



CITY OF BETHEL

COMMUNITY PARKS AND RECREATION COMMITTEE

MONDAY, OCTOBER 14, 2024, 6:00 PM

LOCATION: 300 CHIEF EDDIE HOFFMAN HIGHWAY, BETHEL, ALASKA

JOIN MEETING AT ZOOM.US:

[HTTPS://US06WEB.ZOOM.US/J/3350154000?PWD=HYFLQJB5BBF9IUAXHBN9SOZQAFWPLS.1&OMN=81314125060](https://us06web.zoom.us/j/3350154000?pwd=HYFLQJB5BBF9IUAXHBN9SOZQAFWPLS.1&OMN=81314125060)

MEETING ID: 335 015 4000

PASSCODE: 140569

US TOLL-FREE PHONE NUMBERS: 888 475 4499; 833 548 0276; 833 548 0282; 877 853 5257

MEMBERS

Brian Lefferts, Chair
Sophie Swope, Council Rep.
Brian Jackson
Michelle DeWitt
Alternate 2-Vacant

Beverly Hoffman, Vice-Chair
Kathy Hanson
Jessica Pew
Sean Glasheen, Alternate 1

STAFF

Ex-Officos: Jason Spann, Facility Maint. Foreman
Email: pwadmin@cityofbethel.net Phone: 907-543-3110

I. CALL TO ORDER

II. ROLL CALL

III. PEOPLE TO BE HEARD – FIVE MINUTES PER PERSON

- A. Please submit written public comments to pwadmin@cityofbethel.net by 4:00 p.m. the day of the meeting.

IV. APPROVAL OF AGENDA

V. APPROVAL OF MEETING MINUTES

- A. September 9, 2024 Meeting Minutes

VI. UNFINISHED BUSINESS

- A. Community Center Construction Project *Updates!*
B. Budget Purchase Request Shredder for Cut Willows and Trail Cover (Lefferts)
C. Cordova Pool energy Audit Report

VII. NEW BUSINESS

- A. Review of 2045 Comprehensive Plan/Identify Community Outreach Opportunities And Committee Goals (Pew/Lefferts)

VIII. EX OFFICIO REPORT

- A. Monthly Reports

IX. MEMBER COMMENTS

X. ADJOURNMENT

Posted <<DATE>> at City Hall, AC Co., Swanson's, and the Post Office.

Ex-Officio Staff

City of Bethel, Alaska

Community Parks and Recreation Committee Minutes

September 9, 2024

Regular Meeting

Bethel, Alaska

I. CALL TO ORDER:

A regular Community Parks and Recreation Committee Meeting was held on September 9, 2024, via Zoom. called the meeting to order at 6:01 pm.

II. ROLL CALL:

Comprising a quorum of the committee, the following were present for Roll Call: Jessica Pew, Brian Lefferts, Michelle Dewitt, Sean Glasheen

EX: Sophie Swope sick, Beverly Hoffman

III. PEOPLE TO BE HEARD:

IV. APPROVAL OF AGENDA:

Moved By:	Micelle Dewitt	Motion to approve Agenda.
SECONDED BY:	Sean Glasheen	
VOTE ON MOTION	Motion carried by unanimous vote.	

V. APPROVAL OF MINUTES:

A. 07/08/2024 Meeting minutes

Moved By:	Jessica Pew	Motion to approve Meeting Minutes.
SECONDED BY:	Michelle Dewitt	
VOTE ON MOTION	Motion carried by unanimous vote.	

B. 08/12/24 Meeting minutes

Moved By:	Jessica Pew	Motion to approve Meeting Minutes.
SECONDED BY:	Michelle Dewitt	
VOTE ON MOTION	Motion carried by unanimous vote.	

VI. UNFINISHED BUSINESS:

- A. Community Center Construction Project *Updates!*
- B. Cordova Pool energy Audit Report For
- C. Boardwalk Maintenance Plan (City Administration)
- D. Consideration of Draft Ordinance Modifying Membership Requirements Under Special Circumstances (City Administration)
- E. Consideration of Draft Ordinance Modifying The Monthly Meeting Requirements for Committees And Commissions (City Administration)
- F. Year to Date Actuals End of FY 24 (Lefferts)
- G. Equitable Access Program Data (Lefferts)
- H. Budget Purchase Request Shredder for Cutting Willows and Trail Cover (Lefferts)

VII. NEW BUSINESS:

- A. Acceptance of Kathy Hanson's resignation.

Moved By:	Jessica Pew	Motion to accept the resignation of Kathy Hanson and Brian Jackson.
SECONDED BY:	Sean Glasheen	
VOTE ON MOTION	Motion carried by unanimous vote.	

VIII. EX OFFICIO MEMBER REPORT:

A. July Department Head reports

IX. COMMITTEE MEMBER COMMENTS:

Brian Lefferts: No comments but appreciate everyone to show up.

Beverly Hoffman: n/a

Jessica Pew: Only that I would like to start thinking of which parks and, what we are prioritizing next year for agenda.

Michelle DeWitt: n/a

Sean Glasheen: Wondering about how many lifeguards are expected to be working there to have party's again.

X. ADJOURNMENT:

MOVED BY:	Jessica Pew	Motion to adjourn.
SECONDED BY:	Michella Dewitt	
VOTE ON MOTION	Motion carried by unanimous vote.	

With no further business, meeting adjourned at 6:34PM.

APPROVED THIS _____ DAY OF _____, 2024.

Brian Lefferts
Committee Chair

Frank Bayer
Recorder of Minutes

MOVED BY:		Motion to approve
SECONDED BY:		
VOTE ON MOTION	Motion carried by unanimous vote.	

MOVED BY:		Motion to approve
SECONDED BY:		
VOTE ON MOTION	Motion carried by unanimous vote.	

MOVED BY:		Motion to approve
SECONDED BY:		
VOTE ON MOTION	Motion carried by unanimous vote.	



MEETING NOTES

PROJECT:	Bethel YKFC Gym Expansion	DATE:	8/26/24
PROJECT NUMBER:	50270-67 (TO67)	TIME:	12:00-2pm
ORGANIZER:	Andrew Ackerman	SUBJECT:	Scoping/35% Design
LOCATION:	Bethel City Hall and Teams Mtg	CONTACT INFORMATION:	907-371-2009
ATTENDEES:		ORGANIZATION:	

Bill Arnold (BA), Lori Strickler (LS) Brian Lefferts (BL) and Shawn Glishene (SG) --COB P&R Cmte	City of Bethel
Chase Nelson (CN), Andrew Ackerman (AA; remote)	DOWL
Thomas Brown (TB), David Moore (DM; remote)	Architects Alaska

INTRODUCTIONS

The City staff, DOWL staff, and AAI staff introduced themselves.

REVIEW OF SCOPE OF WORK

CN introduced the process for project delivery.

- Contracting/Delivery Mechanism
- Project budget is ~\$10m. New Denali Comm. grant of \$500k this am. LS mentioned she also will be presented COB CC with request for addl \$2m.
- CMGC – selected due to the need to deliver quickly and ‘right size’ project at set budget amount. Solicitation is drafted now.
- 35% Design Needed for CMGC Selection and ICE Selection
- GMP at 65% with contractor on-board.

BL asked if the P&R cmte will have oppt to review 35% design and it was confirmed they would. LS explained how the initial \$500k for design/environmental would be done. 2026 is the funding expenditure deadline. There was some discussion on whether the project would be able to get done by 2026. CN provided some details on how procurement of supplies may be ordered and shipped. Thermopiles are a critical path as they need to go in when ground is frozen. Arctic Foundations is the supplier. Price goes up if air freighted. Better to ship on first barge next summer and put in in during fall 2025. Complete inside of bldg. in 2026. LS asked if thermopiles were necessary and CN confirmed they are needed.

PRIORITIZATION/REQUIREMENTS

CN went over initial schedule to 35% design

#1) Full Size Gym- **Maximize space**

Some discussion on what is reqd for the addition. DM mentioned bathrooms reqd. DM also provided details on gym sizes (“full size gym”). NCAA 94’, high school reg gym 84’. Not likely to need college/NCAA size. BL noted the gym needs to be sized for a variety of uses—indoor soccer, basketball, etc. Squeeze in 3 middle school size courts with curtains

MEETING AGENDA

between. DM stated middle school size is 50' wide—three equals 150' which is likely over the budget. May need to reprioritize. There was discussion on how to get the gym size as long as possible within budget. DM suggested regulation high school court and put extra space at end of gym so there are two 50' wide courts width wise. BL mentioned that length is key. LS mentioned ability to host events with multiple courts. Locker rooms are not needed. Some discussion of reducing space for other purposes to extent and max the court size. DM mentioned court markings. CN stated space for computer/wireless is a grant req.t. LS stated existing space may be repurposed for computer labs, etc. Explore using exist conf rm space for IT center. Hallway may be repurposed.

It was agreed the running track was not a priority and would eat into gym size. It is secondary priority. Not for running events, just walking/exercise. HVAC may go up on mezzanine. DM explained options and access to HVAC. Restrooms and storage areas can be combined with mech equipment above. DM also provided details about air circulation. BL asked about moving stairs, etc. Option D was used to scale court size. Length of court was hoped to be 135'. 94' was court size in grant appl. and add to it. Concept was proposed for 2 courts with third alt bid item. That way we can see cost est. CN clarified that unit prices will be all we will have, so no bid or approx. cost of 2 vs. 3 courts. Some more discussion of court sizes—135'x74' + bleachers is BL desire.

CN – put restrooms in atrium area? Maybe, but will not save much \$. DM returned to court size and calculated a 135'x74' (90') gym = 12,154 sf for just the gym space. He sketched up some examples on the existing concept. The orientation of the courts and ability to add on later was discussed. Storage solution (other than a room) were discussed—move this to primary priority. Some energy saving alt were discussed. DM mentioned a boiler that can go into non-vent mode at night to save energy. Bleacher not critical.

There are 2 years to come up with more dollars but first need to lock in price. DM mentioned the relative ease/difficulty of adding things—track would be very difficult. Bleachers easy. ~\$1000 per sf. is estimated cost for bldg. in Bethel. Some efficiency in larger bldg. \$800-\$1000 per sf is likely accurate for this building.

DM said within 1 week a draft sketch up of floor plan can be completed and then get it locked in so 35% design can be done.

-Other cost savings ideas – one access point, PEB, re-purpose rooms,

-Driveway will need improvements but minimize amount needed to contract work. BA agreed they can build a road, pad, or parking. Currently used just for maintenance access. CN trying to put all \$ to building and avoid civil costs. Parking is already there. Some discussion around fire lane requirements. Starlink is the likely solution for wireless with extenders. The COB likely will take on cost of the wireless/IT infrastructure and ipads.

Gym floors will be some sort rubber composite/low maintenance material.

Projector may go in the contract—not a big cost. Windows not necessary. Some hi wall windows are nice.

CN noted Oct 4 is 35% timeline but layouts in the next week or so.

AV Options in Gym- Projector that can be lowered

Re-use existing conference room

*Three middle school gyms, + a little on end for collapsible bleacher in the future
135x90*

#2) Computer Lab Space/Docking Stations/Monitors

#3) Additional Restrooms

#4) Boiler and HVAC

#5) Storage

#6) Bleachers

Need to have initial floor plan layout complete for initial review in one week.

SECONDARY PRIORITIES

#7) Track

#8) Additional Showers in Bathrooms

WAYS TO REDUCE SCOPE FROM FEASIBILITY STUDY CONCEPT

-Separate Structure with bridge and utilidors

-PEMB

-Repurposing existing spaces

-Conference Room

-Existing Exercise Room

-No additional parking or site work/City completes work

OWNER PREFERENCES

-Colors

-Logos

-High Wall Windows- Translucent panels- like pool annex

-Roof Line

-Additional Exits- alarms at door

-Security cameras at later

-No cameras included in contract

-Gym floor- rubber composite

SCHEDULE AND DESIGN TIMELINE

- BI-MONTHLY CHECK-INS
- SIX WEEK DESIGN PERIOD
- SOLICIT GMGC AND ICE
 - Mandatory pre-bid?
 - Interviews

ADDITIONAL ITEMS

REVIEW ACTION ITEMS

TASK ASSIGNMENTS:	ASSIGNED TO:	DUE BY:
♦ Provide Layouts to Lori to provide to committee	Thomas Brown	September 3, 2024
♦		
♦		
♦		

DRAWING FILE: Autodesk Docs://24048.01 Dowl Bethel YK Fitness Center Gym Expansion/YK Fitness Center Expansion
Feasibility Study.rvt

PROPOSED 13,866 SF



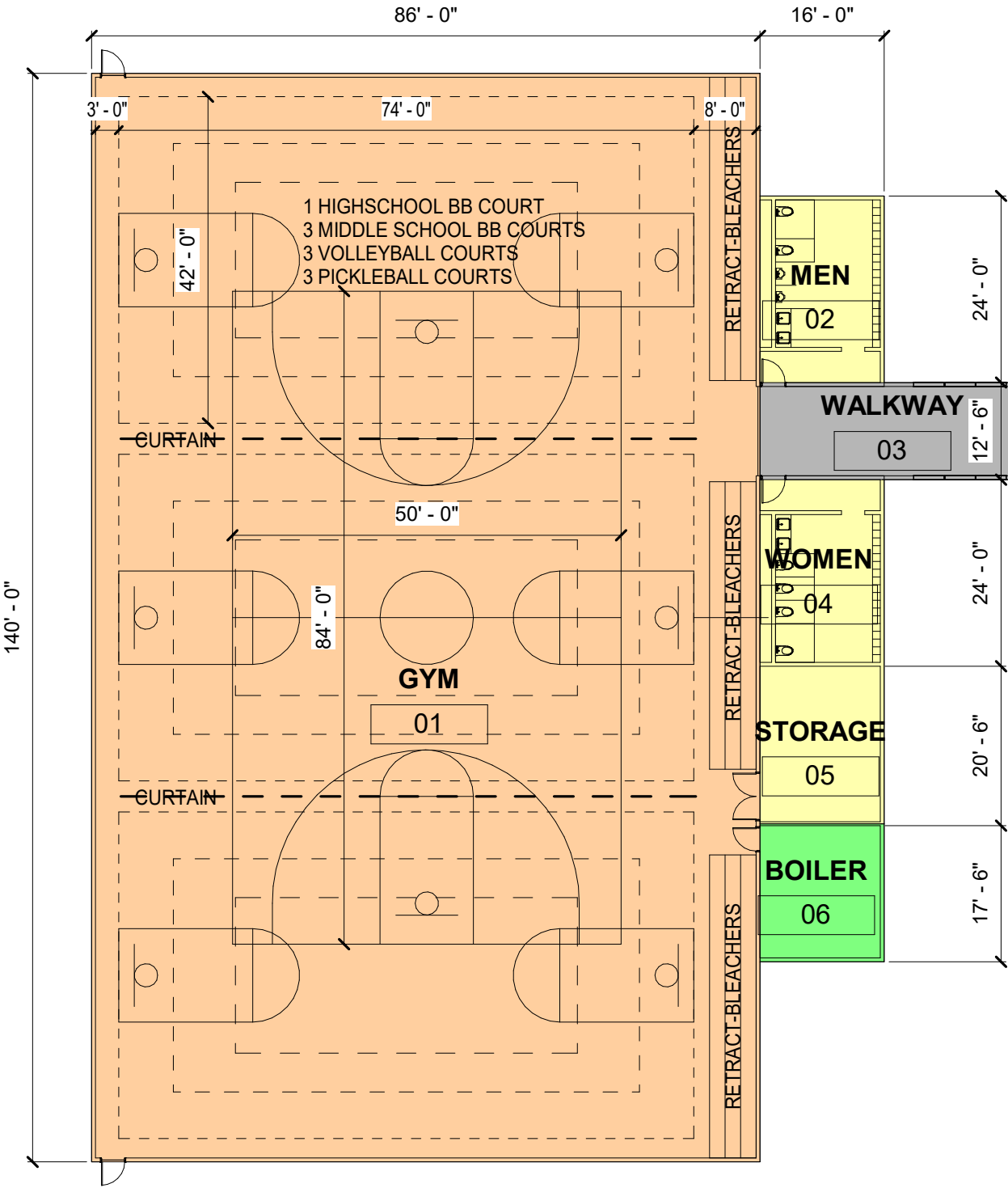
YUKON
KUSKOKWIM
REGIONAL
AQUATIC HEALTH
AND SAFETY
CENTER

DESIGN - LATEST
PLAN

08/29/24

24048.01

EXISTING



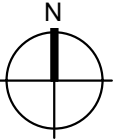
KEY	
	GYM
	UTILITY
	SUPPORT SPACE
	OFFICE
	CIRCULATION

-GYM 140x86 = 12040 square feet / 50 = 240 occupants
-Fixture count: 120 each gender.
-Per UPC (A-4): Men: 101-200, 2 wc required, 2 uninals, 1 Lav (this seems light, showing 2
Women: 101-200, 4 wc required, 2 lav
-Per table 1005.2.1, three exits required due to length of travel
-Exit width (main entrance: 240 X 0.2 = 48" total, therefore ok with single doors for secondary exits

1
A011

LEVEL 1 PLAN

1" = 20'-0"



A011



Investment Grade, Level 2 Energy Audit Bob Korn Memorial Pool

Owner and Client:
City of Cordova

Site Survey Date:
January 28 & 29, 2016

Audit performed by:
Energy Audits of Alaska
1231 W. Northern Lights Blvd, Suite 807
Anchorage, AK 99503
Contact: Jim Fowler, PE, CEM
jimf@jim-fowler.com

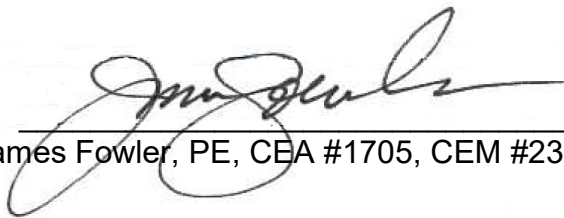
Energy Audits of Alaska 

Project #EEA-CDV-1601

Prepared for:

The City of Cordova

Audit performed by:



James Fowler, PE, CEA #1705, CEM #23110

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	7
1.1 Guidance to the Reader	7
1.2 Summary	7
1.3 Occupancy and Use	8
1.4 Overall Energy Consumption and Costs	9
1.5 Benchmark Summary & Evaluation of Consumption.....	11
1.6 Recommended Energy Efficiency Measures – EEM’s	13
1.7 Recommended Energy Conservation Measures – ECM’s	19
2. AUDIT AND ANALYSIS BACKGROUND.....	20
2.1 Program Description	20
2.2 Audit Description	20
2.3 Method of Analysis	20
2.4 Limitations of Study	23
3. BOB KORN MEMORIAL POOL	24
3.1 Building Description	24
3.2 Predicted Energy Use	27
4. ENERGY EFFICIENCY MEASURES – EEM’S	32
4.1 Summary of Results	32
4.2 Interactive Effects of Projects	35
4.3 EEM Detail with Auditors Notes (only EEM’s calculated inside AkWarm© are shown).....	36

APPENDICES

Appendix A – Major Equipment List	43
Appendix B – Benchmark Analysis	46
Appendix C – Building Schematics	52
D.1 EEM Cost Estimates.....	56
D.2 Plumbing fixtures	56
D.3 Lighting and Lighting controls	57
D.4 Additional Description of ECM’s	60
Appendix E – Project Summary	64
Appendix F – Photographs and IR Images	65
Appendix G – Data Logging Graphs	75
Appendix H – Manufacturer’s Specifications & Cut Sheets	78

Disclaimers

This energy audit is intended to identify and recommend potential areas of energy savings (EEM's), estimate the value of the savings and approximate the costs to implement the recommendations. This audit report is not a design document and no design work is included in the scope of this audit. Any modifications or changes made to a building to realize the savings must be designed and implemented by licensed, experienced professionals in their fields.

Lighting recommendations should all be first analyzed through a thorough lighting analysis to assure that the recommended lighting upgrades will comply with any State of Alaska Statutes as well as Illuminating Engineering Society (IES) recommendations.

Ventilation recommendations should be first analyzed by a qualified and licensed engineer experienced in the design and analysis of pool and natatorium HVAC systems.

Neither the auditor nor Energy Audits of Alaska bears any responsibility for work performed as a result of this report.

Payback periods may vary from those forecasted due to the uncertainty of the final installed design, configuration, equipment selected, and installation costs of recommended EEM's, or the operating schedules and maintenance provided by the owner. Furthermore, EEM's are typically interactive, so implementation of one EEM may impact the cost savings from another EEM. The auditor accepts no liability for financial loss due to EEMs that fail to meet the forecasted savings or payback periods.

This audit meets the criteria of an Investment Grade Audit per the Association of Energy Engineers definition and a Level 2 audit per the ASHRAE definition and is valid for one year. The life of an audit may be extended on a case-by-case basis.

This audit is the property of the client.

AkWarm© is a building energy modeling software developed under contract by the Alaska Housing Finance Corporation (AHFC).

Acknowledgements

A massive amount of very detailed, accurate and relevant information was provided by the Pool Operations Leader, Meghan Shinella, in a very timely manner. Information included electric and oil consumption and cost data, the Alaska Administrative Code, attendance and occupancy records, operating hours and more. Additionally, she provided details regarding the pool operations, lighting and water meter locations.

Micah Renfeldt from the City of Cordova, provided access to mechanical and fan rooms, as well as pool maintenance and operational information.

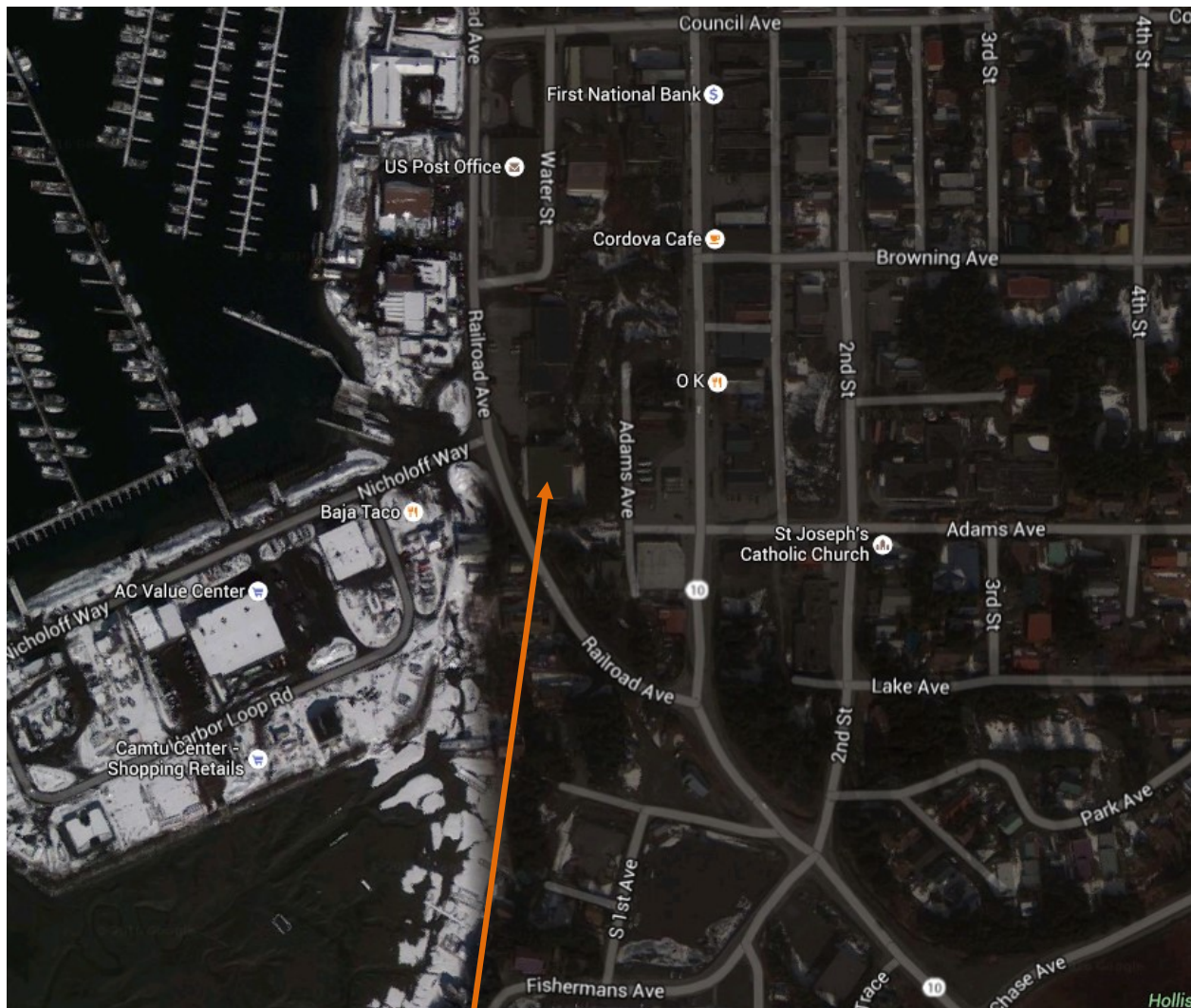
Eagle Contracting provide roof insulation cost estimates.

Aaron Donohue of TMI Aquatics provided electric and efficiency information for the pool systems.

Tim Reynolds of Wescor provided cost estimates and energy calculations for the proposed DesertAire HVAC, de-humidification and heat recovery system.

List of Abbreviations used in this document

A	Amps
AHU	Air Handling Unit
CFL	Compact florescent lamp
CFM	Cubic Feet per Minute
DHW	Domestic Hot Water
ECI	Energy Cost Index
ECM	Energy Conservation Measure (no or low cost), also called O & M recommendations
EEM	Energy Efficiency Measure
EF	Exhaust Fan
EOL	End of Life
EPA	Environmental Protection Agency
EUI	Energy utilization (or use) Index
F	degrees Fahrenheit
Gal	Gallons
gpm	Gallons per minute
HP	Horse Power
HPS	High Pressure Sodium
HID	High Intensity Discharge
HVAC	Heating Ventilation and Air Conditioning
IR	Infra-Red
K	degrees Kelvin
kBTU	1000 BTU
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light emitting diode
MBH	1,000 BTU/hour
MH	Metal Halide
MMBTU	1,000,000 BTU
NG	Natural Gas
O & M	Operations and Maintenance
oc	On Center
ORNL	Oak Ridge National Laboratory
OSA	Outside Air
PIR	Passive Infra-Red
PPM	Parts per million
RA	Return Air
REF	Return Air Fan
ROI	Return on Investment
SA	Supply air
SF	Square feet or Square foot
SIR	Savings to Investment Ratio
w	Watt
WC	Water Closet (toilet)

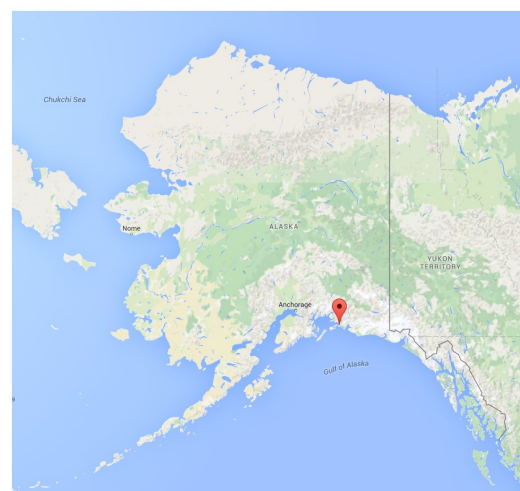


NORTH

Subject Building

The Bob Korn Memorial Pool
609 Railroad Ave
Cordova, AK 99

Building contact:
Meghan Schinella
Pool Operations Leader
907-424-7200
pool@cityofcordova.net



1. EXECUTIVE SUMMARY

This energy audit of the subject building included an analysis of its shell, interior and exterior lighting systems, HVAC systems, large motors, plug loads and pool operating system. Water consumption by plumbing fixtures was also evaluated.

This is an Investment Grade Audit, also called an IGA. An IGA is defined as a technical and economic analysis of potential energy saving projects in a facility. The analysis must provide information on current energy consuming equipment, identify technically and economically feasible EEM's for existing equipment and provide the client with sufficient information to judge the technical and economic feasibility of the recommended EEM's. The ECM's identified in this audit, although they have the potential to save significant consumption and cost, are not part of the technical and economic analysis. The "avoided costs" resulting from ECM's are calculated and shown in Section 1.7, but are not included in the cost and savings calculations in this audit.

1.1 Guidance to the Reader

The 12 page Executive Summary is designed to contain all the information the building owner/operator should need to determine which energy improvements should be implemented, approximately how much they will cost and their estimated annual savings. The Executive Summary discusses the subject building and provides a summary table with the overall savings, costs and payback for all recommended EEM's and ECM's for the facility covered in this audit.

Sections 2, 3 and 4 of this report and the Appendices, are back-up and provide much more detailed information should the owner/operator, or their staff, desire to investigate further. Appendix H contains samples of the equipment recommended in the EEM's.

Issues that the auditor feels are of particular importance to the reader are underlined and all abbreviations and acronyms used in this document are listed on Page 5.

1.2 Summary

A summary of the recommended EEM's and their associated costs and overall payback:

Total Savings	\$ 30,331
Total Costs	\$ 305,795
Payback	10.1 yrs

The fuel oil portion of these savings (\$18,755) is based on a price per gallon of \$2.99, which is very low considering the historical cost of fuel in rural Alaska, but this is the average cost paid for fuel in 2015 by the City of Cordova. At a fuel cost of \$4.00/gallon, the fuel oil portion of savings from the recommended EEM's increases to \$25,090, the total savings increases to \$35,530 and the payback is reduced from 10.4 years to 8.5 years. The electric portion of these savings is based on a PCE discounted, blended cost of \$.14/kWh.

Noteworthy points:

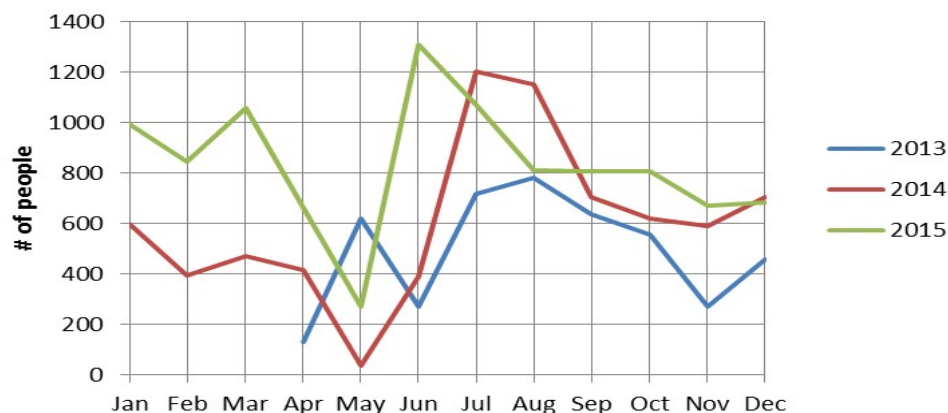
- a. The majority of energy savings in this facility will come from an upgrade to the natatorium ventilation and de-humidification system. The proposed system uses heat recovered from the de-humidification process and air exhaust streams to maintain natatorium space temperature and pool water temperature.

- b. There was a 4,692 gallon (20%) reduction in fuel oil consumption from 2013 to 2014. (which continued in 2015). This is presumed to be a result of either changing the operating conditions of the HVAC system, or a change in the equipment or system operating efficiency¹.
- c. HVAC operational deficiencies observed (more detail provided in Section 3.1):
 - i. The outside air ventilation levels in the Natatorium appear to be below code standards based on visual estimate of the percentage opening of the OSA dampers in AHU-1.
 - ii. The existing HVAC system is not controlling relative humidity (RH) in the natatorium within reasonable limits. The relative humidity (RH) in the natatorium varied from 35% to 70% (See data logging graph in Appendix G). At levels above an RH of 55%, there is danger of damaging the building envelope by allowing moisture laden air into the walls and roof. A mitigating factor in this building, is the fact that two of the three exhaust fans in the clearstory fan room appear to run continually. This fan situation, although inefficient from an energy perspective, will create a negative static pressure in the building which should prevent moisture laden air from getting inside wall and ceiling structures and causing damage. Another effect of this under-ventilation is that the savings calculated from the ventilation EEM's in Table 1.1 are approximately 50% of what they would have been if the natatorium were properly ventilated and a maximum 55% RH was allowed. In other words, half of the potential ventilation savings have already been captured, but at the risk of damaging the building envelope.
- d. Pool deck light levels were measured to be from 19 FC to 29 FC; current code standard is 50 FC.

1.3 Occupancy and Use

The following occupancies and utilizations are based on conditions observed and attendance data provided by onsite staff. Pool operating hours have varied over the last 2 years with a range of 3198 hrs/year to 3640 hrs/year and attendance varies with the time of year as well as year over year as seen in Figure 1.0.

Figure 1.0
Pool Attendance



¹ The high RH in the natatorium mentioned in "HVAC operational deficiencies observed" (Section 1.2, item c.ii) is a very likely cause of the reduction in fuel oil consumption after 2013

The pool operating schedule varies depending on the season, but in general, the pool is open 7 days per week year round. As a most recent schedule example, in February 2016, the pool's operating schedule was from 8:00am-7:15pm on Mondays and Fridays, from 8:00am-7:00pm on Tuesdays through Thursdays, from 10:00am-3:00pm on Saturdays and 11:00am-1:00pm on Sundays.

In addition to its use as a community swimming pool, the facility houses a small office, a small laundry room and locker rooms with showers.

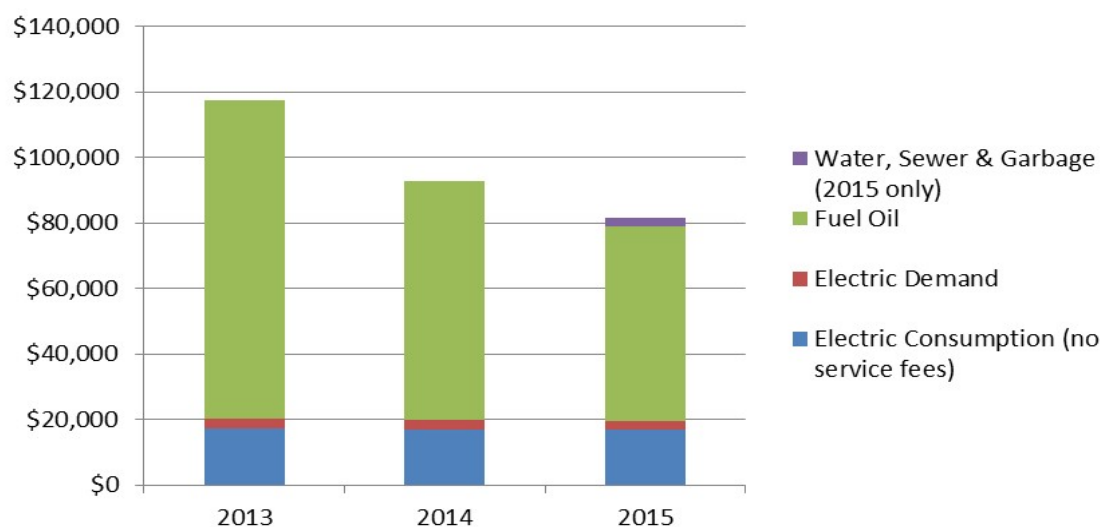
1.4 Overall Energy Consumption and Costs

There is a single electric meter and a single fuel oil tank on the premises. The oil tank is not metered. Electric consumption data from January 2013 through December 2015 was provided by Cordova Electric Cooperative, while electric cost data and fuel oil cost data were provided by the City of Cordova through Meghan Schinella.

Fuel oil costs were provided via an accounting ledger. Only 7 of the 36 months of data provided included gallons of fuel delivered, all others showed only costs. These 7 samples coupled with cost per gallon information from the annual Alaska Fuel Price Report² were used to approximate the number of gallons of oil delivered each month. Raw source data is tabulated and a benchmark analysis on the data is performed in Appendix B.

Figures 1.1, 1.2 and 1.3 summarize energy costs for this facility. Fuel oil, by far, accounts for the largest portion of energy costs. Figure 1.1 seems to indicate that the facility is running more efficiently over each of the last 3 years, as costs between 2013 and 2015 decreased by 33%. But although oil consumption did decrease between 2013 and 2014 (as previously mentioned), Figure 1.3 shows that the cost reduction between 2014 and 2015 is a result of a 16% reduction in the cost of fuel oil during this period. Additional insight is provided in the full benchmark analysis in Appendix B.

Figure 1.1 – Energy Costs
Annual Utility Costs



² Alaska Fuel Price Report: Current Community Conditions, July 2015; Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs

Figure 1.2 – distribution of Utility costs

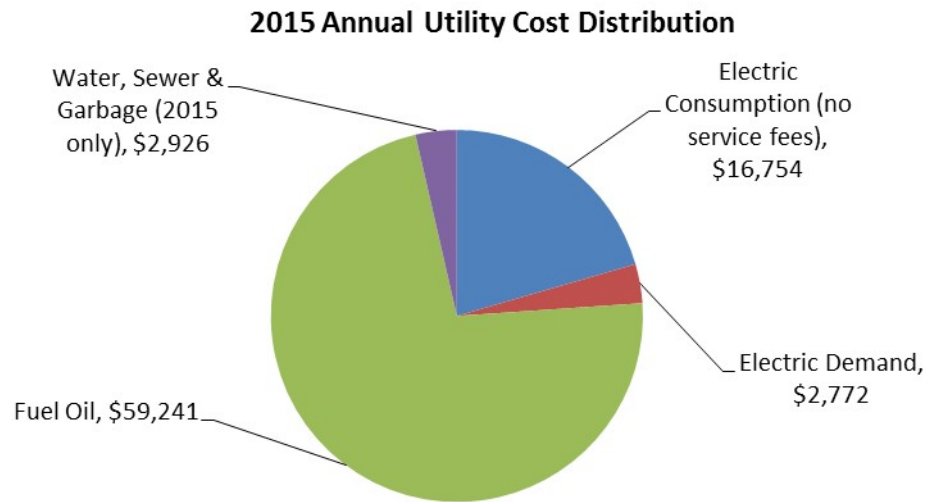
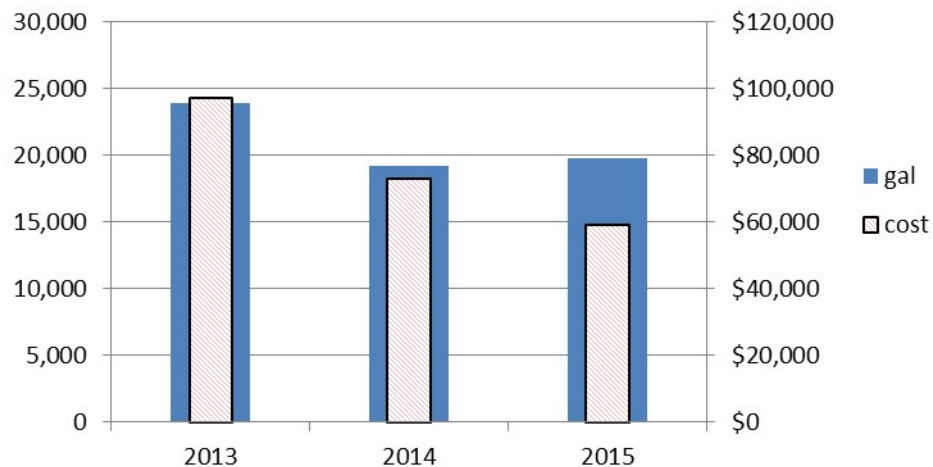


Figure 1.3

Effect of \$/gallon oil cost

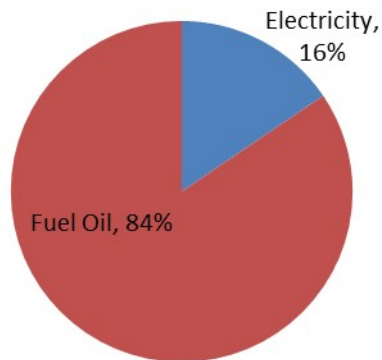
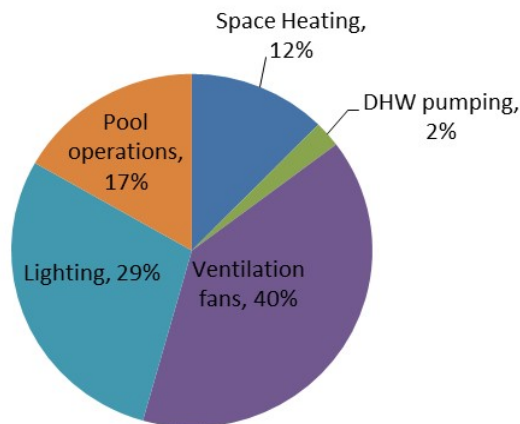


Figures 1.4 and 1.5 show the electric energy consumption and distribution of that consumption, as well as the consumption of fuel oil.

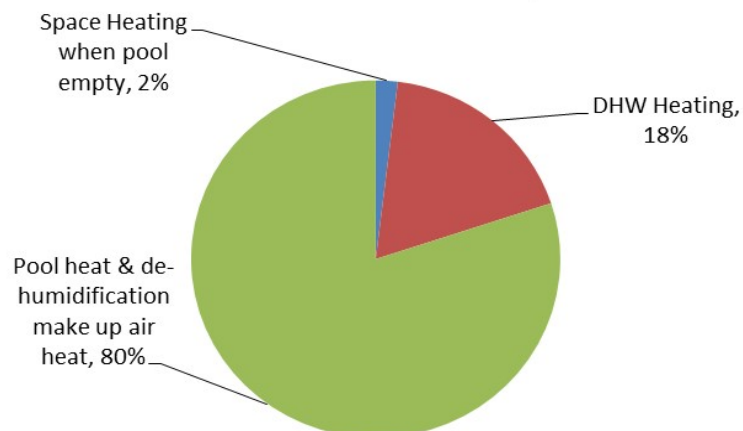
Figure 1.4 – Energy Consumption

2015 Electricity and Fuel Oil				
		Consumption	Cost	Energy (BTU)
Bob Korn Memorial Pool	Electricity (kWh)	142,796	\$20,246	487,362,748
	Fuel Oil (gallons)	19,802	\$59,241	2,653,503,230
Building Total			\$79,486	3,140,865,978

Figure 1.5 – Breakdown of Energy by Fuel and End Use

Distribution of Energy Consumed (BTU's)**Distribution of Electric Consumption**

For the most part, the pool heats this building. AkWarm© modeling limitations preclude breaking out building heat provided directly by the boiler from building heat provided by the pool, which is, of course, originally provided by the boiler.

Distribution of Fuel Oil Consumption

1.5 Benchmark Summary & Evaluation of Consumption

A benchmark measure of energy use relative to other similar-use buildings is the Energy Use Index (EUI), which takes the total annual energy used by the facility divided by the square footage area of the building, for a value expressed in terms of kBTU/SF. This number can then be compared to other buildings to see if it is average, higher or lower than similar-use buildings. Likewise, the Energy Cost Index (ECI) is the cost of all energy used by the building expressed in \$/SF of building area.

Often an average of 3 years energy consumption is used as a baseline for the benchmark analysis, but in this case there were factors which suggested that 2015 was most representative of the current building operation and would provide the most accurate analysis. These factors include:

- iii. The occupancy and operating hour of the pool peaked in 2015
- iv. Occupancy and use records are very accurate for 2015
- v. Fuel use during 2014 and 2015 is similar but 2013 is unusually high; this is believed to be indicative of a different mode of operation of the ventilation system in the building

Figures 1.6 and 1.7 show the EUI and ECI of the subject building and how it compares to other similar use buildings in the region. A complete benchmark analysis is found in Appendix B.

Figure 1.6 – EUI and ECI for the benchmark period

	EUI (kBTU/SF)	ECI (\$/SF)
Electric	62.8	\$2.61
Fuel Oil	342.2	\$7.64
Building Total	405.0	\$10.25

Comparison to similar use buildings

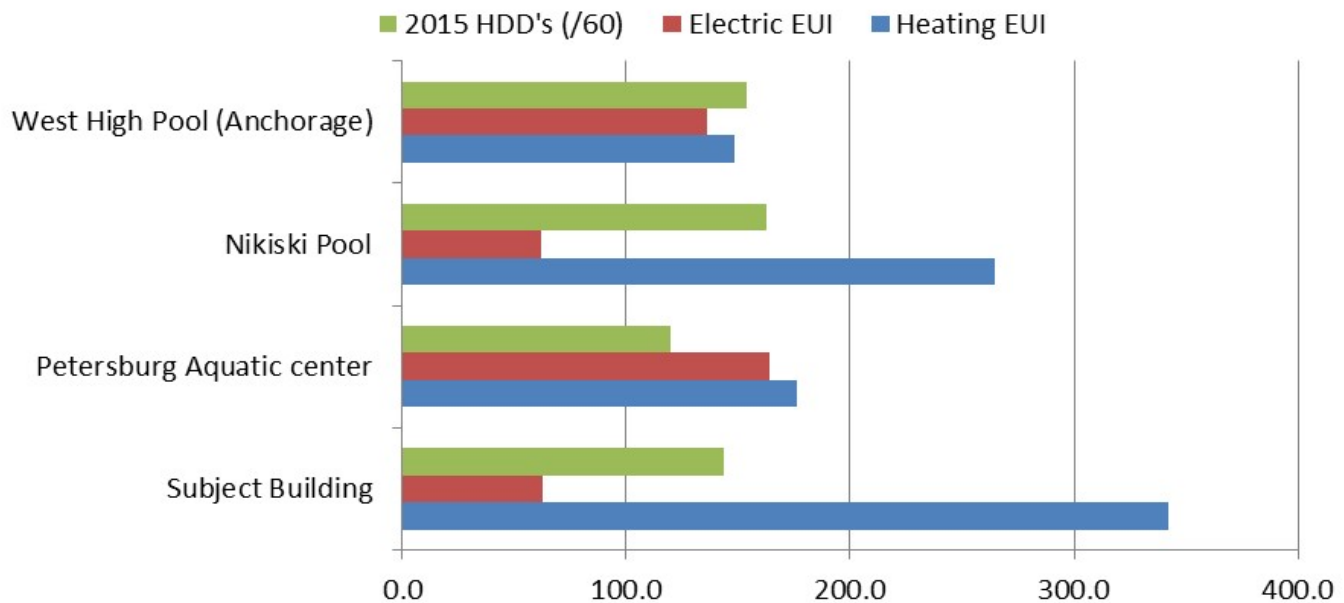
Figure 1.7 shows how the subject building compares with other buildings with pools. There are few stand-alone pools in the region, so a wider sample was obtained. The green bar represents heating degree days (HDD's) which are a measure of the severity of weather. The consumption of heating fuel should be proportionate to HDD's, which allows comparison between different climate zones such as Anchorage and Cordova.

Along with the Nikiski pool, this building's electric EUI is the lowest of all comparison buildings. The auditor performed an audit on the West High pool and observed that the light levels in that building were substantially higher than the light levels at the Cordova pool. Additionally, although the pool is of similar size, the West High Pool building is nearly three times the size (22,599 SF) of the Cordova pool and contains many more offices and plug loads than the subject building, which results in a higher EUI. The Petersburg Aquatic center is also more than twice the size (19,200 SF) of the subject building, so it is presumed it's electric consumption on a per square foot basis, is higher for the same reasons. The Nikiski pool is also housed in a very large building (35,460 SF) whose configuration is unknown so the reason for its very low electric EUI are also unknown.

The subject building's heating EUI (342.2 kBTU/SF) is nearly twice what would be expected based on the comparison buildings. This suggests that most of the savings from recommended EEM's should be from fuel oil consumption reduction, which is in line with the EEM savings results shown in Table 1.1. If all the recommended EEM's in Table 1 were implemented, the

new heating EUI would be 215 kBtu/SF, which would be below the Nikiski pool's heating EUI and slightly higher than the West High and Petersburg pools heating EUI's.

Figure 1.7 – EUI Comparison of Similar Use Buildings



1.6 Recommended Energy Efficiency Measures – EEM's

Various Energy Efficiency Measures (EEMs) have been analyzed for this building to determine if each would provide energy savings with reasonably good payback periods. EEMs can be recommended for reasons including:

- 1.) they have a reasonably good payback period
- 2.) for code or safety compliance
- 3.) end of life (EOL) equipment replacement
- 4.) strategic reasons important to the building owner/operator
- 5.) reasons pertaining to efficient building management³, facility management strategy, operations, maintenance and/or safety

Despite the fact that several lighting EEM's are not cost effective when standing alone, all of the lighting EEM's that were considered for this facility are recommended. EEM's that were considered but not recommended are detailed below. The recommended EEM's are shown in Table 1.1 below and are summarized, by type, in Figure 1.7. Section 4.3 explains each EEM in more detail and includes the auditor's notes. Maintenance savings are included with the energy savings in the summary tables and have been considered when evaluating an EEM's desirability. Appendix D includes information as to how costs were estimated.

The following lighting upgrade philosophy is recommended and is implemented through the EEM's recommended in Table 1.1: In the interest of building management efficiency, upgrade

³ See Appendix D.4.3 for additional discussion regarding Efficient Building Management

the entire facility to LED lighting. Occupancy sensors should be installed in intermittently occupied spaces including mechanical and locker rooms, the natatorium, offices, the laundry room and family bathroom.

Figure 1.7 – Summarized EEM's by Type

	Savings (including maintenance savings)	Cost	Simple Payback (yrs.)
HVAC & Pool related	\$24,412	\$280,900	11.5
Lighting	\$4,783	\$23,096	13.9
Totals	\$29,195	\$303,996	10.4

Each EEM in Table 1.1 includes estimated installation costs, estimated energy savings and a simple payback. Carbon Dioxide reduction and additional measures of financial return are provided in Table 4.1 and Section 4.3.

EEM's considered but not recommended:

Roof insulation: EEM #24 in Table 1.1 shows what additional insulation would cost and save, if the additional insulation was added during a future re-roofing project. The \$148 savings is inadequate to justify the cost.

Premium efficiency pool pump motor: A premium efficiency pool pump motor would save \$86/yr. The existing motor was replaced within the last 2 years, the savings is inadequate to justify replacement of a new pump.

Reduce DHW temperature from 138 to 115: This EEM would reduce heating costs by \$312/yr, but given the fact that the mixing valve serving the showers will have to be adjusted to increase the percentage of hot water from 77% to 93% to maintain a 107F shower temperature), the additional 132 gallons/day of hot water that would be required more than offsets the heating savings.

TABLE 1.1 RECOMMENDED EEMS

EEM No.	Category	Location	Existing Configuration	Improvement Description	Installed Cost	Annual Energy & Maint. Savings	Simple Payback	Notes
2	HVAC And DHW	Boiler room	Pumps run 24/7/365	1.) add DHW re-circulation pump timers to CP-5 & CP-7 (HWG circulation pump and DHW re-circulation pump) to reduce HWG & DHW circulation operation to only hours when pool is open.	\$1,000	\$800	1.3	Add timers to (2) circulation pumps and program to run only during occupied hours. Total installed cost estimated to be \$1,000.
3	Lighting - Power Retrofit	Lobby night light	FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with LED (4) 14W Module	\$154	\$157	1.0	Remove ballast in (1) fixture, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (4) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture
4	Lighting - Power Retrofit	Locker rooms, night lights	4 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 4 LED (21) 14W Module	\$375	\$349	1.1	Remove ballast in (4) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (8) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture
5	Lighting - Power Retrofit	Boiler room - turned on all day	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 14W Module	\$83	\$47	1.8	Replace 3 (turned on every day) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr. Add (1) ceiling mounted occupancy sensor @ \$125 parts + \$45 labor.
6	Lighting - Power Retrofit	Lobby, offices, laundry	5 FLUOR (4) T12 4' F40T12 40W Standard (2) Magnetic with Manual Switching	Replace with 5 LED (4) 14W Module (2)	\$769	\$310	2.5	Remove ballast in (5) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture
7	Lighting - Power Retrofit	Locker rooms	21 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 21 LED (21) 14W Module	\$1,968	\$626	3.1	Remove ballast in (21) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (42) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) ceiling mounted occupancy sensors in EACH locker room @ \$125 ea parts + 1 hr labor each @ \$125/hr (requires electrician). Maintenance savings \$5/fixture. Data logging showed mens locker to be unoccupied 83% when lights were on and 62% in womens locker.

TABLE 1.1 RECOMMENDED EEMS

EEM No.	Category	Location	Existing Configuration	Improvement Description	Installed Cost	Annual Energy & Maint. Savings	Simple Payback	Notes
8	Lighting - Combined Retrofit	Natatorium	18 MH 400 Watt Magnetic with Manual Switching	Replace with 18 LED 119W Module and Remove Manual Switching and Add new Occupancy Sensor	\$13,560	\$2,535	5.3	Replace (18) 400w MH fixtures with 119w LED's with integral dimming occupancy sensors @ \$450 ea parts + 2 hrs labor ea @ \$110/hr + \$1500 lift rental. Maintenance savings \$10/fixture.
9	Lighting - Power Retrofit	Offices, laundry & family bathroom	5 FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 5 LED (4) 14W Module	\$837	\$245	3.4	Remove ballast in (7) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) switch mounted occupancy sensors in family bathroom and laundry room and ceiling mounted sensors in office @ \$125 ea parts + 1 hr labor @ \$45/hr. Maintenance savings \$5/fixture
10	Lighting - Power Retrofit	Small office off lobby	FLUOR (2) CFL, A Lamp 20W with Manual Switching	Replace with LED (2) 10W Module	\$14	\$4	3.5	Replace (2) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45.
11	Lighting - Power Retrofit	AHU Fan & EF Fan rooms - Incand	3 INCAN A Lamp, Std 60W with Manual Switching	Replace with 3 LED 10W Module	\$21	\$3	7.0	Replace (3) 60w incandescent bulbs with 9.5w LED's @ \$7ea and no labor cost.
12	Lighting - Power Retrofit	Exterior	4 MH 175 Watt Magnetic with Manual Switching	Replace with 4 LED 56W Module	\$1,780	\$307	5.8	Replace (4) 175w MH fixtures with 56w LED fixtures @ \$400 ea + 1 hr labor each @ \$45/hr. \$5/fixture maintenance savings.
13	Lighting - Power Retrofit	Storage rooms	3 INCAN A Lamp, Std 60W with Manual Switching	Replace with 3 LED 10W Module	\$21	\$3	7.0	Replace (3) 60w incandescent bulbs with 9.5w LED's @ \$7ea and no labor cost.
1	Ventilation	Building-wide	Both AHU's & EF's run 24/7/365; no heat recovery	1.) Add schedule controls to AHU-2 reduce operating hours to when building is occupied. Estimated cost \$4,000 2.) replace EF's in locker rooms with humidity sensing models, reduce operation by 65%. Estimated cost \$600. 3.) De-commission and replace AHU-1, EF-1 & EF-2 with DesertAire system used to de-humidify, then heat the space, OSA and pool water with recovered	\$279,600	\$23,587	11.9	The costs and savings of these EEM's are combined since both result from an HVAC upgrade.
15	Natatorium de-humidification and pool heat	Natatorium, Pool	Swimming Pool Load					

TABLE 1.1 RECOMMENDED EEMS

EEM No.	Category	Location	Existing Configuration	Improvement Description	Installed Cost	Annual Energy & Maint. Savings	Simple Payback	Notes
				heat. Add deck level chloramine extraction system with heat recovery. Estimated costs are \$150,000 for parts, \$100,000 for mechanical, electrical & general contracting, \$25,000 for engineering.				
16	Setback Thermostat	Locker rooms	Existing Unoccupied Heating Setpoint: 70.0 deg F	Implement a Heating Temperature Unoccupied Setback to 60.0 deg F for the Locker rooms space.	\$300	\$25	12.0	Replace (2) existing manual thermostats with programmable setback models @ \$150 ea including labor
A1	Water Savings	Locker room shower heads	4.0 gpm heads	Replace with 1.5 gpm heads	\$1,800	\$1,135	1.6	Men's locker has (2) 1.5 gpm heads and (4) 4.0 gpm heads. It is assumed same configuration in women's locker room. Replace all (12) shower heads (including the 1.5 gpm heads, for ease of maintenance) with 1.5 gpm heads @ total cost of \$1,800.
TOTAL OF ALL COST EFFECTIVE EEM'S					\$302,282	\$30,133	10.3	
The following EEM's were not found to be cost effective from a financial perspective but are still recommended								
17	Lighting - Combined Retrofit	Storage area off lobby	FLUOR (2) T8 4' F32T8 32W Standard Instant with Manual Switching	Replace with LED (2) 14W Module and Remove Manual Switching and Add new Occupancy Sensor	\$264	\$26	10.2	Remove ballast in (1) fixture, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (2) 32w T8 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45. Maintenance savings \$5/fixture
18	Lighting - Controls Retrofit	Boiler room - turned on all day	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Improve Manual Switching	\$165	\$11	15.0	Replace 3 (turned on every day) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr. Add (1) ceiling mounted occupancy sensor @ \$125 parts + \$45 labor.
19	Lighting - Controls Retrofit	Offices, laundry & family bathroom	5 FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor	\$680	\$45	15.1	Remove ballast in (7) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) switch mounted occupancy sensors in family bathroom and laundry room and ceiling mounted sensors in office @ \$125 ea parts + 1 hr labor @ \$45/hr. Maintenance savings \$5/fixture

TABLE 1.1 RECOMMENDED EEMS

EEM No.	Category	Location	Existing Configuration	Improvement Description	Installed Cost	Annual Energy & Maint. Savings	Simple Payback	Notes
20	Lighting - Controls Retrofit	Locker rooms	21 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor	\$2,000	\$111	18.0	Remove ballast in (21) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (42) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) ceiling mounted occupancy sensors in EACH locker room @ \$125 ea parts + 1 hr labor each @ \$125/hr (requires electrician). Maintenance savings \$5/fixture. Data logging showed men's locker to be unoccupied 83% when lights were on and 62% in women's locker.
21	Lighting - Power Retrofit	Chemical room	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 14W Module	\$103	\$3	34.3	Replace 4 (only 3 working during survey) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr.
22	Lighting - Power Retrofit	Boiler room - other	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 4W Module	\$83	\$3	27.7	Replace 3 (only 2 working during survey) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr.
23	Lighting - Power Retrofit	AHU Fan & EF Fan rooms - CFL	6 FLUOR CFL, A Lamp 20W with Manual Switching	Replace with 6 LED 10W Module	\$42	\$1	42.0	Replace (6) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost.
23	Lighting - Controls Retrofit	Small office off lobby	FLUOR (2) CFL, A Lamp 20W with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor	\$170	\$4	42.5	Replace (2) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45.
25	Lighting - Combined Retrofit	Vestibule	FLUOR CFL, A Lamp 20W with Manual Switching	Replace with LED 10W Module and Improve Manual Switching	\$7	(\$6)	-1.2	Replace (1) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. This lamp was burned out, so there will be negative savings from this EEM.
TOTAL OF ALL RECOMMENDED EEM'S					\$305,795	\$30,331	10.1	
The following EEM's were considered but are not recommended								
24	Building Shell Ceiling Cathedral	Roof/Ceiling	Framing Type/spacing: Standard/24"; Insulated Sheathing: None; Bottom Insulation Layer: XPS (Blue/Pink Foam), 3 inches; Modeled R-Value: 17.8	Add R-19 to existing insulation.	\$39,723	\$148	268.4	This EEM adds 4" (approx. R-20) additional rigid foam during roof replacement - cost of roof replacement is not included here. Eagle Contracting (roof vendor quoted the project in 2015) estimated \$7.50/SF for additional 4" of rigid foam during replacement; structural engineering may be required for fastening system specification.

Figure 1.8 summarizes the energy consumption and costs for the existing building and for the proposed building after the recommended EEM's are implemented.

Figure 1.8 – Summary with all EEM's incorporated
(Electric and Fuel oil only, does not included water/sewer costs)

	Existing conditions		Proposed Conditions		Effective reduction in building energy consumption and costs
		kBTU of consumption		kBTU of consumption	
kWh Electric	142,796	487,363	101,216	345,450	29.12%
Gallons Oil	19,802	2,653,503	12,449	1,668,166	37.13%
Building Energy Cost	\$79,486		\$51,771		34.87%

1.7 Recommended Energy Conservation Measures – ECM's

No and low-cost EEM's are called ECM's and are usually implemented by the existing operations and maintenance staff (they are also called O & M recommendations). ECM's can result in cost and consumption savings, but they also prevent consumption and cost increases, which are more accurately called "avoided costs" rather than cost savings. The following ECM's are recommended for this facility. Additional detail and explanation for each ECM is provided in Appendix D. The avoided annual energy cost calculations below are based on the proposed building with all recommended EEM's in Table 1.1 implemented.

- a) Implement Building Monitoring and install cumulative fuel oil flow meter (See Appendix H). Create an Energy Champion and perform monthly walk through using an Energy Checklist.

Estimated cost for flow meter:	\$1,500
Estimated cost for Energy Champion Training	\$2,000

The avoided costs range from 5% to 15% of the overall building energy cost, 10% is used here:

Avoided cost:	\$5,177
---------------	---------

- b) Maintain HVAC systems.

Estimated cost	\$ 500
Avoided cost if 3% efficiency reduction is prevented:	\$ 212

- c) Boiler temperature reset – based on outdoor temperature, the boiler water temperature should be reset from 180F to 155F during the summer months

2. AUDIT AND ANALYSIS BACKGROUND

2.1 *Program Description*

This audit included the identification, development, and evaluation of EEM's for the Cordova City Pool. The scope of this project included evaluating building shell, lighting and other electrical systems and equipment, HVAC equipment, hot water heating equipment, shower heads and motors and pumps. Measures were analyzed based on life-cycle-cost techniques (using SIR), which include the initial cost (also called "first cost") of the equipment, life of the equipment, annual energy cost, annual maintenance cost, and a discount rate of 3.0% per year in excess of general inflation.

2.2 *Audit Description*

Preliminary audit information including building plans and utility consumption data (if available) was gathered in preparation for the site survey. An interview was conducted with the building owner or manager to understand their objectives, ownership strategy and other information the auditor could use to make the audit most useful to the client. The site survey provides critical information in deciphering where energy is used and what savings opportunities exist within a building. The entire site was surveyed, including every accessible room, and the areas listed below were evaluated to gain an understanding of how the building operates:

- Building envelope (roof, windows, etc.)
- Heating, ventilation, and air conditioning equipment (HVAC)
- Lighting systems and controls
- Building-specific equipment (process equipment)
- Plug loads
- Water consumption by shower heads

The building site visit was performed to survey all major building components, systems and equipment and included detailed inspection of all energy consuming components. Summaries of building occupancy schedules, operating and maintenance practices, and energy management programs provided by the building manager/owner were collected along with as much system and component nameplate information as was available.

2.3 *Method of Analysis*

The details collected by the auditor enabled a simulation model of the building's overall energy usage to be developed – this is referred to as "existing conditions" or the "existing building". The analysis involves distinguishing the different fuels used on site, and analyzing their consumption in different activity areas of the existing building.

Building Simulation Model

An accurate model of the building performance can be created by simulating the thermal performance of the walls, roof, windows and floors of the building, adding any HVAC systems, ventilation and heat recovery, adding major equipment, plug loads, any heating or cooling process loads, the number of occupants (each human body generates approximately 450 BTU/hr. of heat) and the hours of operation of the building.

For the purposes of the model, the City of Cordova Pool was broken down into the following activity areas:

- 1) Natatorium: 5,300 square feet
- 2) Locker rooms: 1,050 square feet
- 3) Office: 400 square feet
- 4) Mechanical rooms: 605 square feet
- 5) Lobby: 400 square feet

The methodology took a range of building-specific factors into account, including::

- Occupancy hours
- Local climate conditions
- Prices paid for energy

For the purposes of this study, the thermal simulation model was created using a modeling tool called AkWarm© Energy Use Software. The building characteristics and local climate data were used to establish a baseline space heating and cooling energy usage. The model was calibrated and was then capable of predicting the impact of theoretical EEM's. The calibrated model is considered to represent "existing conditions" or the "existing building".

Limitations of AkWarm© Models

The model is based on local, typical weather data for Cordova. This data represents the average ambient weather profile as observed over approximately 30 years. As such, the monthly fuel use bar charts in Section 3.2 will not likely compare perfectly, on a monthly basis with actual energy billing information from any single year. This is especially true for years with extreme warm or cold periods, or even years with unexpectedly moderate weather. For this reason the model is calibrated to the building's annual consumption of each fuel.

The heating and cooling load model is a simple two-zone model consisting of the building's core interior spaces and the building's perimeter spaces. This simplified approach loses accuracy for buildings that have large variations in cooling/heating loads across different parts of the building.

AkWarm© does not have the capability to model HVAC systems that simultaneously provide both heating and cooling to the same building space. As an example, large footprint office buildings with expanses of glass walls typically have to provide cooling to southern exposed offices and heating to interior spaces at the same time, so the HVAC system delivers cool 55 degree air to all spaces and re-heats it (called a VAV system with terminal re-heat) in the spaces where heat is required.

Financial Analysis

AkWarm© provides a number of tools for assessing the cost effectiveness of various EEM's. These tools utilize **Life-Cycle Costing**, which is defined in this context as a method of cost analysis that estimates the total cost of a project over its life. The total cost includes both the construction cost (also called "first cost") plus ongoing maintenance and operating costs.

Savings to Investment Ratio (SIR) = Savings divided by Investment

Savings includes the total discounted dollar savings considered over the life of the EEM, including annual maintenance savings. AkWarm© calculates projected energy savings based on occupancy schedules, utility rates, building construction type, building function, existing conditions, and climatic data uploaded to the program based on the zip code of the building. Changes in future fuel prices, as projected by the Department of Energy, are included over the life of the improvement. Future savings are discounted to their present value to account for the time-value of money (i.e. money's ability to earn interest over time). The **Investment** in the SIR

calculation is the first cost of the EEM. An SIR value of at least 1.0 indicates that the project is cost-effective, i.e. total savings exceed the investment costs.

Simple payback is a cost analysis method whereby the investment cost of a project is divided by the first year's energy and maintenance savings to give the number of years required to recover the cost of the investment. This may be compared to the expected time before replacement of the system or component will be required. For example, if a boiler costs \$12,000 and results in a savings of \$1,000 in the first year, the payback time is 12 years. If the boiler has an expected life until replacement of 10 years, it would not be financially viable to make the investment since the payback period of 12 years is greater than the project life.

The Simple Payback calculation does not consider likely increases in future annual savings due to energy price increases, nor does it consider the need to earn interest on the investment (i.e. the time-value of money). Because of these simplifications, the SIR figure is considered to be a better financial investment indicator than the Simple Payback measure.

Measures are ranked by AkWarm© in order of decreasing SIR. The program first calculates individual SIR's and ranks them from highest to lowest. The software then implements the first EEM, re-calculates each subsequent measure and again re-ranks the remaining measures in order of their SIR. An individual measure must have an individual $SIR \geq 1$ to be considered financially viable on a stand-alone basis. AkWarm© goes through this iterative process until all appropriate measures have been evaluated and implemented in the proposed building model.

SIR and simple paybacks are calculated based on estimated first costs for each measure. First costs include estimates of the labor and equipment required to implement a change. Costs are considered to be accurate within +/-30% in this level of audit; they are derived from Means Cost Data, industry publications, the auditors experience and/or local contractors and equipment suppliers.

