: Sec. 5.4.3.1)
C NC	N/A	U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated. (Commentary: Sec. A.6.1.3. Tier 2: Sec. 5.4.3.1)

Moderate and High Seismicity

U

(Complete the following items in addition to the items for Very Low and Low Seismicity)

Foundation Configuration

C NC N/A

NC

С

- OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$. (Commentary: Sec. A.6.2.1. Tier 2: Sec. 5.4.3.3)
- U TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Commentary: Sec. A.6.2.2. Tier 2: Sec. 5.4.3.4)

Very Low Seismicity

Seismic-Force-Resisting System

C (NC)	N/A	U	DRIFT CHECK: The drift ratio of the steel moment frames, calculated using the Quick Check procedure of Section 4.5.3.1, is less than 0.015. (Commentary: Sec. A.3.1.3.1. Tier 2: Sec. 5.5.2.1.2)
C NC	N/A	U	COLUMN AXIAL STRESS CHECK: The axial stress caused by gravity loads in columns subjected to overturning forces is less than $0.10F_y$. Alternatively, the axial stress caused by overturning forces alone, calculated using the Quick Check procedure of Section 4.5.3.6, is less than $0.30F_y$. (Commentary: Sec. A.3.1.3.2. Tier 2: Sec. 5.5.2.1.3)
C NC	N/A	U	FLEXURAL STRESS CHECK: The average flexural stress in the moment frame columns and beams, calculated using the Quick Check procedure of Section 4.5.3.9 is less than F_y . Columns need not be checked if the Strong Column/Weak Beam checklist item is compliant. (Commentary: Sec. A.3.1.3.3. Tier 2: Sec. 5.5.2.1.2)
Connectio	ons		
C NC	N/A	U	STEEL COLUMNS: The columns in seismic-force-resisting frames are anchored to the building foundation. (Commentary: Sec. A.5.3.1. Tier 2: Sec. 5.7.3.1)
<u>Low Seis</u>	smicity	7	(Complete the following items in addition to the items for Very Low Seismicity)
Seismic-F	orce-Re	sisting S	bystem
C NC	N/A	U	REDUNDANCY: The number of lines of moment frames in each principal direction is greater than or equal to 2. The number of bays of moment frames in each line is greater than or equal to 3. (Commentary: Sec. A.3.1.1.1. Tier 2: Sec. 5.5.1.1)
C NC	N/A	U	INTERFERING WALLS: All concrete and masonry infill walls placed in moment frames are isolated from structural elements. (Commentary: Sec. A.3.1.2.1. Tier 2: Sec. 5.5.2.1.1)
Connectio	ons		
C (NC)	N/A	U	TRANSFER TO STEEL FRAMES: Diaphragms are connected for transfer of seismic forces to the steel frames, and the connections are able to develop the lesser of the strength of the frames or the diaphragms. (Commentary: Sec. A.5.2.2. Tier 2: Sec. 5.7.2)

IMMEDIATE OCCUPANCY -STRUCTURAL CHECKLIST FOR BUILDING TYPE S1 AND TYPE S1A

C (NC) N/A U STEEL COLUMNS: The columns in seismic-force-resisting frames are anchored to the building foundation, and the anchorage is able to develop the least of the tensile capacity of the column, the tensile capacity of the lowest level column splice (if any), or the uplift capacity of the foundation. (Commentary: Sec. A.5.3.1. Tier 2: Sec. 5.7.3.1)

<u>Moderate Seismicity</u> (Complete the following items in addition to the items for Very Low and Low Seismicity)

Seismic-Force-Resisting System

			0	•
C	NC	N/A	U	MOMENT-RESISTING CONNECTIONS: All moment connections are able to develop the expected strength of the adjoining members based on the specified minimum yield stress of the steel. (Commentary: Sec. A.3.1.3.4. Tier 2: Sec. 5.5.2.2.1). Note more restrictive requirements for High Seismicity.
(c)	NC	N/A	U	PANEL ZONES: All panel zones shall have the shear capacity to resist the shear demand required to develop 0.8 times the sum of the flexural strengths of the girders framing in at the face of the column. (Commentary: Sec. A.3.1.3.5. Tier 2: Sec. 5.5.2.2.2)
С	NC	N/A	U	COLUMN SPLICES: All column splice details located in moment-resisting frames include connection of both flanges and the web, and the splice develops the strength of the column. (Commentary: Sec. A.3.1.3.6. Tier 2: Sec. 5.5.2.2.3)
C	NC	N/A	U	STRONG COLUMN/WEAK BEAM: The percentage of strong column/ weak beam joints in each story of each line of moment-resisting frames is greater than 50%. (Commentary: Sec. A.3.1.3.7. Tier 2: Sec. 5.5.2.1.5)
С	NC	N/A	U	COMPACT MEMBERS: All frame elements meet section requirements set forth by AISC 341, Table D1.1, for highly ductile members. (Commentary: Sec. A.3.1.3.8. Tier 2: Sec. 5.5.2.2.4)
С	NC	N/A	U	BEAM PENETRATIONS: All openings in frame-beam webs are less than ¹ / ₄ of the beam depth and are located in the center half of the beams. (Commentary: Sec. A.3.1.3.9. Tier 2: Sec. 5.5.2.2.5)
С	NC	N/A	U	GIRDER FLANGE CONTINUITY PLATES: There are girder flange continuity plates at all moment frame joints. (Commentary: Sec. A.3.1.3.10. Tier 2: Sec. 5.5.2.2.6)
\bigcirc	NC	N/A	U	OUT-OF-PLANE BRACING: Beam-column joints are braced out-of- plane. (Commentary: Sec. A.3.1.3.11. Tier 2: Sec. 5.5.2.2.7)
С	(NC)	N/A	U	BOTTOM FLANGE BRACING: The bottom flanges of beams are braced out-of-plane. (Commentary: Sec. A.3.1.3.12. Tier 2: Sec. 5.5.2.2.8)

Diaphragms (Stiff of Flexible)

С	(NC)	N/A	U	PLAN IRREGULARITIES: There is tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. (Commentary: Sec. A.4.1.7. Tier 2: Sec. 5.6.1.4)
С	NC		U	DIAPHRAGM REINFORCEMENT AT OPENING: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. (Commentary: Sec. A.4.1.8. Tier 2: Sec. 5.6.1.5)
C	NC	(N/A)	U	OPENINGS AT MOMENT FRAMES: Diaphragm openings immediately adjacent to the moment frames extend less than 15 percent of the total frame length. (Commentary: Sec. A.4.1.5. Tier 2: Sec .5.6.1.3)
Fle	xible D	liaphrag	gms	
С	NC	N/A	U	CROSS TIES: There are continuous cross ties between diaphragm chords. (Commentary: Sec. A.4.1.2. Tier 2: Sec. 5.6.1.2)
C	NC	(N/A)	U	STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 1-to-1 in the direction being considered. (Commentary: Sec. A.4.2.1. Tier 2: Sec. 5.6.2)
C	NC	N/A	U	SPANS: All wood diaphragms with spans greater than 12 feet consist of wood structural panels or diagonal sheathing. (Commentary: Sec. A.4.2.2. Tier 2: Sec. 5.6.2)
С	NC	N/A	U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 30 feet and have aspect ratios less than or equal to 3-to-1. (Commentary: Sec. A.4.2.3. Tier 2: Sec. 5.6.2)
С	NC	N/A	U	NON-CONCRETE FILLED DIAPHRAGMS: Untopped metal deck diaphragms or metal deck diaphragms with fill other than concrete consist of horizontal spans of less than 40 feet and have aspect ratios less than 4-to-1. (Commentary: Sec. A.4.3.1. Tier 2: Sec 5.6.3)
C	NC	(N/A)	U	OTHER DIAPHRAGMS: The diaphragm does not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Commentary: Sec A.4.7.1. Tier 2: Sec 5.6.5)

KPFF Project No.: 1900308

<u>High Seismicity</u>	(Complete the following items in addition to the items for Very
	Low, Low, and Moderate Seismicity)

Seismic-Force-Resisting System

U

N/A

C (NC)

MOMENT-RESISTING CONNECTION: All moment connections are able to develop the strength of the adjoining members or panel zones based on 110 percent of the expected yield stress of the steel per AISC 341, Section A3.2. (Commentary: Sec. A.3.1.3.4. Tier 2: Sec. 5.5.2.2.1)

Foundation System

С	NC	N/A	U
---	----	-----	---

- C NC N/A U SLOPING
- DEEP FOUNDATIONS: Piles and piers are capable of transferring the seismic forces between the structure and the soil. (Commentary: Sec. A.6.2.3) SLOPING SITES: The difference in foundation embedment depth from one side of the building to another does not exceed one story high.

(Commentary: Sec. A.6.2.4)



Seismic Hazard Data



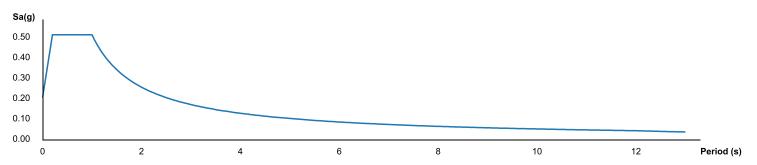
Search Information

Coordinates:	56.8129, -132.9555
Elevation:	41 ft
Timestamp:	2019-07-12T14:27:55.921Z
Hazard Type:	Seismic
Reference Document:	ASCE41-13
Site Class:	D



Custom Probability:

Horizontal Response Spectrum - Hazard Level BSE-2N



Hazard Level BSE-2N

Name	Value	Description
SsUH	0.249	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
CRS	1.144	Coefficient of risk (0.2s)
SsRT	0.285	Probabilistic risk-targeted ground motion (0.2s)
SsD	1.5	Factored deterministic acceleration value (0.2s)
SS	0.285	MCE _R ground motion (period=0.2s)
Fa	1.572	Site amplification factor at 0.2s
S _{XS}	0.448	Site modified spectral response (0.2s)
S1UH	0.27	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
CR ₁	1.03	Coefficient of risk (1.0s)
S1RT	0.278	Probabilistic risk-targeted ground motion (1.0s)
S1D	0.6	Factored deterministic acceleration value (1.0s)
S ₁	0.278	MCE _R ground motion (period=1.0s)
Fv	1.844	Site amplification factor at 1.0s
S _{X1}	0.513	Site modified spectral response (1.0s)

Hazard Level BSE-1N

Name	Value	Description
S _{XS}	0.299	Site modified spectral response (0.2s)
S _{X1}	0.342	Site modified spectral response (1.0s)

Hazard Level BSE-2E

Name	Value	Description	
------	-------	-------------	--

S _S	0.197	MCE _R ground motion (period=0.2s)
Fa	1.6	Site amplification factor at 0.2s
S _{XS}	0.316	Site modified spectral response (0.2s)
S ₁	0.203	MCE _R ground motion (period=1.0s)
Fv	1.994	Site amplification factor at 1.0s
S _{X1}	0.405	Site modified spectral response (1.0s)

Hazard Level BSE-1E

Name	Value	Description
SS	0.123	MCE _R ground motion (period=0.2s)
Fa	1.6	Site amplification factor at 0.2s
S _{XS}	0.197	Site modified spectral response (0.2s)
S ₁	0.114	MCE _R ground motion (period=1.0s)
Fv	2.344	Site amplification factor at 1.0s
S _{X1}	0.267	Site modified spectral response (1.0s)

T_L Data

Name	Value	Description
TL	12	Long-period transition period (s)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the report.

Inundation Study





July 16, 2019

Dan Jardine, Principal NAC Architecture 2025 1st Avenue, Suite 300 Seattle, WA 98121-3131

Subject: Petersburg Medical Center Inundation Analysis

Dear Mr. Jardine:

This letter documents an inundation analysis to support the master planning process for the Petersburg Medical Center (PMC) in Petersburg, Alaska. Per direction you provided, the inundation analysis focuses on the potential for tsunamis to inundate and impact the PMC. Due to the PMC being a regional medical center, it is important that it be located away from areas at risk of inundation, including rare events like tsunamis. In addition to examining tsunami inundation, we also agreed that we would briefly address sea level rise and storm surge as it applies to potential locations of the PMC.

GEOGRAPHIC SETTING

Petersburg is located on the north end of Mitkof Island in the southeast Alaska archipelago. It is bordered to the north and west by Wrangell Narrows and to the east by the larger and deeper Fredrick Sound. The PMC is currently located on a single city block at elevations between 40 and 55 feet above mean lower low water (MLLW) (Ackley Jensen Architects, Inc. 1983).

PROJECT UNDERSTANDING

A recent Facility Condition Assessment of the PMC indicates that some of the building components and systems are nearing the end of their useful life. Accordingly, PMC has begun to explore renovation versus new construction alternatives. The alternative locations under consideration, along with the existing location of the PMC, are shown in Figure 1. Elevation is a key parameter for all of the location alternatives, at least with respect to inundation. Therefore, Table 1 lists the approximate elevations of the existing PMC site and the alternative sites.

Alternatives 1 through 3 all exhibit a similar inundation hazard profile because the sites are all immediately upslope of the existing PMC and at comparable elevations. Alternative 4 is somewhat distinct in that its site is upslope of the northeast end of Petersburg and at an elevation only slightly higher than the existing PMC. The relatively low elevation of the Alternative 4 site subjects this location to an increased probability of inundation, particularly associated with tsunami and storm surge events originating in Frederick Sound.



Figure 1. Map of the existing PMC and proposed alternative locations (from NAC Architecture). Small red H denotes the location of the existing PMC, while the numbered red circles indicate the alternative locations.

Table 1. Approximate Elevations of the Existing PMC Site and Proposed Alternative Sites.				
Location	Location Elevation range in feet above MLLW			
Existing PMC	40-55*			
Alternative 1	80-90			
Alternative 2	75-90			
Alternative 3	70-80			
Alternative 4	50-70			

*From Ackley Jensen Architects, Inc. (1983)

SEA LEVEL RISE

Sea level rise is an important consideration for a critical facility located close to marine waters, as is the case with the PMC. A key component in estimating future sea level rise is vertical land movement (Sweet et al. 2017). There is no vertical land movement data for Petersburg, but there is for Ketchikan. Ketchikan has not experienced any sea level rise in the historical record due to this effect (NOAA 2019b). The lack of historical sea level rise is a result of tectonic uplift associated with the collision of the Pacific and North American plates. Although Ketchikan is over 100 miles away from Petersburg, given its similar location with respect to the plate boundaries, it is expected that tectonic uplift will also mitigate some of the effects of sea level rise at Petersburg.

Even if no tectonic uplift occurs in Petersburg, the ground elevation at the existing PMC site is sufficient to avoid even the most extreme projected sea level scenarios prior to year 2150 (Sweet et al. 2017). The latest predictions suggest that even the most extreme predictions in 2200 will only inundate portions of the existing PMC. The other alternatives are higher than even the worst-case values in 2200.

STORM SURGE

Storm surge refers to elevated sea level associated with wind and low atmospheric pressure. Waves often contribute to storm surge, but wave heights are modest in the Wrangell Narrows. Like other protected passages in the Pacific Northwest (Finlayson 2006), waves are mostly generated by local winds and boat wakes and are only a few feet high at the windiest times.

Storm surge is typically estimated from analyses of tide gages. Although a temporary gage was installed to understand the relationship between the tides at Petersburg compared to its reference station at Ketchikan (NOAA 2019a), none of that data is publicly available. The best data available for assessing storm surge at Petersburg are from the Ketchikan tide gage (NOAA 2019b). From this data, NOAA (2019b) estimates the 100-year (1% chance of exceedance in a

given year) water level to be approximately 21 feet above MLLW. Because the lowest elevation of the existing PMC is 40 feet above MLLW, at least 19 feet of sea level rise is required to inundate the existing PMC in relation to atmospheric and oceanographic processes. Substantially more sea level rise would need to occur to inundate the alternative PMC sites.

TSUNAMIS

Many tsunamis have occurred within the last 100 years in Southeast Alaska. Even more have occurred in recent geologic time. Therefore, the threat of tsunami-induced inundation of a critical facility, such as a hospital, in southeast Alaska is real and serious. There are several mechanisms by which a tsunami could impact the Petersburg area. Each mechanism generates a different type of tsunami and the probability of each mechanism is dramatically different. Therefore, each mechanism is discussed separately below.

Earthquake Generated Tsunamis

The most common type of tsunami is generated by large, distant (outside the northeast Pacific Ocean) earthquakes. These types of tsunamis occur every few years on average. The most recent large tsunami of this type occurred in March 2011 as a result of the Tohoku event in Japan (Allan et al. 2012). However, as detailed by Suleimani et al. (2018), interior portions of Southeast Alaska, like Ketchikan, are protected from these events by large islands to the west. In the 2011 Tohoku event, the tsunami height at Ketchikan was only 0.11 meter (0.4 foot). Like Ketchikan, Petersburg is much more protected from open ocean tsunamis than other Southeast Alaska locations, so it is likely that the tsunami height at Petersburg stemming from the Tohoku event was smaller than the small tsunamis observed in outer Southeast Alaska (e.g., at Craig where it was approximately 1 foot high). Since the Tohoku event occurred due to the fourth largest earthquake in recorded history, and it is highly unusual for earthquakes to be any larger than that earthquake, it is impossible for a standard, distant tectonic event to produce a tsunami that could inundate the existing PMC.

Considerable modeling has been performed recently on local subduction earthquakes in Southeast Alaska. Unlike distant earthquakes such as the Tohoku event off the coast of Japan, local subduction earthquakes can produce significant tsunamis in the area. In particular, Suleimani et al. (2018) provide insight into the propagation of tsunami waves from these local events. Although the focus of their study was at Port Alexander, Craig and Ketchikan and did not include Petersburg, Suleimani et al. (2018) document a range of simulations that indicate earthquake tsunamis can be produced that exceed 10 feet in height in developed areas of outer Southeast Alaska, where tsunamigenic (tsunami producing) earthquakes occur. However, for protected interior areas, such as Petersburg, tsunami heights generated by these types of earthquakes are much smaller. Suleimani et al. (2018) ultimately use a maximum runup height of 1.43 meters (or slightly less than 5 feet) for Ketchikan. Since Petersburg is at least as protected

as Ketchikan, it is not possible for a local subduction earthquake to generate a tsunami that would inundate the existing PMC.

Pro-glacial Tsunamis

Pro-glacial tsunamis occur when a large landslide or ice sheet calving occurs amid a tidewater glacier. The wave generated by the landslide and/or ice displacing sea water causes run-up of sea water on to nearby land. A recent pro-glacial tsunami occurred in 2015 in Taan Fiord, an arm of Icy Bay, approximately 375 miles northwest of Petersburg (Higman et al. 2018). The maximum run-up of this tsunami was 192 meters (approximately 630 feet). The glacial landslide occurred due to rapid retreat of Tyndall Glacier, a tidewater glacier, in addition to the melting of permafrost on adjacent slopes, causing those slopes to destabilize (Higman et al. 2018). The giant 1958 Lituya Bay tsunami, which produced the largest runup of any historical tsunami known, was also a pro-glacial tsunami (Higman et al. 2018), though its initiation mechanism was somewhat complex because the landslide was triggered by a large earthquake (Doser 2010).

As pointed out by recent analysis of the Taan Fiord event, these types of events are probable and likely to increase in frequency with climate change (Higman et al. 2018). The nearest tidewater glaciers to Petersburg are the Baird Glacier in Thomas Bay and the Le Conte Glacier in Le Conte Bay. Both are approximately the same distance from Petersburg (about 20 miles) and both are geographically similar to Tyndall Glacier. There is an ongoing risk of a tsunami occurring near the terminus of either glacier within the confines of either bay.

Based upon the analogy with the Taan Fiord tsunami, it is likely that if a tsunami were to occur in either of these bays, inundation in Petersburg would be minimal. In the absence of modeling both the landslide and the tsunami, it is difficult to speculate about inundation extents, but the tsunami generated in Taan Fiord did not propagate far into Icy Bay, despite its exceptionally large peak runup in Taan Fiord. This is understandable because Icy Bay is large and deep and capable of dissipating even large waves in a smaller arm of the bay. In fact, the tsunami impacts were unidentifiable just 5 kilometers (about 3 miles) from the mouth of Taan Fiord (Higman et al. 2018). The equivalent in the case of both possible pro-glacial tsunami source areas in Thomas Bay and Le Conte Bay would be impacts no more than 3 miles from the mouths of these bays into Frederick Sound. Frederick Sound is even larger and deeper than Icy Bay and Petersburg is more than 12 miles from the mouths of either bay. Therefore, a tsunami generated in either Thomas or Le Conte bay would have to be orders of magnitude larger than the Taan Fiord event to even reach Petersburg, let alone to inundate the existing PMC. It is thus highly unlikely that a pro-glacial tsunami would inundate the existing PMC or any of the alternative PMC sites.

Subaerial Landslide Generated Tsunamis

Landslide-generated tsunamis in the absence of recent deglaciation are extremely rare but have been known to occur. Although the cause of the tsunami event in 1958 Lituya Bay is considered

to be a pro-glacial landslide, the mechanism by which it was generated (i.e., earthquaketriggered liquefaction) could occur anywhere where there is seismicity and steep terrain, like Petersburg.

At Petersburg, Petersburg Mountain is probably the only source of a landslide sufficient to produce a tsunami that could potentially impact the existing PMC. The mountain rises over 2700 feet in approximately one mile distance from Wrangell Narrows. The steepness of the mountain indicates potential for a catastrophic slope failure that could generate a large landslide mass, but the likelihood of such a failure is entirely unknown and speculative. Unlike at Lituya Bay, which has seen two different tsunami events in historical time (Higman et al. 2018), there is no evidence for past catastrophic landsliding on Petersburg Mountain. There is also no evidence of past flank collapses anywhere on the mountain (either in historical time or in the geologic past), and there are no mapped landslides in the geologic map of the area (Brew et al. 1984). Therefore, a flank collapse at Petersburg Mountain would be an unexpected event and highly unlikely to occur. If it were to occur, it could inundate the entire populated area of Petersburg, including the existing PMC and all proposed alternatives.

Submarine Landslide Generated Tsunamis

A final possibility for a tsunami mechanism in the Petersburg area is a submarine landslide, like the one that occurred in Skagway in 1994 (Suleimani and Dickson 2018). However, submarine landslides are highly unlikely in the Wrangell Narrows. Unlike Taiya Inlet near Skagway, Wrangell Narrows is relatively shallow (between 20 and 30 feet deep for the reach adjacent to Petersburg: National Ocean Survey 1978). The shallow water depth does not allow for a significant mass of submarine sediment to move laterally at fast speed. Also, the dominant sediment supply to this portion of the Wrangell Narrows, Petersburg Creek, is modest compared to the Skagway River. The type of tsunami that occurred in Taiya Inlet in 1994 requires a large accumulation of recently deposited sediment to suddenly slump into deeper water. In the Wrangell Narrows, sediment is well dispersed and does not form a large delta. While it is possible that a failure of a submarine slope into deep portions of Fredrick Sound could produce a tsunami, it is unlikely. The potential for an event of this type to generate a tsunami height that could reach the elevation of the existing PMC or any of the alternative PMC sites is negligible.

CONCLUSIONS

Table 2 summarizes the threats of inundation to the existing PMC and the proposed alternative PMC locations. The risk of inundation, particularly with respect to other locations in southeast Alaska, is extremely low at the current location of the PMC. While some of the alternative locations (Alternatives 1 through 3 in Figure 1) provide a modest reduction in probability of inundation due to their higher ground elevations relative to the existing PMC site, the most severe type of tsunami that could occur in the Petersburg area (a tsunami generated from a

large flank collapse of Petersburg Mountain that is seemingly extremely unlikely) could cause inundation of all the proposed alternative sites.

Table 2. Inundation Analysis Summary				
	Probability of	Inundation at Site		
Event	Occurrence	Existing PMC	Alternatives 1-3	Alternative 4
Sea level rise and storm surge	Certain	None before 2150	None before 2200	None before 2200
Distant earthquake tsunami	Certain and frequent	None	None	None
Local earthquake tsunami	Certain but infrequent	None	None	None
Pro-glacial tsunami	Possible	Highly unlikely	Extremely unlikely	Highly unlikely
Petersburg Mountain flank collapse tsunami	Highly unlikely	Total inundation potential	Total inundation potential	Total inundation potential
Submarine landslide tsunami	Highly unlikely	Highly unlikely	Extremely unlikely	Highly unlikely

CAVEATS TO THE ANALYSIS

This analysis was based on an examination of the scientific literature and publicly available information. Tsunamis and other geophysical processes are fundamentally unpredictable phenomena. No on-site survey was performed of the south flank of Petersburg Mountain, the primary area where a large-scale landslide could conceivably occur that could in turn initiate a tsunami capable of inundating the existing PMC. Minor flooding from local surface water runoff was not considered but could easily occur at the existing PMC site if not addressed, particularly in light of aging stormwater infrastructure and anticipated sea level rise.

Please let me know if you have any questions regarding the information presented in this letter.

Sincerely,

Herrera Environmental Consultants, Inc.

Mps Re-

Jeff Parsons, PhD, PE Geomorphologist

REFERENCES

Ackley Jensen Architects, Inc. 1983. Petersburg General Hospital Plans. Prepared for City of Petersburg. April 1983.

Allan, J.C., P.D. Komar, P. Ruggiero, and R. Witter. 2012. The March 2011 Tohoku Tsunami and Its Impacts along the U.S. West Coast. Journal of Coastal Research 28(5):1142-1153.

Brew, D.A., A.T. Ovenshine, S.M. Karl, and S.J. Hunt. 1984. Preliminary Reconnaissance Geologic Map of Petersburg and Parts of the Port Alexander and Sumdum 1:250,000 Quadrangles, Southeastern Alaska. USGS Open File Report 84-405.

Doser, D.I. 2010. A Reevaluation of the 1958 Fairweather, Alaska Earthquake Sequence. Bulletin of the Seismological Society of America 100(4):1792–1799.

Finlayson, D. 2006. The Geomorphology of Puget Sound Beaches. PhD Thesis. University of Washington, Seattle.

Higman, B., D.H. Shugar, C.P. Stark, G. Ekström, M.N. Koppes, P. Lynett, A. Dufresne, P.J.
Haeussler, M. Geertsema, S. Gulick, A. Mattox, J.G. Venditti, M.A.L. Walton, N. McCall, E.
Mckittrick, B. MacInnes, E.L. Bilderback, H. Tang14, M.J. Willis, B. Richmond, R.S. Reece, C. Larsen,
B. Olson, J. Capra, A. Ayca, C. Bloom, H. Williams, D. Bonno, R. Weiss, A. Keen, V. Skanavis, and M.
Loso. 2018. The 2015 landslide and tsunami in Taan Fiord, Alaska.

Miller, I.M., H. Morgan, G. Mauger, T. Newton, R. Weldon, D. Schmidt, M. Welch, and E. Grossman. 2018. Projected Sea Level Rise for Washington State – A 2018 Assessment. A collaboration of Washington Sea Grant, University of Washington Climate Impacts Group, Oregon State University, University of Washington, and US Geological Survey. Prepared for the Washington Coastal Resilience Project.

NOAA. 2019a. Petersburg, AK Gage #9451439 Tides and Currents website. Available at: https://tidesandcurrents.noaa.gov/stationhome.html?id=9451439.

NOAA. 2019b. Ketchikan, AK Gage # 9450460 Tides and Currents website. Available at: https://tidesandcurrents.noaa.gov/stationhome.html?id=9450460.

National Ocean Survey. 1978. Alaska, Wrangell Narrows Hydrographic Survey H-9791.

Suleimani, E. and I. Dickson. 2018. Landslide tsunamis: Why they're different and how to prepare. Alaska Earthquake Center website. Available at: <<u>https://earthquake.alaska.edu/landslide-</u> <u>tsunamis-why-theyre-different-and-how-prepare</u>>. June 10, 2018.

Suleimani, E., D.J. Nicholsky and R.D. Koehler. 2018. DRAFT Regional Tsunami Hazard Assessment for the Communities of Port Alexander, Craig and Ketchikan in Southeast Alaska. Available at: <<u>http://earthquake.alaska.edu/sites/default/files/SE_Report_v0_FORMATTED_10-24-18.pdf</u>>.

Sweet, W.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas. 2017. Global and Regional Sea Level Rise Scenarios for the United States. NOAA Technical Report NOS CO-OPS 083. January.

Navigant Financial Analysis



PETERSBURG MEDICAL CENTER MFP MARKET ANALYSIS

SEPTEMBER 2019



TABLE OF CONTENTS

Agenda Item

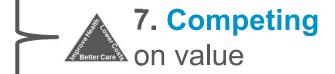
- 1. Setting the State & Industry Trends
- 2. Petersburg Market Assessment
- **3. PMC Internal Situation Assessment**
- 4. Bed Demand Modeling
- **5. Financial Projections and Debt Capacity**
- 6. Next Steps
- 7. Appendix

SETTING THE STAGE & INDUSTRY TRENDS



THE CHANGING NATIONAL HEALTHCARE LANDSCAPE The "7 Cs" impacting healthcare

- **1.** Changes to regulations are uncertain
- **2. Contraction** of inpatient volumes
- 3. Chronic Disease and Care Management across the continuum
- **4. Consolidation** of providers
 - 5. Compression of margins
 - 6. Consumerism comes to healthcare



4 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

NAVIGANT

THE CHANGING NATIONAL HEALTHCARE LANDSCAPE National trends are presenting challenges to all hospitals

Implications for All Hospitals National Trends Create flexibility in strategies to account for Changes to regulations are uncertain uncertainty **Contraction** of inpatient volumes Think outside of the (hospital) "box" **Chronic Disease and Care** Focus on outpatient strategy, primary care, Management across the continuum & improved care coordination will be critical Pursue partnerships/affiliations and **Consolidation** of providers collaboration to support mission and vision Focus on cost reduction and revenue **Compression** of margins enhancement opportunities Deliver a differentiated patient experience • Consumerism comes to healthcare that extends beyond acute care (e.g. virtual care and convenient access to care) Focus on providing high quality, patient-Competing on value • oriented, low cost care

CHANGES TO REGULATIONS ARE UNCERTAIN Growth of uncompensated care is a significant threat to CAHs



"According to the Urban Institute's analysis, repealing the ACA without a replacement would cause 30 million people (22.5 million due to loss of subsidies, Medicaid expansion, and the individual requirement to have health insurance, and 7.3 million due to ripple effects of market upheavals) to lose their healthcare, a number that would jump to 59 million by 2019."

Regulatory Uncertainty Impact by Segment and Implication for CAHs

Patients

 Potential loss of individual mandate and changes in essential benefits



 Increased patient financial responsibility may cause delays in patients seeking treatment and increased bad debt due to difficulties collecting from patients

Payers

 Uncertainty of the future of the insurance exchanges prompts payers to leave the Exchange



 Fewer payers in the Exchange increases payer concentration resulting in more challenging payer negotiations

Providers

•

Potential changes in policy on Medicaid expansion, cost based reimbursement, DSH payments, and 340B



As ~60% of CAH revenue comes from Medicare and Medicaid, there is a risk of growth in uncompensated care coupled with declining government payments

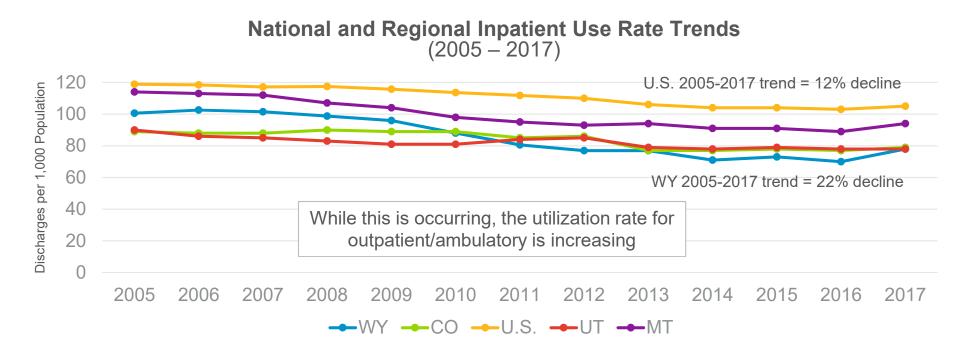
Source: Rural Impact Study 2017, CMS.gov. DSH: disproportionate share hospital.



CONTRACTION OF INPATIENT VOLUMES As inpatient use rates continue to decline, it will become even more difficult for CAHs to maintain critical mass for inpatient services

What's behind the decline in inpatient use rates?

- Advanced technology enables shorter length of stay and more services to be offered OP vs. IP (e.g. more minimally invasive procedures, telehealth, new drugs, etc.)
- Changes in payment models incentivizes providers to reduce length of stay and hospital readmissions
- Shift to population health management & improvements in care management (e.g. home health)



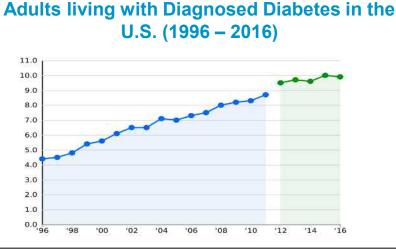
Source: Kaiser Family Foundation; Navigant research and analysis

CHRONIC DISEASE AND CARE MANAGEMENT Aging and chronic disease are inadequately addressed



There are 10,000 new Medicare beneficiaries every day (1 every 7 seconds!)

- Chronic conditions account for a majority of Medicare spending growth
- 25% of Medicare beneficiaries have 5 or more chronic conditions
- Five chronic diseases—heart disease, cancers, stroke, COPD and diabetes—account for two-thirds of all deaths in the United States and chronic diseases account for 75% of national total health care costs
- Current health care infrastructure, which is designed to treat acute illness, is not effective at treating chronic illness and addressing personal behaviors associated with poor health







Sources: www.americashealthrankings.org; US Census Bureau; AHA Cost of Caring Report, AMA Health Care Trends, CDC

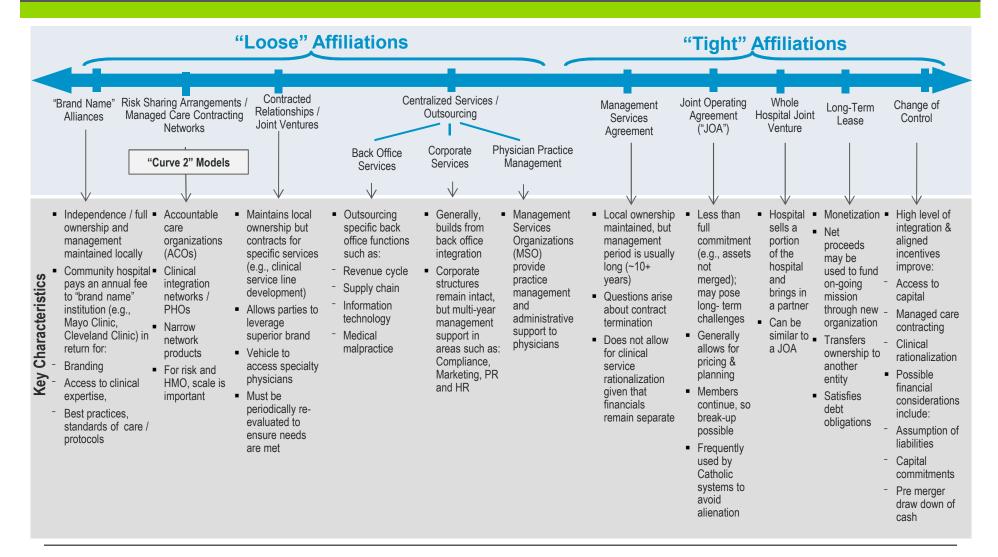
8 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

NAVIGANT

CONSOLIDATION OF PROVIDERS

Nationally and regionally, providers are consolidating and pursuing a variety of affiliations







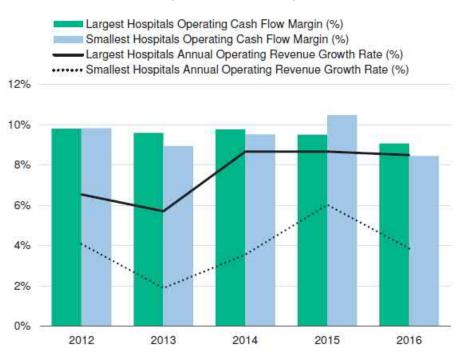
COMPRESSION OF MARGINS

Tighter margins will continue to weigh on CAHs going forward as reimbursement pressures remain and expenses increase



- Smaller hospitals saw operating cash flow margins decrease from 10.5% in 2015 to 8.5% in 2016, while larger hospitals saw a smaller drop from 9.5% to 9.1%.
- Factors contributing to margin declines include:
 - Continued shift to lower-reimbursed outpatient settings
 - Growing costs due to higher pharmaceutical costs, nursing shortages, rising pension contributions, investments in EMR/ other HIT, and increasing need to employ and/or align clinicians to meet requirements of population health management
- Given the majority of CAHs have negative net operating profit margins and low days cash on hand, continued margin pressure makes CAHs particularly vulnerable

Median Margins & Revenue Growth for 50 Smallest and 50 Largest Hospitals (2012 – 2016)

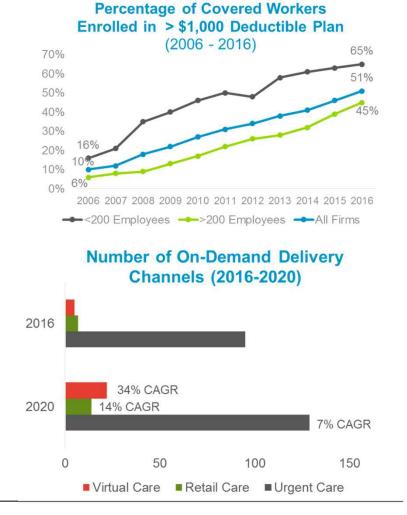


Source: Fitch Ratings, Moody's. Note: 50 smallest and 50 largest not-for-profit and public hospitals were included in terms of total revenue were examined in the Moody's report. 10 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED



CONSUMERISM (FINALLY) COMES TO HEALTHCARE Out-of-pocket costs rise for consumers, retail and "virtual" will matter...a lot!