Interactive effects of EEM's:

It is important to note that the savings for each recommendation is calculated based on implementing the most cost effective measure first (highest SIR), then the EEM with the second highest SIR, then the third, etc. Implementation of an EEM out of the order will affect the savings of the other EEM's. The savings may in some cases be higher and in other cases, lower. For example implementing a reduced operating schedule for inefficient lighting will result in relatively high savings. Implementing a reduced operating schedule for newly installed efficient lighting will result in lower relative savings, because the efficient lighting system uses less energy during each hour of operation. If some of the recommended EEMs are not implemented, savings for the remaining EEMs will be affected, in some cases positively, and in others, negatively. If all EEM's are implemented, their order of implementation is irrelevant, because the total savings after full implementation will be unchanged. If an EEM is calculated outside of the AkWarm© model, the interactive effects of that EEM are not reflected in the savings figures of any other EEM.

Assumptions and conversion factors used in calculations:

The underlying assumptions used in the calculations made in this audit follow:

- 3413 BTU/kWh
- 60% load factor for all motors unless otherwise stated
- 134,000 BTU/gallon of #1 fuel oil

2.4 *Limitations of Study*

All results are dependent on the quality of input data provided, and can only act as an approximation. In some instances, several methods may achieve the identified savings. This report is not a design document and the auditor is not proposing designs, or performing design engineering. A design professional who is following the EEM recommendations and who is licensed to practice in Alaska in the appropriate discipline, shall accept full responsibility and liability for the design, engineering and final results.

Budgetary estimates for engineering and design of these projects is not included in the cost estimate for each EEM recommendation; these costs can be approximated at 15% of the materials and installation costs.

3. BOB KORN MEMORIAL POOL

3.1 *Building Description*

This building was constructed in or around 1973 and an HVAC renovation occurred in 1983. According to plans, the boiler was replaced in 1987, and it appears the boiler was replaced again in 2007. Original 1973 building plans and the 1983 renovation plans were available. These plans and the auditor's measurements and observations were used as the basis for this audit.

See Appendix A for a schedule of mechanical components, large motors, plumbing fixtures, appliances and plug loads.

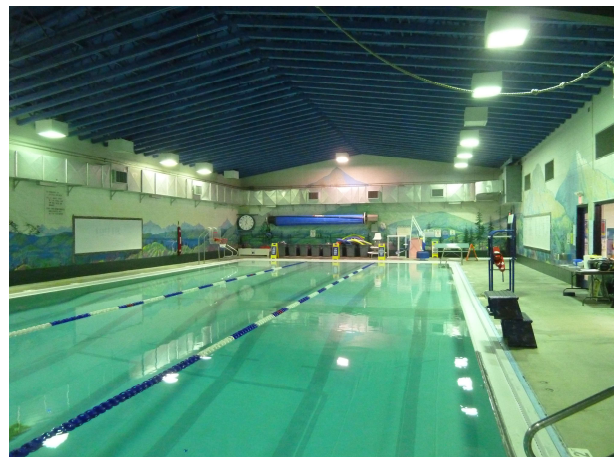
Description of Building Shell & Pool

This building is constructed on a 4" concrete slab surrounding the pool. The walls are 8" CMU's with 1-1/2" of rigid foam applied to their exterior, covered with horizontal vinyl siding. The interior CMU walls are painted. The walls of the west wing (containing locker rooms, lobby and offices) are constructed using 2" x 6" wood studs 16" oc, whose cavities are filled with R-19 fiberglass batt. The exterior of these walls is also finished with horizontal vinyl siding, the interior with painted gypsum.

The painted metal, pitched roof covers 3" of rigid foam insulation which is supported by plywood sheathing supported by wood and metal scissors trusses in the low section of the natatorium and 12" x 48" glue laminated beams in the clearstory section of the natatorium. The same roof surface over the west wing is supported by 2" x 10" joists. The interior ceilings in the natatorium are exposed sheathing or tongue and groove car decking, the ceilings in the lobby/office area and locker rooms are tongue and groove wood (presumed to be cedar).

Entry doors are store front with double pane glass in metal frames. Emergency exit doors are solid surface metal, presumed to have a honeycomb core. There is only one window in the building, it is adjacent to the main entry door and utilizes double pane glass in a metal frame.

Overall, the building shell appears to be in average condition considering its age.



Pool

The 134,000 gallon, 36' x 75' pool varies in depth from 3' to 12'. It has an aluminum shell with a plastic liner and uses a salt system with an auxiliary UV system for sanitation. The pool water temperature setpoint is 80F, it measured 80.7F during the survey and read 79F on the pool water controller digital readout. The natatorium RH measured 64%, the dew point measured 67.9F and the dry bulb temperature measured 82F (thermostat read 83F).

Heating, Cooling, Ventilation and Controls

The Heating Plants used in the building are:

B-1

Nameplate Information:	Viessman VD2-700
Fuel Type:	#1 Oil
Input Rating:	3,059,000 BTU/hr
Steady State Efficiency:	88 %
Idle Loss:	1 %
Heat Distribution Type:	Glycol
Boiler Operation:	All Year
Notes:	Oil fired Vitorond 200, 3,059 MBH input, 2,693 MBH output, max. 35% turndown, 180F setpoint, SN 7134287500010103, mfg 2005; Riello RL/2 burner, 1.5 HP motor, SN 06D 951430000001

Distribution: Heat is distributed in this building by (5) Grundfos constant speed circulation pumps. They appear to serve the following areas, and all pumps are presumed to run continually:

- Pre-heat coil in AHU-1
- Main heating coil in AHU-1
- Heating coil in AHU-2
- DHW generators
- Hydronic baseboard and unit heaters

Controls: The boiler has internal, proprietary controls, presumed to have an outside air temperature reset, but it is not known if this feature is in use. The boiler controls also manage the DHW temperature, as the hot water generators are integral to the Viessman system.

Each perimeter fintube baseboard heater is controlled by a thermostatic control valve; the vestibule valve is non-functional, as it is missing parts (image at right). The locker room unit heaters are controlled by manual thermostats but both units were turned off during the site survey, due to the fact that they are noisy and blow air directly on wet bathers.

AHU's: The 1983 sequence of operations does not indicate when or for how long AHU-1 or AHU-2 operate. They were data logged (see Appendix G) and both were



found to run continually during the logging period so their fan motors are are uncontrolled. Their heating coil valves are controlled by the programmable thermostat in the office (AHU-2) and the manual thermostat in the natatorium (AHU-1)

Natatorium: The sequence of operations specifies that one of the clearstory exhaust fans is to run any time AHU-1 is operating. 60F is to be maintained in the AHU-1 pre-heat chamber (this has been adjusted down to 50F) with the OSA dampers open to 50% and by modulating the pre-heat coil control valve. Mixed air temperature is to be maintained at 60F by modulating the main heating coil and the RA and OSA dampers. A humidistat controls the second and third clearstory exhaust fans (EF-3 was found to be manually turned off) and over-rides the mixed air control to open the OSA dampers and allow more OSA if the humidity is higher than the set point, which is specified as 70% in the sequence of operations. The actual RH was found to vary from 35% to 70%. (A typical RH set point should be 55%.)

Office & Lobby area: There was no available sequence of operations for AHU-2 which, as previously mentioned, runs continually. There are occupant complaints of little or no heat from the air diffusers in these areas. A sampling of air flows found them to be within 10% of what is specified on building plans, but the SA temperature is 20F below what should be supplied which could indicate a problem either with the heating coil, thermostat or hydronic control valve. Upon visual inspection, the heating coil in AHU-2 appears to be significantly clogged with dirt which will cause a high static pressure (and higher motor load), and given the condition of the outside of the coil, it is most likely that the inside fluid channels are also clogged, which would reduce the temperature of SA.

There is no cooling in the building.

Domestic Hot Water System

DWH is produced by two hot water generators located in the boiler room. Gauges indicated 136F and 141F water temperatures at the time of the survey. Pre-mixed hot water temperature at the shower heads was measured at 107F. There is a re-circulation pump located in the boiler room which appears to run continually.

Appliances

An under-counter refrigerator is located in the laundry room along with a clothes washer and electric clothes dryer.

Plumbing

There are (4) flushometer type, WC's (toilets) in this facility, all with manual valves. They appear to use more than 3 gpf. There are (3) lavatory sinks which appear to use 1.5 to 2.0 gpm. All lavatory faucets have manual valves. There are 6 each shower heads in the men's and women's locker rooms, 4 of which (in the men's locker) have 4 gpm heads and 2 of which have 1.5 gpm heads. There is a single urinal in the facility; it appears to use 1 gpf.

Interior Lighting

The interior lighting in this building is a mixture of T12 florescent lamps with magnetic ballasts, Metal Halide high bay lighting in the natatorium, CFL and incandescent A-type screw-in bulbs and BR30 incandescent reflector bulbs. There is a single fixture using T8 lamps with an electronic ballast in the storage area off of the lobby. There are no interior lighting controls in use.

Exterior Lighting

There are (4) HPS entry soffit fixtures, which are presumed to use 175w lamps; they are reported to be controlled by a photocell sensor.

Motors

The large motors in this facility include the 5 HP pool water circulation pump and the 10 HP supply fan motor in AHU-1. The pool circulation pump has a nominal efficiency of 87.5% and has just been replaced, so is not a candidate for a premium efficiency replacement. The nameplate on the 10 HP fan motor was not accessible, so its efficiency rating is unknown.

Major Equipment and Plug Loads

The equipment schedule and a partial listing of plug loads is found in Appendix A.

3.2 Predicted Energy Use

3.2.1 Energy Usage / Tariffs

The AkWarm© model was calibrated on an annual basis, to match the actual electric and fuel oil baseline consumption data. After calibration, the AkWarm© model predicts the annual usage of each fuel as shown in the fuel use bar charts below. The raw utility source data, in addition to being used for AkWarm© calibration, is evaluated and benchmark analysis is performed in Appendix B.

The utility company's providing energy to the building, and the class of service provided by each, are listed below:

Electricity: Cordova Electric Cooperative - Commercial – Sm

Fuel Oil data was provided by the City of Cordova, through accounting ledgers.

The average cost for each type of fuel used in this building is shown below in Table 3.1. These Energy costs include all surcharges, subsidies, demand charges, taxes and utility customer charges and are based on the cost data provided by the electric utility and the City of Cordova.

Table 3.1 Average Energy Cost	
Description	Average Energy Cost
Electricity	\$ 0.1435/kWh
#1 Oil	\$ 2.99/gallons

Electric utility providers measure consumption in kilowatt-hours (kWh) and maximum demand in kilowatts (kW). One kWh usage is equivalent to 1,000 watts running for one hour. One kW of electric demand is equivalent to 1,000 watts running at a particular moment.

Fuel oil consumption is measured in gallons, but unless there is a cumulative meter on the day tank, data provided for analysis is typically gallons delivered, not gallons consumed. It is assumed that all of the oil delivered during the benchmark period was consumed during the benchmark period. One gallon of #1 fuel oil provides approximately 134,000 BTU's of energy. #1 fuel oil is typically more expensive than #2 oil, but has a lower gel point, so can be used in colder climates.

3.2.1.1 Total Energy Use and Cost Breakdown

At then-current rates, the City of Cordova has spent an average of \$76,498 annually over the last 3 years for electricity and other fuel costs for this building.

	Elec. Consumption (kWh)	Cost	Elec. Demand (kW)	Cost	Total Electric Cost	Fuel Oil consumption (gal)	Cost	Total Cost	Total kBTU's
2013	145,521	\$17,313	327.8	\$2,809	\$20,842	23,904	\$97,219	\$118,061	3,651,954
2014	136,796	\$16,991	326.4	\$2,797	\$19,875	19,212	\$73,034	\$92,909	3,002,921
2015	142,796	\$16,754	320.9	\$2,772	\$20,485	19,802	\$59,241	\$79,725	3,101,261
3-year average	141,704	\$17,019	325	\$2,793	\$20,401	20,973	\$76,498	\$96,898	3,252,045

Figure 3.1 below reflects the estimated distribution of costs across the primary end uses of energy based on the AkWarm© computer simulation. Comparing the “Retrofit” bar in the figure to the “Existing” bar shows the potential savings from implementing all of the energy efficiency measures recommended in this report.

Figure 3.1

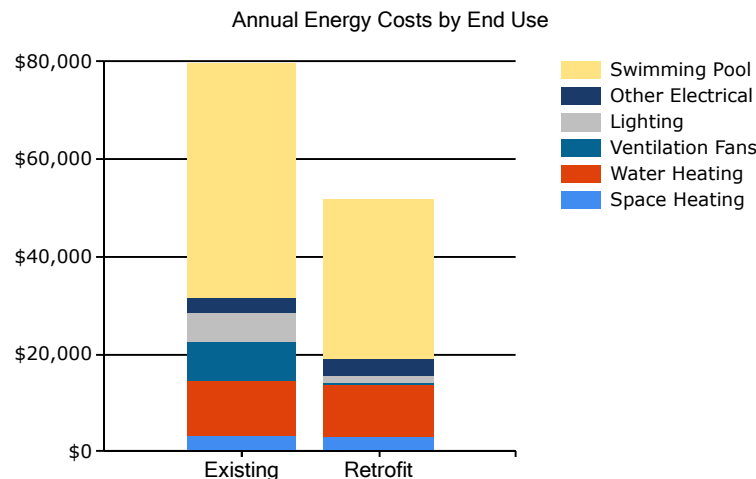


Figure 3.2 below shows how the annual energy cost of the building is distributed between the different fuels used by the building. The “Existing” bar shows the breakdown for the building as it is now; the “Retrofit” bar shows the predicted costs if all of the energy efficiency measures in this report are implemented.

Figure 3.2

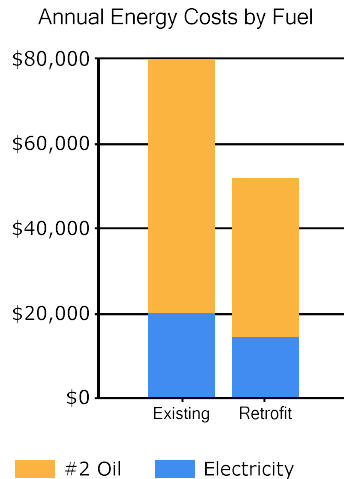
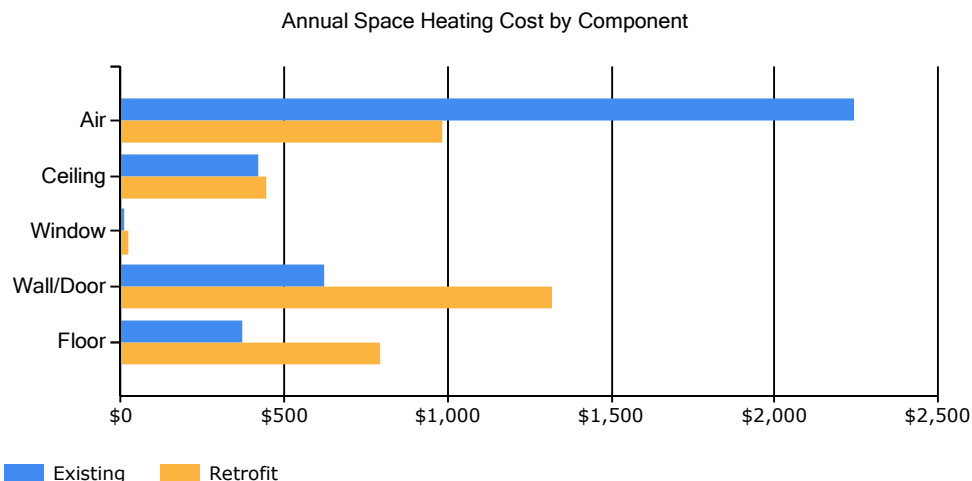


Figure 3.3 below addresses only Space Heating costs. The figure shows how each heat loss component contributes to those costs; for example, the figure shows how much annual space heating cost is caused by the heat loss through the Walls/Doors. For each component, the space heating cost for the Existing building is shown (blue bar) and the space heating cost assuming all retrofits are implemented (yellow bar) are shown. “Air” is ventilation introduced into the building plus infiltration and/or exfiltration, i.e. air leakage into or out of the building. Infiltration is typically through open doors and windows, un-caulked or loose fitting windows and joints, damaged door weather stripping and/or unsealed wall, ceiling or floor penetrations. Exfiltration can result from over-pressurizing a building which forces heated (or cooled) air out through these same gaps. “Air” is typically a significant source of heat or cooling loss in almost all buildings.

Figure 3.3

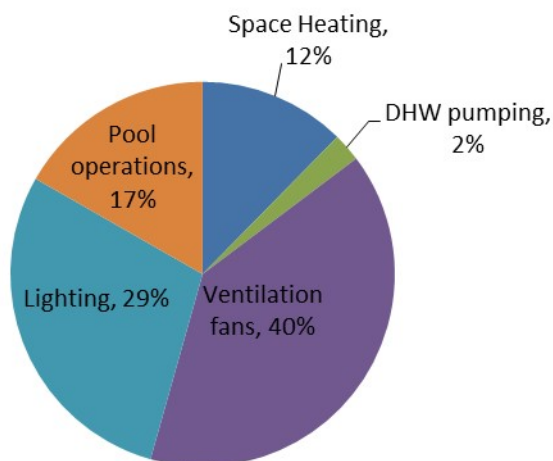


The tables below show the AkWarm© estimate of the monthly fuel use for each of the fuels used in the existing building. For each fuel, the fuel use is broken down across the energy end uses. Note that DHW refers to domestic hot water.

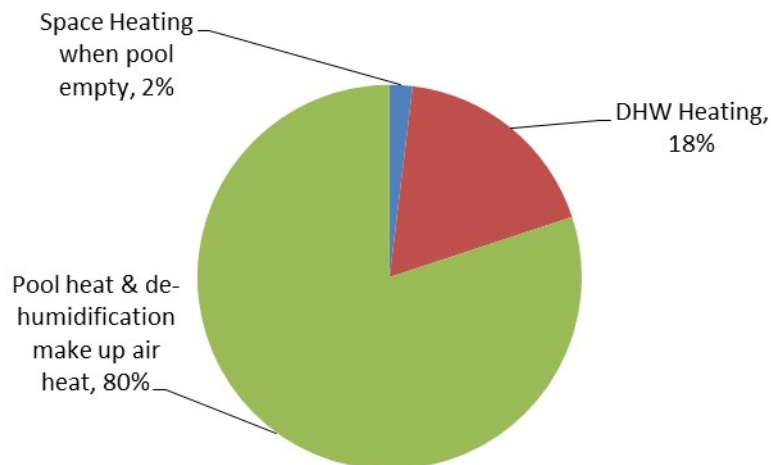
Electrical Consumption (kWh)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Space_Heating	1498	1365	1498	1450	1500	1450	1498	1498	1450	1498	1450	1498
Space_Cooling	0	0	0	0	0	0	0	0	0	0	0	0
DHW	288	262	288	279	288	279	288	288	279	288	279	288
Ventilation_Fans	4832	4403	4832	4676	4498	4676	4832	4832	4676	4832	4676	4832
Lighting	3503	3192	3503	3390	3503	3390	3503	3503	3390	3503	3390	3475
Other_Electrical	2217	2020	2217	2146	0	2146	2217	2217	2146	2217	2146	2217
Swimming_Pool	0	0	0	0	0	0	0	0	0	0	0	0

Fuel Oil #2 Consumption (Gallons)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Space_Heating	0	0	0	0	379	0	0	0	0	0	0	0
DHW	312	285	312	302	205	302	312	312	302	312	302	312
Swimming_Pool	1470	1340	1470	1423	0	1423	1470	1470	1423	1470	1423	1470

Distribution of Electric Consumption



Distribution of Fuel Oil Consumption



3.2.2 Energy Use Index (EUI)

EUI's are calculated by converting all the energy consumed by a building in one year to BTU's and multiplying by 1000 to obtain kBTU. This figure is then divided by the building square footage.

"Source energy" differs from "site energy". Site energy is the energy consumed by the building at the building site only. Source energy includes the site energy as well as all of the losses incurred during the creation and distribution of the energy to the building. Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses, and allows for a more complete assessment of energy efficiency in a building. The type of energy or fuel purchased has a substantial impact on the source energy use of a building. The EPA has determined that source energy is the best measure to use for evaluation purposes and to identify the overall global impact of energy use. Both the site and source EUI ratings for the building are provided below. Site and source EUI's are calculated as follows:

$$\text{Building Site EUI} = \frac{(\text{Electric Usage in kBtu} + \text{Gas Usage in kBtu} + \text{same for other fuels})}{\text{Building Square Footage}}$$

$$\text{Building Source EUI} = \frac{(\text{Electric Usage in kBtu} \times \text{SS Ratio} + \text{Gas Usage in kBtu} \times \text{SS Ratio} + \text{same for other fuels})}{\text{Building Square Footage}}$$

Where "SS Ratio" is the Source Energy to Site Energy ratio for the particular fuel.

Table 3.2 - Bob Korn Memorial Pool EUI Calculation⁴

Energy Type	Building Fuel Use per Year	Site Energy Use per Year, kBTU	Source/Site Ratio	Source Energy Use per Year, kBTU
Electricity	142,789 kWh	487,339	3.340	1,627,713
#2 Oil	19,804 gallons	2,732,896	1.010	2,760,225
Total		3,220,235		4,387,938
BUILDING AREA		7,755	Square Feet	
BUILDING SITE EUI		415	kBTU/Ft ² /Yr	
BUILDING SOURCE EUI		566	kBTU/Ft²/Yr	
* Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued March 2011.				

Building Benchmarks			
Description	EUI (kBtu/Sq.Ft.)	EUI/HDD (Btu/Sq.Ft./HDD)	ECI (\$/Sq.Ft.)
Existing Building	415.2	46.12	\$10.28
With Proposed Retrofits	266.1	29.55	\$6.68
EUI: Energy Use Intensity - The annual site energy consumption divided by the structure's conditioned area.			
EUI/HDD: Energy Use Intensity per Heating Degree Day.			
ECI: Energy Cost Index - The total annual cost of energy divided by the square footage of the conditioned space in the building.			

⁴ These electric, oil and EUI figures are based on the calibrated Ak-Warm-C model, not actual energy consumption, so there is slight differences between these figures and actual figures since it is not possible to calibrate a model to 100% of actual.

4. ENERGY EFFICIENCY MEASURES – EEM'S

4.1 Summary of Results

All of the EEM's considered for this building are summarized in Table 1.1 above. Please refer to the individual measure descriptions in Section 4.3 for more detail. Any additional detail regarding calculations and cost estimates for analyzed measures is provided in Appendix D.

Table 4.1 Bob Korn Memorial Pool, Cordova, Alaska ENERGY EFFICIENCY MEASURES							
Rank	Feature	Improvement Description	Annual Energy Savings	Installed Cost	Savings to Investment Ratio, SIR	Simple Payback (Years)	CO ₂ Savings
1	Ventilation (This EEM is combined with EEM #15 since included in the proposed HVAC upgrade)	1.) Add schedule controls to AHU-2 reduce operating hours to when building is occupied. Estimated cost \$4,000 2.) replace EF's in locker rooms with humidity sensing models, reduce operation by 65%. Estimated cost \$600. 3.) replace AHU-1, EF-1 & EF-2 with Desertair system used to de-humidify, then heat the space, OSA and pool water with recovered heat. Cost is included in EEM#XXX. Pool water heat savings is identified under EEM #X.	\$7,670	\$4,600	19.68	0.6	79,460.4
2	HVAC And DHW	1.) add DHW re-circulation pump timers to CP-5 & CP-7 (HWG circulation pump and DHW re-circulation pump) to reduce HWG & DHW circulation to the only when pool is open.	\$800	\$1,000	13.06	1.3	6,848.5
3	Lighting - Power Retrofit: Lobby night light	Replace with LED (4) 14W Module	\$152 + \$5 Maint. Savings	\$154	5.50	1.0	1,616.1
4	Lighting - Power Retrofit: Locker rooms, night lights	Replace with 4 LED (21) 14W Module	\$333 + \$16 Maint. Savings	\$375	5.02	1.1	3,539.8
5	Lighting - Power Retrofit: Boiler room - turned on all day	Replace with 3 LED 14W Module	\$47	\$83	4.73	1.8	496.6

Table 4.1
Bob Korn Memorial Pool, Cordova, Alaska
ENERGY EFFICIENCY MEASURES

Rank	Feature	Improvement Description	Annual Energy Savings	Installed Cost	Savings to Investment Ratio, SIR	Simple Payback (Years)	CO ₂ Savings
6	Lighting - Power Retrofit: Lobby, offices, laundry	Replace with 5 LED (4) 14W Module (2)	\$290 + \$20 Maint. Savings	\$769	3.93	2.5	3,073.4
7	Lighting - Power Retrofit: Locker rooms	Replace with 21 LED (21) 14W Module	\$521 + \$105 Maint. Savings	\$1,968	3.11	3.1	5,529.9
8	Lighting - Combined Retrofit: Natatorium	Replace with 18 LED 119W Module and Remove Manual Switching and Add new Occupancy Sensor	\$2,355 + \$180 Maint. Savings	\$13,560	2.89	5.3	25,034.3
9	Lighting - Power Retrofit: Offices, laundry & family bathroom	Replace with 5 LED (4) 14W Module	\$225 + \$20 Maint. Savings	\$837	2.46	3.4	2,396.8
10	Lighting - Power Retrofit: Small office off lobby	Replace with LED (2) 10W Module	\$4	\$14	2.22	3.8	39.5
11	Lighting - Power Retrofit: AHU Fan & EF Fan rooms - Incand	Replace with 3 LED 10W Module	\$3	\$21	2.10	7.0	31.4
12	Lighting - Power Retrofit: Exterior	Replace with 4 LED 56W Module	\$287 + \$20 Maint. Savings	\$1,780	1.57	5.8	2,996.9
13	Lighting - Power Retrofit: Storage rooms	Replace with 3 LED 10W Module	\$3	\$21	1.13	7.4	30.2
14	Setback Thermostat: Locker rooms	Implement a Heating Temperature Unoccupied Setback to 60.0 deg F for the Locker rooms space.	\$25	\$300	1.13	12.0	184.5
15	Natatorium de-humidificaiton (Combined with EEM #1 since included in the proposed HVAC upgrade)	De-Commission AHU-1, EF-1,2 & 3 and Install Desertair system to ventilate and de-humidify natatorium and for chloramine extraction, use recovered heat to heat space and pool water. Estimated costs are \$150,000 for parts, \$100,000 for mechanical, electrical & general contracting, \$25,000 for engineering.	\$14,917 + \$1,000 Maint. Savings	\$275,000	1.06	17.3	90,343.8

Table 4.1
Bob Korn Memorial Pool, Cordova, Alaska
ENERGY EFFICIENCY MEASURES

Rank	Feature	Improvement Description	Annual Energy Savings	Installed Cost	Savings to Investment Ratio, SIR	Simple Payback (Years)	CO ₂ Savings
	TOTAL, cost-effective measures		\$27,632 + \$1,366 Maint. Savings	\$300,482	1.51	10.4	221,622.0
The following measures were <i>not</i> found to be cost-effective:							
16	Lighting - Combined Retrofit: Storage area off lobby	Replace with LED (2) 14W Module and Remove Manual Switching and Add new Occupancy Sensor	\$21 + \$5 Maint. Savings	\$264	0.83	10.2	222.8
17	Lighting - Controls Retrofit: Boiler room - turned on all day	Improve Manual Switching	\$11	\$165	0.58	14.4	121.8
18	Lighting - Controls Retrofit: Offices, laundry & family bathroom	Remove Manual Switching and Add new Occupancy Sensor	\$45	\$680	0.55	15.2	476.3
19	Lighting - Controls Retrofit: Locker rooms	Remove Manual Switching and Add new Occupancy Sensor	\$111	\$2,000	0.54	18.0	1,182.0
20	Lighting - Power Retrofit: Chemical room	Replace with 3 LED 14W Module	\$3	\$103	0.43	33.3	32.9
21	Lighting - Power Retrofit: Boiler room - other	Replace with 3 LED 4W Module	\$3	\$83	0.31	26.9	32.9
22	Lighting - Power Retrofit: AHU Fan & EF Fan rooms - CFL	Replace with 6 LED 10W Module	\$1	\$42	0.28	50.7	8.7
23	Lighting - Controls Retrofit: Small office off lobby	Remove Manual Switching and Add new Occupancy Sensor	\$4	\$170	0.18	47.5	38.1
24	Cathedral Ceiling: House	Add R-19 to existing insulation.	\$148	\$39,723	0.09	269.3	1,088.5
25	Lighting - Combined Retrofit: Vestibule	Replace with LED 10W Module and Improve Manual Switching	-\$6	\$7	-7.67	999.9	-68.1
	TOTAL, all measures		\$27,972 + \$1,371 Maint. Savings	\$343,719	1.33	11.7	224,757.9

4.2 *Interactive Effects of Projects*

The savings for a particular measure are calculated assuming all EEM's listed above that measure have been implemented. If some EEM's are not implemented, savings for the remaining EEM's will be affected. For example, if ceiling insulation is not added, then savings from a project to replace the heating system will be increased, because the heating system for the building will be serving a larger load and consuming more energy.

In general, all projects are evaluated sequentially so energy savings associated with one EEM would not also be attributed to another EEM. By modeling the recommended project sequentially, the analysis accounts for interactive affects among the EEMs and does not "double count" savings.

Interior lighting, plug loads, facility equipment, and occupants generate heat within the building. When the building is in cooling mode, these items contribute to the overall cooling demands of the building. Therefore, lighting efficiency improvements will reduce cooling requirements in air-conditioned buildings and conversely, they will increase heating requirements in a heated building. Heating penalties and cooling benefits were included in the lighting project analysis.

4.3 EEM Detail with Auditors Notes (only EEM's calculated inside AkWarm© are shown)

4.3.1 Insulation Measures (*considered but not recommended*)

Rank	Location	Existing Type/R-Value			Recommendation Type/R-Value	
24	Cathedral Ceiling: House	Framing Type: Standard Framing Spacing: 24 inches Insulated Sheathing: None Bottom Insulation Layer: XPS (Blue/Pink Foam), 3 inches Top Insulation Layer: None Modeled R-Value: 17.8			Add R-19 to existing insulation.	
Installation Cost		\$39,723	Estimated Life of Measure (yrs)	30	Energy Savings (/yr)	\$148
Breakeven Cost		\$3,497	Savings-to-Investment Ratio	0.1	Simple Payback yrs	269
Auditors Notes: This EEM adds 4" (approx. R-20) additional rigid foam during roof replacement - cost of roof replacement is not included here. Eagle Contracting (roof vendor quoted the project in 2015) estimated \$7.50/SF for additional 4" of rigid foam during replacement; structural engineering may be required for fastening system specification.						

4.3.2 Window Measures (There were no improvements in this category)

4.3.3 Door Measures (There were no improvements in this category)

4.3.4 Air Sealing Measures (There were no improvements in this category)

4.3.5 Heating/Cooling/Domestic Hot Water Measure

Rank	Recommendation					
2	1.) add DHW re-circulation pump timers to CP-5 & CP-7 (HWG circulation pump and DHW re-circulation pump) to reduce HWG & DHW circulation to the only when pool is open.					
Installation Cost		\$1,000	Estimated Life of Measure (yrs)	20	Energy Savings (/yr)	\$800
Breakeven Cost		\$13,059	Savings-to-Investment Ratio	13.1	Simple Payback yrs	1
Auditors Notes:						

4.3.6 Ventilation System Measures

Rank	Description			Recommendation		
1				1.) Add schedule controls to AHU-2 reduce operating hours to when building is occupied. Estimated cost \$4,000 2.) replace EF's in locker rooms with humidity sensing models, reduce operation by 65%. Estimated cost \$600. 3.) replace AHU-1, EF-1 & EF-2 with Desertair system used to de-humidify, then heat the space, OSA and pool water with recovered heat. Cost is included in EEM#XXX. Pool water heat savings is identified under EEM #X.		
Installation Cost		\$4,600	Estimated Life of Measure (yrs)	15	Energy Savings (/yr)	\$7,670
Breakeven Cost		\$90,524	Savings-to-Investment Ratio	19.7	Simple Payback yrs	1
Auditors Notes:						

4.3.7 Night Setback Thermostat Measures

Rank	Building Space			Recommendation		
14	Locker rooms			Implement a Heating Temperature Unoccupied Setback to 60.0 deg F for the Locker rooms space.		
Installation Cost		\$300	Estimated Life of Measure (yrs)	15	Energy Savings (/yr)	\$25
Breakeven Cost		\$339	Savings-to-Investment Ratio	1.1	Simple Payback yrs	12
Auditors Notes:						

4.3.8 Lighting Measures

Rank	Location	Existing Condition	Recommendation			
3	Lobby night light	FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with LED (4) 14W Module			
Installation Cost		\$154	Estimated Life of Measure (yrs)	6	Energy Savings (/yr)	\$152
					Maintenance Savings (/yr)	\$5
Breakeven Cost		\$847	Savings-to-Investment Ratio	5.5	Simple Payback yrs	1
Auditors Notes: Remove ballast in (1) fixture, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (4) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture						

Rank	Location	Existing Condition	Recommendation			
4	Locker rooms, night lights	4 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 4 LED (21) 14W Module			
Installation Cost		\$375	Estimated Life of Measure (yrs)	6	Energy Savings (/yr)	\$333
					Maintenance Savings (/yr)	\$16
Breakeven Cost		\$1,883	Savings-to-Investment Ratio	5.0	Simple Payback yrs	1
Auditors Notes: Remove ballast in (4) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (8) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture						

Rank	Location	Existing Condition	Recommendation
5	Boiler room - turned on all day	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 14W Module
Installation Cost		\$83	Estimated Life of Measure (yrs) 10
Breakeven Cost		\$392	Savings-to-Investment Ratio 4.7
			Energy Savings (/yr) \$47
			Simple Payback yrs 2
Auditors Notes: Replace 3 (turned on every day) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr. Add (1) ceiling mounted occupancy sensor @ \$125 parts + \$45 labor.			

Rank	Location	Existing Condition	Recommendation
6	Lobby, offices, laundry	5 FLUOR (4) T12 4' F40T12 40W Standard (2) Magnetic with Manual Switching	Replace with 5 LED (4) 14W Module (2)
Installation Cost		\$769	Estimated Life of Measure (yrs) 12
			Energy Savings (/yr) \$290
			Maintenance Savings (/yr) \$20
Breakeven Cost		\$3,021	Savings-to-Investment Ratio 3.9
			Simple Payback yrs 2
Auditors Notes: Remove ballast in (5) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Maintenance savings \$5/fixture			

Rank	Location	Existing Condition	Recommendation
7	Locker rooms	21 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 21 LED (21) 14W Module
Installation Cost		\$1,968	Estimated Life of Measure (yrs) 12
			Energy Savings (/yr) \$521
			Maintenance Savings (/yr) \$105
Breakeven Cost		\$6,115	Savings-to-Investment Ratio 3.1
			Simple Payback yrs 3
Auditors Notes: Remove ballast in (21) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (42) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) ceiling mounted occupancy sensors in EACH locker room @ \$125 ea parts + 1 hr labor each @ \$125/hr (requires electrician). Maintenance savings \$5/fixture. Datalogging showed mens locker to be unoccupied 83% when lights were on and 62% in womens locker.			

Rank	Location	Existing Condition	Recommendation
8	Natorium	18 MH 400 Watt Magnetic with Manual Switching	Replace with 18 LED 119W Module and Remove Manual Switching and Add new Occupancy Sensor
Installation Cost		\$13,560	Estimated Life of Measure (yrs) 22
			Energy Savings (/yr) \$2,355
			Maintenance Savings (/yr) \$180
Breakeven Cost		\$39,249	Savings-to-Investment Ratio 2.9
			Simple Payback yrs 5
Auditors Notes: Replace (18) 400w MH fixtures with 119w LED's with integral dimming occupancy sensors @ \$450 ea parts + 2 hrs labor ea @ \$110/hr + \$1500 lift rental. Maintenance savings \$10/fixture.			

Rank	Location	Existing Condition	Recommendation
9	Offices, laundry & family bathroom	5 FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Replace with 5 LED (4) 14W Module
Installation Cost		\$837	Estimated Life of Measure (yrs) 10
			Energy Savings (/yr) \$225
			Maintenance Savings (/yr) \$20
Breakeven Cost		\$2,058	Savings-to-Investment Ratio 2.5
			Simple Payback yrs 3

Auditors Notes: Remove ballast in (7) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) switch mounted occupancy sensors in family bathroom and laundry room and ceiling mounted sensors in office @ \$125 ea parts + 1 hr labor @ \$45/hr. Maintenance savings \$5/fixture

Rank	Location	Existing Condition	Recommendation
10	Small office off lobby	FLUOR (2) CFL, A Lamp 20W with Manual Switching	Replace with LED (2) 10W Module
Installation Cost	\$14	Estimated Life of Measure (yrs)	10
Energy Savings (/yr)		Simple Payback yrs	4
Breakeven Cost	\$31	Savings-to-Investment Ratio	2.2
Auditors Notes: Replace (2) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45.			

Rank	Location	Existing Condition	Recommendation
11	AHU Fan & EF Fan rooms - Incand	3 INCAN A Lamp, Std 60W with Manual Switching	Replace with 3 LED 10W Module
Installation Cost	\$21	Estimated Life of Measure (yrs)	20
Energy Savings (/yr)		Simple Payback yrs	7
Breakeven Cost	\$44	Savings-to-Investment Ratio	2.1
Auditors Notes: Replace (3) 60w incandescent bulbs with 9.5w LED's @ \$7ea and no labor cost.			

Rank	Location	Existing Condition	Recommendation
12	Exterior	4 MH 175 Watt Magnetic with Manual Switching	Replace with 4 LED 56W Module
Installation Cost	\$1,780	Estimated Life of Measure (yrs)	11
Energy Savings (/yr)		Maintenance Savings (/yr)	\$20
Breakeven Cost	\$2,800	Savings-to-Investment Ratio	1.6
Simple Payback yrs			6
Auditors Notes: Replace (4) 175w MH fixtures with 56w LED fixtures @ \$400 ea + 1 hr labor each @ \$45/hr. \$5/fixture maintenance savings.			

Rank	Location	Existing Condition	Recommendation
13	Storage rooms	3 INCAN A Lamp, Std 60W with Manual Switching	Replace with 3 LED 10W Module
Installation Cost	\$21	Estimated Life of Measure (yrs)	10
Energy Savings (/yr)		Simple Payback yrs	7
Breakeven Cost	\$24	Savings-to-Investment Ratio	1.1
Auditors Notes: Replace (3) 60w incandescent bulbs with 9.5w LED's @ \$7ea and no labor cost.			

Rank	Location	Existing Condition	Recommendation
16	Storage area off lobby	FLUOR (2) T8 4' F32T8 32W Standard Instant with Manual Switching	Replace with LED (2) 14W Module and Remove Manual Switching and Add new Occupancy Sensor
Installation Cost	\$264	Estimated Life of Measure (yrs)	10
		Energy Savings (/yr)	\$21
		Maintenance Savings (/yr)	\$5
Breakeven Cost	\$218	Savings-to-Investment Ratio	0.8
		Simple Payback yrs	10
Auditors Notes: Remove ballast in (1) fixture, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (2) 32w T8 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45. Maintenance savings \$5/fixture			

Rank	Location	Existing Condition	Recommendation
20	Chemical room	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 14W Module
Installation Cost	\$103	Estimated Life of Measure (yrs)	20
		Energy Savings (/yr)	\$3
Breakeven Cost	\$45	Savings-to-Investment Ratio	0.4
		Simple Payback yrs	33
Auditors Notes: Replace 4 (only 3 working during survey) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr.			

Rank	Location	Existing Condition	Recommendation
21	Boiler room - other	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Replace with 3 LED 4W Module
Installation Cost	\$83	Estimated Life of Measure (yrs)	10
		Energy Savings (/yr)	\$3
Breakeven Cost	\$26	Savings-to-Investment Ratio	0.3
		Simple Payback yrs	27
Auditors Notes: Replace 3 (only 2 working during survey) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr.			

Rank	Location	Existing Condition	Recommendation
22	AHU Fan & EF Fan rooms - CFL	6 FLUOR CFL, A Lamp 20W with Manual Switching	Replace with 6 LED 10W Module
Installation Cost	\$42	Estimated Life of Measure (yrs)	20
		Energy Savings (/yr)	\$1
Breakeven Cost	\$12	Savings-to-Investment Ratio	0.3
		Simple Payback yrs	51
Auditors Notes: Replace (6) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost.			

Rank	Location	Existing Condition	Recommendation
25	Vestibule	FLUOR CFL, A Lamp 20W with Manual Switching	Replace with LED 10W Module and Improve Manual Switching
Installation Cost	\$7	Estimated Life of Measure (yrs)	10
Breakeven Cost	-\$54	Savings-to-Investment Ratio	-7.7
		Energy Savings (/yr)	-\$6
		Simple Payback yrs	1000
Auditors Notes: Replace (1) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. This lamp was burned out, so there will be negative savings from this EEM.			

Rank	Location	Existing Condition	Recommendation
17	Boiler room - turned on all day	3 INCAN Reflector, Std 65W BR30 with Manual Switching	Improve Manual Switching
Installation Cost	\$165	Estimated Life of Measure (yrs)	10
Breakeven Cost	\$96	Savings-to-Investment Ratio	0.6
		Energy Savings (/yr)	\$11
		Simple Payback yrs	14
Auditors Notes: Replace 3 (turned on every day) - 65w PAR36 lamps with 9.5w LED @ \$20 ea + total .5 hr labor @ \$45/hr. Add (1) ceiling mounted occupancy sensor @ \$125 parts + \$45 labor.			

Rank	Location	Existing Condition	Recommendation
18	Offices, laundry & family bathroom	5 FLUOR (4) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor
Installation Cost	\$680	Estimated Life of Measure (yrs)	10
Breakeven Cost	\$375	Savings-to-Investment Ratio	0.6
		Energy Savings (/yr)	\$45
		Simple Payback yrs	15
Auditors Notes: Remove ballast in (7) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (20) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) switch mounted occupancy sensors in family bathroom and laundry room and ceiling mounted sensors in office @ \$125 ea parts + 1 hr labor @ \$45/hr. Maintenance savings \$5/fixture			

Rank	Location	Existing Condition	Recommendation
19	Locker rooms	21 FLUOR (2) T12 4' F40T12 40W Standard Magnetic with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor
Installation Cost	\$2,000	Estimated Life of Measure (yrs)	12
Breakeven Cost	\$1,082	Savings-to-Investment Ratio	0.5
		Energy Savings (/yr)	\$111
		Simple Payback yrs	18
Auditors Notes: Remove ballast in (21) fixtures, re-wire end caps @ .75 hrs ea @ \$45/hr; replace (42) 40w T12 lamps with 14w T8 LED tubes @ \$30 ea, labor included in re-wire time. Add (4) ceiling mounted occupancy sensors in EACH locker room @ \$125 ea parts + 1 hr labor each @ \$125/hr (requires electrician). Maintenance savings \$5/fixture. Datalogging showed mens locker to be unoccupied 83% when lights were on and 62% in womens locker.			

Rank	Location	Existing Condition	Recommendation
23	Small office off lobby	FLUOR (2) CFL, A Lamp 20W with Manual Switching	Remove Manual Switching and Add new Occupancy Sensor
Installation Cost	\$170	Estimated Life of Measure (yrs)	10
Energy Savings (/yr)			\$4
Breakeven Cost	\$30	Savings-to-Investment Ratio	0.2
Simple Payback yrs			47
Auditors Notes: Replace (2) 23w CFL bulbs with 9.5w LED's @ \$7ea and no labor cost. Add fixture mounted occupancy sensor @ \$125 parts + 1 hr labor @ \$45.			

4.3.9 Refrigeration Measures (There were no improvements in this category)

4.3.10 Other Electrical Measures (There were no improvements in this category)

4.3.11 Cooking Measures (There were no improvements in this category)

4.3.12 Clothes Drying Measures (There were no improvements in this category)

4.3.13 Other Measures

Rank	Location	Description of Existing	Efficiency Recommendation
15		Natatorium de-humidification and ventilation	De-Commission AHU-1, EF-1,2 & 3 and Install Desertair system to ventilate and de-humidify natatorium and for chloramine extraction, use recovered heat to heat space and pool water. Estimated costs are \$150,000 for parts, \$100,000 for mechanical, electrical & general contracting, \$25,000 for engineering.
Installation Cost	\$275,000	Estimated Life of Measure (yrs)	20
Energy Savings (/yr)			\$14,917
			Maintenance Savings (/yr)
			\$1,000
Breakeven Cost	\$292,746	Savings-to-Investment Ratio	1.1
Simple Payback yrs			17
Auditors Notes:			

APPENDICES

Appendix A – Major Equipment List

ALL SCHEDULES COMPILED FROM PLANS OR ON-SITE NAMEPLATE OBSERVATION, WHERE
ACCESSIBLE e= estimated

AIR HANDLER SCHEDULE

SYMBOL	MFGR/MODEL	FAN CFM	MOTOR DATA HP/VOLTS/PH	REMARKS
AHU-1	unknown, no nameplate	12,000	10/208/3	Natatorium; on "hand"
AHU-2	unknown, no nameplate	2,070	1.5/208/1	Lobby & offices; on mechanical time clock

EXHAUST FAN SCHEDULE

SYMBOL	MOTOR MFGR/MODEL	CFM	MOTOR DATA HP/VOLTS/PH	REMARKS
EF-1	unknown, Dayton motor, south fan	3850	.5/115/1	Natatorium exhaust, located in clearstory fan room; controlled by humidistat; HOA switch on "auto"
EF-2	unknown, Dayton motor, middle fan	4500	.5/115/1	Natatorium exhaust, located in clearstory fan room; controlled by humidistat; HOA switch on "auto"
EF-3	unknown, Dayton motor, north fan	9600*	.5/115/1	Natatorium exhaust, located in clearstory fan room; controlled by humidistat; HOA switch "off"
EF-4	Brod & McClung-Pace Co, model SCF-114-AMI	2200	1/208/1	Locker rooms, toilet rooms, laundry room - no longer in use; SN 84-46958-01
EF-5	Panasonic	e150	e85W/115/1	Women's locker; added to compensate for lack of EF-1
EF-6	Panasonic	e150	e85W/115/1	Men's locker; added to compensate for lack of EF-1
EF-7	Panasonic FV-08WQ1	e100	.14A/115/1	Chemical room
EF-8	unknown	e250	.08/115/1	Electrical room, manual wall switch

* no matter what order fans are turned on, the first fan turned on pulls approx. 3800 cfm, second fan turned on pulls approx. 4500cfm, third fan turned on pulls approx. 9600 cfm

PUMP SCHEDULE

SYMBOL	MFGR/MODEL	GPM @ HD	MOTOR DATA HP/VOLTS/PH	REMARKS
CP-1	Grundfos UP 43-75	36 @ 4'	215W/115/1	circ pump for heating coil in AHU-2
CP-2	Grundfos UMC 80-80	175 @ 15'	1000W/208/3	circ pump for AHU-1 main heating coil; on "hand"

CP-3	Grundfos UPS 50-80	40 @ 28'	610W/115/1	circ pump for AHU-1 pre-heat coil; on "hand"
CP-4	Grundfos UPS 50-160	80 @ 40'	1300w/208/3	main building heat circulation, located at HWG
CP-5	Grundfos 40-80/4	30 @ 25'	565W/208/1	HWG circulation pump
CP-6	Grundfos UPS 80-160 double	130 @ 40'	2050W/208/3	Main building heat circulation, located at boiler
CP-7	Grundfos UPS 15-58	8 @ 8'	80W/115/1	DHW circulation
CP-8	Grundfos UPS 32-80	40 @ 15'	280W/115/1	pool heat exchanger circulation pump
P-1	G&L Model SSH 23SH2J5F0; Baldor motor	433	5/208/3/87.5%, .78 PF	pool water circulation pump

BOILER SCHEDULE

SYMBOL	MFGR/MODEL	EFFICIENCY	MOTOR DATA HP/VOLTS/PH	REMARKS
B-1	Viessman VD2-700	88%	1.5/208/3 burner	Oil fired, Vitorond 200, 3,059 MBH input, 2,693 MBH output, 88% EFF, 35% max. turndown, 180F set point; SN 7134287500010103, mfg 2005; Riello RL burner, SN 06D 951430000001, 5.4-22.4 GPH

UNIT HEATER SCHEDULE

SYMBOL	MFGR/MODEL	CFM	MOTOR DATA HP/VOLTS/PH	REMARKS
UH-1	Dunham Bush model H-250-C, 20 MBH	e600	.05/115/1	Women's Locker room; manual thermostat; SN 930105306
UH-2	Dunham Bush model H-250-C, 20 MBH	e600	.05/115/1	Men's Locker room; manual thermostat
UH-3	Trane, model S-CU, size 42S, 15 MBH	590	e.17/115/1	Chemical room; manual thermostat; SN 1H-01344

HEAT EXCHANGER SCHEDULE

HX-1	unknown, shell & tube			pool water heat
------	-----------------------	--	--	-----------------

HOT WATER HEATER SCHEDULE

SYMBOL	MFGR/MODEL	GALLONS	NUMBER OF ELEMENTS	ELEMENT SIZE
HWG-1	Viessman Vitocell 300			temperature setpoint 143F (62C)

HWG-2	Viessman Vitocell 300			temperature setpoint 134F (57C)
-------	-----------------------	--	--	---------------------------------

PLUMBING FIXTURES				
SYMBOL	FIXTURE	GPF	QUANTITY	REMARKS
	W.C.	e3.0	1	flushometer, manual valve, family bath
	W.C.	e3.0	3	flushometer, manually operated
	Urinal	e1.0	1	flushometer, manually operated
	Showers (6 per pole)	1.5	4	measured gpm in men's locker, measured 107F water temp – it is a assumed women's locker has same head configuration and water temp.
	Showers (6 per pole)	4.0	8	
	Lavatory	2.1	1	measured, family bath
	Lavatory	1.5	2	measured gpm in mens locker; assume womens same

PLUG LOAD SUMMARY				
SYMBOL	FIXTURE	QUANTITY	ESTIMATED CONSUMPTION	REMARKS
	Laptop	1	85w	
	Personal printers	2	85w	
	Personal fan	1	85w	pool office
	Microwaves	1	1000w	
	half size refrigerators (under counter)	1	225 kWh/yr	
	Colorado Lane Systems lane timer/display, model LED-R	6	230W/115/1	6-lanes
	Maytag clothes washer, model A7300	1	7A/115/1	SN 141127 DW
	GE electric clothes dryer, model DX4500EA0WW	1	4.4kW/208/1	SN MZ742012A
	Electric hand dryer, model MT103	2	20A/208/1	
	TV - flat screen	1	50w	lobby
POOL EQUIPMENT				
	Model EUV396 UV water purifier	1	574W/120/1	runs 24/7/365; SN 126168
	Dolphin Dynamic Pool cleaner	1		runs 8 hrs/day, 5 days/wk
	SuitMate, swimsuit water extractor	1	8.6A/115/1	SN 71456
	TMI Salt Pure, water sanitizing system, model NV8	1	15A/208/1	SN 120063, mfg 2013; 16.2 lbs/hr max salt output

Appendix B – Benchmark Analysis

A benchmark analysis evaluates historical raw consumption and cost data for each energy type. The purpose of a benchmark analysis is to identify trends, anomalies and irregularities which may provide insight regarding the building's function and efficiency and to create a baseline for the facility. 36-48 months of historical data is usually a sufficient period of time to gain an understanding of the building operation.

Electric consumption and cost data from 2013 through 2015 were available as was fuel oil cost data for the same period. The fuel oil costs were provided via accounting ledgers and only some of the entries had the number of gallons delivered. Section 1.4 above describes the source of price per gallon used to calculate the missing delivered gallons data.

Figure B.1 shows less than a 6% year over year change in electric consumption and other than the previously mentioned (in Section 1.2) 4692 gallon reduction in oil use from 2013 to 2014, oil consumption in 2014 and 2015 varies by less than 3%

Figure B.1 – Total Building Energy Costs

	Elec. Consumption (kWh)	Cost	Elec. Demand (kW)	Cost	Total Electric Cost	Fuel Oil consumption (gal)	Cost	Total Cost	Total kBTU's
2013	145,521	\$17,313	327.8	\$2,809	\$20,842	23,904	\$97,219	\$118,061	3,651,954
2014	136,796	\$16,991	326.4	\$2,797	\$19,875	19,212	\$73,034	\$92,909	3,002,921
2015	142,796	\$16,754	320.9	\$2,772	\$20,485	19,802	\$59,241	\$79,725	3,101,261
3-year average	141,704	\$17,019	325	\$2,793	\$20,401	20,973	\$76,498	\$96,898	3,252,045

Figure(s) B.2 – 36 Months of Electric Consumption and Demand

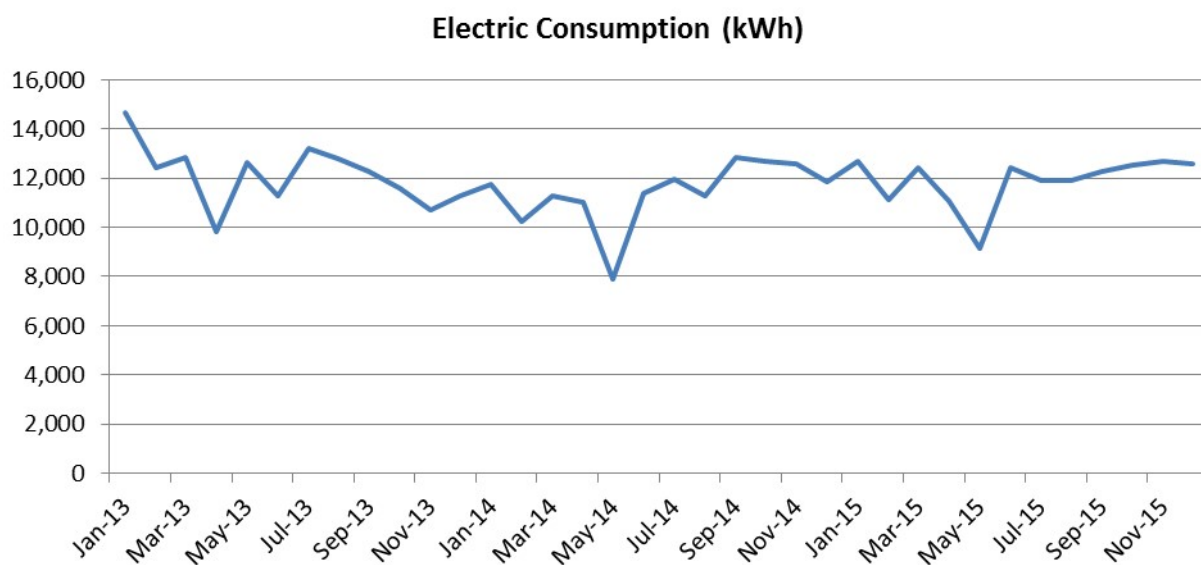


Figure B.2b
Electric Demand (kW)

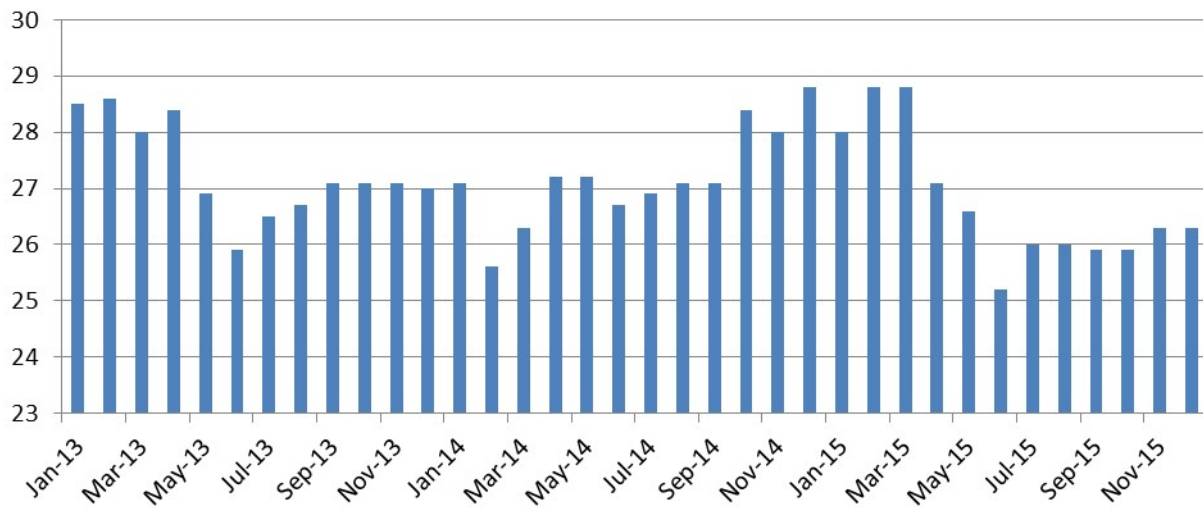


Figure B.2a shows consistent reduced consumption (i.e. downward) spikes in electric consumption in May of each year. This corresponds to the pool's annual shut down for maintenance. Figure B.2b shows higher demand during the winter months, which corresponds to higher light use during the darker period of the year.

Figure B.3 – 3 years of Electric Consumption

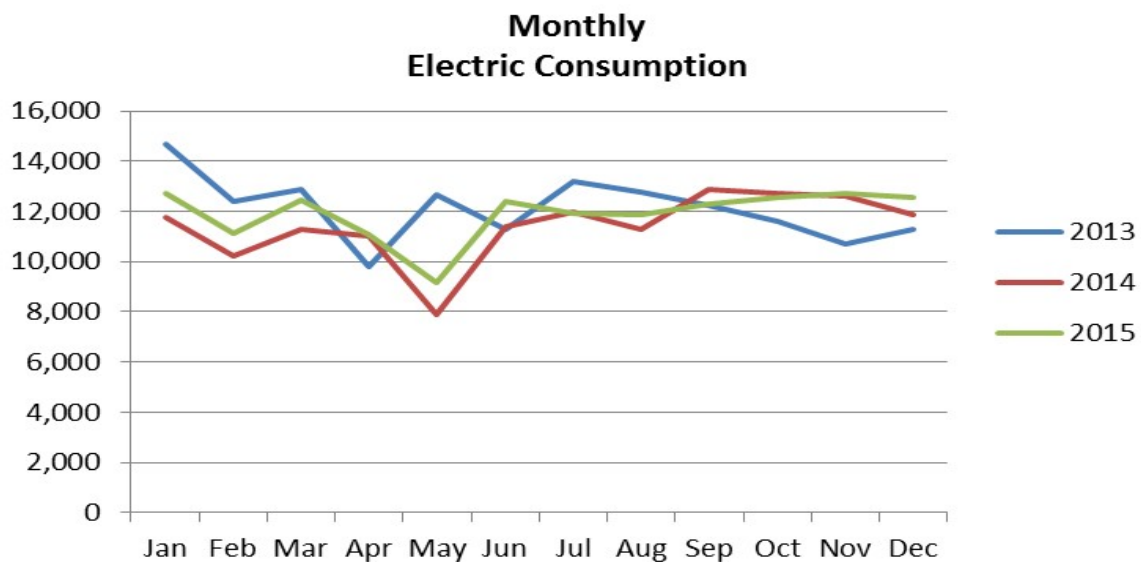


Figure B.3 shows little seasonal variation (other than the May shut down) and a very consistent year over year pattern.

Figure B.4

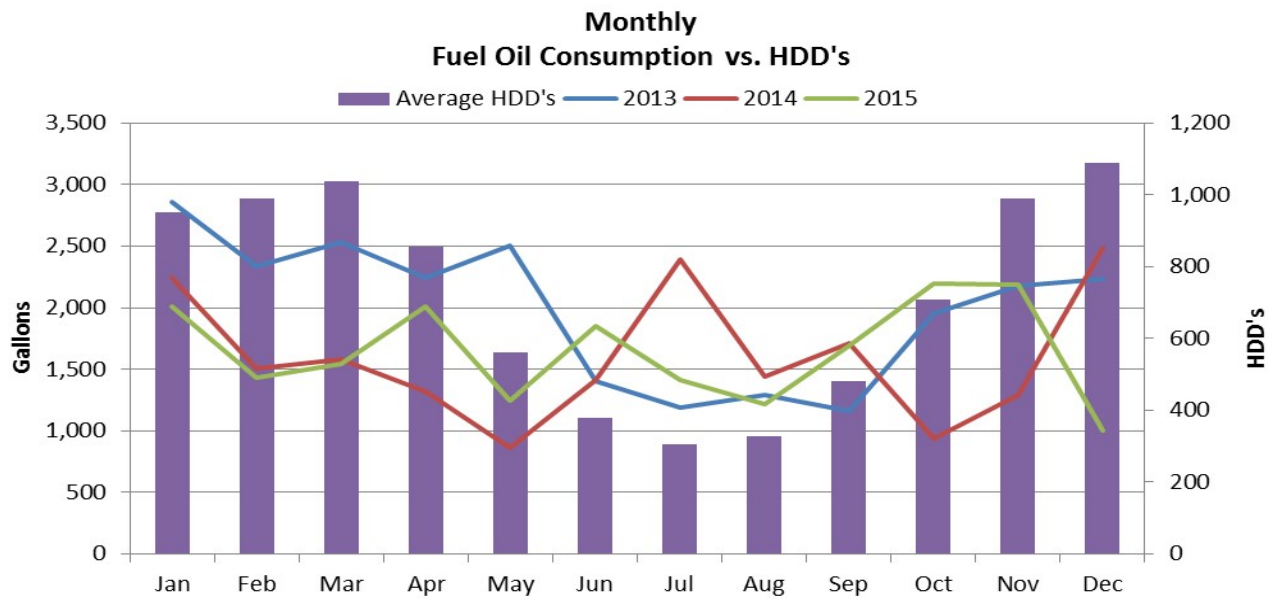


Figure B.4 shows monthly fuel oil deliveries and heating degree days (HDD's). Despite the fact that the chart represents deliveries and not consumption, the deliveries closely parallel HDD's. It is not possible to ascertain any additional insights without metering the day tank in the building.

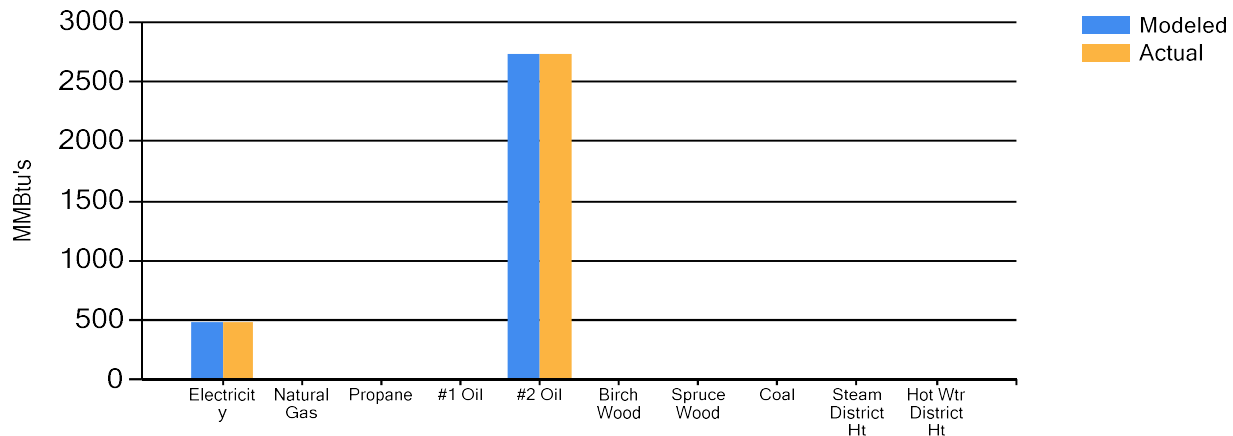
After performing the historical analysis above, a baseline period is selected, based on factors including the consistency of the data, the periods for which data was available and the current use and occupancy of the building versus its historical use and occupancy. The baseline period selected for electric consumption in this building is 2015. Figure B.6 tabulates these figures.

Figure B.6 – Baseline Energy Consumption and Costs

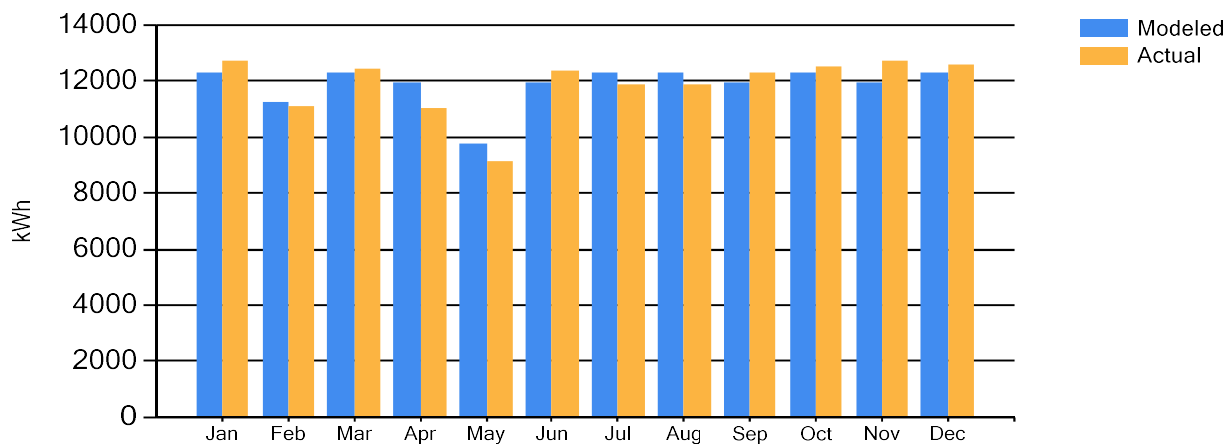
Used to Calibrate AkWarm					
	Elec (kWh)	Elec (kW)	Elec Cost	Oil (gallons)	Oil Cost
Jan	12,709	28	\$1,806	2,014	7087.52
Feb	11,116	28.8	\$1,639	1,431	5035.43
Mar	12,442	28.8	\$1,784	1,540	5389.04
Apr	11,048	27.1	\$1,617	2,013	7044.98
May	9,162	26.6	\$1,406	1,244	3732
Jun	12,403	25.2	\$1,749	1,852	5554.84
Jul	11,904	26	\$1,701	1,414	4241.44
Aug	11,886	26	\$1,699	1,218	3106
Sep	12,288	25.9	\$1,742	1,690	4310.23
Oct	12,554	25.9	\$1,771	2,196	5599.1
Nov	12,712	26.3	\$1,792	2,190	5585.42
Dec	12,572	26.3	\$1,777	1,002	2554.66
Totals	142,796	321	\$20,485	19,802	\$59,241

The Orange bars below show Actual fuel use, and the Blue bars are AkWarm©'s prediction of fuel use.