- The importance of convenience, access, and the empowerment of consumers in directing their own healthcare will fuel "on demand" delivery channels
- This trend will address the fact that people under 40 are 50% more likely to not have an established primary care physician relationship and instead access primary care through on-demand providers such as urgent care, retail clinics or "virtual" providers







ASCENT OF CONSUMERISM

HALF of all people with employer provided coverage have a deductible of at least \$1,000	Average family deductible for silver plans in the exchanges \$8,292
39% of large employers today offer the provided coverage staff ONLY high-deductible plans	health FOUR IN 10 ADULTS in 2017 would either borrow, sell something, or
There were an estimated 22.2 MILLION accounts as of the end of 2017; 73% have opened since 2014	HSA unable to pay if faced
Sources: Kaiser Family Foundation, Forbes, National Business Group on Health, Federal Res	erve, EBRI

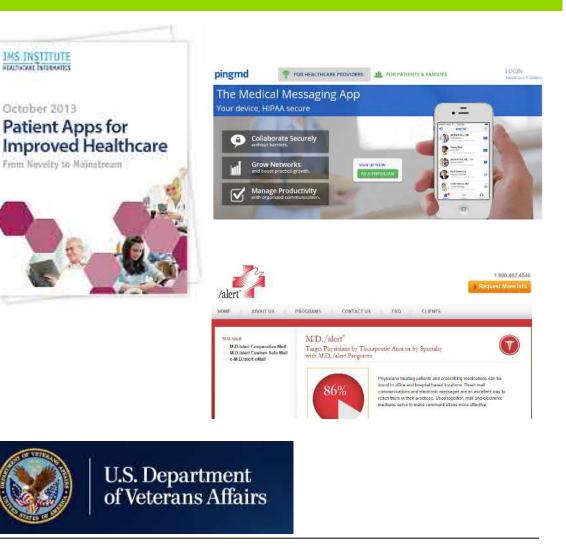
Rise of the high-deductible health plan has materially accelerated consumerism in the healthcare industry. Patients and payers are expending more energy on identifying and utilizing low cost, high quality access points in lieu of the traditional access points.



CONNECTIVITY BETWEEN PATIENTS/FAMILIES & PROVIDERS

There is an explosion in patient demand for access to health data

- 21% of Americans are already tracking their health on some kind of electronic device
- There are more than 150 mobile apps on the market that can track or capture user-entered health data
- The Veterans Health Administration launched a home monitoring system in the mid 2000s. More than 144,000 high risk vets were monitored in 2013 for chronic conditions. A recent study showed a 25% reduction in hospital bed days and a 19% reduction in admissions.
- IHS, a data and analytics firm, projects the telemedicine market will grow at a rate of more than 50% a year, from \$240 million in 2013 to \$1.9 billion by 2018.



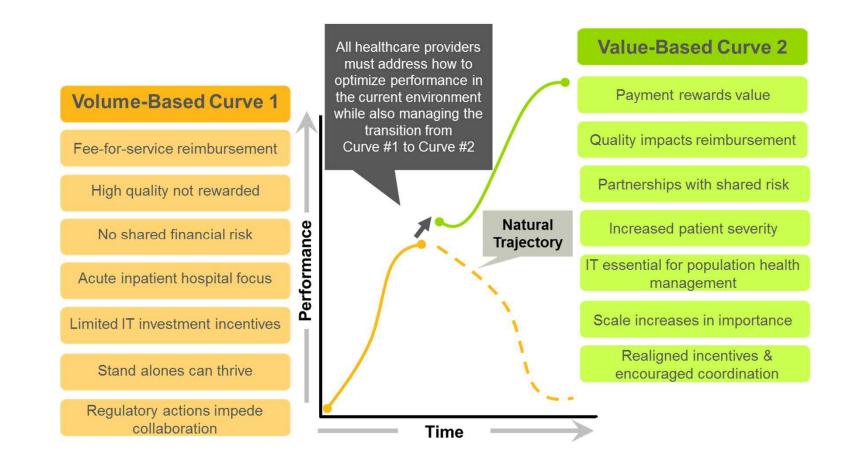
Sources: Pew Foundation, IMS Institute for Healthcare Informatics, IHS

13 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED



COMPETING ON VALUE

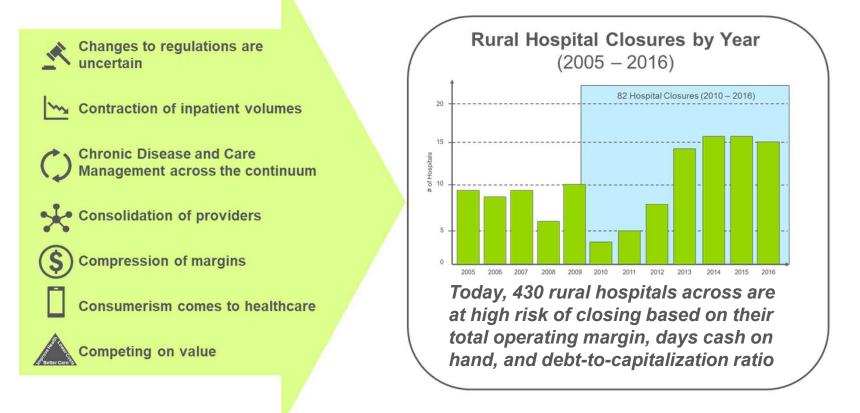




14 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

MARKET FORCES ARE PUTTING CRITICAL ACCESS HOSPITALS AT RISK

 National trends will impact critical access hospitals (CAH), however specific trends will have greater implications given CAH's small scale, limited volume, and challenging market characteristics as well as a disproportionate reliance on government payments results in many having modest assets and financial reserves



Source: AHA 2017, CMS.gov, HFMA, Navigant research and analysis. Note: Years in chart are non-sequential.

15 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

BE PART OF THE SOLUTION FOR NEW PATHWAYS TO GROWTH





WHAT ARE SUCCESSFUL CRITICAL ACCESS HOSPITALS DOING?

Building capabilities across the care continuum to drive a more holistic approach to care and promote population health

Developing new staffing models focused on top of license care

Pursuing partnerships/affiliations with organizations to attract critical mass of lives, provide high quality care, and manage the health of their communities

BUILDING CAPABILITIES ACROSS THE CARE CONTINUUM In order to manage population health, providers are building their capabilities across the care continuum



Healthcare of Yesterday: Acute Care Focus



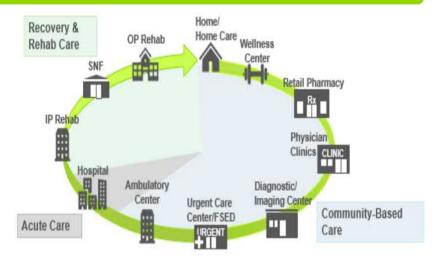
- Acute care focus
- Volume-driven incentives
- Little attention paid to quality of life

- Limited quality and price transparency
- Limited coordination across care continuum
- Expensive

Healthcare of the Future: Focus on Managing Health Across the Care Continuum



- Reduce lifetime burden of illness by delaying the onset of chronic illness Minimize interactions with the acute care system & incorporate prevention and disease management into clinical care plan
- Focus on interventions in the community



Source: Navigant research and analysis. 18 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

BUILDING CAPABILITIES ACROSS THE CARE CONTINUUM CAH's are redesigning care by implementing initiatives to reduce healthcare costs, improve quality and population health management



CAH Care Redesign Strategies

Medical Homes

- As one of the primary sources of care in their local delivery system, rural and critical access hospitals are positioned to take the lead in patient-centered medical home (PCMH) initiatives
- PCMHs address some of the unique challenges that rural hospitals face such as staffing shortages, limited resources, and patient populations that are low-income or uninsured

Telehealth

- CAHs expand service offerings through telehealth by providing local access to specialty care
- Telehealth benefits:
 - Provides better access
 - Improves patient compliance
 - Lowers costs
- Examples of current telehealth at a CAH:
 - Digital mammography
 - Cardiologist follow-up appointments
 - Complex emergency cases

Prevention & Chronic Disease Management

- Prevention and chronic disease management are critical components of valuebased care delivery
- Wellness and prevention initiatives range from the development of employee wellness programs to broader community health initiatives
- Chronic disease management programs are focused on heart failure and COPD to reduce readmission penalties. Innovative approaches include shared medical appointments and Nurse Practitioner led clinics.

19 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED



Source: The Role of Hospitals in Medical Home Initiatives and Strategies to Secure Their Support and Participation. www.aha.org

TOP OF LICENSE CARE

Rural physician shortages are a key driver in the development of new staffing models focused on top of license care

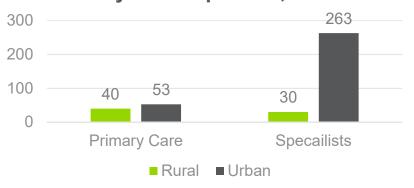


- The Association of American Medical Colleges (AAMC) projects shortages in both primary care and specialty physicians by 2025 and rural regions are expected to be the most impacted by these projected shortages
 - Average physician density in rural areas is much lower than in urban areas
- Top of license care can help address the impact of physician shortages
 - Research suggests advanced practice providers (APPs) lower costs and deliver guideline-based care
 - Cost of care for patients with nurse practitioner primary care provider was 11-29% less than the patients with a physician primary care provider
 - Researchers found that APPs were more likely to follow guidelines for COPD care, prescribing short-acting inhalers or oxygen therapy

Sources: AAMC, HRSA.gov, Ruralhealthweb.org.

20 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

Average Number of Physicians per 100,000





PARTNERSHIPS/AFFILIATIONS

Successful CAHs have pursued a variety of partnerships to attract critical mass of lives, provide high quality care & manage population health





Collaborating with Local Community Organizations

Objective: Coordinate community health initiatives

Example:

- Kossuth Regional Healthcare (CAH in IA) developed the Kossuth Wellness Initiative by bringing together community employers, city officials, hospital board members and staff, and other community leaders to plan strategies and initiatives to improve the health of the community
- The Wellness Initiative includes health fairs, walking trails, and health screenings



Partnering with Local Providers

Objective: Coordinate transitions of care and address underlying health care needs

Example:

- Abbeville Area Medical Center (CAH in SC) formed a joint venture with Abbeville County EMS and The SC Office of Rural Health to develop a Community Paramedicine program
- The program provides care coordination and home-based monitoring for patients in the community to reduce readmissions and ER visits



Affiliating with Regional/National Health Systems

Objective: Gain economies of scale

Examples:

- ~50% of CAHs are affiliated with an Integrated Delivery Network
- Example affiliations from Top 20 CAH list:
 - Carrington Health Center (ND) owned by Catholic Health Initiatives
 - Livingston HealthCare (MT) managed by Billings Clinic
 - Aspirus Ironwood Hospital & Clinics, Inc. (MI) and Aspirus Langlade Hospital (WI) owned by Aspirus System

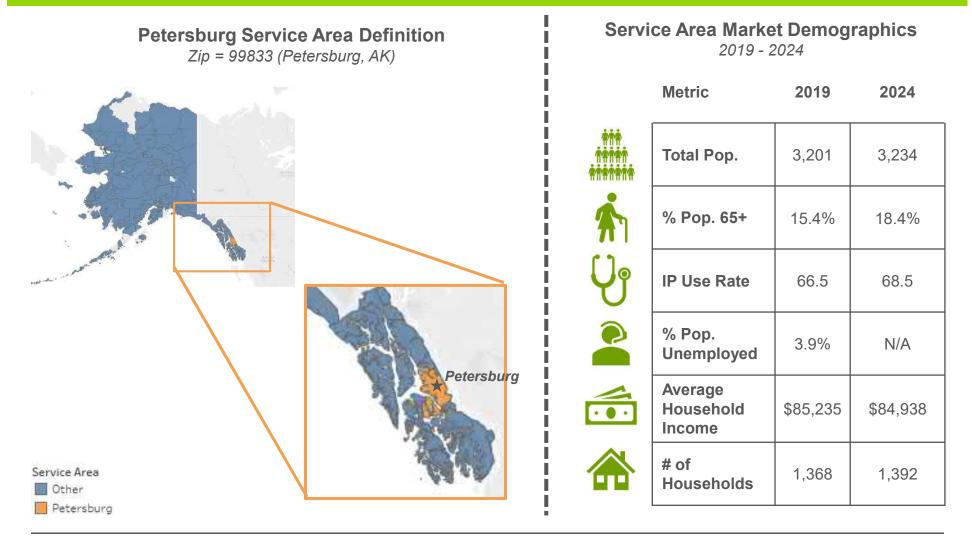
21 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED



Sources: iVantage Health Analytics 2017, Population Health Strategies of Critical Access Hospitals 2016, Definitive Healthcare.



PMC'S SERVICE AREA IS EXPECTED TO SEE A 3% INCREASE IN % OF POPULATION 65+ IN THE NEXT 5 YEARS



23 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: Calritas Demographics (2019-2024). Truven Inpatient Estimates (2018).

PETERSBURG IS EXPECTED TO EXPERIENCE SLOWER POPULATION GROWTH, RELATIVE TO THE STATE

Service Area Market Demographics 2019-2024

			5	Year Growth	1
Service Area Population by Age Cohort	2019	2024	No.	Percent	CAGR
Age 0-17	721	733	12	1.7%	0.3%
Age 18-44	1,046	1,026	(20)	-1.9%	-0.4%
Age 45-64	940	879	(61)	-6.5%	-1.3%
Age 65-84	456	557	101	22.1%	4.1%
Age 85+	38	39	1	2.6%	0.5%
Service Area Total	3,201	3,234	33	1.0%	0.2%
Female Age 15-44	540	535	(5)	-0.9%	-0.2%

		5	Year Growth	1	
Service Area Population by Gender	2019	2024	No.	Percent	CAGR
Female	1,515	1,539	24	1.6%	0.3%
Male	1,686	1,695	9	0.5%	0.1%
Service Area Total	3,201	3,234	33	1.0%	0.2%

Service Area Population Density	2019	2024
Service Area Population	3,201	3,234
Service Area Square Miles	3,552.0	3,552.0
Population Density (Persons per Sq Mile)	0.9	0.9

Alaska Market Demographic Comparison 2019-2024

			5	Year Growth	1
Statewide Population by Age Cohort	2019	2024	No.	Percent	CAGR
Age 0-17	185,752	187,260	1,508	0.8%	0.2%
Age 18-44	285,201	283,961	(1,240)	-0.4%	-0.1%
Age 45-64	183,447	177,040	(6,407)	-3.5%	-0.7%
Age 65-84	80,985	101,967	20,982	25.9%	4.7%
Age 85+	6,508	7,284	776	11.9%	2.3%
Total	741,893	757,512	15,619	2.1%	0.4%
Female Age 15-44	146,069	146,201	132	0.1%	0.0%

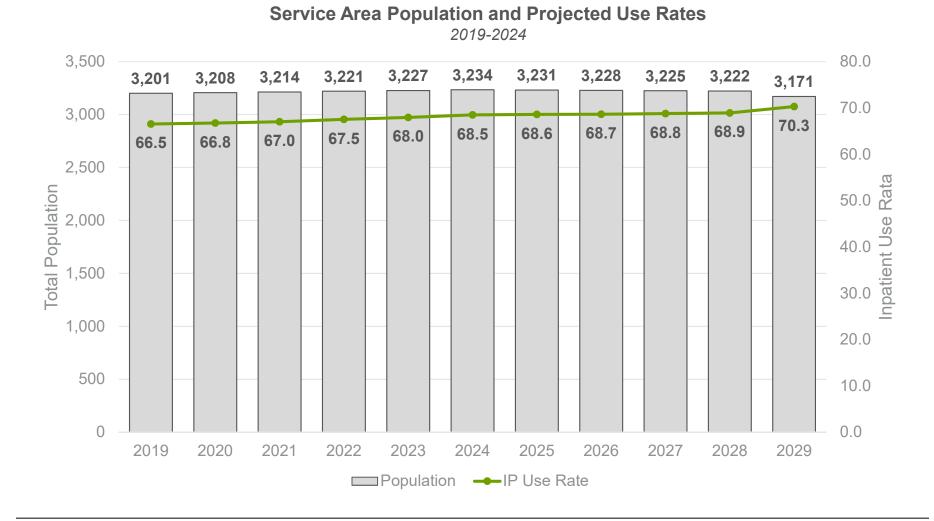
			5	Year Growth	1
State Population by Gender	2019	2024	No.	Percent	CAGR
Female	354,459	363,360	8,901	2.5%	0.5%
Male	387,434	394,152	6,718	1.7%	0.3%
Service Area Total	741,893	757,512	15,619	2.1%	0.4%

State Population Density	2019	2024
Service Area Population	741,893	757,512
Service Area Square Miles	574,136	574,136
Population Density (Persons per Sq Mile)	1.3	1.3

24 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: Calritas Demographics (2019-2024).



PETERSBURG POPULATION AND INPATIENT USE RATES ARE PROJECTED TO REMAIN RELATIVELY STAGNANT



PETERSBURG SERVICE AREA INPATIENT USE RATES ARE LOW RELATIVE TO STATE AND NATIONAL BENCHMARKS

- Alaska inpatient use rates per 1K population declined from 85 in 2008 to 69 in 2016. Petersburg inpatient use rates are relatively low
- compared to state and national benchmarks (90 and 105 respectively).

•

•

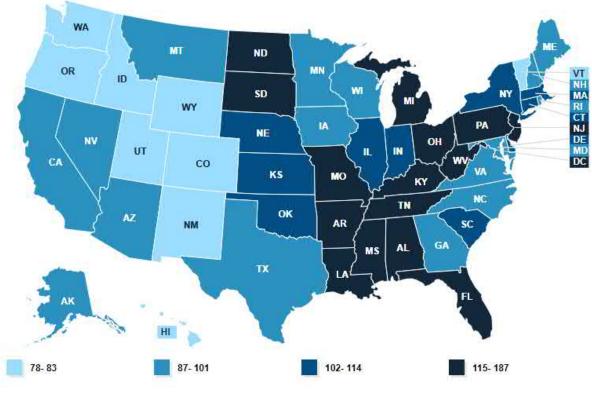
AK IP Use Rate

Petersburg IP Use

Rate per 1K (2019)

per 1K (2017)

Hospital Admissions (IP Use Rates) per 1,000 Population 2017



90

67

PMC IS THE ONLY PROVIDER IN THE REMOTE SERVICE AREA HOWEVER OPPORTUNITY EXISTS TO ALIGN WITH SITES IN NEIGHBORING COMMUNITIES

PMC's Competitive Landscape

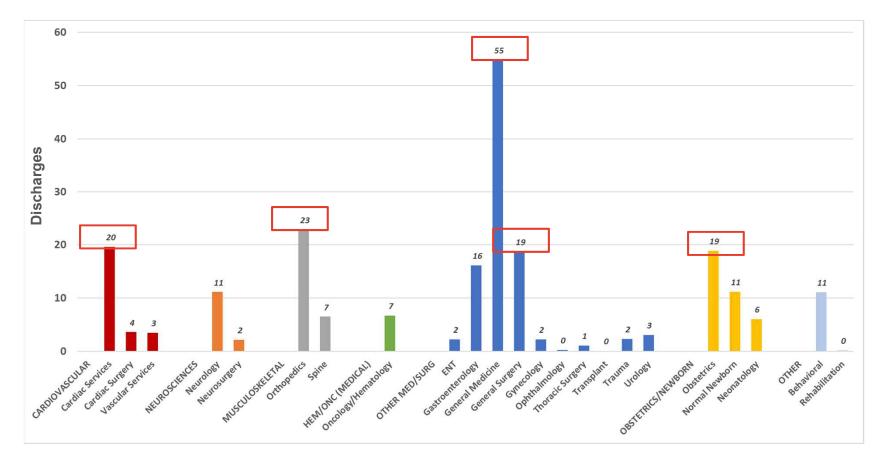
- PMC is the only provider in the remote service area.
- Due to the remote location of Mitkof island, there is no direct competition for acute primary care, urgent care, emergency or inpatient services.
- However, the following list of facilities are possible competitors for chronic care management and post acute care:
 - o Wrangell Medical Center (Wrangell, AK)
 - o Ketchikan Medical Center (Ketchikan, AK)
 - o Bartlett Regional Hospital (Juneau, AK)
 - o Swedish Medical Group (Seattle, WA)
 - o Virginia Mason Medical Center (Seattle, WA)





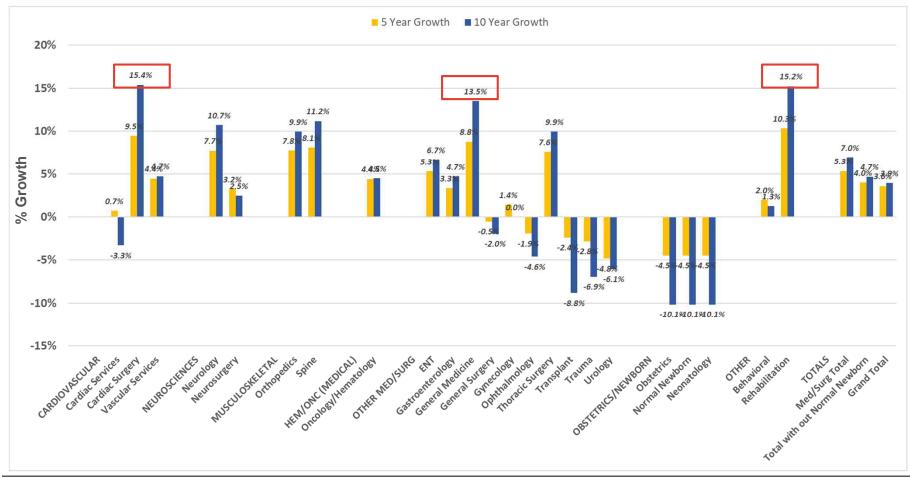
GENERAL MEDICINE, ORTHOPEDICS, CARDIAC, OB AND GENERAL SURGERY ARE THE HIGHEST IP VOLUME DRIVERS IN THE SERVICE AREA

Service Area Estimated Inpatient Market Volume by Service 2019



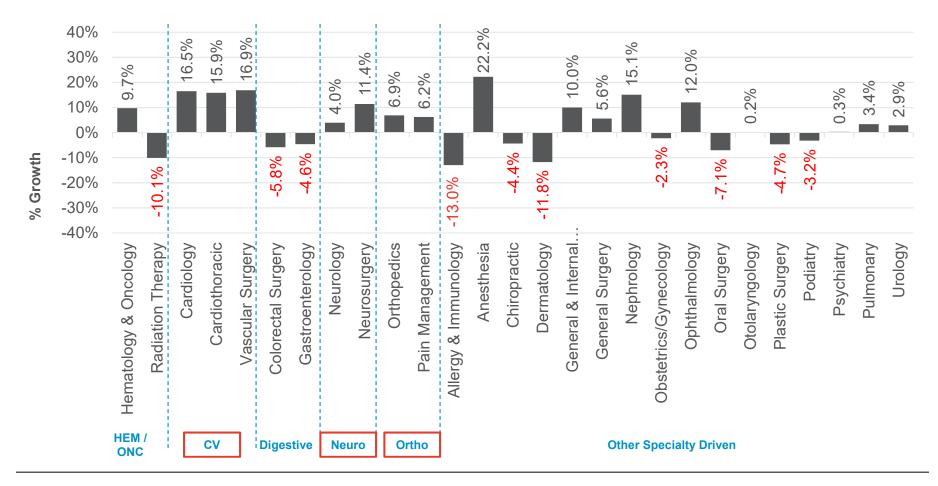
THE INPATIENT MARKET IS EXPECTED TO GROW LESS THAN 1% PER YEAR – DUE TO AN AGING POPULATION AND RELATIVELY FLAT POPULATION GROWTH

Service Area Estimated Inpatient Market Growth by Service Line 2019-2029



OVERALL OUTPATIENT VOLUME WILL GROW SLIGHTLY MORE THAN INPATIENT VOLUME IN THE NEXT 5 YEARS

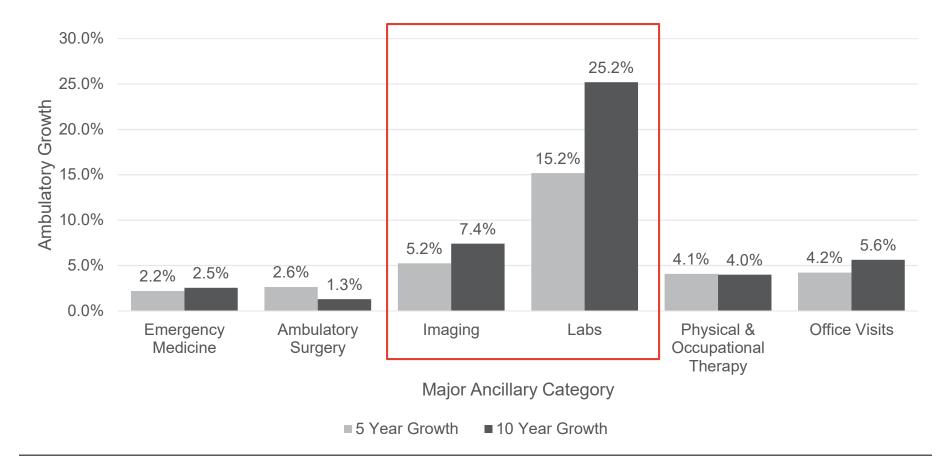
Petersburg Estimated Outpatient 10-Year Volume Growth by Service 2018-2028



30 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: Truven Data Analytics (2018)

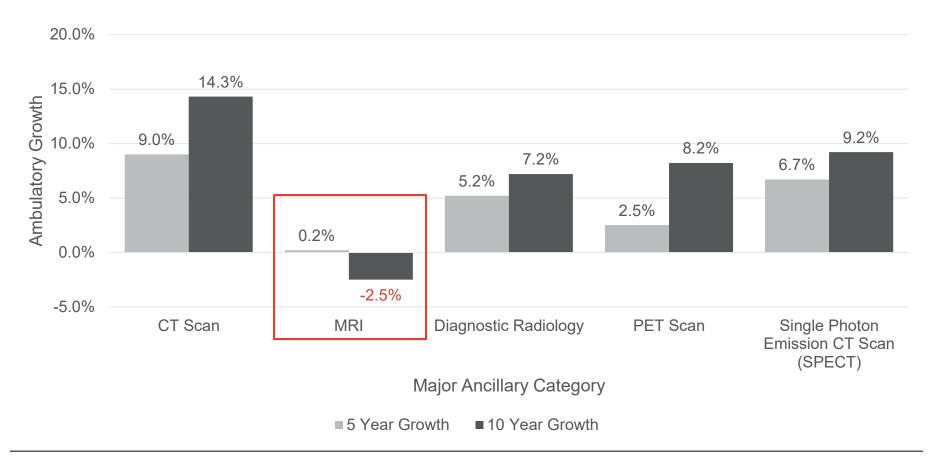
LABS AND IMAGING ARE EXPECTED TO EXPERIENCE SIGNIFICANT GROWTH OVER THE NEXT 5-10 YEARS

PMC PSA Estimated OP 5 & 10 Year Volume Growth by Major Ancillary Category 2018-2028

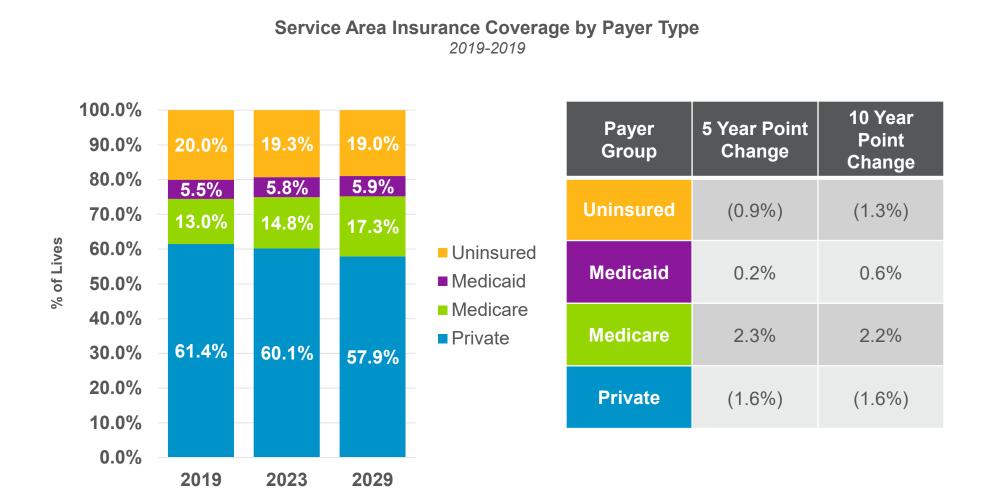


MAJORITY OF IMAGING / DIAGNOSTIC VOLUME WILL CONTINUE TO INCREASE, HOWEVER MRI SCANS ARE PROJECTED TO DECLINE OVER THE NEXT 10 YEARS

PMC PSA Estimated OP 5 & 10 Year Volume Growth by Imaging / Diagnostic X-Ray Modality 2018-2028

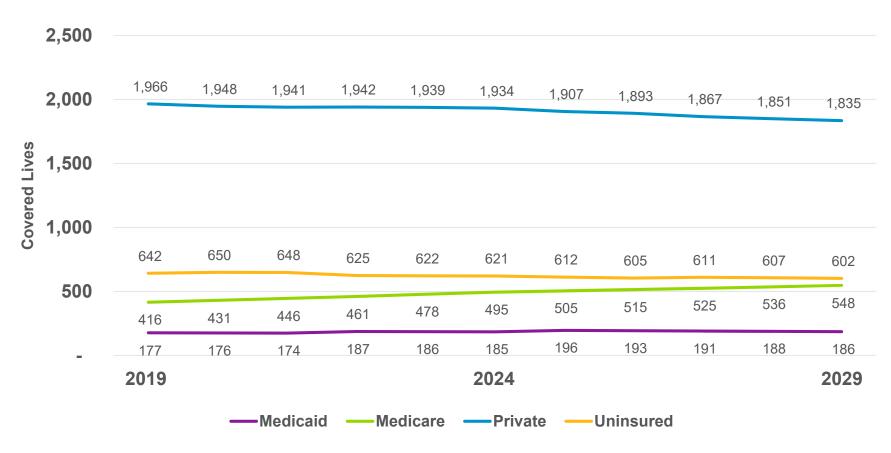


% OF MEDICARE PATIENTS IS PROJECTED TO GROW IN THE SERVICE AREA, IN LINE WITH AN AGING POPULATION



33 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: Truven Data Analytics (2018). Note: Payer inclusions: Private (Direct, ESI, Exchange), Medicare (Medicare, Dual Eligible).

THE NUMBER OF PRIVATE LIVES IS PROJECTED TO DECREASE BY OVER 100 LIVES IN 10 YEARS



Insurance Coverage by Payer Type 2019-2019

34 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: Truven Data Analytics (2018). Note: Payer inclusions: Private (Direct, ESI, Exchange), Medicare (Medicare, Dual Eligible).



GENERAL MEDICINE, GI, BEHAVIORAL HEALTH, AND CARDIAC SERVICES REPRESENT THE HIGHEST INPATIENT VOLUME SERVICE LINES

PMC Inpatient Volume by Service Line 2017-2018

Service Line	Volu	ume		Total ⁄olume	40 37 ³⁸	
	2017	2018	2017	2018	35	
General Medicine	37	38	36.6%	34.5%	20	
Gastroenterology	11	26	10.9%	23.6%	20 21	
Behavioral	21	17	20.8%	15.5%	25 20 20 20 20 20 21 17 21 17 21 17 21 17 21 17 21 17 21	
Cardiac Services	11	8	10.9%	7.3%		
Neurology	8	8	7.9%	7.3%	10 8 - 8 - 8	
Spine	2	5	2.0%	4.5%	5	2^{5} 4 2 3 4
Orthopedics	0	4	0.0%	3.6%		
Oncology/Hematology	1	2	1.0%	1.8%		
Trauma	3	1	3.0%	0.9%	Nicine dog intra ince dog s	pine edice to an train yology that becology
Urology	0	1	0.0%	0.9%	General Medicine Dogy Joral Vices Dogy St.	thop mar the Une moor so
ENT	4	0	4.0%	0.0%	nera store vitigo à O	withe Craila
Gynecology	0	0	0.0%	0.0%	Ger Gor Cor	pine edics of an Train a closed that could be ascillated a could be ascillated a could be a could be a closed a could be could be a could be a
Vascular Services	3	0	3.0%	0.0%	Offe	
Total	101	110	100.0%	100.0%	□201	

36 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Inpatient Data (2017-2018).

GI, NEPHROLOGY, SUBSTANCE ABUSE, AND PULMONOLOGY REPRESENT THE LARGEST % OF PMC'S INPATIENT VOLUME

	Vol	ume	% of Tota	I Volume
Service Line	2017	2018	2017	2018
Gastroenterology	11	26	10.9%	23.6%
Nephrology	5	13	5.0%	11.8%
Substance Abuse	15	13	14.9%	11.8%
Pulmonology	17	11	16.8%	10.0%
Medical Spine	2	5	2.0%	4.5%
Stroke/Cerebrovascular	6	5	5.9%	4.5%
Medical Cardiology - Heart Failure	6	4	5.9%	3.6%
Psychiatry	6	4	5.9%	3.6%
Dermatology	5	3	5.0%	2.7%
Endocrinology	4	3	4.0%	2.7%
Infectious Disease	2	3	2.0%	2.7%
Other General Medicine	2	3	2.0%	2.7%
Epilepsy/Headache	0	2	0.0%	1.8%
General Medical Orthopedics	0	2	0.0%	1.8%
Medical Cardiology - AMI	2	2	2.0%	1.8%
Medical Cardiology - Other	3	2	3.0%	1.8%
Medical Trauma (Orthopedics)	0	2	0.0%	1.8%
Oncology (Medical)	1	2	1.0%	1.8%
Rheumatology	2	2	2.0%	1.8%
Body Injuries	3	1	3.0%	0.9%
Degenerative Disorders	2	1	2.0%	0.9%
Urinary System (Medical)	0	1	0.0%	0.9%
Other Vascular	3	0	3.0%	0.0%
Otology	4	0	4.0%	0.0%
Total	101	110	100.0%	100.0%

PMC Inpatient Volume by Detailed Service Line - 2017-2018

37 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Inpatient Data (2017-2018).

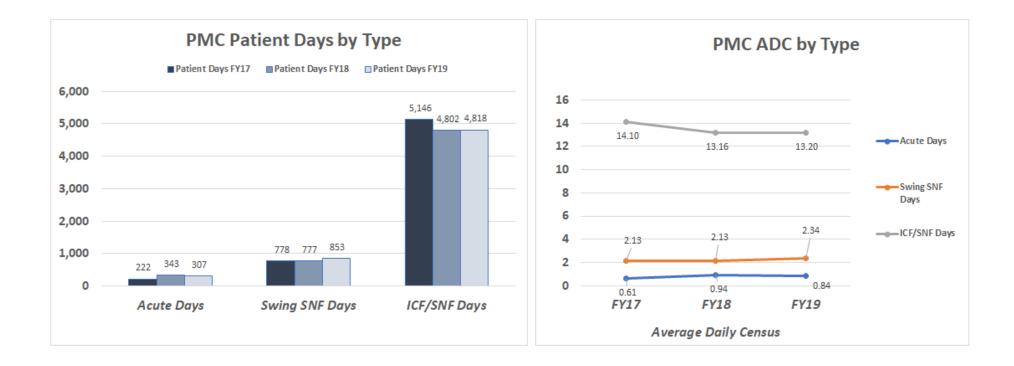
ANCILLARY SERVICES STATISTICS

Service	2017	2018	Volume Difference 2017- 2018	% Difference 2017-2018
Ultrasound Exams	434	-	N/A	N/A
Mammography Exams	193	178	-15	-8.4%
X-Ray	1,143	1,130	-13	-1.2%
CTs	285	314	29	9.2%
Physical Therapy	10,453	12,196	1,743	14.3%
Home Health	245	1,145	900	78.6%
ER Outpatient	744	773	29	3.8%
ER Observation	113	107	-6	-5.6%
Surgery	55	51	-4	-7.8%
Clinic Visits	9,677	9,674	-3	0.0%
Treatment Room Visits	473	647	174	26.9%

PMC Ancillary Volume by Service 2017-2018

PATIENTS DAYS HAVE SLIGHTLY INCREASED RECENTLY, BUT ACUTE ADC IS STILL BELOW 1.0

- The majority of patient days at PMC are long-term care days
- Acute ADC has remained below 1.0





PROVIDER SUMMARY

Provider	Summary
July	2019

Total Number of Providers	13 (7 MD, 5 DO, 1 PA)
Number of Specialists	2 (1 Orthopedic Surgery, 1 General Surgery Endoscopy)
# of Providers Representing 85% of Total PMC Admissions	4

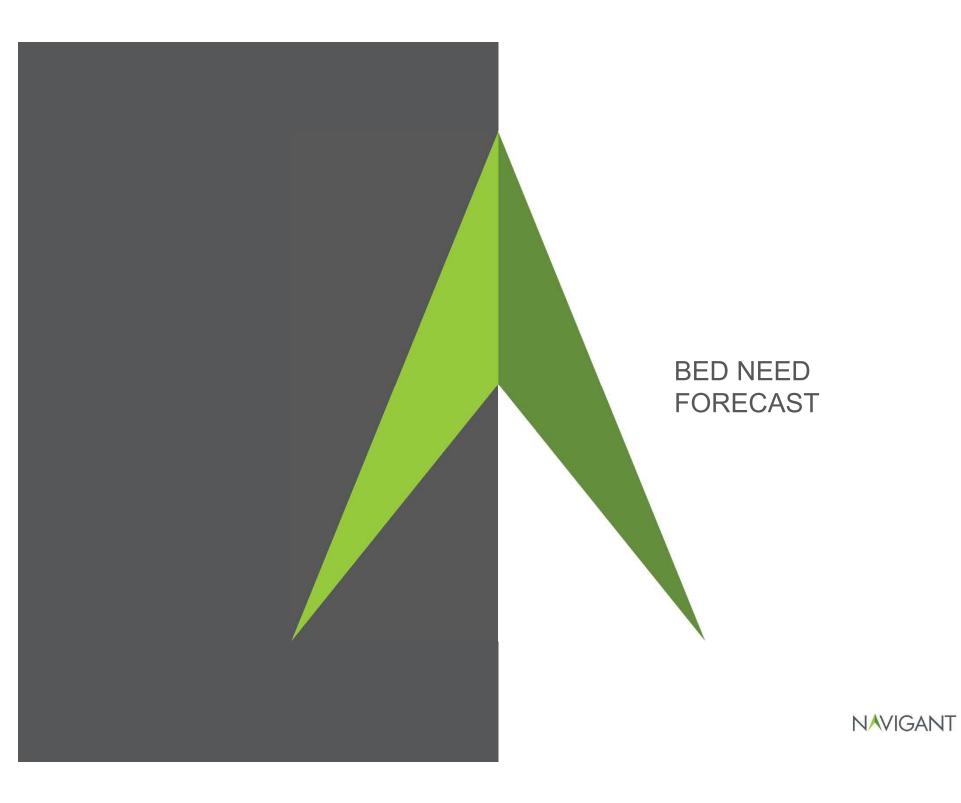


PMC COMMUNITY HEALTH NEEDS ASSESSMENT – EXECUTIVE SUMMARY (FY 2018)

Strengths	 PMC is a vital function in the community and provides quality care PMC is in a stable state and is an important employer in the community PMC provides uncompensated health benefits
Weaknesses	 Ambivalence in the "replace" vs. "remodel" decision Borough relationship is unclear Financing under Borough umbrella constraining Satisfaction with PMC vs. other Borough services is not high Concerns with care & management Borough population in decreasing and economy lacks diversity AK is not in a strong financial position
Opportunities	 Transparency appreciated during interviews Land potentially available that could be used for a building site Build the hospital we want Consider adding services that could expand market demand Opportunities for old building
Opportunities & Threats	 PMC is thought of a "Band Aid" facility Wrangell Medical Center is also working towards replacement Consider affiliation partner Consider change in scope of service
Threats	 Petersburg Borough not supportive of increase in taxes and new buildings Medicaid funding at risk Petersburg residents often leave town for healthcare
Recommendations	 Strategic analysis of PMC operations Develop and implement a community engagement plan Develop a financing proposal Develop preliminary facility design Develop a timeline for remodel/replacement process

*Findings directly reflect CHNA and were not confirmed in Navigant's assessment





PMC BED NEED FORECAST (ACUTE + SWING)

PMC currently operates 12 acute + swing beds

- PMC current acute ADC is approximately 0.8
- Swing bed census is approximately 2.5

FY19 data used

Service Line		Average Daily Census									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	Actual	al Projected									
Service Line											
Med/Surg	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Ob	-	-	-	-	-	-	-	-	-	-	-
Newborn	-	-	-	-	-	-	-	-	-	-	-
Behavioral	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Swing Bed Days	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5
Total	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4

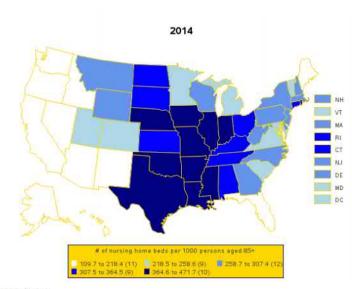
Navigant's forecast suggest a very slight increase in acute + swing bed need over the next several years; the current 12 bed complement appears to be sufficient

PMC BED NEED FORECAST (SNF)

PMC currently operates a 15 bed SNF

- Current ADC is 13.2, suggesting the SNF is at/near capacity

- Alaska, in general, has a relatively low number of SNF Beds Per 1,000 suggesting potential for unmet need (as well as low utilization)
- Given the fairly unusual community dynamics in Petersburg (low IP utilization, high degree of isolation), Navigant has chosen to grow SNF bed need by growing it at the same rate as the 65+ Population in Petersburg



Source: CASPER, U.S. Census Numbers in parentheses in legend indicate number of states in a given category Boxes to the right of the map indicate color categories for small Eastern states



PMC BED NEED FORECAST (SNF)

 Unconstrained by current facility size, Navigant forecasts SNF ADC to grow to nearly 20 by 2029:

PMC Total ALL AREAS												
Bed Type		Bed Need										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
		Projected										
Petersburg SNF												
Patient Days	4,818	5,002	5,194	5,392	5,599	5,813	6,035	6,266	6,506	6,755	7,013	
Average Daily Census	13.2	13.7	14.2	14.8	15.3	15.9	16.5	17.2	17.8	18.5	19.2	
Population Age 65+ in Petersburg	494	513	533	553	574	596	619	642	667	693	719	
Year over Year Change		3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	

PMC BED NEED FORECAST (SUMMARY)

- Acute + Swing bed need is estimated at 5 (suggesting the current 12 bed unit is more than sufficient)
- SNF bed need is forecast to grow to 22 by 2029

PMC Total ALL AREAS															
		Bed Need													
Bed Type	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029				
						Projected									
Desired Occupancy															
Acute + Swing	4	4	5	5	5	5	5	5	5	5	5				
(80% occupancy used)															
SNF	15	16	16	17	18	18	19	20	20	21	22				
(90% occupancy used)															

ANCILLARY ROOM NEED

Modality	Current Year Procedure Volume	10 Year % Growth	10 Year Procedure Volume	Procedure Time (min)		Hours per Day	Days Per Year	Total Capacity per Room/ Machine Per Year	Actual Room/ Machine Need
СТ	323	14.3%	369	60	80%	9	252	1,814	1
Mammography	217	2.0%	221	30	80%	9	252	3,629	1
Ultrasound	434	4.7%	455	60	80%	9	252	1,814	1
X-Ray	1,140	7.2%	1,222	15	80%	9	252	7,258	1
DEXA Bone Density	47	12.3%	53	60	80%	9	252	1,814	1
ED*	870	2.5%	892	n/a	n/a	n/a	n/a	1,300	1
OP Surgery	51	3.9%	53	120	80%	10	252	1,008	1
Endoscopy**	61	2.1%	62	90	80%	10	252	1,344	1

*ED, Including Observation

**Data Unavailable, Market Total was used representing 100% Market Share

47 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED





FINANCIAL FORECAST AND DEBT CAPACITY - OVERVIEW

- Navigant has made a baseline financial model to estimate debt capacity; This model uses a constant market share model to estimate patient volumes into the future
- Expense and revenue ratios rely on recent historical financial performance to forecast near term financial performance
- The FY20 Budget provided by PMC is used as the base year for the financial projections. It is slightly below breakeven from an operating margin perspective (-2.1%) and approximately breakeven (-0.4%) from a total margin perspective. This level of financial performance, in general, represents a slight improvement over recent years.

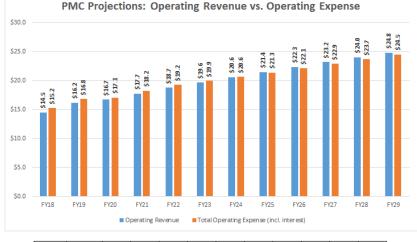
FINANCIAL FORECAST AND DEBT CAPACITY – FINANCIAL CONSIDERATIONS

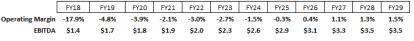
- PMC's assets are nearly fully depreciated, so a debt issuance of any size is likely to quickly put any typical leverage ratios into unfavorable ranges
- For this reason, Navigant's analysis of debt capacity focuses on two areas:
 - What the interest payments will do to PMC's operating income/margin, and
 - How **easily PMC can afford the debt service** (principal and interest) required by the level of debt assumed
- For the purpose of estimating debt capacity, it is assumed that the contemplated capital project will be entirely funded with debt (PMC has ~100 days cash on hand and a limited assets balance of \$3.4M, so PMC has the ability to fund some of any project from funds on hand, but for purposes of this analysis 100% of project cost is estimated to funded through debt)
- Based on recent work in the CAH segment, Navigant is assuming 30 year term on debt at 5.5%, beginning in 2021

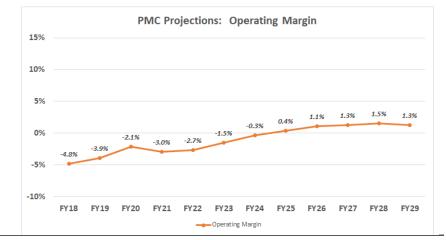
BASELINE FINANCIAL FORECAST RESULTS: INCOME STATEMENT AND MARGIN

Baseline Financial Model **No Additional Debt**

- To help estimate PMC's debt capacity, Navigant has developed a baseline financial model to project PMC's performance
- This baseline model assumes constant market share and no new debt
- This model results in slightly but consistently increasing margins over the next few years
- FY2020 budget was used as the basis, although breakeven performance was not assumed – some of the large estimated decreases in operating expenses assumed in the budget were moderated
- EBIDTA is positive throughout the projection period



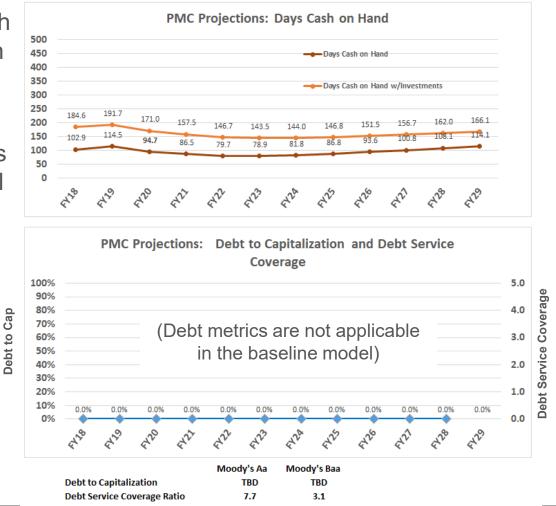




BASELINE FINANCIAL FORECAST RESULTS: KEY METRICS

Baseline Financial Model **No Additional Debt**

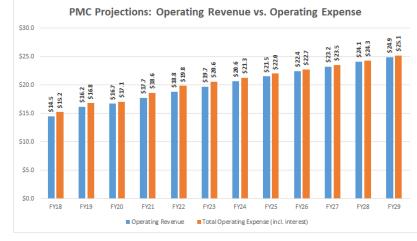
- Days cash slowly builds through this baseline scenario and is on a positive trajectory
- Limited capital spending (continuation of recent levels) is assumed in this baseline model



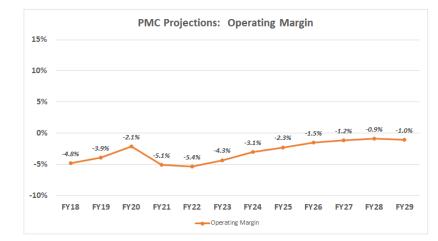
FINANCIAL FORECAST AND DEBT CAPACITY RESULTS: INCOME STATEMENT AND MARGIN

Debt Model \$5.0M Debt assumed

- Navigant's estimate of PMC's debt capacity is \$5.0M
- This results in negative operating margins initially after debt is issued, but these margins recover on a positive trajectory with the baseline assumptions (that assume no financial "bump" from the new facility project(s)
- EBITDA stays positive throughout the projection period







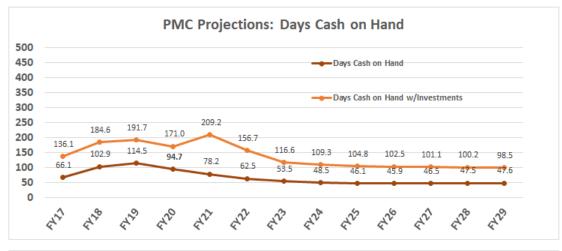
Financial projections include \$5.0M debt issue in FY21

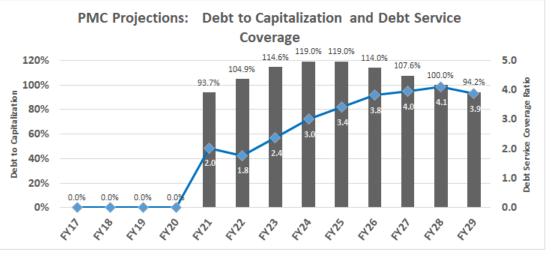
53 / $\odot2019$ NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.

FINANCIAL FORECAST AND DEBT CAPACITY RESULTS: KEY RATIOS

- Navigant's updated estimate of PMC's debt capacity is \$5.0M
- Days cash drops initially but recovers to a positive trajectory in this scenario; including investments, it stays above 100
- Debt to capitalization ratio is going to be unfavorable because PMC's assets are mostly depreciated; debt service coverage is above 2.0 for the majority of the projection period

Financial projections include \$5.0M debt issue in FY21





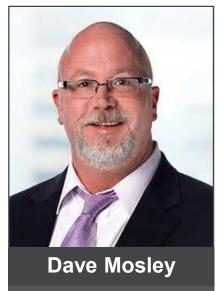
54 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.



NEXT STEPS FOR CONSIDERATION

After the execution of facility and financial analytics, PMC leadership transitioned to forward-thinking discussions regarding strategies on future funding opportunities.

- PMC met with Navigant's Dave Mosley to discuss interest in increased funding and cost saving scenarios
- Dave pursued conversations with the state to confirm interest in innovative solutions for PMC
- Dave Mosley to guide PMC in outlining ideas and related metrics, and engage with the state to cover the evaluation process.

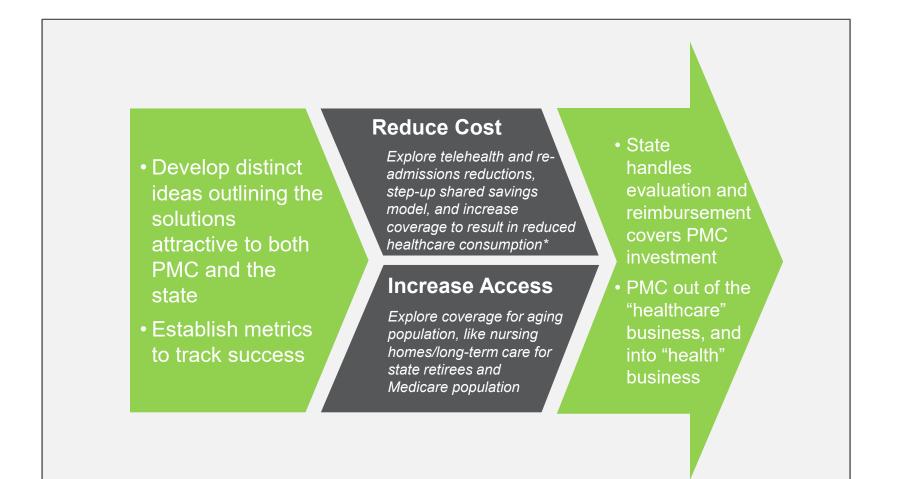


Managing Director

david.mosley@navigant.com

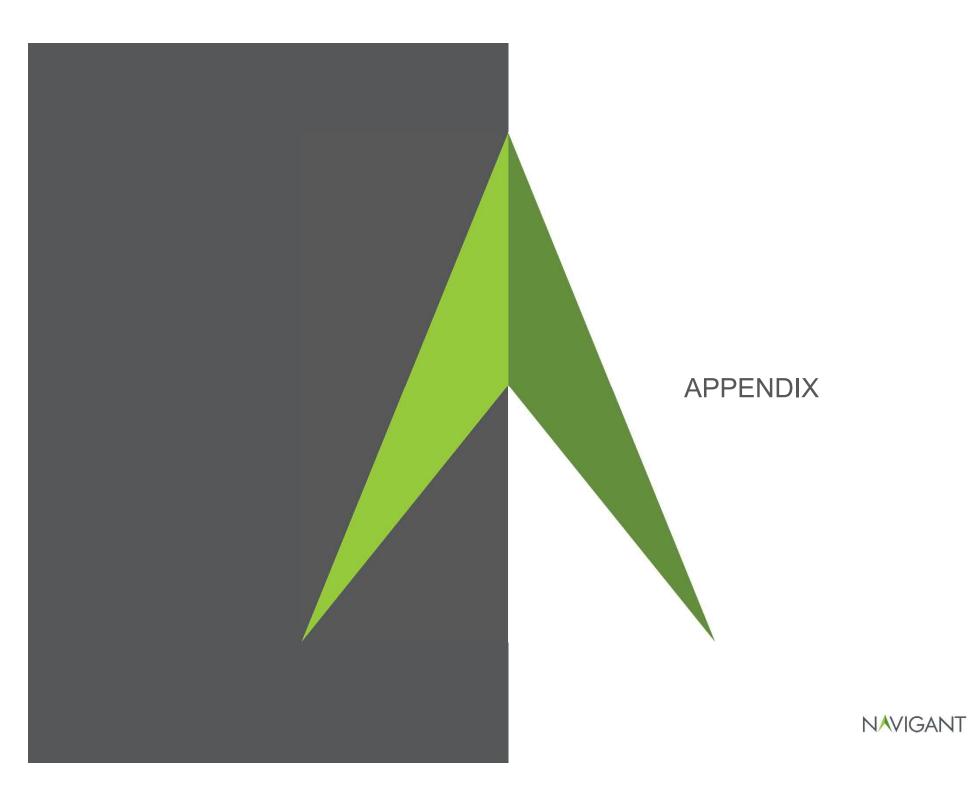


NEXT STEPS FOR CONSIDERATION (CONTINUED)



57 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED

*PMC has data showing costs decreased when coverage by Medicare increased.



BASELINE FINANCIAL FORECAST RESULTS: INCOME STATEMENT DETAIL

Petersburg Medica	al Center												
Financial Modeling	g												
Projected Income	Statemen	t											
-													
	Actual	Actual	Modified										
	Internal	Internal	Budget					Proje	ected				
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Operating Revenues													
Net Patient Service Revenue	\$13,737,544	\$15,088,269	\$15,594,973	\$16,525,373	\$17,512,532	\$18,338,130	\$19,203,809	\$20,014,407	\$20,860,474	\$21,638,058	\$22,445,969	\$23,171,845	\$23,922,618
Other Operating Revenue	778,911	1,064,285	1,100,027	1,165,654	1,235,286	1,293,521	1,354,584	1,411,761	1,471,440	1,526,289	1,583,277	1,634,478	1,687,436
Total Operating Revenues	14,516,455	16,152,554	16,695,000	17,691,027	18,747,818	19,631,651	20,558,393	21,426,168	22,331,915	23,164,347	24,029,246	24,806,323	25,610,053
Operating Expenses													
Salaries and Wage	7,634,622	7,964,981	8,164,106	8,712,814	9,253,439	9,581,303	9,920,783	10,272,292	10,636,254	11,013,112	11,403,321	11,807,357	12,225,707
Benefits	2,669,853	3,104,577	3,250,000	3,497,184	3,744,719	3,909,019	4,080,260	4,258,728	4,444,721	4,638,547	4,840,528	5,050,999	5,270,307
Supplies	940,285	1,356,289	1,396,978	1,484,972	1,578,794	1,633,202	1,689,499	1,747,752	1,808,029	1,870,400	1,934,939	2,001,721	2,070,825
Pharmacy	446,273	492,195	500,000	505,869	530,924	549,466	568,657	588,522	609,084	630,366	652,396	675,198	698,800
Purchased Services	1,010,983	1,042,511	930,000	957,900	986,637	1,016,236	1,046,723	1,078,125	1,110,469	1,143,783	1,178,096	1,213,439	1,249,842
Utilities/Facility	781,819	824,809	880,000	906,400	933,592	961,600	990,448	1,020,161	1,050,766	1,082,289	1,114,758	1,148,200	1,182,646
Other Expense	1,076,833	1,295,875	1,180,602	1,419,302	1,504,086	1,574,993	1,649,343	1,718,962	1,791,628	1,858,411	1,927,800	1,990,143	2,054,624
Depreciation	658,752	704,281	750,000	731,250	712,969	695,145	677,766	660,822	644,301	628,194	612,489	597,177	582,247
Interest				-	-	-	-	-	-	-	-	-	-
Total Operating Expenses	15,219,420	16,785,518	17,051,685	18,215,692	19,245,160	19,920,963	20,623,480	21,345,364	22,095,251	22,865,101	23,664,326	24,484,233	25,334,998
Operating Income	(702,965)	(632,964)	(356,685)	(524,665)	(497,342)	(289,311)	(65,087)	80,804	236,664	299,246	364,919	322,091	275,055
Operating Margin	-4.8%	-3.9%	-2.1%	-3.0%	-2.7%	-1.5%	-0.3%	0.4%	1.1%	1.3%	1.5%	1.3%	1.19
Non-Operating Revenues	180,184	383,092	281,638	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Overall Change in Net Position	(522,781)	(249,872)	(75,047)	(24,665)	2,658	210,689	434,913	580,804	736,664	799,246	864,919	822,091	775,055
Total Margin	-3.6%	-1.5%	-0.4%	-0.1%	0.0%	1.1%	2.1%	2.7%	3.3%	3.5%	3.6%	3.3%	3.0%

59 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.

BASELINE FINANCIAL FORECAST RESULTS: BALANCE SHEET

	Actual Internal	Actual Internal	Modified Budget					Pro	ojected						
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30		
Assets															
Current Assets															
Cash and Cash Equivalents	\$ 4,105,198	\$ 5,044,238	\$ 4,231,497	\$ 4,141,799	\$ 4,046,714	\$ 4,156,308	\$ 4,467,949	\$ 4,916,690	\$ 5,500,645	\$ 6,141,097	\$ 6,828,142	\$ 7,468,963	\$ 8,045,237		
Account Receivable	3,158,950	2,103,267	2,173,900	2,303,596	2,441,203	2,556,290	2,676,963	2,789,958	2,907,898	3,016,291	3,128,912	3,230,097	3,334,753		
Inventory	210,499	225,007	231,757	246,355	261,920	270,947	280,286	289,950	299,950	310,298	321,004	332,083	343,548		
Prepaid Expense and Other	343,809	157,718	167,236	178,652	188,748	195,376	202,266	209,346	216,701	224,251	232,090	240,131	248,475		
Total Current Assets	7,818,456	7,530,230	6,804,391	6,870,402	6,938,586	7,178,921	7,627,465	8,205,945	8,925,194	9,691,937	10,510,148	11,271,275	11,972,012		
NonCurrent Assets															
Capital Assets	21,265,616	21,852,352	22,552,352	23,252,352	23,952,352	24,652,352	25,352,352	26,052,352	26,752,352	27,452,352	28,152,352	28,852,352	29,552,352		
Accum Dep	(16,907,266)	(17,597,777)	(18,347,777)	(19,079,027)	(19,791,996)	(20,487,140)	(21,164,906)	(21,825,728)	(22,470,029)	(23,098,223)	(23,710,712)	(24,307,888)	(24,890,136		
Capital Assets, net	4,358,350	4,254,575	4,204,575	4,173,325	4,160,356	4,165,212	4,187,446	4,226,624	4,282,323	4,354,129	4,441,640	4,544,464	4,662,216		
Assets Limited as to Use	3,257,046	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734		
Total non-Current Assets	7,615,396	7,658,309	7,608,309	7,577,059	7,564,090	7,568,946	7,591,180	7,630,358	7,686,057	7,757,863	7,845,374	7,948,198	8,065,950		
Total Assets	15,433,852	15,188,539	14,412,700	14,447,461	14,502,676	14,747,866	15,218,645	15,836,303	16,611,251	17,449,800	18,355,522	19,219,473	20,037,963		
Liabilities and Net Assets															
Current Liabilities															
Accounts Payable	\$ 569,164														
Salaries and Wages Payable	381,119	419,293	425,942	455,018	480,734	497,615	515,163	533,195	551,927	571,158	591,122	611,603	632,854		
Accrued Vacation/Sick Leave	601,480	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578		
Due to 3rd Partry Payers	272,000	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080		
Current Portion of Capital Lease	119,977	124,896	-	-			-			-	-	1	2		
Current Portion of LTD Total Current Liabilities	- 1,943,740	2,470,853	- 2,118,196	2,177,622	- 2,230,179	- 2,264,681	- 2,300,546	- 2,337,400	- 2,375,684	- 2,414,987	- 2,455,790	- 2,497,650	- 2,541,085		
Non-Current Liabilities															
Long term Portion of Capital Lease	280,269	155,373		-	-	-	-	-	-	-	-	-			
Long Term Debt	- 280,209	-		-					-						
Net Pension and OPEB Liability	10,281,573	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911		
Total Non Current Liabilities	10,561,842	11,749,284	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911		
Total Liabilities	12,505,582	14,220,137	13,712,107	13,771,533	13,824,090	13,858,592	13,894,457	13,931,311	13,969,595	14,008,898	14,049,701	14,091,561	14,134,996		
Net Assets	2,928,270	968,402	700,593	675,928	678,586	889,275	1,324,188	1,904,992	2,641,656	3,440,902	4,305,821	5,127,912	5,902,967		
Total Liabilities and Net Assets	15,433,852	15,188,539	14,412,700	14,447,461	14,502,676	14,747,866	15,218,645	15,836,303	16,611,251	17,449,800	18,355,522	19,219,473	20,037,963		

60 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.

DEBT CAPACITY MODEL RESULTS: INCOME STATEMENT DETAIL

Petersburg Medica	l Center												
Financial Modeling													
Projected Income S	tatemen	t											
	Actual	Actual	Modified										
	Internal	Internal	Budget					Proje	ected				
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Operating Revenues													
Net Patient Service Revenue	\$13,737,544	\$15,088,269	\$15,594,973	\$16,554,796	\$17,575,978	\$18,403,797	\$19,271,774	\$20,084,411	\$20,932,578	\$21,711,965	\$22,521,723	\$23,249,115	\$24,001,433
Other Operating Revenue	778,911	1,064,285	1,100,027	1,167,730	1,239,761	1,298,153	1,359,378	1,416,699	1,476,526	1,531,502	1,588,620	1,639,929	1,692,995
Total Operating Revenues	14,516,455	16,152,554	16,695,000	17,722,526	18,815,739	19,701,950	20,631,152	21,501,110	22,409,105	23,243,467	24,110,343	24,889,043	25,694,428
Operating Expenses													
Salaries and Wage	7,634,622	7,964,981	8,164,106	8,778,978	9,394,760	9,727,593	10,072,217	10,429,049	10,798,523	11,181,086	11,577,203	11,987,352	12,412,031
Benefits	2,669,853	3,104,577	3,250,000	3,523,742	3,801,909	3,968,702	4,142,542	4,323,717	4,512,530	4,709,295	4,914,338	5,127,998	5,350,628
Supplies	940,285	1,356,289	1,396,978	1,495,161	1,600,664	1,655,841	1,712,935	1,772,012	1,833,141	1,896,395	1,961,848	2,029,576	2,099,659
Pharmacy	446,273	492,195	500,000	509,516	538,637	557,450	576,922	597,078	617,940	639,534	661,886	685,022	708,969
Purchased Services	1,010,983	1,042,511	930,000	957,900	986,637	1,016,236	1,046,723	1,078,125	1,110,469	1,143,783	1,178,096	1,213,439	1,249,842
Utilities/Facility	781,819	824,809	880,000	906,400	933,592	961,600	990,448	1,020,161	1,050,766	1,082,289	1,114,758	1,148,200	1,182,646
Other Expense	1,076,833	1,295,875	1,180,602	1,421,829	1,509,535	1,580,633	1,655,180	1,724,975	1,797,820	1,864,759	1,934,306	1,996,779	2,061,393
Depreciation	658,752	704,281	750,000	781,250	812,969	845,145	827,766	810,822	794,301	778,194	762,489	747,177	732,247
Interest				247,500	244,083	240,478	236,675	232,663	228,430	223,965	219,253	214,283	209,039
Total Operating Expenses	15,219,420	16,785,518	17,051,685	18,622,276	19,822,786	20,553,678	21,261,408	21,988,601	22,743,922	23,519,300	24,324,176	25,149,825	26,006,455
Operating Income	(702,965)	(632,964)	(356,685)	(899,750)	(1,007,047)	(851,728)	(630,256)	(487,491)	(334,817)	(275,833)	(213,833)	(260,782)	(312,028
Operating Margin	-4.8%	-3.9%	-2.1%	-5.1%	-5.4%	-4.3%	-3.1%	-2.3%	-1.5%	-1.2%	-0.9%	-1.0%	-1.2%
Non-Operating Revenues	180,184	383,092	281,638	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Overall Change in Net Position	(522,781)	(249,872)	(75,047)	(399,750)	(507,047)	(351,728)	(130,256)	12,509	165,183	224,167	286,167	239,218	187,972
Total Margin	-3.6%	-1.5%	-0.4%	-2.3%	-2.7%	-1.8%	-0.6%	0.1%	0.7%	1.0%	1.2%	1.0%	0.7%

61 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.

DEBT CAPACITY MODEL RESULTS: BALANCE SHEET

Debt Model \$5M Debt assumed

	Actual Internal	Actual Internal	Modified Budget					Pro	jected				
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Assets													
Current Assets													
Cash and Cash Equivalents	\$ 4,105,198	\$ 5,044,238	\$ 4,231,497	\$ 3,823,666	\$ 3,257,181	\$ 2,890,711	\$ 2,717,862	\$ 2,675,222	\$ 2,760,594	\$ 2,894,676	\$ 3,067,209	\$ 3,184,737	\$ 3,228,535
Account Receivable	3,158,950	2,103,267	2,173,900	2,307,697	2,450,047	2,565,443	2,686,437	2,799,717	2,917,949	3,026,594	3,139,472	3,240,868	3,345,740
Inventory	210,499	225,007	231,757	248,046	265,549	274,702	284,174	293,975	304,116	314,610	325,469	336,705	348,331
Prepaid Expense and Other	343,809	157,718	167,236	180,212	192,020	199,223	206,202	213,373	220,822	228,471	236,411	244,557	253,010
Total Current Assets	7,818,456	7,530,230	6,804,391	6,559,621	6,164,797	5,930,080	5,894,675	5,982,287	6,203,481	6,464,350	6,768,561	7,006,867	7,175,617
NonCurrent Assets													
Capital Assets	21,265,616	21,852,352	22,552,352	24,752,352	26,952,352	29,152,352	29,852,352	30,552,352	31,252,352	31,952,352	32,652,352	33,352,352	34,052,352
Accum Dep	(16,907,266)	(17,597,777)	(18,347,777)	(19,129,027)	(19,941,996)	(20,787,140)	(21,614,906)	(22,425,728)	(23,220,029)	(23,998,223)	(24,760,712)	(25,507,888)	(26,240,136
Capital Assets, net	4,358,350	4,254,575	4,204,575	5,623,325	7,010,356	8,365,212	8,237,446	8,126,624	8,032,323	7,954,129	7,891,640	7,844,464	7,812,216
Assets Limited as to Use	3,257,046	3,403,734	3,403,734	6,403,734	4,903,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734	3,403,734
Total non-Current Assets	7,615,396	7,658,309	7,608,309	12,027,059	11,914,090	11,768,946	11,641,180	11,530,358	11,436,057	11,357,86 3	11,295,374	11,248,198	11,215,950
Total Assets	15,433,852	15,188,539	14,412,700	18,586,680	18,078,887	17,699,026	17,535,855	17,512,645	17,639,538	17,822,213	18,063,935	18,255,065	18,391,567
Liabilities and Net Assets													
Current Liabilities													
Accounts Payable	\$ 569,164		\$ 444,596										
Salaries and Wages Payable	381,119	419,293	425,942	465,174	495,162	513,420	531,098	549,263	568,131	587,499	607,605	628,229	649,627
Accrued Vacation/Sick Leave	601,480	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578	719,578
Paryroll Taxes Payable	272,000	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080	528,080
Current Portion of Capital Lease	119,977	124,896	-	-	-	-	-	-	-	-	-	1	2
Current Portion of LTD	-	-	-	62,124	65,541	69,146	72,949	76,961	81,194	85,660	90,371	95,341	100,585
Total Current Liabilities	1,943,740	2,470,853	2,118,196	2,254,050	2,318,845	2,359,858	2,399,892	2,441,134	2,484,039	2,528,206	2,574,131	2,621,384	2,670,499
Non-Current Liabilities													
Long term Portion of Capital Lease	280,269	155,373	-	-	-	-	-	-	-	-	-	-	-
Long Term Debt	-	-	-	4,437,876	4,372,335	4,303,189	4,230,240	4,153,279	4,072,085	3,986,425	3,896,055	3,800,713	3,700,128
Net Pension and OPEB Liability	10,281,573	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911	11,593,911
Total Non Current Liabilities	10,561,842	11,749,284	11,593,911	16,031,787	15,966,246	15,897,100	15,824,151	15,747,190	15,665,996	15,580,336	15,489,966	15,394,624	15,294,039
Total Liabilities	12,505,582	14,220,137	13,712,107	18,285,837	18,285,091	18,256,958	18,224,043	18,188,324	18,150,035	18,108,542	18,064,097	18,016,008	17,964,538
Net Assets	2,928,270	968,402	700,593	300,843	(206,204)	(557,932)	(688,188)	(675,679)	(510,496)	(286,329)	(162)	239,057	427,029
Total Liabilities and Net Assets	15,433,852	15,188,539	14,412,700	18,586,680	18,078,887	17,699,026	17,535,855	17,512,645	17,639,538	17,822,213	18,063,935	18,255,065	18,391,567

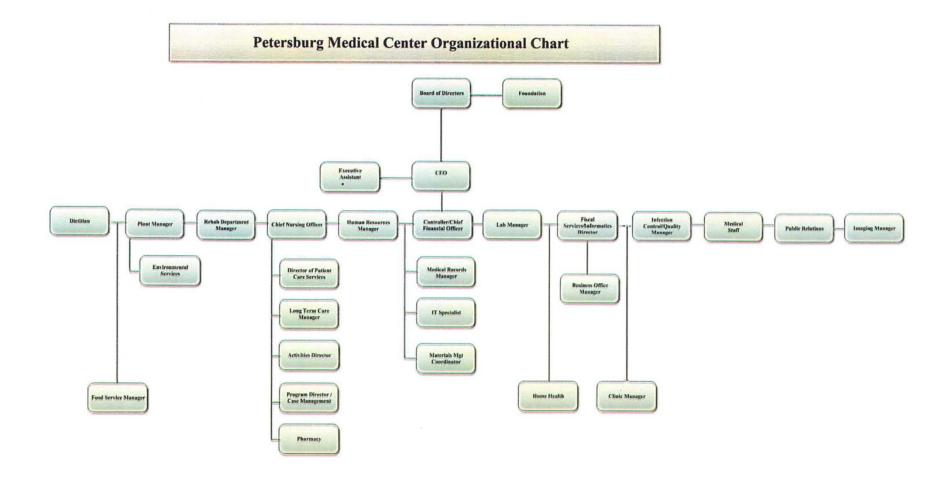
62 / ©2019 NAVIGANT CONSULTING, INC. ALL RIGHTS RESERVED Source: PMC Values – Logo.