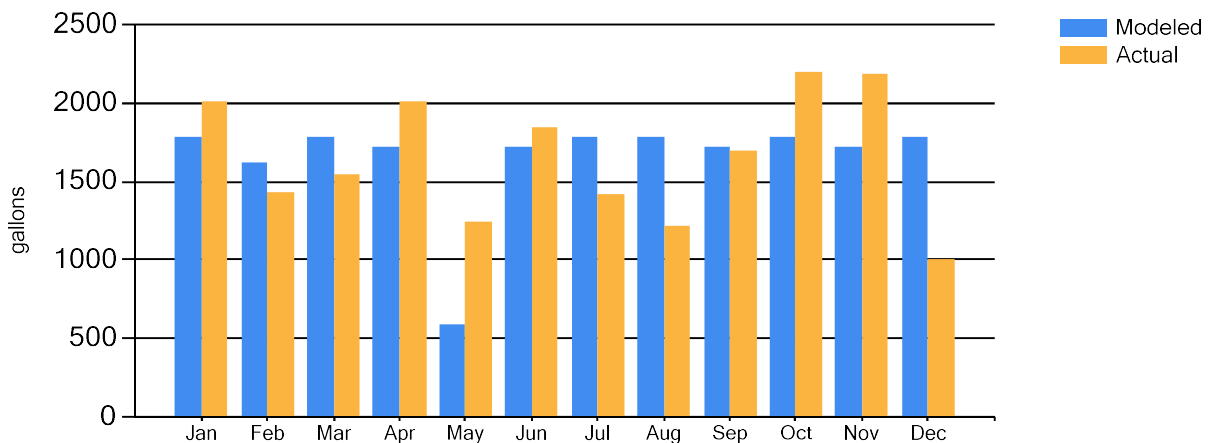
Annual Fuel Use



Electricity Fuel Use



#2 Fuel Oil Fuel Use ("Actual" monthly use is a normalized estimate based on weather conditions)



Raw Utility Data

Electric

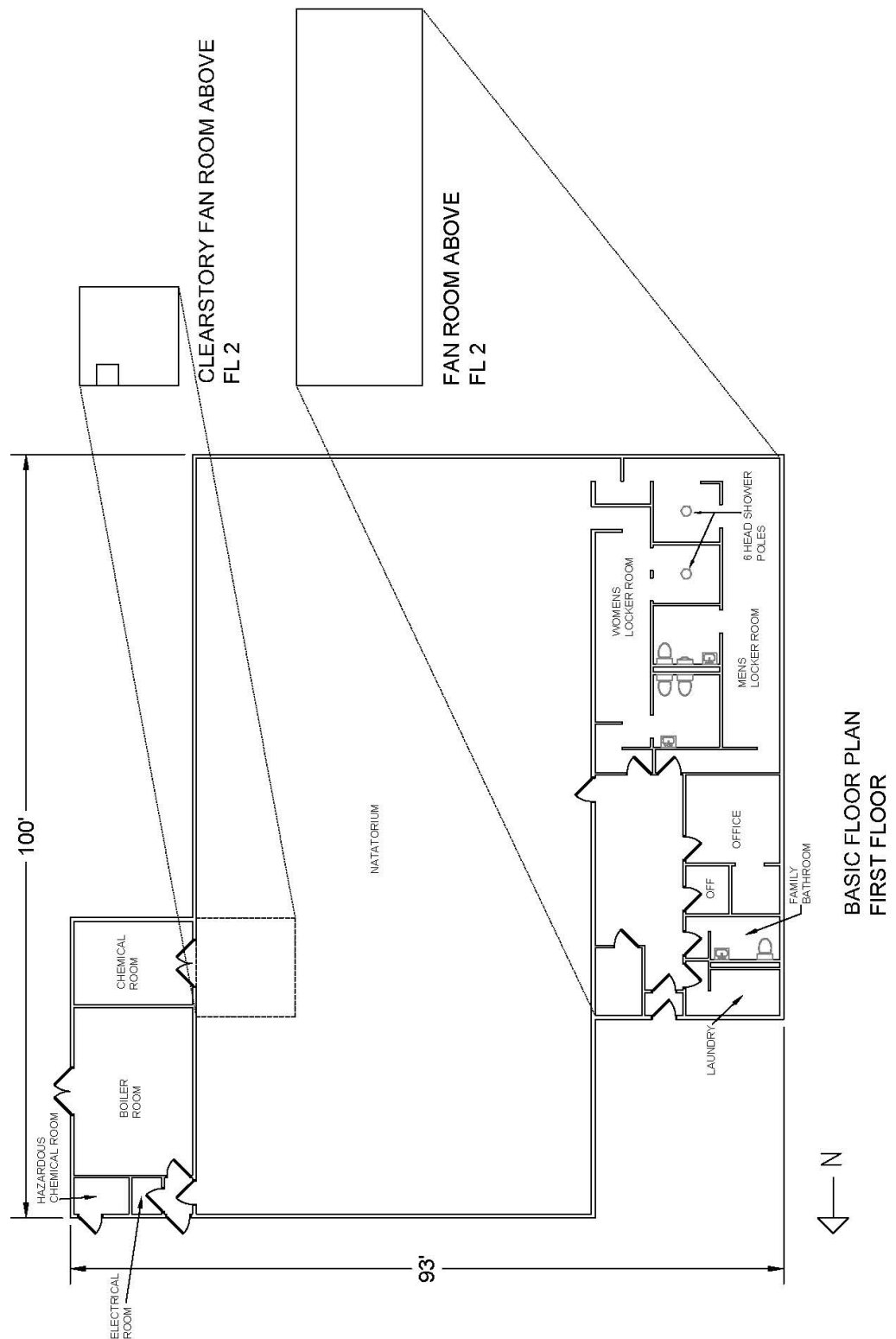
	ELECTRIC					
	kWh	Cost	kW	Cost	cust fees & tax	Total Elec Cost
Jan-13	14,683	\$1,722.64	28.5	\$244.25	\$60.00	\$2,026.88
Feb-13	12,410	\$1,473.77	28.6	\$245.10	\$60.00	\$1,778.87
Mar-13	12,850	\$1,521.94	28	\$239.96	\$60.00	\$1,821.90
Apr-13	9,800	\$1,188.00	28.4	\$243.39	\$60.00	\$1,491.39
May-13	12,661	\$1,501.25	26.9	\$230.53	\$60.00	\$1,791.78
Jun-13	11,290	\$1,351.14	25.9	\$221.96	\$60.00	\$1,633.10
Jul-13	13,190	\$1,559.17	26.5	\$227.11	\$60.00	\$1,846.27
Aug-13	12,788	\$1,515.15	26.7	\$228.82	\$60.00	\$1,803.97
Sep-13	12,264	\$1,457.78	27.1	\$232.25	\$60.00	\$1,750.03
Oct-13	11,613	\$1,386.50	27.1	\$232.25	\$60.00	\$1,678.75
Nov-13	10,698	\$1,286.32	27.1	\$232.25	\$60.00	\$1,578.57
Dec-13	11,274	\$1,349.39	27	\$231.39	\$60.00	\$1,640.78
Jan-14	11,743	\$1,400.74	27.1	\$232.25	\$60.00	\$1,692.99
Feb-14	10,245	\$1,236.72	25.6	\$219.39	\$60.00	\$1,516.11
Mar-14	11,274	\$1,349.39	26.3	\$225.39	\$60.00	\$1,634.78
Apr-14	11,025	\$1,322.12	27.2	\$233.10	\$60.00	\$1,615.23
May-14	7,877	\$977.45	27.2	\$233.10	\$60.00	\$1,270.55
Jun-14	11,400	\$1,363.18	26.7	\$228.82	\$60.00	\$1,652.00
Jul-14	11,968	\$1,425.37	26.9	\$230.53	\$60.00	\$1,715.91
Aug-14	11,261	\$1,347.96	27.1	\$232.25	\$60.00	\$1,640.21
Sep-14	12,858	\$1,522.82	27.1	\$232.25	\$60.00	\$1,815.07
Oct-14	12,708	\$1,506.40	28.4	\$243.39	\$60.00	\$1,809.78
Nov-14	12,588	\$1,493.26	28	\$239.96	\$60.00	\$1,793.22
Dec-14	11,849	\$1,412.34	28.8	\$246.82	\$60.00	\$1,719.16
Jan-15	12,709	\$1,506.51	28	\$239.96	\$60.00	\$1,806.47
Feb-15	11,116	\$1,332.09	28.8	\$246.82	\$60.00	\$1,638.90
Mar-15	12,442	\$1,477.27	28.8	\$246.82	\$60.00	\$1,784.09
Apr-15	11,048	\$1,324.64	27.1	\$232.25	\$60.00	\$1,616.89
May-15	9,162	\$1,118.15	26.6	\$227.96	\$60.00	\$1,406.11
Jun-15	12,403	\$1,473.00	25.2	\$215.96	\$60.00	\$1,748.97
Jul-15	11,904	\$1,418.37	26	\$222.82	\$60.00	\$1,701.19
Aug-15	11,886	\$1,416.40	26	\$222.82	\$60.00	\$1,699.22
Sep-15	12,288	\$1,460.41	25.9	\$221.96	\$60.00	\$1,742.37
Oct-15	12,554	\$1,489.53	25.9	\$221.96	\$60.00	\$1,771.50
Nov-15	12,712	\$1,506.83	26.3	\$225.39	\$60.00	\$1,792.22
Dec-15	12,572	\$1,491.51	26.3	\$225.39	\$60.00	\$1,776.90

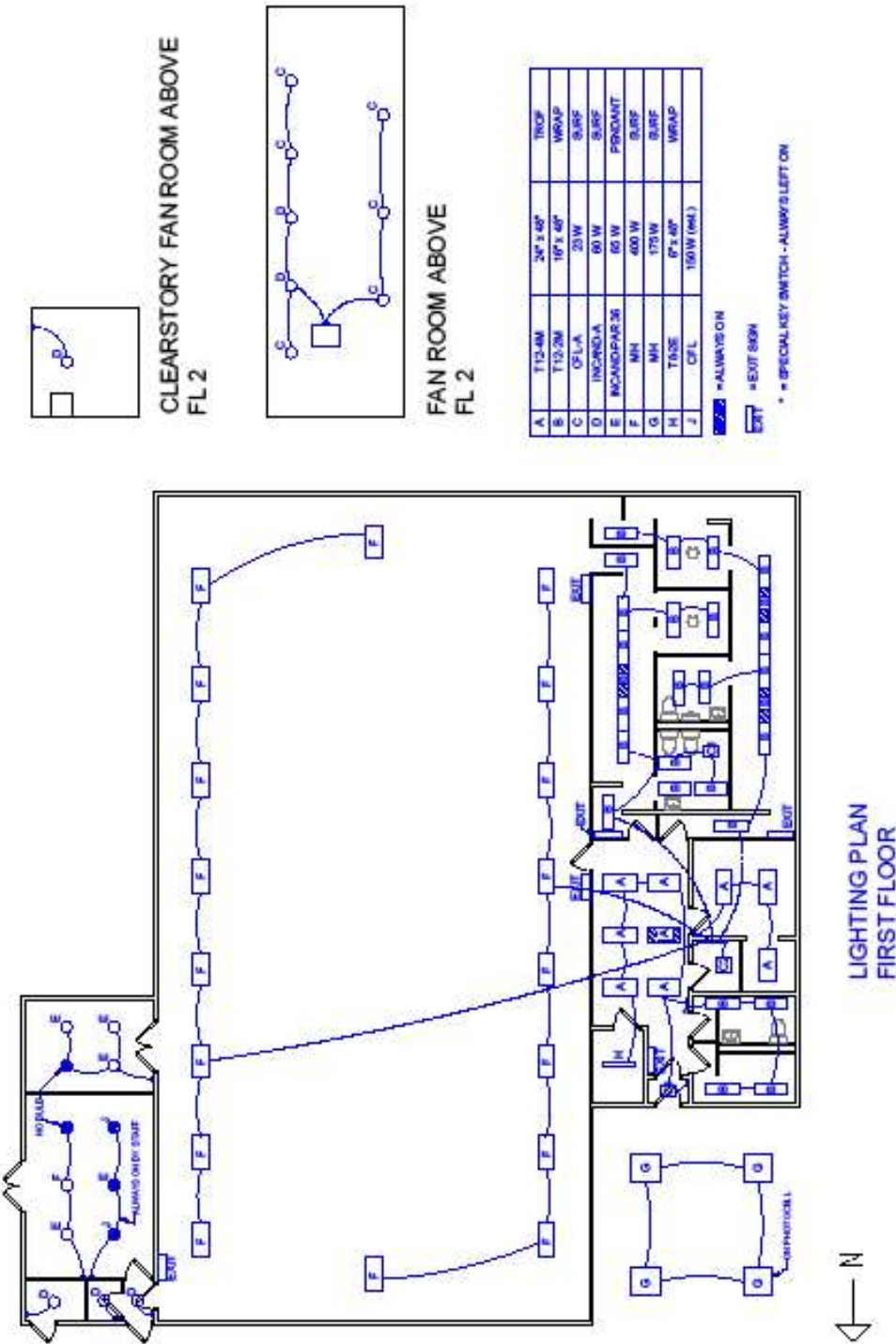
Fuel Oil

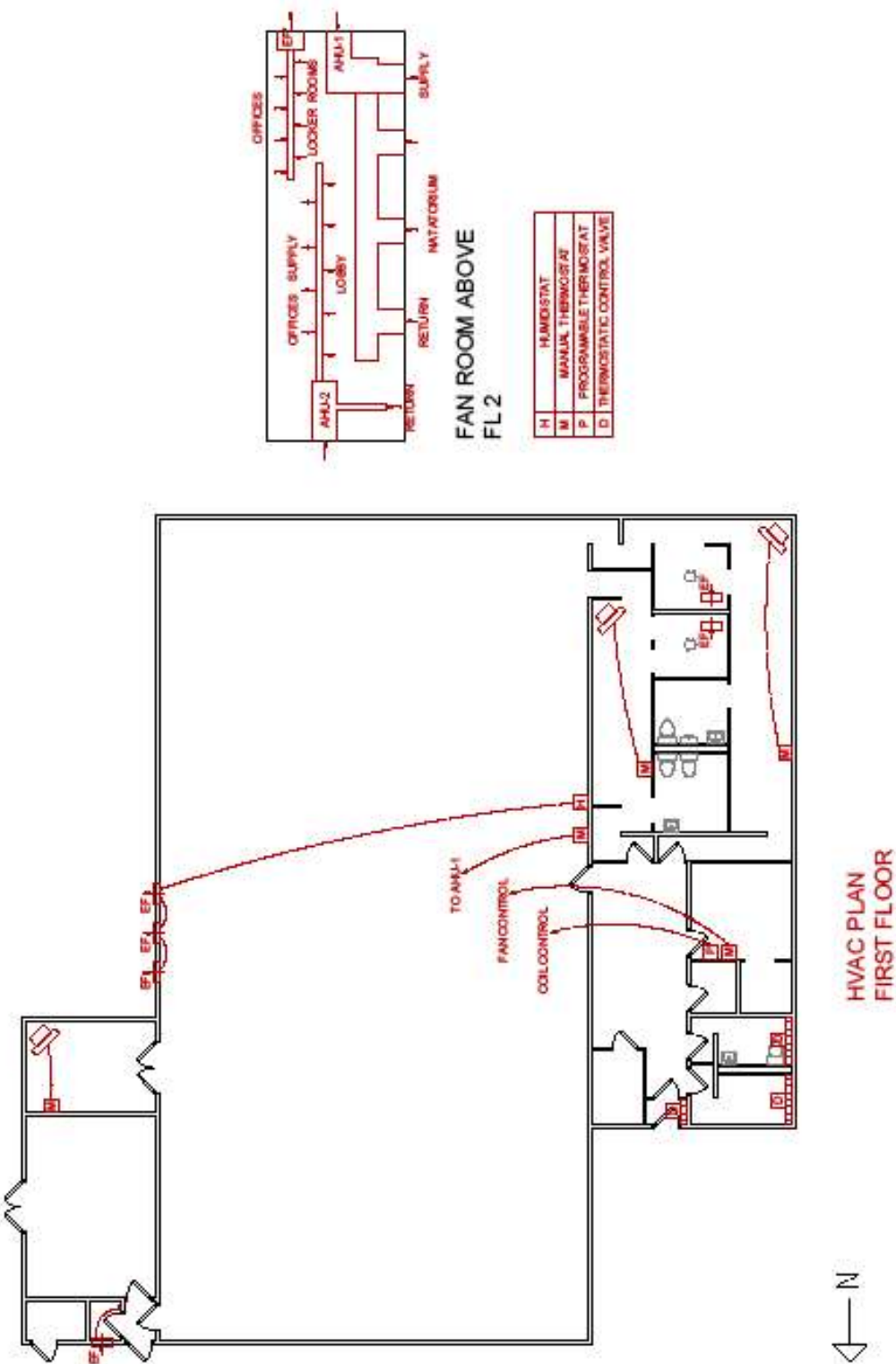
	gallons	Cost	cost/gallon	
Jan-13	2,862.4	\$11,650	\$4.07	
Feb-13	2,333.6	\$9,498	\$4.07	
Mar-13	2,532.9	\$10,309	\$4.07	
Apr-13	2,246.9	\$9,145	\$4.07	
May-13	2,501.3	\$10,180	\$4.07	
Jun-13	1,408.8	\$5,734	\$4.07	
Jul-13	1,186.7	\$4,830	\$4.07	
Aug-13	1,290.0	\$5,250	\$4.07	
Sep-13	1,165.3	\$4,743	\$4.07	
Oct-13	1,956.2	\$7,962	\$4.07	
Nov-13	2181.1	\$8,875	\$4.07	
Dec-13	2238.4	\$9,043	\$4.04	black is actual, from invoices, red is estimated
Jan-14	2248.3	\$9,218	\$4.10	
Feb-14	1511	\$6,195	\$4.10	
Mar-14	1586.1	\$6,444	\$4.06	
Apr-14	1,321.9	\$5,287	\$4.00	
May-14	859.1	\$3,436	\$4.00	
Jun-14	1,409.0	\$5,354	\$3.80	
Jul-14	2,397.5	\$9,111	\$3.80	
Aug-14	1,438.9	\$5,180	\$3.60	
Sep-14	1,712.9	\$6,166	\$3.60	
Oct-14	940.4	\$3,310	\$3.52	
Nov-14	1,296.1	\$4,562	\$3.52	
Dec-14	2,491.2	\$8,769	\$3.52	
Jan-15	2,013.5	\$7,088	\$3.52	
Feb-15	1,430.5	\$5,035	\$3.52	
Mar-15	1,539.7	\$5,389	\$3.50	
Apr-15	2,012.9	\$7,045	\$3.50	
May-15	1,244.0	\$3,732	\$3.00	
Jun-15	1,851.6	\$5,555	\$3.00	
Jul-15	1,413.8	\$4,241	\$3.00	
Aug-15	1,218.0	\$3,106	\$2.55	
Sep-15	1,690.3	\$4,310	\$2.55	
Oct-15	2,195.7	\$5,599	\$2.55	
Nov-15	2,190.4	\$5,585	\$2.55	
Dec-15	1,001.8	\$2,555	\$2.55	
				average cost for 2015
			\$ 2.99	

Appendix C – Building Schematics

(these are schematics based on building plans, observed information & assumptions)







Appendix D – Additional EEM and ECM Detail

D.1 EEM Cost Estimates

Installed costs for the recommended EEM's in this audit include the labor and equipment required to implement the EEM retrofit, but design and construction management costs are excluded. Cost estimates are typically +/- 30% for this level of audit, and are derived from one or more of the following:

- The labor costs identified below
- Means Cost Data
- Industry publications
- The experience of the auditor
- local contractors and equipment suppliers

Labor rates used:

Certified Electrician

\$125/hr

This level of work includes changing street light heads, light fixtures, running new wires for ceiling or fixture-mounted occupancy and/or daylight harvesting sensors, etc.

Common mechanical & electrical work

\$ 45/hr

Includes installing switch mounted occupancy sensors which do not require re-wire or pulling additional wires, replacing ballasts and re-wiring light fixtures, replacing florescent lamps and fixtures, replacing exterior HID wall packs with LED wall packs, replacing doors, repairing damaged insulation, etc.

Certified mechanical work

\$125/hr

Work includes boiler replacement, new or modified heat piping and/or ducting, adding or modifying heat exchangers, etc.

Non-professional technical work and logistics

\$45/hr

Includes identifying, sourcing, ordering, coordinating shipping and receipt of ordered parts, staging for work, etc. Depending on the size and complexity of the total building retrofit project, either a markup on the installed retrofit costs of 50% is used, or an estimate of hours required, at a rate of \$40/hr.

Maintenance activities

\$45/hr

Includes maintaining light fixtures, door and window weather stripping, changing lamps, replacing bulbs, etc.

D.2 Plumbing fixtures

The (4) toilets in this facility should be retrofitted with dual flush valves (see Appendix H). A dual flush toilet valve will typically pay back within 1-3 years, depending on usage.

All (12) of the shower heads should be replaced with low flow (1.5 gpm) models, even though several are already low flow; this is recommended for ease of maintenance and consistency in stocking inventory. The savings calculations are below and are included in Tables 1.1 and 4.1 as EEM #A1:

Water Savings for Shower Head replacement	
# of people/day	41.2
# days/year	355
# pre-swim showers (50%)	20.6
# post-swim showers (100%)	41.2
length of time pre-swim (min)	2
length of time post-swim (min)	12
no. of 1.5 gpm shower heads	4
no. of 4.0 gpm shower heads	8
average flow/showerhead	3.2
flow for new low flow showerheads	1.5
existing conditions - total gallons/yr	602,232
proposed conditions - total gallons/yr	285,268
savings (gallons)	316,964
savings (cost)	\$1,135
estimated cost (12 showerheads)	\$1,800
Payback (yrs)	1.6

D.3 Lighting and Lighting controls

Lighting technology in general, and LED technology in particular, is changing very rapidly in the commercial and residential sectors. This section is intended to provide general lighting and lighting controls information to the building owner.

Lighting controls include occupancy sensors, lighting management systems and daylight harvesting. Each is described below and sample products can be found in Appendix H.

Occupancy sensors

Occupancy sensors sense the presence of occupants, turn the lights on at a pre-determined level, and then turn the lights off after a programmed time period (typically from 2.5 to 30 minutes) of no occupancy. Line of sight, motion sensing **occupancy sensors** can be installed in existing single or duplex switch boxes, as well as on ceilings. **Dual technology sensors** are typically ceiling mounted in rooms, lavatories, mechanical rooms, corridors, vehicle bays and storage areas where obstacles may interfere with line-of-sight sensors. The second technology in these sensors activates lighting based on sound or changes in position, and work even when a person is fully obscured by an obstacle. **Zoned occupancy controls** are typically recommended for long corridors, large vehicle bays and large storage areas with multiple switches and lighting zones. Zoned controls are designed to activate and de-activate lighting by zone, by row, or even by fixture, based on the location of the occupant. **Step-Dim occupancy sensors** turn on a portion of room lights (usually 1/3 or 2/3) upon occupancy, and allow the occupant to manually turn on the rest of the lights. Step-dim occupancy sensors require that the lighting is wired to accommodate the step function. Occupancy sensors can reduce power consumption by 25-60%. Paybacks on occupancy sensors range from 1 to 5 years, depending on the light fixture consumption and occupancy of the room. Sample switch mounted, ceiling mounted, single technology and dual technology occupancy sensors follow. High bay, parking

garage and/or **parking lot LED lighting** is now available with **dimming, occupancy sensing** capability built into each fixture. When occupancy is sensed, the fixture activates at full brightness. After a programmed period of time of no occupancy the fixture dims to 25% or 50% of its full brightness.

When occupancy sensors are added to a room with linear florescent lighting, the recommended ballast is a programmed start ballast. An instant start or rapid start ballast will detrimentally affect lamp life when used with an occupancy sensor.

LED Tubes

As little as 24 months ago, a 21 watt, line voltage LED tube was the standard replacement for a 32 watt T8 or a 40 watt T12 lamp. Today high “Lumens per watt” LED tubes allow a 12 watt tube to replace a 32 watt T8 or a 40 watt T12 lamp and produce approximately the same amount of light. 12 months ago, all LED replacements required re-wiring the fixture to bypass the ballast and provide line voltage directly to the “tombstone” end caps.

Today, in addition to the 12w and 21w line voltage LED tubes, there are 14w LED tubes which will operate on instant start electronic ballasts with no fixture re-wiring required – although in a commercial environment, it is advisable to remove the ballast and re-wire the fixture rather than use the existing ballast. This is recommended because at some point the ballast will fail and the same amount of labor (as re-wiring the fixture in the first place) will be required to replace the ballast, and the cost of a new ballast will be incurred. It is advisable to have a qualified electrician confirm ballast compatibility and LED tube selection, and perform the fixture re-wiring.

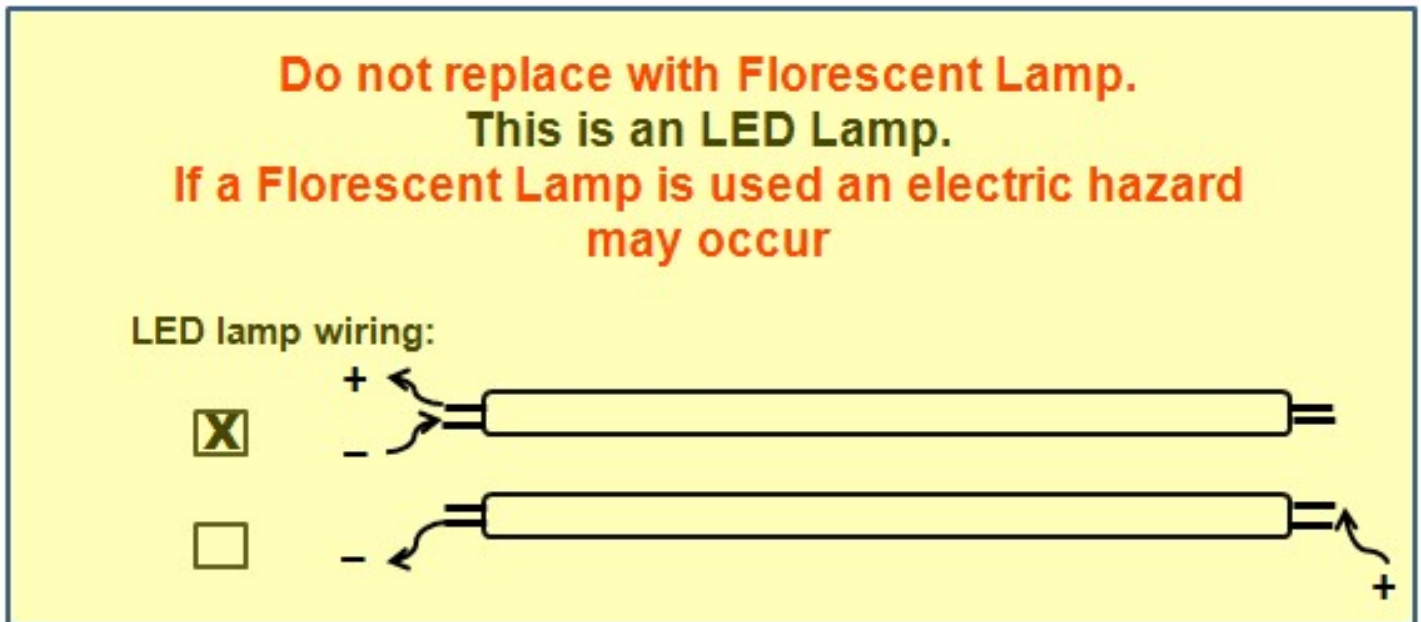
LED Screw-in bulbs

A-type, screw-in bulbs, typically using 9.5 watts, are now available at a cost of less than \$5.00 each. LED reflector bulbs, including BR30 (3.75” diameter) and BR36 (4.5” diameter) sizes, typically using 9.5 watts, are now available for less than \$12.00 each. All of these bulbs come in dimmable (more expensive) and non-dimming versions, and in a color spectrum which closely simulates incandescent light. See the Energy Star website at https://www.energystar.gov/index.cfm?c=lighting.pr_lighting_landing for additional information on lighting.



If a fluorescent lamp is installed in a fixture that has been re-wired for a line voltage LED lamp, it will short and may be a hazard. Therefore, after re-wiring a fixture, a warning label similar to the one that follows, should be put in an obvious location inside the fixture to prevent installation of the wrong kind of lamp.

**Sample Safety Sticker to install after re-wiring
florescent fixtures for LED lamps**



D.4 Additional Description of ECM's

No and low-cost EEM's are called Energy Conservation Measures (ECM's) and are usually implemented by the owner or by the existing operations and maintenance staff (they are also called O & M recommendations). ECM's can result in cost and consumption savings, but they also prevent consumption and cost increases, which are more accurately called "avoided costs" rather than cost savings. Listed below are a range of ECM's, some of which may be applicable to the subject building.

- 1. Ongoing Energy Monitoring:** Extensive research by a number of organizations has validated the value of building system monitoring as an effective means to reduce and maintain lower energy consumption. A few of these organizations are the Lawrence Berkeley National Laboratories, the California Energy Commission and Texas A & M University.

HVAC "performance drift" is the deterioration of an HVAC system over time, resulting from a number of preventable issues. Performance drift typically results in a 5% to 15 % increase in energy consumption. Lawrence Berkeley National Laboratories identified these common contributors to performance drift:

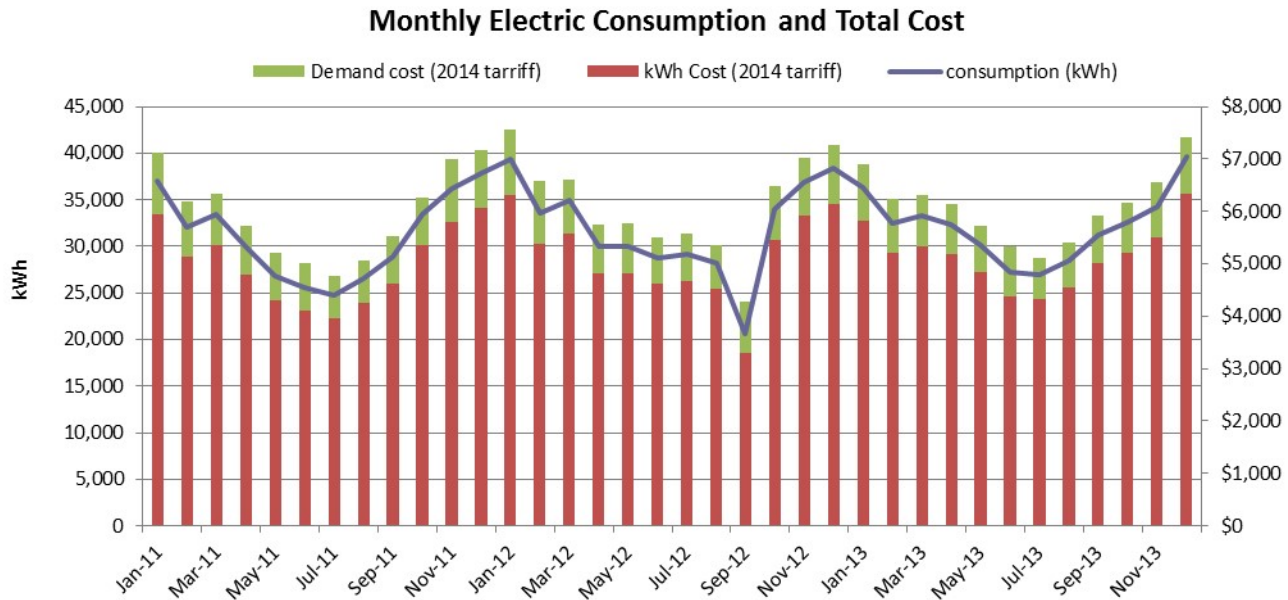
- Manually over-ridden automatic control settings including programmable thermostats, motor control switches, disabled variable frequency motor drives.
- Timer clocks not used or disabled
- Duct and/or valve leakage or dysfunction
- Pumps, fans or actuators not operating correctly
- Scheduling, resets and/or setbacks not matching building usage
- Degradation of sensors

A study of 60 commercial buildings by the same organization found that 40% had HVAC control problems, 15% had missing equipment and 25% had equipment that was not operating properly. The resulting inefficiencies created by problems like these may have been identified by this energy audit – although further investigation would be required to identify the specific causes. Any existing problems should be rectified per the EEM's recommended in this audit and a monitoring program should be implemented to prevent future performance drift.

It is recommended to implement a basic energy monitoring system for this building.

Monitoring Systems: There is a range of simple to very complex building monitoring systems commercially available, most utilize a user-friendly internet or network based dashboard. There are stand-alone systems as well as monitoring capability built into most DDC control systems. Some systems do not have the capability to monitor NG consumption. A small sampling of some commercially available stand-alone building monitoring systems includes:

Do it Yourself – A simple spreadsheet with an accompanying graph may be sufficient to alert a building owner that energy consumption has gone awry. All forms of energy consumed by the building (kWh, gallons of fuel, therms of gas, etc.) should be recorded on a monthly basis, and at least a rolling, 3 year historical trend should be carried. The figure below is an example.



Mach Energy – recurring “subscription model”; sensors are installed and proprietary software and internet based dashboards are used. Programs and software ranges from \$1995/building/year for entry level packages to \$5000+/building/year for comprehensive packages. <http://www.machenergy.com/>

Monnit – “product model”; sensors are purchased (cost from \$500-\$1500) and installed, basic network-based dashboard is free. A more comprehensive, higher level of functionality, internet-based dashboard for a building of this size is \$60-\$100/year. <http://www.monnit.com/>

ARIS - The Alaska Housing Finance Corporation offers free energy tracking software online. The Alaska Retrofit Information System can help facility owners track and manage energy use and costs. Once data is entered, through spreadsheet or online, several reports are available to rank energy use and energy cost indices, graph year over year use for individual buildings, and compare your buildings to other facilities with the same use, i.e., how does my library, or fire station compare in energy use to other communities libraries or fire stations. For more information contact Scott Waterman at swaterman@ahfc.us

BMON - AHFC has developed a building monitoring software to use with Monnit or other sensors. This software is free to any user, open source, can be modified to user needs, and can absorb and display data from multiple sources. It can manage multiple buildings, and can be installed by anyone with a little IT experience. This software is available at <https://code.ahfc.us/energy/bmon>.

2. **Create an organizational “energy champion” and provide training.** It can be an existing staff person who performs a monthly walk-through of the building using an Energy Checklist similar to the sample below. Savings from this activity can vary from zero to 10% of the building’s annual energy cost.

CHECKLIST - MONTHLY WALK-THROUGH OF EACH BUILDING	check
Thermostat set points and programming	
What are the inside and outside temperatures? Is it too hot or cold in the building?	
* Is a computer and display left on while the workstation is unoccupied?	
**Are unoccupied room lights on?	
Are personal heaters in use?	
Are doors or windows open with the heat on?	
Review monthly consumption data in monitoring system dashboard or spreadsheet	

* Consider adding an Isole plug load management device (Appendix C)

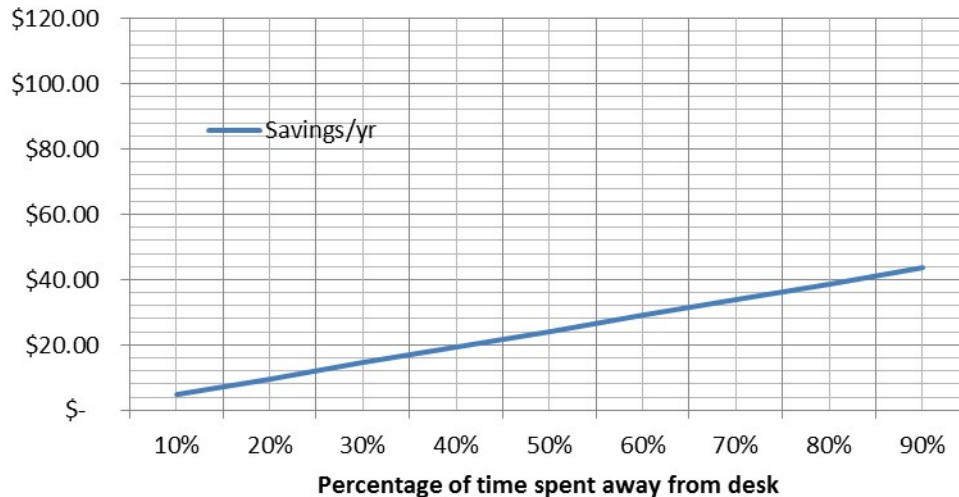
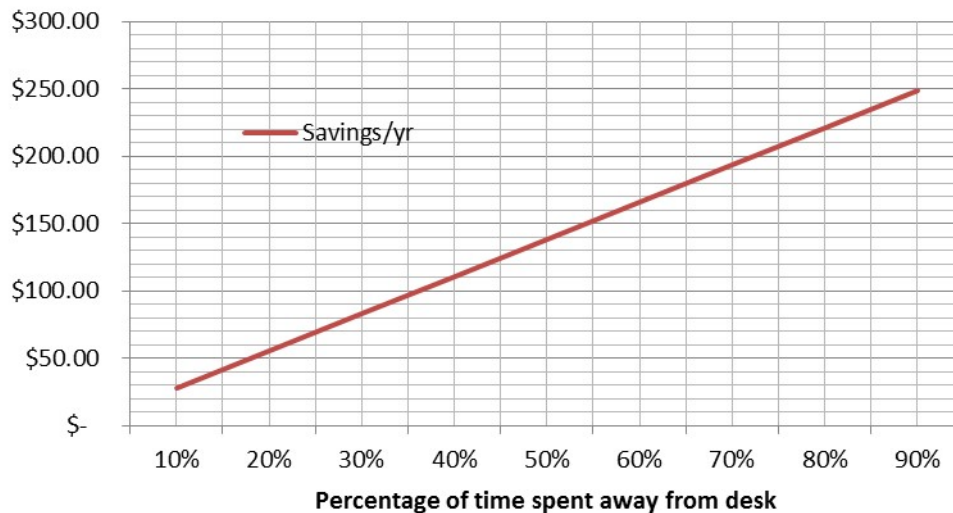
** Consider adding occupancy sensors (Appendix C)

- 3. Efficient Building Management:** Certain EEM's and ECM's are recommended to improve the efficiency of building management. As an example, all lights should be upgraded at the same time, all lamps should be replaced as a preventative maintenance activity (rather than as they fail, one at a time), lamp inventory for the entire building should be limited to a single version of an LED or fluorescent tube (if at all possible), and all appropriate rooms should have similar occupancy controls and setback thermostats.

Other examples of efficient building management include:

- If a building is only partially occupied and has adequate zoning, group occupants together in the same heating zone and turn down the heat and turn off lighting in the unoccupied zones.
- Conversion from an 8 hr. per day, 5-day work to a 10 hr. per day, 4-day work week, or conversion to a "work 1 day at home" and shutting down the office for 1 day per week will save energy
-

- 4. Air Infiltration:** All entry and roll up doors and windows should be properly maintained and adjusted to close and function properly. Additionally, weather stripping should be maintained if it exists or added if it does not. Heat loss around the lower portion of several doors is apparent in the IR images in Appendix F. Poorly maintained weather stripping or leaky doors or windows can add 1000 CFM of infiltration, which is calculated to add \$424/yr by AkWarm© to heating costs in this building.
- 5. Turn off plug loads** including computers, printers, faxes, etc. when leaving the office. For workstations where the occupant regularly leaves their desk, add an occupancy sensing plug load management device (PLMD) like The "Isole IDP 3050" power strip produced by Wattstopper. The graphs below demonstrate annual savings in Hoonah and Haines for various amounts of time spent away from the desk – it is not unusual to be away from the desk for 50% of the work day.

Single monitor, no personal htr**Two monitors, personal heater**

6. **HVAC Maintenance** should be performed annually to assure optimum performance and efficiency of the boilers, circulation pumps, exhaust fans and thermostats in this building. An unmaintained HVAC component like a boiler can reduce its operating efficiency by 3% or more.
7. **Replace key-switch controlling Laundry room lights:** Because a “key” is not handy, these lights are left on 24/7 for no reason – one of the fixtures in the lobby is a 24/7 night light. It is recommended to replace this switch with a normal manual light switch.
8. **Additional ECM recommendations:**
 - a. Maintain air sealing on the building by sealing all wall and ceiling penetrations including switch, electrical outlet and light fixture junction boxes and window and door caulking. Air sealing can reduce infiltration by 500-1000 cfm.
 - b. At their EOL, replace refrigeration equipment with Energy Star Versions.

Appendix E – Project Summary

ENERGY AUDIT REPORT – PROJECT SUMMARY	
General Project Information	
PROJECT INFORMATION	AUDITOR INFORMATION
Building: Bob Korn Memorial Pool	Auditor Company: Energy Audits of Alaska
Address: 609 Railroad Ave	Auditor Name: Jim Fowler, PE
City: Cordova	Auditor Address: 1231 W. Northern Lights Blvd
Client Name: Meghan Schinella	Suite #807
	Anchorage, AK 99503
Client Address: 609 Railroad Ave Cordova, AK 99574	Auditor Phone: (907) 269-4350
Client Phone: (907) 424-7200	Auditor FAX: () -
Client FAX:	Auditor Comment:
Design Data	
Building Area: 7,755 square feet	Design Space Heating Load: Design Loss at Space: 0 Btu/hour with Distribution Losses: 0 Btu/hour Plant Input Rating assuming 82.0% Plant Efficiency and 25% Safety Margin: 0 Btu/hour Note: Additional Capacity should be added for DHW and other plant loads, if served.
Typical Occupancy: 43 people	Design Indoor Temperature: 77.4 deg F (building average)
Actual City: Cordova	Design Outdoor Temperature: -2 deg F
Weather/Fuel City: Cordova	Heating Degree Days: 9,004 deg F-days
Utility Information	
Electric Utility: Cordova Electric Cooperative - Commercial - Sm	Natural Gas Provider: None
Average Annual Cost/kWh: \$0.144/kWh	Average Annual Cost/ccf: \$0.000/ccf

Annual Energy Cost Estimate									
Description	Space Heating	Space Cooling	Water Heating	Ventilation Fans	Lighting	Other Electrical	Swimming Pool	Service Fees	Total Cost*
Existing Building	\$3,668	\$0	\$11,174	\$8,121	\$5,919	\$3,430	\$47,430	\$0	\$79,743
With Proposed Retrofits	\$3,557	\$0	\$10,311	\$684	\$1,276	\$3,430	\$32,512	\$0	\$51,771
Savings	\$111	\$0	\$863	\$7,437	\$4,643	\$0	\$14,917	\$0	\$27,972

* These Total Cost and Savings figures do not include water/sewer costs or water savings by EEM #A1

Appendix F – Photographs and IR Images



AHU-1 inlet in center, exhaust vent at left; exhaust has been unused since the fan was de-commissioned



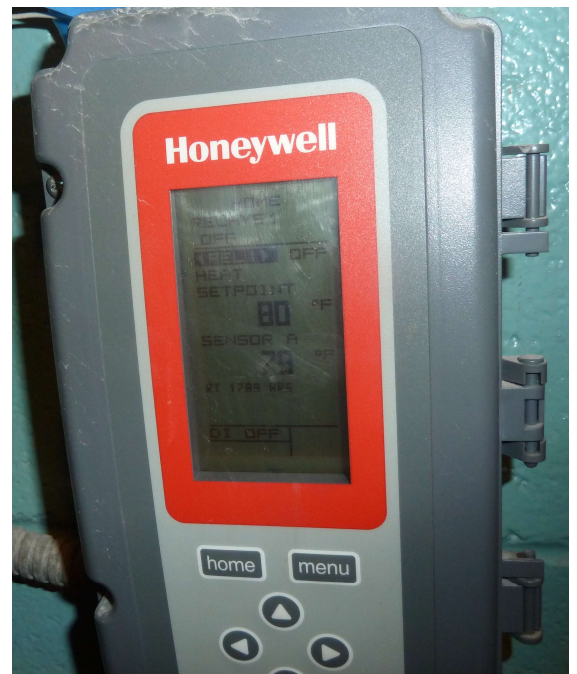
Hot water generators in background, boiler in foreground



Boiler appears to be in good condition



Filter pit and water temperature controller

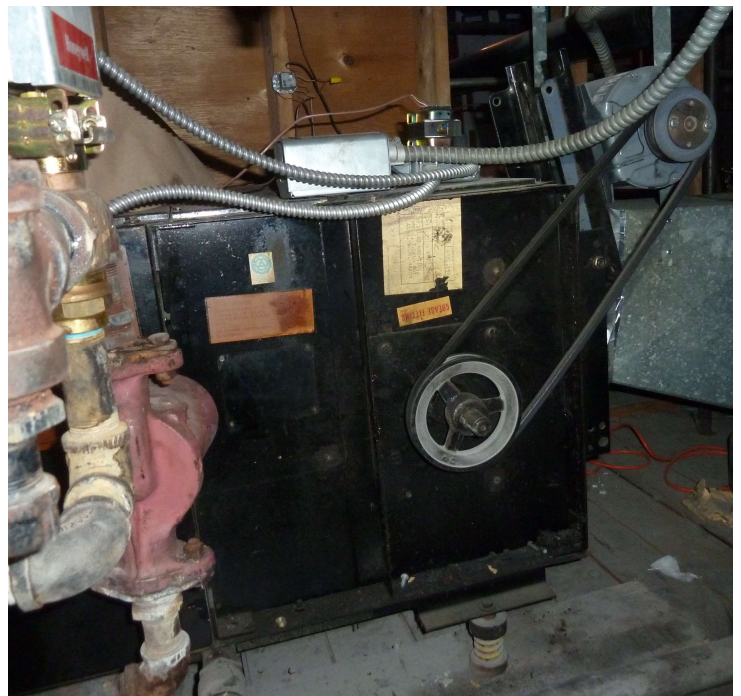




Salt system for water sanitization



AHU-2





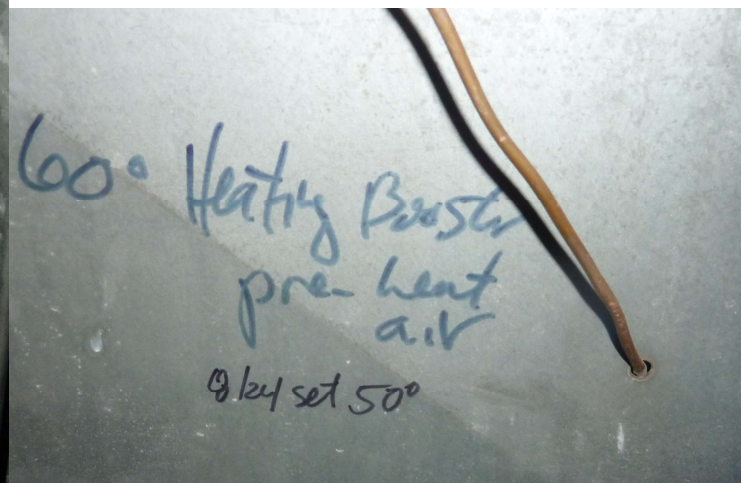
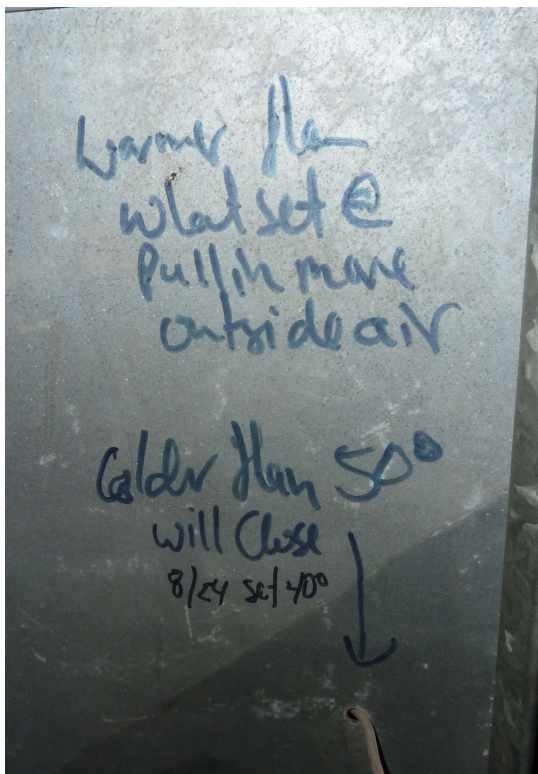
Control panel for AHU-2 above; time clock for AHU-2 (right) is not in use



AHU-2 heating coil should be cleaned inside and out



AHU-1 primary heating coil



Pre-heat and main heating set points have been altered



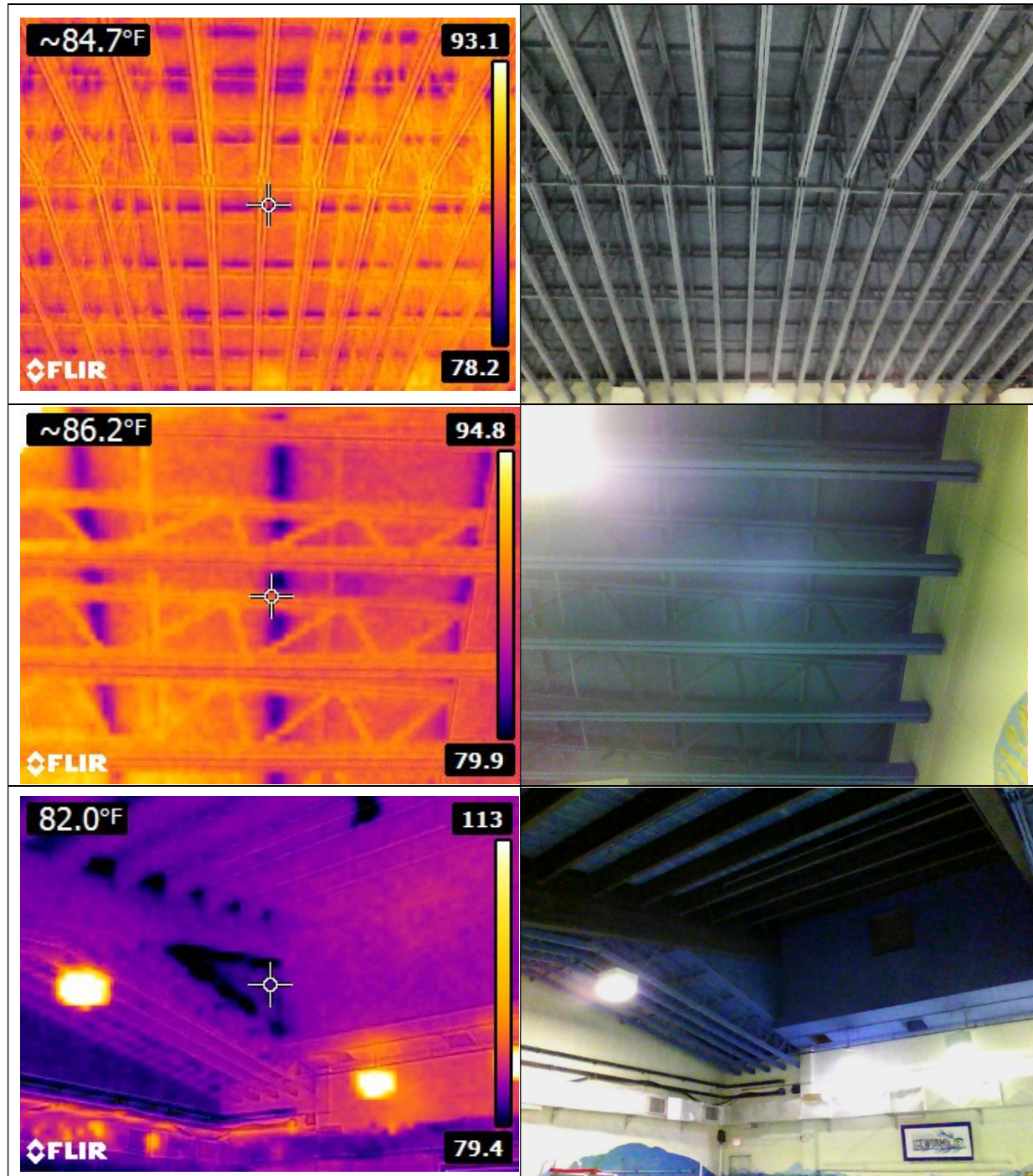
Clearstory exhaust fans; #3 is manually turned off, #2 and #1 seem to run continually



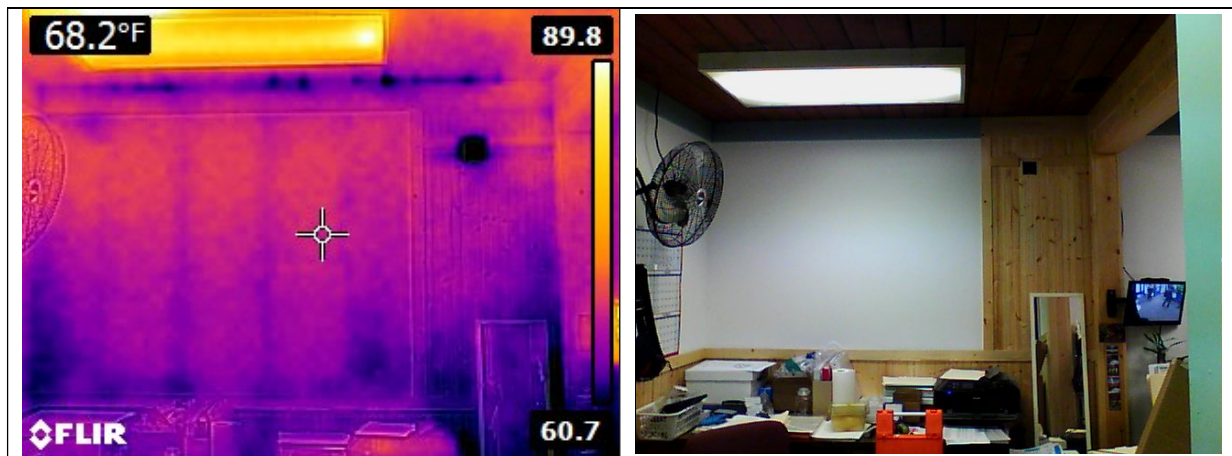
Typical manual thermostatic control valve on fintube baseboard heaters



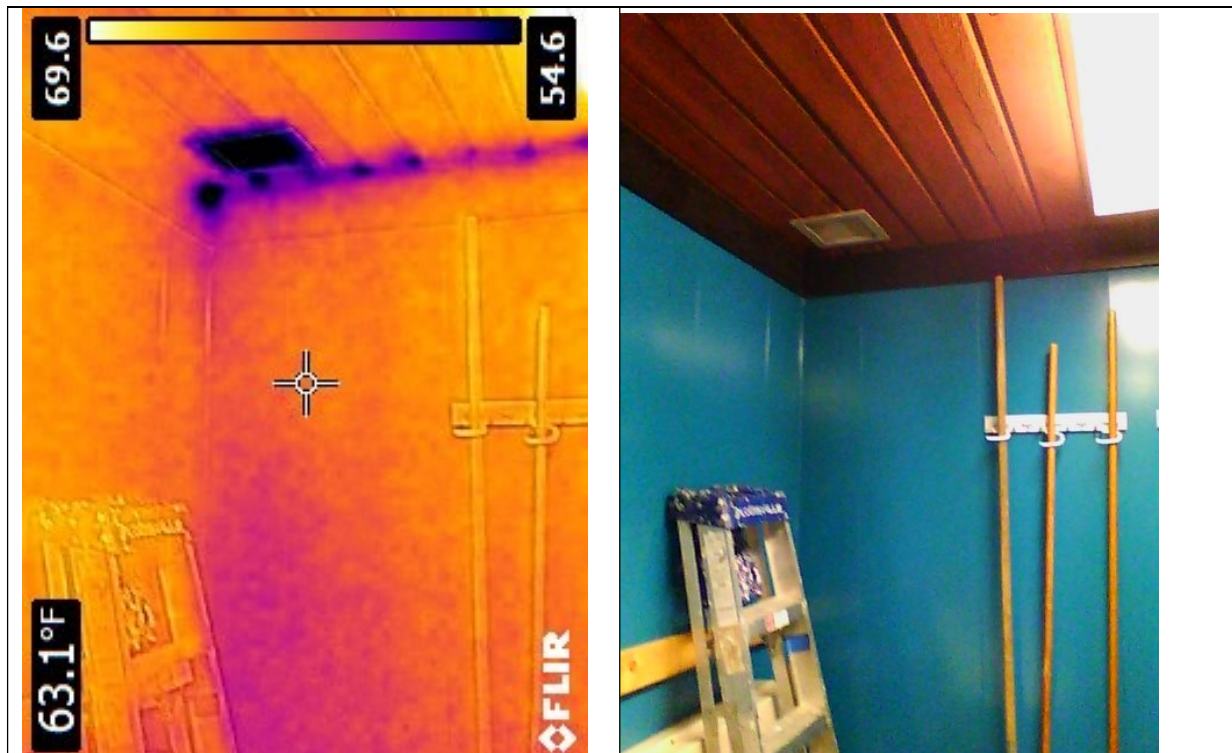
Unit heater typical of Men's and Women's locker rooms. Note wall switch is turned off due to occupancy complaints of noise and air blowing on wet bathers



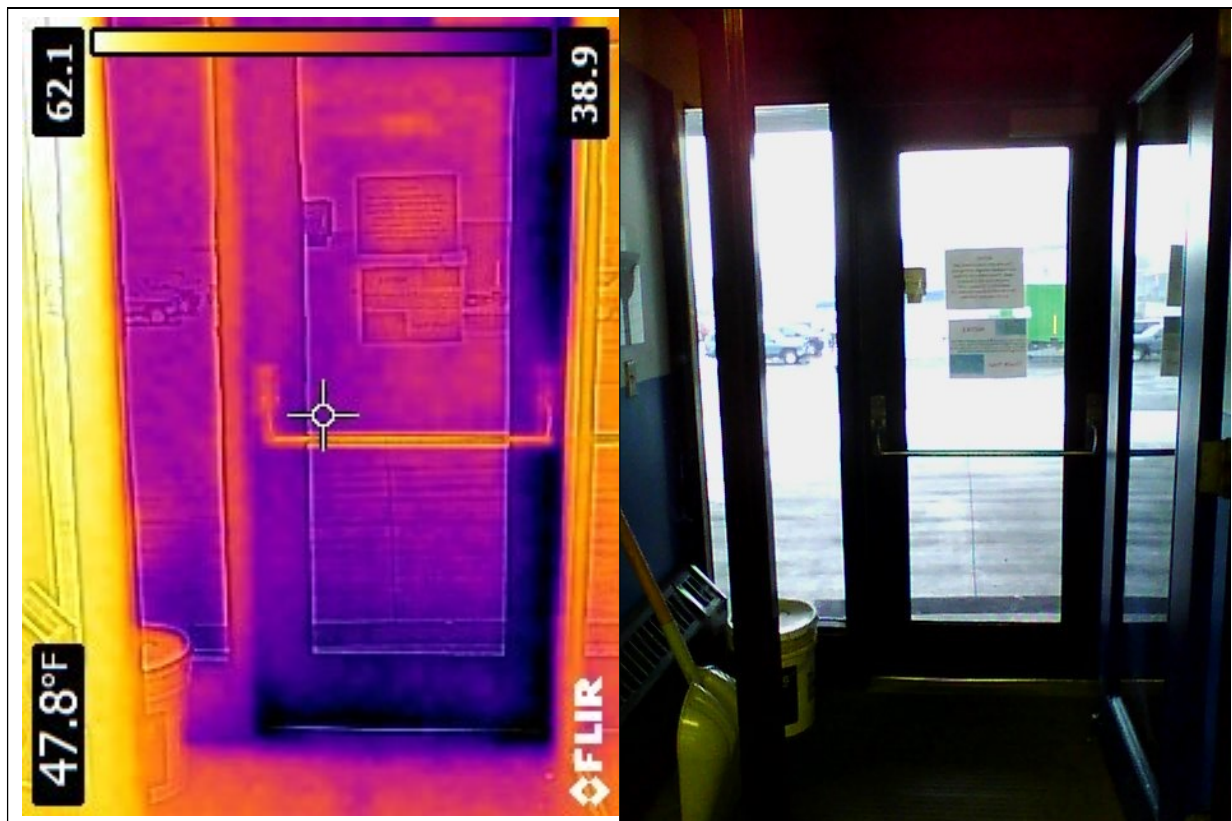
1. Rigid roof insulation has many poorly sealed joints and sections, resulting in a reduction of the overall insulation value



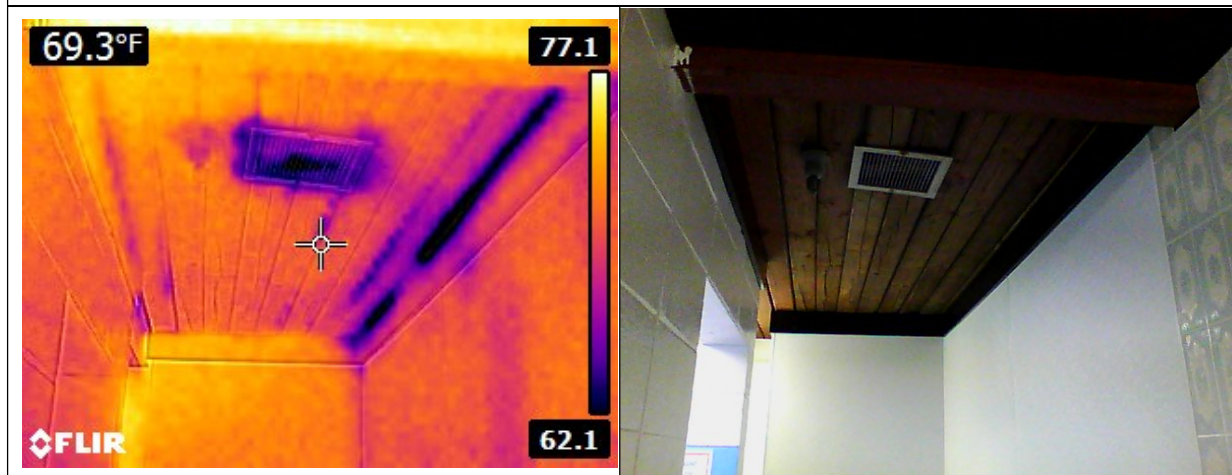
2. Heat loss wicking through studs is fairly normal. Infiltration through electrical outlets and switch covers should be eliminated by sealing all penetrations



1. Additional infiltration through de-commissioned exhaust ducting should be sealed. Poor insulation in corners is normal and difficult to rectify



2. Entry doors would benefit from new weather stripping and sweep

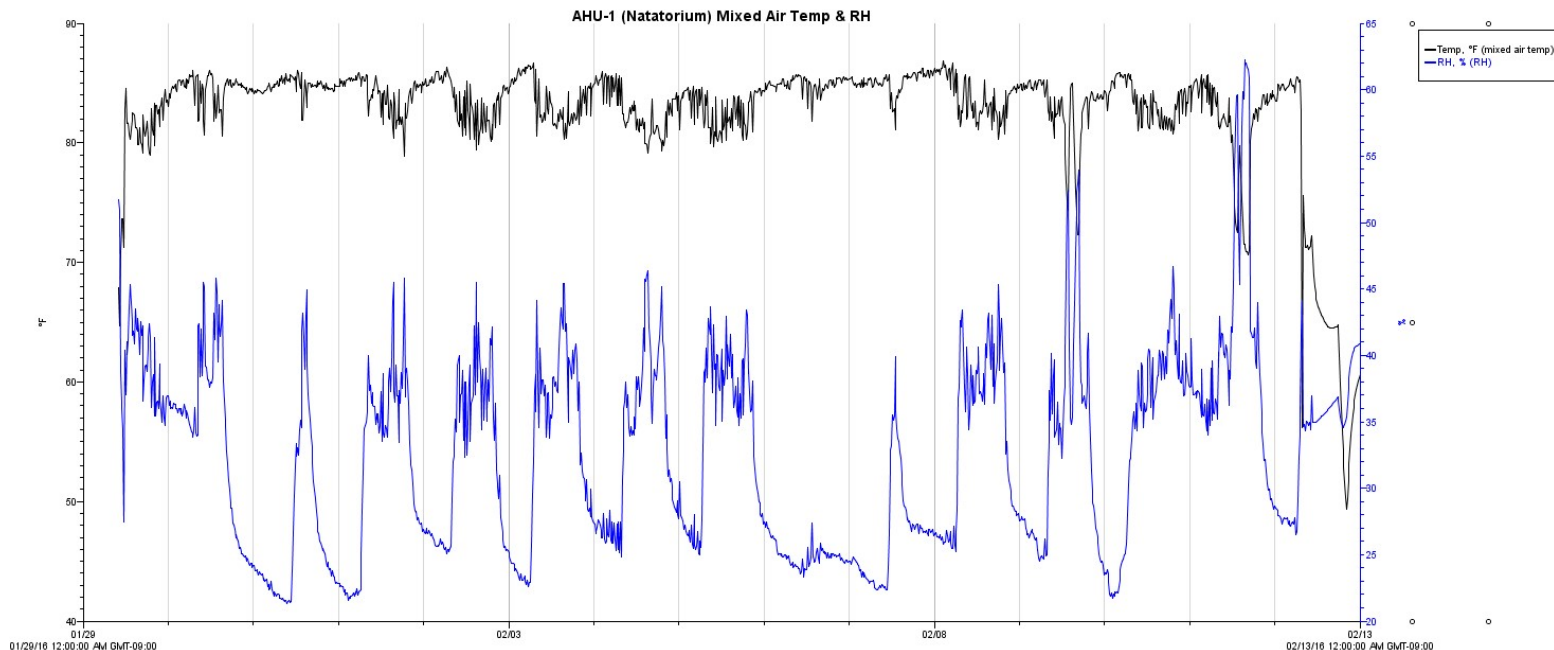


3. More infiltration through de-commissioned exhaust ducting; should be sealed

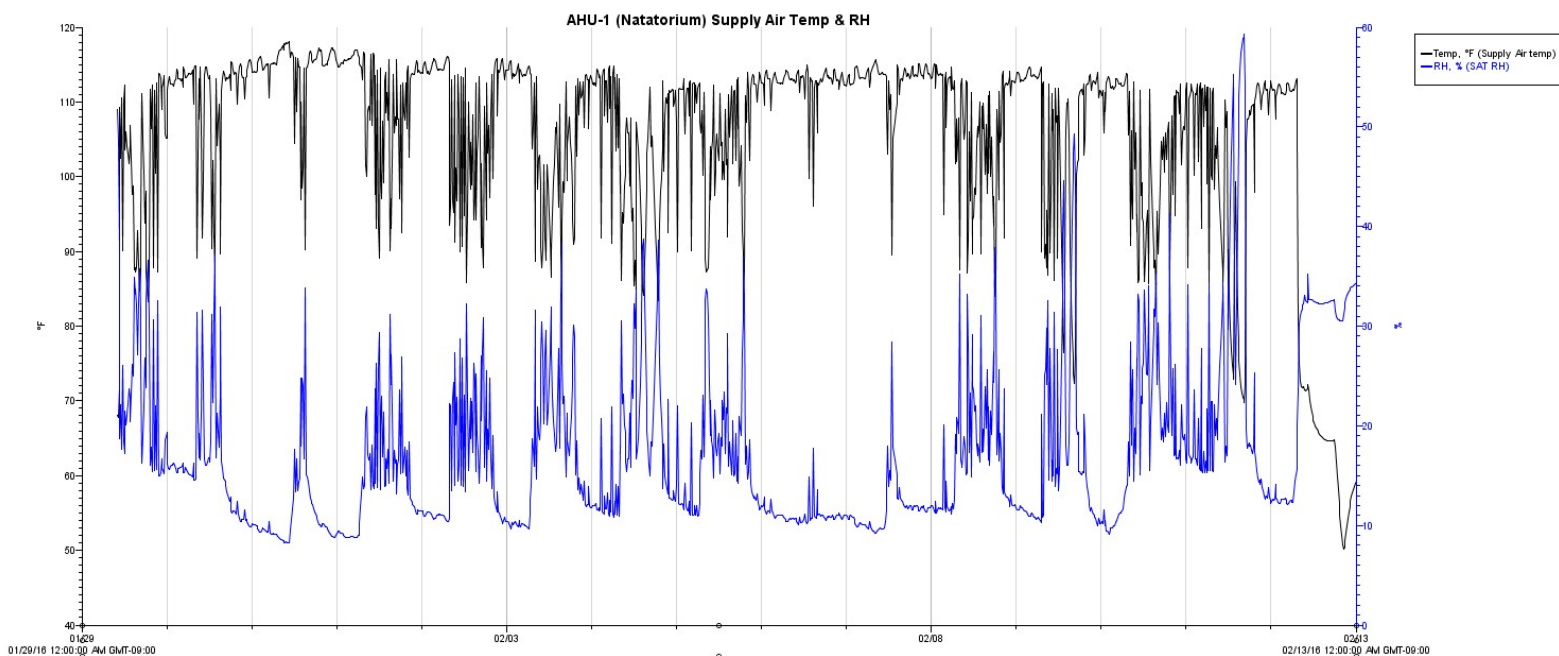
Appendix G – Data Logging Graphs

(Logging period was 1/29/16 through 2/11/16)