PARKING DETAIL

Parking Detail by Location June 2019

Location	# of Spaces
Business Office	13
Clinic	11
Upper Parking Lot	34
Total	58

PMC ORG CHART



PMC LOGO WITH VALUES





Numeric Program



ARCHITECTURE

Space Planning Program - Total Departments

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

	EX	ISTING		PR	OPOSED		
SPACE	NSF	GF	DSF	NSF	GF	DSF	REMARKS
EPARTMENTS							
MAIN ENTRY RECEPTION	875	1.10	966	2,525	1.15	2,904	
ADMINISTRATION	2,183	1.18	2,578	1,200	1.35	1,620	
INFORMATION TECHNOLOGY	0	0	0	1,140	1.25	1,425	
BUSINESS/MED. RECORDS	884	1.19	1,051	1,120	1.25	1,400	
LONG TERM CARE	4,430	1.38	6,094	8,460	1.50	12,690	
CLINIC	2,736	1.95	5,342	6,430	1.40	9,002	
ACUTE CARE	3,578	1.20	4,295	5,990	1.20	7,188	
EMERGENCY DEPARTMENT	954	1.10	1,053	1,440	1.50	2,160	
LABORATORY	1,683	1.12	1,881	2,060	1.25	2,575	
IMAGING	1,437	1.48	2,126	3,470	1.50	5,205	
PHARMACY	117	1.00	117	640	1.20	768	
SURGERY	1,045	1.46	1,522	1,810	1.60	2,896	
CENTRAL STERILE	480	1.09	523	760	1.30	988	
PHYSICAL THERAPY	1,096	1.14	1,253	2,682	1.25	3,353	
HOME HEALTH	1,672	1.44	2,416	440	1.40	616	
MAINTENANCE	2,376	1.26	3,000	2,376	1.15	2,580	
DIETARY	1,656	1.21	2,000	2,940	1.30	3,822	
CENTRAL SUPPLY	5,012	1.20	6,000	4,840	1.30	6,292	
OTHER SUPPORT SPACES	4,660	0.00	0	0	0.00	0	
TOTAL DEPARTMENT GROSS SQU	JARE FOOTAGE		42,217			67,483	
Bu	ilding grossing facto	or	1.16			1.30	
TOTAL DEPARTMENT GROSS SQU	JARE FOOTAGE		49,000			87,728	

BUILDING GROSSING FACTOR

Exterior walls, public corridors, mechanical and electrical services, stairs and elevators

NAC

Space Planning Program - Main Entry Reception

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			PROPOSED	•
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL REMARKS
MAIN ENTRY RECEPTION			875			2,525
VESTIBULE 1	1	53	53	1	150	150 Entry, large enough for wheelchair storage
VESTIBULE 2	1	135	135			0
LOBBY	1	380	380	1	600	600 Allow for Welcoming and Wayfinding
FRONT RECEPTION DESK & ADMITTING	1	57	57	1	100	100 Assume 2 staff (50 sfx 2)
WAITING ROOM L1	1	73	73	1	150	150 Assume 5 seats (30sf x 5)
CHILDREN'S PLAY AREA			0	1	60	60 Contiguous with waiting
MULTI-PURPOSE EDUCATION ROOM			0	1	800	800 Divisible into two rooms
HEALTH EDUCATION KIOSK			0	1	25	25 Brochures
LACTATION ROOM			0	1	80	80 With a sink and refrigerator
QUIET ROOM (CHAPEL)			0	1	200	200
PUBLIC TOILET ROOM L1 - 1	1	44	44			0
PUBLIC TOILET ROOM L1 - 2	1	43	43			0
PUBLIC TOILET ROOMS L2	2	45	90			0
FAMILY RESTROOM				1	80	80
MEN'S RESTROOM				1	130	130 Urinal and ADA stall
WOMEN'S RESTROOM				1	150	150 Standard and ADA stalls
SUBTOTAL NSF			875			2,525
DEPARTMENTAL GROSS SF			966			2,904
GROSSING FACTOR			1.10			1.15
TOTAL DEPARTMENT GROSS SQUARE FOO	DTAGE		966			2,904

DEPARTMENT GROSSING FACTOR

Interior walls, partitiions, corridors, hallways, specific to each department

Notes

1. Intended as central entry to hospital and clinic.



Space Planning Program - Administration

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

	EXISTING			Р	ROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
ADMINISTRATION			2,183			1,200	
CEO OFFICE	1	255	255	1	280	280 CEC)
CFO OFFICE	1	181	181			CFC) with Business Office
CNO OFFICE	1	79	79		100	0 On	nursing floor
HUMAN RESOUCES DIR.	1	75	75	1	100	100	
ADMINISTRATIVE ASSISTANT	1	94	94	1	100	100	
OFFICE MANAGER	1	66	66	1	80	80	
PROJECT MANAGER	1	66	66	1	80	80	
CONFERENCE ROOM (COMBINED)	1	817	817		150	0 Not	required. Mtgs in CEO office
WORK ROOM (CLERICAL)	1	479	479	1	500	500 4 w	orkstations and copier
STAFF TOILET	1	25	25	1	60	60	
HOUSEKEEPING	1	46	46			0	
SUBTOTAL NSF			2,183			1,200	
DEPARTMENTAL GROSS SQUARE FEET			2,578			1,620	
GROSSING FACTOR			1.18			1.35	
TOTAL DEPARTMENT GROSS SQUARE FOO	DTAGE		2,578			1,620	

DEPARTMENT GROSSING FACTOR

Interior walls, partitiions, corridors, hallways, specific to each department

NAC

Space Planning Program - Information Technology

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING		I	ROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
INFORMATION TECHNOLOGY			0			1,140	
OFFICE			0	1	100	100 IT I	Director
WORKSTATIONS			0	4	60	240 Re	pair and configuration
SERVER ROOM			0	1	200	200	
STORAGE			0	1	200	200	
Training				1	400	400 De	dicated training stations
SUBTOTAL NSF			0			1,140	
DEPARTMENTAL GROSS SQUARE FEET						1,425	
GROSSING FACTOR						1.25	
TOTAL DEPARTMENT GROSS SQUARE	FOOTAGE		0			1,425	

DEPARTMENT GROSSING FACTOR

Interior walls, partitiions, corridors, hallways, specific to each department

Notes

1. Existing accommodations for IT were not identified



Space Planning Program - Business Office/Medical Records

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
BUSINESS OFFICE/MEDICAL RECORDS			884			1,120	
CFO OFFICE	1	181	181	1	180	180	
CFO ADMINISTRATIVE ASST.			0		70	0 N	None listed
BUSINESS OFFICE MANAGER			0		120	0 N	None listed
PATIENT ACCOUNTS			0	4	80	320 F	Patient Billing Consultation
RECEPTION AND WAITING			0	1	120	120 C	Dpen office
COPY AND STORAGE			0	1	180	180	
MED REC. OFFICE	1	120	120	1	120	120 N	Manager
MED REC. OFFICE	1	102	102		80	0 N	Not needed
MEDICAL RECORDS STORAGE	1	173	173	1	200	200 0	Compact shelving
COPIER/SUPPLIES	1	110	110		180	0 S	Shared with Bus. Office
DICTATION	1	18	18		30	0 N	Not needed
STORAGE 1	1	22	22			0 0	Combined above
STORAGE 2	1	63	63			0 0	Combined above
FILE STORAGE	1	95	95			0 0	Combined above
SUBTOTAL NSF			884			1,120	
DEPARTMENTAL GROSS SQUARE FEET			1,051			1,400	
GROSSING FACTOR			1.19 exi	sting		1.25	
TOTAL DEPARTMENT GROSS SQUARE FOO	DTAGE		1,051			1,400	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes



Space Planning Program - Long Term Care

ProjectPetersburg Medical Center Master PlanDate10/24/2019

NAC No. 121-19016

		EXISTING		F	ROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
DNG TERM CARE			4,430			8,460	
PRIVATE LONG TERM PATIENT ROOM	9	208	1,868	16	350	5,600 ADA + inc	ludes shower/toilet room
PRIVATE LONG TERM PATIENT TOILET	9	25	223				
SEMI PRIVATE LTC PATIENT ROOM	3	204	612	1	375	375 For Doub	les/Couples
CENTRAL STAFF STATION					120	0 Not neces	sary
ACTIVITY ROOM	1	459	459	1	500	500 TV, music	, recitals
DINING	1	542	542	1	600	600	
QUIET ACTIVITY				1	120	120 Reading,	ouzzles
LTC DIRECTOR OFFICE	1	143	143	1	120	120	
HAIRWASH/SALON	1	137	137	1	120	120 beauty pa	arlor
STORAGE	1	113	113	3	100	300 10 sf per	room
HOUSEKEEPING	1	33	33	1	50	50	
BATH 1	1	69	69	1	120	120 for assiste	ed bathing
BATH 2	1	48	48			0	
BATH 3	1	83	83			0	
LINEN	1	100	100	1	100	100 clean sup	ply + linen room
STAFF BREAK				1	80	80	
STAFF LOCKER ROOM					80	0 Shared w	ith Surgery
STAFF TOILET					60	0 Shared w	ith Surgery
SOIL UTILITY ROOM				1	100	100	
PRIVATE FAMILY CONFERENCE ROOM				1	120	120	
KITCHEN - SERVERY				1	75	75 15 foot lo	ng kitchenette facing Activity
PANTRY				1	80	80	
SUBTOTAL NSF			4,430			8,460	
DEPARTMENTAL GROSS SQUARE FEET			6,094			12,690	
GROSSING FACTOR			1.38			1.50	
TOTAL DEPARTMENT GROSS SQUARE FOO	TAGE		6,094			12,690	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Existing patient room size is based on an average for the room type

NAC

Space Planning Program - Clinic

ProjectPetersburg Medical Center Master PlanDate10/24/2019

NAC No. 121-19016

		EXISTING			ROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
			2,736			6,430	
EXAM ROOM	8	98	94	15	120	1,800	
MINOR PROCEDURE ROOM L1 - 1	3	148	443	2	180		e with a treadmill
VISITING SPECIALIST ROOM				1	180		diology, ENT, Dermatology
NURSE STATION L1	2	135	270	8	60		collabortive workstations
WAITING ROOM L2 - 1	2	184	249	1	100	100	
PHYSICIAN OFFICES L2 - 1	4	71	284	4	80	320 Gla	ss walls, near MA workstations
PSYCHOLOGIST/PSYCHIATRIST				1	120	120 Spa	ace for consultation in office
DICTATION/TELEMEDICINE				2	80	160 En	closed rooms
CONSULTATION/CONFERENCE				2	100	200 Ro	oms for patient/family consultation
OPTOMETRY OFFICE				1	100	100 For	2 physicians
OPTOMETRY SUPPORT/STORAGE				1	80	80	
OPTHAMOLOGY						0 Sha	ared with Optometry office
AUDIOLOGY TESTING				1	180	180 Wit	h modular sound booth
DENTAL HYGIENE STATIONS				2	100	200 Fut	ure build out
DENTAL TREATMENT ROOM				1	120	120 Fut	ure build out, exam for now
DENTAL LAB				1	80	80 Fut	ure build out
NUTRITIONIST OFFICE				1	60		ice in collaborative space
DIETICIAN/WELLNESS COORD.				1	60		ice in collaborative space
NUTRITION EDUCATION							consult room
WELLNESS CONSULTING							ndard exam room
GERIATRICIAN CONSULTATION							consult room
INTERNAL ADULT HEALTH							ice in collaborative space
CARDIOLOGIST							ice in collaborative space
DERMATOLOGIST							ice in collaborative space
DERMATOLOGIST LAB				1	80	80	
CANCER TREATMENT/CHEMO				1	80		Acute Care
CANCER TREATMENT/CHEMO					80 80		Acute Care
ENT EXAM ROOM ENT PROCEDURE ROOM					120		visiting specialist room
					600		Minor Treatment Room
DAYCARE CENTER		400	400	1	600		en play room with care amenities
OFFICE MANAGER	1	109	109	1	120	120	
CODING	1	43	43				ousiness office/Medical Records
TRANSCRIPTION	1	84	84				t needed
VITALS ALCOVES			0	2	20	40	
PATIENT TOILET L1	1	53	53	2	60	120	
PATIENT TOILET L2	1	57	57			0	
CLINICAL LAB STATIONS	1	60	60	2	60	120	
COFFEE	1	26	26				staff lounge
BUSINESS OFFICE	1	373	373		300	0 In l	ousiness office/Medical Records
STAFF LOUNGE/MEETING ROOM	1	392	392	1	200	200	
RAD VIEW	1	51	51		80	0 No	t needed
STORAGE	1	25	25	2	200	400	
GAS STORAGE	1	17	17	1	30	30	
STAFF TOILET L2 - 1	1	55	55	2	60	120	
STAFF TOILET L2 - 2	1	51	51			0	
SUBTOTAL NSF			2,736			6,430	
DEPARTMENTAL GROSS SQUARE FEET			5,342			9,002	
GROSSING FACTOR			1.95			1.40	
TOTAL DEPARTMENT GROSS SQUARE FOOTAG	F		5.342			9.002	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Room size for existing exam, waiting, nurse, and office is average of existing room sizes.



Space Planning Program - Acute Care

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			ROPOSED	
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL REMARKS
E CARE			3,578			5,990
PATIENT ROOM - Private	1	177	177	8	350	2,800 Including 5-6 swing beds, 2 isolation
ACUTE PR 2	1	296	296	2	350	700 BH/Observation
ACUTE PR 3	1	167	167	2	350	700 ICU
ACUTE PR 4	1	280	280			0
ACUTE PR 5	1	164	164			0
ACUTE PR 6	1	275	275			0
TOILET/SHOWER	6	25	150			0
BIRTHING ROOM TOILET	1	34	34			0
BIRTHING ROOM	1	321	321		325	0 Separate room not required
POST PARTUM	1	175	175			0
POST PARTUM BATH	1	57	57			0
NURSERY	1	98	98		120	0 Not required.Baby will stay with mom
GOWN	1	72	72			0
CHIEF NURSE OFFICE				1	120	120 Prefer to be on nursing floor
NURSE OFFICE				2	80	160
NURSES WORK ROOM	1	220	220	1	250	250 Break and Shift Change
NURSE STATION	1	184	184	1	200	200 Shared with LTC
PHYSICIAN DICTATION			0	1	60	60
MEDS ROOM	1	82	82	1	120	120
NOURISHEMENT	1	75	75	1	80	80
CCU	1	178	178			0 In BH/Observation
CCU TOILET	1	18	18			0 In BH/Observation
CLEAN SUPPLY	1	190	190	1	200	200
(ISOLATION/PSYCH) ANTE	1	43	43	1	60	60 Outside 1 Patient Room
ISOL/PSY TOILET ROOM	1	34	34			0
ISOL/PSY	1	130	130			0 In BH/Observation
VISITOR LOUNGE			0	1	200	200
SOILED HOLDING			0	1	80	80
CRASH CART ALCOVE			0	1	20	20
EQUIPMENT / SUPPLIES	1	16	16	1	120	120
DOCTORS WORK ROOM	1	118	118		120	0 None needed
STAFF TOILET			0	1	60	60 ADA - Can be shared with other depts
HOUSEKEEPING	1	24	24	1	60	60 1 large housekeeping for all services
SUBTOTAL NSF			3,578			5,990
DEPARTMENTAL GROSS SQUARE FEET			4,295			7,188
GROSSING FACTOR			1.20			1.20
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		4,295			7,188

DEPARTMENT GROSSING FACTOR

Interior walls, partitiions, corridors, hallways, specific to each department



Space Planning Program - Emergency Department

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING		F	PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
ERGENCY DEPARTMENT			954			1,440	
PUBLIC WAITING	1	60	60	1	100	100	
TRIAGE			0		120	0 Not	needed
TREATMENT	1	128	128	2	180	360	
SEMI-PRIVATE EXAM ROOM	1	101	101			0	
OPEN EXAM ROOM w/ CURTAINS	1	68	68			0	
OPEN EXAM ROOM w/ CURTAINS 2	1	68	68			0	
EXAM ROOM	1	96	96	2	120	240 Enc	losed room
NURSE STATION	1	265	265	1	80	80 Sate	ellite of Acute nurse station
MEDS	1	23	23		80	0 Sec	ure storage cabinets
PATIENT TOILET	1	23	23	1	60	60	
CONSULTATION / BEREAVEMENT			0		80	0 Not	needed
CLEAN SUPPLY	1	77	77	1	80	80	
SOILED HOLDING	1	45	45	1	60	60	
CRASH CART ALCOVE			0	1	20	20	
EQUIPMENT STORAGE			0	1	100	100	
SECURITY/EMT ROOM			0	1	60	60 Wo	rkstation for EMT reports
DECONTAMINATION / GURNEY WASH			0	1	100	100	
AMBULANCE ENTRANCE VESTIBULE			0	1	180	180 size	ed large for wheelchairs
STAFF TOILET			0		60	0 Cou	Ild be shared with other dept.
HOUSEKEEPING			0		80	0 Sha	red with Surgery?
SUBTOTAL NSF		894	954			1,440	
DEPARTMENTAL GROSS SQUARE FEET			1,053			2,160	
GROSSING FACTOR			1.10			1.50	
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		1,053			2,160	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department



Space Planning Program - Laboratory

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING		PROPOSED			
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
ABORATORY			1,683			2,060	
LAB WORK SPACE	1	832	832	1	900	900	Based on similar processes
RECEPTIONIST	1	92	92	1	100	100	
WAIT	1	50	50	1	80	80	
SPECIMENT TOILET	1	53	53	1	60	60	ADA with specimen pass-through
BACTERIOLOGY	1	149	149	1	180	180	
STORAGE			0	1	100	100	
LOUNGE/LOCKER/BREAK	1	111	111	1	150	150	
STAFF TOILET				1	60	60	For lab staff
OFFICE	1	101	101	1	120	120	
BLOOD DRAW	1	88	88	2	80	160	
HISTOLOGY	1	147	147	1	150	150	
PATIENT TOILET 1	1	25	25		60	0	1 specimen toilet room is sufficient
PATIENT TOILET 2	1	35	35			0	
BLOOD BANK				1	120	120	
SUBTOTAL NSF			1,683			2,060	
DEPARTMENTAL GROSS SQUARE FEET			1,881			2,575	
GROSSING FACTOR			1.12			1.25	
TOTAL DEPARTMENT GROSS SQUARE	FOOTAGE		1,881			2,575	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes



Space Planning Program - Imaging

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

			EXISTING		Р	ROPOSED		
	SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
AGING				1,437	1.20		3,470	
	X-RAY (RF)	1	330	330	1	350	350	
	R/F EFG PULM FUNC	1	249	249	1	380	380	
	BONE DENSITOMETRY/DEXA			0	1	140	140	
	ULTRASOUND	1	192	192	1	200	200	
	ULTRASOUND TOILET			0	1	60	60	
	MAMMOGRAPHY			0	1	200	200	
	CT ROOM			0	1	450	450	
	CT CONTROL ROOM			0	1	180	180	
	CT TOILET			0	1	60	60 A	DA toilet
	MRI SCAN ROOM				1	500	500 Sł	nell space for future
	MRI EQUIPMENT ROOM				1	180	180 Sł	nell space for future
	MRI CONTROL ROOM				1	160	160 Sł	nell space for future
	C-ARM ROOM					120	0 N	ot needed
	FILES	1	161	161	1	150	150	
	RAD OFFICE	1	108	108	1	180	180 Sł	hared - Director + 2 techs
	IMAGE VIEW	1	62	62		180	0 N	ot needed
	R/F DARK ROOM	1	89	89			0 N	ot needed
	TELEMEDICINE					120	0 In	Clinic
	ECHOCARDIOGRAPHY					120	In	Clinic
	DRESSING ROOM	4	20	80	2	50	100 1	ADA
	PATIENT TOILET	1	22	22	1	60	60 A	DA toilet
	CLEAN SUPPLY			0		100	0 Sł	hared with Emergency
	SOILED HOLDING			0		80		hared with Emergency
	STORAGE	1	144	144	1	120		quipment
	STAFF TOILET			0		60		t common shared staff changing area
	SUBTOTAL NSF			1,437			3,470	
	DEPARTMENTAL GROSS SQUARE FEET			2,126			5,205	
	GROSSING FACTOR			1.48			1.50	
	TOTAL DEPARTMENT GROSS SQUARE FO	DOTAGE		2,126			5,205	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes



Space Planning Program - Pharmacy

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

			EXISTING			PROPOSED		
	SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
PHARMACY				117			640	
	PHARMACY WORK AREA	1	117	117	1	200	200 A	ssembly and packaging
	DISPENSING			0		100	0 N	lot needed
	OFFICE			0	1	80	80 D	rug coordinator
	RECEIVING/BREAKOUT			0	1	80	80 C	ontrolled acces
	PHARMACY STORAGE			0	1	80	80 C	ontrolled acces
	USP 800 W/ ANTEROOM			0	1	130	130 C	hemo prep
	IV HOOD			0	1	70	70 S	terile prep
	SUBTOTAL NSF			117			640	
	DEPARTMENTAL GROSS SQUARE FEET			117			1.20	
	GROSSING FACTOR			1.00			768	
	TOTAL DEPARTMENT GROSS SQUARE FO	OOTAGE		117			768	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Assumes PMC inpatient and outpatient service only



Space Planning Program - Surgery

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

	I		F	ROPOSED			
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
IRGERY/CENTRAL STERILE			1,045			1,810	
CONSULT ROOM			0		120	0 Not nee	ded
PATIENT DRESSING			0			0 In Acute	Care room
PATIENT TOILET			0			0 Not requ	uired
NURSE WORK AREA			0	1	80	80 Near sta	ge 1 recovery
PRE- & POST-OP			0		125	0 In Acute	Care room
WORK/ROOM STORAGE	1	99	99		80	0 Don't ne	ed anesthesia work room
DELIVERY/PROCEDURE	1	405	405	1	600	600 Orthope	dic Operating Room
SCRUB	1	55	55	1	40	40 next to p	procedure room
SOIL	1	57	57	1	80	80	
LOCKER 1	1	70	70	1	320	320 Men loc	ker shower-shared by all staff
LOCKER 2	1	77	77	1	320	320 Wom. lo	cker shower-shared by all staff
LOCKER TOILET 1	1	40	40	1	60	60 Men	
LOCKER TOILET 2	1	31	31	1	60	60 Women	
STAGE 1 RECOVERY	1	129	129	1	100	100	
RECOVERY TOILET	1	32	32			0 See abo	ve
JANITOR 1	1	34	34	1	30	30 Could be	e shared location
JANITOR 2	1	16	16			0	
ON-CALL SLEEPING ROOM			0	1	120	120	
	SUBTOTAL NSF		1,045			1,810	
	DEPARTMENTAL GRO	DSS SQUA	1,522			2,896	
	GROSSING FACTOR		1.46			1.60	
TOTAL DEPARTMENT GROS	S SQUARE FOOTAGE		1,522			2,896	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

ARCHITECTURE Space Planning Program - Central Sterile

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
SURGERY/CENTRAL STERILE			480			760	
STER SUPPLY	1	188	188	1	300	300	
SORT & PACK	1	120	120	1	200	200	
CART WASH			0		120	0	Outside department
DECONTAMINATION	1	109	109	1	180	180	
STERILIZATION	1	63	63	1	80	80	
	SUBTOTAL NSF		480			760	
	DEPARTMENTAL GR	OSS SQUA	523			988	
	GROSSING FACTOR		1.09			1.30	
TOTAL DEPARTMENT GROSS	SQUARE FOOTAGE		523			988	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department



Space Planning Program - Physical Therapy

ProjectPetersburg Medical Center Master PlanDate10/6/2019NAC No.121-19016

		EXISTING			PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
YSICAL THERAPY			1,096			2,682	
RECEPTIONIST			0	1	80	80	
WAITING AREA	1	50	50	1	100		waiting room for 5 people x 20
WHEELCHAIR STORAGE			0	1	30	30	
PT DIRECTOR OFFICE			0	1	120	120	
PT OFFICE	1	198	198	1	120	120 2	2 therapist workstations
EXAM ROOM	1	96	96	2	120	240 I	PT Evaluation and Treatment room
THERAPY POOL	1	89	89			0	Pool not required?
PATIENT TOILET 1	1	55	55	1	60	60 /	ADA Toilet room
PATIENT TOILET 2	1	28	28	1	60	60 5	Staff toilet
WORK AREA	1	480	480	1	500	500 (Open shared therapy space
TREATMENT STATIONS			0	4	80	320 (Open bays with curtains
TREATMENT ROOM PRIVATE			0	2	110	220 I	Pediatric, Women, Acupuncture
STORAGE (4 small rooms existing)	4	25	100	1	100	100 (one large equipment room
OT OFFICE			0	1	80	80	
OT EXAM			0	1	120	120	
ST OFFICE			0	1	80	80	
ST EXAM			0	1	120	120 I	Enclosed room
MASSAGE THERAPY			0	1	80	80 I	Dedicated with table
CHIROPRACTIC THERAPY			0	1	100	100 I	Dedicated with chiropractic table
TREADMILL			0			0 1	Located in Work Area
WOUND CARE			0	1	140	140 \	With shower?
CRASH CART ALCOVE			0	1	12	12	
SUBTOTAL NSF			1,096			2,682	
DEPARTMENTAL GROSS SQUARE FEET			1,253 exist	ing		3,353 (projected
GROSSING FACTOR			1.14	5		1.25	-
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		1,253			3,353	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

NOTES

1. Therapy pool not included. Is one desired?

2. Two private multi-use therapy rooms shared

3. Is a shower stall desired for wound care treatment?

NAC

Space Planning Program - Home Health

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING		PROPOSED				
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL		
HOME HEALTH			1,672			440		
Visiting Physicians								
RECEPTIONIST 1	1	115	115			In Clinic		
WAITING AREA	1	155	155			In Clinic		
OFFICE 1	1	130	130			In Clinic		
EXAM ROOM	1	76	76			In Clinic		
EXAM ROOM	1	80	80			In Clinic		
EXAM ROOM	1	152	152			In Clinic		
PATIENT TOILET 1	1	51	51			In Clinic		
STAFF TOILET	1	49	49			In Clinic		
Public Health & Home Health								
RECEPTIONIST 1	1	168	168		150	0 Not need		
WAITING AREA	1	155	155		100	0 Not need		
OFFICE 1	1	107	107	1	320	320 Shared w		
OFFICE 2	1	141	141		120	0		
EXAM ROOM	1	119	119		120	0 Not need		
STORAGE	1	69	69	1	120	120 Home hea		
PATIENT TOILET	1	56	56		60	0 Not need		
STAFF TOILET	1	49	49		60	0 Not need		
SLEEP ROOMS			0		80	0 Not need		
SLEEP SUPPORT			0		100	0 Not neede		
SUBTOTAL NSF			1,672			440		
DEPARTMENTAL GROSS SQUARE FEET			2,416			616		
GROSSING FACTOR			1.44			1.40		
TOTAL DEPARTMENT GROSS SQUARE	FOOTAG	E	2,416			616		

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

NOTES

- 1. Public health nurse office located with clinic.
- 2. Visiting physician exams and offices are included in Clinic program.



Space Planning Program - Maintenance

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
IAINTENANCE			2,376			2,967	
LAUNDRY	1	469	469	1	500	500	
SOILED LINEN HOLDING	1	61	61	1	300	300	
HOUSEKEEPING			0	1	120	120 Assu	ime 4 housekeeping carts
LOCKER / SHOWER / TOILET			0		120	0 At sh	nared facility
MAINTENANCE OFFICE			0	1	120	120 Incl.	plan storage and BIM Control Stn.
MAINTENANCE SHOP	1	1,281	1,281	1	900	900 Activ	e repair and Maintenance Supplies
ELECTRICAL ROOM	1	280	280			0	
MECH. / GENERATOR	1	216	216	1	400	400 Hos	pital and Clinic generators
OXYGEN STORAGE	1	61	61	1	120	120 Oxyg	gen generator
OUTSIDE MAINTENANCE EQUIPMENT			0			0	
HOUSEKEEPING L1	1	8	8	2	60	120 Assu	ime 2 in the hospital
SUBTOTAL NSF			2,376			2,580	
DEPARTMENTAL GROSS SQUARE FEET			3,000			2,967	
GROSSING FACTOR			1.26			1.15	
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		3,000			2,967	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Laundry area includes washing, drying, folding and holding on carts

2. Mechanical and Electrical rooms included in Building GSF factor

3. Will likely need a maintenance shed somewhere on the site for vehicles.



Space Planning Program - Dietary

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

			EXISTING			PROPOSED		
	SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
DIETARY				1,656			2,940	
	OFFICE			0	1	160	160 2 peo	ople shared
	STORAGE	1	237	237	1	800	800 Dry a	and cold storage
	KITCHEN	1	691	691	1	1,000	1,000 Food	prep and cart loading
	STORAGE	1	518	518		250	0	
	JANITOR	1	20	20			0	
	DISHWASHING	1	100	100	1	120	120	
	LOCKERS	1	50	50	1	80	80 Dieta	ary Staff
	TOILET	1	40	40	1	60	60 Dieta	ary Staff
	SERVICE LINE				1	120	120 Staff	and visitors
	CAFETERIA				1	600	600 Staff	and visitors
	SUBTOTAL NSF			1,656			2,940	
	DEPARTMENTAL GROSS SQUARE FEET			2,000			3,822	
	GROSSING FACTOR			1.21			1.30	
	TOTAL DEPARTMENT GROSS SQUARE FO	OOTAGE		2,000			3,822	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Dietary will serve staff and visitors as well as patients.



Space Planning Program - Central Supply

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			PROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
CENTRAL SUPPLY			5,012			4,840	
STORAGE 1	1	787	787	1	4,000	4,000	1 large storage facility
STORAGE 2	1	1,762	1,762			0	
STORAGE 3	1	1,615	1,615			0	
RECEIVING/BREAKDOWN	1	223	223	1	240	240	
TRASH	1	190	190	1	200	200	
OFFICE	1	80	80	1	80	80	
CLEAN STORAGE	1	200	200			0	Included above
WASH ROOM				1	120	120	With hose bib and drain
MORGUE	1	155	155	1	200	200	Near loading dock
SUBTOTAL NSF			5,012			4,840	
DEPARTMENTAL GROSS SQUARE FEET			6,000			6,292	
GROSSING FACTOR			1.20			1.30	
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		6,000			6,292	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. Assuming generous storage to accommodate shipping realities.

2. Morgue included in this department because of proximity to loading dock.



Space Planning Program - Other Support Spaces

ProjectPetersburg Medical Center Master PlanDate10/24/2019NAC No.121-19016

		EXISTING			ROPOSED		
SPACE	QTY	AREA	TOTAL	QTY	AREA	TOTAL	REMARKS
R SUPPORT SPACES			4,660			0	
EMPLOYEE LOUNGE	1	269	269			0 With	Dietary
LOCKER ROOM 1	1	90	90			0 With	Dietary
LOCKER ROOM 2	1	49	49			0 With 1	Surgery
LOCKER ROOM 3	1	49	49			0 With 9	Surgery
STAFF CLOSET	1	38	38			0	
OFFICE 1	1	214	214			0 Assig	ned to departments
OFFICE 2	1	108	108			0 Assig	nedc to departments
OFFICE 3	1	113	113			0 Assig	nedc to departments
OFFICE STORAGE	1	23	23			0 Assig	nedc to departments
STAFF DINING AREA	1	283	283			0 With	Dietary - common dining room
HOUSEKEEPING L1	1	8	8			0 With	Vaintenance
HOUSEKEEPING L2	1	14	14			0 With	Vaintenance
GYM FOR STAFF						0 Assur	ne use of community facilities
SWIMMING POOL FOR STAFF						0 Assur	ne use of community facilities
TRAINING/EDUCATION ROOM						0 With	Administrative Area
CONFERENCE ROOM						0 With	Administrative Area
PUBLIC HEALTH NURSE ACCOMODATION	1					0 With	Clinic
MECHANICAL ROOM 1	1	861	861			0 Oth	
MECHANICAL ROOM 2	1	906	906			0 In bui	lding grossing factor
MECHANICAL ROOM 3	1	71	71			0 In bui	lding grossing factor
MECHANICAL ROOM 4	1	266	266			0 In bui	lding grossing factor
MECHANICAL ROOM 5	1	56	56			0 In bui	lding grossing factor
MECHANICAL ROOM 6	1	114	114			0 In bui	lding grossing factor
ELECTRICAL CLOSET L1 - 1	1	280	280			0 In bui	lding grossing factor
ELECTRICAL CLOSET L1- 2	1	36	36			0 In bui	lding grossing factor
ELEVATOR AND MACHINE ROOM 1	1	105	105			0 In bui	lding grossing factor
ELEVATOR 2	1	44	44				lding grossing factor
ELEVATOR 3	1	80	80			0 In bui	lding grossing factor
STAIRS 1	1	133	133			0 In bui	lding grossing factor
STAIRS 2	1	133	133			0 In bui	lding grossing factor
STAIRS 3	1	156	156				lding grossing factor
STAIRS 4	1	161	161			0 In bui	lding grossing factor
		1660	4 660			0	
SUBTOTA		4,660	4,660				
DEPARTM GROSSING			0.00			0	
TOTAL DEPARTMENT GROSS SQUARE F	OOTAGE		0			0	

DEPARTMENT GROSSING FACTOR

Interior walls, partitions, corridors, hallways, specific to each department

Notes

1. These existing spaces have been picked up in other departments or are accounted for in building grossing factor.

System Narratives





Architectural Design Narrative

Petersburg Medical Center

December 1, 2019

Introduction

In order to order to inform the budgeting process it is necessary to define some basic assumptions regarding the structure, building envelope materials and interior finishes. These assumptions are based on appropriate strategies for the typical weather and site conditions in Southeast Alaska. It should be noted however that these are not design decisions at this point. They are simply a base line placeholder to assure that sufficient allowances are built into the budget to afford design flexibility as the project moves forward with greater definition.

Site and Building Organization

The two sites will significantly influence the building organization, and this is reflected in the site diagrams for each. The limited space available at the downtown location forces a multi-story approach with the structural engineering and seismic restraint required to support that solution. However the site is largely developed with good utility services so site preparation scope is minimized. The nature of the location will also limit the amount of onsite paving and landscaping required.

At the Haugen Drive site there is enough space to allow for a single story solution which will tend to mitigate structural and seismic costs. Utilities are available at the adjacent Haugen drive and side streets allowing convenient extension of water and sewer services to the facility. However the site is otherwise undeveloped, requiring more extensive site preparation and improvement including excavation of unsuitable materials and placement of structural fill to provide a solid building pad, and extensive paving for access roads and parking.

Project Approach

As a general guide the facility will be planned as a 50-year building. At either site the approach to building envelope will incorporate robust rain management at the roofs, durable materials that can withstand the marine environment with minimal maintenance, and thermal performance to meet or exceed energy code requirements. To provide a healing environment windows, clerestories and skylights will be incorporated to maximize daylight harvesting and provide inspiring views out to the natural surroundings. Subtle landscaping using native species will be incorporated at select outdoor settings accessible from the proposed café and long term care unit.

Exterior Closure

The predominant exterior cladding material will potentially be prefinished metal panels or cement shingles with some masonry or stone veneer features. The cladding will be attached with metal furring



channels over an air space cavity. The building side of the airspace cavity will have continuous rigid polyisocyanurate insulation 1.5 inches thick over a rain screen membrane and exterior fiberglass-mat gypsum sheathing attached to metal stud wall framing. The interior side of the metal stud wall framing system will have spray applied foam insulation with painted gypsum wallboard at the exposed interior face. Exterior metal panels will be complemented with stone veneer at selected locations near entries and ground planes to provide a more natural, tactile visual character.

Roofing will be primarily sloped standing seam metal roofing over a water and ice barrier on minimum R-30 rigid insulation adhered to moisture resistant sheathing. Soffits at roof overhangs will be integrally colored cement fiber board panels. Any low slope roof areas will be an exposed membrane with a continuous vapor barrier adhered to structural deck. Minimum R-30 rigid insulation boards will be adhered to the vapor barrier, with ¼" cover board adhered to rigid insulation and single ply membrane adhered to cover board. Walk pads installed where required at roof access paths and mechanical equipment service areas.

Aluminum Curtain Wall, Storefront, Windows and Doors

The main entrance lobby will utilize a prefinished aluminum curtain wall window framing system with insulated glazing wherever it extends more than a single story in height. Prefinished aluminum storefront window framing with insulated glazing will be incorporated in openings less than 10' tall at corridors along exterior walls and at openings facing outdoor activity areas. Prefinished aluminum windows with insulated glazing will be used at all other punched window openings.

Entrance systems will be tailored to the hospital programmatic needs. Swing doors will be heavy duty type to support automatic opener hardware. All door glazing will be insulated, laminated safety glass. Exterior utility doors will be galvanized metal with an insulated core and a powder coat painted finish.

Interior Construction

Structural steel framing beams and columns will have spray-applied fireproofing throughout. Code required fire and smoke stopping materials will be installed at all rated wall and floor assemblies. Where exposed heavy timber structure is used wood will be sealed and connectors will be painted.

Partitions

Typical interior partitions will be framed with metal studs full height to underside of structure, acoustical insulation and sheathed with abuse resistant (mold resistant) gypsum board with level 4 finish at painted exposed surfaces, level 3 finish where wall coverings are applied. Selected offices, clinic areas and rooms with gypsum board ceilings will have partitions with gypsum board that extends 6" above finished ceilings.

Doors and Openings

Typical interior doors will be solid core wood with plastic laminate finish. Frames will be painted hollow metal, except stainless steel at elevator entrance frames and selected surgery department openings. Finish hardware will be heavy duty mortise type with lever ADA handles. Hardware brand and keyway systems will comply with PMC standards.

Interior Finishes

Wall finishes in staff and patient care areas will have fiberglass reinforced laminate (FRL) wall protection wainscots and stainless steel corner guards. Selected areas will have wall protection bumpers for equipment and mobile cart protection.

Floor finishes in waiting areas, conference rooms and offices will be carpet. Corridors will be sheet vinyl or vinyl composition tile (VCT) where heavy rolling equipment loads are anticipated. Cleanable walkoff mats will be located at all entries.

Window treatment at offices and exam rooms will be standard horizontal blinds.

Ceilings will be washable acoustical lay-in tile with suspended metal T-bar grid throughout. Selected exam and treatment rooms will have painted gypsum board ceilings. Toilet rooms will have painted gypsum board ceilings. Selected waiting and reception areas will have feature ceilings with wood laminated panels and fabric-wrapped acoustical wall panels with wood trim accents between panels.

Admitting offices will have fabric wrapped acoustical wall panels on one wall with wood trim accents between panels.

Surgery

Operating room will have aseptic resinous epoxy flooring and integral coved base, painted gypsum board ceilings, solid surface wall protection wainscot full height to ceiling with welded seams.

Clinics

Clinical exam and treatment rooms will have sheet vinyl flooring, washable acoustical lay-in tile ceilings with suspended metal T-bar grid. Casework at patient and exam areas will be standard plastic laminate with solid surface countertops and backsplashes.

Imaging

X-ray and fluoroscopy rooms will have lead lined gypsum walls with painted finish. All rooms will have sheet vinyl flooring typically and acoustical lay tile with suspended metal t bar grid ceilings. Dressing areas will have carpet flooring.

Public Areas

Lobby and reception areas will have stone tile and carpet floors. Public lobby and reception areas walls will have laminated wood panels and wall coverings. Waiting and reception areas will have feature ceilings with wood laminated panels, fabric wrapped acoustical wall panels with wood trim accents between panels.

Propane fuel fireplace in main entrance lobby will have cultured stone veneer.

Service Areas

Service areas will have sealed concrete floors.

Conveying Systems (at multi-floor schemes)

Passenger and service elevators will be MRL 350 FPM, 3500 lb. capacity. Passenger cab finishes –plastic laminate wall panels, stainless steel wainscot and sheet vinyl flooring. Service elevator cab finishes – stainless steel, wall protection, VCT flooring.

N:\121-19016\08_Deliverables_Final\Architectural Narrative.docx



Date:	January 24, 2020
To:	Dan Jardine, NAC Architecture
From:	Martin Chase, PE
Subject:	Petersburg Medical Center Master Plan Civil Engineering Narrative

INTRODUCTION

The following narrative is largely a compilation of information gathered from documents provided by others. These documents include:

- Google Maps
- Utility Map and utility/soils information provided by Petersburg Utility Director Karl Hagerman
- Predesign Schemes by NAC
- 2018 Petersburg Development Code

DEMOLITION AND EARTHWORK

The downtown site obviously has many structures and surface improvements requiring demolition, whereas, the Greenfield site will require logging, clearing and grubbing efforts.

Muskeg organic material present at either site would need to be removed and replaced with structural fill where building, road and parking footprints are proposed. How much muskeg needs to be removed has not been determined at the time of this memo as no geotechnical investigations have been performed. The existing hospital is currently on piles, so there is likely muskeg present at the downtown site, which could be anywhere between 0-feet to 5-feet deep. The recent construction of the fire station at Haugen Drive and N. 12th Street required removal of Muskeg between 6.5-feet and 9-feet deep. As this is our best data for the Greenfield site, we recommend accounting for 9-feet of Muskeg removal and structural fill import as the Greenfield site may actually have a deeper Muskeg profile.

It will be important to minimize draining of the muskeg to remain surrounding the sites as well as the adjacent properties as this would cause unintended settlement. A strategy to minimize settlement, therefore, this would be to remove only the amount of muskeg that can be replaced by structural fill in one day. This would add costs over excavating the entire site before replacing with structural fill, however. Once the structural fill is placed, the groundwater should act in a steady state. Foundation drains, if implemented, should be as high as possible.

Stone columns, if local expertise is available, could be an alternative to replacing muskeg or conventional piles. A geotechnical engineer would need to confirm this assumption.

Utilities constructed within the muskeg layer have the potential to settle. To mitigate this cost, utilities should be routed as much as possible near building footprints or within vehicle traveled





areas where muskeg is to be removed anyway. Instances where this is not feasible, the utility trenches would need to be backfilled with native material or geofoam that is similar in weight to the material removed in order to minimize settlement potential. Utilities may also need locking or flexible connections at pipe joints to be able to move with the ground if settlement does occur. Flexible or telescoping connections between muskeg and structural fill sections will be required due to differential settlement.

Utility trenches, if backfilled with material other than native material, should have bentonite check dams every 50-feet to avoid becoming a conduit for draining the surrounding muskegr.

The structural fill would be locally available material conforming to ADOT Standard Specifications. The Borough has its own quarry pit that is used for public projects.

SITE ACCESS/STREET IMPROVEMENTS

Downtown Site:

Borough Development Standards would require new curb, gutter and sidewalk be installed around the full development blocks. Additionally, we would also recommend half street improvements on all street frontages given that existing streets are unpaved and those that are may not survive construction of the medical center. The half street improvements would include new full depth street pavement section and new stormwater infrastructure, see Storm Drainage section below.

Greenfield Site:

Proposed on-site access drives and parking are shown on the NAC concept plan, Scheme 7. These drives would need to be designed with heavy pavement sections to accommodate the weight of emergency, delivery and garbage trucks.

Off-site improvements would require new curb, gutter and sidewalk along the Haugen Drive frontage and perhaps as far as N. 8th Street to comply with the Petersburg Development Code requirement of a Continuous Walkway System. Off-site improvements would also include constructing N. 9th Street and extending Fram Street to serve the proposed ambulance and loading areas. New streets shall be constructed per Commercial Street Standards outlined in Table 3.6.020.C of the Borough Development Code.

STORM DRAINAGE

In general, Petersburg does not provide stormwater infrastructure rather relying on overland surface flow. Stormwater detention or water quality systems are generally not required.

Downtown Site:

The downtown site has an existing 18-inch CMP in Fram Street starting at Second Street and running west. Providing roof and site drainage conveyance to this pipe is preferable to discharging to the street curb and gutter system unless new stormwater infrastructure is provided as part of new street infrastructure with the medical center development.

MEMO



Greenfield Site:

The Greenfield site generally slopes from the north end of the site towards the south. Haugen Drive is built up on a prism adjacent to the site so access drives would need to be filled adjacent to Haugen with culverts to allow stormwater runoff to migrate. The site will require rainwater pipes and area drains to convey to surface swales that convey stormwater towards Haugen Drive. Since there is no stormwater infrastructure in Haugen Drive, the swale areas should be maximized on site to allow natural drainage infiltration and/or absorption to occur. Maintaining as much of the depressed areas adjacent to Haugen drive would be ideal. Planter and swale soils should contain at least 18-inches of organic bioretention soil to maximize onsite infiltration. Stormwater detention may be required if during design and permitting, it is determined that the stormwater runoff would have adverse impacts downstream of the site.

SANITARY SEWER

There is one wastewater treatment plant serving Petersburg with pumps and distributive piping delivering wastewater to the plant where it is treated to NPDES standards and discharged to Frederick Sound.

Downtown Site:

The existing hospital is served by a side sewer connected to an 8-inch PVC sewer main in First Street that drains towards the existing 8-inch PVC sewer main in Fram Street, which drains west. There are also 8-inch PVC sewer mains in Excel Street, Second Street and Third Street adjacent to the site.

The sewer infrastructure appears adequate to serve the proposed medical center development except that the existing sewer main in Second Street, if conveying wastewater beyond the site, would need to be relocated as it will be demolished as part of the proposed street vacation. Otherwise no new sanitary sewer infrastructure is required except for new side sewers for the proposed hospital and medical office building.

Greenfield Site:

There is an existing 8-inch PVC sanitary sewer main in Haugen Drive on the opposite side of the road from the Greenfield site. There is also an 8-inch asbestos cement (AC) pipe sewer main in Fram Street and a sewer main in Excel Street of unknown size and material type.

Since the site slopes towards Haugen Drive and the sewer main in Haugen Drive is PVC (newer than AC), we recommend that the medical center sanitary side sewers be routed to the sewer main in Haugen Drive. This will require a new side sewer crossing the entire width of Haugen Drive.

POTABLE WATER

The source of Petersburg water is from two reservoirs Cabin Creek (primary) and City Creek (back-up), which provide a reliable source of potable water. According to the Petersburg's 2018 Annual Water Quality Report, water quality within the potable water system meets both state and federal standards.

MEMO



Downtown Site:

Existing water main infrastructure surrounds the downtown site:

- 8-inch ductile iron pipe (DI) in First Street
- 8-inch high density polyethylene pipe (HDPE) in Second Street
- 4-inch asbestos cement pipe (AC) in Third Street
- 10-inch DI in Fram Street from First to Second Street
- 10-inch AC in Fram Street from Second to Third Street
- 10-inch DIP in Excel Street

Existing fire hydrants are present at all the adjacent intersections except for 2nd and Fram.

Three separate fire hydrant flow tests conducted in 2016 in Nordic Drive, one block west of the site, resulted in flow rates ranging from approximately 3,800 GPM to 4,800 GPM at a residual pressure of 20 PSI, and static pressures around 100 PSI, which are robust.

The existing water infrastructure appears to be adequate to serve the domestic and fire suppression needs of the proposed medical center development at this site except that with the vacation of Second Street, the existing 8-inch HDPE water main will be removed from the water grid. We would expect Public Works to require a new 8-inch water main to be installed in Third Street and remove the old 4-inch AC water main. The 10-inch AC water main in Fram may need to be replaced with DI pipe if construction impacts require replacing. AC pipe is typically old and brittle and would be prudent to replace at the time of construction of the hospital phase.

The development will require new domestic and fire services. The domestic line will include a new meter and the fire service will need a backflow preventer which would most likely be in the fire sprinkler riser room and a fire department connection for each building in separate phases. The FDC may be wall mounted on the building if the local fire chief allows it.

Greenfield Site

Existing water main infrastructure is available on the south and west sides of the site and partially on the north side:

- 14-inch DI in Haugen Drive
- 10-inch DI in the unimproved but platted N. 9th Street
- 10-inch DI in Fram Street extending approximately 240-feet east of N. 9th Street

Nearby existing fire hydrants are in N. 8th Street at Haugen Drive and at Excel Street as well as at the Mountain View Manor apartments.

A fire hydrant flow test was conducted in 2013 resulting in a flow of 2300 GMP at a residual pressure of 20 PSI. We recommend that is fire hydrant be tested to verify current flow and pressure.

The existing water infrastructure appears adequate to serve the domestic and fire suppression needs of the proposed medical center development at this site except that Public Works may require a new water main be installed to provide a loop around the medical center for redundancy. This loop could be to extend the 10-inch water main in Fram Street east then





southeast to connect to the existing water main in 12th Street. For planning purposes, assume three new fire hydrants will be required. The medical center will also require new domestic service and meter and a new fire suppression service with backflow preventer in the fire sprinkler riser room, most likely off of the existing 10-inch main in either unimproved N. 9th Street or Fram Street. A fire department connection standpipe will need to be installed as well but may be wall mounted if allowed by the fire marshall.

NATURAL GAS

Natural gas infrastructure is not available in Petersburg. Properties using gas are supplied by propane trucks to individual onsite tanks.

POWER AND COMMUNICATIONS

See Electrical Engineering Narrative

TECHNICAL MEMO



Date:	December 17, 2019
To:	Dan Jardine, NAC Architecture
From:	David Arndt, PE
Subject:	Petersburg Medical Center Master Plan Structural Engineering Narrative

GENERAL

The anticipated potential structural systems for the proposed schemes are applicable to all the schemes. They consist of gravity framing systems of structural steel, mild-reinforced concrete, or heavy timber, or some combination thereof. It's expected that a concrete-framed structure would be more expensive than a steel-framed or timber structure, due to 1) the need to transport much of the material for the concrete to Petersburg for this size of building and 2) the associated labor force requirements. In addition, a steel-framed structure is more easily modified for future changes, such as the addition of hung medical equipment, than a concrete or timber structure and can generally be constructed more quickly than a concrete-framed structure.

STEEL FRAMING

For a steel-framed building, the likely gravity floor framing system for elevated floors would be concrete on steel deck slabs supported by steel wide flange beams and columns. The columns would preferably be spaced not more than about 30 feet on center in both directions to avoid more expensive or deeper framing to meet the desired vibration performance. The likely gravity roof framing system would be steel deck supported by steel wide flange beams and columns. However, if a steel roof deck would need to be fireproofed, a concrete slab on metal deck roof without fireproofing may be preferable.

LATERAL BRACING

Potential candidates for the lateral framing system for a steel-framed building include steel moment frames and steel braced frames. Steel moment frames are generally more expensive than steel braced frames, but the moment frames provide for greater flexibility for future modifications by not creating "hard" wall locations.

FOUNDATION

The columns would most likely be supported by concrete spread footings, with concrete slabs on grade. Due to the typical soil conditions in Petersburg with a layer of muskeg overlaying suitable bearing material, it is likely that muskeg would need to be removed and replaced with structural fill to accommodate spread footings. Pile foundations with concrete grade beams are another foundation option, in order to avoid the need for removal of muskeg under the building footprint but using a deep foundation system of this type is expected to be a more expensive approach. In general, Petersburg does not provide stormwater infrastructure rather relying on overland surface flow. Stormwater detention or water quality systems are generally not required.



SINGLE VS. MULTI-STORY

Due to the likely need to remove and replace the layer of muskeg, building schemes with smaller footprints may be determined to have lower total costs. However, the reduction in cost for a smaller footprint building scheme may be offset by the cost of some structured floors in multi-story areas of the building.



Mechanical System Design Narrative

Petersburg Medical Center

FIRE SPRINKLER SYSTEM

Summary

The facility will be fully fire-sprinklered with a conventional wet-pipe system. Dry sprinkler heads served from the wet system or a separate dry-pipe system will be included as needed to protect areas subject to freezing. Conventional steel piping and semi-recessed quick-response sprinkler heads anticipated in most areas. The water utility will be the primary water supply with conventional pumper connections for additional water supply. Depending on utility water pressure and reliability at the selected site, an electric fire pump and/or on-site water storage may be needed.

PLUMBING SYSTEM

Summary

The facility will have a conventional "hospital-grade" plumbing system. The following attributes are anticipated:

- Copper domestic water piping. Cast iron sanitary and roof drainage piping.
- Institutional-grade vitreous china plumbing fixtures. Wall hung water closets as default except floor-mount will be considered for bariatric reasons in certain areas. Field-repairability and durability will be important for faucets and flush valves.
- Dual, fuel-fired domestic water heaters will provide 140-degree hot water for kitchen and CS areas and to central thermostatic mixing valves that will temper water circulated to patient areas to 118 degrees. Hot water piping systems will be circulated with extra provisions to minimize dead-legs and provide rapid hot water response to fixtures.
- Water softening and other methods of treatment will be provided as appropriate for local water quality.
- Conventional hospital-grade medical gas systems will be included, design to NFPA standards and plumbing code requirements. Oil-free "claw" type vacuum pumps anticipated. Oil-free reciprocating medical air compressors with full air quality conditioning/monitoring anticipated. Indoor manifolds for piped gasses anticipated.
- Fuel piping systems and tanks will be provided to serve boilers, water heaters and emergency generators.
- Propane tank and piping will be provided to serve fireplaces.

HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEM

Considerations

HVAC systems in medical facilities must perform multiple functions simultaneously and reliably, giving rise to a demanding array of expectations, including:

E1 Ventilation (air-change) rates must meet standards in most healthcare areas.

- E2 Heating and cooling must meet strict temperature standards with individual control in many areas.
- E3 High efficiency air filtration must be used to avoid circulation of harmful contaminants by the system.
- E4 Certain rooms must be pressurized to minimize migration of contaminants to/from adjacent rooms.
- E5 Systems must continue partial (essential) service when normal sources of energy are not available.
- E6 Systems must be rugged enough to continue partial operation after component failure or earthquake.
- E7 Systems should perform above standards to improve comfort and further minimize odors.
- E8 Systems should be long-lived and economical to maintain to minimize operating/replacement costs.
- E9 Systems should be energy efficient to minimize operating cost and environmental impact.
- E10 Systems should be economical to construct.

The ultimate selection of a system and its associated equipment can be complicated as some options meet certain expectations very well but underperform on others. Any system considered needs to meet the "must-haves," specifically expectations E1-E6. This narrows the choices down to very few options and means decisions must be based on weighting of E7-E10.

Expectation E8 (long-lived and economical to maintain) is very dependent on local conditions. Coastal locations can be very hard on exterior equipment, for example, reducing longevity. Complicated packaged equipment, requiring out-of-town specialists for maintenance and repair, can be a difficult choice for remote locations like Petersburg even though complicated equipment often performs well with E9 and E10.

The following four HVAC system options have been identified as good contenders for the new Petersburg Medical Center considering the size of the facility, the semi-remote location, the climate, and the fact that it is new construction and not needing to mesh into an existing (sub-standard) facility. With each of these options, operable windows in patient rooms are optional with (if desired) wired switches to deactivate heating/cooling in that room whenever a window is opened.

Option A – Variable Air Volume (VAV) with Hydronic Heating and Air-cooled Central Chillers

Central air handlers with associated return and exhaust fans located in mechanical rooms that each provide air to large portions of the building. Energy recovery will transfer heat from exhaust air to incoming fresh air. Hydronic heating water loop with fuel-fired (and possible electric) boilers supplying up to 180-degree water to convection/radiant heaters in patient rooms (acute and LTC) and to reheat coils at VAV terminal units (conventional and fan-powered) serving areas where heaters are not desired. Chilled water (glycol) system providing cooling to air handlers with outdoor, air-cooled chillers having multiple sections so failure of one section will not prevent continued operation with reduced capacity.

E7 Benefits: Convection/radiant heating in patient rooms can feel more comfortable as heating is provided without significant air movement near floor level.

E8 Benefits: Most equipment is located inside the building, away from coastal environment and weather, and of a type that is generally long-lived (only the cooling equipment needs to be located outside.) Air handlers are few, simple and durable with field-replaceable parts. Boilers and pumps are well understood by regional service providers. Virtually all equipment is located away from patient care areas, simplifying maintenance. It may be beneficial to include an electric resistance boiler in the heating plant, which could reduce energy cost depending on the prevailing cost of heating oil.

E9 Benefits: Average energy efficiency. This system is generally <u>not</u> energy efficient since air delivered to many spaces must be reheated with boiler energy after being (unnecessarily) cooled. Long duct runs require more motor energy for fans. To minimize inefficiency, the use of exhaust air heat recovery will reduce heating energy, "economizer" cooling (increasing the percentage of outdoor air) will reduce chiller energy. Also, the use of radiant/convective heating in patient rooms can further reduce heating and cooling energy by minimizing the amount of air supply (that would need reheating) to patient rooms when cooling is not needed.

E10 Benefits: This system is not inexpensive mechanically due to the higher cost of the hydronic heating system, the central chiller system, exhaust heat recovery and the cost of long runs of larger ductwork. Some offsetting cost advantages of this option include the ability to locate cooling equipment at grade, remotely from air handlers, providing architectural (visual) benefits and reducing general construction costs to accommodate noise, structural support and visual screening issues associated with what otherwise usually becomes multiple smaller AC units across the roof.

Option B – Variable Air Volume (VAV) with Hydronic Heating and DX Cooling

Same as Option A except use roof-mounted split system direct-expansion (DX) cooling units for each handler instead of the central chiller plant.

E7 Benefits: Same as Option A

E8 Benefits: Same as Option A. Multiple DX cooling units will require about the same amount of maintenance as fewer chillers with a separate hydronic piping system.

E9 Benefits: Same as Option A

E10 Benefits: Similar to Option A except DX cooling will cost less than a central chiller plant. As noted, above, additional general construction cost may be needed to accommodate multiple roof-mounted DX units.

Option C - Fan Coil System with DOAS Units and Hydronic Heating/Cooling

Roof-mounted, packaged dedicated outside air systems (DOAS) supply ventilation air (outside and exhaust air) to large portions of the building. Outside air from the DOAS system is injected into fan coil units located in patient rooms and most other spaces. The fan coil units do most of the air conditioning (heating and cooling) with recirculating room air. Filtered return air grilles can be used where its important to limit necessity to access the ceiling for filter maintenance. Ventilation air is generally a small percentage of the total air supply needed for heating and cooling, so distribution ductwork across the building is much smaller than ductwork associated with the options above.

The hydronic water loop with boilers only need to supply up to 115-degree water to fan coil units and terminal units when the system is in heating mode since multi-row coils are used. A split-system chiller

plumbed into the same (2-pipe) hydronic loop provides cold water when the system is in cooling mode. This chiller plant will be smaller than the Option A plant since the DOAS units will provide part of the total cooling needed. When in heating mode, the DOAS will supply extra-cool ventilation air to the fan coils for optimum humidity control and to delay the need to switch the hydronic system to cooling mode. Some fan coil units will be equipped with small electric heating coils to accommodate zones that still need some heating when the hydronic system eventually shifts to cooling mode.

Areas that need high ventilation rates, cooling during winter, or high-efficiency filtration (surgery, for example) will be served directly from a DOAS unit with electric reheat terminal units.

E7 Benefits: Comfortable indoor humidity during mild, rainy days. Odors generated in one area are less likely to be recirculated to other areas. Smaller central air handling equipment results in less noise near equipment.

E8 Benefits: Fan coil units are very small and simple in concept. A fan coil unit failure only takes a small area out of service. Multiple, small DOAS units can serve a common distribution system so a unit failure does not take any space out of service. Stocking of spare parts on site is very practical. Less return ductwork means less duct cleaning. Otherwise, maintenance cost will be higher due to the location and quantity of fan coil units and the roof mounted DOAS units will have a reduced life expectation.

E9 Benefits: This system is generally efficient since the need for reheating is minimal and fan energy is reduced. Efficiency will be further enhanced since the DOAS units will have heat recovery and economizer cooling.

E10 Benefits: Mechanical costs may be similar to Option A. Offsetting cost advantages will include smaller ductwork allowing a lower ceiling-to-structure space (reduced general construction cost) fewer mechanical rooms will allow a smaller building (reduced general construction cost).

Option D - Fan Coil System with DOAS Units and Hydronic Ground Source Heat Pump

Same as Option C except the chiller would be replaced with a water-to-water ground source heat pump system sized for the summer cooling load. Since a ground source system has limited ability to provide heat in a climate that is heavily dominated by heating needs, boilers will still be required but slightly smaller in size. The external bore field will be sized appropriately for the total summer heat contribution from cooling.

E7 Benefits: Same as Option C

E8 Benefits: Same as Option C but with increased maintenance associated with the ground source system.

E9 Benefits: Reduced energy consumption since some of the heating energy will be provided by the ground source heat pump. Cooling energy may not be much different since the Option C air cooled chiller will be very efficient with the low summer outside air temperature. **E10 Benefits:** This should be considered a relatively expensive system to install.

Other HVAC Systems

• Controls: Conventional DDC controls are anticipated. A fully-loaded/licensed central work station and separate laptop computer (for off-site monitoring) will be included. Full building

graphics, monitoring and adjusting capabilities via either computer. Manufacturer training for at least two individuals.

- Humidification: Electric humidifiers with duct-mounted, short-dispersion manifolds will be needed for each VAV air handler or DOAS unit.
- High efficiency filtration: MERV 14 downstream filtration will be required for each VAV air handler or DOAS unit. DOAS filtration will be about 35% of the sized needed for VAV air handlers.
- Steam: Steam boilers are not anticipated. It is assumed that CS and kitchen equipment will be electric.
- Miscellaneous ventilation and heating: Convention wall exhausters and unit heaters in utility rooms. Electric or hydronic heaters in entrance vestibules.



D50 - ELECTRICAL SYSTEMS – Downtown Site

Electrical Service:

Electrical Distribution

- Primary medium voltage service from the utility company location will be as directed by utility company. Primary underground will be extended from nearest power source on the street which is overhead to the new service yard that will enclose the padmounted transformer. The existing primary overhead distribution system currently routes down 2nd street where the new hospital and clinics main entrance will be located. Therefore, this primary distribution line will need to be relocated. This line appears to feed the high school further down the street. Pending discussions with Alaska Power and Telephone, it is anticipated that the line will need to be intercepted at 2nd and Fram street, rerouted over to 3rd street and then back to 2nd at Excel street.
- Main electrical service to be a single 480Y/277 VAC 3-phase 4-wire main switchboard with a single main overcurrent breaker. Preliminary size based on building square footage and assuming electric heating will be 4,000 amps. This service will be dedicated to the new hospital construction. The existing service will be maintained to operate the hospital during the phased construction of the hospital. Once construction is completed, the existing hospital will be demolished. A new temporary service may be necessary to maintain the clinic's operation while the existing hospital is demolished. It is believed that the clinic is currently served by the main switchboard in the hospital.
- Dry type low voltage transformers will be used to step the voltage down to from 480Y/277 volt to 208Y/120 volt systems. These transformers will be aluminum wound with 115 degree C rise NEMA 2 enclosures and located in select electrical rooms.
- Demand metering is to be provided on the main service disconnecting breaker via Power Logic, or compatible equipment.
- Surge protection is to be provided at the main service entrance and on load side of dry-type transformers that supply 208-volt panelboards serving sensitive loads such as computer centers and IT equipment. All Life Safety, Critical branch, and legally required panelboards will be provided with Surge Protective Device (SPD) protection.
- 208Y/120 VAC panelboards for lighting circuits will be distributed throughout the building and generally located in electrical rooms. Panelboards for spaces such as the kitchen will be locally located in the space.



- 208Y/120 VAC distribution panelboards and motor control equipment for mechanical equipment circuits will be specified for mechanical equipment and located in the area being served where space allows.
- 208Y/120 VAC panel boards for receptacle and miscellaneous circuits will be specified using a radial distribution system with local of distribution boards. Panelboards and transformers will be located in electrical rooms and closets. Each floor devices shall be feed from a Panelboard located on that floor. Emergency loads will be feed from alternate floor located panels due to the limited number of circuits needed.
- Panelboards will be tin-plated aluminum bussed.
- Distribution feeders will be generally routed underground to each wing.
- Feeders 100 Amp and greater from the main electrical room to the wings will use compact aluminum feeders with hydraulically applied connection pin in the base bid. Other feeders will be based on copper conductors. All feeders will be based on copper provided as an alternate if the budget can support this expense.

Fire Pump Service:

• No fire pump service will be provided.

Emergency Electrical System:

- Main Hospital A redundant (N+1) standby diesel generator(s), located on the ground level, three 4-pole automatic transfer switches (ATS) and distribution panels rated at 208Y/120 volt are to be provided consisting of a dedicated life-safety branch, a critical branch, and an equipment branch. Paralleling gear will be designed to support the two generators. This Emergency Power Supply System (EPSS) is anticipated as being a level-01system where failure of the equipment to perform could result in loss of human life or serious injury. The EPSS equipment will be located in a separate 2-hour room and separated from the main electrical distribution equipment. Fuel will be #2 non-bio diesel with a minimum of 96-hours of run time. Due to the gallons required, a separate main tank with double wall construction will be needed with a transfer pump system to the day tank located in the generator room. A fuel polishing system will be required. A stationary load bank will be design to allow for automatic exercising of the generators on a monthly basis.
- Existing Hospital existing EPSS will remain in operation during the phase of construction of the new hospital. Once complete, existing EPSS infrastructure shall be demolished. Existing 80kW and 250kW shall be salvaged. The existing 250kW generator will be considered for re-use for the new clinic. Re-use of generator will depend on whether it meets current EPA Tier emission regulations and provides adequate capacity for the buildings NEC 700 Life Safety and NEC 702 Optional Standby electrical demand.
- Clinic A separate standby diesel generator will be used to feed the NEC-700 life safety system and the NEC-702 optional standby system. This system will have two dedicated ATSs. The EPSS is

anticipated as being a level-02 system where failure of the EPSS to perform is less critical to human life and safety. Re-use of the existing 250kW generator will be evaluated for use of the new clinic. If it does not pass the EPA Tier emission requirements or provide adequate capacity, a new generator will be planned for this building. A portable load bank can be used for annual testing. Fuel will be #2 non-bio diesel with a minimum of 24-hours of run time. It is estimated that this tank can be located below the generator in a belly tank configuration. A fuel polishing system will be not be required.

- A second generator output breaker for the clinic generator system will be specified for the generator system for an annual portable load bank for load test of the generator. This system will have a Trystar or similar generator bypass switch to allow for automatic disconnection of the load bank should utility power be lost during maintenance testing.
- Distribution and branch panels are to be provided for 120-volt loads. The generator unit to be
 provided with a base tank for minimum 8-hour operation. This generator is initially sized at 500 –
 750 kW based on rough order of magnitude main hospital building square footage. The clinic will
 require a generator of rough order of magnitude of 200 350kW based on the clinic square
 footage and the desire to maintain full use of the facility. The generators are to be controlled for
 monthly testing via the building energy management control system.
- Generator will be fueled with #2 non-bio diesel. Bio-fuel can be investigate if so desired, but the generator manufacturers' have limitations on the level of bio-fuel that can be effectively used.
- Generation is to comply with NEC article 517 (Health Care Facility) for the main hospital and NEC articles 700, 701, 702 for the Clinic. These systems will serve life safety emergency exit and egress lighting, fire alarm system, security system, communication rooms, building automated control (BAC) panels, air conditioning for communications rooms, and walk-in coolers. Distribution is via feeders, with branch panels for life safety, and optional equipment loads. A dedicated generator branch will be used to serve select IT equipment, IT air-handling, walk-in coolers and areas that require ventilation.
- Sound levels are to be in accordance with local *maximum environmental noise level requirements and restrictions where applicable and local city ordinances. The generator system will be located exterior to the building and have a sound attenuated enclosure.

Emergency Life-Safety Loads

Egress lighting & exit signage, alarm and alerting systems, communication systems	Generator power. Additional battery packs provided in main electrical room where Automatic Transfer Switch (ATS) is located per NFPA-110 (Generator) Code.
--	--

Critical Loads

Equipment necessary for	Patient Bed/Critical Care
operation	



Telephone	Main switch and related equipment
Nurse-call/Code Blue system	Main equipment and supporting apparatus
Nurse-assist system	Main equipment and supporting apparatus
Misc equipment	Equipment and components as determined by the facility manager that are essential to operations. This can include things such as coffee makers, computer systems, etc.

Standby/Equipment Loads

Hydronic circulating pumps	Boiler and AC loops, include control circuits for any gas fired boilers
Owner data network	Power and equipment for all IDFs and MDF; include spare receptacles & A/C
BMS system	DDC controls
Fire Sprinkler & Alarm system	FACP, NAC panels, dry system compressors, magnetics locks, & any other associated device requiring power.
Generator accessories	Block heater and battery charger
Heat trace	Any heat trace installed to prevent system freezing
HVAC control system	Some items on this list would not operate w/o BMS controls
Phone system	Believed to be part of IT system. Dedicated circuits to phone headend wil be provided
Security system	Includes intrusion, CCTV, card access system, front-door intercom, components may be scattered through the building(s)
Sump Pumps (if applicable)	For sub-grade drainage or sewage
Walk-in cooler/freezer	Optional per Owner request. Generally, these will hold cold for several hours and the large additional increase in generator may not be warranted.
Lighting	All restrooms, area light by generator for refueling, electrical room(s), mechanical room(s), MDF room and demarc room

Convenience outlets:	
- Health type rooms	Medical refrigerator(s)
Facility manager office	phone / laptop / computer / emerg. radio / security computer / etc.
Operations - Manager	phone / computer / radio
Security office, if desired	computer / radios / security camera head-end
Kitchen/Food - Service	Microwave and other select items as directed by the Owner
- Custodial office	HVAC/BMS computer/radio
- Additional areas	Common spaces, emergency storage & generator

Note: All generator backed receptacles to be red/orange in color for easy identification

- Select lighting for commons areas where kids may be held while being picked up during a power outage
- Mechanical DDC system

Uninterruptible Power System:

- No UPS equipment will be provided.
- If communication rooms are to have local UPS units at equipment racks, they will be provided by the Owner.
- X-ray and related equipment to be provided with UPS if so desired by the equipment supplier.

Grounding:

- The grounding system is to be in accordance with the National Electrical Code. The building ground is to consist of a UFER ground system with other grounding electrodes consisting of water service, and building steel. Interior metallic systems will be bonded together per NEC requirements. A telecommunication grounding riser will be provided with copper ground bars located as each telecommunication room. Driven ground rods will be provided for separately derived systems where other grounding means are not available.
- Grounding of raceway systems and distribution equipment cabinets is to consist of an insulated green equipment grounding conductor routed with the phase conductors and bonded at each panelboard and at intermediate pull boxes. The raceway system will not be used as the sole means of grounding.

- Cable trays throughout the building are to be bonded to building steel at multiple locations to create a low impedance signal ground in addition to being grounded at the main service. A bare copper ground wire will be routed with the cable tray and bonded to each section of the tray.
- A communication grounding system is to be provided per TIA/EIA-607 standards bonding all communications rooms to service ground and building steel. Ground bus bars are to be provided in each communication room.
- An isolated ground distribution system and isolated ground receptacles will be specified for patient care areas.

Lightning Protection:

• A lightning protection system will not be provided, but should be looked at.

Power:

- Wall receptacles are to be provided in offices, computer rooms, and room spaces. Floor boxes are to be located only where normal wall service would not accommodate the need such as teaching podiums. Tamper-resistant receptacle will be used in public accessible locations.
- Lab benches are to be provided with dual channel aluminum surface metal raceways. Single and three phase 208-volt receptacles are to be provided in laboratory spaces. Dedicated circuits shall be provided to serve equipment areas.
- 120-volt receptacles are to be provided on the building exterior for future electric vehicle charging and general Owner usage if directed by the Owner.
- Power poles are not to be used unless wall or floorbox service is not possible or there exists a need for easy relocation of power items.
- Receptacles in corridors will be placed on a maximum spacing of 50-ft for janitorial use.
- Display cases, if desired, will be provided with one duplex receptacle for general usage.
- General spacing of receptacles will be a maximum of 12-ft on-center with dedicated receptacles located for items such as vending machines, copy/fax machines, computers, and other like equipment.
- Receptacles on reception desk counters and like spaces will be on 4-ft centers. Where possible, receptacle for counter computer stations will be located below counter in the knee space with grommeted openings for cabling.
- Dedicated power will be provided for door control systems such as powered doors or door locking systems.
- Branch circuit wiring will be based on health-care rated MC cable with copper conductors and separate neutrals. Homeruns will be hard-piped back to the local panelboards from a distribution junction box in the vicinity of the loads being served. Additional concealed and

accessible junction boxes will be provided with hard-pipe interconnection to form a distribution backbone that can support future conductor additions from the room to the panelboard. MC cable will be radially connected to these distribution junction boxes following a spoke and hub design.