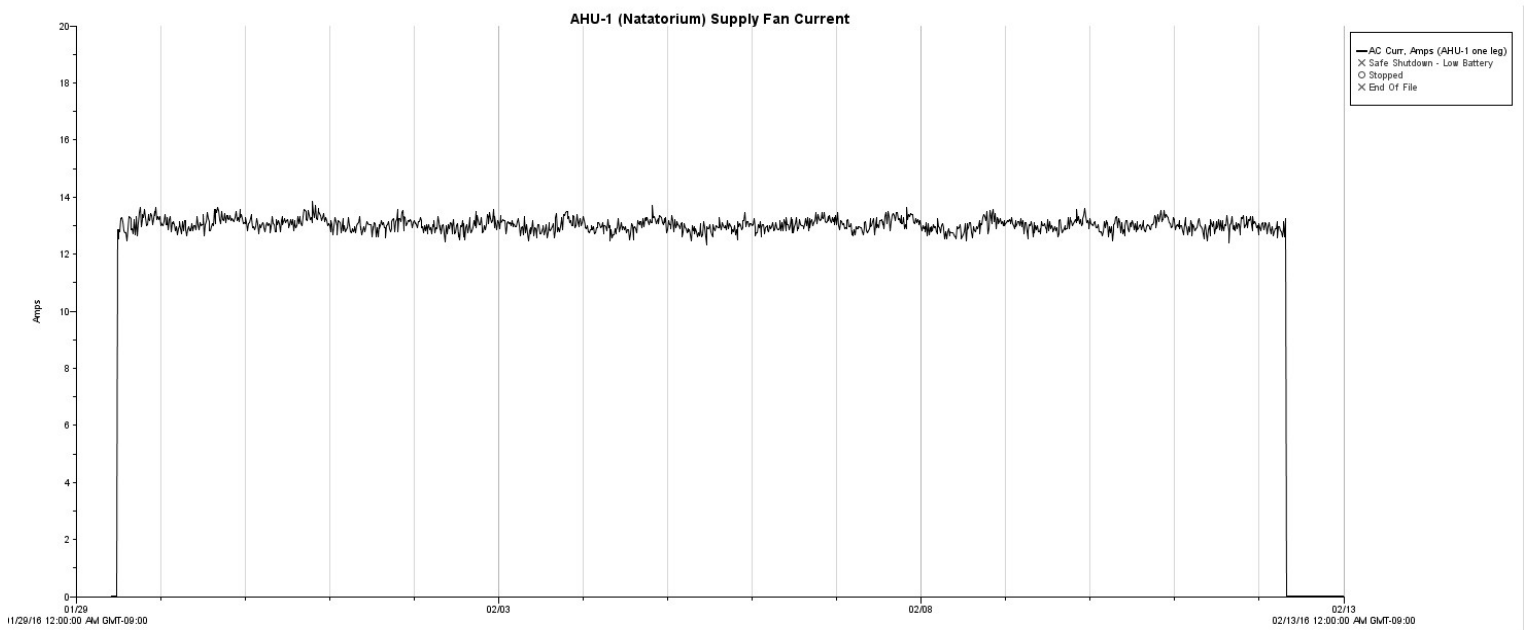
AHU-1 mixed air temp and RH



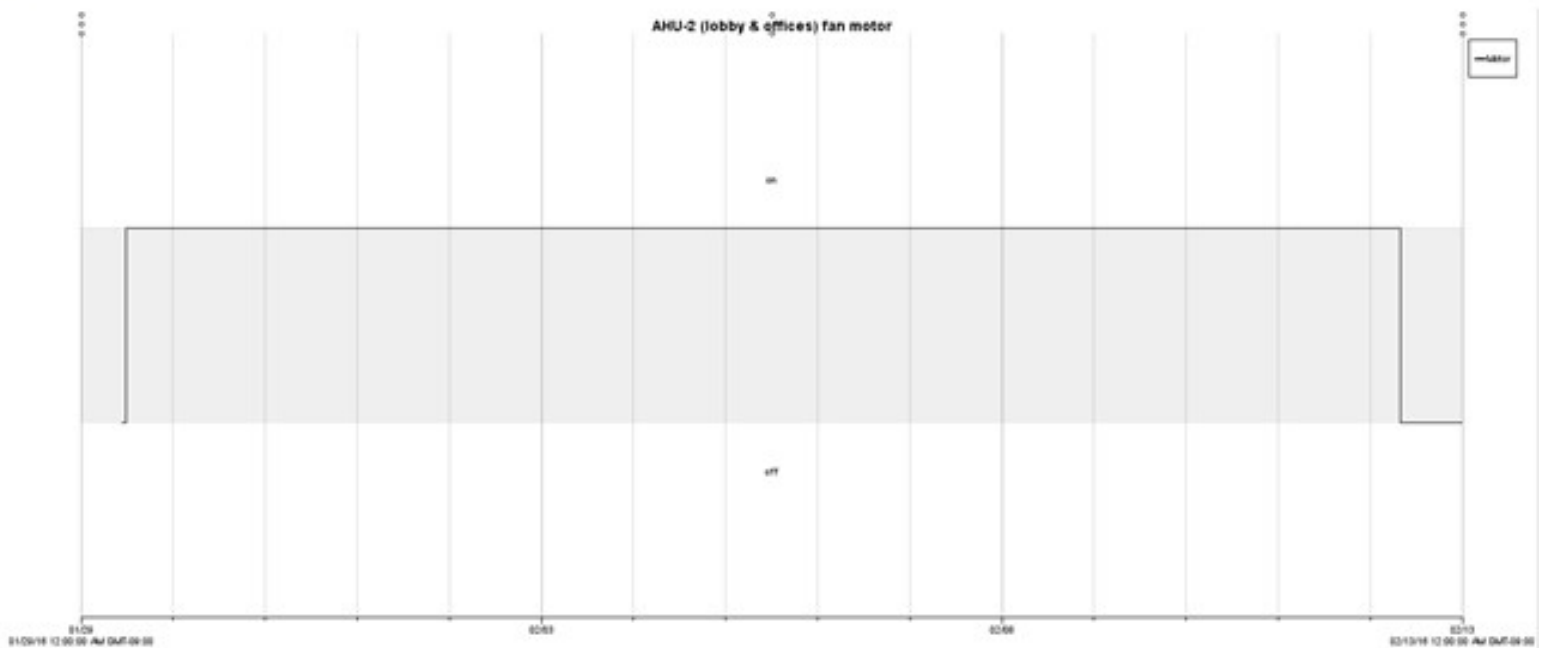
AHU-1 supply air temp and RH



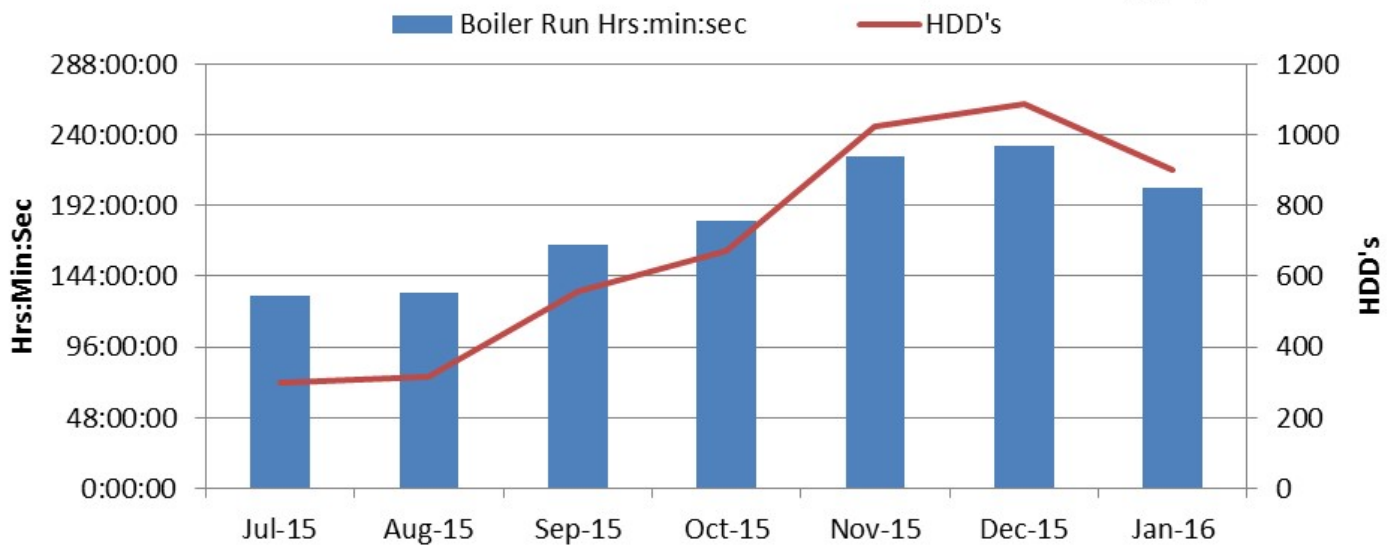
AHU-1 Current (indicates that the unit ran continually during the period)



AHU-2 motor on/off (indicates that motor was “on” continually during the period)

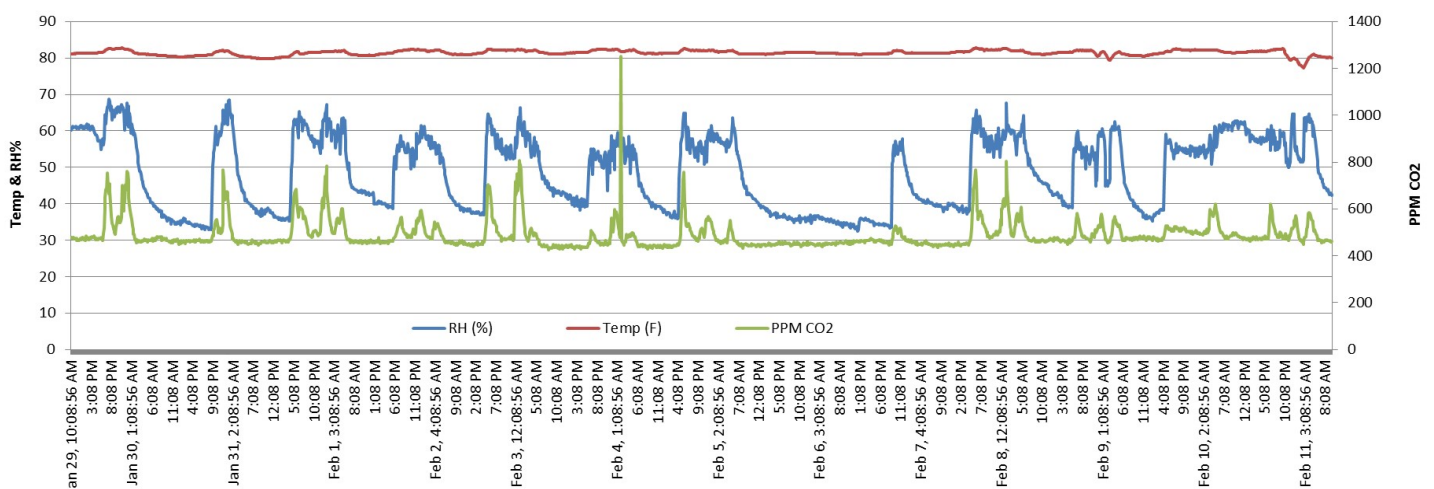


Cordova Pool Boiler burner motor run time (ACEP data logger)

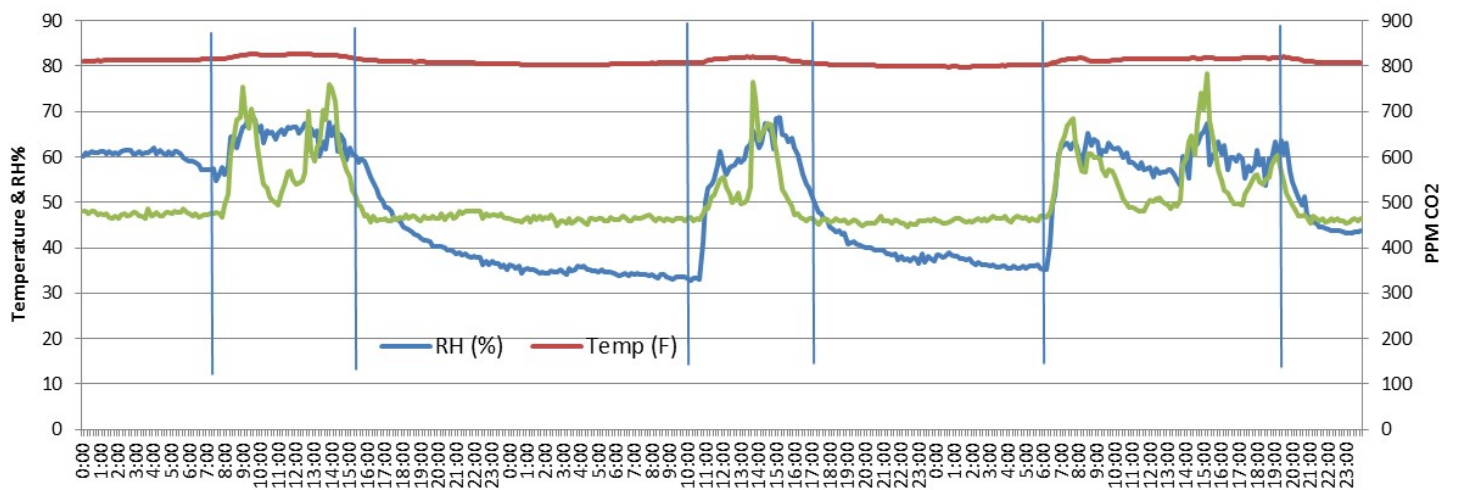


Outdoor CO2 level measured at 440 PPM. The time clock in the data logger was incorrect, it is corrected in bottom graph.

Natatorium RH, Temp & CO2 - 14 day period



Natatorium - time corrected - RH, Temp & CO2 - 3 day period



Appendix H – Manufacturer's Specifications & Cut Sheets

(These are samples only to provide building owner with an idea of recommended product types, electricians and/or mechanical contractors may recommend various other equipment.)

Retrofit dual flush valve for flushometer type toilet

The Fastest Way to Start Saving Water!

Dual-Flush Flushometer

Sloan's UPPERCUT® Dual-Flush Flushometer introduced dual-flush operation to the commercial marketplace — and facilities have been saving more water ever since. In fact, the UPPERCUT has been proven to reduce water usage by 30%. The UPPERCUT is one of only two Flushometers in the world to receive Cradle to Cradle™ design certification for its eco-effectiveness; the other is Sloan's Royal® model 111 Flushometer.

UPPERCUT®

UP for liquid waste

DOWN for solid waste

*Dual-Flush Flushometers are available for commercial Flushometer style bowls**.*

- Lifting handle up initiates reduced flush (1.1 gpf), evacuating liquid and paper waste, saving a 1/2-gallon of water!
- Pushing handle down initiates full flush (1.6 gpf).
- Antimicrobial coating on distinctive green handle.
- Available as a retrofit kit for Sloan and other installed Flushometers.
- UPPERCUT Flushometers are among the many Sloan products that comply with the **Buy American Act**.
- Easy-to-understand instructions, etched on adhesive backed metal plates included with every Flushometer.

For more information, please visit www.sloanvalve.com or call 866-663-2289.

SLOAN.
The Water Efficiency Company

*Manufactured in the U.S.A. under U.S. Patent 7,607,635 with other patents pending.
**Can be used on all High-Efficiency commercial Flushometer bowls and any high-performance 1.6 gpf fixtures.

Low Flow Aerator – 1.5 gpm



PCA® Care Laminar Stream

FEATURES

- Provides a splash free crystal clear (non aerated) stream.
- Unique screenless 100% plastic Cascade® construction prevents lime build up.
- Color-coded to identify flow rate.
- Recommended for use in medical facilities to prevent airborne bacteria from entering the water stream.
- Pressure compensating for constant flow from 20 to 80 psi.
- Virtually unbreakable single piece insert ensures a longer useable life.
- Available housing finishes: unplated, chrome and PVD.
- Laser marked housings: statutory mark and custom logo.
- Rubber washer.

CERTIFICATION

ANSI/NSF 61

ASME A112.18.1M

CSA B125

Complies with VHA Directive 2002-073

PART NUMBERS* & PACKING

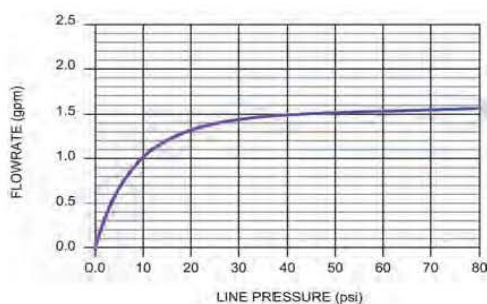
Designation	Part #	Packing
Insert only	A5.4162.0	3000
Regular male 15/16"-27	B1.7723.1	500
Regular female 55/64"-27	B1.7713.1	500
Reg. dual thread 15/16"-27 55/64"-27	B1.7773.1	500
Vandal proof male 15/16"-27	B9.7723.1	400
Vandal proof female 55/64"-27	B9.7713.1	400
Vandal proof dual thread	B9.77F3.1	400
Vandal key	BX.399C.1	

*Other combinations also available

COLOR CODE

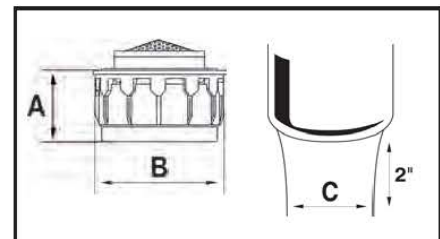
Dome: Orange Diffuser: Gray

FLOW RATE CURVE



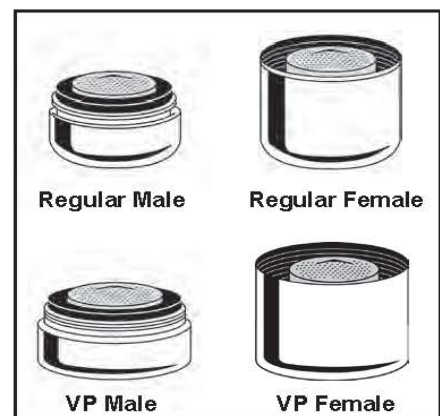
NEOPERL Inc., Waterbury, CT • Tel: (203) 756-8891 • Fax: (203) 755-5717 • www.neoperl.com

04/03 - Information subject to change without notice



DIMENSIONS

No	mm	In
A	12.00	.472
B	20.05	.789
C	≈ 13	≈ 1/2



TECHNICAL DATA

Materials: Body Acetal
 O-ring EPDM
 Washer EPDM
 Working temperature: 150°F
 Working pressure: 125 psi

Digital timer

For plug-in heaters, large copy/printers, TV's and anything with a "sleep" cycle – schedule to turn devices completely off during unoccupied hours

APC by Schneider Electric

United States [change]

Home | Sign In | View Cart | Order Status

Product information Search

Solutions Products and Services Support Your Business Company

You are here: Home > Products > Surge Protection and Power Conditioning > Surge Protection Devices > SurgeArrest Essential

SurgeArrest Essential

APC Power-Saving Timer Essential SurgeArrest, 4 Outlet Wall Tap, 120V

Basic Protection Against Power Surges for Computers and Electronics

Includes: User Manual

Standard Lead Time: Usually in Stock

★★★★★
Be the first to [write a review](#)

Share this Product: [f](#) [G+](#) [P](#) [B](#)

P4GC
Price *: \$18.99
[Add to Cart](#)

[Email Technical Specifications](#)
[Printer Friendly](#)

[RoHS](#) [Green Premium Product](#)

[More Images](#)

[Return to Surge Protection and Power Conditioning](#)

Technical Specifications Product Overview Documentation Ratings and Reviews

Output	
Number of Outlets	4
Receptacle Style	NEMA 5-15R
Input	
Nominal Input Voltage	120V
Input Frequency	50/60 Hz
Input Connections	NEMA 5-15P 
Maximum Input Current	15A
Surge Protection and Filtering	
Surge energy rating	1080 Joules
EMI/RFI Noise rejection (100 kHz to 10 MHz)	40 dB
Peak Current Common Mode	72 kAmps
NM Surge Response Time (ns)	1 ns
Let Through Voltage Rating	< 400

Occupancy Sensing Plug Load Management Device

Realize energy savings by turning plug loads off

Why keep plug loads operating when no one is there to use them? Isolé ends the energy waste by turning plug loads on and off based on occupancy.

The **Isolé IDP-3050** consists of an eight-outlet power strip with surge protection and a personal occupancy sensor that utilizes the latest passive infrared (PIR) technology. When the sensor detects occupancy, it turns on controlled outlets. When the space becomes vacant, the sensor turns off these outlets automatically after the preset time delay expires.

Plug loads account for an increasing percentage of the total energy consumed by buildings—up to 15 to 20% in homes and commercial buildings. According to the EPA, “energy consumption by office equipment represents the fastest growing use of electricity in the country.”

How much energy can users save?

A single workspace can consume 1,500 kWh each year with an average cost of \$175 (and growing)! Add up the cost of every workspace and the amount is staggering. Isolé can dramatically cut this cost with energy savings of up to 50%.



Essential machines (hard drives, faxes) use uncontrolled outlets to remain operating continuously.



Equipment that isn't needed when the workspace is unoccupied (e.g., monitors, task lighting, printers) plug into controlled outlets that respond to the occupancy signals.





Isolé IDP-3050 Power Strip with Personal Sensor

Energy-saving control system for desktop plug load equipment

Eight-outlet power strip with surge protection



Six outlets are controlled by occupancy; two outlets are uncontrolled

Personal sensor signals controlled equipment on and off based on occupancy

Product Overview

Description

The Isolé IDP-3050 is an energy-saving control system that provides maximum surge and noise suppression while keeping plug load equipment off when there is no occupancy. It consists of an eight-outlet power strip and a personal occupancy sensor.

Operation

The IDP-3050 turns plug load devices on and off based on occupancy. The personal sensor connects to the eight-outlet power strip with the attached cable. The power strip contains six outlets controlled by occupancy and two outlets that are uncontrolled. The IDP-3050 automatically turns all controlled devices on when the workspace is occupied, and off when the workspace has been unoccupied for the user-defined time delay. Uncontrolled devices remain on regardless of occupancy.

Features

Power Strip

- Eight outlets; six controlled, two uncontrolled
- Surge and noise suppression protects desktop equipment
- Ground protected for safety; will not operate without a grounded outlet
- Two LEDs to indicate: 1) correct wiring and grounding; 2) surge protection is functioning
- Installation requires no hardwiring
- Flat offset plug for wire management
- One uncontrolled outlet and one controlled outlet are wall-transformer-enabled
- Plugs into a standard three-prong outlet

Surge Suppression

The power strip provides a high degree of surge suppression that protects connected equipment against threats like power surges, lightning strikes and voltage spikes. It features a resettable circuit breaker and two LEDs that indicate that the outlet is wired and grounded properly and the surge protection is functioning.

Application

The IDP-3050 is ideal for controlling task lighting and computer monitors. Additional devices for the controlled outlets include space heaters, fans and other equipment that can be turned off during unoccupied periods. Devices such as CPUs and fax machines should be plugged into the uncontrolled outlets. Applications include workstations, open office cubicles, offices and engineering stations.

Personal Sensor

- Uses latest passive infrared (PIR) technology to detect occupancy
- User-adjustable time delay of 30 seconds to 30 minutes
- Multi-level Fresnel lens for superior occupancy detection
- 120° coverage, up to 300 square feet
- ASIC technology reduces components and enhances reliability
- Instantaneous response time

PROJECT

LOCATION/TYPE

WattStopper
www.wattstopper.com
800.879.8585

Specifications

Power Strip:

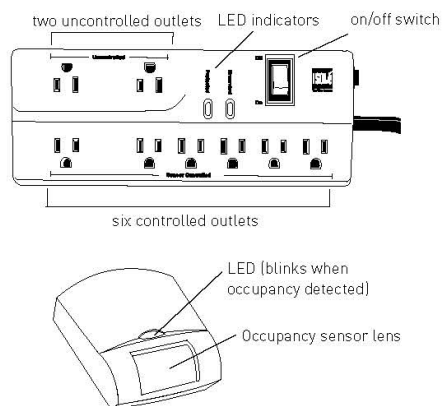
- Electrical rating: 120VAC, 12A, 50/60 Hz
- 12A dry contact relay
- Six-foot black cord
- Transformer provides power to sensor
- Mounts with screws or double-sided tape
- UL 1449 rating: 600V
- Circuit: High-energy, multistage hybrid
- Noise filtration: 0-25db (94.38%)
- Joule rating: 740 joules
- Maximum surge amperage: 48,000 Amps
- Protection modes: 500V L-N, 600V L-G, 600V N-G
- Response time: instantaneous
- Let-through voltage: 140V
- Initial clamping voltage: 200V
- UL and CUL listed; five-year warranty

Personal Sensor:

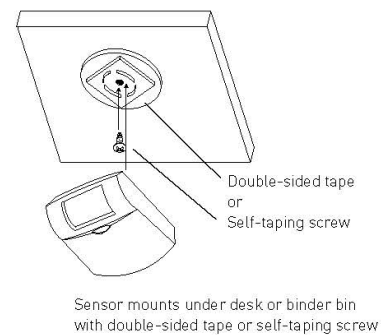
- Nine-foot connector cable
- Supply voltage: 12 VDC
- UL and CUL listed; five-year warranty

Controls & Mounting

Product Controls

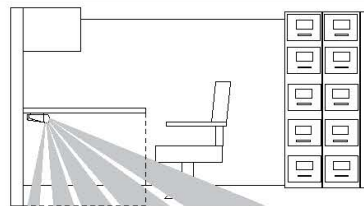


Personal Sensor Mounting

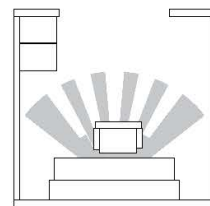


Coverage

Side Coverage



Overhead Coverage



Ordering Information

Catalog No.	Description
☐ IDP-3050-A	Eight-outlet power strip with personal sensor
☐ DI-110	Auto-on personal sensor
☐ CK1-1	20' extension cable w/single 1-1 connector (for single sensor and power strip)
☐ CK1-2	Two 10' extension cables w/duplex 1-2 connector (for multiple sensors and/or power strips)

Products are dark grey

Pub. No. 11907 rev. 9/2009

www.wattstopper.com
800.879.8585



OCCUPANCY SENSORS

Plug Load Controls

Programmable, 7-day set-back, low voltage thermostat (with Wi-Fi capability)



NEVER STOP IMPROVING

FREE SHIPPING on qualifying orders \$49 or more.

Help | Weekly Ads | Gift Cards | For Pros | Credit Card Services

Shop Ideas & How-Tos Savings MyLowe's

What are you looking for?

Home: Heating & Cooling: Thermostats: Programmable Thermostats:

Honeywell 7-Day Programmable Thermostat Built-In Wifi

Need Help? Print

Your Store: Wasilla, AK

Store Info Change Store



Honeywell 7-Day Programmable Thermostat Built-In Wifi

Item #: 171234 | Model #: RTH6580WF1001

★★★★☆ 116 reviews | Write a review

\$130.90

In-use images; accessories not included

Additional Images Demo

Share Pin it Tweet 0 +1 1

FREE Store Pickup

Your order can be available for pickup in Lowe's Of Wasilla, AK today.

Change Store

Lowe's Truck Delivery

Your order will be ready for delivery to you from your selected store.

Parcel Shipping

Sent by carriers like UPS, FedEx, USPS, etc.

Honeywell 7-Day Programmable Thermostat Built-In Wifi **\$130.90**

Subtotal: **\$130.90**

Qty: 1

Add to Cart

Save Item

Set a Reminder

Go to Your Account

Related Items

Honeywell 7-Day Touch Screen Programmable... **\$163.90**

Honeywell 7-Day Touch Screen Programmable... **\$252.00**

Description Specifications Reviews Community Q&A

Heating Only	Yes	Daylight Savings Time Ready	Yes
Cooling Only	Yes	Optional Battery-Free Operation	No
Compatible with Warm Air Furnace	Yes	Shape	Rectangle
Compatible with Central Air Conditioning	Yes	Height (Inches)	3.75
Compatible with Hot Water	Yes	Width (Inches)	5.75
Compatible with Steam or Gravity	Yes	Depth (Inches)	1.25
Use with Floor/Wall Furnace 24V or 750mV	No	UL Safety Listing	No
Use with Volt Gas Fireplace 24V or 750mV	No	CSA Safety Listing	No
Use with Pellet Stove for mV Thermostats	No	Single-Stage Heating	Yes
Use with Electric Baseboard 120V-240V	No	Single-Stage Cooling	Yes
Program Type	7-day	Multi-Stage Heating	Yes
Program Periods per Day	4.0	Multi-Stage Cooling	Yes
Auto System Change from Heat to Cool	Yes	Compatible with Heat Pump (No Aux.)	Yes
Touch Screen Programming	No	Compatible with Heat Pump (No EM)	Yes
Backlit Display	Yes	Compatible with Heat Pump (With Aux.)	Yes
Temperature Displayed	Current and setpoint/desired temperature	Compatible with Heat Pump (With EM)	Yes
High/Low Desired Temperature Limits	No	Iris Technology	No
Temporary Vacation Override	No	Remote Control Included	No
Hold Temperature Button	Yes	Built-In WiFi	Yes
Early-Start Comfort Function	Yes	Voice Activated	No
Filter Monitor	Yes		

12 watt LED T8 Tubes – fixture must be re-wired to remove ballast and provide line voltage to end caps



LED COB T8 4ft Tube, 12watt and 18watt



Features

- Super Lumen Output
- LED Chip COB LED
- Beam Angle 140°
- 50,000 Hrs Life
- 5 Year Warranty
- Frosted. No Visible LED's
- CRI >80
- 130 Lumens per Watt
- UL Rated
- DLC Listed* 18 watt only

130 lm/W
IES LM-79-08



Part #	Input Voltage	Lumens	Operating Temp.	CRI	Average Life
T8LDCOB12W	110V or 277V	1560	-20°C to 45°C	83	>50,000 Hrs
T8LDCOB18W	110V or 277V	2260	-20°C to 45°C	83	>50,000 Hrs



1751 Panorama Point Suite D, Lafayette, CO 80026 Ph: 303.225.7595 Fax: 303.225.5410 sales@bravo-lighting.com bravo-lighting.com

**14 watt LED T8 Tubes – direct replacement for T8 Fluor with instant start ballast
(re-uses existing ballast)**

Easily
upgrade
to LED
from fluorescent.



PHILIPS INSTANTFIT LED T8 LAMPS



Philips InstantFit LED T8 Lamps are an ideal energy saving choice for existing linear fluorescent fixtures.

Perfect for a wide range of applications

- Full light output in spaces with temperatures down to -22°F (-30°C)
- Perfect for applications with frequent "on/off" switching cycles
- Buildings that desire to be mercury free

Easy to experience

- Instant on, no flicker or buzz
- Fits into existing linear fixtures
- Compatible with Instant Start ballasts¹ eliminating the need for rewiring and allows fixture to maintain original UL and CSA compliance

Energy savings

- Over 41% energy savings vs F32T8 electronic instant start systems²

Sustainable lighting solution

- No mercury allowing for non-hazardous waste disposal
- Emits virtually no UV rays or IR
- Glass-free for use in food areas and refrigerated food displays
- 4 year limited warranty³

(1, 2, 3, See back page for footnotes)



PHILIPS

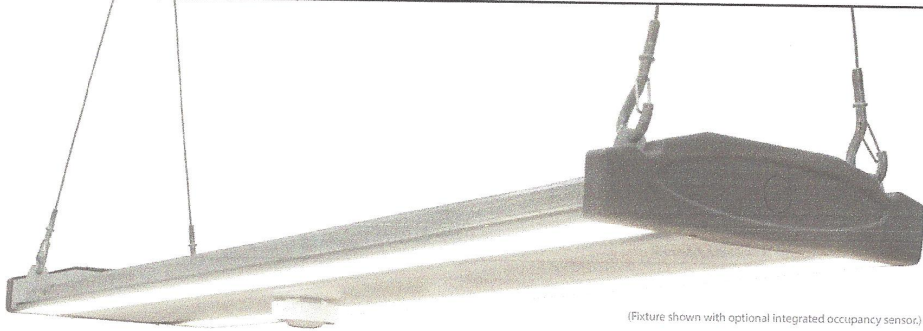
119w LED high bay fixture, with integral occupancy sensor – replacement for 400w HPS or MH



ESSENTIALS™ BAY SERIES v 2.0

2 LED MODULES (2M) FIXTURE OVERVIEW

TYPE



(Fixture shown with optional integrated occupancy sensor.)

ABOUT THE LUSIO ESSENTIALS BAY SERIES

The Lusio Essentials Bay Series is a family of high efficacy LED fixtures engineered to maximize performance and value. Essentials version 2.0 is introduced with the latest LED technology sorted to provide the same industry leading efficacy at 4000K or 5000K color temperatures. Separated finned aluminum heat sinks are designed to promote heat transfer from the LEDs by allowing air to pass. This keeps the LEDs cool so their useful life is extended. Ideally suited for one-for-one replacement of traditional fluorescent and HID light sources or new construction projects, the Lusio Essentials Bay Series can significantly reduce lighting costs and provide a very attractive return on investment. The Lusio Essentials Bay Series is backed by a 5-year warranty.

ESSENTIALS 2M FIXTURE DESCRIPTION

With a nominal 10-inch x 4-foot modular form, the Lusio Essentials Bay Series 2M fixture is equivalent in light output to 4-lamp T5HO fluorescent or 250W metal halide light fixtures and reduces power consumption by 53-62% to meet strict energy codes.

FIXTURE PERFORMANCE

	WATTAGE ¹	LUMENS ¹	EFFICACY ²	CRP ³
NL-BAFN: NO LENS, NO BAFFLE				
4000K/5000K ³	110	12,300	111.8	75
NL-BAFY: NO LENS WITH BAFFLE				
4000K/5000K ³	110	11,800	107.3	75
CA-BAFN: CLEAR ACRYLIC LENS, NO BAFFLE				
4000K/5000K ³	110	11,800	107.3	75
CA-BAFY: CLEAR ACRYLIC LENS WITH BAFFLE				
4000K/5000K ³	110	11,700	106.4	75
FP-BAFN: FROSTED POLYCARBONATE LENS, NO BAFFLE				
4000K/5000K ³	110	11,000	100.0	75

¹Typical at 120V and 25°C (77°F). ²Typical CRI. ³Consult factory for other CCT offerings. Lead times may be longer.

DIMENSIONS

INS (CMS) • LBS (KGS)

LENGTH ¹	WIDTH ¹	DEPTH ¹	WEIGHT	WEIGHT WITH BATTERY BACKUP
43-5/8 (110.8)	9-3/4 (24.8)	2-1/4 (5.7)	12 (5.4)	16 (7.2)

¹Dimensions listed are for the fixture only. See dimensional drawings for measurements with mounting hardware.

POWER FACTOR

120V	0.997
277V	0.952
347V	0.988
480V	0.969

TOTAL HARMONIC DISTORTION

120V	6.5%
277V	11.9%
347V	10.3%
480V	10.8%

FEATURES

POWER AND CONTROL

- **POWER INPUT:** 100-277V or 347-480V (50/60 Hz)
- **DIMMING:** Optional factory installed dimmable power supply (10-100% dimming) interfaces with standard third party 0-10V dimmers.
- **SENSORS:** Optional on-board, factory installed occupancy sensors available. See Lusio Accessories sheet for more information.
- **EMERGENCY BATTERY BACK-UP:** For 120-277V fixtures only, optional on-board, factory installed battery back-ups are available that produce 1,900-2,100 lumens for a minimum of 90 minutes.

LUMEN MAINTENANCE

- **L70 LIFE:** 90% lumen maintenance at 70,000 hours (77°F/25°C ambient); L70 predicted life is more than 200,000 hours

LISTINGS AND CERTIFICATIONS

- UL | CUL listed for safety (1598)
- UL | CUL dry/damp location listed
- RoHS compliant
- FCC Class B
- Lighting Facts (U.S. Department of Energy) certified
- DesignLights™ Consortium approved



FIXTURE

- **ENVIRONMENT:** Dry/damp locations. For interior applications.
- **HEAT SINKS:** Extruded aluminum heat sinks provide optimal thermal management, decreasing LED junction temperature and ensuring long life.
- **POWER SUPPLY ACCESS:** Center channel cover is hinged for easy access to power supplies and quick wiring.
- **OPTICS:** Two highly reflective white coated optics are available to enhance light output and reduce glare.
- **LENSES:** Recommended UV stable clear acrylic or frosted polycarbonate. Also available without a lens. Consult acrylic/polycarbonate chemical resistance chart for guidance in selecting the appropriate lensing material for your application.
- **WIRE GUARDS:** Optional wire guards can be field installed. See Lusio Accessories sheet for more information.
- **WARRANTY:** Limited 5-year warranty. See complete warranty coverage and exclusions details at www.LusioLighting.com.
- **REPLACEABLE LED LIGHT MODULES:** Allows field replacement of individual light modules.
- **AMBIENT OPERATING TEMPERATURES**
Cable, Loop/Hook, and Stem Mounted Fixtures
-31° to 131°F (-35° to 55°C)
Fixtures with Emergency Battery Back-ups and All Surface Mounted Fixtures
-31° to 122°F (-35° to 50°C)

PHOTOMETRIC AND DISTRIBUTION DATA IS TYPICAL FOR THIS FIXTURE. PERFORMANCE WILL VARY DEPENDING ON LED AND POWER SUPPLY. THIS FIXTURE IS MANUFACTURED TO AN OVERALL PERFORMANCE TOLERANCE OF +/- 8%.

18 Lusio Commercial and Industrial Lighting • www.LusioLighting.com • info@LusioLighting.com

Copyright © 2013, Lusio Commercial & Industrial Lighting, a brand of Electrotechnics Lighting Solutions. All rights reserved. 091213-1.
All specifications subject to change without notice. Visit www.LusioLighting.com for updates.

Jim Fowler

From: Don Williams <dwilliam@ncelec.com>
Sent: Tuesday, June 17, 2014 8:43 AM
To: jim@jim-fowler.com
Cc: Matt Helm
Subject: LUCIO Quote

Jim please see below for pricing, we quoted both ways with and without OCSS. Shipping 3-4 weeks. pricing is Prepaid into Anchorage

60 watt

Short, with and without occ sensors

20ea LW-LUSIO-ES2-2MS-40K-CA-BAFN-208-HOOK-OCC40-C6W \$ 427.50ea Total \$ 8550.00 (occ sensor)

20ea LW-LUSIO-ES2-2MS-40K-CA-BAFN-208-HOOK-C6W \$ 341.25ea Total \$ 6825.00

119 watt

4' with and without occ sensors

20ea LW-LUSIO-ES2-2M-40K-CA-BAFN-208-HOOK-OCC40-C6W \$ 537.50ea \$ 10,750.00 (occ sensor)

20ea LW-LUSIO-ES2-2M-40K-CA-BAFN-208-HOOK-C6W \$ 451.25ea \$ 9025.00

Any questions please let us know

Thanks
Don

LED Wall Pack replacement for entry lighting – replacement for 50w HPS or MH

[Home](#) [All Products](#) **[LED Wall Packs](#)** [LED Gas Station Canopy Lights](#) [LED Parking Garage Canopy Lighting](#) [LED Area Lighting](#)
[LED Wall Mount Dusk to Dawn](#) [Lighting Accessories](#) [Blog](#) [About Us](#)

Home > LED Wall Pack Lighting > 17W LED Wall Pack



17W LED Wall Pack

\$74.90

WP3S-17 ▼

Quantity

1 ▲ ▼

Add to cart

Jarvis Corp 17W Wall Pack

Model Number: WVP3S-17

Important Links:

- [Specifications Sheet](#)

Applications:

- Security, doorway, pathway and perimeter lighting.
- Typical mounting height is 5-10 feet.
- Typical spacing is 2 times mounting height.

Key Features:

- Dark bronze housing
- 120V Input
- Comparable to a 50W metal halide light
- 17 Watts of power
- 5000K Daylight White Color Output
- Aluminum backing plate with conduit entrance on back.
- Polycarbonate enclosure and lens
- 120V dusk-to-dawn photocell Included
- 3 year factory warranty
- ETL Listed



**Manufactured by
Jarvis Corp LED Products
in Chicago, Illinois**

Share this item: [G+](#) [Tweet](#) [Pin it](#) [Like](#) [0](#)

Related products

LED Wall Pack – replacement for 100w HPS or MH



[Home](#) [All Products](#) [LED Wall Packs](#) [LED Gas Station Canopy Lights](#) [LED Parking Garage Canopy Lighting](#) [LED Area Lighting](#)
[Lighting Accessories](#) [Blog](#) [About Us](#)

[Home](#) > [LED Wall Pack Lighting](#) > [30W Forward Throw LED Wall Pack - Bronze](#)



30W Forward Throw LED Wall Pack - Bronze

\$165.90

WP3FT-30-BRZ ▼

Quantity

1 ▲▼

[Add to cart](#)

Jarvis Corp

Model Number: WWP3FT-30

30W Forward Throw LED Wall Pack.

Important Links:

- [Specification Sheet](#)
- [5-Year Manufacturer's Warranty](#)

Compatible Photocells/Dusk to Dawn Sensors Available for Purchase:

- [120V Button Photocell](#)
- [120V Stem Photocell](#)
- [208-277V Stem Photocell](#)

Applications:

- Security, doorway, pathway and perimeter lighting
- Typical mounting height is 8-12 feet
- Typical spacing is 2 times mounting height

Key Features:

- Universal input voltage (120-277V)
- Comparable to a 125W metal-halide light
- Dark bronze aluminum housing with prismatic lens
- Conduit entrances on back, side and bottom
- 30 Watts of power
- 5000K Daylight White Color Output
- Easily accepts photo cells (May require field drilling)
- ETL Listed

order status | about us | customer service | 800.392.4818

Welcome, Guest | Log In | Register

Search

GO

my cart

15 YEARS OF BRINGING THE LIGHT

Trade Professionals / Resellers | Lighting Gift Ideas | Sale & Clearance | New Products

Light Fixtures | Residential | Commercial | Light Bulbs | Ballasts | Transformers | More

This summer, the ice cream is on us! **FREE Standard Shipping** on orders over \$25 (US\$) - \$4.99 Flat Rate Standard below \$25 -

now in: [recessed lighting](#) > [led recessed lighting](#) > [led retrofit modules for recessed lights](#) > 6 inch - 9.5 watt - 50 watt replacement - dimmable led downlight retrofit module - gu24 base - wet location - cree

Product Overview:

- GU24 Base
- ENERGY STAR®
- Excellent Color Rendering
- Dimmable to 5%
- Wet location approved
- 5-Year warranty
- [Learn More](#)

Need Assistance?

LiveText**CHAT**
M – F 9am - 5:00pm ET

Email Us
24 / 7

800.392.4818
M – F 8am - 6:00pm ET

Have a Questi

Ask a Q about th

2 Questions | 2

15 YEARS OF BRINGING THE LIGHT

order status | about us | customer service | 800.392.4818

Welcome, Guest | Log In | Register

Search

GO

my cart

Trade Professionals / Resellers | Lighting Gift Ideas | Sale & Clearance | New Products

Light Fixtures | Residential | Commercial | Light Bulbs | Ballasts | Transformers | More

This summer, the ice cream is on us! **FREE Standard Shipping** on orders over \$25 (US\$) - \$4.99 Flat Rate Standard below \$25 -

Product Overview:

- Use with NLEDR series
- Converts to GU24 base
- No tools required
- [Learn More](#)

Need Assistance?

LiveText**CHAT**
M – F 9am - 5:00pm ET

Email Us
24 / 7

800.392.4818
M – F 8am - 6:00pm ET

Have a Question?

Ask a Question about this Product

About our GU24 Socket Adapter for LED Retrofit Modules

Back to Top

> Description

> Product Reviews

> Questions & Answers

Description

Back to Top

Use this adapter to install LED retrofit modules in IC or Non-IC GU24 base housings.

- Use: allows [Nora Lighting LED retrofit modules](#) to connect to GU24 base IC or non-IC housings
- Easy to Install: no tools required. Simply remove the E26 medium screw base adapter from LED retrofit module and replace with the GU24 adapter.

Accessories

Nora Lighting LED Recessed Lights

Item #

CR6-57LS-GU24

Rating

(0 Review)

Price

Reg. Price: \$46.90

Sale Price: **\$29.90**

You Save: 36% (\$17.00)

Availability

Usually ships the next business day

Quantity

1

Add to my cart safe, secure.

list

Item #

NRA-212

Rating

Review this item

Price

\$1.70

Availability

Usually ships in 3-4 business days

Quantity

1

Add to my cart safe, secure.

Add to my wish list

7.3w and 9.6w A-type, screw-in LEDs, 40w & 60w equivalent

amazon Prime
Tools & Home Improvement LED light bulbs

Shop by Department
James's Amazon.com Today's Deals Gift Cards Sell Help

Tools & Home Improvement Best Sellers Gift Ideas Lighting & Ceiling Fans Hardware Kitchen & Bath Fixtures Power & Hand Tools Woodworking Home Automation Deals & Savings

< Back to search results for "LED light bulbs"



Feit Electric - 60 Watt Replacement - Omni Directional - LED Dimmable - 3 Pack (144799)
by Feit Electric
★★★★★ 224 customer reviews | 39 answered questions

Price: **\$18.90** (\$6.30 / Pack) **Prime**

Note: Available at a lower price from other sellers, potentially without free Prime shipping.

In Stock.
Sold by Citadel Solutions LLC and Fulfilled by Amazon. Gift-wrap available.

- 3 Pack - Feit Electric
- 60 Watt Replacement - Uses 9.6 Watts
- Omni Directional - LED Dimmable
- Lasts over 22 Years
- Soft White - 2700k - Instant On

[See more product details](#)

22 new from \$12.99 2 used from \$16.99

Holiday Deals
in Tools & Home Improvement

STANLEY **IRWIN**
PROGRESS LIGHTING [Learn more](#)



Feit 7.3 Watt A19 Dimmable LED Light Bulbs 3-Pack (equiv to 40 watts)

by Feit Electric
★★★★★ 84 customer reviews | 6 answered questions

Price: **\$11.00** **Prime**

Only 1 left in stock.
Sold by Warehouse 33 and Fulfilled by Amazon. Gift-wrap available.

- Multi-Use Decorative
- Lasts 22.8 years
- Instant On
- Soft White 2700k, Full Range Dimming
- Mercury Free
- All round light Distribution

[See more product details](#)

34 new from \$11.00 3 used from \$8.99

Holiday Deals
in Tools & Home Improvement

STANLEY **IRWIN**
PROGRESS LIGHTING [Learn more](#)

13w LED Par30 bulb (2-pack)



Feit Electric 65 Watt LED BR30 Flood Track and Recessed - 2 Pack (144785)

by Feit Electric

★★★★★ 361 customer reviews | 50 answered questions

List Price: \$29.99

Price: \$18.47 (\$0.62 / BULBS) Prime

You Save: \$11.52 (38%)

Note: Available at a lower price from other sellers, potentially without free Prime shipping.

Only 4 left in stock.

Sold by RokBuy and Fulfilled by Amazon. Gift-wrap available.

Color: White



- It has an average life of 25,000 Hours. It is also Energy Star approved, RoHS Compliant and mercury free
- This High Powered 10.5 Watt Dimmable Performance LED is a direct replacement for a 65 Watt BR30.
- Usage: Track & Recessed Lighting
- Energy Star Approved
- Instant on to full brightness

[See more product details](#)

32 new from \$10.00 4 used from \$11.50

Holiday Deals

in Tools & Home
Improvement

[Learn more](#)

Ceiling mounted occupancy sensors



Free ground shipping on orders over \$100
For large or tax exempt orders, [click here](#)

Sign in | New Customer? Your Account Help

 LIVE CHAT

[Renu](#)
[Energy Efficient](#)
[Home](#)
[Commercial](#)
[Electric Vehicle](#)
[Home Automation](#)
[Bundles](#)
[Promotions](#)



Click the image to zoom.






2

Videos



Leviton Green Living Products

25% 20% 4x longer

0:00 / 2:22 YouTube

Ceiling Mount Self-Contained Occupancy Sensor, 1000W INC 500VA FL, 220VAC 50Hz, PIR, 360 Degree, 530 sq. ft. Coverage, White, ODC0S-I2W

Not yet rated. Be the first to write a review

Have a question about this product?

Price: \$98.00

Get free ground shipping on all orders over \$100! Here's how (restrictions apply)

[Offer Details](#) [Here's how \(restrictions apply\).](#)

Quantity:

Availability: Usually ships in 1 to 2 days

Product Details

Leviton's self-contained passive infrared ceiling occupancy sensor is the cost-effective choice for commercial and institutional installations, where installation of the recessed ceiling unit is difficult, inconvenient or costly. Available in 120V, 220V and 277V versions, the ODC0S-I is ideal for storage areas, small bathrooms, copy rooms, mop/sink closets or small spaces without wall switches. The self-contained ceiling sensor does not require an external control unit for power or switching the load on and off. 1000W INC 500VA FL, 220VAC 50Hz, PIR, 360-degree, 530 sq. ft. coverage, ceiling mount self-contained occupancy sensor, commercial grade - white.

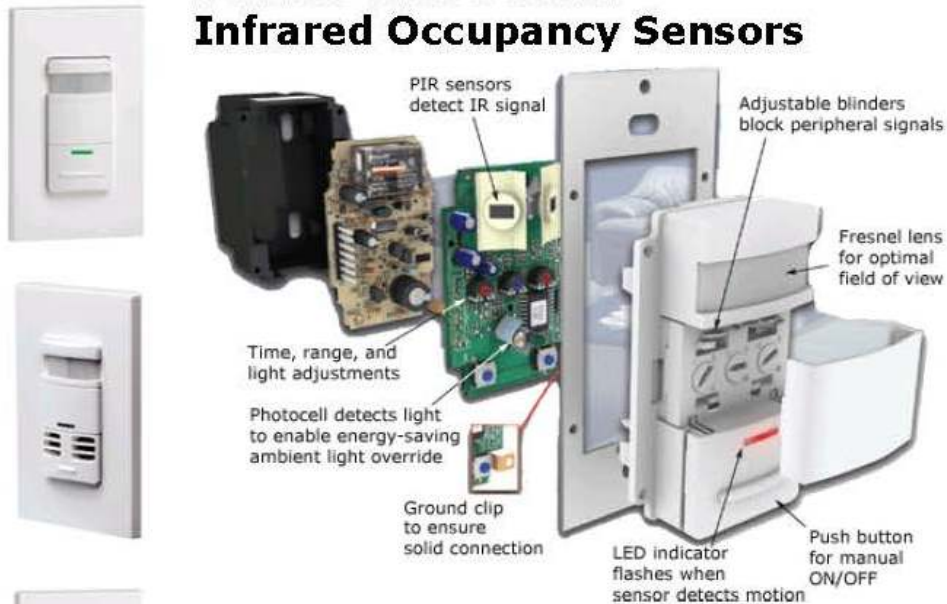
- * Sensor and switching relay in one unit
- * 360 degrees field of view with approximately 530 sq. ft. of coverage when mounted at 8 ft.
- * Adjustable Delayed OFF time setting between 20 seconds and 15 minutes allows custom adjustment for maximum savings
- * LED indicator light flashes when sensor detects motion - to verify power placement and function of sensor at installation
- * Segmented Fresnel lens contains 79 segments for optimum sensitivity and detection performance

For California residents, click [here](#) for Proposition 65 Warning.

Switch mounted occupancy sensors


[Occupancy Sensor Home](#)
[Buy Sensors](#)

Decora Wall-Switch Infrared Occupancy Sensors



Convenient switch and occupancy sensor combo in sleek Decora style unit. Advanced passive infrared technology provides highly accurate monitoring in a variety of commercial applications. The OSSMT Multi-Tech unit combines passive infrared and ultrasonic technologies to provide maximum sensitivity with immunity to false triggering.

Specifications and Features

Ambient light override prevents lights from turning on when there is ample natural light

- ODS0D-ID (Self-Adjusting)
- ODS0D-TD (Self-Adjusting)
- ODS10
- ODS15 (Self-Adjusting)
- OSSMT
- PR150
- PR180

Manual override turns light on at any time regardless of override setting

- All Units

Dual pushbuttons provide manual ON/OFF switching for 2 separate banks from a single unit

- ODS0D-ID
- ODS0D-TD

Exclusive automatic "walk-through sensing increases energy savings by shutting lights within 2-1/2 minutes after momentary occupancy

- ODS0D-ID
- ODS0D-TD
- ODS15
- OSSMT

Unit beeps to indicate load is going to be switched off automatically

- ODS0D-ID
- ODS0D-TD
- ODS10

Choice of "Conference Room" or "Classroom" modes for maximum performance and energy savings in a variety of installations



- ODS0D-ID

Manual delayed-off-time settings: 5, 10, and 20 minutes, with 30-second test mode

- ODS0D-ID
- ODS0D-TD

Manual delayed-off-time settings: 10, 20, and 30 minutes, with 30-second test mode

- ODS10
- IPP15

Manual delayed-off-time settings: 15 seconds to 15 minutes

- PR150
- PR180

Manual delayed-off-time settings: 30 seconds to 30 minutes

- OSSMT
- OSS10

Manual delayed-off-time settings: 30 seconds, 30 minutes, 10 hour, 2 hours

- OSSNL

Three-position service switch with off, auto, on

- ODS0D-ID
- ODS0D-TD
- ODS15

Single-pole and 3-way wiring

- OSSMT
- IPP15
- PR180

Elegant Decora styling complements any interior, uses Decora wall plates

- All Units

Fits in standard wallbox; units may be ganged

- All Units

Night Light mode or "Guide Light" feature

- OSSNL
- OSS10

Night Light dim feature

- OSSNL
- OSS10

Adjustable integral blinders with 180-degree to 32-degree field-of-view

- ODS0D-ID
- ODS0D-TD
- ODS10
- ODS15
- OSSMT
- OSSNL
- OSS10
- IPP15

Manual ON/Auto OFF operation for CEC Title 24 compliance

- ODS0D-ID
- ODS0D-TD
- ODS10
- ODS15
- OSSMT
- OSS10
- IPP15

Ideal for Use In:

ODS0D-ID/ODS0D-TD - Classrooms, multimedia and conference rooms, day care centers, office, lounges

ODS10-ID - Enclosed areas: small offices, conferences rooms, storage rooms, copy rooms, closets

ODS15-ID - Commercial areas: small offices, conference rooms, classrooms, stockrooms, lounges, restrooms, warehouses

PR150-1L - Wide variety of residential applications

PR180-1L - Large rooms, home offices, and a variety of light commercial and residential applications

OSSMT - Private and executive offices, conference rooms, storage areas, restrooms, classrooms, lounges, and training areas

OSSNL/OSS10 - Hotel restrooms, hospital restrooms, conference rooms, class rooms, small offices, lounges, storage areas, and bathrooms

High Bay, Zoned Occupancy Sensor

PRODUCT DATA



OSFHU Passive Infrared Fixture Mount High Bay Occupancy Sensor



BASIC OPERATION

The High Bay Occupancy Sensor is designed simply to automatically turn lights ON or OFF. The sensor utilizes Passive Infrared Technology (PIR) combined with Fresnel Lenses to determine when an area is occupied. This is determined when a heat source is detected and moves from one facet in the lens to another. The sensor recognizes this as motion and provides power to the light fixture. Simultaneously a timer is started and restarts with each motion, once expired, the lights will turn OFF.

The high bay sensor maximizes energy savings, incorporating false detection algorithms to eliminate false ON's by nuisance tripping or background environmental conditions. The sensor also optimizes energy savings and safety concerns during power loss scenarios by assuming a return to last known state of operation.

APPLICATIONS

The OSFHU High Bay Occupancy Sensor is specifically designed and assembled to reduce the amount of labor required during the fixture assembly process and at time of installation.

These sensors are for use in spaces where ceiling heights can vary from 8 to 40 feet, such as warehouses, manufacturing facilities, production, industrial area, and all other high ceiling applications.

It comes with three interchangeable lenses for use in either a 360° high-bay or 360° low-bay general area or an aisle way. The OSFHU provides reliable coverage up to 40 ft. mounting heights. The OSFHU is also available in a model for cold storage applications with temperatures as low as -40° F.

INSTALLATION

The OSFHU mounts directly to an industrial fluorescent fixture or an electrical junction box through a standard 1/2" knockout using the provided lock-nut. Wiring is connected inside the fixture body. To improve the field-of-view for deep body fixtures, a separate offset adaptor accessory (OSFLO or OSFOA) can be used to position the sensor below the fixture body. The adapter simply snaps into a 1/2" knockout on the end of the industrial fixture to attach the sensor. The OSFHU and OSFLO/OSFOA provides the most labor savings available with quick snap, 42" wire leads, and no power required to configure.

OSFHU

Leviton Mfg. Co., Inc. Lighting & Energy Solutions

201 N. Service Rd. Melville, NY 11747-3138 Tech Line: 1-800-824-3005 Fax: 1-800-832-9538 www.leviton.com/les
© 2011 Leviton Manufacturing Co., Inc. All rights reserved. Subject to change without notice.

PRODUCT DATA

FEATURES

Quicksnap: built into the 1/2" nipple, this locking mechanism allows for the fastest and easiest mounting not requiring a threaded lock-nut.

Reduce time and materials: easily reach the ballast at either end of the fixture without requiring more wire or connectors with the included 42" wire leads.

Fast, easy time delay setting: can be set at any time without requiring power to the sensor; time delay is variable from 30s-20m.

Instantly verify fixture operation and wiring connections: "instant ON" closing relay fires lamps in under 5 seconds.

High Inrush Stability (H.I.S. Technology):

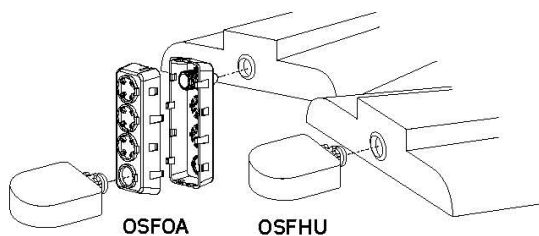
- Zero crossing circuitry optimizes relay operation for reliable, long-life operation
- Robust mechanical latching relay is durable for all load types

Auto temperature calibration: automatically adjusts the PIR sensitivity as ambient temperature rises to increase detection of heat movement through the field-of-view.

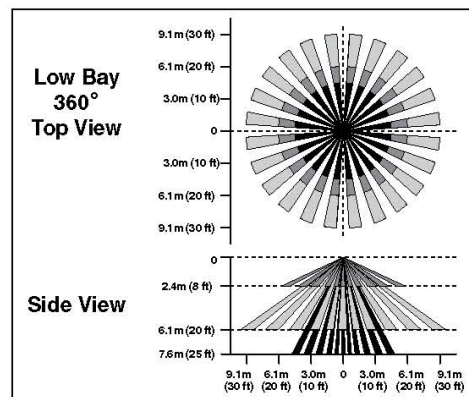
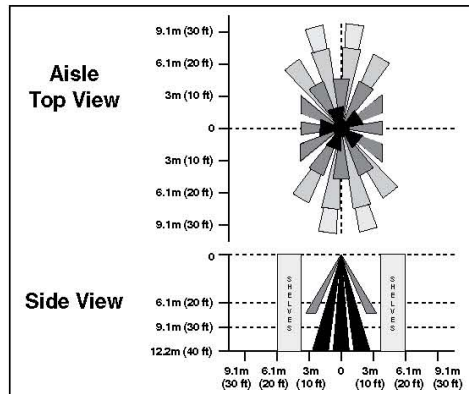
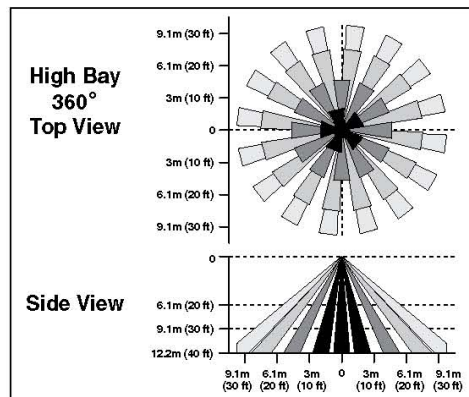
Return to last state: for safety and energy savings, the OSFHU contains a latching relay so that in the event power is lost to the device, the device will return to the last known state of the relay.

False detection intelligence: for increased energy savings and to mitigate nuisance tripping, the super bright LED indicates advanced detection has been activated and the lights will only turn ON when true occupancy has been determined.

ASSEMBLY WITH OFF-SET ADAPTOR

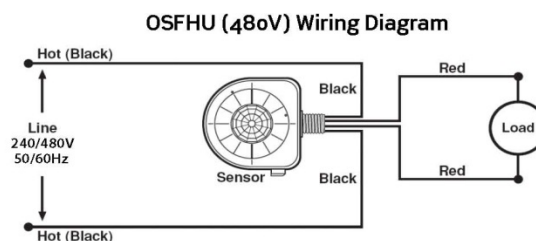
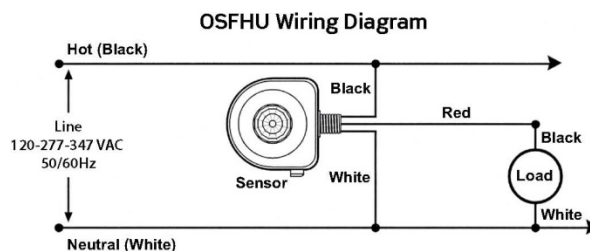


FIELD-OF-VIEW



**SPECIFICATIONS**

ELECTRICAL	
Input Voltage	120-230-277-347VAC; 240/480VAC (-I4W models)
Operational Frequencies	50/60Hz
Load Rating	800VA @ 120VAC Ballast 1200VA @ 277VAC Ballast 1500VA @ 347VAC Ballast 2000VA @ 480VAC Ballast Motor: 1/4 HP Load @ 120V
Standby Power Consumption	120V - 130mW - .13W 277V - 450mW - .45W 347V - 460mW - .46W
Time Delay	30 seconds-20 minutes (factory set to 30 sec - no power required to set)
Wire Designation	-ITW/-CTW models: Line-Black, Load-Red, Neutral-White -I4W/-C4W models: Line-Black, Load-Red, Load-Red
ENVIRONMENTAL	
Operating Temperature Range	14° F to 160° F (-10° C to 71° C)
Cold Storage Operating Temperature Range	-40° F to 160° F (-40° C to 71° C)
Storage Temperature Range	-14° F to 160° F (-25° C to 71° C)
Relative Humidity	20% to 90% non-condensing
PHYSICAL	
Dimensions	OSFHU: 3.50" H x 3.50" W x 1.25" D OSFOA: 5.50" H x 2.00" W x 2.00" D OSFLO: 4.325" H x 2.00" W x 2.00" D
Construction	High-impact, injection molded plastic housing
Color	White
OTHER	
Agency Listings	UL and CUL Listed (OSFHU models)
Warranty	Limited 5-Year

WIRING DIAGRAM**ORDERING INFORMATION**

CAT. NO.	DESCRIPTION
OSFHU-ITW	PIR Fixture Mount High Bay Sensor with 3 Interchangeable Lenses, White
OSFHU-CTW	PIR Fixture Mount High Bay Sensor with 3 Interchangeable Lenses for Cold Storage, White
OSFHU-I4W	PIR Fixture Mount High Bay Sensor with 3 Interchangeable Lenses, 480V, No Neutral, White
OSFHU-C4W	PIR Fixture Mount High Bay Sensor with 3 Interchangeable Lenses for Cold Storage, 480V, No Neutral, White
OSFOA-00W	Offset Adapter Accessory for OSFHU, 3 Position, White
OSFLO-00W	Offset Adapter Accessory for OSFHU, 1 Position, White
OSFCG-00W	Protective Cage for Fixture Mounted Sensors

NAFTA and Made in USA models available.

Leviton Mfg. Co., Inc. Lighting & Energy Solutions

201 N. Service Rd. Melville, NY 11747-3138 Tech Line: 1-800-824-3005 Fax: 1-800-832-9538 www.leviton.com/les
© 2011 Leviton Manufacturing Co., Inc. All rights reserved. Subject to change without notice.

OSFHU

DHW re-circulation pump with integral timer



globalindustrial.com a Systemax company

Call us 7 days a week
1.888.978.7759
Click to Chat

Log In | View Cart | Contact Us | Track Order | Quick Order

0 Items - (\$0.00)

Shop Categories | Help | Welcome Log In | Account Tools | (0) Lists | All | **SEARCH**

Return to Category | Home > HVAC/R & Fans > HVAC Pumps & Circulators > Circulators > Grundfos Super Brute 3-Speed Circulator Water Pumps



Grundfos Comfort System Hot Water Recirculator System , UP15-10 SU7P TLC, 595916, Comfort Valve

Item #: T9FB925935
Sold By: globalindustrial.com

Usually ships in 10 to 13 days

★★★★★ 2 reviews | Write a review

Price: \$287.95

Calculate Shipping

Quantity:

ADD TO CART

Add to list

Product Information | Customer Review | Product Q&A

Grundfos Comfort System Hot Water Recirculator System , UP15-10 SU7P TLC, 595916, Comfort Valve

Grundfos Comfort System - Hot Water Recirculation System The water circulation system that eliminates cold water runoff at the faucet using a bypass valve and pump with a timer to control water flow. Hot Water Recirculation - Special Features- The ultimate in convenience is having hot water instantly available at sinks, appliances and bathroom faucets. The elimination of time spent waiting is especially convenient in areas where the installation of low flow showerheads and faucets are required by law. Hot water recirculation improves the efficiency and effectiveness of household appliances including washing machines and dishwashers by having hot water available instantly. Users can save energy by setting the 24 hour programmable timer to make hot water available during peak demand times, such as early morning and in the evening. The recirculation pump can be installed by a certified contractor in two hours. For the average home, hot water recirculation systems generally cost a few hundred dollars, including parts and installation. A wet rotor design for whisper-quiet and maintenance-free operation. Stainless steel rotor cladding and canister construction, an exclusive UP 15 series feature, ensures corrosion-resistance and extended product durability. A low-watt, two-pole motor combined with low-flow performance ensures minimum water heater operating costs, pipe and water heater wear and energy consumption. Significant water (and sewer) disposal savings, retaining the 12,000 to 38,000 gallons of water a typical U.S. home wastes annually waiting for hot water. Some fast-growing counties are making the installation of hot water recirculation pumps mandatory for all new construction projects.