- The State of Alaska does not have a state code and follows the 2012 International Energy Conservation Code (IECC). We feel that energy conservation is an important aspect of facility longevity, sustainability and general good practice energy conservation. Hence we recommend following the Washington State Energy Code (WSEC) as it has proven to provide better performance than the IECC and is relatively cost effective since we will primarily be using LED style lighting. Per the current WSEC - At least 50 percent of all 125 volt 15- and 20-ampere receptacles installed in private offices, open offices, conference rooms, rooms used primarily for printing and/or copying functions, break rooms, individual workstations and rooms, including those installed in modular partitions and modular office workstation systems, shall be controlled as required by this section. In rooms larger than 200 square feet (19 m 2), a controlled receptacles shall be located within 72 inches (1.8 m) of each uncontrolled receptacle. Controlled receptacles shall be visibly differentiated from standard receptacles and shall be controlled by one of the following automatic control devices:
 - 1. An occupant sensor that turns receptacle power off when no occupants have been detected for a maximum of 20 minutes. This is the option we plan to use.
 - 2. Alternate approach A time-of-day operated control device that turns receptacle power off at specific programmed times and be programmed separately for each day of the week. The control device shall be configured to provide an independent schedule for each portion of the building not to exceed 5,000 square feet (465 m2) and not to exceed one full floor. The device shall be capable of being overridden for periods of up to two hours by a timer accessible to occupants. Any individual override switch shall control the controlled receptacles for a maximum area of 5,000 square feet (465 m2). Override switches for controlled receptacles are permitted to control the lighting within the same area. This option can be used if so directed by the Owner.

Interior Lighting:

- The lighting system will be designed primarily based on use of lay-in 4500 to 5400 lumen volumetric style LED luminaires with electronic, high power factor, low harmonic served at 277 volts.
- Lamp color shall be the Owner standard. It is believed to be 3500°K with a minimum CRI of 80.
- Human centric lighting will be explored in patient care areas. This requires special luminaires and more complicated controls to mimic circadian rhythms. It does add around \$3/sft to the cost of the initial building design and does not use any additional energy as compared to a conventional on/off daylight harvesting system.

- Exit lights with LED lamps and emergency egress pathway lighting are to be provided and connected to the emergency distribution system. Exit lights shall be no more than 5 watts. Exit lights shall be red letters on a white face.
- The lighting system shall meet current 2015 Washington State NREC energy code.
- Indirect LED volumetric troffers are to be used in offices and other similar areas.
- LED grid volumetric/lensed luminaires are to be used in corridors and controlled via local lowvoltage wall switches interconnected with the DDC and lighting control system. Local switches provide an over-ride of the system for a short period of time. The system selected should be specified to ignore the switches during scheduled times of day to avoid undesired switching.
- Life safety exit and egress lighting to remain on 24/7 as that is the intended use of the facilities.
- Direct/indirect (volumetric) lay-in grid-mounted linear LED fixtures with lenses on the direct downlight component in offices, laboratories, and conference rooms.
- Recessed LED accent down lighting to be used where applicable.
- Multi-level daylight zone controls for laboratories, and office lighting are to be provided. System will be digital and distributed.
- Automatic daylight harvesting has been interfaced with the localized digital control system in each room.
- Building interior lighting in common areas is to be controlled by DDC via a low voltage control system with computer control, relay panels and local low voltage switching, for compliance with energy code. Controls will be located at the nurse's station to allow for night-time dimming of corridors.
- Lighting control system will be based on an nLight system with luminaire level controls. Common/central core areas will be controlled from centralized network panels that are interconnected. The system would be specified to allow at least 3 different manufacturer's to bid.
- Occupancy sensors will be used in offices, conference/work rooms, corridors and restrooms per energy code requirements.
- Excessive brightness and glare shall be controlled in all instructional areas.
- Lighting levels will follow Washington Administrative Code (WAC) and Illuminating Engineering Society of North America (IESNA) recommended levels. Follow are the general guidelines:
 - a. Lighting levels in patient rooms will be 20 30 foot-candles.
 - i. Examinations will be designed for 100 foot-candles
 - b. Lighting levels in offices will be 30 40 foot-candles.
 - c. Lighting levels at the nurse's station will be 30-50 foot-candles.
 - d. Lighting levels at the pharmacy will be 70-90 foot-candles.
 - e. Lighting levels in stairwells and corridors will be 10 20 foot-candles.
 - f. Lighting levels in mechanical equipment and electrical rooms will be 40 50 foot-candles.
 - g. Lighting levels in telecommunications rooms will be 40 50 foot-candles.

- h. Lighting levels in labs will be 50 60 foot-candles.
- i. Lighting levels in the surgical rooms will be approximately 150 foot-candles and require dedicate examination lights.
- j. Lighting levels in examination rooms will be 50 70 foot-candles.
- k. Lighting levels in soiled and clean utility type rooms will be 30 40 foot-candles.
- I. Lighting levels in food service/kitchen area will be 50 60 foot-candles.
- m. Lighting levels at building exterior entrances will be 2 5 foot-candles.
- n. Lighting levels at building exterior pathways will be 1 2 foot-candles.

Exterior Lighting:

- Site lighting will be tightly controlled to areas of egress, pedestrian paths and parking areas. Luminaires will be LED with dusk-to-dawn full operation. Luminaires will be dark sky compliant, with distribution types carefully controlled to avoid light trespass and light pollution.
- Exterior lighting will be automatically controlled. Lighting will generally be wall-mounted LED for building perimeter. Other area lighting around building, pedestrian pathways, and within parking area will be pole-mounted LED.
- Building egress and entrances will be connected to the standby generator per Code requirements.

Fire Alarm System:

- Existing fire alarm systems will be maintained for both the hospital and clinic for the duration of construction. Upon completion of each of construction, the fire alarm system in its entirety shall be demolished. Retention of any existing equipment shall be at the discretion of the owner. The existing fire alarm main panel will need to be relocated to the clinic during the demolition and construction of the new hospital. Once the new hospital portion is operational, the existing clinic can be demolished and the new clinic can be interfaced with the new system provided in the hospital.
- Multiplexed, addressable fire alarm system with mylar speakers and strobes to comply with ADA and local codes.
- Corridor and common area smoke detection will be specified as a minimum. If there are a significant number of duct smoke detectors required by the mechanical system layout, then total area coverage will be used instead.
- Raised floor areas will require detection below the floor in addition to the room space per NFPA 72 requirements. None are envisioned at this time.
- Fire separation doors will have 120 VAC electro-magnetic hold open devices which will be released by the fire alarm system.
- Building is equipped with an elevator so connections for elevator recall are needed.

- Fire/smoke dampers will be a zoned shutoff system. Position switches to confirm open for motorized dampers will not be provided.
- System will be a voice alarm system to allow paging and emergency announcements throughout the building.
- Fire alarm system will be based on the Owner fire alarm system standard. Currently this is unknown.
- 24-hour battery backup for the fire alarm system will be required in addition to generator backup.
- The contractor will provide the necessary programming of the fire alarm control panel.
- Building exterior notification devices, with amber visual signals, will be provided to identify building lockdown activation.
- 100% area detection is being considered for the Windsor site as the local AHJ has indicated that employing 100% area detection could reduce the fire water storage tank size. Cost evaluations are underway to see if there is an economic advantage of the 100% detection. The building is fully sprinkled.

Telecommunications:

- In addition to the overhead primary power distribution line there is fiber optic distribution on the same poles as the power and this would also require relocation to accommodate the new main entry for the hospital and clinic.
- The existing telecommunication infrastructure shall be maintained for both the hospital and clinic for the duration of construction. Upon completion of each of construction phase, the telecommunication network infrastructure in its entirety shall be demolished. Retention of any existing equipment shall be at the discretion of the owner. The existing MDF will need to be relocated to the clinic side to keep the clinic in operation while the hospital is demolished. It is intended that the MDF will reside in the new hospital and a new IDF will be provided in the clinic.
- Voice services will be copper and originate from the servicing utility companies demarcation cabinet located in the Main Distribution Frame (MDF) on the basement or first floor. A temporary new incoming service will be required to feed the clinic during the demolision and construction of the new hospital building.
- Copper and optical fiber horizontal distribution system within the building to support voice and data networks. A Telephone\Data Main Distribution Frame (MDF) entrance room shall be provided on the first level with access to the first floor pathways. Distributed communication Intermediate Distribution Frame (IDF) rooms shall be provided to minimize cable runs to 90 meters. This 90 meter length to be total length including patch cords of up to 5 meters. Connection between the MDF and IDF closets will be via underground raceway systems.

- IDF communication rooms shall be located toward the center of the building wings and not at the edges of each floor where possible. IDF communications rooms will be dedicated rooms located on the catwalk level.
- Each floor wing will be configured such that the station cables are terminated on the floor/wing that serve the corresponding Work Area Outlet (WAO) except where space does not allow for an IDF room per wing. In those locations, WAO station cables will terminate at the closest IDF or MDF. Jack and cable color and labeling will be per the Owner Standards.
- A complete telephone and data cabling system shall be provided throughout the facility. System shall be installed in accordance with TIA/EIA 568B standards, and in general will include Category 6A cable runs to all workstations and printer locations, terminated at station outlet jacks patch panels using RJ45 connections at the IDF communication rooms. The system will be designed to support 10 GB/s distribution.
- Fiber optic backbone cable will be provided between the entrance room and all distributed communication rooms. 8.3 micron SM Fiber optic cables will also be provided to server rooms and certain dedicated workstations where higher level of future bandwidth is anticipated. 6-strand MM OM3 50-micron and/or 8.3 micron SM fiber optic cabling will be designed between MDF and IDF rooms. Currently, the Owner has chosen 6-strand MM OM3 and 6-strand SM cabling. Terminations will be based on TeraSPEED SM duplex LC adapters.
- Color code for cables shall be as follows unless otherwise directed by the Owner:
 - Blue: Data and Voice
 - White: Security Cameras, Meters, Facilities
 - Violet/Purple: IP Clocks and Intercoms
 - Orange: Wireless Access
 - Black: Access Control
- Standard station outlets will include cabling for two (2) RJ-45 jacks on a common single-gang stainless steel faceplate. Faceplate colored icons shall be as follows:
 - Top Left white
 - Top Right Orange
 - Bottom Left Blue
 - Bottom Right Blank
- Labeling scheme will use MDF/IDF destination name. Examples IDF_200 1-3; HS_406 1-3
- A complete wire-basket cable tray, ladder runway, and raceway system shall be provided for the facility. Cable tray will be routed in the mezzanine level. Underground raceways with a minimum of (1) 4" spare will be provided from the MDF to each IDF and (1) 4" spare from each IDF to the adjacent IDF to form a ring. This is a precaution for future additions or cable repair. It also affords the Owner the ability to create a self-healing network backbone.

- Cable tray and conduit shall be routed from the MDF entrance room to all distributed IDF communication rooms. Distribution cable tray shall be run from distributed communication rooms to areas with large concentrations of outlets or through main corridors as to provide easy access with minimal occupant disruption. Where possible, cabling shall be routed below raised floors and rated for the environment. Cable tray system will be based around a wire basket style tray with a maximum of 30% fill. Minimum size will be 12"W with a 4" loading depth.
- Raceways shall be provided from cable trays to all outlets. Ladder rack shall be provided in all communication rooms.
- Telephone handsets, and personal computers will be provided by the Owner.
- WiFi LAN system based on 802.11b standards will be required for interior hallways, common spaces and other select rooms that require wireless access points (WAPs) for wireless networking primarily used by the students. Offices will generally not be provided with wireless provisions. Some offices rooms may be able to utilize the wireless system based on the distribution locations for the WAPs. The wireless network will use power over Ethernet (PoE) for powering the WAPs. System to be designed around Aruba 7205 with Aruba AP-205 components.
- 2 data cables to each WAP will be provided.
- Category 6A augmented copper UTP with bonded pairs cabling will be used for horizontal cabling. Some select locations will be provided with fiber optic data ports as directed by the Owner's IT department. Wall locations may use Category 6A as dictated by the Owner's IT department.
- Horizontal and Vertical wire management will be provided at each rack/cabinet. Wire management will be 6" wide for vertical support on both sides of the rack with a common/shared vertical wire management where racks adjoin. Between each 48-port patch panel a 2RU wire management unit will be shown. Between each 24-port patch panel a 1RU wire management unit will be shown.
- A 50-pair Cat 3 phone backbone will be provided between the MDF and the IDF rooms. This cable will punch down on 110 blocks and can be used for cross-connects for older analog equipment that the Owner may want to re-use that is not IP-based at current time.
- Owner standard manufacturer is unknown.

The follow is a table of items to discuss to determine what is to be provided in the contract and what will be an FF&E item:

System ID	Description	Contractor Furnished Contractor Installed (CFCI)	Owner Furnished Contractor Installed (OFCI)	Owner Furnished Owner Installed (OFOI)
	Telecommunications Distribution			
1	System			

	.01	Device conduit rough-in	x		
	.01	Open cabling supports / Cable Tray	x		
	.03	Category 6A cabling for Work Area Outlets (WAO)	x		
	.04	Category 6A cabling for wireless access points	x		
	.05	Wireless Access Points			X
	.06	Optical fiber & copper back bone cabling	X		
	.07	IT equipment racks & ladder rack	X		
	.08	Fiber & conduit to High MDF demarc	X		
	.09	UPS in Telecommunications Room		X	
	.10	PDU's in Telecommunications Room		X	
	.11	Power receptacles for telecommunications rooms	x		
	.12	HVAC cooling equipment for telecommunications rooms	x		
	.13	IT grounding & Bonding infrastructure	X		
	.14	Firestopping for IT pathways	X		
2		IP Centralized Clock System			
	.01	Device conduit rough-in	X		
	.02	IP clock combo device & patch cord (device end only)	x		
	.03	IP clock specialty back box	X		
	.04	IP digital clocks	X		
	.05	Analog speakers, zone controllers and paping amplifiers	x		
	.06	Analog speaker specialty back box	X		
	.07	Analog speaker cabling & connectivity	X		
	.08	software licenses			X
	.09	software, servers and programming			x
3		Audio Visual System			



	.02	Electrical connections	X		
	.01	Device conduit rough-in	X		
6		Security - Access Control System			
	.06	Ethernet switches (PoE and non-PoE)			X
	.05	licensing			x
	.04	scheduling Network servers, programming and			X
	0.4	Network programming and QOS			
	.03	Category 6 patch cords for telecommunications room & workstations			x
	.02	Network electronics			X
	.01	PC workstations and monitors			X
5		Network System			
	.02	licensing			X
		Telephone servers, programming, and			
-	.01	Telephone Devices (handsets)			X
4		Telephone System			
	.10	IR sensor	X		
		Wireless microphone, base charger and			
	.09	USB switcher, extender and input device	X		
	.07	Audio Video network software	x		
	.07	Sound enhancement speaker system (per room)	x		
	.06	Audio Video network switcher	x		
	.05	HDMI device and cabling	X		
	.04	VGA (video)/audio input device and cabling	x		
	.03	Video projector mount and mast	x		
	.02	Interactive ultra short throw LCD video projector		x	



		Low voltage cabling, security devices			
	.03	and terminations	X		
		Access control equipment &			
	.04	programming	X		
7		Security - IP Surveillance System			
	.01	Device conduit rough-in	X		
		IP surveillance cameras & patch cords			
	.02	(device end only)	X		
	.03	Software, cameras and licenses	X		
	.04	Physical servers and storage - NVR	X		
	.05	VMS programming			X
7		Nurse Call System			
	.01	Device conduit rough-in	X		
	.02	Devices	X		
	.03	Headend equipment	X		
	.04	Cabling, devices and terminations	X		
	.05	Programming and testing	X		
8		Distributed Antenna System (Required?)			
	.01	Device conduit rough-in	?		
	.02	Headend equipment	?		
	.03	Cabling, devices and terminations	?		
	.04	Programming and testing	?		
10		Audio Visual Distribution Systems			
		Recessed AV wallbox and device conduit			
	.01	rough-in	X		
	.02	LCD flat panel display			X
	.03	Universal wall mount		X	
		Network media player, licenses and			
	.04	software			X
	.05	Programming			X



CATV System:

• A coax style CATV system will not be provided as IPTV has replaced most TV distribution systems. IPTV systems generally run over the data network. Devices will be located in each patient area and in waiting rooms.

CCTV System:

- Existing CCTV system shall be maintained for both the hospital and clinic for the duration of construction. Upon completion of each of construction phase, the CCTV infrastructure in its entirety shall be demolished. Retention of any existing equipment shall be at the discretion of the owner.
- A limited security CCTV system will be required. This system will be remotely monitored and will include network video recorders (NVR). The NVRs will be located in the telecommunications rooms and configured for connectivity to the Ethernet network. Monitoring of the system will be via a Windows-based software package installed on a dedicated computer for the Security Resource Officer (SRO) usage.
- The security CCTV system will be continuously monitored. Software triggers can be implemented to reduce the recording data amount.
- Cameras for the security CCTV system may require TCP/IP addressing capability.
- A security surveillance type system with cameras and monitors is to be included for corridors and entry doors and elevator.
- Active components will be furnished by the Owner. This includes cameras and head-end equipment such as network video recorders and storage. Cabling will be part of the building infrastructure contract.
- Anticipated camera locations are the main entrances, waiting areas, and potentially parking lots.

Audio/Video:

- Mediated training rooms shall be equipped with presentation systems consisting of a video/graphics projection system and multimedia sources, including document camera, VCR's, DVD/CD players and connections for personal computers or laptops. All mediated rooms shall be provided with program audio systems and larger meeting/community rooms shall also be provided with voice reinforcement systems.
- Mediated rooms shall be provided with control systems based on the Owner standards. Multimedia sources shall be located in the Instructor's podium and/or media.

- Video projectors will be based primarily around an Ultra-Short Throw projection system without interactive capability. These will be wall mounted above the front teaching whiteboard. Dalite style projection boards will be used over standard whiteboards for better visibility and contrast.
- There will be either flat panel display or ultra-short throw projectors with screens in the commons for daily events display. Cost comparisons between the two options are in progress.
- Assistive listening systems shall be provided in all rooms with 40 seats or more, if such space is applicable. Headsets are checked out to individual users by the Instructor.

Intercommunication/Public Address System:

- Existing intercom system shall be maintained for both the hospital and clinic for the duration of construction. Upon completion of each of construction phase, the intercom system infrastructure in its entirety shall be demolished. Retention of any existing equipment shall be at the discretion of the owner.
- The building interior and exterior will be provided with a public address system consisting of speakers and interconnections to sound re-enforcement system using a priority override. Paging capability will be combined with the room clock/speakers system, locker rooms, commons, corridors and similar general usage spaces.
- Paging will be provided for a minimum of 10 zones with expandability to a minimum of 16 zones.
- System will be based on Owner Standards. This is believed to be a Rauland Telecenter.
- The Owner furnished VoIP telephone system will be interfaced to this system to allow for roomto-room communication or general announcement broadcasting.

Clock System:

- Individual room and the nurse's station clocks with synchronization using SNTP will be specified. Size is expected to be based on standard 12" digital-style clocks.
- Surgical rooms will have standard time of day clocks and additional procedure clocks.
- Commons area will be provided with 12" or larger analog-style clocks.
- The clock system will use SNTP for synchronization and will be Ethernet-based. The clocks will connect to the Rauland Telecenter system using network/Ethernet style cabling.

Access Control:

• Existing access control system shall be maintained for both the hospital and clinic for the duration of construction. Upon completion of each of construction phase, the access control

infrastructure in its entirety shall be demolished. Retention of any existing equipment shall be at the discretion of the owner.

- The building requires an exterior access control system for selected doors. Access control will be via proximity cards. The system will be based on Owner standards.
- Keypads will be located at select main entry points for arming/disarming the system.
- The building will be configured for multiple zones to allow kitchen staff to enter and leave without disruption of the overall building protection. Zone discussions will be required between the Engineer and the Owner so these can properly be indicated on the construction documents.
- 24-hour battery backup in addition to generator power will be required for the access control system. This system will be feed from the NEC 702 optionally standby system.
- Perimeter doors are to be provided with door switches and proximity card reader access control.
- Intrusion detection will also be provided in the corridors and select perimeter rooms classified as "High Risk" areas such as computer labs, science rooms, etc.
- The Owner is currently working with their vendor of choice on a system design. Once selected, the vendor and the engineer will work together to depict the system installation on the construction documents.

LEED Credits (if LEED Certification is desired):

- Following is a list of Leadership in Energy and Environmental Design (LEED) points that will be sought after:
 - Sustainable Site Outdoor Lighting Light Pollution Reduction (1 pt)
 - Energy and Atmosphere Superior Energy Performance (1 pt)
 - Energy and Atmosphere Green Power and Carbon Offsets (0 pt), Generally an expensive item
 - Indoor Environment Quality Electric Light Quality (1 pt)

 $N: 121-19016 \ 02_Design_Production \ K_Design_Reports \ c_SD \ Elect \ 02K \ c_19016 \ D50_Elect \ ratio \ N=1000 \ ratio \ r$



D50 - ELECTRICAL SYSTEMS - Greenfield Site

Electrical Service:

Electrical Distribution

- Primary medium voltage service from the utility company location will be as directed by utility company. Primary underground will be extended from nearest power source to the new service yard that will enclose the padmounted transformer.
- Main electrical service to be a single 480Y/277 VAC 3-phase 4-wire main switchboard with a single main overcurrent breaker. Preliminary size based on building square footage and assuming electric heating will be 4,000 amps.
- Dry type low voltage transformers will be used to step the voltage down to from 480Y/277 volt to 208Y/120 volt systems. These transformers will be aluminum wound with 115 degree C rise NEMA TP1 enclosures and located in select electrical rooms.
- Demand metering is to be provided on the main service disconnecting breaker via Power Logic, or compatible equipment.
- Surge protection is to be provided at the main service entrance and on load side of dry-type transformers that supply 208-volt panelboards serving sensitive loads such as computer centers and IT equipment. All Life Safety, Critical branch, and legally required panelboards will be provided with Surge Protective Device (SPD) protection.
- 208Y/120 VAC panelboards for lighting circuits will be distributed throughout the building and generally located in electrical rooms. Panelboards for spaces such as the kitchen will be locally located in the space.
- 208Y/120 VAC distribution panelboards and motor control equipment for mechanical equipment circuits will be specified for mechanical equipment and located in the area being served where space allows.
- 208Y/120 VAC panel boards for receptacle and miscellaneous circuits will be specified using a radial distribution system with local of distribution boards. Panelboards and transformers will be located in electrical rooms and closets. Each floor devices shall be feed from a Panelboard located on that floor. Emergency loads will be feed from alternate floor located panels due to the limited number of circuits needed.
- Panelboards will be tin-plated aluminum bussed.
- Distribution feeders will be generally routed underground to each wing.



• Feeders 100 Amp and greater from the main electrical room to the wings will use compact aluminum feeders with hydraulically applied connection pin in the base bid. Other feeders will be based on copper conductors. All feeders will be based on copper provided as an alternate if the budget can support this expense.

Fire Pump Service:

• No fire pump service will be provided.

Emergency Electrical System:

- Main Hospital A redundant (N+1) standby diesel generator(s), located on ground level, three 4-pole automatic transfer switches (ATS) and distribution panels rated at 208Y/120 volt are to be provided consisting of a dedicated life-safety branch, a critical branch, and an equipment branch. Paralleling gear will be designed to support the two generators. This Emergency Power Supply System (EPSS) is anticipated as being a level-01system where failure of the equipment to perform could result in loss of human life or serious injury. The EPSS equipment will be located in a separate 2-hour room and separated from the main electrical distribution equipment. Fuel will be #2 non-bio diesel with a minimum of 96-hours of run time. Due to the gallons required, a separate main tank with double wall construction will be needed with a transfer pump system to the day tank located in the generator room. A fuel polishing system will be required. A stationary load bank will be design to allow for automatic exercising of the generators on a monthly basis.
- Clinic A separate standby diesel generator will be used to feed the NEC-700 life safety system and the NEC-702 optional standby system. This system will have two dedicated ATSs. The EPSS is anticipated as being a level-02 system where failure of the EPSS to perform is less critical to human life and safety. A portable load bank can be used for annual testing. Fuel will be #2 nonbio diesel with a minimum of 24-hours of run time. It is estimated that this tank can be located below the generator in a belly tank configuration. A fuel polishing system will be not be required.
- A second generator output breaker for the clinic generator system will be specified for the generator system for an annual portable load bank for load test of the generator. This system will have a Trystar or similar generator bypass switch to allow for automatic disconnection of the load bank should utility power be lost during maintenance testing.
- Distribution and branch panels are to be provided for 120-volt loads. The generator unit to be
 provided with a base tank for minimum 8-hour operation. This generator is initially sized at 500 –
 750 kW based on rough order of magnitude main hospital building square footage. The clinic will
 require a generator of rough order of magnitude of 200 350kW based on the clinic square
 footage and the desire to maintain full use of the facility. The generators are to be controlled for
 monthly testing via the building energy management control system.
- Generator will be fueled with #2 non-bio diesel. Bio-fuel can be investigate if so desired, but the generator manufacturers' have limitations on the level of bio-fuel that can be effectively used.

- Generation is to comply with NEC article 517 (Health Care Facility) for the main hospital and NEC articles 700, 701, 702 for the Clinic. These systems will serve life safety emergency exit and egress lighting, fire alarm system, security system, communication rooms, building automated control (BAC) panels, air conditioning for communications rooms, and walk-in coolers. Distribution is via feeders, with branch panels for life safety, and optional equipment loads. A dedicated generator branch will be used to serve select IT equipment, IT air-handling, walk-in coolers and areas that require ventilation.
- Sound levels are to be in accordance with local *maximum environmental noise level requirements and restrictions where applicable and local city ordinances. The generator system will be located exterior to the building and have a sound attenuated enclosure.

Emergency Life-Safety Loads

Egress lighting & exit signage, alarm and alerting systems, communication systems	Generator power. Additional battery packs provided in main electrical room where Automatic Transfer Switch (ATS) is located per NFPA-110 (Generator) Code.
--	--

Critical Loads

Equipment necessary for operation	Patient Bed/Critical Care		
Telephone	Main switch and related equipment		
Nurse-call/Code Blue system	Main equipment and supporting apparatus		
Nurse-assist system	Main equipment and supporting apparatus		
Misc equipment	Equipment and components as determined by the facility manager that are essential to operations. This can include things such as coffee makers, computer systems, etc.		

Λ

Standby/Equipment Loads

Hydronic circulating pumps	Boiler and AC loops, include control circuits for any gas fired boilers
Owner data network	Power and equipment for all IDFs and MDF; include spare receptacles & A/C
BMS system	DDC controls
Fire Sprinkler & Alarm system	FACP, NAC panels, dry system compressors, magnetics locks, & any other associated device requiring power.
Generator accessories	Block heater and battery charger
Heat trace	Any heat trace installed to prevent system freezing
HVAC control system	Some items on this list would not operate w/o BMS controls
Phone system	Believed to be part of IT system. Dedicated circuits to phone headend wi be provided
Security system	Includes intrusion, CCTV, card access system, front-door intercom, components may be scattered through the building(s)
Sump Pumps (if applicable)	For sub-grade drainage or sewage
Walk-in cooler/freezer	Optional per Owner request. Generally, these will hold cold for several hours and the large additional increase in generator may not be warranted.
Lighting	All restrooms, area light by generator for refueling, electrical room(s), mechanical room(s), MDF room and demarc room
Convenience outlets:	
- Health type rooms	Medical refrigerator(s)
Facility manager	phone / laptop / computer / emerg. radio / security computer / etc.
Operations - Manager	phone / computer / radio
Security office, if desired	computer / radios / security camera head-end
- Kitchen/Food - Service	Microwave and other select items as directed by the Owner
- Custodial office	HVAC/BMS computer/radio

- Additional areas	Common spaces, emergency storage & generator
- Additional aleas	common spaces, emergency storage & generator

- Note: All generator backed receptacles to be red/orange in color for easy identification
 - Select lighting for commons areas where kids may be held while being picked up during a power outage
 - Mechanical DDC system

Uninterruptible Power System:

- No UPS equipment will be provided.
- If communication rooms are to have local UPS units at equipment racks, they will be provided by the Owner.
- X-ray and related equipment to be provided with UPS if so desired by the equipment supplier.

Grounding:

- The grounding system is to be in accordance with the National Electrical Code. The building ground is to consist of a UFER ground system with other grounding electrodes consisting of water service, and building steel. Interior metallic systems will be bonded together per NEC requirements. A telecommunication grounding riser will be provided with copper ground bars located as each telecommunication room. Driven ground rods will be provided for separately derived systems where other grounding means are not available.
- Grounding of raceway systems and distribution equipment cabinets is to consist of an insulated green equipment grounding conductor routed with the phase conductors and bonded at each panelboard and at intermediate pull boxes. The raceway system will not be used as the sole means of grounding.
- Cable trays throughout the building are to be bonded to building steel at multiple locations to create a low impedance signal ground in addition to being grounded at the main service. A bare copper ground wire will be routed with the cable tray and bonded to each section of the tray.
- A communication grounding system is to be provided per TIA/EIA-607 standards bonding all communications rooms to service ground and building steel. Ground bus bars are to be provided in each communication room.
- An isolated ground distribution system and isolated ground receptacles will be specified for patient care areas.

Lightning Protection:

• A lightning protection system will not be provided, but should be looked at.

Power:

- Wall receptacles are to be provided in offices, computer rooms, and room spaces. Floor boxes are to be located only where normal wall service would not accommodate the need such as teaching podiums. Tamper-resistant receptacle will be used in public accessible locations.
- Lab benches are to be provided with dual channel aluminum surface metal raceways. Single and three phase 208-volt receptacles are to be provided in laboratory spaces. Dedicated circuits shall be provided to serve equipment areas.
- 120-volt receptacles are to be provided on the building exterior for future electric vehicle charging and general Owner usage if directed by the Owner.
- Power poles are not to be used unless wall or floorbox service is not possible or there exists a need for easy relocation of power items.
- Receptacles in corridors will be placed on a maximum spacing of 50-ft for janitorial use.
- Display cases, if desired, will be provided with one duplex receptacle for general usage.
- General spacing of receptacles will be a maximum of 12-ft on-center with dedicated receptacles located for items such as vending machines, copy/fax machines, computers, and other like equipment.
- Receptacles on reception desk counters and like spaces will be on 4-ft centers. Where possible, receptacle for counter computer stations will be located below counter in the knee space with grommeted openings for cabling.
- Dedicated power will be provided for door control systems such as powered doors or door locking systems.
- Branch circuit wiring will be based on health-care rated MC cable with copper conductors and separate neutrals. Homeruns will be hard-piped back to the local panelboards from a distribution junction box in the vicinity of the loads being served. Additional concealed and accessible junction boxes will be provided with hard-pipe interconnection to form a distribution backbone that can support future conductor additions from the room to the panelboard. MC cable will be radially connected to these distribution junction boxes following a spoke and hub design.
- The State of Alaska does not have a state code and follows the 2012 International Energy Conservation Code (IECC). We feel that energy conservation is an important aspect of facility longevity, sustainability and general good practice energy conservation. Hence we recommend following the Washington State Energy Code (WSEC) as it has proven to provide better performance than the IECC and is relatively cost effective since we will primarily be using LED style lighting. Per the current WSEC - At least 50 percent of all 125 volt 15- and 20-ampere receptacles installed in private offices, open offices, conference rooms, rooms used primarily for printing and/or copying functions, break rooms, individual workstations and rooms, including those installed in modular partitions and modular office workstation systems, shall be controlled

as required by this section. In rooms larger than 200 square feet (19 m 2), a controlled receptacle shall be located within 72 inches (1.8 m) of each uncontrolled receptacle. Controlled receptacles shall be visibly differentiated from standard receptacles and shall be controlled by one of the following automatic control devices:

- 1. An occupant sensor that turns receptacle power off when no occupants have been detected for a maximum of 20 minutes. This is the option we plan to use.
- 2. Alternate approach A time-of-day operated control device that turns receptacle power off at specific programmed times and be programmed separately for each day of the week. The control device shall be configured to provide an independent schedule for each portion of the building not to exceed 5,000 square feet (465 m2) and not to exceed one full floor. The device shall be capable of being overridden for periods of up to two hours by a timer accessible to occupants. Any individual override switch shall control the controlled receptacles for a maximum area of 5,000 square feet (465 m2). Override switches for controlled receptacles are permitted to control the lighting within the same area. This option can be used if so directed by the Owner.

Interior Lighting:

- The lighting system will be designed primarily based on use of lay-in 4500 to 5400 lumen volumetric style LED luminaires with electronic, high power factor, low harmonic served at 277 volts.
- Lamp color shall be the Owner standard. It is believed to be 3500°K with a minimum CRI of 80.
- Human centric lighting will be explored in patient care areas. This requires special luminaires and more complicated controls to mimic circadian rhythms. It does add around \$3/sft to the cost of the initial building design and does not use any additional energy as compared to a conventional on/off daylight harvesting system.
- Exit lights with LED lamps and emergency egress pathway lighting are to be provided and connected to the emergency distribution system. Exit lights shall be no more than 5 watts. Exit lights shall be red letters on a white face.
- The lighting system shall meet current 2015 Washington State NREC energy code.
- Indirect LED volumetric troffers are to be used in offices and other similar areas.
- LED grid volumetric/lensed luminaires are to be used in corridors and controlled via local lowvoltage wall switches interconnected with the DDC and lighting control system. Local switches provide an over-ride of the system for a short period of time. The system selected should be specified to ignore the switches during scheduled times of day to avoid undesired switching.
- Life safety exit and egress lighting to remain on 24/7 as that is the intended use of the facilities.
- Direct/indirect (volumetric) lay-in grid-mounted linear LED fixtures with lenses on the direct downlight component in offices, laboratories, and conference rooms.

- Recessed LED accent down lighting to be used where applicable.
- Multi-level daylight zone controls for laboratories, and office lighting are to be provided. System will be digital and distributed.
- Automatic daylight harvesting has been interfaced with the localized digital control system in each room.
- Building interior lighting in common areas is to be controlled by DDC via a low voltage control system with computer control, relay panels and local low voltage switching, for compliance with energy code. Controls will be located at the nurse's station to allow for night-time dimming of corridors.
- Lighting control system will be based on an nLight system with luminaire level controls. Common/central core areas will be controlled from centralized network panels that are interconnected. The system would be specified to allow at least 3 different manufacturer's to bid.
- Occupancy sensors will be used in offices, conference/work rooms, corridors and restrooms per energy code requirements.
- Excessive brightness and glare shall be controlled in all instructional areas.
- Lighting levels will follow Washington Administrative Code (WAC) and Illuminating Engineering Society of North America (IESNA) recommended levels. Follow are the general guidelines:
 - a. Lighting levels in patient rooms will be 20 30 foot-candles.
 - i. Examinations will be designed for 100 foot-candles
 - b. Lighting levels in offices will be 30 40 foot-candles.
 - c. Lighting levels at the nurse's station will be 30-50 foot-candles.
 - d. Lighting levels at the pharmacy will be 70-90 foot-candles.
 - e. Lighting levels in stairwells and corridors will be 10 20 foot-candles.
 - f. Lighting levels in mechanical equipment and electrical rooms will be 40 50 foot-candles.
 - g. Lighting levels in telecommunications rooms will be 40 50 foot-candles.
 - h. Lighting levels in labs will be 50 60 foot-candles.
 - i. Lighting levels in the surgical rooms will be approximately 150 foot-candles and require dedicate examination lights.
 - j. Lighting levels in examination rooms will be 50 70 foot-candles.
 - k. Lighting levels in soiled and clean utility type rooms will be 30 40 foot-candles.
 - I. Lighting levels in food service/kitchen area will be 50 60 foot-candles.
 - m. Lighting levels at building exterior entrances will be 2 5 foot-candles.
 - n. Lighting levels at building exterior pathways will be 1 2 foot-candles.

Exterior Lighting:

• Site lighting will be tightly controlled to areas of egress, pedestrian paths and parking areas. Luminaires will be LED with dusk-to-dawn full operation. Luminaires will be dark sky compliant, with distribution types carefully controlled to avoid light trespass and light pollution.