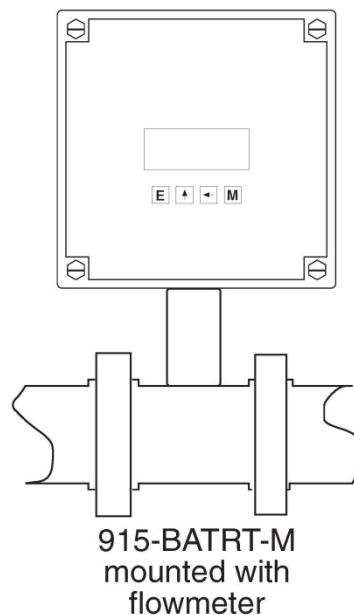
Product Specifications

BRAND	Grundfos
LENGTH INCHES	5-7/16
WIDTH INCHES	5-1/2
HEIGHT INCHES	6-1/4
COLOR	Red
CONSTRUCTION	Stainless
VOLTAGE	115
PHASE	1
INCLUDES	Timer and Line Cord
MANUFACTURER'S PART NUMBER	GF595916
MODEL	UP15-10 SU7P TLC
HEAD FEET	0-8
FLOW U.S. GPM	0-8-1/2
MAX. SYSTEM PRESSURE	145 PSI
MIN. FLUID TEMPERATURE	36°F (2°C)
MAX. FLUID TEMPERATURE	150°F (66°C)

Cumulative fuel oil flow meter

Sensor must be calibrated at factory for #1 diesel from .1 to 7 gph. Square plastic display is NEMA rated, round is explosion proof (not required). Display can be mounted directly on sensor. Sensor has female 1/2" NPT, factory can install 3/8" or other adapter, as required. Meter has flow rate and totalizer.

Battery or Loop Powered Ratometer & Totalizer





Flowmetrics, Inc.

"Where Quality is Measurable"

9201 Independence Avenue
Chatsworth, CA 91311

(818) 407-3420
(800) 356-6387
Fax (818) 700-1961
Email: information@flowmetrics.com

Tangential Turbine Flowmeter - FMT Series

Special Features:

- Well suited to meet a variety of process media
- Capable of measuring extremely low flow rates as .001 GPM in liquids and .001 ACFM in gases
- High output and low drag magnetic pickoffs
- Zero drag modulated carrier pickoffs*
- Bearings to suit specialized applications
- NIST traceable calibration

*Modulated carrier pickoff requires a pre-amplifier – please refer to the PA/PC/PS/LS Brochure



General:

The Flowmetrics Tangential turbine flowmeter is a unique volumetric device. This uses a dual orifice design to direct a stream of fluid tangent to a low mass/balanced rotor and a precision bearing to provide maximum sensitivity. This arrangement permits the measurement of very low flow rates in either liquid or gas service under a variety of operating conditions with high degree of precision and reliability. This geometry also eliminates the need for flow straighteners and allows for greater repeatability.

The unit produces an electrical output with pulse frequency proportional to the flowrate. These pulse can be fed into digital data display, frequency to DC analog, totalizing or into one of many recording equipments available from Flowmetrics, Inc., to provide full fluid flow measurement capability.



9201 Independence Avenue
Chatsworth, CA 91311
USA

(800) 356 6387 • (818) 407-3420
FAX (818) 700-1961

June 14, 2013

Mr. Jim Fowler
Energy Audit of Alaska
Tel: 206 954 3614 /Fax:
E-mail: jim@jim-fowler.com

Our Ref: Quote # 1306221

Dear Jim,

We are pleased to quote the following flow meter & display, which will accurately Diesel #1 Fuel

1. P/N: FMT-8-7NX1-0.070-LD1L Price/each: US\$ 880
Turbine Flowmeter (FMT Series):
 - Process Connection: ½ " NPT (Female)
 - Calibration Range: 0.50 – 3 GPH for Diesel # 1 Fuel at ambient conditions
 - Accuracy: +/- 0.5% Reading
 - Materials of Construction: 316 Stainless Steel except with 440c stainless steel ball bearing
 - Magnetic pickup coil

2. P/N: 915BATRTM5A4 Price/each: US\$ 434
Digital Display:
 - Battery powered
 - Displays Rate and Total simultaneously
 - Mounted integral to flowmeter in a NEMA-4x enclosure

Delivery: 1 - 2 Weeks ARO
F.O.B. Factory
Quoted prices are firm for 60 days

Thank you for the opportunity to quote your requirements. Please do not hesitate to contact our office if you have any questions. We look forward to being of further assistance.

Very truly yours,

Irfan Ahmad
Sales/Application Manager
irfan@flowmetrics.com



Bethel 2045 Comprehensive Plan

JULY 2023

Prepared for:



City of Bethel
300 State Highway
Bethel, AK 99559

Prepared by:



5015 Business Park Boulevard, Suite 4000
Anchorage, AK 99503

This page has been intentionally left blank.

Table of Contents

CHAPTER 1: INTRODUCTION	1
1.1 Plan Purpose	2
1.2 Components of this Comprehensive Plan	3
1.3 Plan Development Process	4
1.4 Vision Statement	5
1.5 Chapters Overview	5
CHAPTER 2: EXISTING CONDITIONS	9
2.1 History of Bethel	11
2.2 Population and Demographic Information	11
2.3 Economy	12
2.4 Land Use and Transportation Patterns	13
2.5 Environmental Challenges	13
2.6 Public Facilities and Services	15
CHAPTER 3: HOUSING & LAND USE	19
3.1 Introduction	20
3.2 Housing	20
3.3 Strategic Development	25
3.4 Future Land Use Plan Map	29
3.5 GIS Mapping	36
CHAPTER 4: LOCAL TRANSPORTATION	37
4.1 Introduction	38
4.2 Road System	38
4.3 Connectivity for All Users	44
4.4 Funding for Facility Construction and Maintenance	49
4.5 Public Transportation	50
4.6 Other Local Transportation Links	53

CHAPTER 5:	REGIONAL TRANSPORTATION	55
5.1	Airport	56
5.2	Port and River	58
5.3	Expanding Regional Access	62
CHAPTER 6:	UTILITY INFRASTRUCTURE	65
6.1	Energy	66
6.2	Water and Sewer	69
6.3	Internet	73
6.4	Solid Waste	74
CHAPTER 7:	PUBLIC FACILITIES & SERVICES	77
7.1	City Operations and Communications	78
7.2	City Finances	80
7.3	Public Facilities & Equipment	82
7.4	Public Safety	84
7.5	Parks and Recreation	88
CHAPTER 8:	PEOPLE & ECONOMY	91
8.1	Education and Career Training	92
8.2	Donlin Mine	93
8.3	Fishing and Subsistence	95
8.4	Climate Resilience Planning	96
8.5	Local History and Culture	97
8.6	Local Businesses	98
8.7	Visitor Experience	99

Figures

Figure 1:	General Ownership Map.....	26
Figure 2:	Future Land Use Plan Map.....	33
Figure 3:	Road Classification & Maintenance Map.....	39
Figure 4:	Transportation Priority Projects	42
Figure 5:	Trail System Map.....	45
Figure 6:	Transit System Map.....	51
Figure 7:	Waterfront Map.....	59

Tables

Table 1:	Plan Chapters and Plan Appendices	5
Table 2:	City of Bethel and Bethel Census Area Population over Time.....	12
Table 3:	Zoning versus Future Land Use Plan	29
Table 4:	Future Land Use Designations	31

Appendices

Appendix 1: City Clerk Action Items

Appendix 2: City Manager Action Items

Appendix 3: Finance Department Action Items

Appendix 4: Fire Department Action Items

Appendix 5: Grant Manager Action Items

Appendix 6: Human Resources Action Items

Appendix 7: Information Technology Action Items

Appendix 8: Landfill Manager Action Items

Appendix 9: Parks and Recreation Action Items

Appendix 10: Planning Department Action Items

Appendix 11: Police Department Action Items

Appendix 12: Port of Bethel Action Items

Appendix 13: Public Works Department Action Items

Appendix 14: Transit Manager Action Items

Acknowledgements

Land Acknowledgment:

The City of Bethel is located on the traditional lands of the Yup'ik People. We respectfully acknowledge the Yup'ik People's deep connection and stewardship with this land and honor their enduring presence and contributions to this community.

Thank you to all Bethel community members who contributed to the planning process through Community Meetings, written comments, and the online Public Comment Map. The following groups and individuals also participated in the planning process through stakeholder meetings and other formal engagements:

City of Bethel	Stakeholder Working Group	Other Groups
Peter Williams, City Manager	Ryan Butte	City Council
John Sargent, Grant Manager	Gisela Chapa	Planning Commission
Lori Strickler, City Clerk	Calvin Cockroft	Community Parks and Recreation Committee
Ted Meyer, Planning Director (<i>retired</i>)	Clarence Daniel	Port Commission
Pauline Boratko, Planning Assistant	Michelle DeWitt	Public Safety and Transportation Commission
Bill Arnold, Public Works Director	Kimberly Hankins	Public Works Committee
Xavier Mason, Finance Director	Ana Hoffman	
Leonard Hicks, Police Chief	Joseph Laroux	
Daron Solesbee, Fire Chief	Deanna Latham	
Ed Flores, Port Director	Brian Lefferts	
Evon Fox, Transit Manager	Philana Miles	
Stacey Reardon, Fitness Center Director	Stacey Reardon	



CITY OF BETHEL

P.O. Box 1388 • Bethel, Alaska 99559

907-543-1373

Fax: 907-543-1394

June 7, 2023
Bethel Residents
Bethel, AK 99559

Dear Community Member:

The City of Bethel is proud to present the Bethel 2045 Comprehensive Plan. The Plan is meant to guide development decisions over the next twenty years. It should be a useful tool for the City Planner, developers, and organizations as we work to secure funds for projects that improve the quality of life for residents, visitors, and provide an incentive for future employees and entrepreneurs to relocate to Bethel.

One consistent characteristic of Bethel is its ever-changing workforce. People move in and out of town on a regular basis. Recruitment and retention are major concerns for all employers in town, from the largest employers like the Yukon Kuskokwim Health Corporation and the Lower Kuskokwim School District to the smallest employers like auto repair businesses, restaurants, and hotels. The Comprehensive Plan will help us improve the roads, utilities, parks, and other critical infrastructure so that the social, economic, and educational life of Bethel inhabitants is not just acceptable, but preferable.

The City must move away from hauled water and sewer services as fast as possible and toward piped infrastructure. The City is under tremendous pressure to recruit and retain those with commercial driver's licenses with tanker endorsements to drive water and sewer haul trucks. There are 18 positions in the budget for drivers, but typically only 9 positions are occupied. The long-term solution to this problem is to purchase, install, and operate a piped water and sewer system and this is reflected in the Plan. In the short-term, the revenue generated from the 3% increase in water and sewer rates every July 1st will not be enough to sustain the water and sewer enterprise fund and keep it in

the black. The pending rate study by DOWL will show that the water system pays for itself, while the cost of the sewer system is increasing faster than the sewer system revenue contribution. Bethel City Council will have to take a hard look at the study once it is published and see if they have the political will to increase rates.

City administrators and council members will have to answer some hard questions like these: (1) Should we raise the sales tax rate? (2) Should we reallocate the .05% sales tax portion currently going to the YK Fitness Center back to the General Fund? (3) Should the City stop giving away a portion of the alcohol tax revenues in the form of Community Action Grants and dedicate that money to the General Fund?

Hardening the City-owned gravel roads with new palliatives like EK35 in Bethel is vital for dust control. Minimizing dust reduces the harmful respiratory effects on people (especially pedestrians and bicyclists), improves visibility, and keeps the roads intact.

The City faces the challenge of working with federal and state rules and regulations that often function as barriers to small communities like Bethel. The City continually seeks grant funds with minimal match requirements or loans with large forgiveness provisions. The City hopes it gets traction with its recently expressed criticisms of USDA-RD program conditions and EPA-funded State Village Safe Water provisions to federal congressional delegates and State commissioners.

The community of Bethel needs more low-income housing. The recent Covid-19 pandemic years and high inflation aftermath have hurt low-income families. The City must work to assist developers in planning, design, and constructing safe, affordable homes and apartments.

The City Dock, Petro Port, Seawall, Small Boat Harbor, and Float Plane Landing Area represent the collective waterfront responsibilities of the Port of Bethel. Seeking funding to repair and replace these facilities is essential. Waterfront operations impact neighboring river communities and regional villages through transshipments and access to Bethel by boat.

As inflation skyrockets, Bethel must search for alternative revenue sources and exploit current revenue streams to its advantage. It must purchase gravel and road implements to maintain 18 miles of gravel roads that increase in number every time a new subdivision comes online. It must operate and maintain its 31 buildings and 30 pieces of heavy equipment. The General Fund consists of sale taxes and fees. It's these funds that are used to maintain buildings and roads belonging to the City. The City might need to raise the sales tax in the future to maintain these services.

The 2045 Comprehensive Plan is full of goals, strategies, and action plans to accomplish the goals. It is truly comprehensive in nature. It covers housing and land use, local and regional transportation, public facilities and services, people, and the economy. The Plan provides historical context as it weaves in the diverse human elements that form the Bethel community and lays out logical paths for future development.



Bethel is the largest rural community in Alaska. It is the heart of the YK Delta region, home to 26,000 Yup'ik people in 56 village communities. Bethel will continue to grow as a hub community and serve as a prominent place for regional organizations, state and federal agencies, and new businesses to thrive.

Thank you to all the stakeholders who contributed to the development of the Comprehensive Plan. Your voices were heard and incorporated into the plan. DOWL did an excellent job soliciting input from the community, asking questions that only we could answer for ourselves, putting our ideas on paper, and editing those ideas to shape the final version of the plan. This plan is truly a collaborative effort that we can all use to for our mutual betterment.

As I retire from City of Bethel employment, I hope those that come after me delve into the Bethel 2045 Comprehensive Plan and the City's Long Range Transportation Plan and use them in their work to make practical decisions that make Bethel a fantastic place to live, work, and play.

Sincerely,

A handwritten signature in dark ink that reads "Peter A. Williams". The script is cursive and fluid, with the first letters of each word being capitalized and prominent.

Peter A. Williams

City Manager



The background is a solid blue color. On the right side, there are several overlapping white geometric shapes. These include a large semi-circle, a smaller circle, and a complex, flowing white line that forms a shape resembling a stylized 'e' or a drop. The shapes are layered, with some appearing in front of others.

CHAPTER 1

Introduction

1: Introduction

1.1 Plan Purpose

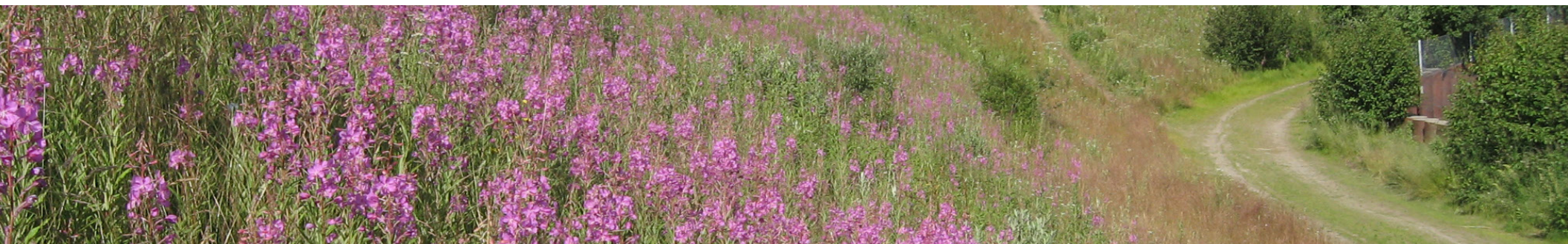
A comprehensive plan guides the long-term physical, social, and economic development of a community. Because it can be difficult to keep long-term community goals in sight while working on day-to-day functions, cities use the comprehensive plan as a reference tool that guides community decisions and actions. That is the critical function of the Comprehensive Plan: it serves as a tool to spotlight community goals and identify the strategies and specific actions that are needed to work towards those goals.

The authority for land use regulations in Alaska is detailed in the Alaska Statutes Title 29, Municipal Government. Per Alaska state law, incorporated cities such as Bethel are required to prepare comprehensive plans that are reviewed and updated as necessary – usually every ten years. A comprehensive plan should be adopted by ordinance, and it may be reviewed and revised as needed. Bethel's Comprehensive Plan was last updated in 2011 and set goals for the City looking towards 2035. Using the 2035 plan as a

starting point, the plan has been updated to consider and identify the community's vision for Bethel in 2045.

The typical comprehensive plan is based on a 20-year horizon and is intended to be flexible enough to adjust to unanticipated changes in social or economic conditions, while providing sufficient guidance to move the community in the desired direction.

A comprehensive plan is a policy document that guides the long-term physical, social and economic development of a community. As suggested by the word “comprehensive,” this type of plan looks at a variety of issues that contribute to or are affected by land use development patterns. The comprehensive plan outlines the City's vision and goals, and explores policies intended to guide decision making by the City government. Most importantly, the purpose of the plan is to inspire action and be incorporated into everyday decision making. The Comprehensive Plan will continually play an active role in community planning and decisions.

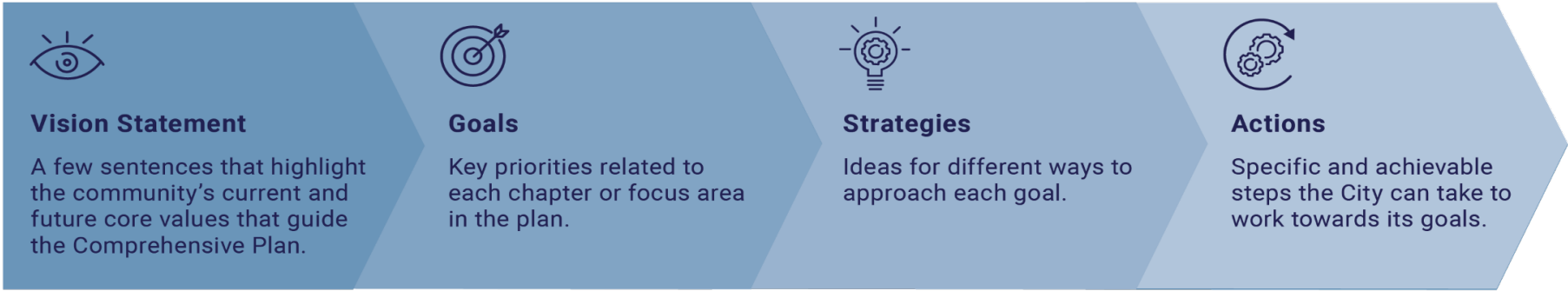


1.2 Components of this Plan

A thorough examination of existing community conditions is critical to inform the comprehensive plan update. Chapter 2 of this document provides the existing conditions basis for this document. The baseline conditions described in Chapter 2 inform the Vision

Statement of this document and the Goals, Strategies, and Actions for each plan chapter. The Vision Statement, Goals, Strategies, and Actions components are defined in the graphic below.

How does a Comprehensive Plan work?



The chapters in this plan are organized by topic: Housing and Land Use (Chapter 3), Local Transportation (Chapter 4), Regional Transportation (Chapter 5), Utility Infrastructure (Chapter 6), Public Facilities and Services (Chapter 7) and People and Economy (Chapter 8). Each chapter identifies several goals, or high-level priorities, related

to the topic for that chapter. Under each goal, strategies bridge the gap between the goal and the actions needed to achieve the goal. Lastly, actions serve as a “to-do list” for the City to work towards its goals and vision.

1.3 Plan Development Process

To update the Comprehensive Plan, the project team reviewed each section of the past plan and conducted research on changes within the community and its priorities. This process included extensive discussions with City staff, committees, commissions, stakeholder organizations, and community members. The focus of the update was to write action items that are concise, implementable, and in line with City goals for 2045.

Community input was critical to the update process. A Stakeholder Working Group was formed with representatives from various organizations in Bethel, including:

City of Bethel <i>(the City)</i>	Bethel Native Corporation <i>(BNC)</i>
Orutsararmiut Traditional Native Council <i>(ONC)</i>	Lower Kuskokwim School District <i>(LKSD)</i>
Association of Village Council Presidents <i>(AVCP)</i>	Alaska Department of Transportation and Public Facilities <i>(DOT)</i>
Yukon-Kuskokwim Health Corporation <i>(YKHC)</i>	Yukon-Kuskokwim Fitness Center

Two Community Meetings to collect public input were held in March of 2022 and April of 2023. Presentations or work sessions were completed with most of the City Commissions and Committees, as well as City Council. The project team created a public project website with information and an interactive Public Comment Map to collect place-specific input. Other feedback and input was gathered through direct communication from community members.



Vision Statement

Bethel is the hub that connects the communities of the rural Yukon-Kuskokwim Delta region.

Bethel is a growing, diverse community that strives to improve quality of life, affordability, and opportunities through strategic development that responds to Bethel's remote location.

1.4 Vision Statement

Stakeholder input was received through workshops with the City of Bethel and conversations with the Bethel community to establish a vision statement. This vision statement serves as the foundation for the updated Comprehensive Plan's goals, strategies, and action items – the guiding idea as Bethel looks towards how it will grow and change in the future.

1.5 Plan Overview and Organization

The main body of the Comprehensive Plan is organized by areas of interest, providing background information and relevant goals, strategies, and action items in each chapter. To assist with the implementation of the plan, the appendices of this document organize the action items by the department that would be responsible for leading the implementation. Even as the people in City leadership and community members involved in planning may change over time, the organization of the Comprehensive Plan can provide continuity.

The Plan Chapters and the Plan Appendices are outlined in Table 1 below.

Table 1: Plan Chapters and Plan Appendices

	Plan Chapters	Plan Appendices
Organization	Organized into chapters that focus on different topics (like Housing & Land Use, Local Transportation, etc.), as well as more focused sections (like GIS Mapping, Public Transportation, etc.)	Organized into lists for each City department (like City Clerk, Grant Manager, Planning Department, etc.)
Contents	■ Background information and map figures ■ Goals, Strategies, and Actions relevant to each chapter. <i>Actions have symbols indicating which department is responsible, or which Appendix to reference for more notes about implementation.</i>	■ Goals, Strategies, and Actions relevant to each department ■ Detailed additional notes to help with implementing the Actions – past context, clarifications, new ideas, other departments to collaborate with, etc.

The areas of interest from Chapters 3 through 8 are outlined below:

Chapter 3: Housing & Land Use

1. Address potential barriers to housing development.
2. Facilitate more affordable housing development and access to affordable housing.
3. Reserve land to accommodate community needs and desired development.
4. Identify areas that are good candidates for infill development and take steps to facilitate their development.
5. Using the Future Land Use Plan Map and its land use designations, encourage future development to have an organization of uses that is compatible.
6. Make spatial information and maps available to the public online using GIS.

Chapter 4: Local Transportation

1. Use the Long Range Transportation Plan (LRTP) to guide all local transportation facility planning.
2. Plan for an organized, proactive approach to surface transportation facility maintenance.
3. Develop the surface transportation network to reduce travel times, alleviate congestion, and support future development.
4. Design new and reconstructed streets with a focus on providing safe and comfortable routes for all transportation modes and all users.
5. Improve and expand the trail system.
6. Strategically seek funding for transportation facility construction and maintenance.
7. Improve the public transit system to be more convenient and responsive to the community's needs.
8. Evaluate site development codes to better support safe access for all transportation modes.

Chapter 5: Regional Transportation

1. Create a well-functioning airport area for travelers and businesses.
2. Support DOT&PF in airport operations and planning.
3. Study and plan for potential changes to the river's course that may impact port operations.
4. Maintain adequate port infrastructure to support shipping operations.
5. Maintain infrastructure to support the use of small boats and float planes for transportation, commerce, subsistence, and recreation.
6. Support the improvement and expansion of other modes of regional transportation.

Chapter 6: Utility Infrastructure

1. Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gases.
2. Regularly seek ways to lower water and sewer bills for customers.
3. Transition Bethel's water and sewer utilities to fully piped systems serving all residences and businesses.
4. Facilitate broadband development within the City of Bethel to advance community access to reliable internet service.
5. Prolong the life of the existing landfill.

Chapter 7: Public Facilities & Services

1. Enhance the reliability and efficiency of the City workforce.
2. Communicate regularly and effectively with the community through various channels.
3. Optimize the management of City revenue and spending.
4. Manage City-owned land in an efficient, cost-effective, and forward-thinking manner.
5. Manage updates to City facilities and equipment in an efficient, cost-effective, and forward-thinking manner.
6. Improve public safety facilities and services in Bethel.
7. Target specific public safety concerns within Bethel.
8. Enhance the role of parks in the Bethel community.
9. Enhance recreational facilities and programs in Bethel.
10. Enhance the network of trails and open spaces in Bethel.

Chapter 8: People & Economy

1. Promote broad access to high-quality education, training, and employment opportunities in Bethel.
2. Minimize potential negative impacts to Bethel from the Donlin Mine efforts and maximize potential benefits.
3. Support subsistence rights and access to subsistence resources in Bethel and the surrounding region.
4. Prepare the City for a broad range of potential climate change impacts.
5. Support locally-specific cultural activities and attractions in Bethel.
6. Foster a thriving local business community.
7. Support and expand tourism and visitation to Bethel.

Appendices

As discussed above, the Appendices repeat action items from the Plan Chapters, but categorized by which City department is responsible for leading the implementation. Each appendix serves as a “to-do list” for a separate City department, along with additional context or ideas gathered during plan development that are not included in the chapters.

The Appendices are listed in order below. To show which department is responsible for each action in the Plan Chapters, the circular icons below are used throughout the plan.

Appendix 1:	City Clerk		
Appendix 2:	City Manager	 	<i>If action items in plan chapters are listed as CM*, they are not intended to be City Manager actions; the City Manager should assign them to the appropriate party.</i>
Appendix 3:	Finance Department		
Appendix 4:	Fire Department		
Appendix 5:	Grant Manager		
Appendix 6:	Human Resources		
Appendix 7:	Information Technology		
Appendix 8:	Landfill Manager		
Appendix 9:	Parks and Recreation		<i>Some action items are assigned to Parks and Recreation although this is not currently a City department, recognizing that the community is advocating for greater emphasis on the management of parks and recreation. In the interim, Public Works and the City Manager should continue to work together to track and work on these action items until a Parks and Recreation department is created. The Community Parks and Recreation Committee can also assist with providing input on delegation of responsibilities.</i>
Appendix 10:	Planning Department		
Appendix 11:	Police Department		
Appendix 12:	Port of Bethel		
Appendix 13:	Public Works Department		
Appendix 14:	Transit Manager		

An abstract graphic on a dark green background. It features three overlapping circles of increasing size from left to right, each a lighter shade of green. A thick white line starts from the right edge, curves downwards and to the left, then curves back to the right, ending near the bottom right corner.

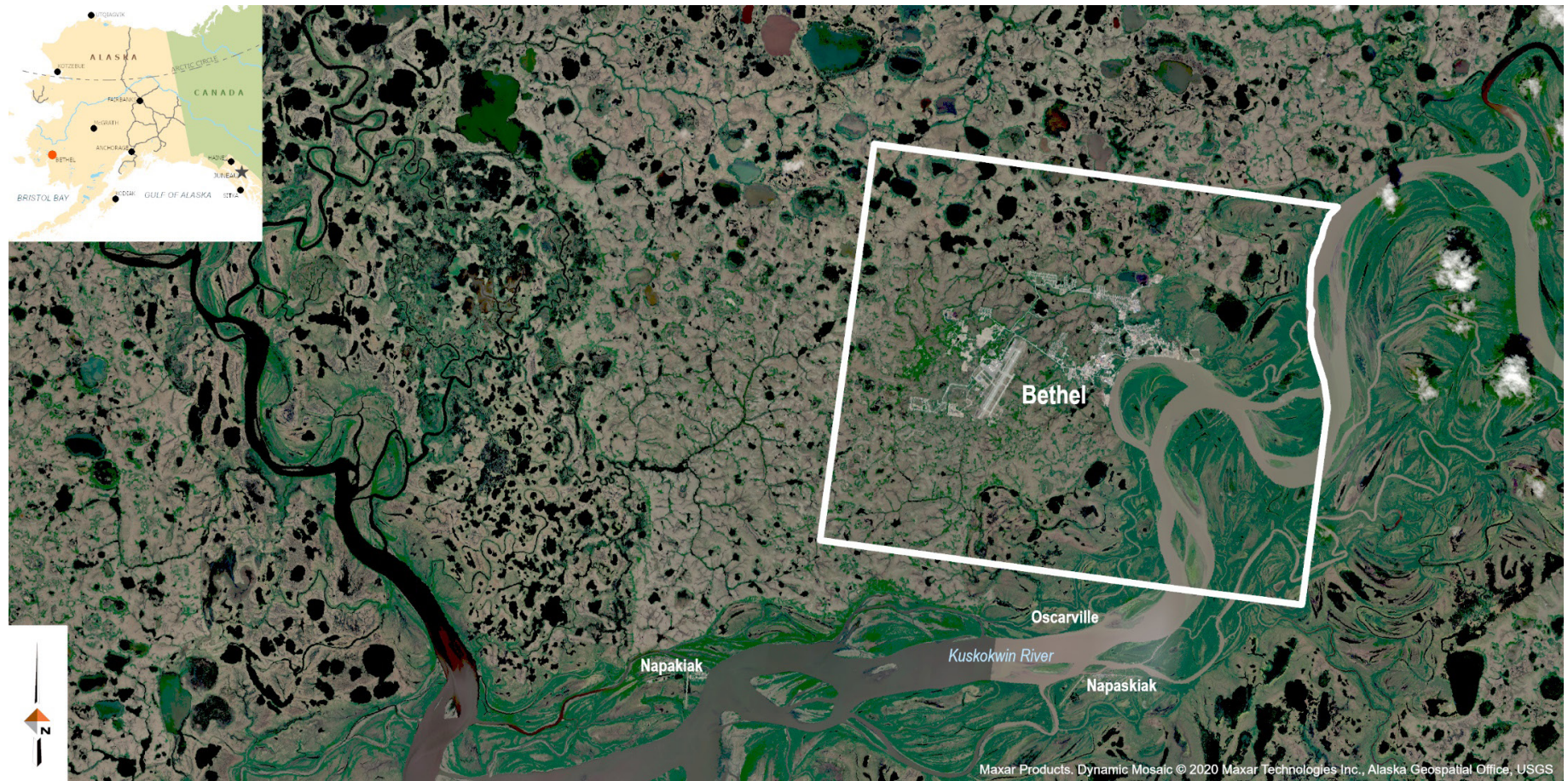
CHAPTER 2

Existing Conditions

2: Existing Conditions

The City of Bethel is the regional hub of the Yukon-Kuskokwim Delta (Y-K Delta). The city is situated on the outer bank of a bend in the Kuskokwim River, approximately 40 miles inland from the Bering Sea. Much of Bethel's 44 square miles is undeveloped land within the Yukon Delta National Wildlife Refuge, and the city is remotely located off the Alaskan road network, about 400 air miles from Anchorage.

The delta region stretches across 59,000 square miles and is the historic home of the Yup'ik people; 56 villages across the region rely on Bethel as a major resource for transportation, government, education, health services, and commerce.



Aerial view of Bethel, its city limits, and the locations of a few of the surrounding communities.

2.1 History of Bethel

The Yukon-Kuskokwim Delta region has been home to Native cultures, including Yup'ik, Siberian Yup'ik, and Cup'ik people, for thousands of years. Several Yup'ik settlements were located near present-day Bethel's location. In 1867, shortly after the United States purchased Alaska from Russia, the Alaska Commercial Company opened three trading posts on the Kuskokwim River. In 1885, the Moravian Church established a mission, store, and school near one of these trading posts and a Yup'ik village called "Mumtrekhlogamute" or "Mamterillermuit" (translated to "smokehouse people" or "village of many fish caches").

In the early twentieth century, Bethel began to emerge as the regional hub it is today, with the establishment of a post office, the mapping of a key deep-water channel for freight, the opening of federal and state agency offices, and the establishment of schools to serve families moving to the region. After a series of epidemics in the area, many native children from villages across the region were placed in orphanages in Bethel, further expanding the Bethel population. Building on existing aviation and government activities, the U.S. Military had a presence in Bethel since World War II and the Cold War era.

Bethel was incorporated as a city in 1957. A regional high school was built in the early 1970s. By the 1980s, Bethel had grown to be the largest town in western and arctic Alaska; public and private industry increased, and subdivision development boomed. Today, Bethel is the eighth most populous city in Alaska.

2.2 Population and Demographic Information

According to U.S. Census Bureau data for 2020, the population of Bethel is approximately 6,325 people. The table below shows a general trend of population growth over the decades of the past century, as well as an increasing percent of the census area living within

Bethel city limits. However, Bethel's population and percentage of the census area population decreased between 2009 and 2020. Recent acceleration of migration out of villages and rural Alaska is likely the result of high energy and food costs and changing generational expectations. This trend is both drawing people from villages to regional hubs like Bethel, and from regional hubs like Bethel to Anchorage.

Bethel is a growing and diverse community. According to the 2020 American Community Survey (ACS), 79 percent of the population identify as people of color, and 63 percent identify as Alaska Native. Alaska Native organizations in the area include tribal government Orutsarmiut Traditional Native Council (ONC), village corporation Bethel Native Corporation (BNC), and regional corporation Calista Corporation. As of 2019, only six percent of Bethel residents were born outside of Alaska (down from 30 percent in 2000).

The median age of the Bethel region is 29, with people 17 years and under contributing to 31 percent of the population. According to the ONC and City of Bethel 2010 Long Range Transportation Plan, two important and fast-growing population subgroups in Bethel are seniors and youth. It is anticipated that Bethel will continue to evolve as a center for education and workforce development for area youth, and as a center for specialized facilities and services for the region's elderly residents, further accelerating the growth of these population subgroups.

According to the 2020 ACS, there are approximately 1,618 households in Bethel, with an average of 3.3 people per household (significantly above the U.S. average of 2.51 people per household). The median household income in Bethel is \$86,624 (including income outside of work such as Alaska Permanent Fund or Native corporation dividends) and the median household earnings for work is \$42,247.

Table 2: City of Bethel and Bethel Census Area Population over Time

Year	City of Bethel	Bethel Census Area	Bethel as % of Census Area
1920	221	-	-
1930	178	-	-
1939	376	4,026	9.3
1950	651	4,670	13.9
1960	1,258	6,360	19.8
1970	2,416	8,917	27.1
1980	3,576	10,999	32.5
1990	4,674	13,656	34.2
2000	5,471	16,006	34.2
2009	6,522	17,352	37.6
2020	6,325	18,666	33.9

Source: U.S. Census Bureau. The Y-K Delta includes the approximately 37 villages of the Bethel Census Area and 19 additional villages of the Wade Hampton Census Area at the north end of the Delta. The data above does not include the population of the Wade Hampton Census Area.

2.3 Economy

Bethel's status as a regional hub has driven the growth of its population over the city's history. For this to continue, available local opportunities will need to be able to support residents in the face of a very high cost of living. The cost of fuel increases the cost of household or business expenses like heating, electricity, and transportation. Most goods bear an extra cost since they must be shipped to the city by barge or plane.

According to 2020 ACS data, just over 30 percent of the employed population in Bethel works in Educational Services, Health Care, and Social Assistance. Other prominent employment sectors include Transportation, Warehousing, and Utilities (about 10 percent of the working population) and Professional, Scientific, and Management,

and Administrative and Waste Management Services (another approximately 10 percent). While there is some overlap with the previously mentioned industries, it is also notable that almost 30 percent of the workforce is classified as government workers.

Economic activity in Bethel extends beyond employment with larger organizations. There are currently over 500 businesses licensed in Bethel. Several local artisans produce artwork, jewelry, clothing, and other items that are sold locally, in Anchorage, and worldwide. Some of the economy is supported by visitors including business travelers and people visiting friends and relatives, and some tourists come for outdoor recreation activities including bird watching and sport fishing. Subsistence activities including fishing, hunting, and berry

picking are an important part of life in Bethel and supplement many residents' incomes.

According to 2022 labor statistics from the Alaska Department of Labor and Workforce Development, the Bethel unemployment rate has recently been hovering around 10 to 11 percent, while the statewide unemployment rate is currently closer to approximately 4 or 5 percent. The City has noted shortages of certain types of skilled workers, such as for jobs in the Public Works department. This indicates an opportunity to improve local career training and help connect people with work, which would also help with retaining homegrown talent in the Bethel workforce.

2.4 Land Use and Transportation Patterns

Bethel's role as a regional transportation hub has shaped its development. Historically, the city grew around its port and along the Kuskokwim River, with older neighborhoods, parks, trails, and water access for the port, small boat harbor, float plane access, and seasonal ice road access on the eastern side of town. Further inland, the Chief Eddie Hoffman Highway extends from the airport at the west side of town and east towards the civic and commercial center of Bethel; this highway is the only road in Bethel that is classified as an Alaska State Highway and connects the airport to critical destinations such as the post office, hospital, and government offices. The airport is Part 139 certified by the Federal Aviation Administration (FAA) and typically ranked the second-busiest general aviation airport in the state due to its role as the primary hub for the region. Transportation within Bethel includes a variety of modes, including personal vehicle; public transportation (City bus service); foot transportation along roads, trails, and boardwalks; bicycle; four-wheeler or snowmachine; or taxicab.

Bethel's "downtown" is primarily oriented along the highway; this corridor also includes the cultural center, tribal organization offices, the University of Alaska-Fairbanks Kuskokwim Campus, stores, restaurants, and religious institutions. At the end of the highway, Ridgecrest Drive curves north to provide access to the Lower Kuskokwim School District campus, public works facilities including the sewage lagoon and landfill, the Fitness Center, Pinky's Park, and many residential subdivisions. Other residential subdivisions have emerged throughout Bethel, sprouting from other locations along the highway.

An aerial view of Bethel shows development along a curved "spine" of the highway and other major roads, with a large undeveloped area north of the highway, south of Ptarmigan Street, west of the part of town along Ridgecrest Drive, and east Tundra Ridge Road (currently in progress) and H-Marker Lake. This area is often referred to as the "Donut Hole." It includes some areas of tundra that are likely to remain open space, but also City, BNC, and other privately-owned land or native allotments that could potentially be developed, especially if more road connections are made through the space. For example, the City plans to support infill opportunities and improved connectivity with a new north-south road that would connect the highway north to the Fitness Center and beyond to Ptarmigan Street (currently being nicknamed "Donut Hole Road" during the planning process).

2.5 Environmental Challenges

Climate Change and Thawing Permafrost

Weather and climate in Bethel are characterized by "high humidity, frequent fogs, considerable cloudiness and many periods of rain or snow (ONC LRTP, 2020)." Summer temperatures typically range from 40 to 62 degrees Fahrenheit, and winter temperatures typically

range from -2 to 19 degrees. Frost in Bethel averages from around early September to the end of May. According to a 2011 study of communities in the surrounding region by Alaska Native Tribal Health Consortium (ANTHC), annual temperatures in the region are expected to get warmer and wetter. For example, annual temperatures are expected to rise by five to eight degrees, and four to twelve degrees in the winter (depending on timeframe and greenhouse gas emissions scenarios). Residents are reporting climate change impacts already, with an earlier spring breakup season and different weather patterns including periods with more rain than had been typical, but also dry periods with fires.

The warming climate is already having an impact on the built environment in Bethel. Permafrost in the area is characterized as “warm” permafrost, averaging around 31.2 degrees Fahrenheit, according to the City. Community members are now observing permafrost at 4 to 6 feet below ground surface. This poses a problem to local construction and increases maintenance costs, as thawing permafrost impacts building foundations, roads, and utility infrastructure. Local soil types already pose challenges to development, so the changing permafrost may only make construction and maintenance more complicated in the future.

Winter travel on frozen lakes and the river is also becoming more challenging as annual temperatures rise. The Kuskokwim River is freezing later and breaking up earlier. Ice conditions throughout the winter are becoming more variable, which prevents reliable and safe ice road routes. Recent winters have brought less snow, so road surfaces have been exposed and dry, causing dust problems which were typically only an issue during the summer.

Erosion and Flooding

Bethel has experienced erosion along the river since the community was originally founded; it is natural for rivers to change over time. The community was once protected by a series of small islands in the main channel of the Kuskokwim River. As of 1939, the river eroded these protective islands. Bethel has a steep riverbank, made up of easily erodible materials, often exacerbating the erosion problem. Other factors contributing to erosion are direct sunlight in the south-east portion of the bank which causes melting of permafrost, as well as high foot traffic which destroys protective vegetation. Climate change impacts are anticipated to exacerbate riverbank erosion.

Bethel experiences seasonal flooding due to ice jams during “break up,” the springtime melting season. This has led to the riverbank adjacent to Bethel eroding over the last 40 years. A historic flood in 1995 created a cove measuring 350 feet wide and 200 feet inland, which posed a danger to structures within the city. Later in 1995, the U.S. Army Corps of Engineers (USACE) installed a rock seawall along 600 linear feet of the dock and riverbank. To combat further erosion, USACE initiated a \$24 million project which included an 8,000-foot bank stabilization. The City reports there is always more work to be done to improve and maintain the critical seawall infrastructure.

Due to the changing course of the river and the eroding riverbank, there will likely be impacts to the deep water channel and Port of Bethel. As the region relies on the river for the delivery of fuel and other cargo, further study and mitigation planning is necessary.

Subsistence Resources and Environmental Impacts

Bethel is situated in a generally flat area of the tundra. Vegetation includes low-growing shrubs, herbs, grasses, and sedges rooted

in a mat of mosses and lichens. Commonly found plants include sphagnum moss and Labrador tea, crowberry, birch, willow, and berries, such as currants, blueberries, cranberries, blackberries, and salmonberries – the environment is rich with foods that can be harvested. There are abundant waterfowl and other bird habitats around Bethel. Moose are one of the most common subsistence land mammals (comprising of over half of land mammals harvested), followed by caribou. Commonly harvested furbearers include rabbits, beaver, fox, wolves, and mink.

No federally listed endangered species or critical habitats currently exist in Bethel. However, Bethel is among many coastal Alaskan communities being impacted by decreasing fish populations. Bethel's rivers and lakes are home to several types of fish including arctic char, all five salmon species, lake trout, dolly varden, rainbow trout, arctic grayling, northern pike, sculpin, whitefish, burbot, stickleback, and blackfish. Fish have been significantly less abundant, and those who rely on fish for their livelihood or supplementing their diet are subject to sometimes unpredictable closures in order to protect fish populations. Overfishing, changing migration patterns, warming water temperatures, environmental contamination, and melting permafrost are all anticipated to continue to have impacts on subsistence resources across the region, which will in turn impact communities such as Bethel that rely on subsistence foods to keep the cost of living more manageable.

2.6 Public Facilities and Services

The city is governed by a Mayor, City Manager, and seven-member City Council. All council members are elected at large for 2-year terms. The Mayor is elected by the City Council, and the City Manager oversees the daily operations of the City.

Commissions and Committees include the Board of Ethics, Community Action Grant Committee, Finance Committee, Port Commission, Planning Commission, Public Safety and Transportation Commission, Public Works Committee, and Community Parks and Recreation Committee.

Administrative services for the City of Bethel are provided by the City Manager, Grants Manager, and Human Resources Department. Other departments focus on specific City facilities and/or services.

Administration:

The City Manager is appointed by the City Council and serves as the chief executive officer for the City, directing the day-to-day operations of the City in accordance with municipal law. The City Manager hires and supervises department heads, carries out implementation of the annual budget with the Capital Improvement Plan, manages City property, and is responsible for managing quality service delivery to City residents, as well as other interdisciplinary programs and initiatives.

The Grants Manager obtains grant funding for various City capital and operating needs.

The Human Resources Department organizes City hiring and human resources.

Other City Departments:

The City Clerk is appointed by City Council and acts as their parliamentary advisor, responsible for assuring compliance with local and state laws associated with municipal records and public meetings. The Clerk's Office also conducts research and processing of Council requests and actions, prepares agenda packets, administers municipal elections, serves as notary public, manages and writes City ordinances and resolutions, manages City Council and Clerk budgets, manages City public relations (currently assisted by a contractor), and works with other governmental representatives and agencies.

The City Attorney is appointed by City Council and is the legal advisor of the governing body, representing the City in civil and criminal proceedings. The Legal Department (led by the City Attorney) advises City leases, contracts, and other matters such as ordinances.

The Finance Department is led by the Finance Director, who is appointed by the City Manager to be the ex officio treasurer, data processing manager, city accountant, and internal auditor responsible for supervising fiscal operations of other departments and employees. The Finance Department manages City money and investments, administering tax collections as well as payments made by the City.

The Technology Department maintains the information and communications technology for all City departments.

The Planning Department provides guidance and reviews for all new development and redevelopment in the City to ensure code compliance. The department also manages permit records and makes recommendations for changes to code when needed to

better promote health, safety, and responsible development in the community.

The Port of Bethel oversees shipping, receiving, and distribution of petroleum products and barged freight for the Yukon-Kuskokwim Delta. Port infrastructure includes the Cargo Dock, Petro Port, Small Boat Harbor, Float Plane Beach, and Seawall.

The Fire Department oversees emergency fire, hazardous materials, and medical response.

The Police Department oversees public safety and law enforcement, in collaboration with regional and state law enforcement and safety entities. The Police Department also oversees animal care and control (including in collaboration with the non-profit organization **Bethel Friends of Canines** (BFK9)).

The Public Works Department oversees City services (water, wastewater, and solid waste), transportation and other infrastructure, buildings, vehicles, equipment, and Parks and Recreation.

Other utilities and services provided by other public agencies or private entities include:

Fuel: Crowley, Delta Western, and Vitus currently supply fuel to Bethel.

Electricity: Alaska Village Electric Cooperative (AVEC), a member-owned rural electric cooperative, provides electricity for Bethel and nearby villages.

Telephone: In-state telephone services are provided by United Utilities, Inc., a GCI company. GCI provides long-distance service.

Internet: Internet is available locally to community members through

GCI. At the time of updating this Comprehensive Plan, satellite internet providers such as Starlink were rapidly expanding into the region.

Health services: Health services are provided by the Yukon Kuskokwim Health Center (YKHC), and the Bethel Family Clinic (a federally funded community health center).

Homelessness services: Bethel Winter House is a non-profit organization that provides services for individuals and families at-risk of or experiencing homelessness.

Other human services: Bethel Community Services Foundation (BCSF) is a non-profit organization that provides other community-based programs and services across the YK Delta region.

Post office: The U.S. Postal Service (USPS) operates a full post office in Bethel.

Education: Bethel is home of the Kuskokwim Campus of the University of Alaska Fairbanks, Adult Basic Education, the Lower Kuskokwim School District (LKSD), Bethel Regional High School, Mikelnguut Elitnaurviat School, Bethel Alternative Boarding School, a Yupik Immersion School (Ayaprun Elitnaurvik), Involved Parents Preschool, Headstart, and Junior ROTC. Yuut Elitnaurviat (People's Learning Center) provides vocational training, and Bethel also has a flight school.

Museum and community center: The Yupiit Piciryarait Cultural Center and Museum provides a gathering space for community-wide events in Bethel. The museum was founded in 1965 as the "Bethel Museum" by the City and transferred to the Association of Village Council Presidents (AVCP) in 1995. Galleries display exhibits of Yup'ik, Cup'ik, and Athabascan people of the YK Delta in ancient and contemporary times.

Library: In conjunction with the University of Alaska, Bethel operates the Kuskokwim Consortium Library.

Fitness Center: The YK Fitness Center is a community multipurpose gym and swimming pool facility owned by the City and currently operated by contractors.



Bethel City Hall.



CHAPTER 3

Housing & Land Use

3: Housing & Land Use

3.1 Introduction

As discussed in Chapter 2: Existing Conditions, land use in Bethel has been shaped by a variety of factors including the changing river-front, soil conditions, or ownership. These factors have helped shape Bethel's development, with a mixed-use core and a small number of major roads spreading out in different directions to serve primarily residential development further out.

Any development in Bethel is challenging and expensive. Materials must be shipped in, buildings must be constructed on piles to respond to permafrost and wetlands, and there are not always enough people available locally who have skills to design and/or construct buildings and the infrastructure to serve them. Due to the spread-out development pattern, roads and utilities must travel farther, increasing construction and maintenance cost.

This can create insurmountable challenges for potential developers, homeowners, renters, and business owners. The City's vision for 2045 focuses on easing the high cost of living and improving quality of life, and facilitating land use development that is more efficient will play a significant role in this effort. This plan seeks to identify ways the City can streamline land use processes, lessen barriers that the City code may pose, provide helpful land use information, and shape development patterns to move the City towards its goals.

3.2 Housing

Need for More Housing

Bethel homes are in short supply and are difficult for buyers and renters to afford. Finding ways to assist with the development of more (and particularly more affordable) housing is a major priority for the City. Community members have observed that housing is urgently needed for those who wish to live in Bethel, but there is also a need for shorter-term housing for workers on temporary contracts or visiting Bethel for shorter periods of time to work. Generally, a variety of housing is needed to serve a variety of user groups and make it easier to find a suitable place to live or stay.

In 2021, a team including Orutsararmiut Traditional Native Council (ONC), NeighborWorks America and Alaska, Enterprise Community Foundation, the City of Bethel, Cook Inlet Housing Authority and Cook Inlet Lending Center, Agnew::Beck, DOWL, and SALT published "Clean Water Makes a Healthy Home: A Concept Paper for an Innovative Approach to Infrastructure Investment in Rural Alaska." This concept paper included a study of housing needs in Bethel and the infrastructure needed to support more housing. The project focused on how to reduce costs and expand revenue sources for housing development, developing partnerships, and providing adequate water and sewer infrastructure. The water and sewer findings are discussed in greater detail in Chapter 6: Utility Infrastructure.

Per the study, 11 percent of households are severely overcrowded, and there is a potential demand for an additional 577 units of housing over the next 10 to 20 years. This will need to include both devel-

oping new housing and replacing aging and substandard units. The rental market is limited, and approximately 38 percent of households pay more than 30 percent of their income for housing. Lack of available and affordable housing could discourage people from staying in Bethel or moving to Bethel, in turn negatively impacting local economic sustainability.

Streamline Processes

There are several well-established residential subdivisions throughout Bethel, mostly including single- and two-family homes. These continue to be popular housing options for those who can afford them (whether to buy or rent). Though slowly, new subdivisions of this type continue to be developed in Bethel. There are also some multifamily options in various locations around Bethel. However, the pace of development for any of these housing options is not meeting the community's needs.

The City can help facilitate and/or encourage housing development through a variety of means, particularly through Planning Department actions. This could include sharing information on funding assistance, streamlining development and permitting processes, and proposing code changes (such as to clarify how Planned Unit Developments can be developed or to allow greater density in some areas). The City could also explore other ways to incentivize development.

It is important to note that facilitating development does not mean sacrificing processes that are in place to protect the quality of life in Bethel and the rights and interests of property owners. Ensuring compliance with code and working within existing regulatory processes is critical to avoiding delays in the housing pipeline, including the provision of necessary infrastructure like utilities and roads. For example, the Haroldson Subdivision (located to the northeast of town) was created prior to the adoption of the required subdivision agreement process. The access road to the subdivision traverses a City-owned parcel but without a public right-of-way. Neither the access road nor the roads within the subdivision were constructed to adequate standards to support public vehicular traffic, so the City was not able to take on ownership and maintain the roads until the issue was resolved, delaying the roll-out of much-needed residential lots. While the subdivision agreement process is an additional step in development, it helps protect the City and ensure adequate infrastructure is provided for future residents. Like any other process in Bethel Municipal Code (BMC), it may evolve over time to best suit the needs of the City and the community.

GOAL 1: Address potential barriers to housing development.

Strategy 1: Streamline the land use approval process.

Action A: Every five years, audit the Planning Department website and application forms used for land use processes and revise for clarity and ease of use. PL

Action B: If an element of the code or process repeatedly causes unnecessary difficulty or undue delay for housing developers, the City Planner should consider whether it would be of public benefit to make a change to the code and bring the suggested change forward to the Planning Commission and City Council. PL

Strategy 2: Ensure that subdivision, development, and design standards are enforced.

Action A: Require compliance with all subdivision standards for approval, including the standard subdivision agreement process. PL

Action B: Consider changes to the subdivision approval and agreement process to improve clarity and efficiency. PL

Action C: Develop a position description to potentially hire a code enforcement officer. PL

Action D: Examine code sections related to non-conformance and coming closer to compliance to determine if changes may be needed. PL

Strategy 3: Encourage development by collaboratively working with developers to install public infrastructure, including piped water and sewer systems and roads.

Action A: As part of the subdivision agreement process, consider designing a standardized “impact fee” mechanism to have developers participate in funding when their development will impact the overall system (water and sewer or other infrastructure such as roads). CM PL

Action B: Create a guide for infrastructure development grants or other funding assistance programs, in order to assist developers with finding information needed to pursue supplemental development financing. GM PL

Focus on Density

Denser housing typically costs less for developers and residents. Smaller homes require less materials to build and require less energy to heat. Denser development located closer to the center of town may also mean more residents don't have to travel as far to get to work, school, healthcare, food, or other destinations. To provide more affordable and workforce housing in Bethel, there should be a focus on facilitating multifamily developments such as apartment buildings or townhomes, as well as opportunities to build smaller homes on smaller lots for more accessible ownership or "starter home" opportunities.

Existing provisions in BMC, such as the Planned Unit Development (PUD) model, already allow greater development layout flexibility to help facilitate more compact residential development and the

potential for greater density balanced with shared open space. However, these code sections may need to be reviewed for clarity and/or promoted in the community, as they have not been frequently used. Other parts of zoning code could benefit from closer study and potential changes to encourage higher density and multifamily residential development.

Like any change to zoning code, creating a new zoning district would require the City to develop the proposed code changes. The proposed code changes would then be subject to a public review process. Finally, any code changes would need to be adopted by the Planning Commission and City Council as part of a public hearing process.

GOAL 2: Facilitate more affordable housing development and access to affordable housing.

Strategy 1: Use zoning to encourage multifamily and more dense housing development.

- Action A:** Develop a working group to assist the City Planner to study and create code changes and zoning map changes for a new Multifamily Residential zoning district that can be brought forward to the Planning Commission and City Council for approval. PL
- Action B:** Encourage the implementation of the new Multifamily Residential zone and existing Downtown Commercial and Neighborhood Commercial zones through the Future Land Use Plan Map. PL
- Action C:** Consider rezoning some City-owned land to Multifamily Residential where recommended in the Future Land Use Plan Map. PL
- Action D:** Encourage use of the Planned Unit Development model, which allows flexibility on dimensional standards for multifamily development to allow denser residential developments with shared open spaces (such as townhomes, "tiny home" communities, or other compact residential styles). PL

Strategy 2: Support access to information on housing assistance programs.

- Action A:** Consider completing a housing needs assessment in collaboration with community partners such as ONC or BNC. CM
- Action B:** Work with various community partners, potentially including the U.S. Department of Housing and Urban Development (HUD), Alaska Housing Finance Corporation (AHFC), ONC, or BNC, to research potential economic housing assistance that could be available to Bethel residents. GM



Aerial view of the “Donut Hole” in Bethel.

3.3 Strategic Development

Housing is a priority, but the organization of other land uses within Bethel must also be strategically coordinated to ensure the City has the public infrastructure needed as it continues to grow. The available land and varying constraints must be considered while evaluating the land uses that the community will need in the future.

As discussed in the Housing section above, denser development has many benefits. Less utility and road infrastructure is needed to connect denser development, saving the City money. Shorter distances between developments also saves time and money spent on transportation for Bethel residents and public service providers.

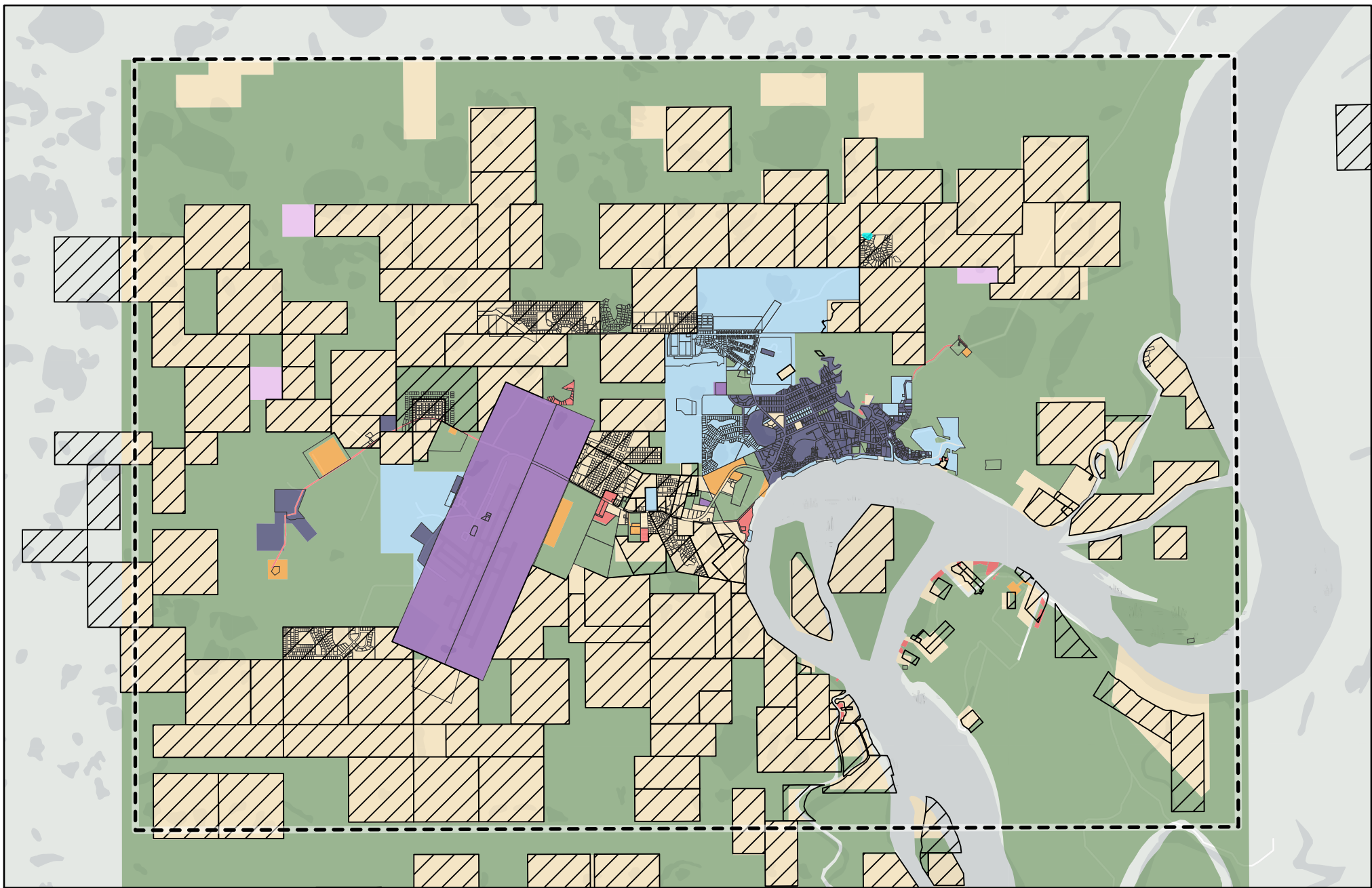
Yet, development in Bethel must respond to a variety of constraints, including varying ownership and soil types that complicate development. So far, the City has grown along a curved spine, with a largely undeveloped area nicknamed the “Donut Hole” in the middle. The community has expressed a desire to reserve valuable areas as open space (providing areas for recreation or berry picking, for example), but other properties might be better suited for development to continue.

Given the high cost of development in Bethel, along with the expense of expanding and maintaining infrastructure such as roads, infill development has become more common. The City should apply this principle to projects on land it owns or might seek to purchase, and can also seek ways to encourage private development to be located closer to already-developed areas of the City.

Current zoning dictates where more dense infill development would be allowed and most suitable. For example, more dense or mixed-use development would not generally be allowed in established Residential-zoned neighborhoods. However, areas that are not far from the center of town, are not developed, and are not yet zoned (or are zoned General Use) could be good candidates for new multi-family housing or mixed-use development (such as with a new Multifamily Residential zone, as discussed in Section 3.2 above). The Future Land Use Plan Map in Section 3.4, which is a planning tool to help inform how zoning could look in the future, was developed with these ideas in mind – established residential neighborhoods in the Residential zone and further-out areas are suggested to be less dense residential development, whereas areas in the Donut Hole are suggested to be “Mixed-Use Neighborhoods.”

On the next page is a map of land ownership in Bethel. Areas of existing development can be identified as denser concentrations of property lines in gray – primarily along the bend in the Kuskokwim River and extending west in two sections: along the Chief Eddie Hoffman Highway (CEHH) towards the airport to the south and along Ptarmigan Road to the north. H-Marker Lake and the in-progress Tundra Ridge Road form the western boundary of the “Donut Hole” of undeveloped land. As shown in the color coding on the map, this area consists of a mix of land owned by the City, Bethel Native Corporation (BNC), and private native allotment owners.

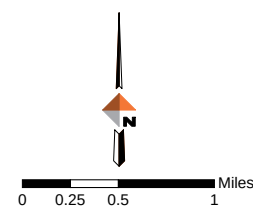
**** The map on the next page is not a full reflection of current ownership in Bethel and is included to show general land ownership patterns. The ownership data in the map is primarily sourced from a 1997 map; some information was not available or has changed. Because Bethel does not collect property taxes, current ownership is not regularly tracked and would require extensive title research.*



General Ownership (1997 City of Bethel Comprehensive Plan)

- | | |
|---|---|
| ■ ANCSA^ | ■ State Selected |
| ■ Bethel Native Corporation* | ■ State of Alaska |
| ■ City of Bethel | ■ Information Unavailable |
| ■ Federal | <i>^includes ANCSA 14c1/c2 and ANCSA c3</i> |
| ■ Private | <i>*a small number of properties are also part federal or private ownership</i> |

- | | |
|--|---|
| | Conveyed Native Allotment
(BLM Published: 4/25/2020) |
| | City of Bethel Parcel
Boundary |
| | City of Bethel Boundary |



General Ownership

City of Bethel Comprehensive Plan



Date: July 2023

Figure 1

GOAL 3: Reserve land to accommodate community needs and desired development.

Strategy 1: Inventory City-owned properties.

Action A: Inventory all City-owned properties, including their current use or any use requirements/restrictions or other encumbrances associated with original BLM conveyance to the City. PW PL

Strategy 2: Create and regularly maintain a list of community facility and infrastructure needs that will require land.

Action A: Create and maintain a list of community facility and infrastructure needs in order of priority, and include specific spatial needs such as general location and approximate area of land required. PW CM

Action B: As applicable, identify and initiate coordination with entities that need to be involved in the implementation of community facilities and infrastructure (such as the Public Works department for wastewater facilities, or AVEC for alternative energy generation sites). PW CM

Action C: Research and identify if there are any City-owned sites that should be reserved for specific community facilities or infrastructure. PL

Action D: As needed, create a plan to obtain land or lease a property to satisfy each priority community infrastructure need. CM

Strategy 3: Use the Future Land Use Plan Map to designate priority areas for residential and commercial development.

See Future Land Use Plan Map section and Goal 5 below.

Strategy 4: Sell, trade, or lease City-owned properties that the City does not need in the future so that more private development can occur.

Action A: Evaluate City-owned properties that should be considered to sell or lease for private development. CM

Action B: Create a plan for how the City will dispose of (sell or lease) certain properties over time. CM

Action C: Initiate the process to dispose of these properties according to the plan. CM

GOAL 4: Identify areas that are good candidates for infill development and take steps to facilitate their development.

Strategy 1: Identify the best areas for infill development.

Action A: Create a map that highlights “priority development areas” including the best / most likely areas for infill development as Bethel grows (*more information on factors included in Appendix 10*). PL

Action B: Regularly update the priority development area map based on new developments and environmental information, such as changing permafrost and hydrologic information. PL

Strategy 2: Investigate how private landowners within priority development areas might be encouraged to participate in community development goals.

Action A: Explore partnership opportunities to achieve desired development, such as with BNC. CM

Action B: Compile and share information from BIA about how native allotment owners can prepare for potential development. CM

Action C: Coordinate with the Association of Village Council Presidents (AVCP) Realty Department to learn more about potential land exchanges between BNC and native allotment owners for “in-town” native allotments. CM

Strategy 3: Decrease barriers to additional commercial development and incentivize development patterns that support more commercial activity.

Action A: Revise zoning code to allow shopping centers in appropriate zoning districts. PL

Action B: Consider setting aside a space to host markets where small businesses can rent booths and sell goods or services. PL

Strategy 4: Facilitate redevelopment of properties that are underutilized, dilapidated, or abandoned.

Action A: Compile a list of sites that appear to be underutilized, dilapidated, or vacant / abandoned. PL

Action B: Implement a vacant building registration ordinance. PL

Action C: Examine and revise the Public Nuisance Abatement code (BMC 9.36) to improve its effectiveness and the efficiency of enforcement. PL

Action D: Consider funding available for the purchase of dilapidated or abandoned properties, potentially for use in partnership developments. GM

3.4 Future Land Use Plan Map

The Future Land Use Plan Map is a key component of every Comprehensive Plan for every city. It is a tool used to help shape what types of land uses and neighborhoods develop in different parts of town in the future. It is important to note that land use designations in the Future Land Use Plan Map are not the same as zoning. Land

use designations are broader categories than zoning districts; multiple different zoning districts could be implemented depending on the future land use designation in an area. The table below outlines differences between the Zoning Map and the Future Land Use Plan Map.

Table 3: Zoning versus Future Land Use Plan

Zoning Map	Future Land Use Plan Map
Areas are called zoning districts.	Areas are called future land use designations .
Part of Bethel Municipal Code, which is law.	Part of the Comprehensive Plan, which is a planning document (not law) .
Shows current zoning.	Shows the community's vision for the future .
Dictates what land uses are currently legal on each property.	Does not impact current zoning. This is part of the consideration if a property owner is interested in applying to change the zoning on their property (which is a public hearing process). Suggests what zoning would be generally suitable in different areas, based on current conditions and expectations for how the City could change over time.
Sets requirements for lot sizes, setbacks, and whether other specific design elements or permits are required, based on which land use is being proposed in which zoning district.	Implies a general type of neighborhood – a variety of uses and zoning districts may be possible in each designation.

Both: Considered as part of every planning application review in the City, and used to provide compatibility amongst land uses.

The Future Land Use Plan Map is especially important in reviewing rezone applications; changes to the Zoning Map must be supported by the Future Land Use Plan Map and the contents of this section of the Comprehensive Plan in order to be approved.



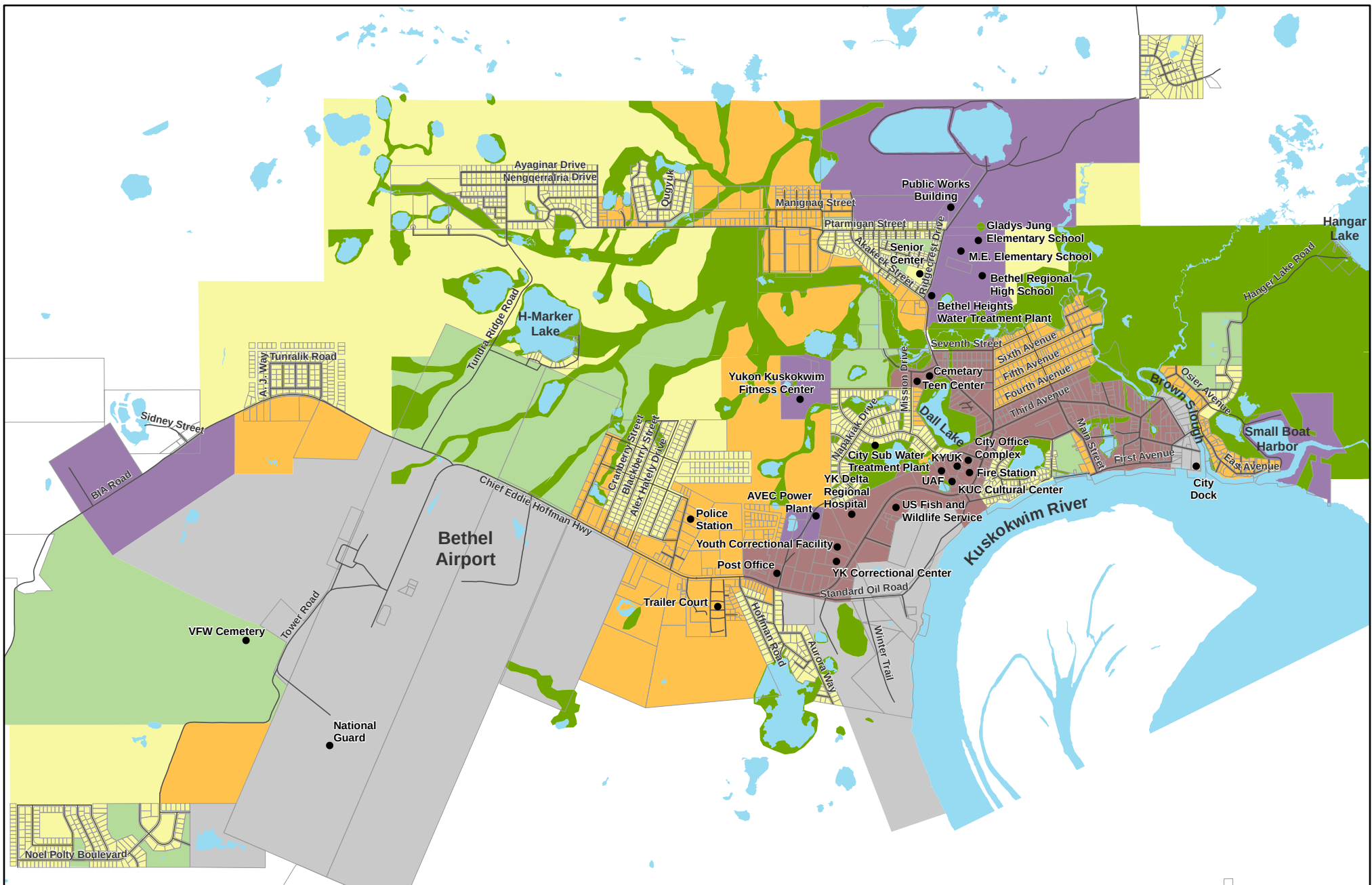
It is important to note that the Future Land Use Plan Map is not intended or able to dictate what development occurs. It is still up to individual landowners to determine how their property may be developed as it relates to the current zoning and allowed uses. Instead, the Future Land Use Plan Map serves to show community goals for land use patterns in different areas. Since the Comprehensive Plan itself is only a guiding document, the plan does not implement new zoning designations, but it can and should be used to guide rezones or future zoning for areas that are currently not zoned. Any changes to the currently adopted zoning map require a public hearing, and any changes to zoning code require an even more robust public process involving both the Planning Commission and City Council.

When considering both the current Zoning Map and the Future Land Use Plan Map created as part of the 2011 Comprehensive Plan, it was noted that the General Use zoning district and Mixed-Use future land use designations might be too general to help shape desired development. The designations created for this updated plan seek to improve clarity on which uses are encouraged where. The Future Land Use Plan Map and definitions below provide examples of land use designations that are consistent with community goals and potential zoning districts that could be considered for each future land use designation.

Table 4: Future Land Use Designations

Future Land Use Designation	Definition / Intent	Implementing Zoning Districts and Uses
 Single- and Two-Family Residential Neighborhood	Compared to the Multi-Use Neighborhood, this designation is more similar to traditional single-family and two-family neighborhoods. It is typically located farther from the commercial and civic center of town. R should be the most common zoning district in this designation, and lot sizes and homes tend to be larger as farther-out development is more expensive and better suited to this type of lower-density residential development. Multifamily and commercial development is possible, but should typically be reserved for the edges of neighborhoods or along major roads.	R Could include some R2 (<i>new zoning district recommended in this plan</i>) and NC along neighborhood edges or major roads Parks and recreation facilities, open space
 Multi-Use Neighborhood	Of the two main “neighborhood” designations, this is the more “urban” of the two. The most common implementing zoning district in this designation should be the new R2, Multifamily Residential district, which emphasizes higher density, multifamily housing types. This designation is typically located close to major roads and commercial / civic centers, so that more people may access transit and/or pedestrian-friendly areas. In line with the more “urban” and “walkable” feel, these neighborhoods are well-suited to including residential-compatible commercial uses, including mixed-use developments. (For example, restaurants and offices as opposed to auto-repair shops.) Parks and open space associated with multifamily developments or Planned Unit Developments are encouraged in every residential neighborhood, so space should be set aside for this in Multi-Use neighborhoods.	R2 (<i>new zoning district recommended in this Plan</i>) NC, mostly along neighborhood edges or roads but can include a mix of uses Could include some DC on major roads Parks and recreation facilities, open space
 Commercial / Civic Center	This designation is intended to generally follow the commercial and civic corridor along the highway and into the heart of “Old Bethel.” This is where most commercial and institutional activities are located. These areas typically contain employment centers or common “destinations” that people need or want to go, including the hospital, government offices, groceries, restaurants, and other gathering spaces. With the most convenient access to Bethel’s commercial and civic center, housing developed within or near to this area should typically emphasize higher density, multi-family options.	DC PLI NC and/or R2 Parks and recreation facilities

 Community Infrastructure	This designation is intended to include public infrastructure and facilities, such as the landfill, sewage lagoon, school district campus, fitness center, and small boat harbor. In the future, this could also include facilities for alternative energy generation.	PLI
		Parks and recreation facilities, open space
		<i>Other zones / uses are possible within Community Infrastructure, if compatible</i>
 Industrial / Heavy Commercial	This designation is intended to include industrial and heavy commercial uses that support Bethel's role as a hub for transportation and cargo for the region. This includes areas around the port and airport. This may also include land reserved for utilities-related uses.	I
		PLI
		DC
 Public Open Space	This designation indicates areas that are recommended to be reserved as larger public open spaces, such as for recreation uses. This does not necessarily include all parks in Bethel, as these can be smaller and within residential or commercial/civic areas. This designation is often used adjacent to the Preservation zone, such as in some areas of the “Donut Hole,” where the intent is to reserve areas for recreation and subsistence in “green belts” adjacent to areas that must be preserved. This designation also makes sense to be applied to areas on the periphery of Bethel that are unlikely to be developed and would remain as open space, such as a potential refuge at the end of BIA Road.	OS
		PLI
Zoning District	Definition / Intent	
 Preservation	Areas zoned P are likely to remain undeveloped given that they generally contain significant wetlands and drainageways that should be preserved. Thus, this zone represents areas that are unlikely to be developed in the future.	P
	It is the intent of the city that the boundaries of the P district be consistent with boundaries of general permit 83-4 issued by USACE, and that amendments to the official map will be made when the boundaries of the general permit are changed.	
	Permitted uses include greenbelts, trails, boardwalks, subsistence, recreational uses, or other accessory uses that do not require the use of fill material.	



Future Land Use Designation

- Single- and Two-Family Residential Neighborhood
- Multi-Use Neighborhood
- Commercial/Civic Center
- Community Infrastructure

- Industrial/Heavy Commercial
- Public Open Space

Zoning Designation

- Preservation

City of Bethel Parcel Boundary



0 0.13 0.25 0.5 Miles

Future Land Use Plan Map

City of Bethel Comprehensive Plan



Date: July 2023

Figure 2

As discussed above, the updated Future Land Use Plan Map emphasizes that denser (and generally more affordable) housing development should be located near the commercial and civic center of Bethel. This commercial and civic center is mostly the older core of Bethel, which has primarily General Use or PLI zoning. In order to encourage the use of newer and more focused zoning districts (including Neighborhood Commercial, Downtown Commercial, and the proposed higher-density residential district), which align better with the updated Future Land Use Plan Map, the General Use zone should be phased out of use. This will give the City more ability to shape the types and locations of development in the future. There is still flexibility through the use of conditional use permits where applicable.

As Bethel continues to expand, there will likely be more commercial and civic development needed to support farther-out residential development. The definitions provided in Table 3 above help describe the mix of uses intended for residential areas, along with guidance for where commercial uses could be located relative to the residential (such as along major roads). This will help commercial and residential development support each other but remain compatible.



GOAL 5: Using the Future Land Use Plan Map and its land use designations, encourage future development to have an organization of uses that is compatible.

Strategy 1: Implement and raise awareness about the Future Land Use Plan Map and how it is used.

Action A: Add the Future Land Use Plan Map to the City's GIS maps. PL

Action B: Post the explanation of Zoning versus Future Land Use Plan Map from this plan, as well as the table with Future Land Use designations, definitions, and implementing districts, to the Planning Department website. PL

Action C: Use the Future Land Use Plan Map as the basis for initiating discussions with landowners that could potentially develop their land in the priority development area. PL

Strategy 2: Create a working group to alter code for zoning designations so that future development is more strategically organized.

Action A: Create a working group to assist the City Planner on potential changes to zoning code that could be brought forward to the Planning Commission and City Council for approval. PL

Action B: Create an organized table for all uses and all zoning districts, clarifying which uses are permitted, and which require additional permitting or are not permitted. PL

Action C: Consider eliminating the General Use (GU) zone. PL

Action D: Once the new Multifamily Residential zone is created (see Goal 2, Strategy 1, Action B), consider altering the traditional R zoning district to emphasize its focus on a less dense model that would encourage single-family and duplex development. PL

Action E: Consider City-led rezones to help phase out the GU district and assign more specific zones (including newly implemented zoning districts) to applicable areas. PL

Action F: Examine the list of uses that require conditional use permits for all zoning districts and consider changes based on the intent of each district; the changes could be brought forward to the Planning Commission and City Council for approval. PL

3.5 GIS Mapping

GIS stands for Geographic Information Systems. Using contemporary GIS software, there are infinite possibilities of spatial information and maps that can be created and shared online. Many entities with a major stake in land within Bethel may already use GIS to track spatial data, including ONC, BNC, AVCP, BIA, and ADFG. The City already uses GIS as well but is currently working on the ability to share GIS information with the public online; the first GIS map planned to be released is the Current Zoning map.

Once each property within the City is represented in this digital space, any additional information can be added, including land use, ownership, address numbers, and more. Accessing the information will be much easier for the Planning Department, the Planning Commission, developers, members of the public, and anyone else who may need to reference it. This is a tool that is available and growing in many other communities and can make land use processes much clearer and more efficient.

GOAL 6: Make spatial information and maps available to the public online using GIS.

Strategy 1: Publish online GIS maps that provide information that was identified as the highest priority for stakeholders.

Action A: Publish the GIS version of the Zoning Map online. PL

Action B: Publish an online, interactive GIS map that can provide property lines, zoning, street addresses, and ownership information (when available). PL

Action C: Publish an online GIS version of the Future Land Use Plan Map. PL

Strategy 2: The Planning Department can continue to add to the GIS maps used internally or available to the public online, based on suggestions made by the community.

Action A: Create a map or maps showing easements for trails, rights-of-way, and utilities. PL

Action B: Create a map that shows wetlands, stream or floodplain setbacks, contaminated sites, or other limitations to development related to preservation. PL

Action C: Explore opportunities to collaborate with other entities with local GIS data (such as ONC, BNC, AVCP, BIA, ADFG), forming a joint database. PL



CHAPTER 4

Local Transportation

4: Local Transportation

4.1 Introduction

The primary mechanism for transportation planning decisions in Bethel is the Long Range Transportation Plan (LRTP). The LRTP is intended to be revised every five years and used in conjunction with the Comprehensive Plan. Based on traffic analysis and extensive public input, it provides more specific transportation engineering and planning guidance for the City. Each time the LRTP is revised, it should be reviewed by relevant committees and commissions, as well as City Council, and then be adopted as ordinance to help ensure it is implemented.

The most recent LRTP was fully prepared and finalized in 2020, but never officially adopted. It should be adopted by the City Council so that it can be publicly shared and used.

Future LRTP revisions should continue to involve extensive public input, as the LRTP informs what maintenance will be prioritized, along with new potential transportation facilities including roads, trails, and port facilities. The City should educate the community that the LRTP is a main opportunity to specifically provide input on transportation planning projects and needs.

GOAL 1: Use the Long Range Transportation Plan (LRTP) to guide all local transportation facility planning.

Strategy 1: Emphasize the LRTP process and recommendations in Bethel.

Action A: Adopt the 2020 Draft LRTP. **CM**

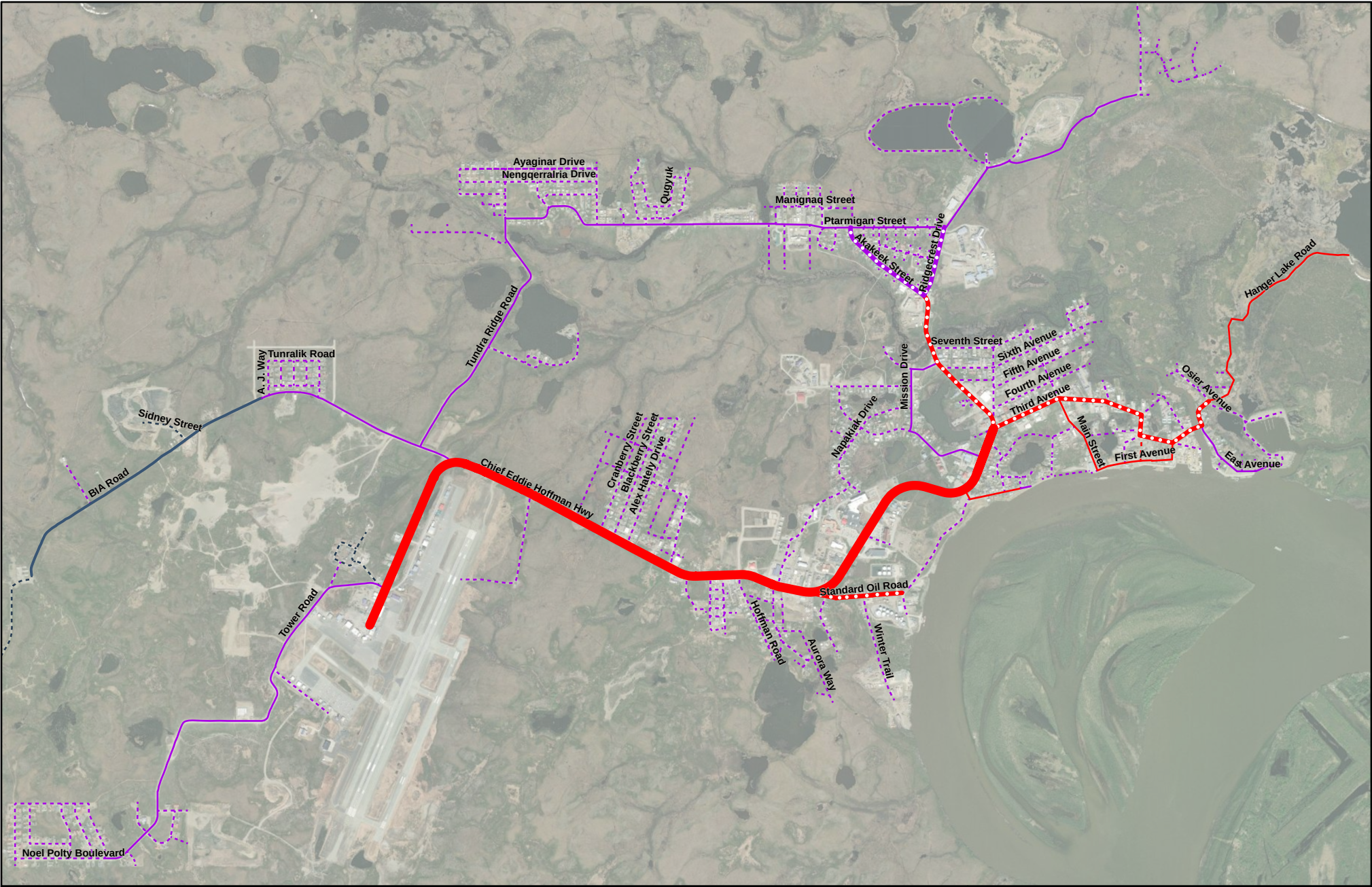
Action B: Every five years, revisit (through a public process) and update the LRTP. **CM**

Action C: Coordinate with other organizations that prepare transportation planning documents for the area, including DOT&PF and ONC, to find overlaps and collaboration opportunities. **CM**

4.2 Road System

As shown in the Road Classification and Maintenance Map on the next page, most roads in Bethel are classified as “collectors” or “local” roads, which refers to a relatively low amount of traffic (compared to major roads in places like Anchorage). Most are City-maintained and surfaced with gravel. Some of the major roads, including the Chief Eddie Hoffman Highway (the only Minor Arterial and the only Alaska State Highway in Bethel), are paved and maintained by the State of Alaska Department of Transportation and Public

Facilities (DOT&PF). Road maintenance is an ongoing funding and capacity challenge in Bethel, so this section has many action items focused on improving maintenance procedures to be more effective and efficient. After all, road maintenance is critical to public health and safety, and finding better ways to address issues such as dust and drainage in the longer term must continue to be priorities for the City.



Road Classification Minor Arterial Major Collector Minor Collector Local		Current Road Management Responsibility State Highway Agency City or Municipal Agency Federal Agency		 N 0 0.13 0.25 0.5 Miles	Road Classification and Management	
					City of Bethel Comprehensive Plan	
						Date: July 2023 Figure 3

GOAL 2: Plan for an organized, proactive approach to surface transportation facility maintenance.

Strategy 1: Clarify surface transportation facility maintenance responsibilities.

Action A: Building on publicly available DOT&PF maps, create a maintenance responsibility map for all transportation facilities in Bethel (including roads and trails). PW

Action B: Maintain copies of maintenance agreements for transportation facilities that are not solely under City jurisdiction (such as DOT&PF roads or private facilities). CM

Action C: Work with DOT&PF to update existing state road MOUs, including exploring the possibility of the City assuming responsibility for maintenance of DOT&PF-managed roads in Bethel. CM

Strategy 2: Identify and address key transportation facility maintenance issues.

Action A: Prioritize identifying and implementing the most effective ways to control dust on gravel roads, shoulders, and trails, such as watering, emulsifiers, chip sealing, or other surface treatments. PW

Action B: Regularly inspect roads for major potholes that need to be filled / grated, and complete maintenance work as needed. PW

Action C: Regularly inspect transportation facilities for overgrowth, blockage, or freezing culverts and other drainage facilities, and complete maintenance work as needed. PW

Action D: As part of the snow removal prioritization plan, incorporate sites for storing snow, to avoid large berms building up within the road ROW. PW

Action E: Monitor City signage to ensure it meets public needs for wayfinding and safety. Maintain areas around signs to ensure that visibility is not impacted by vegetation overgrowth, snow/ice cover, vandalism, or other issues. PW

Action F: Enforce the removal of ROW encroachments that hinder road maintenance operations. PW

Strategy 3: Establish improved systems to track maintenance operations.

Action A: Raise awareness about the Report a Problem feature on the City website that should be used to report road maintenance needs. PW

Action B: Investigate and consider implementing a software program to track maintenance operations. PW IT

Action C: Create a typical maintenance schedule based on expected work needed on a seasonal basis, as well as best practices for responding to maintenance needs. PW

Action D: Create a map of all City transportation supporting elements such as signage, lighting, culverts, other drainage systems, etc. PW

Strategy 4: Create a prioritized City road maintenance plan.

Action A: Create a prioritized City road maintenance plan, and incorporate it into the transportation facility funding strategy and Capital Improvement Plan (see Goal 6 below). PW

Action B: Identify and prioritize more major road rehabilitation projects, and incorporate them into the transportation facility funding strategy (see Goal 6 below). PW

Strategy 5: Design new and rehabilitated road and other transportation facilities to proactively minimize maintenance needs.

Action A: Continually evaluate materials for road surfacing and other transportation facility construction to improve quality/durability and reduce dust, such as chip sealing, emulsifiers, or other innovative construction methods. ^{PW}

Action B: As paving technology continues to improve and become more available, use paved surfaces instead of gravel for new or rehabilitated roads of collector classification and above. ^{PW}

Action C: Improve the implementation of adequate drainage facilities, keeping in mind maintenance needs. ^{PW}

Action D: At the same time as undertaking road rehabilitation projects, assess whether there is additional ROW needed or encroachments that need to be addressed; address these as part of the design process. ^{PW}

Besides maintenance of existing roads, planning new connections to support current and future development is also an important consideration. The road system in Bethel has developed in response to the relatively spread-out development patterns described in Chapter 3 – Housing and Land Use. Large areas in the middle and western parts of town remain undeveloped, leaving a gap in the transportation network, with a particular lack of north-south connections. This creates issues for access, efficiency of travel, and emergency response; it is also tied to maintenance issues, as heavy and concentrated traffic wears down roads more quickly and makes it difficult for the City to close certain key roads for maintenance.

Tundra Ridge Road has recently been undergoing formalization and construction to provide a connection between the northwest residential areas along Ptarmigan Street and the airport area along the highway. The previous LRTP and Comprehensive Plan also recommended to connect the highway north through the central undeveloped area of Bethel (known as the “Donut Hole”), connecting to the Fitness Center and all the way to Ptarmigan Street. Not only would these new connections support current land uses, but they

may also help make new development more feasible in areas where it couldn’t be considered previously.

The map on the next page shows an updated version of the Transportation Priority Projects map from the 2020 Draft LRTP. As shown, some projects have been started or completed since the original map was created. Other projects have moved up the priority list. As part of the action items in this chapter, the City will identify new projects to add to this living list / map going forward. It is important to note that the routes shown on the Transportation Priority Projects Map are for planning purposes only; routes could change as these potential connections are studied more closely as part of a design process. A design process would involve more engineering and environmental considerations as well as assessing ROW property acquisition feasibility.

Surface Transportation Priority Projects

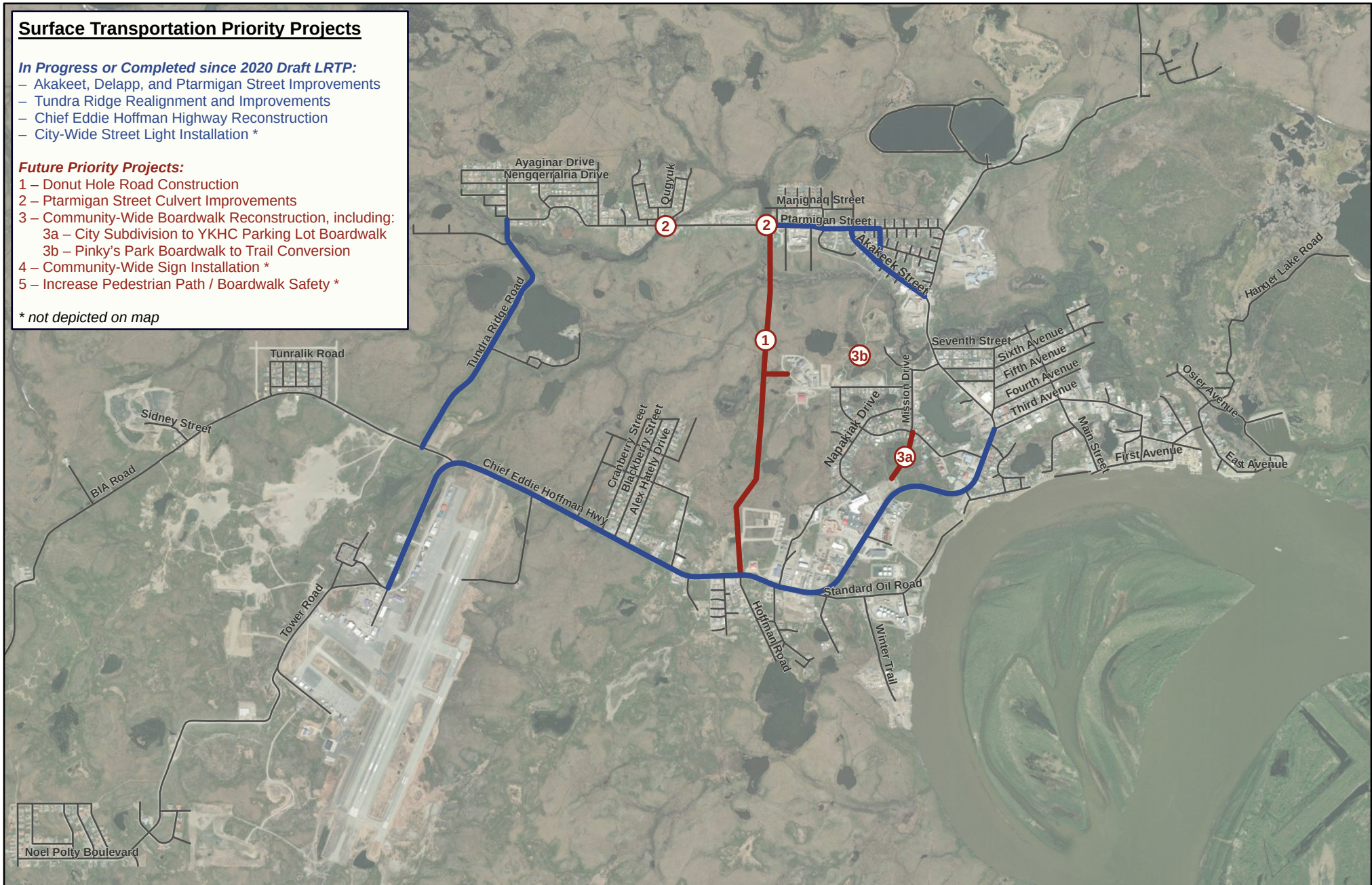
In Progress or Completed since 2020 Draft LRTP:

- Akakeet, Delapp, and Ptarmigan Street Improvements
- Tundra Ridge Realignment and Improvements
- Chief Eddie Hoffman Highway Reconstruction
- City-Wide Street Light Installation *

Future Priority Projects:

- 1 – Donut Hole Road Construction
- 2 – Ptarmigan Street Culvert Improvements
- 3 – Community-Wide Boardwalk Reconstruction, including:
 - 3a – City Subdivision to YKHC Parking Lot Boardwalk
 - 3b – Pinky's Park Boardwalk to Trail Conversion
- 4 – Community-Wide Sign Installation *
- 5 – Increase Pedestrian Path / Boardwalk Safety *

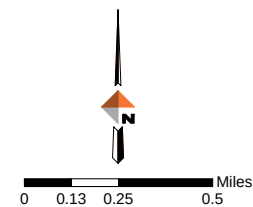
* not depicted on map



Project Type

- In Progress or Completed since 2020 Draft LRTP
- Future Priority Projects

— Road



Transportation Priority Projects

City of Bethel Comprehensive Plan



Date: July 2023

Figure 4

GOAL 3: Develop the surface transportation network to reduce travel times, alleviate congestion, and support future development.

Strategy 1: Identify missing links in the surface transportation network.

Action A: Track traffic data, population and traffic forecasts, and significant future development plans and use these to assist with the identification and prioritization of surface transportation projects through LRTP updates. *PW*

Action B: Starting with the Priority Projects map in the 2020 LRTP, create a map that shows new road connections that may be needed in the future. *PW*

Action C: Based on locations of likely future land development, add locations of potential future road and other surface transportation connections that would support connectivity for this additional development. *PW*

Strategy 2: Use the LRTP to prioritize and guide implementation of new surface transportation construction projects.

Action A: Based on the map, create a prioritized list of new surface transportation construction projects. *PW*

Action B: Incorporate the prioritized list of new transportation projects into the funding strategy – see *Goal 6 below*. *PW*

Action C: Working with key stakeholders and the community, use the five-year LRTP update cycle as an opportunity to revisit and update the prioritized list of new road projects. *PW*

4.3 Connectivity for All Users

The surface transportation network in Bethel includes a lot more than just vehicular transportation on roads. Bethel's roads and other routes are shared by a wide variety of users, and ensuring the safety of all users (including "motorized" and "non-motorized" users) is a top priority.

Many Bethel residents use non-motorized modes of transportation (such as walking, bicycling, etc. – basically any mode besides vehicles driving on the road) to get around town. There is a non-motorized transportation "system" made up of a combination of formal trails and boardwalks, paths or shoulders alongside roads, shared roads, and an infinite number of other informal routes people may use depending on their mode of transportation and/or the season. Non-motorized transportation is not always the most comfortable option in Bethel, as distances can be long and weather conditions can be harsh in the dark, cold winters and windy, dusty summers. To support non-motorized transportation in the future, community members had many suggestions to improve access, safety, and comfort.

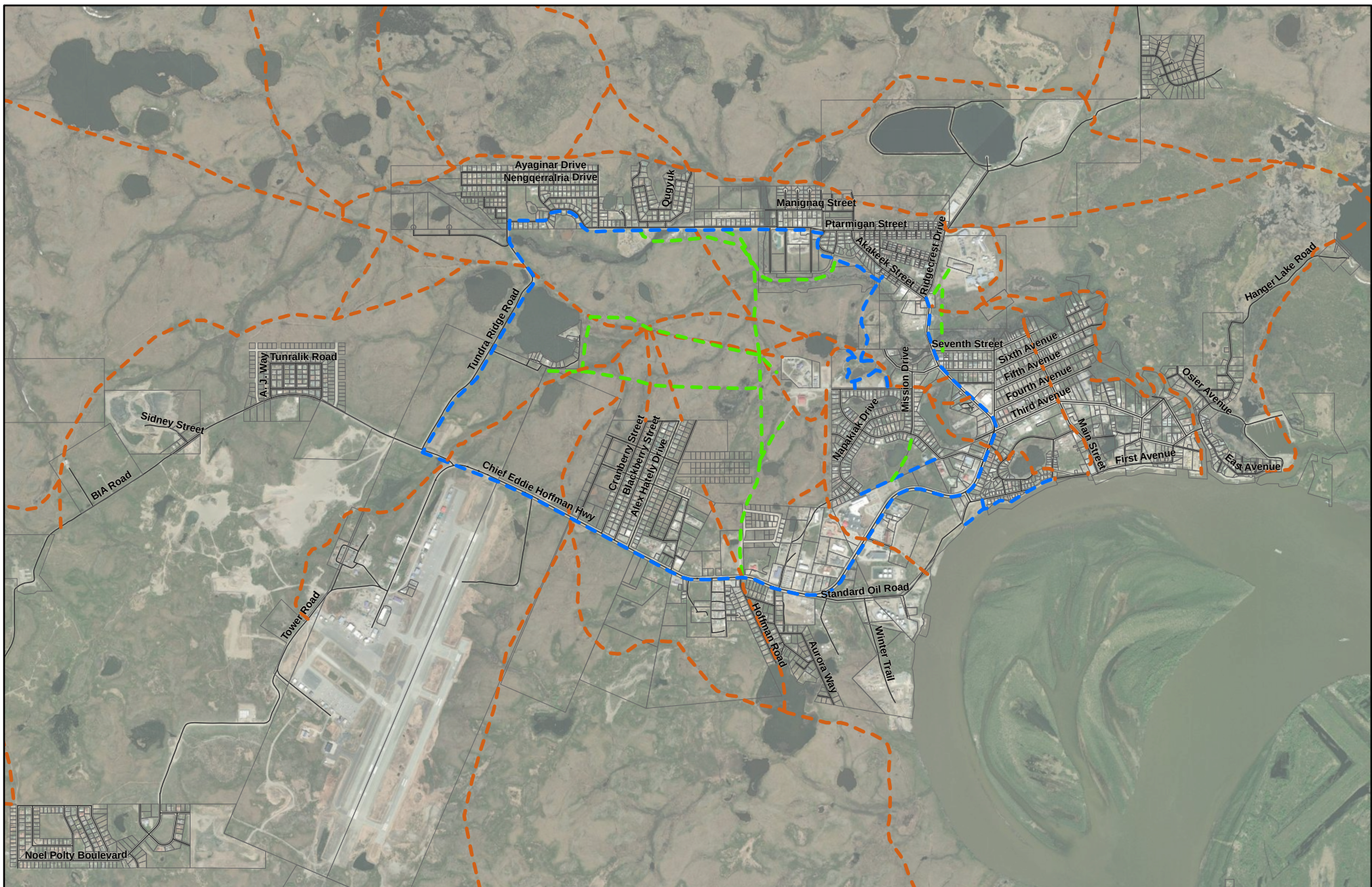
Progress has been made in designing reconstructed or new streets to provide safe and comfortable access for non-motorized users in addition to drivers on the road. Nationwide, the U.S. Department of Transportation has been increasingly emphasizing safety for all users with their Safe System Approach and grant programs such as Safe Streets and Roads for All, which provides funding opportunities for safety improvements ranging from city-wide safety action plans down to smaller projects like pedestrian safety improvements. A related concept growing in importance in transportation planning is Complete Streets, which emphasizes design features that contribute to a safe, convenient, or comfortable travel experience for all users;

transportation projects in Bethel are required to incorporate Complete Streets as part of BMC 12.05.

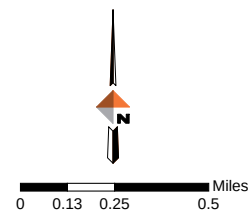
When it comes to trails, some projects are more complicated due to unclear ownership or maintenance responsibilities or other challenges. As such, many of the action items in this section focus on formalizing the trail system when possible and helpful to its users.

The map on the following page shows existing facilities that are formally established in blue (including paths/trails, boardwalks, and designated shoulders intended for non-motorized use) and potential future routes in green. The potential future routes shown are a starting point for future trail planning based on routes that the community has already been discussing. The rest of the routes shown in orange are "Approximate / Unconfirmed Snowmachine Routes," and attempt to paint a picture of common routes that some people may use, including to travel outside Bethel; it is important to note that many of these likely cross private properties. Other than showing approximate snowmachine routes, the map included in this plan does not distinguish between which facilities are dedicated to particular users and which facilities are multi-use; action items under Goal 5 in this chapter provide a roadmap for the City to create a more sophisticated trails map that can provide more detailed information and evolve over time.

In future revisions of the LRTP and through coordination with the Community Parks and Recreation Committee (which has a focus on the trail system in Bethel), the City should continue to edit the trail system map (as discussed in action items below) and identify its priorities for non-motorized facility improvements.



- Existing Formal Facilities
- Approximate/Informal Snowmachine Routes
- Potential New Routes
- City of Bethel Parcel Boundary



Trail System

City of Bethel Comprehensive Plan



Date: July 2023

Figure 5

GOAL 4: Design new and reconstructed streets with a focus on providing safe and comfortable routes for all transportation modes and all users.

Strategy 1: Throughout the local transportation system, increase the focus on safety for all users.

Action A: Regularly evaluate crash data; pedestrian, bicyclist, and motorist use; and other road safety data to identify areas for improvement. *PW*

Action B: Using community input, identify locations (especially along key routes for non-motorized users) that need safety improvements such as crosswalks, additional lighting, and/or signage. *PW*

Action C: Plan safety improvements as individual projects and/or as part of other transportation projects, keeping in mind that federal Safe Streets and Roads for All (SS4A) funding may be available. *PW*

Strategy 2: Ensure adequate ROW for sharing the road and implementing Complete Streets.

Action A: Ensure that new ROWs created as part of subdivisions meet minimum width requirements per code. *PW*

Action B: When plats are submitted, require the dedication of additional ROW when the current ROW does not meet width requirements. *PL*

Action C: Consider developing a set of typical roadway cross-sections for reference in City or private development projects involving new or reconstructed roads. *PW*

Strategy 3: When implementing Complete Streets, prioritize the most safe and comfortable facilities for non-motorized transportation that space will allow.

Action A: Ensure that Complete Streets (BMC 12.05) is being considered and used to the extent possible in the design of new and reconstructed roads. *PW*

Action B: When deciding the location and type of non-motorized facilities to be included in a Complete Streets project, prioritize a separated pathway or boardwalk on at least one side over a shoulder for non-motorized users, when possible. *PW*

When there is insufficient space for a separated pathway or boardwalk, create a shoulder or shoulders for walkers, bicyclists, and other non-motorized users. *PW*

Action C: Along existing and new shoulders for non-motorized transportation, implement measures to discourage the shoulders' use as parking or an unofficial turn lane. *PW*

Action D: If a shoulder or separated path for non-motorized users will be gravel, consider implementing methods to reduce dust impacts. *PW*

GOAL 5: Improve and expand the trail system.

Strategy 1: Gradually and as funding is available, improve safety and comfort on the trail system.

Action A: Continually monitor and test new trail building techniques and materials that are affordable, easy to maintain, and suitable for the frequently changing character of the tundra ground. PW

Action B: Transition Bethel trail building methods (including reconstruction of existing routes) away from high-cost and difficult-to-maintain boardwalks and towards less expensive surface-level trails with footbridges and ramps to cross streams and pipes where necessary. PW

Action C: Add pedestrian amenities such as lighting and benches to more frequently used non-motorized routes. PW PR

Action D: Add amenities for bicyclists at parks and recreation facilities, such as bike racks and bike “fix-it” stations. PW PR

Strategy 2: Address trail and boardwalk maintenance needs more efficiently.

Action A: Encourage the use of the Report a Problem feature on the City website for the public to report trail and boardwalk maintenance issues, including hazards or vandalism. PW

Action B: Initiate an Adopt-a-Trail and/or boardwalk and trail maintenance volunteer group to assist when City maintenance staff does not have capacity to respond to trail / boardwalk maintenance issues. PW PR

Action C: As maintenance issues are reported and repairs are made, record any recurring maintenance issues (types of issues or problematic areas). PW

Action D: Alter trail maintenance and construction best practices over time to mitigate common maintenance issues. PW

Strategy 3: Clarify the existing City-managed trail system.

Action A: Create an updated and easy-to-read map of existing formal City trails. PR

Action B: On the City trails map, identify which users and modes of transportation are allowed on each trail. PR

Action C: On the trails map, include a layer that shows important community “centers” such as the hospital and other health centers, schools, parks, the Fitness Center, the library, and others. PR

Action D: Make the trails map and information (including type of facility, users allowed, accessibility information, and distances) easily available on the City website. PR

Action E: Post signs with the trails map and information at key points within the trail system, such as at parks and recreation facilities. PR

Strategy 4: Expand the trail system by formalizing popular trails and adding new trails.

Action A: For internal planning purposes, mark popular but informal trails on the map in dotted lines. PR

Action B: Based on community input and gaps in pedestrian access to important community “centers,” add other potential new trail / boardwalk routes to the map in dotted lines. PR

Action C: Investigate what would be needed to obtain easements to formalize informal and potential new trails. PW

Action D: Coordinate with owners of properties that have informal or potential new trails through them to obtain easements or agreements. PW

Action E: For trails within or through larger properties, consider forming agreements or partnerships for private management / maintenance of the trails. PW



Vehicles and pedestrians sharing a gravel road in Bethel.

4.4 Funding for Facility Construction and Maintenance

Transportation projects are complex and often span many years to plan, design, fund, and construct. The City must constantly adapt and prioritize to be able to fund both maintenance and new construction projects. Annually, the City prepares a Capital Improvement Plan, including prioritized projects to be funded by the City general fund. The City also collaborates with contractors and engineering support staff to prepare cost estimates and identify other funding that may be needed, such as from federal, state, or other sources.

Depending on funding sources, additional requirements and regulations from state or federal agencies may come into play and impact project cost and community impacts, such as the potential need for right-of-way acquisitions; the Grant Manager plays a critical role in identifying outside funding sources and tracking the additional considerations that may accompany them.

GOAL 6: Strategically seek funding for transportation facility construction and maintenance.

Strategy 1: Leverage opportunities available in Alaska to secure potential funding sources for implementing transportation projects.

Action A: Work with Alaska Municipal League and DOT&PF to use the Alaska Transportation Funding Opportunity Hub to identify potential funding sources for different types of surface transportation projects, and to prioritize Bethel's projects through the Hub Intake Survey. **GM**

Action B: Continue to leverage existing transportation construction support and funding through collaboration with other local entities, such as ONC. **CM**

Strategy 2: Create a prioritized list of all transportation facility construction and maintenance projects.

Action A: Combine the lists of maintenance / rehabilitation and new transportation facility projects created for roads and trails, and add details on estimated design and construction cost and grant-related considerations. **GM**

Action B: Order the list based on priority and when each project should be completed. **GM**

Strategy 3: Pursue funding to complete priority projects.

Action A: Continue to review priority projects annually to select those that could be funded through the Capital Improvement Plan. **GM**

Action B: Nominate priority projects for state owned / managed facilities to the STIP, and nominate City owned / managed facilities to other state programs for federal funding such as the Community Transportation Program (CTP). **GM**

Action C: Apply for grants to fund other priority projects, focusing on time-sensitive funding opportunities. **GM**

4.5 Public Transportation

The Bethel Transit System is an important means of transportation for those without vehicles, and its service should be improved and expanded in the future. (While there are many taxi cabs available to serve community and visitor needs, the bus is much less expensive.) Community members noted that while the Transit Manager currently collects some passenger data, there could be opportunities to collect more targeted data and start using it to inform decisions about priority changes as well as to support potential grant applications.

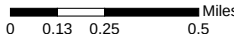
Over time, the transit system has already been making changes in response to community requests and ridership patterns. At times there were two routes instead of one, and some stops have been added and/or removed. The map on the next page includes current

Bethel Transit System routes and stops, as well as two potential new stops that have been commonly requested by community members: the airport and the fitness center. Both of these stops have been tested in the past, but there may be opportunities to improve their implementation if reestablished. Changes to the road system may influence routes, and more multifamily development in Bethel may help support shorter headways (time between buses at each particular stop). As more grant funding is secured, new buses can be purchased, both to replace buses that are quickly worn out on Bethel's difficult road conditions and to help expand routes to farther out areas like Kasayulie.



Bethel Transit System sheltered bus stop.



● Bus Stop ● Potential Future Bus Stop — Bus Route  	Transit System City of Bethel Comprehensive Plan  Date: July 2023 Figure 6
---	---

GOAL 7: Improve the public transit system to be more convenient and responsive to the community's needs.

Strategy 1: Use data collection to inform changes to the transit system or back up capital needs and potential grant applications.

Action A: Expand data collected on ridership to reflect times of day and days of the week. TM

Action B: Expand data collected on ridership to reflect how many passengers enter or exit the bus at each stop. TM

Action C: Create a comment form on the City website's transit page to collect questions, comments, or issues reported by riders. TM

Strategy 2: Improve access to information about the transit system.

Action A: Post signs with schedules and routes at bus stops and inside key community facilities. TM

Action B: Continue to periodically print transit information in the newspaper, and also consider printing it in the City newsletter. TM

Action C: Incorporate transit information into visitor information on the City's website. TM

Action D: When there are updates to routes or schedules, share within the City to be posted on City social media (as well as in the newspaper and City newsletter to continue to remain accessible to those not using social media). TM

Strategy 3: Make changes or expansions to the transit services provided.

Action A: Consider adding a stop at the airport or partnering with another organization to add another transit link between the airport and the central city. TM

Action B: Annually, evaluate altering the transit route(s) to include additional stops that are commonly requested by community members, such as the Fitness Center. TM

Action C: Review ridership data and/or community comments to consider running the transit system later into the evening. TM

Action D: Consider decreasing headways from one hour to half an hour, either throughout the day or during times of peak use. TM

Strategy 4: Maintain and improve the transit fleet.

Action A: Use a database to track maintenance needs and expected lifespans of buses and make repairs and/or replace buses as needed. TM

Action B: Consider adding features to buses to improve accessibility and convenience. TM

4.6 Other Local Transportation Links

While roads and trails connect people with the places they live, work, and recreate in Bethel, sites need adequate driveways and parking facilities to avoid negative impacts on the adjacent roadways

and parcels. The actions in this section focus on parking facilities and the routes non-motorized travelers use to access their destinations.

GOAL 8: Evaluate site development codes to better support safe access for all transportation modes.

Strategy 1: Provide for adequate and safe parking facilities and practices.

- Action A:** Examine code to make sure appropriate numbers of parking spaces are provided for each type of land use. (If changes are warranted, see Action C below.) PL
- Action B:** Facilitate shared parking between adjacent properties and uses when appropriate. PL
- Action C:** If changes are warranted to parking requirements or shared parking provisions in code, provide changes to the Planning Commission and City Council for approval. PL
- Action D:** Using signage and/or announcements via various City channels, clarify locations where street parking is not permitted in areas with compliance issues. PW
- Action E:** Continue inter-departmental collaboration to enforce parking violations that impact road safety and maintenance. PD PW

Strategy 2: Provide for safe access for vehicles and non-motorized users.

- Action A:** Consider consolidating driveway and parking design provisions in code or creating a separate driveway standards worksheet. PL
- Action B:** Review commercial site design code to identify opportunities to improve safety provisions such as those encouraged by Crime Prevention through Environmental Design (CPTED) principles. PL

This page has been intentionally left blank.



CHAPTER 5

Regional Transportation

5: Regional Transportation

Like many communities in Alaska, Bethel is not accessible by any road system and is isolated from surrounding villages. However, Bethel has a critical role as the air and water transportation hub of the Y-K Delta region for both people and goods.

5.1 Airport

Practically everyone traveling to or from any community in the Y-K Delta must travel through the Bethel Airport at some point in their journey; as such, Bethel is sometimes nicknamed the “gateway to the region.” Bethel’s airport is typically ranked the second-busiest general aviation airport in the state, and it is owned and operated by DOT&PF. The airport in Bethel includes an Alaska Airlines terminal as well as other smaller airlines serving the region.

While DOT&PF manages airport facilities and operations, and individual airlines leasing within the airport have control over their own facilities, the City has an interest in participating in planning for the airport and surrounding area given its importance to the community.



GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 1: Facilitate efficient and organized access to the airport.

Action A: Between the City, DOT, and airline tenants leasing land and/or buildings on airport land, determine (and formalize in agreements if needed) which party is responsible for managing roads, parking, signage, and other elements within the airport area. **CM**

Action B: Advocate for clear loading and unloading areas for taxicabs and private vehicles at the main jet terminal. **PW**

Action C: Consider adding a transit stop around the airport. **TM**

Action D: Create a guide to transportation options available to/from the airport with a map of where to access them, to be distributed and displayed in buildings for the passenger airline(s). **CM***

Action E: Advocate for more wayfinding signage in the airport area to direct parking and pick-up / drop-off traffic, as well as pedestrian traffic between different airlines, parking areas, and other amenities. **PW**

Strategy 2: Facilitate adequate parking at the airport.

Action A: Once parking management is determined, advocate for exploring the potential of designating short-term and long-term parking lots and an associated parking fee system with time limits. **CM***

Action B: Once parking management is determined, advocate for the completion of a parking study to evaluate whether more parking is needed near the main jet terminal and if so, make plans to provide additional parking space. **CM***

Strategy 3: Support the development of relevant industrial uses and commercial amenities within the airport area.

Action A: Coordinate with DOT&PF to determine if an Airport zoning overlay district is needed, and what this overlay district would look like. **PL**

GOAL 2: Support DOT&PF in airport operations and planning.

Strategy 1: As requested by the FAA and/or DOT&PF, take actions that support smooth and secure airport operations.

Action A: Examine FAA requirements and recommendations when reviewing potential land uses near the airport. **PL**

Action B: If a new landfill or sewage lagoon is constructed, place it as far from the airport as practicable to avoid attracting wildlife that could be harmed, damage airport equipment, and disrupt operations. **LM PW**

Action C: Coordinate with the airport management / DOT&PF to schedule security drills. **CM**

Strategy 2: Participate in planning for the future of the airport.

Action A: Maintain regular coordination (such as quarterly meetings) with DOT&PF and representatives from airlines operating at the airport to track near- and long-term plans impacting the Bethel airport. **CM**

Action B: Encourage public participation in airport planning projects so that the City and community's needs are factored into plans. **PL**

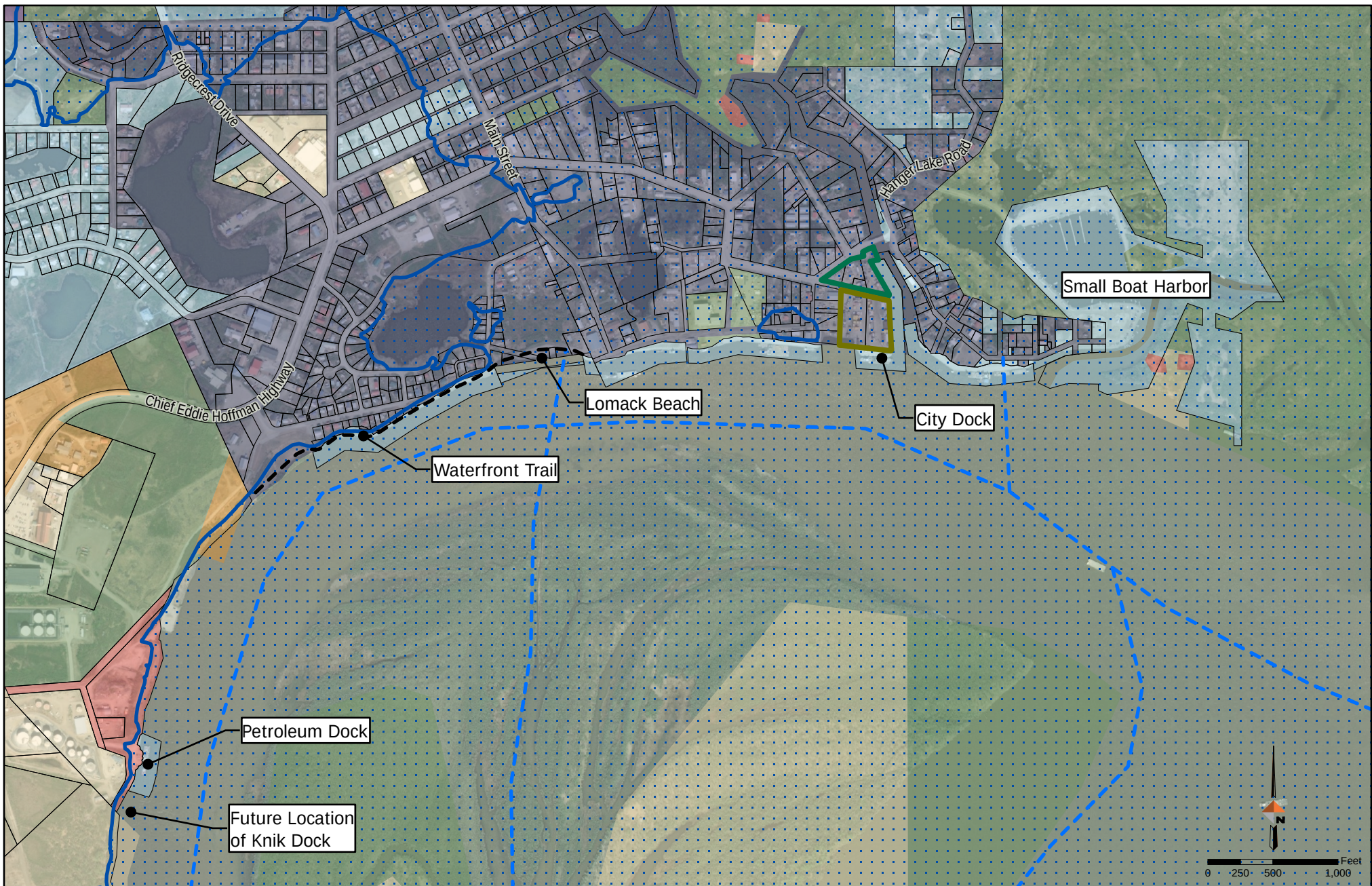


5.2 Port and River

The Port of Bethel, managed by the City, is the only port in Southwest Alaska that is not dependent on high tides for access; as such, it is the shipping hub for the region. The Port facilities include the Port Office, City Dock (for freight) and secure cargo storage yard, the small boat harbor, Lomack Beach (including float plane access), the petroleum port, and the seawall (which mitigates erosion along the riverbank). The City works closely with USACE to track changes in the course of the river that could impact all of this critical regional infrastructure and by extension access to the entire region; the City also works with USACE on dredging, studies, seawall maintenance, and other essential infrastructure improvements and repairs at the Port.

Besides the critical commercial and industrial uses of the cargo and petroleum port facilities (including 15-20 freight barges per year and smaller river barges to carry goods farther upriver), the Port facilities including the small boat harbor and Lomack Beach are vital to commercial fishing and subsistence activities, as well as transportation for the general public, government agencies, businesses, and non-profit organizations.

Given heavy use of Port of Bethel infrastructure and changes in the river, there is consistently more maintenance and planning needed.



General Ownership (1997 City of Bethel Comprehensive Plan)

- ANCSA^
- Bethel Native Corporation*
- City of Bethel
- Federal
- Private
- State of Alaska
- Information Unavailable

^includes ANCSA 14c1/c2 and ANCSA c3

**a small number of properties are also part federal or private ownership*

Ownership from Other Sources (Unverified)

- City of Bethel
- State of Alaska

- Waterfront Trail
- Ice Road
- 100-Year Floodplain [FEMA]
- City of Bethel Parcel Boundary

Waterfront

City of Bethel Comprehensive Plan



Date: July 2023

Figure 7

GOAL 3: Study and plan for potential changes to the river's course that may impact port operations.

Strategy 1: Keep up with regular dredging operations.

Action A: Continue to complete hydrographic studies every two years, as required by USACE. **PO**

Action B: Continue to dredge Brown's Slough annually. **PO**

Action C: As needed and based on the hydrographic studies, dredge the river between the petroleum port and the entrance to the small boat harbor. **PO**

Strategy 2: Plan for potential future changes in the Kuskokwim River's course to mitigate potential impacts.

Action A: Request assistance from USACE for funding and conducting a feasibility study for a potential navigation study of the river. **PO**

Action B: Following the feasibility study, complete a navigation study to determine how changes in the river may impact larger ships' ability to access Bethel's port. **PO**

Action C: Continue to work with USACE to monitor the sea wall conditions to determine if, and at what rate, the river is undercutting the sea wall. **PO**

Action D: Develop an action plan for studies, monitoring, and maintenance activities needed to mitigate riverfront erosion and ensure navigability of the river around Bethel's port. **PO**

Action E: Incorporate the Port's mitigation efforts into the City's regularly-updated Hazard Mitigation Plan (*discussed further in Chapter 8 – People & Economy*). **PO**

Strategy 3: Collaborate with other major waterfront property owners on riverfront management efforts.

Action A: As part of coordination with the private entity constructing a new cargo dock near the petroleum port in Bethel, explore partnership opportunities to obtain funding for hydrographic or navigation studies, sea wall monitoring, and maintenance or dredging efforts. **PO**

Action B: If other major waterfront developments occur in Bethel, coordinate with the property owners / developers to incorporate measures to mitigate erosion and participate in City efforts to monitor and take action according to changes in the river. **PO**

Action C: Coordinate with other property owners along the Kuskokwim River to identify collaboration and cost-sharing opportunities for studies, dredging, and other maintenance. **PO**



Shipping containers on the City Dock and small boats in Browns Slough.

GOAL 4: Maintain adequate port infrastructure to support shipping operations.

Strategy 1: Efficiently manage port infrastructure maintenance and repairs.

Action A: Regularly inspect all public port infrastructure for a condition assessment and to predict future maintenance needs. **PO**

Action B: Create and maintain a list of maintenance needs at the port. **PO**

Action C: Prioritize the list, determine whether current maintenance staff have the skills and equipment to complete the work or if specialized contractors will be needed, and prepare cost estimates. **PO**

Action D: Pursue funding opportunities for more significant maintenance projects at the port, such as grants (which could be pursued in partnership with other entities such as tribal organizations), or partnership with private entities like Lynden. **PO**

Strategy 2: Identify new infrastructure that may be needed to improve port operations.

Action A: Coordinate with port management, current shipping operators, and other stakeholders to identify infrastructure needs to support current and future shipping operations. **PO**

Action B: As part of the regular LRTP process, document the port's existing conditions, issues, and needs; this would be used to create a prioritized list of infrastructure and maintenance needed. **PO**

Action C: Pursue funding opportunities for additional infrastructure expansions that would improve port operations, such as grants (which could be pursued in partnership with other entities such as tribal organizations), and partnership with private entities like Lynden. **PO**

GOAL 5: Maintain infrastructure to support the use of small boats and float planes for transportation, commerce, subsistence, and recreation.

Strategy 1: Maintain infrastructure for small boat users.

Action A: Regularly inspect the existing small boat harbor infrastructure and manage its use to help determine maintenance and/or expansion needs. **PO**

Action B: Consider developing additional parking at the small boat harbor. **PO**

Action C: Facilitate transit and taxi access to and from the small boat harbor by incorporating signage to direct passengers to appropriate loading areas. **PO**

Action D: Add any maintenance needs to the prioritized list created as part of Goal 4, Strategy 1 above. **PO**

Action E: Evaluate the costs associated with maintaining small boat harbor infrastructure and dredging. **PO**

Action F: Based on approximate yearly costs for maintenance as well as other longer-term projects that may need funding, consider gradual fee increases and/or creating new fees for various types of small boat harbor users (such as for businesses using the harbor, or vehicle parking fees) to help fund operations and improvements. **PO**

Strategy 2: Maintain infrastructure for float plane users.

Action A: Continue to place gravel on Lomack Beach to protect it from erosion associated with launching float planes. **PO**

Action B: Create a maintenance agreement with DOT&PF to clarify land and facility ownership and shared maintenance responsibility for Hangar Lake Road and the float plane docks at Hangar Lake. **PO**

Action C: Consider partnerships (with government agencies and/or private entities) or ways to levy user fees for float plane facilities on the river and lakes in and around Bethel to help fund erosion control measures. **PO**

5.3 Expanding Regional Access

As the transportation hub for the region, Bethel has an opportunity to play a leadership role in regional collaboration on transportation initiatives that can improve and expand the many ways people travel between Y-K Delta communities, including the ice road, trails, and

future opportunities for inter-community transit and new road development. Regular collaboration can help Bethel and its neighbors make connections and start sharing more ideas and funding for transportation projects that can benefit the entire region.

GOAL 6: Support the improvement and expansion of other modes of regional transportation.

Strategy 1: As the hub of regional transportation, organize a City-led regional transportation coordination group to plan routes, maintenance, and funding.

Action A: Establish a regional transportation coordination group, including DOT&PF, representatives from villages and tribal organizations, shipping companies, and transportation companies. **CM**

Action B: The group should meet regularly to discuss existing routes, maintenance responsibilities and issues, potential new routes or transportation methods, and grant opportunities. **CM**

Action C: Jointly create a funding strategy including participation from private entities as well as grant applications and pursuing tribal transportation and/or STIP funding. **GM**

Strategy 2: Work with the regional transportation coordination group to improve reliability of ice road maintenance.

Action A: Create a map of the typical ice road route, including all the villages it connects. **CM***

Action B: Create a typical snow-clearing schedule, including what party or parties are responsible for clearing and marking. **CM***

Action C: Collect data on past years' freezing and break up and monitor freezing, ice thickness, and break up each year. Share this data and changes over time to help reduce the risk of incidents where vehicles fall through the ice. **CM***

Strategy 3: Work with the regional transportation coordination group to improve the reliability of the trail network.

Action A: Work with the group and DOT&PF to develop a map of the most used trails between Bethel and the surrounding villages, including user groups, trail markers, hazards, and other landmarks. **CM***

Action B: Identify whether easements are needed for places where trails cross private property, and coordinate with property owners. **CM***

Action C: Create a regional trail maintenance strategy that is responsive to different seasons, various types of trail users (snowmachine versus ATV, for example), and changing conditions over time. **CM***

Strategy 4: Facilitate potential regional transit opportunities as they arise.

Action A: Coordinate with the hovercraft operator to determine if they may consider providing passenger transit again in the future. **CM***

Action B: If interest in a river (and/or ice road) transit or taxi service arises, explore how the City's port can help accommodate it. **PO**

Strategy 5: Explore potential road connections between Bethel, Oscarville, Napaskiak, and Napakiak.

Action A: Work specifically with Oscarville, Napaskiak, and Napakiak representatives in the transportation coordination group to gauge interest in pursuing surface road routes between each village and Bethel. **CM**

Action B: Explore partnership agreement opportunities to implement future road connections. **CM**



Passenger loading area in front of the Alaska Airlines terminal at the Bethel Airport.



CHAPTER 6

Utility Infrastructure

6: Utility Infrastructure

Contemporary homes need a network of utility services in order to function, including energy for electricity and heating, water and sewer service, internet access, and a way to dispose of solid waste. These utilities are central to quality of life. Providing the needed infrastructure can be challenging in remote communities like Bethel due to the lack of locally available materials and skilled labor, which has significant impacts on the cost of the infrastructure. However, updating infrastructure can bring savings and sustainability improvements.

6.1 Energy

Energy production in Bethel has historically relied on non-renewable, expensive methods such as diesel generators, which cost approximately 60 cents per kilowatt per hour. This is more than 300% higher than the national rate of approximately 14 cents. This high cost is added on top of an already high cost of living in Bethel including other essentials like housing, transportation, and groceries.

The Alaska Village Electric Cooperative (AVEC) is the largest source of energy for the region, and Bethel is AVEC's largest member community. As a member-owned rural electric cooperative, AVEC serves more than 50 remote member communities. Its Bethel power plant provides power to nearby communities of Oscarville and Napakiak in addition to Bethel.

The 2011 Comprehensive Plan outlined goals to reduce energy consumption, improve existing infrastructure, and develop new alternative energy sources to reduce costs. Stakeholders have stressed the importance of pursuing alternative energy sources; not only are they more environmentally sustainable, but they also will reduce costs in the long run.



A solar array near the Fitness Center in Bethel.

Since 2011, the following are some examples of progress made:

- Until 2014, Bethel electricity was provided by Bethel Utility Company (BUC, Inc.), a private, investor-owned utility, but the 2011 Comprehensive Plan identified a cooperative as the ideal model for Bethel. Now that AVEC provides energy since 2014, there may be more opportunities for regional coordination on alternative energy sources and infrastructure advancements.
- In 2014, one wind turbine capable of putting out 100 kW was constructed to help power the new Yukon-Kuskokwim Regional Aquatic Health and Safety Center, which features a six-lane swimming pool, weight room, hot tub, and more for Bethel residents and surrounding communities. The wind turbine produces 40% of the facility's electricity.
- In 2020, a new 900 kilowatt-capacity wind turbine was constructed about 3.3 miles from the diesel-fired prime power plant. AVEC selected Bethel as the place to locate its first MW-range wind turbine due simply to the size of the grid. In its first 15

months of operation - October 2018 through December 2019 - it produced nearly 5% of all the power generated and consumed on the Bethel grid.

- In 2020, the 45-year-old power plant in Bethel was improved to maintain proper voltage regulation and provide more surge protection.

Stakeholders identified wind turbines, solar panels, hydroelectric facilities, natural gas, and small-scale nuclear power as avenues to pursue in order to diversify Bethel's energy sources away from diesel. The City can pursue integrating these energy sources for its own facilities, o. Even though the City is not responsible for electricity serving the community, the City should support AVEC system upgrades and alternative energy projects. For example, AVEC is interested in taking greater advantage of wind energy as Bethel experiences a significant amount of wind, so the City could help identify suitable sites for turbines or wind farms and help AVEC work through regulatory processes.



GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gases.

Strategy 1: Facilitate large-scale projects to introduce more alternative energy sources to the local network.

Action A: Assign a City “energy point person” to coordinate regularly with AVEC. **CM**

Action B: Working with AVEC, create a strategic plan that identifies ways for the City to support a transition to more alternative energy generation. **CM**

Action C: Create a guide to zoning code and permitting requirements that are applicable to alternative energy infrastructure such as wind turbines or solar panels, and work with AVEC to identify and propose changes to requirements that may create unnecessary barriers. **PL**

Action D: As part of the strategic plan discussed in Action B, identify the best locations in Bethel for wind, solar, or other alternative energy generation and storage, and examine City-owned sites for suitability. **PW**

Action E: Monitor and support AVEC in applying for grant opportunities for alternative energy generation and storage that could be implemented in Bethel. **GM**

Action F: Pursue partnerships with tribal entities to work together on grant applications and gain access to more potential funding. **GM**

Strategy 2: Update City facilities to be more energy efficient.

Action A: When updating existing City facilities or constructing new City facilities, design should consider including alternative energy sources, such as solar or wind power instead of diesel. **PW**



Water and sewer pipes serving homes in the Bethel Heights neighborhood.

6.2 Water and Sewer

Bethel currently has a mix of truck-hauled and piped water and sewer services. The truck-haul system serves approximately 1,100 residences, compared to approximately 500 served by piped water and sewer. Due to Bethel's high groundwater and discontinuous permafrost, pipes are installed above ground so they are better able to withstand ground movement.

The City is focused on upgrading to a fully piped system. Piped

water and sewer offer several advantages over the haul system, including improved public health, reduced road wear and safety concerns from haul trucks, and reduced risk of spills and leaks. The City experiences a chronic shortage of truck drivers, and operating the piped system costs the City about a third as much as the haul system. Residents generally prefer the unlimited capacity allowed by the piped system and support eliminating haul trucks from the roadways.

Recent price escalations of both materials and labor pushed the capital cost of water and sewer pipe construction to approximately \$2 million for every 1,000 feet, which could make future upgrades cost prohibitive for the City. However, piped water and sewer remain a top priority to reduce cost of living and improve quality of life for the City in the long run.