- Exterior lighting will be automatically controlled. Lighting will generally be wall-mounted LED for building perimeter. Other area lighting around building, pedestrian pathways, and within parking area will be pole-mounted LED.
- Building egress and entrances will be connected to the standby generator per Code requirements.

Fire Alarm System:

- Multiplexed, addressable fire alarm system with mylar speakers and strobes to comply with ADA and local codes.
- Corridor and common area smoke detection will be specified as a minimum. If there are a significant number of duct smoke detectors required by the mechanical system layout, then total area coverage will be used instead.
- Raised floor areas will require detection below the floor in addition to the room space per NFPA 72 requirements. None are envisioned at this time.
- Fire separation doors will have 120 VAC electro-magnetic hold open devices which will be released by the fire alarm system.
- Building is equipped with an elevator so connections for elevator recall are needed.
- Fire/smoke dampers will be a zoned shutoff system. Position switches to confirm open for motorized dampers will not be provided.
- System will be a voice alarm system to allow paging and emergency announcements throughout the building.
- Fire alarm system will be based on the Owner fire alarm system standard. Currently this is unknown.
- 24-hour battery backup for the fire alarm system will be required in addition to generator backup.
- The contractor will provide the necessary programming of the fire alarm control panel.
- Building exterior notification devices, with amber visual signals, will be provided to identify building lockdown activation.
- 100% area detection is being considered for the Windsor site as the local AHJ has indicated that employing 100% area detection could reduce the fire water storage tank size. Cost evaluations are underway to see if there is an economic advantage of the 100% detection. The building is fully sprinkled.

Telecommunications:

- Voice services will be copper and originate from the servicing utility companies demarcation cabinet located in the Main Distribution Frame (MDF) on the basement or first floor.
- Copper and optical fiber horizontal distribution system within the building to support voice and data networks. A Telephone\Data Main Distribution Frame (MDF) entrance room shall be provided on the first level with access to the first floor pathways. Distributed communication Intermediate Distribution Frame (IDF) rooms shall be provided to minimize cable runs to 90 meters. This 90 meter length to be total length including patch cords of up to 5 meters. Connection between the MDF and IDF closets will be via underground raceway systems.
- IDF communication rooms shall be located toward the center of the building wings and not at the edges of each floor where possible. IDF communications rooms will be dedicated rooms located on the catwalk level.
- Each floor wing will be configured such that the station cables are terminated on the floor/wing that serve the corresponding Work Area Outlet (WAO) except where space does not allow for an IDF room per wing. In those locations, WAO station cables will terminate at the closest IDF or MDF. Jack and cable color and labeling will be per the Owner Standards.
- A complete telephone and data cabling system shall be provided throughout the facility. System shall be installed in accordance with TIA/EIA 568B standards, and in general will include Category 6A cable runs to all workstations and printer locations, terminated at station outlet jacks patch panels using RJ45 connections at the IDF communication rooms. The system will be designed to support 10 GB/s distribution.
- Fiber optic backbone cable will be provided between the entrance room and all distributed communication rooms. 8.3 micron SM Fiber optic cables will also be provided to server rooms and certain dedicated workstations where higher level of future bandwidth is anticipated. 6-strand MM OM3 50-micron and/or 8.3 micron SM fiber optic cabling will be designed between MDF and IDF rooms. Currently, the Owner has chosen 6-strand MM OM3 and 6-strand SM cabling. Terminations will be based on TeraSPEED SM duplex LC adapters.
- Color code for cables shall be as follows unless otherwise directed by the Owner:
 - o Blue: Data and Voice
 - White: Security Cameras, Meters, Facilities
 - Violet/Purple: IP Clocks and Intercoms
 - Orange: Wireless Access
 - Black: Access Control
- Standard station outlets will include cabling for two (2) RJ-45 jacks on a common single-gang stainless steel faceplate. Faceplate colored icons shall be as follows:
 - Top Left white
 - Top Right Orange
 - o Bottom Left Blue

- Bottom Right Blank
- Labeling scheme will use MDF/IDF destination name. Examples IDF_200 1-3; HS_406 1-3
- A complete wire-basket cable tray, ladder runway, and raceway system shall be provided for the facility. Cable tray will be routed in the mezzanine level. Underground raceways with a minimum of (1) 4" spare will be provided from the MDF to each IDF and (1) 4" spare from each IDF to the adjacent IDF to form a ring. This is a precaution for future additions or cable repair. It also affords the Owner the ability to create a self-healing network backbone.
- Cable tray and conduit shall be routed from the MDF entrance room to all distributed IDF communication rooms. Distribution cable tray shall be run from distributed communication rooms to areas with large concentrations of outlets or through main corridors as to provide easy access with minimal occupant disruption. Where possible, cabling shall be routed below raised floors and rated for the environment. Cable tray system will be based around a wire basket style tray with a maximum of 30% fill. Minimum size will be 12"W with a 4" loading depth.
- Raceways shall be provided from cable trays to all outlets. Ladder rack shall be provided in all communication rooms.
- Telephone handsets, and personal computers will be provided by the Owner.
- WiFi LAN system based on 802.11b standards will be required for interior hallways, common spaces and other select rooms that require wireless access points (WAPs) for wireless networking primarily used by the students. Offices will generally not be provided with wireless provisions. Some offices rooms may be able to utilize the wireless system based on the distribution locations for the WAPs. The wireless network will use power over Ethernet (PoE) for powering the WAPs. System to be designed around Aruba 7205 with Aruba AP-205 components.
- 2 data cables to each WAP will be provided.
- Category 6A augmented copper UTP with bonded pairs cabling will be used for horizontal cabling. Some select locations will be provided with fiber optic data ports as directed by the Owner's IT department. Wall locations may use Category 6A as dictated by the Owner's IT department.
- Horizontal and Vertical wire management will be provided at each rack/cabinet. Wire management will be 6" wide for vertical support on both sides of the rack with a common/shared vertical wire management where racks adjoin. Between each 48-port patch panel a 2RU wire management unit will be shown. Between each 24-port patch panel a 1RU wire management unit will be shown.
- A 50-pair Cat 3 phone backbone will be provided between the MDF and the IDF rooms. This cable will punch down on 110 blocks and can be used for cross-connects for older analog equipment that the Owner may want to re-use that is not IP-based at current time.
- Owner standard manufacturer is unknown.

The follow is a table of items to discuss to determine what is to be provided in the contract and what will be an FF&E item:

System ID		Description	Contractor Furnished Contractor Installed (CFCI)	Owner Furnished Contractor Installed (OFCI)	Owner Furnished Owner Installed (OFOI)
		Telecommunications Distribution			
1		System			
	.01	Device conduit rough-in	X		
	.01	Open cabling supports / Cable Tray	X		
	.03	Category 6A cabling for Work Area Outlets (WAO)	x		
		Category 6A cabling for wireless access			
	.04	points	X		
	.05	Wireless Access Points			X
	.06	Optical fiber & copper back bone cabling	×		
	.07	IT equipment racks & ladder rack	x		
	.08	Fiber & conduit to High MDF demarc	X		
	.09	UPS in Telecommunications Room		x	
	.10	PDU's in Telecommunications Room		x	
		Power receptacles for			
	.11	telecommunications rooms	X		
	4.0	HVAC cooling equipment for			
	.12	telecommunications rooms	X		
	.13	IT grounding & Bonding infrastructure	X		
	.14	Firestopping for IT pathways	X		
2		IP Centralized Clock System			
-	.01	Device conduit rough-in	x		
	.01	IP clock combo device & patch cord	^		
	.02	(device end only)	X		
	.03	IP clock specialty back box	X		
	.04	IP digital clocks	X		
		Analog speakers, zone controllers and	_		
	.05	paping amplifiers	X		
	.06	Analog speaker specialty back box	X		



	.07	Analog speaker cabling & connectivity	X		
	.08	software licenses			X
	.09	software, servers and programming			X
3		Audio Visual System			
	.01	Device conduit rough-in	X		
	.02	Interactive ultra short throw LCD video projector		x	
	.03	Video projector mount and mast	X		
	.04	VGA (video)/audio input device and cabling	x		
	.05	HDMI device and cabling	X		
	.06	Audio Video network switcher	X		
	.07	Sound enhancement speaker system (per room)	x		
	.08	Audio Video network software	X		
	.09	USB switcher, extender and input device	X		
	.10	Wireless microphone, base charger and IR sensor	X		
4		Telephone System			
	.01	Telephone Devices (handsets)			X
	.02	Telephone servers, programming, and licensing			x
5		Network System			
	.01	PC workstations and monitors			X
	.02	Network electronics			X
	.03	Category 6 patch cords for telecommunications room & workstations			x
	.04	Network programming and QOS scheduling			x
	.05	Network servers, programming and			X



		licensing		
	.06	Ethernet switches (PoE and non-PoE)		x
6		Security - Access Control System		
	.01	Device conduit rough-in	X	
	.02	Electrical connections	X	
	.03	Low voltage cabling, security devices and terminations	x	
	.04	Access control equipment & programming	x	
7		Security - IP Surveillance System		
-	.01	Device conduit rough-in	x	
	.02	IP surveillance cameras & patch cords (device end only)	x	
	.03	Software, cameras and licenses	x	
	.04	Physical servers and storage - NVR	x	
	.05	VMS programming		x
7		Nurse Call System		
	.01	Device conduit rough-in	x	
	.02	Devices	X	
	.03	Headend equipment	x	
	.04	Cabling, devices and terminations	x	
	.05	Programming and testing	X	
8		Distributed Antenna System (Required?)		
	.01	Device conduit rough-in	?	
	.02	Headend equipment	?	
	.03	Cabling, devices and terminations	?	
	.04	Programming and testing	?	
10		Audio Visual Distribution Systems		



.01	Recessed AV wallbox and device conduit rough-in	x		
.02	LCD flat panel display			X
.03	Universal wall mount		X	
	Network media player, licenses and			
.04	software			X
.05	Programming			X

CATV System:

• A coax style CATV system will not be provided as IPTV has replaced most TV distribution systems. IPTV systems generally run over the data network. Devices will be located in each patient area and in waiting rooms.

CCTV System:

- A limited security CCTV system will be required. This system will be remotely monitored and will include network video recorders (NVR). The NVRs will be located in the telecommunications rooms and configured for connectivity to the Ethernet network. Monitoring of the system will be via a Windows-based software package installed on a dedicated computer for the Security Resource Officer (SRO) usage.
- The security CCTV system will be continuously monitored. Software triggers can be implemented to reduce the recording data amount.
- Cameras for the security CCTV system may require TCP/IP addressing capability.
- A security surveillance type system with cameras and monitors is to be included for corridors and entry doors and elevator.
- Active components will be furnished by the Owner. This includes cameras and head-end equipment such as network video recorders and storage. Cabling will be part of the building infrastructure contract.
- Anticipated camera locations are the main entrances, waiting areas, and potentially parking lots.

Audio/Video:

 Mediated training rooms shall be equipped with presentation systems consisting of a video/graphics projection system and multimedia sources, including document camera, VCR's, DVD/CD players and connections for personal computers or laptops. All mediated rooms shall be provided with program audio systems and larger meeting/community rooms shall also be provided with voice reinforcement systems.

- Mediated rooms shall be provided with control systems based on the Owner standards. Multimedia sources shall be located in the Instructor's podium and/or media.
- Video projectors will be based primarily around an Ultra-Short Throw projection system without interactive capability. These will be wall mounted above the front teaching whiteboard. Dalite style projection boards will be used over standard whiteboards for better visibility and contrast.
- There will be either flat panel display or ultra-short throw projectors with screens in the commons for daily events display. Cost comparisons between the two options are in progress.
- Assistive listening systems shall be provided in all rooms with 40 seats or more, if such space is applicable. Headsets are checked out to individual users by the Instructor.

Intercommunication/Public Address System:

- The building interior and exterior will be provided with a public address system consisting of speakers and interconnections to sound re-enforcement system using a priority override. Paging capability will be combined with the room clock/speakers system, locker rooms, commons, corridors and similar general usage spaces.
- Paging will be provided for a minimum of 10 zones with expandability to a minimum of 16 zones.
- System will be based on Owner Standards. This is believed to be a Rauland Telecenter.
- The Owner furnished VoIP telephone system will be interfaced to this system to allow for roomto-room communication or general announcement broadcasting.

Clock System:

- Individual room and the nurse's station clocks with synchronization using SNTP will be specified. Size is expected to be based on standard 12" digital-style clocks.
- Surgical rooms will have standard time of day clocks and additional procedure clocks.
- Commons area will be provided with 12" or larger analog-style clocks.
- The clock system will use SNTP for synchronization and will be Ethernet-based. The clocks will connect to the Rauland Telecenter system using network/Ethernet style cabling.

Access Control:

- The building requires an exterior access control system for selected doors. Access control will be via proximity cards. The system will be based on Owner standards.
- Keypads will be located at select main entry points for arming/disarming the system.

- The building will be configured for multiple zones to allow kitchen staff to enter and leave without disruption of the overall building protection. Zone discussions will be required between the Engineer and the Owner so these can properly be indicated on the construction documents.
- 24-hour battery backup in addition to generator power will be required for the access control system. This system will be feed from the NEC 702 optionally standby system.
- Perimeter doors are to be provided with door switches and proximity card reader access control.
- Intrusion detection will also be provided in the corridors and select perimeter rooms classified as "High Risk" areas such as computer labs, science rooms, etc.
- The Owner is currently working with their vendor of choice on a system design. Once selected, the vendor and the engineer will work together to depict the system installation on the construction documents.

LEED Credits (if LEED Certification is desired):

- Following is a list of Leadership in Energy and Environmental Design (LEED) points that will be sought after:
 - Sustainable Site Outdoor Lighting Light Pollution Reduction (1 pt)
 - Energy and Atmosphere Superior Energy Performance (1 pt)
 - Energy and Atmosphere Green Power and Carbon Offsets (0 pt), Generally an expensive item
 - Indoor Environment Quality Electric Light Quality (1 pt)

 $N: 121-19016 \\ 02_Design_Production \\ K_Design_Reports \\ c_SD \\ Elect \\ 02K \\ c_19016 \\ -D50_Electrical \\ Narrative \\ New \\ Site - 191217. \\ docx \\$







PETERSBURG MEDICAL CENTER GREENFIELD SCHEME 7A Concept Estimate 1/20/2020

Building Sitework		\$ \$	55,894,542 10,119,728
	ESTIMATED CONSTRUCTION COST TOTAL BUILDING & SITE ESTIMATE	\$	66,014,270
Off Site A	llowance:		



Petersburg Medical Center Greenfield Scheme 7A

Estimate Documents: The concept estimate is based on documents, emails, and narratives provided by:

NAC Architecture

Bidding Assumptions: The project will be competively bid. With multiple subcontractors covering in all major categories. Public prevailing wage/union wage rates.

Unit pricing is based in December 2019 and costs are escalated 8.4% up to NTP.

EXCLUSIONS:STATE SALES TAXUTTESTING AND INSPECTIONSCHCONSTRUCTION CONTINGENCYBIARCHITECT/ENGINEERING FEESMPERMITSL/TOXIC SOILS/MATERIALS REMOVALPILING, GEO PIERSEQUIPMENT & FURNISHINGS NOT LISTED; MEDICAL EQUIPMENT

UTILITY COMPANY CHARGES/ JURISDICTIONAL FEES CONSTRUCTION MANAGEMENT FEES BUILERS RISK INSURANCE MARKET CONTINGENCY LAND PURCHASE



Greenfield Scheme 7A Building Level 2 Summary

Desc	ription		Cost/SF	Total Cost
A10	Foundations		\$48.47	\$3,512,321
B10	Superstructure		\$40.58	\$2,940,785
B20	Exterior Enclosure		\$45.56	\$3,301,667
B30	Roofing		\$42.87	\$3,106,590
C10	Interior Construction		\$45.39	\$3,289,085
C30	Interior Finishes		\$37.54	\$2,719,951
D20	Plumbing		\$28.42	\$2,059,100
D30	HVAC		\$75.32	\$5,457,735
D40	Fire Protection		\$5.79	\$419,881
D50	Electrical		\$49.89	\$3,615,500
E10	Equipment		\$3.00	\$217,389
E20	Furnishings		\$10.99	\$796,577
		ESTIMATED NET COST	\$433.83	\$31,436,581
MAR	GINS & ADJUSTMENTS			
Locat	tion Factor	25.0 %		\$7,859,145
Gene	ral Conditions	7.5 %		\$2,947,179
Desig	n Contingency-Buildings	8.0 %		\$3,379,432
Adde	d Design / Market Contingency MEP Systems	2.6 %		\$1,173,561
Contr	actors Overhead & Profit	7.5 %		\$3,509,692
Escal	lation to NTP (average 4.8%/year)	8.4 %		\$4,225,670
Per d	iem / Imported labor	2.5 %		\$1,363,282
		ESTIMATED TOTAL COST	\$771.35	\$55,894,542



Greenfield Scheme 7A Building Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cos
A1010	Standard Foundations				
1	Footing drains	LF	2,030	20.00	40,600
2	Standard foundation excavation/backfill (sfa)	SF	72,463	1.75	126,81
3	Standard foundations-continuous footings, column footings (sfa)	SF	72,463	16.00	1,159,40
4	Add for stem wall/foundation wall-below grade	SF	8,120	45.00	365,40
5	Add for brace frame footings (sfa)	SF	72,463	1.60	115,94
7	Dampproofing / insul/ drainage-foundation	SF	10,658	8.00	85,26
	Standard Foundations			\$26.13/SF	\$1,893,42
A1020	Special Foundations				
3	Excavate-haul muskeg @ bldg footprint	CY	21,471	18.00	386,47
9	Import fill @ bldg footprint	CY	21,471	25.00	536,77
	Special Foundations			\$12.74/SF	\$923,25
A1030	Slab on Grade				
10	Slab on grade	SF	72,463	8.00	579,70
11	Gravel at slab	SF	72,463	0.85	61,59
12	Slab depressions/ blockouts/columns	SF	72,463	0.75	54,34
	Slab on Grade			\$9.60/SF	\$695,64
B1020	Roof Construction				
20	Roof structure-beams, columns, brace frames, joists, decking	SF	84,613	28.00	2,369,16
21	Fireproofing roof structure and decking	SF	84,613	5.50	465,37
22	Allowance for canopies, drop off canopy	SF	850	125.00	106,25
	Roof Construction			\$40.58/SF	\$2,940,78
B2010	Exterior Walls				
23	Exterior wall-framing, metal stud, insulations, wrb, sheath, furrings, gwb	SF	30,450	28.95	881,52
24	Metal wall panels-55% above grade framed exterior wall area	SF	22,330	35.00	781,55
25	Stone veneer-20% above grade framed exterior wall area	SF	8,120	52.00	422,24
26	Misc. exterior wall flash, trim, caulk (ext. gross wall area)	SF	40,600	3.50	142,10
	Exterior Walls			\$30.74/SF	\$2,227,41
B2020	Exterior Windows				
27	Windows, storefront, curtain wall-25% above grade gross ext. wall area	SF	10,150	95.00	964,25
	Exterior Windows			\$13.31/SF	\$964,25



Greenfield Scheme 7A Building Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cost
B2030	Exterior Doors				
28	Exterior doors-allow	LS	1	110,000.00	110,000
	Exterior Doors			\$1.52/SF	\$110,000
D 2040	Deef Coveringe				
B3010 30	Roof Coverings	SF	04 64 2	2.85	044 447
30 31	Temp roof dry in	SF	84,613 71,021	32.00	241,147 2,301,472
	Standing seam metal roofing system-complete 85% roof area	SF	71,921		
32 22	Membrane roofing system-complete 15% roof area	SF	12,692	24.00	304,608
33	Furring, cladding of roof overhangs		8,526	20.00	170,520
34 25	Roofing rough carpentry	SF SF	84,613	0.65	54,998
35 26	Roofing accessories, ladders, hatch, snow block, walk pads	SF	84,613	0.40	33,845 Evol
36	Fall protection-excluded Roof Coverings	эг	84,613	\$42.87/SF	Excl. \$3,106,590
	Koor Coverings			<i>φ</i> 42.01/3Γ	<i>\$</i> 3,700,590
C1010	Partitions				
37	Interior partitions-metal stud, gwb ea. side	SF	101,449	13.50	1,369,562
38	Misc. blocking/bracing	SF	101,449	0.50	50,725
39	Add for wall types -stud thickness, gwb layers, insulation	SF	55,797	3.00	167,391
40	X-ray shielding wall / door / relite assemblies (sfa)	SF	5,205	55.00	286,275
	Partitions			\$25.86/SF	\$1,873,953
C1020	Interior Doors				
41	Interior doors/ frames/hardware	EA	290	2,600.00	754,000
42	Interior special doors-coiling, sliding	LS	1	35,000.00	35,000
43	Added hardware-card readers, electric, ADA	LS	1	50,000.00	50,000
44	Interior relites, sidelites, glazed walls-allow	SF	3,624	60.00	217,440
	Interior Doors			\$14.58/SF	\$1,056,440
C1030	Specialties				
45	Specialities-signage/wayfinding ,toilet/shower accessories, marker boards	SF	72,463	4.95	358,692
	Specialties			\$4.95/SF	\$358,692
C3010	Wall Finishes				
47	Wall finishes-Tile, FRL, Wood, misc. other	SF	72,463	9.00	652,167
93	Add for fireplace surround / finishes	LS	1 1	25,000.00	25,000
48	Interior painting / sealing	SF	72,463	3.25	235,505
51	Add surgery-solid surface wall protection	SF	3,186	80.00	254,880
52	Acoustical wall panel allowance	SF	1,500	26.00	39,000
	Wall Finishes		.,000	\$16.65/SF	\$1,206,552
				Ψ.0.00/O	Ψ.,200,00 2



Greenfield Scheme 7A Building Level 3 Detail

Descri	otion	Unit	Qty	Rate	Total Cost
C3020	Floor Finishes				
49	Flooring-mix of carpet / resilient	SF	55,395	8.00	443,160
50	Flooring-surgery, aseptic resinous epoxy	SF	2,896	20.00	57,920
53	Flooring-tile @ rr's allow	SF	2,800	22.00	61,600
54	Flooring-stone tile @ reception / lobby	SF	2,500	28.00	70,000
55	Flooring-sealed concrete	SF	8,872	0.85	7,541
56	Base allowance-mix of tile, coved, standard, wood	SF	72,463	1.05	76,086
	Floor Finishes			\$9.89/SF	\$716,307
C3030	Ceiling Finishes				
57	Ceilings-mix of hard and soft, including vertical soffits/transitions	SF	72,463	8.50	615,93
58	Allowance for ceiling upgrades / acoustics	SF	72,463	2.50	181,15
	Ceiling Finishes			\$11.00/SF	\$797,092
D2090	Other Plumbing Systems				
60	Plumbing systems-see PIKA sfa estimate	LS	1	2,059,100.00	2,059,10
	Other Plumbing Systems			\$28.42/SF	\$2,059,10
D3090	Other HVAC Systems and Equipment				
68	HVAC-see PIKA sfa estimate	LS	1	5,457,735.00	5,457,73
	Other HVAC Systems and Equipment			\$75.32/SF	\$5,457,73
D4090	Other Fire Protection Systems				
64	Fire Protection-see PIKA sfa estimate	LS	1	419,881.00	419,88 ⁻
	Other Fire Protection Systems			\$5.79/SF	\$419,88
D5090	Other Electrical Services				
72	Electrical building power systems-see PIKA sfa estimate	LS	1	814,837.00	814,837
73	Electrical building lighting & receptacles-see PIKA sfa estimate	LS	1	1,424,450.00	1,424,450
74	Electrical building special systems, commsee PIKA sfa estimate	LS	1	764,842.00	764,842
75	Electrical building fire alarm, security-see PIKA sfa estimate	LS	1	611,371.00	611,371
	Other Electrical Services			\$49.89/SF	\$3,615,50
E1090	Other Equipment				
88	Misc. building equipment / FOIC	SF	72,463	3.00	217,389
	Other Equipment			\$3.00/SF	\$217,38
E2010	Fixed Furnishings				
89	Casework allowance	SF	72,463	8.50	615,935



Greenfield Scheme 7A Building Level 3 Detail

Desc	ription	Unit	Qty	Rate	Total Cost
90	Manual shades / blinds @ exterior glazing	SF	10.150	11.00	111,650
91	Manual blinds @ interior glazing	SF	3,624	8.00	28,992
92	Add for electric blinds	LS	1	40,000.00	40,000
	Fixed Furnishings	5		\$10.99/SF	\$796,577
	ESTIMATED NET COST	Γ		\$433.83/SF	\$31,436,581



Greenfield Scheme 7A Site Work Level 2 Summary

Description		Cost/SF	Total Cost
G10 Site Preparations		\$6.63	\$2,153,846
G20 Site Improvements		\$3.77	\$1,225,059
G30 Site Civil/Mechanical Utilities		\$2.86	\$928,750
G40 Site Electrical Utilities		\$3.62	\$1,175,000
	ESTIMATED NET COST	\$16.87	\$5,482,655
MARGINS & ADJUSTMENTS			
Location Factor	25.0 %		\$1,370,664
General Conditions	7.5 %		\$513,999
Design Contingency-Site Work	15.0 %		\$1,105,097
Added Design / Market Contingency MEP Systems	0.0 %		
Contractors Overhead & Profit	7.5 %		\$635,431
Escalation to NTP (average 4.8%/year)	8.4 %		\$765,059
Per diem / Imported labor	2.5 %		\$246,823
	ESTIMATED TOTAL COST	\$31.14	\$10,119,728



Greefield Scheme 7A Site Work Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cos
G1020	Site Demolition & Relocations				
103	Site Clear & grub, misc. demo	SF	325,000	0.40	130,000
127	Demo existing hospital	SF	53,205	15.00	798,075
	Site Demolition & Relocations			\$2.86/SF	\$928,07
G1030	Site Earthwork				
104	Remove muskeg at drives, parking, loading,parking plant islands,walks	CY	22,547	18.00	405,846
105	Import fill at drives, paking, loading, parking plant islands, walks	CY	22,547	25.00	563,675
106	Misc. site grading/earthwork-allowance	LS	1	175,000.00	175,000
107	Erosion control allowance	SF	325,000	0.25	81,250
	Site Earthwork			\$3.77/SF	\$1,225,77
G2020	Parking Lots				
108	Heavy duty pavement-drives	SF	33,178	10.00	331,780
109	Normal duty pavement-parking	SF	34,966	7.00	244,762
110	Loading / ambulance area hardscape	SF	3,475	10.00	34,750
111	Wheel stops	EA	102	125.00	12,75
112	Signage, striping, detectable warnings	SF	71,619	0.35	25,06
113	Curbing allowance	LS	1	25,000.00	25,000
	Parking Lots			\$2.07/SF	\$674,10
G2030	Pedestrian Paving				
114	Pedestrian paving onsite	SF	3,500	7.00	24,500
	Pedestrian Paving			\$0.08/SF	\$24,500
G2040	Site Development				
115	Site furnishings allowance	LS	1	35,000.00	35,000
117	Misc. loading / receiving development (dock)	LS	1	75,000.00	75,000
	Site Development			\$0.34/SF	\$110,000
G2050	Landcaping				
118	Landscape allowance	LS	1	65,000.00	65,000
149	Landscape-minor development allowance extg. hospital site	SF	63,900	5.50	351,450
	Landcaping			\$1.28/SF	\$416,450
G3010	Water Supply				
119	Water system allowance-new loop 10", hydrants, dbl detector valve, fire, domestic	LS	1	485,000.00	485,000



Greefield Scheme 7A Site Work Level 3 Detail

Descri	otion	Unit	Qty	Rate	Total Cost
120	Road patch allowance for water line extension	LS	1	150,000.00	150,000
	Water Supply			\$1.95/SF	\$635,000
G3020	Sanitary Sewer				
121	Sanitary side sewer to Haugen Drive	LS	1	35,000.00	35,000
122	Road patch allowance for side sewer cross Haugen Drive	LS	1	15,000.00	15,000
	Sanitary Sewer			\$0.15/SF	\$50,000
G3030	Storm Sewer				
123	Storm collection, draingage, culverts	SF	325,000	0.75	243,750
	Storm Sewer			\$0.75/SF	\$243,750
G4090	Other Site Electrical Utilities				
124	Site electrical-see PIKA estimate	LS	1	1,175,000.00	1,175,000
	Other Site Electrical Utilities			\$3.62/SF	\$1,175,000
	ESTIMATED NET COST			\$16.87/SF	\$5,482,655



PETERSBURG MEDICAL CENTER GREENFIELD SCHEME 7B Concept Estimate 1/20/2020

Building Sitework		\$ \$	59,429,763 9,641,267
	ESTIMATED CONSTRUCTION COST TOTAL BUILDING & SITE ESTIMATE	\$	69,071,030
Off Site A	llowance:		
5 Shto / i			



Petersburg Medical Center Greenfield Scheme 7B

Estimate Documents: The concept estimate is based on documents, emails, and narratives provided by:

NAC Architecture

Bidding Assumptions: The project will be competively bid. With multiple subcontractors covering in all major categories. Public prevailing wage/union wage rates.

Unit pricing is based in December 2019 and costs are escalated 8.4% up to NTP.

EXCLUSIONS:STATE SALES TAXUTESTING AND INSPECTIONSCCONSTRUCTION CONTINGENCYBIARCHITECT/ENGINEERING FEESMPERMITSL/TOXIC SOILS/MATERIALS REMOVALPILING, GEO PIERSEQUIPMENT & FURNISHINGS NOT LISTED; MEDICAL EQUIPMENT

UTILITY COMPANY CHARGES/ JURISDICTIONAL FEES CONSTRUCTION MANAGEMENT FEES BUILERS RISK INSURANCE MARKET CONTINGENCY LAND PURCHASE



Greenfield Scheme 7B Building Level 2 Summary

Desc	cription		Cost/SF	Total Cost
A10	Foundations		\$47.37	\$3,797,835
B10	Superstructure		\$39.80	\$3,191,030
B20	Exterior Enclosure		\$38.28	\$3,068,975
B30	Roofing		\$41.83	\$3,353,409
C10	Interior Construction		\$44.90	\$3,599,782
C30	Interior Finishes		\$37.08	\$2,972,903
D20	Plumbing		\$26.30	\$2,108,720
D30	HVAC		\$73.06	\$5,857,000
D40	Fire Protection		\$5.72	\$458,730
D50	Electrical		\$48.83	\$3,915,002
E10	Equipment		\$3.00	\$240,510
E20	Furnishings		\$10.69	\$857,027
		ESTIMATED NET COST	\$416.88	\$33,420,923
MAR	GINS & ADJUSTMENTS			
Loca	tion Factor	25.0 %		\$8,355,231
Gene	eral Conditions	7.5 %		\$3,133,211
Desi	gn Contingency-Buildings	8.0 %		\$3,592,749
Adde	ed Design / Market Contingency MEP Systems	2.6 %		\$1,253,535
Cont	ractors Overhead & Profit	7.5 %		\$3,731,673
Esca	lation to NTP (average 4.8%/year)	8.4 %		\$4,492,936
	liem / Imported labor	2.5 %		\$1,449,505
Pero				



Greenfield Scheme 7B Building Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cos
A1010	Standard Foundations				
1	Footing drains	LF	1,882	20.00	37,64
2	Standard foundation excavation/backfill (sfa)	SF	80,170	1.75	140,29
3	Standard foundations-continuous footings, column footings (sfa)	SF	80,170	16.00	1,282,72
4	Add for stem wall/foundation wall-below grade	SF	7,528	45.00	338,76
5	Add for brace frame footings (sfa)	SF	80,170	1.60	128,27
7	Dampproofing / insul/ drainage-foundation	SF	9,881	8.00	79,04
	Standard Foundations			\$25.03/SF	\$2,006,73
A1020	Special Foundations				
3	Excavate-haul muskeg @ bldg footprint	CY	23,755	18.00	427,59
9	Import fill @ bldg footprint	CY	23,755	25.00	593,87
	Special Foundations			\$12.74/SF	\$1,021,46
A1030	Slab on Grade				
10	Slab on grade	SF	80,170	8.00	641,36
11	Gravel at slab	SF	80,170	0.85	68,14
12	Slab depressions/ blockouts/columns	SF	80,170	0.75	60,12
	Slab on Grade			\$9.60/SF	\$769,63
B1020	Roof Construction				
20	Roof structure-beams, columns, brace frames, joists, decking	SF	92,083	28.00	2,578,32
21	Fireproofing roof structure and decking	SF	92,083	5.50	506,45
22	Allowance for canopies, drop off canopy	SF	850	125.00	106,25
	Roof Construction			\$39.80/SF	\$3,191,03
B2010	Exterior Walls				
23	Exterior wall-framing, metal stud, insulations, wrb, sheath, furrings, gwb	SF	28,230	28.95	817,25
24	Metal wall panels-55% above grade framed exterior wall area	SF	20,702	35.00	724,57
25	Stone veneer-20% above grade framed exterior wall area	SF	7,528	52.00	391,45
26	Misc. exterior wall flash, trim, caulk (ext. gross wall area)	SF	37,640	3.50	131,74
	Exterior Walls			\$25.76/SF	\$2,065,02
32020	Exterior Windows				
27	Windows, storefront, curtain wall-25% above grade gross ext. wall area	SF	9,410	95.00	893,95
	Exterior Windows			\$11.15/SF	\$893,95



Greenfield Scheme 7B Building Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cost
B2030	Exterior Doors				
28	Exterior doors-allow	LS	1	110,000.00	110,000
	Exterior Doors			\$1.37/SF	\$110,000
D2010	Pact Coverings				
B3010 30	Roof Coverings	SF	92,083	2.85	262,437
30 31	Temp roof dry in Standing seam metal roofing system-complete 85% roof area	SF	92,083 78,271	32.00	2,504,672
32		SF	13,813	32.00 24.00	331,512
32 33	Membrane roofing system-complete 15% roof area	SF	7,905	24.00	158,100
33 34	Furring, cladding of roof overhangs	SF	7,903 92,083	20.00	59,855
34 35	Roofing rough carpentry	SF			
	Roofing accessories, ladders, hatch, snow block, walk pads	SF	92,083	0.40	36,833 Evol
36	Fall protection-excluded Roof Coverings	эг	92,083	\$41.83/SF	Excl. \$3,353,409
	Roor Coverings			<i></i> 41.03/3Г	\$3,303,409
C1010	Partitions				
37	Interior partitions-metal stud, gwb ea. side	SF	112,238	13.50	1,515,213
38	Misc. blocking/bracing	SF	112,238	0.50	56,119
39	Add for wall types -stud thickness, gwb layers, insulation	SF	61,731	3.00	185,193
40	X-ray shielding wall / door / relite assemblies (sfa)	SF	5,205	55.00	286,275
	Partitions			\$25.48/SF	\$2,042,800
C1020	Interior Doors				
41	Interior doors/ frames/hardware	EA	321	2,600.00	834,600
42	Interior special doors-coiling, sliding	LS	1	35,000.00	35,000
43	Added hardware-card readers, electric, ADA	LS	1	50,000.00	50,000
44	Interior relites, sidelites, glazed walls-allow	SF	4,009	60.00	240,540
	Interior Doors			\$14.47/SF	\$1,160,140
C1020	Specialtics				
C1030 45	Specialities Specialities-signage/wayfinding ,toilet/shower accessories, marker boards	SF	80,170	4.95	396,842
	Specialties			\$4.95/SF	\$396,842
				,	<i></i>
C3010		0-	00.470	0.00	704 500
47	Wall finishes-Tile, FRL, Wood, misc. other	SF	80,170	9.00	721,530
93	Add for fireplace surround / finishes	LS	1	25,000.00	25,000
48	Interior painting / sealing	SF	80,170	3.25	260,553
51	Add surgery-solid surface wall protection	SF	3,207	80.00	256,560
52	Acoustical wall panel allowance	SF	1,500	26.00	39,000
	Wall Finishes			\$16.25/SF	\$1,302,643