Since the 2011 Comprehensive Plan, the City has undertaken many water and sewer projects including:

- Extended and improved piped water and sewer in the Institutional Corridor (including facilities like the hospital and City Hall)
- New pumps, a generator, and a Fats, Oils, and Grease (FOG) mixer for the Main Lift Station
- Ongoing security improvements, including a fence around the City Subdivision Water Treatment Plant water tank
- Design of the Avenues Piped Water and Sewer project to serve 110 residences is underway, with construction anticipated to begin in 2023.

The Bethel Heights-Martina Oscar Piped Water and Sewer project, which includes new services to 25 houses, expansion of the Bethel Heights Water Treatment Plant, and repairs to existing pipes (in

response to frost jacking), is expected to begin in 2024. The City also implemented corrosion control measures to address water discoloration concerns in Bethel Heights.

Based on the most recent rate study, a new rate structure could be implemented to address the cost disparity between piped and hauled service. Looking ahead to Bethel's goal of a fully piped system, in 2022 the City completed a Community-Wide Piped Water and Wastewater Preliminary Engineering Report (PER) to evaluate potential buildout of the piped system to almost all Bethel households. This was a requirement in order to qualify for certain federal grants available for implementing water and sewer improvements.

The PER outlines a 12-phased approach to extending the piped utilities. The phases present more readily constructible and fundable projects than piping the entire community at once. The series of projects starts with a new truck fill and distribution center, followed by extending pipes and adding lift stations to each residential subdivision. There are a few alternatives possible for planning for sewer, such as adding an additional sewage lagoon cell when needed or using modular treatment plants for each subdivision. Another project recommended in the PER is the construction of a backup well for another water source for the City.

GOAL 2: Regularly seek ways to lower water and sewer bills for customers.

Strategy 1: While the hauled portion of the Bethel water and sewer system continues, evaluated hauled operations to look for efficiencies that may help reduce rates.

Action A: Seek grants to evaluate adding additional lift station points or watering points. GM

Action B: Work with DOT&PF to get exemptions to allow for heavier (more efficient) water and sewer haul trucks. PW

Strategy 2: Expand the piped water and sewer system, as it operates profitably and offsets losses from the hauled network.

Action A: Investigate and pursue funding options including grants, low interest loans, and bonds to expand the City's piped water and sewer network to reduce the amount of hauling. GM

Action B: Repair existing deficiencies to the existing piped water and sewer network to maximize the system's efficiencies. PW

Strategy 3: Evaluate and reduce costs associated with production and distribution of water and collection and treatment of wastewater.

Action A: Seek grants to conduct energy audits and make energy efficiency improvements at water treatment plants and amongst the haul fleet. GM

Action B: Request an audit of water and sewer operations and maintenance from the Alaska Rural Utility Collaborative with a focus on improving cost, efficiency, resilience, and reliability. PW

Action C: Increase financial efficiency, automate operations and billing, explore cost effective freeze protection efforts, and explore subsidized technical support through non-profits and state and federal agencies. PW

GOAL 3: Transition Bethel's water and sewer utilities to fully piped systems serving all residences and businesses.

Strategy 1: Complete each phase of projects outlined in the PER.

Action A: Obtain grant and loan funding for new water and sewer projects, including from the USDA. ^{GM}

Action B: Identify available land and begin acquiring easements (as needed) for future facilities, such as the truck fill station, pipes, and additional source water well. ^{PW}

Action C: Implement each phase of the PER. ^{PW}

Action D: As PER phases are implemented, monitor the capacity of the existing sewage lagoon to determine if another lagoon cell will be needed, and when it may be needed. ^{PW}

Strategy 2: Focus on maintenance to protect the City's utility investments and avoid unnecessary costs.

Action A: Construct security fences around all water treatment plants. ^{PW}

Action B: Improve Supervisory Control and Data Acquisition (SCADA) compatibility of Bethel's water treatment plants and lift stations to reduce the manual monitoring tasks performed by staff. ^{PW}

Action C: Provide information to the community on how to use the piped sewer system, restrictions on what can be dumped into the system, and who is responsible for maintenance costs associated with different elements of the system. ^{PW}

Strategy 3: During the phases of the PER and beyond, manage the piped system to be as efficient and accessible as possible, as well as equitable in cost.

Action A: Complete a rate study every 10 years; utilize results of the rate study to set rates appropriately. ^{PW}

Action B: Establish a process for non-residential properties to be informed about the piped system progress in their area and how and when to connect to the piped system. ^{PW}

Action C: For new development or redevelopment, work with industry experts to investigate how the City could implement an "impact fee" system in which there are clear expectations related to new or upgraded infrastructure cost to the developer. ^{CM}

Action D: Provide City assistance with finding potential grant or loan funding for new commercial connections or subdivision developments not currently included in the 2022 PER phases. ^{GM}

Action E: If water usage becomes an issue due to water supply or excessive usage, install meters in conjunction with a tiered rate system to encourage less water usage and increase revenue. ^{PW}

6.3 Internet

Bethel’s current lack of access to adequate broadband internet service limits economic development as well as the efficiency of services by health care providers, schools, tribal entities, businesses, and residents. Widespread access to broadband will remove barriers to public health innovation and schooling options and would stimulate economic growth.

Fast and reliable communications through deployment of broadband networks are a priority for the State of Alaska, which recently developed a State Office of Broadband Development and, along with other federal agencies, will be funding large scale deployment in the next 5-10 years. According to the State of Alaska Governor’s Task Force on Broadband, Alaska “must prioritize broadband service expansion in unserved and underserved areas” as 63.7% of Alaskans living in rural areas have access to fixed terrestrial broadband at speeds of at

least 25 Mbps. Additionally, Alaska will receive at least \$100 million through a new federal program to expand high-speed internet to underserved rural areas to promote workforce development.

GCI is currently the sole internet service provider for community members in Bethel, with microwave system-based speeds of 10 Megabits per second (Mbps), but GCI is planning to expand access to Bethel through a combination of projects. Though the City is not directly involved in providing internet service to residents, fast and reliable internet would greatly improve efficiency for City government, local businesses, and residents seeking to connect with those outside the region; the City should do what it can to help GCI bring in broadband. At the time of updating this Comprehensive Plan, satellite internet providers such as Starlink were also rapidly expanding into the region.

GOAL 4: Facilitate broadband development within the City of Bethel to advance community access to reliable internet service.

Strategy 1: Monitor the buildout of internet-related infrastructure in Bethel.
Action A: Request information from GCI regarding locations of existing fiber optic cable within Bethel. PW

Strategy 2: When possible, streamline permitting of internet-related infrastructure.
Action A: Prioritize facilitation of rights-of-way within city-owned land or city-held easements for laying fiber optic cable. PW
Action B: Review and amend tall tower permitting code to be simpler and more efficient. PL
Action C: If / as needed to help facilitate improved internet connectivity in Bethel, review and amend other sections of BMC that may impact permits required for different types of internet-related infrastructure (besides cables and towers). PL

6.4 Solid Waste

Part of the Public Works Department's maintenance and operations responsibilities for the City include solid waste management. Trash is primarily collected in residential and commercial dumpsters located throughout the city before being placed in the landfill.

The Bethel landfill was constructed in 1991 and has completed several studies throughout the years to determine its remaining capacity. Per a 2019 study, the landfill is projected to reach capacity in 2043. Landfill closure, continued monitoring that would be required after closure, and the opening of another landfill would be very expensive, so the City of Bethel is motivated to prolong the life of the existing landfill as much as possible. Reducing existing volume of waste and managing new waste entering the landfill are two main strategies to achieve this goal.

Based on Alaska Department of Environmental Conservation

(ADEC) inspections, Bethel has continued to improve landfill operations. The city has purchased a shredder to reduce waste volume. There are also opportunities to reduce the amount of waste that heads for the landfill in the first place. Since the latest Comprehensive Plan in 2011, the recycling program in Bethel has been discontinued due to the high cost of shipping out materials, which has led to an increase in reusable / recyclable material in the landfill.

Though the City is no longer recycling, there are other reuse, recycling, and specific types of waste collection programs that exist in the community, such as a recycling program run by ONC. These efforts could become more collaborative so that they can be amplified. Some of the strategies in this section focus on the City working with the community to find ways to divert more waste from the landfill, which both prolongs the landfill's life and protects the environment and public health of the community.



Refrigerators being stored separately from other waste at the Bethel Landfill.

GOAL 5: Manage the landfill to be useable as long as possible and with minimal environmental impacts, through more efficient and environmentally responsible practices.

Strategy 1: Continuously monitor the capacity of the landfill to assess if / when a new landfill might be needed in the future.

Action A: Conduct a new landfill closure study approximately every five years to measure and evaluate progress and determine what strategic changes might be necessary. LM

Strategy 2: Utilize best solid waste management practices and compliance with ADEC standards to reduce the volume of waste in the landfill.

Action A: Regularly review guidance on the ADEC Solid Waste website and incorporate recommendations based off of the annual state inspection and new technology as it becomes available. LM

Action B: Improve separation of waste by establishing cells (such as for lumber or scrap metal and vehicles). LM

Action C: Train personnel on the use of the shredder and other techniques to reduce volume of waste. LM

Action D: Provide continual education and staff training for properly disposing of hazardous materials, such as freon removal with Total Reclaim, the Rural Alaska Landfill Operator (RALO) course, and/or HAZWOPER. LM

Action E: In the longer term, consider building an additional storage garage to store and protect heavy equipment. LM

Strategy 3: Pursue ways to redirect more types of waste from the landfill, both to prolong the landfill's life and to minimize impacts to the environment and public health.

Action A: Provide regularly updated information to the public on existing City waste separation programs and what types of waste can and cannot be disposed in dumpsters. LM

Action B: Research types of waste that can be reused or recycled locally as well as the market for recyclables in Anchorage and/or Seattle; stage these items for public salvaging or separate for local recycling and/or shipping out in collaboration with ONC's recycling program or as part of a renewed City recycling program. LM

Action C: Research potential partners for a new City-wide e-waste collection and recycling program to build on periodic local collections. LM

Action D: Research how to implement a compost program for food waste and potentially cardboard and paper products; this could potentially be incorporated into Parks and Recreation and Community Garden programming. LM PR

Action E: As local recycling becomes more feasible, consider starting by working with organizations such as schools, hospitals, and businesses that may have a steady supply of uniform recyclable materials (like paper, certain types of packaging, etc.). LM

Action F: Research funding or partnership opportunities for barging out other kinds of waste, particularly harmful waste. LM GM

Action G: Research and initiate community discussions about ways to address negative impacts of junk vehicles located on private properties and in the landfill. LM

Action H: Pursue other funding opportunities geared towards environmentally friendly landfill and recycling programs for the City. GM

This page has been intentionally left blank.

An abstract graphic on a dark blue background. It features several overlapping circles in lighter shades of blue. A thick white line, resembling a stylized 'S' or a flowing path, starts from the right edge and curves towards the center, passing through the circles.

CHAPTER 7

Public Facilities & Services

7: Public Facilities & Services

Details on the responsibilities of each City department are provided in Chapter 2 – Existing Conditions.

7.1 City Operations and Communications

The City has reported ongoing difficulty in finding people to work in City jobs, particularly since the Covid-19 pandemic. Many departments are short-staffed, creating challenges when trying to keep up with the needs of the growing city. For example, there is little room for delaying delivery of Public Works Department services like water and sewer or road maintenance. Generally, the City should evaluate how each department operates to help determine whether services can be provided with existing staff and resources, or if there are ways to alter technology used or department structures to maintain reliability for the community while minimizing personnel costs (which in turn increase some service costs for the community).

Vacancies in City committees and commissions also reduce their ability to effectively meet and make decisions, as meetings cannot be held without a quorum. Strategies such as implementing new technology or establishing mentorship, chains of command, and transition plans can improve City operations in the face of staffing challenges and help retain and develop City employees and volunteers. The City should pursue new ways to recruit potential employees and volunteers. This will also require strategic bolstering of ways the City communicates with the community in order to increase engagement.

GOAL 1: Enhance the reliability and efficiency of the City workforce.

Strategy 1: Optimize and monitor the staffing and operations of each City department to ensure efficiency and support staff retention and hiring efforts.

Action A: Ensure every department has clearly outlined responsibilities with documented and regularly updated policies, procedures, and job descriptions to facilitate staff training and operations evaluations.  

Action B: Conduct an evaluation of each department's operational efficiency on an annual basis and when considering hiring additional personnel.  

Action C: As evaluations of operations are completed, consider altering the structure of departments (for example, implementing new technology to increase efficiency, or establishing mentorship and chains of command that facilitate staff advancement into leadership roles).  

Action D: Establish transition plans so that department operations are minimally impacted by the departure of key staff.  

Strategy 2: Implement new technology in order to save money spent on some City functions and decrease each City department's workload.

Action A: Transition the City to an online customer portal system with abilities to manage utility service preferences and pay bills. Over time, this self-serve system could expand to include the ability to manage business licensing and sales tax payments, submit site plans, and other potential applications. **IT**

Action B: Transition City departments to an electronic timekeeping system. **IT**

Action C: Explore more automated technology systems that could be used to track City department budgets and produce reports, in order to help departments manage their own budgets and lighten the load on the Finance Department. **FI IT**

Strategy 3: Regularly raise awareness about current and upcoming job and committee / commission openings within Bethel.

Action A: Informed by operations evaluations completed as part of Strategy 1, create a running list of staffing needs within the City, and order it based on priority. **HR**

Action B: Post open position advertisements to national recruitment websites, featuring the highest priority openings as identified in Action A. **HR**

Action C: Set up an automated email alert service that sends updates to potentially interested parties when there are openings at the City, featuring the highest priority openings as identified in Action A. **IT**

Action D: Organize an annual City of Bethel Opportunity Fair, where representatives from each department and committee / commission can raise awareness about their activities and meet potentially interested candidates. **HR**

Action E: Advertise current and upcoming openings as well as the opportunity fair and any other relevant events through typical channels within Bethel. **HR**

Strategy 4: Work with educational programs to create a pipeline of trained candidates for City jobs.

Action A: Work with local schools, including the high school, vocational school, and university, to create a pipeline of potential City employees. **HR**

Action B: Identify other vocational schools in Alaska and advertise job openings through their channels. **HR**

Action C: Request that the University of Alaska help share job openings with their network to broaden the reach across Alaska. **HR**

Strategy 5: Broaden recruitment channels around the region and Alaska.

Action A: Invite people from villages in the region to attend hiring events and apply for jobs at the City. **HR**

Action B: Work with tribal organizations and native corporations to raise awareness about jobs at the City with a statewide audience. **HR**

Action C: Consider working with recruiters to help find candidates. **HR**

GOAL 2: Communicate regularly and effectively with the community through various channels.

Strategy 1: Expand the reach of the City's newsletter, "In the Loop."

Action A: Maintain easy public access to the current month's newsletter on the homepage of the City website, with historical newsletters also available on the website. 

Action B: Create a City information flier to laminate and place around town, including URLs and QR codes for the current newsletter and other key sites to access. 

Action C: Print some copies of the newsletter to leave in key locations around town. 

Strategy 2: Expand the City's presence on social media.

Action A: Designate a social media "point person" within City staff, to be responsible for monitoring City activities that should be posted to social media and regularly checking in with all the departments for updates. (This could be the City Clerk or someone the Clerk designates.) 

Strategy 3: Optimize the City website and update it regularly.

Action A: Each year, conduct a review of the website to determine if there are particular pages or sections that need to be added, deleted, reorganized, or updated. 

Action B: As needed, update the home page (and/or other pages) with more new information and links. 

Action C: Make it easier to find contact information to use for different types of inquiries to the City. 

7.2 City Finances

The City of Bethel's financial structure includes certain types of revenue contributing to a general fund to pay for things like City employee salaries and building operation costs. Current funding sources include bed tax, sales tax (including selective sales tax on certain items like alcohol, marijuana, and tobacco), gaming fees, and payment in lieu of taxes. The Finance Department oversees business licensing and sales tax collection and is focusing on completing audits to improve compliance.

Other fees are structured as "enterprise funds" that fund services and facilities that are supposed to be self-supporting, such as water and sewer, solid waste services, or the municipal dock enterprise fund. The Fitness Center is also considered an enterprise fund for

auditing purposes, and most of its funding comes from sales taxes. Enterprise funds may not always be self-supporting as they could become too expensive to residents – they may require subsidizing through other revenue sources. This is something the Finance Department should take the lead on managing as discussed in Strategy 1 below. Generally, the Finance Department can play an active role in continually assessing the City's fiscal structure and making changes based on priorities and needs.

There are currently no property taxes in Bethel, unlike the large majority of Alaskan cities of Bethel's size. This is because there is such a mix of Native allotments and other privately owned land, and Native allotments are not taxable.

GOAL 3: Optimize the management of City revenue and spending.

Strategy 1: Continually evaluate and consider reshaping the City's fiscal structure for efficiency and as City priorities change over time.

Action A: Working with other City departments as well as the Finance Committee, consider ways to augment, diversify, and allocate City revenue sources, such as based on particular projects that may need funding. **FI**

Action B: In the longer term, conduct a comprehensive study of municipal finances to determine the most efficient and effective fiscal structure. **FI**

Strategy 2: Regularly update fees and other charges.

Action A: Continue annual updates to the City's fee schedule (as required by BMC 4.04.025), including consideration of whether new fees should be levied. **FI**

Action B: Keep up-to-date utility rates by completing utility rate studies every 10 years. **PW**

Strategy 3: Improve clarity and consistency of sales tax collection and business licensing.

Action A: Consolidate and improve clarity of information on the City website related to businesses, licensing, and sales tax collection. **FI**

Action B: Before local business licenses are issued or renewed, require a code compliance review from the Planning Department. **FI**

Action C: Enforce compliance with business licensing requirements and sales tax collection by completing 80 sales tax audits per year. **FI**

Action D: Expand resources to help people start local businesses. **FI**

Strategy 4: Shape sales taxes and fees to positively influence public health and sustainability and fund key community projects.

Action A: Over time, consider proposing expansions to taxes on alcohol, marijuana, and tobacco sales, as well as gambling. **CM**

Action B: Propose a "bag tax" for disposable bags from stores and restaurants. **CM**

Action C: Consider proposing vehicle parking fees in some areas, such as for long-term parking near the airport or boat harbor. **CM**

Strategy 5: Maximize grant funding that can be obtained.

Action A: Expand the grant writing and research capacity of the City beyond the Grants Manager, including assistance from other departments and/or hiring consultants to prepare some grant applications. **GM**

Action B: Explore partnerships with other organizations to fund some projects. **GM**

7.3 Public Facilities & Equipment

In addition to the revenue sources discussed above in Section 7.2, the City holds assets including land, equipment, transportation and other infrastructure, buildings, and other public facilities. To best serve the community, the City must manage potential land uses for its holdings or otherwise navigate leases or sales. Equipment, public utility, and building facilities must be maintained, updated, and expanded when necessary, but this requires advance planning to make sure there is adequate funding available and that public

services are not interrupted while the City waits for new equipment to arrive, for example. The City regularly completes a Capital Improvement Plan (CIP) to plan allocation of City funds, but this system might benefit from more strategic updates. Goals 4 and 5 below provide guidance for managing City-owned land and other assets as well as planning to prioritize where to obtain and/or allocate funding in the future.

GOAL 4: Manage City-owned land in an efficient, cost-effective, and forward-thinking manner.

Strategy 1: Maintain a map of City-owned lands and ownership changes.

- Action A:** Create a map of City-owned lands using GIS and an associated database. PL
- Action B:** Identify undeveloped or underutilized properties currently owned by the City on the map. PL
- Action C:** Using the community land use needs identified as part of the goals in Chapter 3 – Housing and Land Use, identify community needs that may be met with City-owned properties or underutilized properties. Use this information to identify where there are gaps, which could lead to identifying properties that may be pursued for acquisition by the City. CM
- Action D:** Update the map as properties are acquired or sold, also tracking properties identified as potential acquisitions or potential properties to sell. PL

Strategy 2: Improve processes for City property acquisition, sales, and leasing.

- Action A:** When the City needs to buy or lease land, release requests to negotiate lease or sale agreements with other property owners in order to help find available land that meets City purposes. CM
- Action B:** Work with the City Attorney to clarify appropriate options of processes for leasing land / facilities to non-profits, businesses, or other types of entities, including determining fair rental costs relative to appraised value, bid processes, or other ways to enter into lease agreements. CM
- Action C:** The City currently offers heavily discounted rental and utility rates for some non-profit lessees; evaluate the community value of these leases and consider evolving the practice to rent at appraised values, still with the potential for discounts depending on purpose. CM
- Action D:** Examine publicly owned lands for all potential uses, including open space use, before disposition. PL

GOAL 5: Manage updates to City facilities and equipment in an efficient, cost-effective, and forward-thinking manner.

Strategy 1: Maintain the Capital Improvement Plan (CIP).

Action A: Update the CIP every year. 

Action B: Ensure that items in the CIP advance City goals for improving energy efficiency and a transition to alternative energy sources in the future. 

Action C: Continue to use the insurance schedule to anticipate items that the City may need to spend money on in the future, such as repairing frozen pipes. 

Strategy 2: Continually seek funding for additions, improvements, and repairs to City facilities and equipment.

Action A: Remain up-to-date on funding opportunities, including special infrastructure funding through federal or state programs. 

Action B: Apply to grants to fund infrastructure, such as BUILD grants. 

Action C: Consider allocating other funding sources for some infrastructure improvements, including through collaboration and potentially facilities-sharing with organizations such as ONC. 



Bethel Heights water treatment plant.

7.4 Public Safety

The Bethel Fire Department currently includes the Fire Chief, the Fire Captain, three Fire Lieutenants, and six Firefighter / Emergency Medical Technicians (EMTs), in addition to approximately 20 volunteer firefighters, EMTs, and/or paramedics. The department operates two Class-A pumpers, one aerial apparatus, three Type-1 Advanced Life Support Ambulances, a fire rescue boat, two wildland firefighting ATVs, and several support vehicles out of the fire station in the middle of town (near City Hall and the Cultural Center). The City has a mutual aid agreement with the state-owned Bethel airport to provide services, as well as a cooperative agreement with the State of Alaska Bureau of Land Management, Division of Forestry and Fire Protection for access to additional equipment and personnel when needed.

Prevention and education programs include a home fire safety program, fire prevention classes, and fire drills for children through field trips and school visits (including Fire Prevention Month in October), and a program in which fire department personnel regularly examine commercial and residential properties in areas of the community where a significant fire problem might develop. Smoke detectors are available and can be tested year-round at the fire station; the department will also provide, test, or install detectors in homes for those without the means to do so themselves.

The Bethel Police Department currently includes 19 sworn personnel that handle a significantly larger number of calls for service than other cities of its size. Bethel police also respond to calls outside of city limits as the public safety answering point (PSAP) for the Alaska State Troopers.

In addition to police, Bethel has a state grant-funded Community Service Patrol program that currently includes three full-time employees.

This program helps with the police department's response load for certain types of cases, such as bringing intoxicated people to the sobering center operated in partnership with YKHC.

Capital improvements completed since the last Comprehensive Plan include a new police headquarters, a new Community Service Patrol vehicle (funded with Covid-19 relief money), a new ladder

truck, a new pumper-tender truck, and refurbishment of an existing ambulance. It is important to note that many improvements that fall under the Public Works department, including for improved roads and water systems, would also benefit the emergency response operations and help lengthen the life of equipment.

GOAL 6: Improve public safety facilities and services in Bethel.

Strategy 1: Continue to improve fire and emergency medical infrastructure and services.

Action A: Construct a new fire station near the airport. FD

Action B: As the City's piped water system is expanded, install fire hydrants. PW

Action C: Address maintenance needs for the fire station. FD

Action D: Continue to recruit and provide training to fire and EMS staff and volunteers. FD

Action E: Address other public safety capital improvement needs as they arise and new technology becomes needed and/or available. FD

Action F: Continue and increase the delivery of existing fire prevention and education programs. FD

Strategy 2: Continue to improve police service.

Action A: Continually upgrade public safety dispatch and communications equipment. PD

Action B: Purchase additional surveillance and other evidence collection equipment, as needed. PD

Action C: Provide additional training to Police and Community Service Patrol staff, as needed. PD

Action D: Make other upgrades and additions to police department facilities as needed, including the vehicle impound yard. PD



Bethel Fire Department trucks located outside of the fire station.

Other than general Fire and Police Department updates, locally specific, targeted initiatives have been successful at improving public safety in the past. One example is the progress made on the “Kids Don’t Float” program, which was listed as an action item in the previous Comprehensive Plan. To help prevent drowning, safety information signage and life jackets or other flotation devices have been placed near water access.

There could be other opportunities for public safety initiatives that respond to safety issues that are specific to Bethel, which may be spearheaded by the Fire and/or Police Departments or in partnership with other organizations, depending on the specific issue.

GOAL 7: Target specific public safety concerns within Bethel.

Strategy 1: Improve maritime safety through educational programs.

Action A: Continue to work with the Fitness Center to offer swim classes for all ages, including pursuing a partnership with the school district to incorporate swim lessons into their required physical education programming during elementary school. PR

Action B: Through the Port, organize boating safety classes. PO

Strategy 2: Improve ATV and snowmachine safety, on and off Bethel roads.

Action A: Pursue a partnership with the State of Alaska to offer ATV and snowmachine safety information and/or classes. PD

Action B: Require ATV registration to drive ATVs on roads within City limits. PD

Strategy 3: Reduce drug abuse in Bethel.

Action A: Through the renewed Parks and Recreation department (see *Section 7.5*), provide programming for all ages that focuses on physical and emotional wellbeing through recreation, including the potential for mentorship and volunteering opportunities. PR

Action B: Continue collaboration with the Western Alaska Alcohol and Narcotics Team (WAANT, which includes Bethel Police, Kotzebue Police, Kodiak Police, and the Alaska State Troopers) to penalize drug trafficking and illegal alcohol bootlegging. PD

Action C: Continue operation of the Community Service Patrol, the grant-funded service that picks up individuals under the influence and drops them off at places such as YKHC or their sobering center. PD

Strategy 4: Support organizations that provide services to people experiencing homelessness in Bethel.

Action A: Continue to support the Bethel Winter House nonprofit organization. CM*

Strategy 5: Improve animal care and control programs.

Action A: Continue discussions on whether to hire a dedicated City animal control staff person to catch loose dogs and issue citations for animal cruelty. PD

Action B: Support and coordinate with Bethel Friends of Canines (BFK9) on the new animal shelter project. PD

7.5 Parks and Recreation

Bethel's recreation facilities include parks, trails, the Fitness Center and pool, and other facilities. These facilities are heavily used by the community and identified as a key community resource that contributes to quality of life in Bethel. As such, there is a desire to expand recreational facilities for people of all ages. In the past, expansion efforts have involved grants, special funding allocation from City taxes, and community partnerships and volunteer efforts. Given the strong public interest in more parks, trails, and other facilities, it is likely similar collaborative efforts could be enacted for future projects. These projects will also improve the visitor experience of Bethel and provide more spaces for sports and cultural events held in the City, which is important to economic development, as discussed in Chapter 8 – People and Economy.

Bethel Parks and Recreation are currently managed by the Public Works department. In the past, there was a dedicated Parks and Recreation department, and the Community Parks and Recreation Committee (which advises City Council) is advocating for the recreation of this department to increase capacity for parks and

recreation planning and programming. An interim step could be working with a contractor to provide recreational services support to the community for desired programming expansion; the Committee is currently working with Public Works on an RFP to this effect. The Fitness Center is owned by the City but currently run by a contractor; the center could potentially be restructured as “headquarters” for a Parks and Recreation department.

Many of the action items in this section are assigned to Parks and Recreation despite this not being a City department at this time, recognizing that the community is advocating for greater emphasis on the management of parks and recreation. As a shift towards a greater focus on Parks and Recreation occurs, Public Works and the City Manager should continue to work together to track and work on these action items. The Community Parks and Recreation Committee can also assist with providing input on delegation of responsibilities.



Yukon-Kuskokwim Fitness Center.

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 1: Expand the City's capacity to manage and maintain parks.

Action A: Recreate the Parks and Recreation department and/or designate an interim Parks and Recreation manager within the City who will be responsible for leading coordination with contractors (current and potential future), parks and recreation improvement projects, and coordination with the Community Parks & Recreation Committee. **CM**

Action B: Continue efforts to hire and train Public Works maintenance staff, including for seasonal positions and/or potential for volunteer involvement. **HR**

Action C: Monitor general and ongoing maintenance issues related to parks (such as vandalism) and discuss ideas for solutions with the Community Parks & Recreation Committee. **PR**

Strategy 2: Expand and improve key central parks in Bethel with the goal of making them community landmarks and gathering spaces.

Action A: Create a new park on the former Kilbuck School site, as the neighborhood park for the Avenues / Alligator Acres area. **PR**

Action B: Identify waterfront park investment opportunities to create an iconic and central civic space that represents Bethel. **PR**

Action C: At Pinky's Park, add amenities that are focused on community gathering and comfort for all ages. **PR**

Strategy 3: Establish a network of Bethel parks to serve all neighborhoods.

Action A: Create and regularly update an online guide and map of all the parks in Bethel. **PL**

Action B: Using the development of the parks guide and map, identify areas with less access to nearby parks. **PL**

Action C: Pursue the development of new City parks in underserved areas. **PW**

Action D: Require that new residential subdivisions reserve space for a park or open space. **PL**

Strategy 4: Improve park facilities for sports and other recreational activities.

Action A: Continue to upgrade and add facilities to Pinky's Park, including new playground equipment and potentially new gravel trails to replace run-down boardwalks. **PR**

Action B: Consider creating additional facilities such as picnic shelters, a recreational campground, a dog park, non-motorized winter recreation such as cross-country skiing or mushing, additional skate park facilities, or new sports fields or courts. **PR**

Strategy 5: Pursue special funding and collaboration opportunities for enhancing Bethel parks.

Action A: Pursue Land and Water Conservation Fund or similar outdoors-related grant money to help with parks projects. **GM**

Action B: Add more community gardening opportunities to parks, potentially in partnership with Alaska Native organizations or other sponsor entities. **GM**

GOAL 9: Enhance recreational facilities and programs in Bethel.

Strategy 1: Expand the facilities and operations of the Fitness Center to accommodate more activities and all ages.

Action A: Expand the fitness center with potential improvements such as a gym and/or fitness track. PR

Action B: As the City is able, transition the City towards managing the Fitness Center (which is currently run by a contractor). PR

Action C: Develop programming within the fitness center oriented towards youth / younger people, such as classes or recreational sports leagues. PR

Action D: Develop programming within the fitness center and/or pool that is oriented towards seniors. PR

Action E: Based out of the Fitness Center but potentially including other facilities in town, consider establishing adult recreational sports leagues. PR

Strategy 2: Support expansions to childcare, teen activities, and senior activities.

Action A: Support upgrades and expansions to the Bethel 4-H Youth Center facilities and programming, including food programs, classes, and recreation for teens and afterschool youth. PR

Action B: Support recreational programming dedicated to seniors, such as upgrades to the existing Senior Center Park or other programs. PR

Strategy 3: Explore collaborations for recreational activities at other facilities in Bethel.

Action A: Coordinate with the school district to identify opportunities to use school facilities for programming outside of school hours. PR

Action B: Support expansions to recreational facilities and resources, such as the Cultural Center and the Kuskokwim Consortium Library. PR

GOAL 10: Enhance the network of trails and open spaces in Bethel.

Strategy 1: Improve access and comfort for trails.

See Chapter 4 – Local Transportation for trail and other non-motorized transportation goals.

Action A: Add trails to the map and guide of parks and recreation facilities. PL

Strategy 2: Maintain a network of open spaces.

Action A: Identify and map open spaces within and around the developed area of Bethel that can be used for public recreation. PL

Action B: Identify key future transportation connections across currently open areas such as the “Donut Hole.” PL

Action C: Based on the map of key future connections through currently open space, as well as mapped areas that must be preserved due to wetlands or drainage, identify suitable locations for potential green belts. PL



CHAPTER 8

People & Economy

8: People & Economy

To restate the community's Vision Statement,

Bethel is the hub that connects the communities of the rural Yukon-Kuskokwim Delta region.

Bethel is a growing, diverse community that strives to improve quality of life, affordability, and opportunities through strategic development that responds to Bethel's remote location.

As a remote hub city, Bethel provides opportunities to build businesses, careers, homes, and community connections. Its economic development strategy should be tied to attracting, retaining, and connecting the people who make the community great. The economy is dominated by employment in local government (city, tribal, and school) as well as government-funded organizations (like the Association of Village Council Presidents and Yukon Kuskokwim Health Corporation), but there are opportunities to expand local commercial activity. Partnerships between public and private entities, including non-profit organizations and businesses, can yield innovative new programs. With investments in local people and culture, locally generated economic growth is expected to follow.

8.1 Education and Career Training

As the regional hub of the Yukon-Kuskokwim Delta, Bethel is the also the de facto educational hub for the surrounding villages. Schools and career training are an important piece of Bethel's economic sustainability and growth. Bethel is home to many educational facilities, as listed in Chapter 2 – Existing Conditions. However, Bethel (like many remote Alaskan communities) struggles to fill job vacancies with local community members who have the appropriate training. It may be that residents with more education and training locally are moving to larger communities such as Anchorage, in part due to the high cost of living in Bethel.

Facing the continued rise in cost of living, Bethel should continue to encourage residents to seek out job training and explore new ideas for the retention and recruitment of local and regional talent. This will not only build local recruitment pipelines, but it will also give more Bethel residents higher-paying jobs and contribute to the overall resiliency of the community. These goals will require quality education at all levels.

GOAL 1: Promote broad access to education, training, and employment opportunities in Bethel.

Strategy 1: Identify community priorities for education and career training.

Action A: City of Bethel staffing is an important priority; see Chapter 7 – Public Facilities & Services, Goal 1: “*Enhance the reliability and efficiency of the City workforce.*” **HR**

Action B: Work with City departments and community partners to identify key community staffing needs. **CM**

Action C: Identify gaps between community unemployment and community job openings. **CM***

Action D: Working with community partners and the business community, monitor which employment sectors are likely to increase in importance and which employment sectors are likely to decrease in importance in 2045. **CM***

Strategy 2: Foster a city-wide culture of emphasizing local hiring and training for specific local opportunities.

Action A: Lead the community in the creation of a local “job board” that helps businesses find suitable hires. **HR**

Action B: Create a focused internship and apprenticeship program that offers introductory training and support leading to employment with City of Bethel or through partnerships with community organizations or businesses. **HR**

8.2 Donlin Mine

The Donlin Mine has long been discussed as a controversial project on the horizon that may have significant impacts on Bethel. After years of uncertainty about whether the project would proceed, it now seems to be moving forward; as such, it will be important to plan for the potential impacts. In the future, there could be other major projects in the Bethel region to prepare for and track.

The Donlin Gold Project would include development of an open pit mine approximately 150 miles northeast of Bethel. All key federal and state approvals have been obtained, and planning for construction is in progress. Bethel (along with a barge landing on the Kenai Peninsula) would be a primary accumulation point for pipeline materials during construction. Construction of the mine site, transportation facilities, and pipeline is anticipated to take about 3-4 years. This would begin with moving equipment, supplies, and personnel to the project site using various transportation modes. The Donlin Mine

is expected to cost approximately \$1.2 billion in labor; at peak construction, the proposed Donlin Gold Project would annually require up to 3,200 workers, including 2,500 for mine site and transportation facilities construction and 650 for natural gas pipeline construction.

The Donlin Gold Project would occur over a period of approximately 30 years, representing nearly a full generation of workers and residents. Approximately 50 to 60 percent of the peak year workforce would be drawn from communities within the Y-K region, and there are strong training programs to support local hiring. Employment during operations would be less but still substantial, estimated to impact 4 to 4.5 percent of households in the region. A portion of those employees at the Donlin Gold Mine may relocate their household outside of the region. Based on experience at Red Dog Mine, about 50 percent of employees would out-migrate to Bethel or Anchorage.

As part of mine development, an EIS was conducted which evaluated potential impacts to Bethel, including the following:

- Increased employment and income from the mine may go to residents of Bethel, which could increase the population above current projections by the Alaska Department of Labor and may also change Bethel's cultural composition (e.g., percentage of Alaska Natives and non-Natives).
- Infrastructure improvements for the Port of Bethel would be necessary, as the project is expected to approximately double the number of freight and fuel barges annually.
- Some local businesses in the Y-K region could experience an increase in activity during construction (likely concentrated in Bethel, as there are few retail and service outlets in smaller communities).
- An influx of capital and labor to small communities such as Bethel (small when viewed from a state-wide perspective) as a result of project construction could also have a negative economic effect in the form of inflationary pressure. Basically, this could increase the prices of goods and services for residents, especially impacting those not employed by the project.

The City of Bethel provided feedback for the EIS with the following key points:

- Emergency Management and Response: Collaborate with the Department of Homeland Security and local emergency services to create a comprehensive plan for mitigating and responding to incidents involving hazardous materials. Bethel's first responders may need additional training and resources to handle environmental spills or injuries related to cyanide, mercury, and high explosives.
- Hazardous Materials: Develop a thorough plan for the safe transportation and storage of hazardous substances, including specific protocols for handling and storing explosives, along with enhanced security measures.
- Infrastructure: Evaluate and potentially upgrade the existing water and sewer systems to accommodate new developments.
- In addition, there may be other potential impacts such as inflation, cultural changes, housing demands due to seasonal workers and new residents, and increased strain on support services.

GOAL 2: Minimize potential negative impacts to Bethel from the Donlin Mine efforts and maximize potential benefits.

Strategy 1: Ensure effective coordination with the Donlin Mine Project.

Action A: Develop a Memorandum of Understanding with Donlin Mine project leaders for ongoing coordination, including holding annual strategy meeting for conflict resolution and identify partnering opportunities. ^{CM}

Action B: Establish a communications plan to outline ways to keep Bethel residents informed of construction schedules and status of barge traffic, as well as to keep Donlin informed of the location and timing of commercial and subsistence fishing activities and other concerns or questions. ^{CM}

Strategy 2: Work with the Donlin project to plan for additional traffic associated with Donlin Mine.

Action A: Obtain full details about the planned dock construction south of the Bethel petroleum dock (associated with the Donlin Mine project). **PO**

Action B: Given Donlin's significant anticipated impacts to the Port of Bethel, jointly work with Donlin on port and waterway studies and improvements needed. **PO**

Action C: Coordinate with DOT&PF to monitor potential impacts to the capacity of Chief Eddie Hoffman Highway and whether improvements would be needed. **PW**

8.3 Fishing and Subsistence

For decades, commercial fishing was a key source of income in Bethel. Recently, however, commercial fishing has declined significantly due to falling fish population and prices. Since the 1990s, revenue from commercial fishing in Bethel decreased by nearly 50 percent. In 2016, the Coastal Villages Region Fund (CVRF) stopped buying and processing fish from the Kuskokwim region. CVRF was the largest buyer for 20 villages surrounding Bethel in Western Alaska. Since 2016, the region has been without a processor, making it nearly impossible to sell fish. Local fishermen tried to organize a cooperative to work with an external fish processor but had no success.

Many residents in Bethel and the broader region participate in subsistence fishing, just as people in the Yup'ik villages in the area had done long before the establishment of Bethel. Many people have small boats and travel along the river to fish camps. Subsistence food, including fish, makes up nearly half of residents' annual diet. However, salmon runs have been extremely low in recent years, causing Alaska Department of Fish and Game (ADFG) to limit how many fish people can catch. This has put strain on Bethel and other river communities as they are forced to rely more heavily on expensive imported groceries and less on traditional subsistence ways of life.

In addition to fish in the river, there are many other subsistence foods harvested around Bethel that supplement residents' diets. Beyond food, harvested materials can be used for clothing, tools, crafts, shelter, and more. These practices are important to the local culture and way of life for many Bethel residents, including but not limited to Alaska Natives. Most harvesting occurs during the summer and fall months, when the growing season and typical hunting season occur. Year-round, there is also informal sharing and trading of subsistence foods.

Many City of Bethel residents will continue to be impacted by the local salmon decline and other environmental challenges that are likely to impact subsistence resources (like climate change, which is already changing characteristics of the tundra). While the City cannot directly interfere with ADFG or U.S. Fish and Wildlife Service resource management policies, there may be opportunities to provide information or other resources to assist with local organizations' research and advocacy efforts.

Several organizations in the region are involved in advocacy to address issues impacting salmon populations, including climate change, pollution, and salmon bycatch in the Bering Sea pollock fishery. One

example is the Kuskokwim River Inter-Tribal Fish Commission, which advocates for stricter restrictions on salmon bycatch in the Bering Sea and continued coordination with Alaska Native tribes that can

provide traditional ecological knowledge. Other groups include the ONC Fisheries Department and the Kuskokwim River Salmon Management Working Group.

GOAL 3: Support subsistence rights and access to subsistence resources in Bethel and the surrounding region.

Strategy 1: Protect physical access to subsistence resources around Bethel.

Action A: Maintain the small boat harbor facility, and identify future expansion needs and priorities for funding to ensure sufficient access for subsistence users. **PO**

Action B: Require the dedication of parks and/or open spaces, such as green belts, in new subdivisions in order to maintain access to the undeveloped tundra. **PL**

Action C: Work to obtain public access easements over trails used to access fishing, hunting, or plant harvesting areas. **PL**

Strategy 2: Support research and advocacy efforts that seek to protect access to subsistence resources.

Action A: As opportunities arise, provide information or resources to support the activities of subsistence resource advocacy groups. **PO**

8.4 Climate Resilience Planning

As discussed in Chapter 2 – Existing Conditions, and according to the Alaska Department of Community & Regional Affairs (DCRA), Bethel is considered an Environmentally Threatened Community at risk from infrastructure damage caused primarily by flood, erosion, and permafrost degradation exacerbated by climate change. DCRA assistance may be available to help Bethel plan for mitigating the impacts of climate change. The City should take advantage of this and other programs that may exist, as any of these efforts could help protect human life and property.

The primary assistance available to communities to mitigate natural and other hazards is from the Federal Emergency Management Agency (FEMA) through development of a Hazard Mitigation Plan. Bethel's Hazard Mitigation Plan was completed in 2017 and is overdue for an update. These collaborative plans include a risk and

capability assessment which identifies hazards and develops a mitigation strategy to be implemented by the City to prepare for natural and man-made hazards that could occur in the future.

Other communities have developed Climate Action Plans or Climate Adaptation Plans to more comprehensively address climate change. However, Hazard Mitigation Plans offer similar benefits as all are collaborative efforts involving various City departments as well as community members and other organizations. With more awareness of potential hazards, the community and surrounding region's people and local economies can be more prepared and resilient in the face of climate change. The City should also consult with DCRA to determine if a more focused Climate Adaptation Plan should be prepared as well.

GOAL 4: Prepare the City for a broad range of potential climate change impacts.

Strategy 1: Using the help of state and/or federal climate resilience resources, create City plans for climate adaptation and community resilience.

Action A: Update the City's Hazard Mitigation Plan every five years. CM PL

Action B: Consult with DCRA and consider preparing a Community Resilience and Climate Adaptation Plan. PL CM

Action C: Monitor other funding or support resources that may become available. GM

8.5 Local History and Culture

As the hub city for the YK Delta region, Bethel is both the gateway to the villages of the region and the gateway from the region to the rest of the world. Bethel represents a confluence of cultures, and community members referred to it as the “heartland of the Yup’ik people” and a very diverse community. Due to its remote location, community members describe a strong sense of interconnectedness, community, and self-reliance. At times, large numbers of people from around the region, state, and world come together in Bethel around

traditional activities and expressions of community and culture. The cultural environment in Bethel includes not only Yup’ik traditions that have existed for thousands of years, but also contemporary sports that bring people together and a common value for the beauty of the river and the tundra. The City can play a role in supporting the cultural fabric that makes Bethel a great community in which to live, with a strong sense of place and local identity and pride.



Bethel Farmers Market shed.

8.6 Local Businesses

Community members report that it is very difficult to start a small business in Bethel. The City should try to help foster a local business friendly environment, as local production and commerce is a great way to decrease reliance on imports, oftentimes lowering the cost of living and keeping money flowing in the local economy.

The right balance between regulations and policies that ease the way for small businesses needs to be found. In the past, it was sometimes difficult for the City to enforce business licensing that allows the City to collect sales tax, an important source of City revenue to fund public facilities and services. When Covid-19 relief money came into the community to assist businesses, more busi-

nesses were forced to get licenses in order to access funding; this is an example of an incentive that helped formalize more businesses in Bethel.

The City could start getting more involved with supporting local businesses by designating a Business Community Liaison. Currently, there is no Chamber of Commerce in Bethel, but a Business Community Liaison could work with business leaders to reinvigorate the Chamber, opening more regular lines of communication and opportunities for the City and business leaders to collaborate on community events and programs that build up the local economy.

GOAL 6: Foster a thriving local business community.

Strategy 1: Encourage the reinvigoration of the Chamber of Commerce.

Action A: Assign a staff person within the City (likely in the Finance Department) to serve as the Business Community Liaison. **CM**

Action B: Identify and reach out to business leaders in the community about the City's interest in more coordination with the business community, including potentially supporting the reinvigoration of the Chamber of Commerce. **FI**

Action C: Organize a City space for representatives from the business community / Chamber of Commerce to meet on a quarterly basis. **FI**

Strategy 2: Expand resources to help people start local businesses.

Action A: Continue to provide information on licensing and permitting required, as well as enforcement. **FI**

Action B: Pursue a partnership with an organization such as UAF to offer business planning assistance. **FI**

Action C: Raise awareness about resources available to help small businesses, such as the Alaska Small Business Development Center and related guides or workshops. **FI**

Strategy 3: Create a business-friendly environment in Bethel.

Action A: Identify any barriers that the City may be able to address to assist with starting and running businesses. **FI**

Action B: Examine BMC to consider allowing some small businesses to be a legal in residential zoned areas. **PL**

Action C: Develop a directory of local businesses that is updated regularly. **FI**

Action D: Work with the business community to organize events that highlight local businesses, such as markets or events that encourage people to visit businesses around town. **CM***

8.7 Visitor Experience

People visit Bethel for a variety of reasons. The most common group visiting the area is made up of people visiting friends and relatives, known in tourism research as VFRs. Other common reasons for visiting Bethel include business trips, medical care, shopping, and community events. There is also a small segment of visitors seeking birdwatching, hunting, or flyfishing experiences. Each of these

groups may be encouraged to spend more time in Bethel if investments are made in marketing and better accessibility of information about local attractions and amenities. This should increase spending and in turn help fund improvements to attractions for visitors, also improving the local quality of life and community sense of pride.

GOAL 7: Support and expand tourism and visitation to Bethel.

Strategy 1: Expand information and marketing for visitors.

Action A: Provide general visitor information on the City website, including information such as lodging, dining, and transportation (in collaboration with the Chamber of Commerce). 

Action B: Create regularly updated visitor marketing materials specific to different visitor groups:

Family-friendly – focused on people visiting friends and relatives (aka VFRs) with children and/or seniors in their groups

Business travelers – focused on coffee / breakfast, lunch and dinner dining, catering for meetings, wifi hangout spots, the fitness center, and “quick” attractions to visit

Nature tourists – focused on in-town attractions, equipment shops or rental services, and regional transportation and wilderness guiding services

Visitors from villages – focused on resources they may be coming to access and include Yup'ik translation

New residents – overview of key community resources as well as popular spots for locals and residents to help people who recently moved to “get to know Bethel” 

Action C: In collaboration with the Chamber of Commerce, encourage businesses and community facilities to provide up-to-date contact, website information, and photos on Google Maps. 

Action D: In collaboration with organizers of large annual events and the Chamber of Commerce, assess the capacity of Bethel lodging available relative to expected peak demands to determine if shortages are anticipated and how the community could address this if/as visitation is expected to grow. 

Strategy 2: Improve attractions for visitors.

Action A: Emphasize locally specific natural and cultural attractions. PR

Action B: Work with the Chamber of Commerce and other organizations to develop a calendar of community events. PR

Action C: Develop and implement a beautification plan for the downtown area (roughly between the Cultural Center and Brown's Slough) and the waterfront. PR



Waterfront trail in Bethel.



JULY 2023

Bethel 2045 Comprehensive Plan

Appendices

Appendices

Appendix 1	City Clerk Action Items	CC
Appendix 2	City Manager Action Items	CM CM*
Appendix 3	Finance Department Action Items	FI
Appendix 4	Fire Department Action Items	FD
Appendix 5	Grant Manager Action Items	GM
Appendix 6	Human Resources Action Items	HR
Appendix 7	Information Technology Action Items	IT
Appendix 8	Landfill Manager Action Items	LM
Appendix 9	Parks and Recreation Action Items	PR
Appendix 10	Planning Department Action Items	PL
Appendix 11	Police Department Action Items	PD
Appendix 12	Port of Bethel Action Items	PO
Appendix 13	Public Works Department Action Items	PW
Appendix 14	Transit Manager Action Items	TM

Appendix Guide

Each Appendix is categorized by group responsible as indicated on the previous page. The appendices are organized by Comprehensive Plan chapter, and contain chapter goals, strategies, actions, and notes. Below is a diagram illustrating the table formatting.

Chapter X – Chapter Title

Chapter of the Comprehensive Plan.

GOAL X: Example goal title

Goal identified in Comprehensive Plan.

Strategy X: Example strategy title

Strategies are listed under each goal.

	Action A: Example action item	Example notes section
	Action B: Example action item	

Action Items are grouped under each each strategy.

Notes for each action item are listed on the right. If there are no notes for an action item, the cell will appear blank.

This page has been intentionally left blank.

APPENDIX 1: CITY CLERK ACTION ITEMS

Appendix 1 – City Clerk Action Items

Chapter 7 – Public Facilities & Services

GOAL 2: Communicate regularly and effectively with the community through various channels.

Strategy 1: Expand the reach of the City’s newsletter, “In the Loop.”

	Action A: Maintain easy public access to the current month’s newsletter on the homepage of the City website, with historical newsletters also available on the website.	There is a page on the City website for the newsletter that includes a link to sign up to receive it. The reach of this newsletter could be expanded by publishing it directly online, as well as pursuing other ways to spread the word. On the newsletter page of the website, also include an archive of past newsletters.
	Action B: Create a City information flier to laminate and place around town, including URLs and QR codes for the current newsletter and other key sites to access.	The flier can include URLs and QR codes for the City website, City Facebook page, and current City newsletter. Good locations may include City Hall, the Cultural Center, the Post Office, the airport, the small boat harbor, and the hospital.
	Action C: Print some copies of the newsletter to leave in key locations around town.	Printed copies may be more accessible for more residents. Another possibility could be to charge a small fee to receive printed copies via mail. On printed versions, adequate font size will also be important for accessibility.

Strategy 2: Expand the City's presence on social media.

Action A: Designate a social media “point person” within City staff, to be responsible for monitoring City activities that should be posted to social media and regularly checking in with all the departments for updates. (This could be the City Clerk or someone the Clerk designates.).

The City's public relations contractor currently helps manage the City's Facebook page. Many staff within various City departments also have admin privileges on the Facebook page and are currently responsible for sharing updates, but this effort could be more organized to increase regularity of communication with the community.

It is important for the page to remain active so that it is a useful tool that people look to for community updates. The page description can include links to important pages on the City website. Updates can include election or application reminders, key staff or contact changes, exciting announcements of City achievements like grants obtained or projects started or completed, and other similar topics. When special meetings outside of regular City meetings are held, these could be announced; if the City wishes to raise more awareness about an event and/or collect a rough RSVP, an Event can be created.

Strategy 3: Optimize the City website and update it regularly.

Action A: Each year, conduct a review of the website to determine if there are particular pages or sections that need to be added, deleted, reorganized, or updated.

This could be organized by the City's contracted public relations firm.

Action B: As needed, update the home page (and/or other pages) with more new information and links.

Action C: Make it easier to find contact information to use for different types of inquiries to the City.

Chapter 8 – People & Economy

GOAL 5: Support locally-specific cultural activities and attractions in Bethel.

Strategy 1: Work with community organizations to continue to highlight Yup'ik culture in Bethel.

	Action A: Identify needs and opportunities to expand existing Yup'ik translation services provided as part of City functions.	For example, Yup'ik language assistance is provided associated with local elections. There are many speakers in Bethel, including visitors from villages and elders who may rely on translation services more. There is also a Yup'ik immersion school and Yup'ik programming through UAF.
--	---	---

APPENDIX 2: CITY MANAGER ACTION ITEMS

Appendix 2 – City Manager Action Items CM CM*

If action items in plan chapters are listed as CM*, they are not intended to be City Manager actions but will need to be assigned to an appropriate party by the City Manager. These action items are listed at the conclusion of this Appendix.

Chapter 3 – Housing & Land Use

GOAL 1: Address potential barriers to housing development.

Strategy 3: Encourage development by collaboratively working with developers to install public infrastructure, including piped water and sewer systems and roads.

	Action A: As part of the subdivision agreement process, consider designing a standardized “impact fee” mechanism to have developers participate in funding when their development will impact the overall system (water and sewer or other infrastructure such as roads).	The impact fee could include funding for engineering, materials, and/or construction. A transparent, standardized process will be important in making expectations clear to potential developers.
--	--	---

GOAL 2: Facilitate more affordable housing development and access to affordable housing.

Strategy 2: Support access to information on housing assistance programs.

	Action A: Consider completing a housing needs assessment in collaboration with community partners such as ONC or BNC.	A study of community housing needs was completed in 2018 by a team including ONC, NeighborWorks America and Alaska, City of Bethel, and other organizations – <i>see background information in Section 3.2 for additional information</i>. An updated and more formal housing needs assessment could be completed to determine key types of housing expected to be needed.
--	--	---

GOAL 3: Reserve space to accommodate community needs and desired development.

Strategy 2: Create and regularly maintain a list of community facility and infrastructure needs that will require land.

	Action A: Create and maintain a list of community facility and infrastructure needs in order of priority, and include specific spatial needs such as general location and approximate area of land required.	The City Manager and the Planning Department should create and maintain the list of facilities and infrastructure needs, in collaboration with leaders from each department. Some items on the list would go hand-in-hand with the Capital Improvement Plan (<i>see Chapter 7 – Public Facilities & Services</i>). As a start, consider including the following space needs for the community (other than housing): ▪ Additional schools that may be needed as the population continues to grow ▪ Additional civic or public works buildings needed ▪ Parks and open space, distributed around different areas of Bethel ▪ Port expansion areas, as needed ▪ Water and wastewater treatment facilities (<i>see Chapter 6 – Utility Infrastructure for more discussion of water and sewer</i>) ▪ Alternative energy generation (wind, solar, etc.) and energy storage sites ▪ Likely new road and other transportation corridors
	Action B: As applicable, identify and initiate coordination with entities that need to be involved in the implementation of community facilities and infrastructure (such as the Public Works department for wastewater facilities, or AVEC for alternative energy generation sites).	<i>See Chapter 6, Utility Infrastructure for more information on coordination with Public Works and AVEC, for example.</i>
	Action D: As needed, create a plan to obtain land or lease a property to satisfy each priority community infrastructure need.	<i>Also see Chapter 7 – Public Facilities & Services, Goal 4 regarding management of City land.</i>

Strategy 4: Sell, trade, or lease City-owned properties that the City does not need in the future so that more private development can occur.

	Action A: Evaluate City-owned properties that should be considered to sell or lease for private development.	
	Action B: Create a plan for how the City will dispose of (sell or lease) certain properties over time.	Through RFP processes and/or purchase and sale agreements, the City can maintain some control over what gets developed, whether with formal public-private partnership or simply the terms of the agreement. This can help ensure that the land is utilized for community benefit.
	Action C: Initiate the process to dispose of these properties according to the plan.	City land disposal decisions would require a City Council vote.

GOAL 4: Identify areas that are good candidates for infill development and take steps to facilitate their development.

Strategy 2: Investigate how private landowners within priority development areas might be encouraged to participate in community development goals.

	Action A: Explore partnership opportunities to achieve desired development, such as with BNC.	<i>See Goal 3 above for more discussion of desired development.</i> The City could potentially approach land owners considering development in the priority development area and assist with elements such as infrastructure funding. This could be used to help encourage developments that would be beneficial for the whole community, such as multifamily housing or alternative energy generation facilities.
	Action B: Compile and share information from BIA about how native allotment owners can prepare for potential development.	There is a formal process the City could go through with BIA Realty to invite native allotment owners to participate in development.

	Action C: Coordinate with the Association of Village Council Presidents (AVCP) Realty Department to learn more about potential land exchanges between BNC and native allotment owners for “in-town” native allotments.	Coordination with BIA would also be helpful. The AVCP Realty Department offers support to native allotment holders for a variety of actions they could take with their land, including land exchanges, rights-of-way, or subdivision. BNC owns a significant amount of land around the peripheries of the official boundary of Bethel; they may have good candidate properties for land trades that are still near Bethel. The City could then partner with BNC to encourage development on the in-town parcels.
Strategy 4: Facilitate redevelopment of properties that are underutilized, dilapidated, or abandoned.		
	Action D: Consider funding available for the purchase of dilapidated or abandoned properties, potentially for use in partnership developments.	The City could potentially assist with cleaning up sites in order to facilitate redevelopment. Many owners of defunct / dilapidated properties can’t afford to clean up the property and/or don’t live on the premises.

Chapter 4 – Local Transportation

GOAL 1: Use the Long Range Transportation Plan (LRTP) to guide all local transportation facility planning.

Strategy 1: Emphasize the LRTP process and recommendations in Bethel.

	Action A: Adopt the 2020 Draft LRTP.	This LRTP was fully prepared but never officially adopted. It should be adopted by the City Council so that it can be publicly shared and used.
	Action B: Every five years, revisit (through a public process) and thoroughly update the LRTP.	Reviewing and updating the LRTP should continue to involve extensive public input, as it informs what maintenance will be prioritized, along with new potential transportation facilities including roads, trails, and port facilities. The City should make it clear to the community that the LRTP is their main opportunity to provide input on transportation planning.
	Action C: Coordinate with other organizations that prepare transportation planning documents for the area, including DOT&PF and ONC, to find overlaps and collaboration opportunities.	

GOAL 2: Plan for an organized, proactive approach to surface transportation facility maintenance.

Strategy 1: Clarify surface transportation facility maintenance responsibilities.

	Action B: Maintain copies of maintenance agreements for transportation facilities that are not solely under City jurisdiction (such as DOT&PF roads or private facilities).	One example is for BIA Road, which is currently maintained by a federal entity with occasional City involvement; this arrangement should be clarified in an agreement and would also be important to have in place to help manage future road improvement funding opportunities. A joint maintenance agreement was also recommended in the 2020 Draft LRTP to allow the City and ONC to share TTP funds.
	Action C: Work with DOT&PF to update existing state road MOUs, including exploring the possibility of the City assuming responsibility for maintenance of DOT&PF-managed roads in Bethel.	The City currently has five MOUs with DOT&PF, under which the airport manager is responsible for maintenance of state-owned roads in Bethel. Without a local crew as involved in road maintenance, DOT&PF may be less equipped to manage local road maintenance than the City. Public Works would like to explore the possibility of assuming maintenance of all of these roads, potentially except CEHH. This would require coordination with DOT&PF to negotiate and agree to the terms of the transition, including examining how it could impact STIP funding eligibility. Assuming maintenance of the roads would shift the financial responsibility to the City, so this would need to be factored into the City's budget.

GOAL 6: Strategically seek funding for transportation facility construction and maintenance.

Strategy 1: Leverage opportunities available in Alaska to secure potential funding sources for implementing transportation projects.

	Action B: Continue to leverage existing transportation construction support and funding through collaboration with other local entities, such as ONC.	Currently, ONC provides some support to construction projects such as through providing gravel; fostering these types of collaborations should continue to factor into transportation funding.
--	--	--

Chapter 5 – Regional Transportation

GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 1: Facilitate efficient and organized access to the airport.

	Action A: Between the City, DOT, and airline tenants leasing land and/or buildings on airport land, determine (and formalize in agreements if needed) which party is responsible for managing roads, parking, signage, and other elements within the airport area.	
--	---	--

GOAL 2: Support DOT&PF in airport operations and planning.

Strategy 1: As requested by the FAA and/or DOT&PF, take actions that support smooth and secure airport operations.

	Action C: Coordinate with the airport management / DOT&PF to schedule security drills.	
--	---	--

Strategy 2: Participate in planning for the future of the airport.

	Action A: Maintain regular coordination (such as quarterly meetings) with DOT&PF and representatives from airlines operating at the airport to track near- and long-term plans impacting the Bethel airport.	
--	---	--

GOAL 6: Support the improvement and expansion of other modes of regional transportation.

Strategy 1: As the hub of regional transportation, organize a City-led regional transportation coordination group to plan routes, maintenance, and funding.

	Action A: Establish a regional transportation coordination group, including DOT&PF, representatives from villages and tribal organizations, shipping companies, and transportation companies.	
	Action B: The group should meet regularly to discuss existing routes, maintenance responsibilities and issues, potential new routes or transportation methods, and grant opportunities.	

Strategy 5: Explore potential road connections between Bethel, Oscarville, Napaskiak, and Napakiak.

	Action A: Work specifically with Oscarville, Napaskiak, and Napakiak representatives in the transportation coordination group to gauge interest in pursuing surface road routes between each village and Bethel.	There are already power lines connecting Bethel with Napakiak and Oscarville. Community members have expressed interest in surface connections in the past since these villages are close to Bethel. ▪ For Oscarville, only a few miles of road and a creek crossing would be needed. There have been efforts to fund a bridge to cross the creek. ▪ Napaskiak is just across the river from Oscarville, so a bridge would be needed. ▪ Napakiak is also close to Bethel, and there was recently a DOT&PF RFP released to explore aviation and surface connections between village and the City. That RFP was canceled due to a funding issue, but this idea may arise again soon, and DOT&PF will be important to the discussion.
	Action B: Explore partnership agreement opportunities to implement future road connections.	The City would likely not lead these efforts, but can help coordinate through the transportation group.

Chapter 6 – Utility Infrastructure

GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gasses.

Strategy 1: Facilitate large-scale projects to introduce more alternative energy sources to the local network.

	Action A: Assign a City “energy point person” to coordinate regularly with AVEC.	In the past, there was an Energy Committee that held discussions around energy, but there is no clear person or group within the City that focuses on energy now.
	Action B: Working with AVEC, create a strategic plan that identifies ways for the City to support a transition to more alternative energy generation.	Bethel has an interest in lowering energy costs for residents, and a shift to more renewable energy is anticipated to be the best way to do this. Alternative energy generation also is generally less harmful to the already-fragile Alaskan tundra and river environment on which Bethel depends. Bethel should work with AVEC to identify ways Bethel can help transition the grid to more alternative energy sources, such as working together on acquiring and/or setting aside land for wind or solar farms. AVEC currently needs to weigh in if the City applies for alternative energy grants, but in the future there could be opportunities for the two organizations to work together more collaboratively to obtain funding. As the largest member community within AVEC, Bethel may have an opportunity to play an influential role in support AVEC’s alternative energy transition.

GOAL 3: Transition Bethel’s water and sewer utilities to fully piped systems serving all residences and businesses.

Strategy 3: During the phases of the PER and beyond, manage the piped system to be as efficient and accessible as possible, as well as equitable in cost.

	Action C: For new development or redevelopment, work with industry experts to investigate how the City could implement an “impact fee” system in which there are clear expectations related to new or upgraded infrastructure cost to the developer.	Other communities have systems in place for development to bear some or all of the cost of public infrastructure associated with the development. Eventually, this system should be added to municipal code. Clear expectations for private contributions, how this funding would be managed, and how the City can assist could help avoid discouraging development from high installation costs.
--	---	---

Chapter 7 – Public Facilities & Services

GOAL 1: Enhance the reliability and efficiency of the City workforce.

Strategy 1: Optimize and monitor the staffing and operations of each City department to ensure efficiency and support staff retention and hiring efforts.

	Action A: Ensure every department has clearly outlined responsibilities with documented and regularly updated policies, procedures, and job descriptions to facilitate staff training and operations evaluations.	Work with the Human Resources Department on this action item.
	Action B: Conduct an evaluation of each department's operational efficiency on an annual basis and when considering hiring additional personnel.	Work with the Finance Department on this action item.
	Action C: As evaluations of operations are completed, consider altering the structure of departments (for example, implementing new technology to increase efficiency, or establishing mentorship and chains of command that facilitate staff advancement into leadership roles).	Work with the Human Resources Department on this action item.
	Action D: Establish transition plans so that department operations are minimally impacted by the departure of key staff.	Work with the Human Resources Department on this action item.

GOAL 3: Optimize the management of City revenue and spending.

Strategy 4: Shape sales taxes and fees to positively influence public health and sustainability and fund key community projects.

	Action A: Over time, consider proposing expansions to taxes on alcohol, marijuana, and tobacco sales, as well as gambling.	If the City decides to pursue expansions to these selective sales taxes, this would likely require an approval process with City Council.
	Action B: Propose a “bag tax” for disposable bags from stores and restaurants.	Frequently called a “bag tax” in other communities, this is a small (few cents) fee per disposable bag used at stores. The “bag tax” could encourage more environmentally friendly behaviors including using reusable bags and reusing paper or plastic bags instead of throwing them away after one use. This change would help extend the life of the landfill. Creating a new “bag tax” would likely require an approval process with City Council.
	Action C: Consider proposing vehicle parking fees in some areas, such as for long-term parking near the airport or boat harbor.	Implementation and/or enforcement could be challenging, but there is room to expand parking fees at these locations. In the past, parking fees were tested at the harbor, but there was confusion around whether a harbor permit includes vehicle parking already. At the airport, coordination with the airport manager and DOT&PF would be required.

GOAL 4: Manage City lands in an efficient, cost-effective, and forward-thinking manner.

Strategy 1: Maintain a map of City-owned lands and ownership changes.

	Action C: Using the community land use needs identified as part of the goals in Chapter 3 – Housing & Land Use, identify community needs that may be met with City-owned properties or underutilized properties. Use this information to identify where there are gaps, which could lead to identifying properties that may be pursued for acquisition by the City.	
--	--	--

Strategy 2: Improve processes for City property acquisition, sales, and leasing.

	Action A: When the City needs to buy or lease land, release requests to negotiate lease or sale agreements with other property owners in order to help find available land that meets City purposes.	
	Action B: Work with the City Attorney to clarify appropriate options of processes for leasing land / facilities to non-profits, businesses, or other types of entities, including determining fair rental costs relative to appraised value, bid processes, or other ways to enter into lease agreements.	While appraised values factor in market conditions, the City has noted that additional flexibility to negotiate sale or lease agreements would be helpful depending on the situation. Especially when leasing City property to others, the City could benefit from a Rental Market Analysis to factor in location, size, property type, and other considerations. An additional consideration is to track and observe any outside limitations that may exist (for example, if federal dollars were used to acquire a property and could have come with additional stipulations requiring exact appraised value be used in future deals).
	Action C: The City currently offers heavily discounted rental and utility rates for some non-profit lessees; evaluate the community value of these leases and consider evolving the practice to rent at appraised values, still with the potential for discounts depending on purpose.	

GOAL 5: Manage updates to City facilities and equipment in an efficient, cost-effective, and forward-thinking manner.

Strategy 1: Maintain the Capital Improvement Plan (CIP).