Greenfield Scheme 7B Building Level 3 Detail

Descri	otion	Unit	Qty	Rate	Total Cost
C3020	Floor Finishes				
49	Flooring-mix of carpet / resilient	SF	62,786	8.00	502,288
50	Flooring-surgery, aseptic resinous epoxy	SF	2,915	20.00	58,300
53	Flooring-tile @ rr's allow	SF	3,000	22.00	66,000
54	Flooring-stone tile @ reception / lobby	SF	2,500	28.00	70,000
55	Flooring-sealed concrete	SF	8,969	0.85	7,624
56	Base allowance-mix of tile, coved, standard, wood	SF	80,170	1.05	84,178
	Floor Finishes			\$9.83/SF	\$788,390
00000					
C3030	Ceiling Finishes	<u>с</u> г	00 170	9 50	CO1 11E
57	Ceilings-mix of hard and soft, including vertical soffits/transitions	SF	80,170	8.50	681,445
58	Allowance for ceiling upgrades / acoustics	SF	80,170	2.50	200,425
	Ceiling Finishes			\$11.00/SF	\$881,870
D2090	Other Plumbing Systems				
61	Plumbing systems-see PIKA sfa estimate	LS	1	2,108,720.00	2,108,720
	Other Plumbing Systems			\$26.30/SF	\$2,108,720
D3090	Other HVAC Systems and Equipment				
69	HVAC-see PIKA sfa estimate	LS	1	5,857,000.00	5,857,000
	Other HVAC Systems and Equipment			\$73.06/SF	\$5,857,000
D4090	Other Fire Protection Systems				
65	Fire Protection-see PIKA sfa estimate	LS	1	458,730.00	458,730
00	Other Fire Protection Systems		•	\$5.72/SF	\$458,730
				<i>\$011 ± 61</i>	<i>\$ 100,100</i>
D5090	Other Electrical Services				077.407
76	Electrical building power systems-see PIKA sfa estimate	LS	1	877,427.00	877,427
77	Electrical building lighting & receptacles-see PIKA sfa estimate	LS	1	1,542,146.00	1,542,146
78	Electrical building special systems, commsee PIKA sfa estimate	LS	1	842,704.00	842,704
79	Electrical building fire alarm, security-see PIKA sfa estimate	LS	1	652,725.00	652,725
	Other Electrical Services			\$48.83/SF	\$3,915,002
E1090	Other Equipment				
88	Misc. building equipment / FOIC	SF	80,170	3.00	240,510
	Other Equipment			\$3.00/SF	\$240,510
E2010	Fixed Furnishings				
89	Casework allowance	SF	80,170	8.50	681,445
00		0	00,170	0.50	001,440



Greenfield Scheme 7B Building Level 3 Detail

Desc	ription	Unit	Qty	Rate	Total Cost
90	Manual shades / blinds @ exterior glazing	SF	9,410	11.00	103,510
91	Manual blinds @ interior glazing	SF	4,009	8.00	32,072
92	Add for electric blinds	LS	1	40,000.00	40,000
	Fixed Furnishin	gs		\$10.69/SF	\$857,027
	ESTIMATED NET CO	ST		\$416.88/SF	\$33,420,923



Greenfield Scheme 7B Site Work Level 2 Summary

Description		Cost/SF	Total Cost
G10 Site Preparations		\$6.16	\$2,003,389
G20 Site Improvements		\$3.43	\$1,116,295
G30 Site Civil/Mechanical Utilities		\$2.86	\$928,750
G40 Site Electrical Utilities		\$3.62	\$1,175,000
	ESTIMATED NET COST	\$16.07	\$5,223,434
MARGINS & ADJUSTMENTS			
Location Factor	25.0 %		\$1,305,859
General Conditions	7.5 %		\$489,697
Design Contingency-Site Work	15.0 %		\$1,052,849
Added Design / Market Contingency MEP Systems	0.0 %		
Contractors Overhead & Profit	7.5 %		\$605,388
Escalation to NTP (average 4.8%/year)	8.4 %		\$728,887
Per diem / Imported labor	2.5 %		\$235,153
	ESTIMATED TOTAL COST	\$29.67	\$9,641,267



Greenfield Scheme 7B Site Work Level 3 Detail

Descri	otion	Unit	Qty	Rate	Total Cos
G1020	Site Demolition & Relocations				
103	Site Clear & grub, misc. demo	SF	325,000	0.40	130,000
127	Demo existing hospital	SF	53,205	15.00	798,07
	Site Demolition & Relocations			\$2.86/SF	\$928,07
G1030	Site Earthwork				
104	Remove muskeg at drives, parking, loading,parking plant islands,walks	CY	19,048	18.00	342,864
105	Import fill at drives, paking, loading, parking plant islands, walks	CY	19,048	25.00	476,20
106	Misc. site grading/earthwork-allowance	LS	1	175,000.00	175,00
107	Erosion control allowance	SF	325,000	0.25	81,25
	Site Earthwork			\$3.31/SF	\$1,075,31
G2020	Parking Lots				
108	Heavy duty pavement-drives	SF	25,883	10.00	258,830
109	Normal duty pavement-parking	SF	32,263	7.00	225,84
110	Loading / ambulance area hardscape	SF	2,338	10.00	23,38
112	Signage, striping, detectable warnings	SF	60,484	0.35	21,16
113	Curbing allowance	LS	1	25,000.00	25,00
125	Wheel stops	EA	89	125.00	11,12
	Parking Lots			\$1.74/SF	\$565,34
G2030	Pedestrian Paving				
114	Pedestrian paving onsite	SF	3,500	7.00	24,500
	Pedestrian Paving			\$0.08/SF	\$24,50
G2040	Site Development				
115	Site furnishings allowance	LS	1	35,000.00	35,000
117	Misc. loading / receiving development (dock)	LS	1	75,000.00	75,000
	Site Development			\$0.34/SF	\$110,00
G2050	Landcaping				
118	Landscape allowance	LS	1	65,000.00	65,00
149	Landscape-minor development allowance extg. hospital site	SF	63,900	5.50	351,450
	Landcaping			\$1.28/SF	\$416,45
G3010	Water Supply				
119	Water system allowance-new loop 10", hydrants, dbl detector valve, fire, domestic	LS	1	485,000.00	485,000



Greenfield Scheme 7B Site Work Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cost
120	Road patch allowance for water line extension	LS	1	150,000.00	150,000
	Water Supply	,		\$1.95/SF	\$635,000
G3020	Sanitary Sewer				
121	Sanitary side sewer to Haugen Drive	LS	1	35,000.00	35,000
122	Road patch allowance for side sewer cross Haugen Drive	LS	1	15,000.00	15,000
	Sanitary Sewei			\$0.15/SF	\$50,000
G3030	Storm Sewer				
123	Storm collection, draingage, culverts	SF	325,000	0.75	243,750
	Storm Sewei			\$0.75/SF	\$243,750
G4090	Other Site Electrical Utilities				
124	Site electrical-see PIKA estimate	LS	1	1,175,000.00	1,175,000
	Other Site Electrical Utilities	;		\$3.62/SF	\$1,175,000
	ESTIMATED NET COST			\$16.07/SF	\$5,223,434



PETERSBURG MEDICAL CENTER DOWNTOWN SCHEME Concept Estimate 1/20/2020

lding Phase 1	\$ 50,657,699
work Phase 1	\$ 5,128,233
lding Phase 2	\$ 18,604,553
work Phase 2	\$ 4,537,137
ESTIMATED CONSTRUCTION COST TOTAL BUILDING & SITE ESTIMATE	\$ 78,927,622

Off Site Allowance (curb, s	sidewalk, gutter, grade, lands	cape) \$	348,300
-----------------------------	--------------------------------	----------	---------



Petersburg Medical Center Downtown Scheme

Estimate Documents: The concept estimate is based on documents, emails, and narratives provided by:

NAC Architecture

Bidding Assumptions: The project will be competively bid. With multiple subcontractors covering in all major categories. Public prevailing wage/union wage rates.

Unit pricing is based in December 2019 and costs are escalated 8.4% up to NTP.

EXCLUSIONS: STATE SALES TAX U TESTING AND INSPECTIONS C CONSTRUCTION CONTINGENCY BI ARCHITECT/ENGINEERING FEES M PERMITS L/ TOXIC SOILS/MATERIALS REMOVAL PILING, GEO PIERS EQUIPMENT & FURNISHINGS NOT LISTED; MEDICAL EQUIPMENT

UTILITY COMPANY CHARGES/ JURISDICTIONAL FEES CONSTRUCTION MANAGEMENT FEES BUILERS RISK INSURANCE MARKET CONTINGENCY LAND PURCHASE



Downtown Phase 1 Building Level 2 Summary

Desc	cription		Cost/SF	Total Cost
A10	Foundations		\$31.73	\$2,176,197
A20	Basement Construction		\$2.55	\$175,000
B10	Superstructure		\$56.60	\$3,881,417
B20	Exterior Enclosure		\$40.58	\$2,782,559
B30	Roofing		\$27.31	\$1,872,935
C10	Interior Construction		\$45.28	\$3,104,878
C20	Stairs		\$1.87	\$128,000
C30	Interior Finishes		\$38.11	\$2,613,271
D10	Conveying		\$2.26	\$155,000
D20	Plumbing		\$25.92	\$1,777,745
D30	HVAC		\$73.75	\$5,057,335
D40	Fire Protection		\$5.72	\$392,444
D50	Electrical		\$49.82	\$3,416,839
E10	Equipment		\$3.00	\$205,731
E20	Furnishings		\$10.63	\$728,826
		ESTIMATED NET COST	\$415.13	\$28,468,177
MAR	GINS & ADJUSTMENTS			
Loca	tion Factor	25.0 %		\$7,117,044
Gene	eral Conditions	7.5 %		\$2,668,892
Desi	gn Contingency-Buildings	8.0 %		\$3,060,329
Adde	ed Design / Market Contingency MEP Systems	2.7 %		\$1,097,080
Cont	ractors Overhead & Profit	7.5 %		\$3,180,864
Esca	lation to NTP (average 4.8%/year)	8.4 %		\$3,829,760
		2.5 %		\$1,235,553
	diem / Imported labor	2.0 /0		+ ,,



Downtown Phase 1 Building Level 3 Detail

Descrip	ption	Unit	Qty	Rate	Total Cos
A1010	Standard Foundations				
1	Footing drains	LF	1,358	20.00	27,16
2	Standard foundation excavation/backfill (sfa)	SF	34,588	1.75	60,529
3	Standard foundations-continuous footings, column footings (sfa)	SF	34,588	16.00	553,40
4	Add for stem wall/foundation wall-below grade	SF	15,824	45.00	712,08
5	Add for brace frame footings (sfa)	SF	34,588	1.60	55,34
6	Elevator pit	LS	1	20,000.00	20,00
7	Dampproofing / insul/ drainage-foundation	SF	17,522	8.00	140,17
	Standard Foundations			\$22.87/SF	\$1,568,69
A1020	Special Foundations				
3	Excavate-haul muskeg @ bldg footprint	CY	6,406	18.00	115,30
9	Import fill @ bldg footprint	CY	6,406	25.00	160,15
	Special Foundations			\$4.02/SF	\$275,45
A1030	Slab on Grade				
10	Slab on grade	SF	34,588	8.00	276,70
11	Gravel at slab	SF	34,588	0.85	29,40
12	Slab depressions/ blockouts/columns	SF	34,588	0.75	25,94
	Slab on Grade			\$4.84/SF	\$332,04
A2010	Basement Excavation				
13	Add for basement excavation / backfill of taller foundation walls	LS	1	175,000.00	175,00
	Basement Excavation			\$2.55/SF	\$175,00
31010	Floor Construction				
16	Floor structure-beams, columns, brace frames, decking, topping	SF	33,989	52.00	1,767,42
17	Fireproofing floor structural steel and decking	SF	33,989	5.50	186,93
	Floor Construction			\$28.50/SF	\$1,954,36
31020	Roof Construction				
20	Roof structure-beams, columns, brace frames, joists, decking	SF	44,179	28.00	1,237,01
21	Fireproofing roof structure and decking	SF	44,179	5.50	242,98
22	Allowance for canopies, drop off canopy	SF	850	125.00	106,25
95	Add for structure-beams,columns, brace frames, joists, decking Patient Courtyard	SF	5,927	52.00	308,20
96	Fireproofing Patient courtyard structure and decking	SF	5,927	5.50	32,59
	Roof Construction			\$28.10/SF	\$1,927,05



Downtown Phase 1 Building Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cos
B2010	Exterior Walls				
23	Exterior wall-framing, metal stud, insulations, wrb, sheath, furrings, gwb	SF	25,497	28.95	738,138
24	Metal wall panels-55% above grade framed exterior wall area	SF	18,698	35.00	654,43
25	Stone veneer-20% above grade framed exterior wall area	SF	6,800	52.00	353,60
26	Misc. exterior wall flash, trim, caulk (ext. gross wall area)	SF	33,996	3.50	118,98
	Exterior Walls			\$27.20/SF	\$1,865,15
B2020	Exterior Windows				
27	Windows, storefront, curtain wall-25% above grade gross ext. wall area	SF	8,499	95.00	807,40
	Exterior Windows			\$11.77/SF	\$807,40
B2030	Exterior Doors				
28	Exterior doors-allow	LS	1	110,000.00	110,00
	Exterior Doors			\$1.60/SF	\$110,00
B3010	Roof Coverings				
30	Temp roof dry in	SF	44,179	2.85	125,91
31	Standing seam metal roofing system-complete 85% roof area	SF	37,552	32.00	1,201,66
32	Membrane roofing system-complete 15% roof area	SF	6,627	24.00	159,04
33	Furring, cladding of roof overhangs	SF	6,624	20.00	132,48
34	Roofing rough carpentry	SF	44,179	0.65	28,71
35	Roofing accessories, ladders, hatch, snow block, walk pads	SF	44,179	0.40	17,67
36	Fall protection-excluded	SF	44,179		Exc
126	Patient courtyard deck coating/pavers / development	SF	5,927	35.00	207,44
	Roof Coverings			\$27.31/SF	\$1,872,93
C1010	Partitions				
37	Interior partitions-metal stud, gwb ea. side	SF	96,008	13.50	1,296,10
38	Misc. blocking/bracing	SF	96,008	0.50	48,00
39	Add for wall types -stud thickness, gwb layers, insulation	SF	52,805	3.00	158,41
40	X-ray shielding wall / door / relite assemblies (sfa)	SF	5,221	55.00	287,15
	Partitions			\$26.10/SF	\$1,789,68
C1020	Interior Doors				
41	Interior doors/ frames/hardware	EA	275	2,600.00	715,00
42	Interior special doors-coiling, sliding	LS	1	35,000.00	35,00



Downtown Phase 1 Building Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cos
99	Added hardware - card readers, electric, ADA	LS	1	20,000.00	20,00
	Interior Doors			\$14.23/SF	\$975,74
C1030	Specialties				
45	Specialities-signage/wayfinding ,toilet/shower accessories,	SF	68,577	4.95	339,45
	marker boards	01	00,017		000,10
	Specialties			\$4.95/SF	\$339,45
C2010	Stair Construction				
46	Stairs/rails-per floor	EA	4	32,000.00	128,00
	Stair Construction			\$1.87/SF	\$128,00
C3010	Wall Finishes				
47	Wall finishes-Tile, FRL, Wood, misc. other	SF	68,577	9.00	617,19
93	Add for fireplace surround / finishes	LS	1	25,000.00	25,00
48	Interior painting / sealing	SF	68,577	3.25	222,87
51	Add surgery-solid surface wall protection	SF	3,194	80.00	255,52
52	Acoustical wall panel allowance	SF	1,000	26.00	26,00
	Wall Finishes			\$16.72/SF	\$1,146,58
C3020	Floor Finishes				
49	Flooring-mix of carpet / resilient	SF	56,297	8.00	450,37
50	Flooring-surgery, aseptic resinous epoxy	SF	2,903	20.00	58,06
53	Flooring-tile @ rr's allow	SF	2,650	22.00	58,30
54	Flooring-stone tile @ reception / lobby	SF	2,500	28.00	70,00
55	Flooring-sealed concrete	SF	4,227	0.85	3,59
56	Base allowance-mix of tile, coved, standard, wood	SF	68,577	1.05	72,00
	Floor Finishes			\$10.39/SF	\$712,33
C3030	Ceiling Finishes				
57	Ceilings-mix of hard and soft, including vertical soffits/transitions	SF	68,577	8.50	582,90
58	Allowance for ceiling upgrades / acoustics	SF	68,577	2.50	171,44
	Ceiling Finishes			\$11.00/SF	\$754,34
D1010	Elevators and Lifts				
59	3 stop MRL 350 fpm, 3500 lb elevator	LS	1	155,000.00	155,00
	Elevators and Lifts			\$2.26/SF	\$155,00



Downtown Phase 1 Building Level 3 Detail

	Other Plumbing Systems Plumbing systems-see PIKA sfa estimate				
Dagas		LS	1	1,777,745.00	1,777,745
Dagas	Other Plumbing Systems			\$25.92/SF	\$1,777,745
D3090	Other HVAC Systems and Equipment				
70	HVAC-see PIKA sfa estimate	LS	1	5,057,335.00	5,057,335
	Other HVAC Systems and Equipment			\$73.75/SF	\$5,057,335
D4090	Other Fire Protection Systems				
66	Fire Protection-see PIKA sfa estimate	LS	1	392,444.00	392,444
	Other Fire Protection Systems			\$5.72/SF	\$392,444
D5090	Other Electrical Services				
80	Electrical building power systems-see PIKA sfa estimate	LS	1	781,797.00	781,797
81	Electrical building lighting & receptacles-see PIKA sfa estimate	LS	1	1,322,752.00	1,322,752
	Electrical building special systems, commsee PIKA sfa estimate	LS	1	745,365.00	745,365
83	Electrical building fire alarm, security-see PIKA sfa estimate	LS	1	566,925.00	566,925
	Other Electrical Services			\$49.82/SF	\$3,416,83
E1090	Other Equipment				
88	Misc. building equipment / FOIC	SF	68,577	3.00	205,73 ²
	Other Equipment			\$3.00/SF	\$205,731
E2010	Fixed Furnishings				
89	Casework allowance	SF	68,577	8.50	582,905
90	Manual shades / blinds @ exterior glazing	SF	8,499	11.00	93,489
91	Manual blinds @ interior glazing	SF	3,429	8.00	27,432
102	Add for electric blinds	LS	1	25,000.00	25,000
	Fixed Furnishings			\$10.63/SF	\$728,826
	ESTIMATED NET COST			\$415.13/SF	\$28,468,177



Downtown Phase 1 Site Work Level 2 Summary

Description		%	Cost/SF	Total Cost
G10 Site Preparations		20.7 %	\$13.62	\$1,063,538
G20 Site Improvements		1.6 %	\$1.04	\$81,330
G30 Site Civil/Mechanical Utilities		11.4 %	\$7.47	\$583,500
G40 Site Electrical Utilities		20.5 %	\$13.44	\$1,050,000
	ESTIMATED NET COST	54.2 %	\$35.57	\$2,778,368
MARGINS & ADJUSTMENTS				
Location Factor		25.0 %		\$694,592
General Conditions		7.5 %		\$260,472
Design Contingency-Site Work		15.0 %		\$560,015
Added Design / Market Contingency MEP Systems		0.0 %		
Contractors Overhead & Profit		7.5 %		\$322,009
Escalation to NTP (average 4.8%/year)		8.4 %		\$387,698
Per diem / Imported labor		2.5 %		\$125,079
	ESTIMATED TOTAL COST		\$65.66	\$5,128,233



Downtown Phase 1 Sitework Level 3 Detail

Descrij	otion	Unit	Qty	Rate	Total Cost
G1020	Site Demolition & Relocations				
103	Site Clear & grub, misc. demo	SF	78,100	0.40	31,240
128	Demo existing structures, site features	SF	78,100	4.25	331,925
139	Demo abandandon / cap utilites	LS	1	10,000.00	10,000
	Site Demolition & Relocations			\$4.78/SF	\$373,165
G1030	Site Earthwork				
104	Remove muskeg at drives, parking, loading,parking plant islands,walks	CY	278	18.00	5,004
105	Import fill at drives, paking, loading, parking plant islands,walks	CY	278	25.00	6,950
107	Erosion control allowance	SF	78,100	0.25	19,525
129	Remove muskeg at balance of site area (not bldg foot print)	CY	8,058	18.00	145,044
130	Import fill at balance of site area (not bldg foot print)	CY	8,058	25.00	201,450
132	Misc. site grading/earthwork-allowance	SF	78,100	4.00	312,400
	Site Earthwork			\$8.84/SF	\$690,373
G2020	Parking Lots				
108	Heavy duty pavement-drives	SF	1,083	10.00	10,830
	Parking Lots			\$0.14/SF	\$10,830
G2030	Pedestrian Paving				
114	Pedestrian paving onsite	SF	1,500	7.00	10,500
	Pedestrian Paving			\$0.13/SF	\$10,500
G2040	Site Development				
136	Site furishings allowance	LS	1	20,000.00	20,000
	Site Development			\$0.26/SF	\$20,000
G2050	Landcaping				
138	Landscape allowance	LS	1	40,000.00	40,000
	Landcaping			\$0.51/SF	\$40,000
G3010	Water Supply				
140	New water main on 3rd to replace abandoned , with road patch	LF	300	350.00	105,000
142	Replacement water main along Fram, with road patch	LF	505	385.00	194,425
143	Misc. water system-vaults, meters, backflow preventers, valves, connections	LS	1	75,000.00	75,000
	Water Supply			\$4.79/SF	\$374,425
G3020	Sanitary Sewer				
144	Side sewer allowance	LS	1	35,000.00	35,000



Gross Floor Area: 78,100 SF Downtown Phase 1 Sitework Level 3 Detail Rates Current At December 2019 Description Unit Qty Rate **Total Cost** LF 145 Replace sewer line abandoned, with road patch 300 385.00 115,500 Sanitary Sewer \$1.93/SF \$150,500 Storm Sewer G3030 146 Storm collection, drainage allowance SF 78,100 0.75 58,575 Storm Sewer \$58,575 \$0.75/SF G4090 **Other Site Electrical Utilities** 1,050,000.00 147 LS Site electrical-see PIKA estimate 1,050,000 1 Other Site Electrical Utilities \$13.44/SF \$1,050,000 ESTIMATED NET COST \$2,778,368 \$35.57/SF



Downtown Phase 2 Building Level 2 Summary

Desc	ription		Cost/SF	Total Cost
A10	Foundations		\$46.57	\$1,249,678
A20	Basement Construction		\$2.98	\$80,000
B10	Superstructure		\$47.21	\$1,266,886
B20	Exterior Enclosure		\$42.85	\$1,150,026
B30	Roofing		\$28.56	\$766,465
C10	Interior Construction		\$51.68	\$1,386,946
C20	Stairs		\$2.38	\$64,000
C30	Interior Finishes		\$27.63	\$741,514
D20	Plumbing		\$22.08	\$592,665
D30	HVAC		\$59.43	\$1,594,975
D40	Fire Protection		\$5.35	\$143,685
D50	Electrical		\$38.67	\$1,037,780
E10	Equipment		\$3.00	\$80,511
E20	Furnishings		\$12.74	\$341,889
		ESTIMATED NET COST	\$391.14	\$10,497,020
MAR	GINS & ADJUSTMENTS			
Locat	ion Factor	25.0 %		\$2,624,255
	ral Conditions	7.5 %		\$984,096
Desig	n Contingency-Buildings	8.0 %		\$1,128,430
	d Design / Market Contingency MEP Systems	2.2 %		\$342,259
	actors Overhead & Profit	7.5 %		\$1,168,205
Esca	ation to NTP (average 4.8%/year)	8.4 %		\$1,406,518
	iem / Imported labor	2.5 %		\$453,770
		ESTIMATED TOTAL COST	\$693.24	\$18,604,553
				, ,



Downtown Phase 2 Building Level 3 Detail

Descrij	otion	Unit	Qty	Rate	Total Cost
A1010	Standard Foundations				
1	Footing drains	LF	687	20.00	13,740
2	Standard foundation excavation/backfill (sfa)	SF	16,704	1.75	29,232
3	Standard foundations-continuous footings, column footings (sfa)	SF	16,704	16.00	267,264
4	Add for stem wall/foundation wall-below grade	SF	6,828	45.00	307,260
5	Add for brace frame footings (sfa)	SF	16,704	1.60	26,726
7	Dampproofing / insul/ drainage-foundation	SF	7,687	8.00	61,496
	Standard Foundations			\$26.30/SF	\$705,718
A1020	Special Foundations				
8	Excavate-haul muskeg @ bldg footprint	CY	3,094	18.00	55,692
9	Import fill @ bldg footprint	CY	3,094	25.00	77,350
94	Demo /cut down piling-portion under new bldg footprint	SF	16,704	15.00	250,560
	Special Foundations			\$14.29/SF	\$383,602
A1030	Slab on Grade				
10	Slab on grade	SF	16,704	8.00	133,63
11	Gravel at slab	SF	16,704	0.85	14,19
12	Slab depressions/ blockouts/columns	SF	16,704	0.75	12,528
	Slab on Grade			\$5.98/SF	\$160,358
A2010	Basement Excavation				
14	Add for basement excavation / backfill of taller foundation walls	LS	1	80,000.00	80,000
	Basement Excavation			\$2.98/SF	\$80,000
B1010	Floor Construction				
16	Floor structure-beams, columns, brace frames, decking, topping	SF	10,133	52.00	526,916
17	Fireproofing floor structural steel and decking	SF	10,133	5.50	55,732
	Floor Construction			\$21.71/SF	\$582,648
B1020	Roof Construction				
20	Roof structure-beams, columns, brace frames, joists, decking	SF	20,425	28.00	571,900
21	Fireproofing roof structure and decking	SF	20,425	5.50	112,338
	Roof Construction			\$25.50/SF	\$684,23
B2010	Exterior Walls				
23	Exterior wall-framing, metal stud, insulations, wrb, sheath, furrings, gwb	SF	10,542	28.95	305,191
24	Metal wall panels-55% above grade framed exterior wall area	SF	7,731	35.00	270,58
25	Stone veneer-20% above grade framed exterior wall area	SF	2,812	52.00	146,224



Downtown Phase 2 Building Level 3 Detail

Descri	ption	Unit	Qty	Rate	Total Cos
26	Misc. exterior wall flash, trim, caulk (ext. gross wall area)	SF	14,056	3.50	49,196
	Exterior Walls			\$28.74/SF	\$771,19
B2020	Exterior Windows				
27	Windows, storefront, curtain wall-25% above grade gross ext. wall area	SF	3,514	95.00	333,83
	Exterior Windows			\$12.44/SF	\$333,83
32030	Exterior Doors				
97	Exterior doors - allow	LS	1	45,000.00	45,00
	Exterior Doors			\$1.68/SF	\$45,00
B3010	Roof Coverings				
30	Temp roof dry in	SF	20,425	2.85	58,21
31	Standing seam metal roofing system-complete 85% roof area	SF	17,361	32.00	555,55
32	Membrane roofing system-complete 15% roof area	SF	3,064	24.00	73,53
33	Furring, cladding of roof overhangs	SF	2,886	20.00	57,72
34	Roofing rough carpentry	SF	20,425	0.65	13,27
35	Roofing accessories, ladders, hatch, snow block, walk pads	SF	20,425	0.40	8,17
36	Fall protection-excluded	SF	20,425		Exc
	Roof Coverings			\$28.56/SF	\$766,46
C1010	Partitions				
37	Interior partitions-metal stud, gwb ea. side	SF	37,572	13.50	507,22
38	Misc. blocking/bracing	SF	37,572	0.50	18,78
39	Add for wall types -stud thickness, gwb layers, insulation	SF	20,665	3.00	61,99
	Partitions			\$21.91/SF	\$588,00
C1020	Interior Doors				
41	Interior doors/ frames/hardware	EA	77	2,600.00	200,20
44	Interior relites, sidelites, glazed walls-allow	SF	7,515	60.00	450,90
98	Added hardware - card readers, electric, ADA	LS	1	15,000.00	15,00
	Interior Doors			\$24.82/SF	\$666,10
C1030	Specialties				
45	Specialities-signage/wayfinding ,toilet/shower accessories, marker boards	SF	26,837	4.95	132,84
	Specialties			\$4.95/SF	\$132,84



Downtown Phase 2 Building Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cos
C2010	Stair Construction				
46	Stairs/rails-per floor	EA	2	32,000.00	64,000
	Stair Construction			\$2.38/SF	\$64,000
C3010	Wall Finishes				
100	Wall finishes-Tile, FRL, Wood, misc. other	SF	26,837	6.50	174,44
48	Interior painting / sealing	SF	26,837	3.25	87,220
52	Acoustical wall panel allowance	SF	500	26.00	13,000
	Wall Finishes			\$10.23/SF	\$274,66
C3020	Floor Finishes				
49	Flooring-mix of carpet / resilient	SF	13,621	8.00	108,968
53	Flooring-tile @ rr's allow	SF	1,100	22.00	24,200
55	Flooring-sealed concrete	SF	12,116	0.85	10,298
56	Base allowance-mix of tile, coved, standard, wood	SF	26,837	1.05	28,179
	Floor Finishes			\$6.40/SF	\$171,64
C3030	Ceiling Finishes				
57	Ceilings-mix of hard and soft, including vertical soffits/transitions	SF	26,837	8.50	228,11
58	Allowance for ceiling upgrades / acoustics	SF	26,837	2.50	67,09
	Ceiling Finishes			\$11.00/SF	\$295,20
D2090	Other Plumbing Systems				
63	Plumbing systems-see PIKA sfa estimate	LS	1	592,665.00	592,66
	Other Plumbing Systems			\$22.08/SF	\$592,66
D3090	Other HVAC Systems and Equipment				
71	HVAC-see PIKA sfa estimate	LS	1	1,594,975.00	1,594,97
	Other HVAC Systems and Equipment			\$59.43/SF	\$1,594,97
D4090	Other Fire Protection Systems				
67	Fire Protection-see PIKA sfa estimate	LS	1	143,685.00	143,68
	Other Fire Protection Systems			\$5.35/SF	\$143,68
D5090	Other Electrical Services				
84	Electrical building power systems-see PIKA sfa estimate	LS	1	212,080.00	212,08
85	Electrical building lighting & receptacles-see PIKA sfa estimate	LS	1	453,180.00	453,180
86	Electrical building special systems, commsee PIKA sfa estimate	LS	1	213,933.00	213,93



Gross Floor Area: 26,837 SF

Petersburg Medical Pre Design Concept

Downtown Phase 2 Building Level 3 Detail Rates Current At December 2019 Description Unit Qty Rate **Total Cost** 87 Electrical building fire alarm, security-see PIKA sfa estimate LS 1 158,587.00 158,587 **Other Electrical Services** \$38.67/SF \$1,037,780 E1090 **Other Equipment** 88 Misc. building equipment / FOIC SF 26,837 3.00 80,511 Other Equipment \$3.00/SF \$80,511 E2010 **Fixed Furnishings** 89 SF 26,837 8.50 228,115 Casework allowance Manual shades / blinds @ exterior glazing SF 90 3.514 11.00 38,654 91 7,515 60,120 Manual blinds @ interior glazing SF 8.00 101 Add for electric blinds LS 1 15,000.00 15,000 Fixed Furnishings \$12.74/SF \$341,889 **ESTIMATED NET COST** \$10,497,020 \$391.14/SF



Downtown Phase 2 Sitework Level 2 Summary

Description		Cost/SF	Total Cost
G10 Site Preparations		\$28.27	\$1,806,737
G20 Site Improvements		\$4.75	\$303,463
G30 Site Civil/Mechanical Utilities		\$2.47	\$157,925
G40 Site Electrical Utilities		\$2.97	\$190,000
	ESTIMATED NET COST	\$38.47	\$2,458,125
MARGINS & ADJUSTMENTS			
Location Factor	25.0 %		\$614,531
General Conditions	7.5 %		\$230,449
Design Contingency-Site Work	15.0 %		\$495,466
Added Design / Market Contingency MEP Systems	0.0 %		
Contractors Overhead & Profit	7.5 %		\$284,893
Escalation to NTP (average 4.8%/year)	8.4 %		\$343,011
Per diem / Imported labor	2.5 %		\$110,662
	ESTIMATED TOTAL COST	\$71.00	\$4,537,137



Downtown Phase 2 Site Work Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cos
G1020	Site Demolition & Relocations				
103	Site Clear & grub, misc. demo	SF	63,900	0.40	25,56
127	Demo existing hospital	SF	53,205	15.00	798,07
	Site Demolition & Relocations		,	\$12.89/SF	\$823,63
G1030	Site Earthwork				
104	Remove muskeg at drives, parking, loading,parking plant islands,walks		4,144	18.00	74,592
105	Import fill at drives, paking, loading, parking plant islands,walks	CY	4,144	25.00	103,60
107	Erosion control allowance	SF	63,900	0.25	15,97
129	Remove muskeg at balance of site area (not bldg foot print)	CY	8,740	18.00	157,320
130	Import fill at balance of site area (not bldg foot print)	CY	8,740	25.00	218,50
131	Demo /cut down piling-allow at balance extg. hospital footprint	SF	10,501	15.00	157,51
132	Misc. site grading/earthwork-allowance	SF	63,900	4.00	255,60
	Site Earthwork			\$15.39/SF	\$983,10
G2020	Parking Lots				
133	Curbing allowance	LS	1	15,000.00	15,00
109	Normal duty pavement-parking	SF	15,878	7.00	111,14
110	Loading / ambulance area hardscape	SF	3,914	10.00	39,14
112	Signage, striping, detectable warnings	SF	19,792	0.35	6,92
134	Wheel stops	EA	46	125.00	5,75
	Parking Lots			\$2.79/SF	\$177,96
G2030	Pedestrian Paving				
114	Pedestrian paving onsite	SF	1,500	7.00	10,500
	Pedestrian Paving			\$0.16/SF	\$10,50
G2040	Site Development				
117	Misc. loading / receiving development (dock)	LS	1	75,000.00	75,00
135	Site furnishings allowance	LS	1	15,000.00	15,000
	Site Development			\$1.41/SF	\$90,00
G2050	Landcaping				
137	Landscape allowance	LS	1	25,000.00	25,00
	Landcaping			\$0.39/SF	\$25,00



Downtown Phase 2 Site Work Level 3 Detail

Descrip	otion	Unit	Qty	Rate	Total Cost
G3010	Water Supply				
143	Misc. water system-vaults, meters, backflow preventers, valves, connections	LS	1	75,000.00	75,000
	Water Supp	ly		\$1.17/SF	\$75,00
G3020	Sanitary Sewer				
144	Side sewer allowance	LS	1	35,000.00	35,000
	Sanitary Sew	er		\$0.55/SF	\$35,000
G3030	Storm Sewer				
146	Storm collection, drainage allowance	SF	63,900	0.75	47,925
	Storm Sew	er		\$0.75/SF	\$47,92
G4090	Other Site Electrical Utilities				
148	Site electrical-see PIKA estimate	LS	1	190,000.00	190,000
	Other Site Electrical Utilitie	es		\$2.97/SF	\$190,000
	ESTIMATED NET COS	6T		\$38.47/SF	\$2,458,12

Petersburg Medical Center Recognitions

Hospital Leadership Award

Each year the American Hospital Association honors a hospital leader in each state for being tireless advocates for hospitals and their patients.

In 2020 Petersburg Medical Center's Executive Director, Phil Hofstetter was named this 2020's **Grassroots Champion Award** winner for the State of Alaska.

> "(I) don't know how to respond sometimes to those awards," Hofstetter said during a KSFK radio call. "I feel like our staff is worthy of that. Anything that's a reflection of me of is a reflection of PMC staff."

Long Term Care Unit

Petersburg Medical Center's Long Term Care Unit was receive a 5 Star (out of 5) rating from the US Government's Medicare rating system. Please visit Medicare.gov to see the ratings of PMC and other long term care facilities.

The Petersburg Medical Center, **Medication Assistant Program (MAT)** was given the Golden Stethoscope award for the treatment of those with a substance or opioid use disorder.





P.O. Box 589 • 103 Fram Street • Petersburg, Alaska 99833 907.772.4291 • PMCweb@PMC-Health.org • www.pmcak.org

Petersburg Medical Center Recognitions

Hospital Leadership Award

Each year the American Hospital Association honors a hospital leader in each state for being tireless advocates for hospitals and their patients.

In 2020 Petersburg Medical Center's Executive Director, Phil Hofstetter was named this 2020's **Grassroots Champion Award** winner for the State of Alaska.

> "(I) don't know how to respond sometimes to those awards," Hofstetter said during a KSFK radio call. "I feel like our staff is worthy of that. Anything that's a reflection of me of is a reflection of PMC staff."

Long Term Care Unit

Petersburg Medical Center's Long Term Care Unit was receive a 5 Star (out of 5) rating from the US Government's Medicare rating system. Please visit Medicare.gov to see the ratings of PMC and other long term care facilities.

The Petersburg Medical Center, **Medication Assistant Program (MAT)** was given the Golden Stethoscope award for the treatment of those with a substance or opioid use disorder.





P.O. Box 589 • 103 Fram Street • Petersburg, Alaska 99833 907.772.4291 • PMCweb@PMC-Health.org • www.pmcak.org