	Action A: Update the CIP every year.	There is currently a focus on upgrades to heavy equipment, and facility upgrades (such as the need for a new Public Works building) have been deferred. Priorities may shift over time, and unexpected expenses may arise. Updating the CIP each year is a comprehensive approach to planning for capital improvements. At the time of the preparation of this Comprehensive Plan, the City noted the following examples of facilities that need upgrades: ▪ New Public Works Building is needed (current estimated cost \$36.4 million) ▪ Library and Cultural Center need repairs and a new paint job
	Action B: Ensure that items in the CIP advance City goals for improving energy efficiency and a transition to alternative energy sources in the future.	<i>Reference the Energy section of Chapter 6 – Utility Infrastructure.</i>
	Action C: Continue to use the insurance schedule to anticipate items that the City may need to spend money on in the future, such as repairing frozen pipes.	

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 1: Expand the City's capacity to manage and maintain parks.

Action A: Recreate the Parks and Recreation department and/or designate an interim Parks and Recreation manager within the City who will be responsible for leading coordination with contractors (current and potential future), parks and recreation improvement projects, and coordination with the Community Parks & Recreation Committee.

The past Comprehensive Plan designates many action items for the Parks & Recreation Department. However, this department no longer exists at the time this plan update is being written. The Community Parks & Recreation Committee is very active, but it would greatly increase the City's ability to improve parks and recreation to have at least one staff person dedicated to this role, and potentially more people involved on a seasonal basis. In addition to working with the Committee, this designated leader of parks-related efforts would need to collaborate with the City's property maintenance team and Planning Department.

Chapter 8 – People & Economy

GOAL 1: Promote broad access to education, training, and employment opportunities in Bethel.

Strategy 1: Identify community priorities for education and career training.

Action B: Work with City departments and community partners to identify key community staffing needs.

Key staff may include childcare workers, commercial drivers, and maintenance staff for the City or other organizations. The Chamber of Commerce is not currently active, but if it does resume activities, this would be a good resource to consult with on staffing needs.

GOAL 2: Minimize potential negative impacts to Bethel from the Donlin Mine efforts and maximize potential benefits.

Strategy 1: Ensure effective coordination with the Donlin Mine Project.

Action A: Develop a Memorandum of Understanding with Donlin Mine project leaders for ongoing coordination, including holding annual strategy meeting for conflict resolution and identify partnering opportunities.

The MOU could discuss Donlin participation in studies and maintenance that may be needed related to causing increased traffic for the Port and the highway. Additional heavy vehicles on roads could accelerate their wear, and additional barge traffic could exacerbate erosion concerns, so impact fees could be considered in an MOU. The MOU should also consider planning for breaches of facilities and monitoring / mitigation of environmental contamination events / impacts.

The MOU could also specify responsibilities for Donlin and the City for funding upgrades of water and sewer infrastructure, providing extra resources and training for hazardous material handling and response, and detailing the review process of hazardous material handling and spill response plans.

	Action B: Establish a communications plan to outline ways to keep Bethel residents informed of construction schedules and status of barge traffic, as well as to keep Donlin informed of the location and timing of commercial and subsistence fishing activities and other concerns or questions.	The communications plan could involve notices in the City’s newsletter, discussed in Chapter 7 – Public Facilities & Services.
--	--	---

GOAL 4: Prepare the City for a broad range of potential climate change impacts.

Strategy 1: Using the help of state and/or federal climate resilience resources, create City plans for climate adaptation and community resilience.

	Action A: Update the City’s Hazard Mitigation Plan every five years.	The primary assistance available to communities to mitigate natural and other hazards is from the Federal Emergency Management Agency (FEMA) through development of a Hazard Mitigation Plan. Bethel’s Hazard Mitigation Plan was completed in 2017 and is overdue for an update. These collaborative plans include a risk and capability assessment which identifies hazards and develops a mitigation strategy to be implemented by the City to prepare for natural and man-made hazards that could occur in the future.
	Action B: Consult with DCRA and consider preparing a Community Resilience and Climate Adaptation Plan.	Other communities have developed Climate Action Plans or Climate Adaptation Plans to more comprehensively address climate change. However, Hazard Mitigation Plans offer similar benefits. The City should consult with DCRA to determine if a more focused Climate Adaptation Plan should be prepared in addition to the Hazard Mitigation Plans, as this could potentially open the door to additional support or funding.

GOAL 6: Foster a thriving local business community.

Strategy 1: Encourage the reinvigoration of the Chamber of Commerce.

	Action A: Assign a staff person within the City (likely in the Finance Department) to serve as the Business Community Liaison.	The liaison role may make the most sense to be held by someone in the Finance Department who already works with businesses on licensing.
--	---	--

CM* Action Items – Chapter 5 – Regional Transportation

GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 1: Facilitate efficient and organized access to the airport.

	Action D: Create a guide to transportation options available to/from the airport with a map of where to access them, to be distributed and displayed in buildings for the passenger airline(s).	The guide should include parking options, taxicab pickup areas and phone numbers, the nearest transit stop, the hospital shuttle, car or other vehicle rental services, the location of passenger airlines at the airport, and any other transportation options available around town. The guide should be posted in the Alaska Airlines terminal and elsewhere if deemed helpful.
--	--	--

Strategy 2: Facilitate adequate parking at the airport.

	Action A: Once parking management is determined, advocate for exploring the potential of designating short-term and long-term parking lots and an associated parking fee system with time limits.	Designating short term and long term parking may help with the issue of limited parking around the airport. Because of fees, those planning to be traveling for a while may choose to find another way to the airport instead of leaving their vehicle there.
	Action B: Once parking management is determined, advocate for the completion of a parking study to evaluate whether more parking is needed near the main jet terminal and if so, make plans to provide additional parking space.	

GOAL 6: Support the improvement and expansion of other modes of regional transportation.

Strategy 2: Work with the regional transportation coordination group to improve reliability of ice road maintenance.

	Action A: Create a map of the typical ice road route, including all the villages it connects.	Identify a representative from each village that the ice road connects to participate in the coordination group.
	Action B: Create a typical snow-clearing schedule, including what party or parties are responsible for clearing and marking.	In the past, Lynden would periodically plow the river to support their shipping needs, which resulted in easier access for anyone using the ice road. Napaimute Corporation is planning to take charge of ice road maintenance and recently received additional funding for the effort. With maintenance schedule and responsibility information shared amongst the coordination group, it will be easier to collaborate and work together to fill in any gaps (such as for funding).
	Action C: Collect data on past years' freezing and break up and monitor freezing, ice thickness, and break up each year. Share this data and changes over time to help reduce the risk of incidents where vehicles fall through the ice.	

Strategy 3: Work with the regional transportation coordination group to improve the reliability of the trail network.

	Action A: Work with the group and DOT&PF to develop a map of the most used trails between Bethel and the surrounding villages, including user groups, trail markers, hazards, and other landmarks.	Many of the trails outside of Bethel primarily run through DNR and other federal agency land; these agencies may have their own trail system and maps. ONC has also worked on mapping and marking historic routes. The coordination group should consult with and collect prior efforts of these agencies when developing the map. The map should include pedestrian, ATV, and snowmachine trails. It should also mark creek crossings to encourage caution.
	Action B: Identify whether easements are needed for places where trails cross private property, and coordinate with property owners.	If a trail crosses public agency land (like DNR or other federal agencies), mark the agency managing the trail on the map.
	Action C: Create a regional trail maintenance strategy that is responsive to different seasons, various types of trail users (snowmachine versus ATV, for example), and changing conditions over time.	This may be able to be funded by tribal transportation funds, especially since trails are often used to travel between villages. It is important to note that these trails are located in the tundra and may have challenging conditions. Due to climate change, there is a decreasing portion of the year during which snowmachines can be used; increasing ATV use may damage the tundra ecosystem and become an increasing maintenance issue down the road. The coordination group should discuss these issues to reach appropriate solutions.

Strategy 4: Facilitate potential regional transit opportunities as they arise.

	Action A: Coordinate with the hovercraft operator to determine if they may consider providing passenger transit again in the future.	The hovercraft can travel on difficult terrain in the region including tundra, water, snow, and ice. As climate change makes conditions less predictable, it could become even more useful to transporting cargo in the area. The hovercraft used to have approximately 12 passenger seats, and the transportation coordination group can work with the operator to determine if there are opportunities to once again provide passenger transportation.
--	---	---

CM* Action Items – Chapter 6 – Utility Infrastructure

GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gasses.

Strategy 3: Encourage efficiency updates for private energy users.

	Action A: Develop outreach materials to encourage commercial and residential users on energy efficiency best practices and grants that may be available for installing private alternative energy facilities.	The Cold Climate Housing Research Center may have some useful information to contribute to these outreach materials. Coordination with AVEC will also be needed.
	Action B: Work with AVEC to develop and share a guide to approval processes required for private alternative energy facilities and opportunities to sell excess power back to the grid.	Independent power producers may be eligible to have their AVEC bill reduced, and there could be opportunities to sell surplus power back to the grid. Information about necessary processes and related opportunities should be shared on the City website.

CM* Action Items – Chapter 7 – Public Facilities & Services

GOAL 7: Target specific public safety concerns within Bethel.

Strategy 4: Support organizations that provide services to people experiencing homelessness in Bethel.

	Action A: Continue to support the Bethel Winter House nonprofit organization.	The Winter House facility provides nighttime shelter during the winter for people experiencing homelessness, as well as limited services during other months, depending on funding. The organization runs almost entirely on donations and volunteer work, so any support with funding/grants, projects, and raising awareness about the Winter House efforts that the City can provide is helpful. This could include working in partnership with the Bethel Community Services Foundation, which leads the Bethel Housing & Homelessness Coalition.
--	--	---

CM* Action Items – Chapter 8 – People & Economy

GOAL 1: Promote broad access to education, training, and employment opportunities in Bethel.

Strategy 1: Identify community priorities for education and career training.

	Action C: Identify gaps between community unemployment and community job openings.	This could be an opportunity to partner with low-income and/or social service providers, to connect economically vulnerable community members with work.
	Action D: Working with community partners and the business community, monitor which employment sectors are likely to increase in importance and which employment sectors are likely to decrease in importance in 2045.	For example, the City has noted that it is difficult to establish wind power facilities without local staff with the training needed to service the turbines; it may be expected that this sector would grow and thus more staff would be needed. Elder care may also be expected to grow, given that Bethel is a healthcare hub with a growing population of seniors.

GOAL 5: Support locally-specific cultural activities and attractions in Bethel.

Strategy 1: Work with community organizations to continue to highlight Yup'ik culture in Bethel.

	Action C: When possible, partner with Bethel Council on the Arts and Alaska Native organizations to sponsor cultural facilities and events in Bethel, such as arts and crafts markets, cultural exhibits, or the Camai dance festival.	These events can be a part of Parks and Recreation activities that add to the quality of life in Bethel; they also attract visitors to the community (<i>see the Visitor Experience section below in this chapter</i>).
--	---	---

GOAL 6: Foster a thriving local business community.

Strategy 3: Create a business-friendly environment in Bethel.

Action D: Work with the business community to organize events that highlight local businesses, such as markets or events that encourage people to visit businesses around town.

Small businesses run out of people's homes could benefit from market-style events that bring people together to check out tables from different organizations. Other ideas could include several business organizing a time to provide scheduled events to encourage people to patronize several local businesses.

GOAL 7: Support and expand tourism and visitation to Bethel.

Strategy 1: Expand information and marketing for visitors.

Action A: Provide general visitor information on the City website, including information such as lodging, dining, and transportation (in collaboration with the Chamber of Commerce).

This should include information on lodging options, transit and cab information, airport information, dining, shopping, recreational opportunities, services that visitors may need to access, and so on. The information should be simple and easy to read, with contact and location information.

Action B: Create regularly updated visitor marketing materials specific to different visitor groups: ▪ Family-friendly – focused on people visiting friends and relatives (aka VFRs) with children and/or seniors in their groups ▪ Business travelers – focused on coffee / breakfast, lunch and dinner dining, catering for meetings, wifi hangout spots, the fitness center, and “quick” attractions to visit ▪ Nature tourists – focused on in-town attractions, equipment shops or rental services, and regional transportation and wilderness guiding services ▪ Visitors from villages – focused on resources they may be coming to access and include Yup’ik translation ▪ New residents – overview of key community resources as well as popular spots for locals and residents to help people who recently moved to “get to know Bethel”	Visitor marketing materials should also be included on the City website, and could be prepared with the City’s public relation contractor in collaboration with organizations such as the Chamber of Commerce. Separating types of attractions by who might be interested in them will make information more accessible and relevant to everyone visiting the website. The City can also work with organizations that consistently bring people to Bethel (such as the hospital) to distribute these marketing materials. People who have moved to Bethel have noted it can be difficult to find information on community resources, cost of living, etc. without having connections in the community through family or work already; supporting prospective residents should be an area of focus.
Action D: In collaboration with organizers of large annual events and the Chamber of Commerce, assess the capacity of Bethel lodging available relative to expected peak demands to determine if shortages are anticipated and how the community could address this if/as visitation is expected to grow.	There may be shortages during large community events such as the Camai dance festival. If shortages are expected to worsen, the City could examine initiatives such as incentives for lodging development.

APPENDIX 3: FINANCE DEPARTMENT ACTION ITEMS

Appendix 3 – Finance Department Action Items

Chapter 7 – Public Facilities & Services

GOAL 1: Enhance the reliability and efficiency of the City workforce.

Strategy 1: Optimize and monitor the staffing and operations of each City department to ensure efficiency and support staff retention and hiring efforts.

Action B: Conduct an evaluation of each department's operational efficiency on an annual basis and when considering hiring additional personnel.

Work with the City Manager on this action item.

Strategy 2: Implement new technology in order to save money spent on some City functions and decrease each City department's workload.

Action C: Explore more automated technology systems that could be used to track City department budgets and produce reports, in order to help departments manage their own budgets and lighten the load on the Finance Department.

Under the current budget system, the City submits fund balances and data comparing budgets to actual money spent to City Council. However, the Finance Department has capacity challenges, leading the information to typically be running one to two months behind. Using technology to help automate some portions of the system could help departments better track their own expenditures, in turn lightening the load on the Finance Department and helping everyone remain up-to-speed.

GOAL 3: Optimize the management of City revenue and spending.

Strategy 1: Continually evaluate and consider reshaping the City's fiscal structure for efficiency and as City priorities change over time.

	Action A: Working with other City departments as well as the Finance Committee, consider ways to augment, diversify, and allocate City revenue sources, such as based on particular projects that may need funding.	Departments can collaborate to change the strategy over time based on key projects that need funding. For example, one-half-percent of City sales taxes were previously allocated to raise funds for the construction of the Fitness Center. For more ideas, <i>see Strategy 5</i> within this goal.
	Action B: In the longer term, conduct a comprehensive study of municipal finances to determine the most efficient and effective fiscal structure.	Depending on how the City is operating, the best structure for different funds or departments can change over time. For example, the Fitness Center is currently considered an enterprise fund for auditing purposes, but the City has discussed whether to treat it as a department and put the budget into the general fund like Fire, Police, and other departments. How each facility and/or department operated by the City is budgeted should be considered as part of the fiscal structure study.

Strategy 2: Regularly update fees and other charges.

	Action A: Continue annual updates to the City's fee schedule (as required by BMC 4.04.025), including consideration of whether new fees should be levied.	This should be organized by the Finance Department in coordination with all other departments. City Council approves the fee schedule annually, and it is posted to the City website. The relevant page should note that the fees are current as of when they went into effect.
--	--	---

Strategy 3: Improve clarity and consistency of sales tax collection and business licensing.

	Action A: Consolidate and improve clarity of information on the City website related to businesses, licensing, and sales tax collection.	Currently, some information is housed under Businesses, while some is under the Finance Department page in the Government tab. Business owners also receive information from the City when registering. Reorganizing the information could make it more accessible and easier to use. This should include a clear list of all types of economic activities that require different types of licensing and the collection of sales tax.
--	---	---

	Action B: Before local business licenses are issued or renewed, require a code compliance review from the Planning Department.	This should be noted in the information for businesses on the City website and added to the Finance Department's procedures. Before the Finance Department issues a license, they should be required by Department procedure to send the relevant information to the Planning Department for review.
	Action C: Enforce compliance with business licensing requirements and sales tax collection by completing 80 sales tax audits per year.	In 2022, the new Finance Director worked to bring a large percentage of businesses into compliance and used various communication strategies to spread the word about the effort, including sending letters, publishing in the newspaper, and posting on social media. The goal is to use the audits to bring more businesses into compliance over time.
	Action D: Expand resources to help people start local businesses.	<i>See the Local Businesses section in Chapter 8 – People and Economy.</i>

Chapter 8 – People & Economy

GOAL 6: Foster a thriving local business community.

Strategy 1: Encourage the reinvigoration of the Chamber of Commerce.

	Action B: Identify and reach out to business leaders in the community about the City's interest in more coordination with the business community, including potentially supporting the reinvigoration of the Chamber of Commerce.	The "Business Community Liaison," as determined by the City Manager as part of Action A in this strategy, would be responsible for this. It is important to note that the Chamber of Commerce previously dissolved due to lack of interest. If there is still insufficient interest in a formal Chamber even as Bethel's business community grows over time, it could still be worthwhile for the City to coordinate regularly with business leaders about the state of the business community.
	Action C: Organize a City space for representatives from the business community / Chamber of Commerce to meet on a quarterly basis.	The "Business Community Liaison" would be responsible for organizing this.

Strategy 2: Expand resources to help people start local businesses.

	Action A: Continue to provide information on licensing and permitting required, as well as enforcement.	The City website currently provides information on the applicable federal, state, and local requirements, but it may be helpful to optimize the information on the website to be more user-friendly – see <i>Chapter 7 – Public Facilities & Services</i> .
	Action B: Pursue a partnership with an organization such as UAF to offer business planning assistance.	There could also be opportunities to connect new businesses with students or young professionals who may be help with some elements of starting up a new business, like building a website or social media accounts.
	Action C: Raise awareness about resources available to help small businesses, such as the Alaska Small Business Development Center and related guides or workshops.	These resources are already linked on the Business Licensing page within the Finance Department section under the Government Tab of the City website, but this may be difficult to find, and people may not be aware of the resources available. The Chamber of Commerce is currently inactive, but if it resumes activities, the City could also work with them to improve the accessibility of these resources. Also see <i>Chapter 7 – Public Facilities & Services</i> .

Strategy 3: Create a business-friendly environment in Bethel.

	Action A: Identify any barriers that the City may be able to address to assist with starting and running businesses.	The “Business Community Liaison” could work with the Chamber of Commerce to conduct a survey of business owners to identify key challenges.
	Action C: Develop a directory of local businesses that is updated regularly.	The “Business Community Liaison” could work with the Chamber of Commerce to develop this directory, which should be made available online.

GOAL 7: Support and expand tourism and visitation to Bethel.

Strategy 1: Expand information and marketing for visitors.

	Action C: In collaboration with the Chamber of Commerce, encourage businesses and community facilities to provide up-to-date contact, website information, and photos on Google Maps.	Many visitors turn to map applications like Google Maps to plan and navigate, but the information currently available is inconsistently complete. More information could make visitors feel more comfortable navigating Bethel as an outsider.
--	--	--

This page has been intentionally left blank.

APPENDIX 4: FIRE DEPARTMENT ACTION ITEMS

Appendix 4 – Fire Department Action Items FD

Chapter 7 – Public Facilities & Services

GOAL 6: Improve public safety facilities and services in Bethel.

Strategy 1: Continue to improve fire and emergency medical infrastructure and services.

	Action A: Construct a new fire station near the airport.	The station would house a vehicle and equipment and serve as a gathering place for volunteers responding to fires and medical emergencies. This would help serve the Kasayulie and Tundra Ridge subdivisions as well as the airport; some existing homes and buildings within this area are subject to significantly higher insurance rates due to their distance from the current fire station. This could also help serve more development that could occur in this area.
	Action C: Address maintenance needs for the fire station.	The station may need repairs to the foundation, piles, and retaining walls, as well as improved drainage on the site. As noted in the previous Comprehensive Plan, the fire training tower is also planned to be replaced, likely closer to the fire station than its previous location near the sewage lagoon.
	Action D: Continue to recruit and provide training to fire and EMS staff and volunteers.	It has at times been challenging to attract volunteers; the City may need to brainstorm additional recruitment ideas for this volunteer opportunity. <i>See Chapter 8 – People & Economy for more information on education and career training that may be relevant.</i>
	Action E: Address other public safety capital improvement needs as they arise and new technology becomes needed and/or available.	The Fire Department's detection equipment is obsolete. New chemical analyzation and radiation detection equipment, including CBRNE response training (i.e. - Hazardous Materials Technician), is needed.
	Action F: Continue and increase the delivery of existing fire prevention and education programs.	The Fire Department organizes programs such as fire prevention classes, school visits, and home safety inspections; these types of activities should continue and can be further promoted through social media.

APPENDIX 5: GRANT MANAGER ACTION ITEMS

Appendix 5 – Grant Manager Action Items

Chapter 3 – Housing & Land Use

GOAL 1: Address potential barriers to housing development.

Strategy 3: Encourage development by collaboratively working with developers to install public infrastructure, including piped water and sewer systems and roads.

	Action B: Create a guide for infrastructure development grants or other funding assistance programs, in order to assist developers with finding information needed to pursue supplemental development financing.	The Grant Manager can prepare and maintain this list, to be shared with the Planning Department for use in their discussions with potential developers. As part of the subdivision agreement process, the City Planner can ensure that this guide is readily available to developers. It should also be posted to the City website to help encourage development by improving awareness of resources available. For road development, the City can help developers apply for transportation funding via the Alaska Transportation Funding Opportunity Hub (<i>see Chapter 4 – Local Transportation, Goal 6 for more discussion</i>). For water and sewer, there are other grants that may be able to help with funding, such as the grants the City will use to fund projects outlined in Chapter 6 – Utility Infrastructure. For subdivisions developed by tribal organizations, additional funding sources may be available.
--	--	---

GOAL 2: Facilitate more affordable housing development and access to affordable housing.

Strategy 2: Support access to information on housing assistance programs.

	Action B: Work with various community partners, potentially including the U.S. Department of Housing and Urban Development (HUD), Alaska Housing Finance Corporation (AHFC), ONC, or BNC, to research potential economic housing assistance that could be available to Bethel residents.	It is possible some existing housing assistance programs are organized such that Bethel residents would not qualify based on locally specific conditions. Depending on the results of the Grant Manager's research, the City could advocate for changes to these programs so that they are inclusive of rural Alaskan communities like Bethel. If the Grant Manager can identify relevant programs, a guide could be created to be shared with the Planning Department for use in their discussions with potential developers. This could also be posted to the City website to help encourage development by improving awareness of resources available.
--	--	---

GOAL 4: Identify areas that are good candidates for infill development and take steps to facilitate their development.

Strategy 4: Facilitate redevelopment of properties that are underutilized, dilapidated, or abandoned.

Action D: Consider funding available for the purchase of dilapidated or abandoned properties, potentially for use in partnership developments.

The City could potentially assist with cleaning up sites in order to facilitate redevelopment. Many owners of defunct / dilapidated properties can't afford to clean up the property and/or don't live on the premises.

Chapter 4 – Local Transportation

GOAL 6: Strategically seek funding for transportation facility construction and maintenance.

Strategy 1: Leverage opportunities available in Alaska to secure potential funding sources for implementing transportation projects.

Action A: Work with Alaska Municipal League and DOT&PF to use the Alaska Transportation Funding Opportunity Hub to identify potential funding sources for different types of surface transportation projects, and to prioritize Bethel's projects through the Hub Intake Survey.

While the STIP nomination process can be used for projects on DOT&PF facilities, other funding must be secured for any other transportation projects. The Alaska Municipal League and DOT&PF have partnered to improve access across Alaska to project development and funding opportunities.

A project intake survey should be completed for all potential projects to support matching project opportunities with funding sources and assist with securing funds to complete surface transportation improvement projects in Bethel.

Strategy 2: Create a prioritized list of all transportation facility construction and maintenance projects.

Action A: Combine the lists of maintenance / rehabilitation and new transportation facility projects created for roads and trails, and add details on estimated design and construction cost and grant-related considerations.

Use the list and funding strategy developed for Strategy 1 above to inform potential funding sources for projects. Deadlines and schedules for different funding sources could impact how projects are prioritized.

	Action B: Order the list based on priority and when each project should be completed.	The prioritization should factor in community need, cost, funding opportunities available, and what timing makes sense based on other transportation projects and/or developments. It should also consider the funding opportunity application windows to align projects with grants and increase the chances of success when seeking grant applications. The Alaska Transportation Funding Opportunity Hub can be used to support programming of projects to align them with funding opportunities.
Strategy 3: Pursue funding to complete priority projects.		
	Action A: Continue to review priority projects annually to select those that could be funded through the Capital Improvement Plan.	Note that the STIP only applies to state-managed facilities. If MOUs for management change, this could impact funding eligibility.
	Action B: Nominate priority projects for state owned / managed facilities to the STIP, and nominate City owned / managed facilities to other state programs for federal funding such as the Community Transportation Program (CTP).	Some of these funding applications may include working with partners, such as tribal organizations like ONC who have access to different funding opportunities, including the Tribal Transportation Program (TTP). Matching funds with organizations that have access to different funding can enable the City to take on more significant projects.
	Action C: Apply for grants to fund other priority projects, focusing on time-sensitive funding opportunities.	Some of these funding applications may include working with partners, such as tribal organizations like ONC who have access to different funding opportunities, including the Tribal Transportation Program (TTP). Matching funds with organizations that have access to different funding can enable the City to take on more significant projects. It is important to note that for federally funded projects, design and construction need to meet federal standards, which could also impact project cost.

Chapter 5 – Regional Transportation

GOAL 6: Support the improvement and expansion of other modes of regional transportation.

Strategy 1: As the hub of regional transportation, organize a City-led regional transportation coordination group to plan routes, maintenance, and funding.

	Action C: Jointly create a funding strategy including participation from private entities as well as grant applications and pursuing tribal transportation and/or STIP funding.	There have been examples of this type of collaboration in the past, such as villages obtaining tribal transportation funds to clear snow from the ice road and passing it to the City to do the plowing work.
--	--	---

Chapter 6 – Utility Infrastructure

GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gasses.

Strategy 1: Facilitate large-scale projects to introduce more alternative energy sources to the local network.

	Action E: Monitor and support AVEC in applying for grant opportunities for alternative energy generation and storage that could be implemented in Bethel.	AVEC would be responsible for taking the lead on major projects impacting AVEC assets in the overall City electric system, but the City can assist by keeping tabs on potential funding opportunities and supporting AVEC when applying for funding. There may also be opportunities for collaboration with AVEC when pursuing funding for alternative energy projects that would be City-owned.
	Action F: Pursue partnerships with tribal entities to work together on grant applications and gain access to more potential funding.	The City's "energy point person" and representatives from local tribal entities could look for opportunities with the ANTHC Rural Energy Initiative and the ANTHC Rural Energy Technical Assistance Program.

GOAL 2: Regularly seek ways to lower water and sewer bills for customers.

Strategy 1: While the hauled portion of the Bethel water and sewer system continues, evaluated hauled operations to look for efficiencies that may help reduce rates.

Action A: Seek grants to evaluate adding additional lift station points or watering points.

Strategy 2: Expand the piped water and sewer system, as it operates profitably and offsets losses from the hauled network.

Action A: Investigate and pursue funding options including grants, low interest loans, and bonds to expand the City's piped water and sewer network to reduce the amount of hauling.

Strategy 3: Evaluate and reduce costs associated with production and distribution of water and collection and treatment of wastewater.

Action A: Seek grants to conduct energy audits and make energy efficiency improvements at water treatment plants and amongst the haul fleet.

GOAL 3: Transition Bethel’s water and sewer utilities to fully piped systems serving all residences and businesses.

Strategy 1: Complete each phase of projects outlined in the PER.

Action A: Obtain grant and loan funding for new water and sewer projects, including from the USDA.

It may be advantageous to collaborate with other local organizations to obtain grants, such as ONC, which is able to access additional tribal funding sources. It is also important to recognize that the long-term cost savings from operating piped systems in place of hauled systems represents funds that can be used to repay loans. The Grant Manager may need to educate potential lenders or grantors on the very high cost for infrastructure, as project costs increasingly rise yet they are still needed.

- City: USDA Rural Development (grant and loan), Community Development Block Grant, EPA Alaska Native Villages and Rural Communities Water, State Revolving Fund
- ONC: Indian Community Development Block Grant, Indian Housing Block Grant additional competitive funds, EPA Tribal Set-Aside Drinking Water and Infrastructure

Strategy 3: During the phases of the PER and beyond, manage the piped system to be as efficient and accessible as possible, as well as equitable in cost.

Action D: Provide City assistance with finding potential grant or loan funding for new commercial connections or subdivision developments not currently included in the 2022 PER phases.

GOAL 5: Manage the landfill to be useable as long as possible and with minimal environmental impacts, through more efficient and environmentally responsible practices.

Strategy 3: Pursue ways to redirect more types of waste from the landfill, both to prolong the landfill’s life and to minimize impacts to the environment and public health.

Action F: Research funding or partnership opportunities for barging out other kinds of waste, particularly harmful waste.

Work with the Landfill Manager on this action item.

	Action G: Pursue other funding opportunities geared towards environmentally friendly landfill and recycling programs for the City.	
--	---	--

Chapter 7 – Public Facilities & Services

GOAL 3: Optimize the management of City revenue and spending.

Strategy 5: Maximize grant funding that can be obtained.

	Action A: Expand the grant writing and re-search capacity of the City beyond the Grants Manager, including assistance from other departments and/or hiring consultants to prepare some grant applications.	
	Action B: Explore partnerships with other organizations to fund some projects.	Some funding organizations may encourage or require cooperative arrangements for grants. One example of a collaboratively funded and implemented project in the past was the City's partnership with the University of Alaska Fairbanks Cooperative Extension to provide a community garden for all Bethel residents to use. Such projects could also include considerations for ongoing revenue to support the project, such as rental fees for garden plots.

GOAL 5: Manage updates to City facilities and equipment in an efficient, cost-effective, and forward-thinking manner.

Strategy 2: Continually seek funding for additions, improvements, and repairs to City facilities and equipment.

	Action A: Remain up-to-date on funding opportunities, including special infrastructure funding through federal or state programs.	This should include improvements and repairs to existing City facilities, but the City should also remain informed about funding opportunities specific to adding new types of facilities and equipment. For example, there may be funding available specifically for updating the technology used in City offices.
	Action B: Apply to grants to fund infrastructure, such as BUILD grants.	For example, a new Public Works building is needed. Currently, the cost of construction is estimated at approximately \$36.4 million and could be a candidate for BUILD grant funding.

	Action C: Consider allocating other funding sources for some infrastructure improvements, including through collaboration and potentially facilities-sharing with organizations such as ONC.	<i>See Goal 3, Strategy 6, Action B above.</i>
--	---	--

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 5: Pursue special funding and collaboration opportunities for enhancing Bethel parks.

	Action A: Pursue Land and Water Conservation Fund or similar outdoors-related grant money to help with parks projects.	As part of a past Land and Water Conservation Fund grant award, the City was required to designate Pinky's Park for outdoor recreation in perpetuity. For other parks projects in the future, this or similar funding may be available.
	Action B: Add more community gardening opportunities to parks, potentially in partnership with Alaska Native organizations or other sponsor entities.	There is currently a community garden that was developed as part of a partnership between the City and the University of Alaska Fairbanks Cooperative Extension; there could be opportunities to expand this type of facility through partnerships. Chapter 8 – People & Economy also discusses opportunities for incorporating Native place names and public art.

Chapter 8 – People & Economy

GOAL 4: Prepare the City for a broad range of potential climate change impacts.

Strategy 1: Using the help of state and/or federal climate resilience resources, create City plans for climate adaptation and community resilience.

	Action C: Monitor other funding or support resources that may become available.	The Alaska Department of Community & Regional Affairs (DCRA) may be a good resource for additional guidance, support, or resources. The Center for Arctic Policy Studies (CAPS) at the University of Alaska Fairbanks may also be able to provide guidance on funding for climate resilience planning and mitigation efforts.
--	--	---

GOAL 5: Support locally-specific cultural activities and attractions in Bethel.

Strategy 3: Celebrate natural and historic resources and sites in Bethel.

Action F: Pursue grants for City-led incorporation of signage, public art, or other elements that highlight local culture, history, and natural environment.

APPENDIX 6: HUMAN RESOURCES ACTION ITEMS

Appendix 6 – Human Resources Action Items HR

Chapter 7 – Public Facilities & Services

GOAL 1: Enhance the reliability and efficiency of the City workforce.

Strategy 1: Optimize and monitor the staffing and operations of each City department to ensure efficiency and support staff retention and hiring efforts.

	Action A: Ensure every department has clearly outlined responsibilities with documented and regularly updated policies, procedures, and job descriptions to facilitate staff training and operations evaluations.	Work with the City Manager on this action item. Maintaining consistent procedures and ways of operating has been a challenge for some departments due to lack of staff continuity. Establishing and following consistent procedures could assist current and future staff in running the department properly and efficiently.
	Action C: As evaluations of operations are completed, consider altering the structure of departments (for example, implementing new technology to increase efficiency, or establishing mentorship and chains of command that facilitate staff advancement into leadership roles).	Work with the City Manager on this action item.
	Action D: Establish transition plans so that department operations are minimally impacted by the departure of key staff.	Work with the City Manager on this action item.
Strategy 3: Regularly raise awareness about current and upcoming job and committee / commission openings within Bethel.		
	Action A: Informed by operations evaluations completed as part of Strategy 1, create a running list of staffing needs within the City, and order it based on priority.	For example, water and sewer truck drivers and utility maintenance workers play a critical role in the City, and hiring for these types of roles should be prioritized. This and other actions related to hiring should be completed in collaboration with representatives from relevant departments when searching for specific roles.

	Action B: Post open position advertisements to national recruitment websites, featuring the highest priority openings as identified in Action A.	
	Action D: Organize an annual City of Bethel Opportunity Fair, where representatives from each department and committee / commission can raise awareness about their activities and meet potentially interested candidates.	Private employer partners could also participate and help organize an event like this.
	Action E: Advertise current and upcoming openings as well as the opportunity fair and any other relevant events through typical channels within Bethel.	<i>Also see Chapter 7 – Public Facilities & Services, Goal 2 on communications.</i>
Strategy 4: Work with educational programs to create a pipeline of trained candidates for City jobs.		
	Action A: Work with local schools, including the high school, vocational school, and university, to create a pipeline of potential City employees.	For more discussion of working with schools in Bethel, see <i>Chapter 8 – People and Economy</i> .
	Action B: Identify other vocational schools in Alaska and advertise job openings through their channels.	
	Action C: Request that the University of Alaska help share job openings with their network to broaden the reach across Alaska.	

Strategy 5: Broaden recruitment channels around the region and Alaska.

	Action A: Invite people from villages in the region to attend hiring events and apply for jobs at the City.	
	Action B: Work with tribal organizations and native corporations to raise awareness about jobs at the City with a statewide audience.	
	Action C: Consider working with recruiters to help find candidates.	

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 1: Expand the City's capacity to manage and maintain parks.

	Action B: Continue efforts to hire and train Public Works maintenance staff, including for seasonal positions and/or potential for volunteer involvement.	<i>See Chapter 7, Goal 1 for more actions related to City recruitment.</i>
--	--	--

Chapter 8 – People & Economy

GOAL 1: Promote broad access to education, training, and employment opportunities in Bethel.

Strategy 1: Identify community priorities for education and career training.

	Action A: City of Bethel staffing is an important priority; see Chapter 7 – Public Facilities & Services, Goal 1: “ <i>Enhance the reliability and efficiency of the City workforce.</i> ”	This section discusses strategies for the City to hire new City staff, which are applicable to providing opportunities in Bethel and can also be applied to opportunity development beyond City roles.
--	---	--

Strategy 2: Foster a city-wide culture of emphasizing local hiring and training for specific local opportunities.

	Action A: Lead the community in the creation of a local “job board” that helps businesses find suitable hires.	<i>Also see strategies in Chapter 7 – Public Facilities & Services.</i>
	Action B: Create a focused internship and apprenticeship program that offers introductory training and support leading to employment with City of Bethel or through partnerships with community organizations or businesses.	This program could have an education component and be developed in partnership with LKSD, UAF, and/or the vocational school. This could allow job training as part of education programs that helps students find employment opportunities in their field earlier, particularly in those sectors which are most needed by the community and will be of increasing importance in the future.

This page has been intentionally left blank.

APPENDIX 7: INFORMATION TECHNOLOGY ACTION ITEMS

Appendix 7 – Information Technology Action Items

Chapter 4 – Local Transportation

GOAL 2: Plan for an organized, proactive approach to surface transportation facility maintenance.

Strategy 3: Establish improved systems to track maintenance operations.

	Action B: Investigate and consider implementing a software program to track maintenance operations.	There may be options that directly interface with something like the Report a Problem form, allowing both the public and City staff to input records of issues. As Public Works keeps record of action taken and other information in this type of system, a useful record would be created to help inform future planning.
--	--	---

Chapter 7 – Public Facilities & Services

GOAL 1: Enhance the reliability and efficiency of the City workforce.

Strategy 2: Implement new technology in order to save money spent on some City functions and decrease each City department's workload.

	Action A: Transition the City to an online customer portal system with abilities to manage utility service preferences and pay bills. Over time, this self-serve system could expand to include the ability to manage business licensing and sales tax payments, submit site plans, and other potential applications.	Customers can currently pay utility bills online, but this type of self-serve system could be expanded to allow starting, stopping, increasing, or decreasing service. To assist the Finance Department, businesses could be allowed to manage licensing, sales tax payments, and other processes via an online system. This could also benefit the Planning Department by allowing applicants to upload photos and other materials, reducing staff time currently taken to visit sites to take photos.
	Action B: Transition City departments to an electronic timekeeping system.	The City currently has access to electronic timekeeping through its accounting system, but it hasn't been fully set up; instead, employees submit paper timesheets which travel through a series of reviews before being sent to a third part for completion. Electronic timekeeping would likely reduce payroll processing errors and make the process more efficient.

	Action C: Explore more automated technology systems that could be used to track City department budgets and produce reports, in order to help departments manage their own budgets and lighten the load on the Finance Department.	Under the current budget system, the City submits fund balances and data comparing budgets to actual money spent to City Council. However, the Finance Department has capacity challenges, leading the information to typically be running one to two months behind. Using technology to help automate some portions of the system could help departments better track their own expenditures, in turn lightening the load on the Finance Department and helping everyone remain up-to-speed.
Strategy 3: Regularly raise awareness about current and upcoming job and committee / commission openings within Bethel.		
	Action C: Set up an automated email alert service that sends updates to potentially interested parties when there are openings at the City, featuring the highest priority openings as identified in Action A.	This service could allow candidates to select types of jobs or departments for which they'd like to be alerted. Because this service is via email, people anywhere could add themselves to the list, not just in Bethel.

GOAL 3: Optimize the management of City revenue and spending.

Strategy 1: Implement new technology in order to save money spent on some City functions and decrease each City department's workload.

	Action A: Transition the City to an online customer portal system with abilities to manage utility service preferences and pay bills. Over time, this self-serve system could expand to include the ability to manage business licensing and sales tax payments, submit site plans, and other potential applications.	Customers can currently pay utility bills online, but this type of self-serve system could be expanded to allow starting, stopping, increasing, or decreasing service. To assist the Finance Department, businesses could be allowed to manage licensing, sales tax payments, and other processes via an online system. This could also benefit the Planning Department by allowing applicants to upload photos and other materials, reducing staff time currently taken to visit sites to take photos.
	Action B: Transition City departments to an electronic timekeeping system.	The City currently has access to electronic timekeeping through its accounting system, but it hasn't been fully set up; instead, employees submit paper timesheets which travel through a series of reviews before being sent to a third party for completion. Electronic timekeeping would likely reduce payroll processing errors and make the process more efficient.
	Action C: Explore more automated technology systems that could be used to track City department budgets and produce reports, in order to help departments manage their own budgets and lighten the load on the Finance Department.	Under the current budget system, the City submits fund balances and data comparing budgets to actual money spent to City Council. However, the Finance Department has capacity challenges, leading the information to typically be running one to two months behind. Using technology to help automate some portions of the system could help departments better track their own expenditures, in turn lightening the load on the Finance Department and helping everyone remain up-to-speed.

APPENDIX 8: LANDFILL MANAGER ACTION ITEMS

Appendix 8 – Landfill Manager Action Items

Chapter 5 – Regional Transportation

GOAL 2: Support DOT&PF in airport operations and planning.

Strategy 1: As requested by the FAA and/or DOT&PF, take actions that support smooth and secure airport operations.

Action B: If a new landfill or sewage lagoon is constructed, place it as far from the airport as practicable to avoid attracting wildlife that could be harmed, damage airport equipment, and disrupt operations.

The FAA recommends new landfills be six miles from airports, but many Alaskan communities receive exemptions due to their small size. The existing landfill is under six miles away, but it is located away from the airport.

Chapter 6 – Utility Infrastructure

GOAL 5: Manage the landfill to be useable as long as possible and with minimal environmental impacts, through more efficient and environmentally responsible practices.

Strategy 1: Continuously monitor the capacity of the landfill to assess if / when a new landfill might be needed in the future.

Action A: Conduct a new landfill closure study approximately every five years to measure and evaluate progress and determine what strategic changes might be necessary.

The main priority will be to use a multitude of strategies to preserve the life of the existing landfill as long as possible, as constructing a new one would be very expensive and difficult. The strategy to manage the landfill may need to evolve over time.

Strategy 2: Utilize best solid waste management practices and compliance with ADEC standards to reduce the volume of waste in the landfill.

	Action A: Regularly review guidance on the ADEC Solid Waste website and incorporate recommendations based off of the annual state inspection and new technology as it becomes available.	The current inspection contains some recommendations, including: ▪ Maintain adequate cover ▪ Establish secondary containments (e.g., liner) for staged/impounded vehicles
	Action B: Improve separation of waste by establishing cells (such as for lumber or scrap metal and vehicles).	Currently, some waste is deposited in designated piles, such as for construction material, vehicles, tires, or trees and branches, but this practice could be expanded and improved according to ADEC guidance.
	Action C: Train personnel on the use of the shredder and other techniques to reduce volume of waste.	Compact shredded waste within the landfill, maintaining stable slopes. The City could pursue dynamic compaction using a crane as another technique. There may be funding available for this through grants.
	Action D: Provide continual education and staff training for properly disposing of hazardous materials, such as freon removal with Total Reclaim, the Rural Alaska Landfill Operator (RALO) course, and/or HAZWOPER.	This is critical to minimizing environmental impacts and protecting public health and safety in Bethel, so the training should be regularly provided to ensure staff remain up to date on the latest best practices.
	Action E: In the longer term, consider building an additional storage garage to store and protect heavy equipment.	This was recommended by the State as part of their inspection. Equipment such as the shredder should be protected to ensure the longest lifespan to help extend the life of the landfill.

Strategy 3: Pursue ways to redirect more types of waste from the landfill, both to prolong the landfill's life and to minimize impacts to the environment and public health.

	Action A: Provide regularly updated information to the public on existing City waste separation programs and what types of waste can and cannot be disposed in dumpsters.	Alaska State Statutes dictate what can and cannot go in the landfill; in addition to the landfill management enforcing this, the public should be educated so as to avoid these items arriving at the landfill in the first place. Outreach programs could include educational programs for children in local schools and partnerships with rural development programs out of University of Alaska Fairbanks.
	Action B: Research types of waste that can be reused or recycled locally as well as the market for recyclables in Anchorage and/or Seattle; stage these items for public salvaging or separate for local recycling and/or shipping out in collaboration with ONC's recycling program or as part of a renewed City recycling program.	Other relevant recyclables may include glass, aluminum, and #1 PET plastic. The City worked with a Seattle recycling center in the past that wanted metals to be pre-shredded; now that the City has a shredder, this may be an option. In addition to junk vehicle parts salvage, the City currently separates wood out for the public to be able to come take. There is also a program that recycles wood into pallets that can be burned in pallet stoves for heating. While equipment is currently expensive, this could be something to keep on the City's radar in the future. As more technology is developed, there may be other reuse opportunities that emerge and could help the City divert more waste from the landfill.
	Action C: Research potential partners for a new City-wide e-waste collection and recycling program to build on periodic local collections.	ONC used to run an e-waste collection and recycling program, but they are not currently due to lack of capacity to manage it. There may be other organizations that could partner with the City to assist with starting a new program.
	Action D: Research how to implement a compost program for food waste and potentially cardboard and paper products; this could potentially be incorporated into Parks and Recreation and Community Garden programming.	Work with Parks and Recreation on this action item.

	Action E: As local recycling becomes more feasible, consider starting by working with organizations such as schools, hospitals, and businesses that may have a steady supply of uniform recyclable materials (like paper, certain types of packaging, etc.).	
	Action F: Research funding or partnership opportunities for barging out other kinds of waste, particularly harmful waste.	Backhaul Alaska is one example of an organization that coordinates hauling harmful waste.
	Action G: Research and initiate community discussions about ways to address negative impacts of junk vehicles located on private properties and in the landfill.	

This page has been intentionally left blank.

APPENDIX 9: PARKS AND RECREATION ACTION ITEMS

Appendix 9 – Parks and Recreation Action Items

Chapter 4 – Local Transportation

GOAL 5: Improve and expand the trail system.

Strategy 1: Address trail and boardwalk maintenance needs more efficiently.

	Action C: Identify and potentially add pedestrian amenities to more locations, including lighting and benches.	Lighting has been installed in some areas, but this should continue along more boardwalks or major trails. There is potential for benches to be funded by individual sponsorships (such as in exchange for a dedication plaque on the bench). These could be located along trails and/or at parks and other key public locations.
	Action D: Add amenities for bicyclists at parks and recreation facilities, such as bike racks and bike “fix-it” stations.	

Strategy 2: Address trail and boardwalk maintenance needs more efficiently.

	Action B: Initiate an Adopt-a-Trail and/or boardwalk and trail maintenance volunteer group to assist when City maintenance staff does not have capacity to respond to trail / boardwalk maintenance issues.	To assist City maintenance staff, the community could help with trail and boardwalk maintenance. This could be through an Adopt-a-Trail program with opportunities for sponsorship signage. This could also be a community service opportunity for younger people, and it would encourage more people to feel a sense of ownership over the public boardwalks, potentially reducing vandalism.
--	--	--

Strategy 3: Clarify the existing City-managed trail system.

	Action A: Create an updated and easy-to-read map of existing formal City trails.	The trails map created for the past Comprehensive Plan may include trails that are not officially / legally under City jurisdiction – they may cross private land without easements, and maintenance responsibility may be unclear. The trails map created for the 2020 LRTP includes formal and informal trails, including snowmachine trails. A trails map is needed to support non-driver transportation and recreation in Bethel, but to avoid potential liability issues, the City should only map formally City-managed trails. This can be the starting point for taking steps to formalize other popular trails in Bethel and clarifying who is responsible for maintenance. This plan includes a map that is a starting point, and the Parks & Recreation Committee and Public Safety & Transportation Commission should be involved as the map develops over time.
	Action B: Clarify which users and modes of transportation are allowed on each trail.	Many existing trails in Bethel are currently shared amongst pedestrians, bicyclists, and small motorized users such as ATVs, motorcycles, and snowmachines. On City-managed trails, the City should clarify which users may be present to help all users stay aware of who to look out for on the trail. Boardwalks may not be built to accommodate motorized users, so they should be clearly identified for pedestrians and bicyclists only. Information on which users are permitted on different facilities should be provided to the public in various ways – see <i>Actions C and D below</i>.
	Action C: On the trails map, include a layer that shows important community “centers” such as the hospital and other health centers, schools, parks, the Fitness Center, the library, and others.	
	Action D: Make the trails map and information (including type of facility, users allowed, accessibility information, and distances) easily available on the City website.	

	Action E: Post signs with the trails map and information at key points within the trail system, such as at parks and recreation facilities.	
Strategy 4: Expand the trail system by formalizing popular trails and adding new trails.		
	Action A: For internal planning purposes, mark popular but informal trails on the map in dotted lines.	This information would be useful for community discussions about formalizing and expanding the trail system, but it should not be posted on the City website or around town in a way that might cause confusion over which trails are official and City-maintained.
	Action B: Based on community input and gaps in pedestrian access to important community “centers,” add other potential new trail / boardwalk routes to the map in dotted lines.	These new routes could fill gaps in the system and could be informed by potential locations for future roads, such as through the Donut Hole. Some stakeholders have also discussed interest in more trails in the southwest area of town, near the gravel extraction pit. Some areas near this location have been designated Public Open Space on the Future Land Use Plan Map; this designation could evolve to include more areas in the southwest part of town if interest in additional trails continues.

Chapter 6 – Utility Infrastructure

GOAL 5: Manage the landfill to be useable as long as possible and with minimal environmental impacts, through more efficient and environmentally responsible practices.

Strategy 3: Pursue ways to redirect more types of waste from the landfill, both to prolong the landfill's life and to minimize impacts to the environment and public health.

	Action D: Research how to implement a compost program for food waste and potentially cardboard and paper products; this could potentially be incorporated into Parks and Recreation and Community Garden programming.	Work with the Landfill Manager on this action item.
--	--	---

Chapter 7 – Public Facilities & Services

GOAL 7: Target specific public safety concerns within Bethel.

Strategy 1: Improve maritime safety through educational programs.

	Action A: Through the Fitness Center, continue to offer swim classes for all ages, including pursuing a partnership with the school district to incorporate swim lessons into their required physical education programming during elementary school.	In the past, there have been some efforts to provide swim lessons, and these should continue. Given its location on the Kuskokwim River, with many creeks and other water bodies in the vicinity, Bethel and regional residents should be prepared with swimming and boating skills to prevent drowning. Some communities require swim lessons as a school graduation requirement. Another model could be offering and encouraging classes for all ages for a fee, with scholarships available.
--	--	---

Strategy 3: Reduce drug abuse in Bethel.

Action A: Through the renewed Parks and Recreation department (see *Section 7.5*), provide programming for all ages that focuses on physical and emotional wellbeing through recreation, including the potential for mentorship and volunteering opportunities.

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 1: Expand the City's capacity to manage and maintain parks.

Action C: Monitor general and ongoing maintenance issues related to parks (such as vandalism) and discuss ideas for solutions with the Community Parks & Recreation Committee.

As mentioned in the action item, vandalism is one example of a general issue related to parks that is difficult to prevent. One of the benefits of having multiple types of people / groups focusing on parks in the community (including the person the City Manager may designate to lead this effort per Action A in this strategy) is the ability to brainstorm solutions together; as this and other potential issues arise in the future, they should be raised for discussion.

Strategy 2: Expand and improve key central parks in Bethel with the goal of making them community landmarks and gathering spaces.

Action A: Create a new park on the former Kilbuck School site, as the neighborhood park for the Avenues / Alligator Acres area.

The site is currently being used for storage since the school burned down. There are several easements through the property and changes to the site that would be needed.

Ideas for the park include a track or walking path, playground equipment, basketball courts, volleyball courts, and a gazebo. The park design could be site specific, perhaps with playground equipment referencing its history as a school.

The site is large; there is also potential for housing to be developed on a portion of the property.

	Action B: Identify waterfront park investment opportunities to create an iconic and central civic space that represents Bethel.	The site at the intersection of 1st Avenue and Bluff Drive already has benches / picnic tables and marks the start of the City-maintained waterfront trail. The trail could be marked with public art and gateway features, and the park could be improved. It is very near the cultural center and library, so this could be a natural gathering space for outdoor events with an amphitheater or picnic shelter. The City has also identified the underutilized site owned by the Moravian Church behind Lomack Beach; this could also be developed as a waterfront park, and the site is large enough that there could be space to add parking.
	Action C: At Pinky’s Park, add amenities that are focused on community gathering and comfort for all ages.	This could include a picnic shelter or gazebo with benches and tables, more trails, and placemaking features like signage and public art.
Strategy 3: Establish a network of Bethel parks to serve all neighborhoods.		
	Action C: Pursue the development of new City parks in underserved areas.	Beyond looking at the map of parks created as part of Actions A and B in this strategy, this will require community coordination, including: ▪ coordination with neighborhood residents/community to identify a site ▪ navigating potential ownership changes ▪ brainstorming funding mechanisms, such as sponsorships from private entities or grants ▪ determining park maintenance cost and how maintenance will be managed and funded ▪ addressing potential liability concerns associated with the new park space, depending on whether the City is managing maintenance

Strategy 4: Improve park facilities for sports and other recreational activities.

	Action A: Continue to upgrade and add facilities to Pinky’s Park, including new playground equipment and potentially new gravel trails to replace run-down boardwalks.	As noted in Strategy 1, Pinky’s Park is a main park for the community including the Big Dipper multipurpose field used for soccer, frisbee, and football and other amenities. Recently, a volleyball court was added to its collection of sport facilities. The community has expressed a desire for further improvements to the park; the City has obtained grant funding for new playground equipment to be installed in summer 2023 and is currently in the process of applying for funds to improve Pinky’s Park trails. Other Pinky’s Park improvements the City could potentially pursue include: ▪ Artificial turf for fields to reduce maintenance needs – grass doesn’t survive long and becomes very uneven. Artificial turf would likely need to be engineered, but is becoming less expensive. ▪ New ice rink
	Action B: Consider creating additional facilities such as picnic shelters, a recreational campground, a dog park, non-motorized winter recreation such as cross-country skiing or mushing, additional skate park facilities, or new sports fields or courts.	Some additional facilities could be established with the help of partnerships, such as with non-profit organizations willing to sponsor their maintenance.

GOAL 9: Enhance recreational facilities and programs in Bethel.

Strategy 1: Expand the facilities and operations of the Fitness Center to accommodate more activities and all ages.

	Action A: Expand the fitness center with potential improvements such as a gym and/or fitness track.	Currently, expansion of the fitness center is estimated to cost approximately \$20 million and could be eligible for BUILD grant funding. A plan has been drafted, alternatives are being considered, and fundraising is underway.
--	---	---

	Action B: As the City is able, transition the City towards managing the Fitness Center (which is currently run by a contractor).	The Community Parks and Recreation Committee is advocating for the City to further develop its recreation program. The current contract for management of the Fitness Center includes a provision for recreation services, but the City is also considering a separate contract for these services. If the City reassumes management of the Fitness Center, likely as part of the development of a Parks and Recreation management role or department, these responsibilities would shift accordingly. Some Committee members noted that City management of the Fitness Center was part of the original business plan for the facility.
	Action C: Develop programming within the fitness center oriented towards youth / younger people, such as classes or recreational sports leagues.	Some younger people in the community may feel intimidated by the adults who primarily use the fitness center, so a greater effort should be made to include them and make them feel comfortable through classes and programs that are offered or specific hours for the youth to use the gym. This can help youth create lifelong healthier lifestyles.
	Action D: Develop programming within the fitness center and/or pool that is oriented towards seniors.	Certain times or specially designed classes could be set aside for senior residents to ensure safety. There could be special classes oriented towards older residents.
	Action E: Based out of the Fitness Center but potentially including other facilities in town, consider establishing adult recreational sports leagues.	
Strategy 2: Support expansions to childcare, teen activities, and senior activities.		
	Action A: Support upgrades and expansions to the Bethel 4-H Youth Center facilities and programming, including food programs, classes, and recreation for teens and afterschool youth.	UAF leases the building from the City, so this is their project. They did receive grant funding to help. This is a good example of a community partnership for the City to work with a separate organization to fill a community need. The center offers some “life skills” programming and could potentially work more with the City by providing volunteer community service and internship opportunities. At the center or elsewhere (since it is sometimes very heavily used), the City could also explore partnering with another organization to provide childcare programs for City and partner organization’s children.

	Action B: Support recreational programming dedicated to seniors, such as upgrades to the existing Senior Center Park or other programs.	The Senior Center Park is run by the Alaska State Housing Authority. As the older population in Bethel continues to grow, there may be a need for additional facilities and/or programming.
Strategy 3: Explore collaborations for recreational activities at other facilities in Bethel.		
	Action A: Coordinate with the school district to identify opportunities to use school facilities for programming outside of school hours.	This has been limited in the past due to liability concerns, scheduling constraints, and the need for supervision. However, there may be staff that works for the school district that could help with childcare programming outside of school hours as well; this should be explored.
	Action B: Support expansions to recreational facilities and resources, such as the Cultural Center and the Kuskokwim Consortium Library.	Libraries in many communities organize a variety of programming for the benefit of the community, not necessarily related to reading. This could include creative or “life skills” classes, or the establishment of a “materials library” where Bethel residents can check out household tools or electronic equipment.

Chapter 8 – People & Economy

GOAL 5: Support locally-specific cultural activities and attractions in Bethel.

Strategy 1: Work with community organizations to continue to highlight Yup'ik culture in Bethel.

	Action B: Seek opportunities to incorporate Alaska Native place names and art into public spaces in Bethel, such as parks and trails.	
	Action C: When possible, partner with Bethel Council on the Arts and Alaska Native organizations to sponsor cultural facilities and events in Bethel, such as arts and crafts markets, cultural exhibits, or the Camai dance festival.	These events can be a part of Parks and Recreation activities that add to the quality of life in Bethel; they also attract visitors to the community (<i>see the Visitor Experience section in Chapter 8 – People & Economy</i>).

Strategy 2: Work with community organizations to continue to highlight Yup'ik culture in Bethel.

	Action A: Pursue the expansion of the fitness center to make space for more sports activities, such as basketball and other sports.	<i>Also see Chapter 7 – Public Facilities & Services – Parks and Recreation section.</i>
	Action B: Pursue the expansion of organized winter sports facilities and activities, such as mushing and cross-country skiing.	<i>Also see Chapter 7 – Public Facilities & Services – Parks and Recreation section.</i>
	Action C: Work with community organizations to organize “food fairs” highlighting diverse cuisines of people and restaurants in Bethel.	This action item could also be pursued in collaboration with the reinvigorated Chamber of Commerce, as discussed in Goal 5 in this chapter.

Strategy 3: Celebrate natural and historic resources and sites in Bethel.

	Action A: Work with other community organizations and public input to complete an “asset mapping” exercise to identify cultural, historical, and natural attractions in Bethel.	
	Action B: Emphasize preservation of natural landscapes and native plants in the management and design of open spaces and parks.	<i>Also see Chapter 7 – Public Facilities & Services – Parks and Recreation section.</i>
	Action C: Create a guide to natural features, spaces and parks, and wildlife viewing opportunities such as a network of birding trails, for the education and appreciation of residents and visitors.	<i>Also see Chapter 7 – Public Facilities & Services – Parks and Recreation section and the Chapter 8 - People & Economy - Visitor Experience section.</i>

	Action D: Identify and map buildings or historic sites that are of historic significance, and consider development of a historical walking route that focuses on Bethel's history.	The Moravian Bookstore and other older Moravian buildings may be eligible for nomination to the National Register of Historic Places. The City could work with community members to identify other places that are significant to the history of Bethel.
	Action E: Develop and implement an informational signage system for parks and significant places of interest.	

GOAL 7: Support and expand tourism and visitation to Bethel.

Strategy 2: Improve attractions for visitors.

	Action A: Emphasize locally specific natural and cultural attractions.	This could include plant and animal observation areas and references to local and regional guiding services. <i>Also see Goal 4 above.</i>
	Action B: Work with the Chamber of Commerce and other organizations to develop a calendar of community events.	This can include cultural events, entertainment or educational events, and other types of events that would not appear on the City's calendar or be consolidated in any other location. This could be coordinated with the administrators of the It's going on in Bethel! Facebook group where people currently tend to advertise community events.
	Action C: Develop and implement a beautification plan for the downtown area (roughly between the Cultural Center and Brown's Slough) and the waterfront.	Work with Chamber of Commerce to develop plans and find volunteer organizations that can help fund and participate in installing signage, planting and maintaining flowers, organizing public art, and trash pick-up. The beautification plan could identify specific projects that should occur seasonally, or phases for completing larger projects over time.

APPENDIX 10: PLANNING DEPARTMENT ACTION ITEMS

Appendix 10 – Planning Department Action Items PL

Chapter 3 – Housing & Land Use

GOAL 1: Address potential barriers to housing development.

Strategy 1: Streamline the land use approval process.

	Action A: Every five years, audit the Planning Department website and application forms used for land use processes and revise for clarity and ease of use.	Bethel Municipal Code (BMC) Titles 15 through 18 govern land use and development. BMC is available online and updated regularly as changes are made to the code. Planning application forms are also available online on the City website. These materials are intended to make it accessible for anyone working on projects to access the information they need to get approval and complete their projects, but processes can be overwhelming for those not frequently using them; clarifying information available helps reduce time the Planning Department must help walk applicants through the process. It may be helpful to create flowcharts explaining the most common land use approval processes, including references to relevant code sections. The department may also consider creating a schedule of application submission cut-off dates for each Planning Commission hearing.
	Action B: If an element of the code or process repeatedly causes unnecessary difficulty or undue delay for housing developers, the City Planner should consider whether it would be of public benefit to make a change to the code and bring the suggested change forward to the Planning Commission and City Council.	Code and development ideas are always changing, so there needs to be room for flexibility and the ability to adapt as needed. One process in the code that can be used to address some cases, such as dimensional and parking requirements, is a Variance. Variances require a public hearing and approval before the planning commission. However, if an element of the code or process repeatedly causes unnecessary difficulty or undue delay for housing developers, the City Planner may consider whether it would be of public benefit to consider a code change that would be brought forward to the Planning Commission and City Council.

Strategy 2: Ensure that subdivision, development, and design standards are enforced.

	Action A: Require compliance with all subdivision standards for approval, including the standard subdivision agreement process.	In the past, standards and enforcement of ROW widths and roadway construction may have been inconsistent; many roads in Bethel are narrow or have ROW encroachments. The subdivision agreement process was in part created to avoid this; insufficient ROW can cause safety, liability, or funding issues. One example of issues arising was the Haroldson Subdivision to the northeast of town, where the roads constructed without City oversight or review, which made it difficult for the city to officially accept and maintain the roadways. Later, the City had to work with the subdivision developer to inspect and bring roads up to a standard that could be accepted by the City for ownership and maintenance responsibilities. If subdivision standards are not enforced prior to or during development, this can cause complex issues with various private property owners within the subdivision.
	Action B: Consider changes to the subdivision approval and agreement process to improve clarity and efficiency.	While more housing is needed in Bethel and some might consider standards to be a barrier to development, they are necessary to ensuring that the City can provide for adequate quality of life in Bethel. Still, ways to improve the clarity and efficiency of the process may arise, so the Planning Department should be open to changes in the future.
	Action C: Develop a position description to potentially hire a code enforcement officer.	Currently, the planning director or whomever they appoint is designated as the “land use administrator,” who is tasked with enforcing code. There has been discussion within the City as to whether or not there is sufficient work to justify hiring a full-time code enforcement officer, while some people think a code enforcement officer would be very busy. Funding the role may also be a challenge. Hiring a code enforcement officer may be the most effective way to combat compliance issues. There may also be opportunities for them to undertake other duties, such as documenting maintenance issues across the City, including drainage concerns, vegetation overgrowth, or vandalism. They could also assist with handling derelict vehicles and abandoned buildings.
	Action D: Examine code sections related to non-conformance and coming closer to compliance to determine if changes may be needed.	

Strategy 3: Encourage development by collaboratively working with developers to install public infrastructure, including piped water and sewer systems and roads.

	Action A: As part of the subdivision agreement process, consider designing a standardized “impact fee” mechanism to have developers participate in funding when their development will impact the overall system (water and sewer or other infrastructure such as roads).	This could include funding for engineering, materials, and/or construction. A transparent, standardized process will be important in making expectations clear to potential developers.
	Action B: Create a guide for infrastructure development grants or other funding assistance programs, in order to assist developers with finding information needed to pursue supplemental development financing.	The Grant Manager can prepare and maintain this list, to be shared with the Planning Department for use in their discussions with potential developers. As part of the subdivision agreement process, the City Planner can ensure that this guide is readily available to developers. It should also be posted to the City website to help encourage development by improving awareness of resources available. For road development, the City can help developers apply for transportation funding via the Alaska Transportation Funding Opportunity Hub (<i>see Chapter 4 – Local Transportation, Goal 6 for more discussion</i>). For water and sewer, there are other grants that may be able to help with funding, such as the grants the City will use to fund projects outlined in Chapter 6 – Utility Infrastructure. For subdivisions developed by tribal organizations, additional funding sources may be available.

GOAL 2: Facilitate more affordable housing development and access to affordable housing.

Strategy 1: Use zoning to encourage multifamily and more dense housing development.

	Action A: Develop a working group to assist the City Planner to study and create code changes and zoning map changes for a new Multifamily Residential zoning district that can be brought forward to the Planning Commission and City Council for approval.	While multifamily development is currently possible in several zones, there may be code requirements that hinder its feasibility or discourage it. Creating a new Multifamily Residential zoning district would require an amendment to zoning code. A working group could conduct analysis to determine exact requirements and standards associated with this district. Units allowed per acre should be higher than other districts, which currently only allow four maximum, and lot sizes should be viable to fit triplexes or larger. Ideally a CUP would not be required under some threshold of units (instead, only a site plan permit). The Future Land Use Plan Map in this plan should be used to guide where this new zoning district would be appropriate.
	Action B: Encourage the implementation of the new Multifamily Residential zone and existing Downtown Commercial and Neighborhood Commercial zones through the Future Land Use Plan Map.	When people consider completing projects, the City Planner can provide information and advice about potential zoning changes.
	Action C: Consider rezoning some City-owned land to Multifamily Residential where recommended in the Future Land Use Plan Map.	
	Action D: Encourage use of the Planned Unit Development model, which allows flexibility on dimensional standards for multifamily development to allow denser residential developments with shared open spaces (such as townhomes, “tiny home” communities, or other compact residential styles).	To demonstrate the potential of PUD or other creative multifamily residential development projects, the City could release an RFP to examine multi-family or mixed-use projects as examples of the PUD model.

GOAL 3: Reserve land to accommodate community needs and desired development.

Strategy 1: Inventory City-owned properties.

Action A: Inventory all City-owned properties, including their current use or any use requirements/restrictions or other encumbrances associated with original BLM conveyance to the City.

This should be included in the City's GIS mapping efforts; see *Goal 6*. To determine and potentially change encumbrances that may exist on City properties, coordination with BLM may be required.

Strategy 2: Create and regularly maintain a list of community facility and infrastructure needs that will require land.

Action C: Research and identify if there are any City-owned sites that should be reserved for specific community facilities or infrastructure.

If appropriate, the sites should be identified on the Future Land Use Plan Map – see *Goal 5 below*. Existing City property that can serve community needs should be considered first. If adequate or appropriately located property is not available for a particular need, look into other properties that may make sense to pursue trading or acquiring (Action D).

Strategy 3: Use the Future Land Use Plan Map to designate priority areas for residential and commercial development.

See Section 3.4 - Future Land Use Plan Map.

GOAL 4: Identify areas that are good candidates for infill development and take steps to facilitate their development.

Strategy 1: Identify the best areas for infill development.

	Action A: Create a map that highlights “priority development areas” including the best / most likely areas for infill development as Bethel grows.	The map could include: ▪ The area within and around existing Bethel development, or the areas that would not require long road extensions to reach them ▪ Remove already-developed parcels – just leave parcel boundaries to show there is development there ▪ Remove areas that are not reasonably developable, such as waterways and floodplains in the Preservation zone (this should be updated as areas classified by the Corps as wetlands may change over time) ▪ Show land ownership for the remaining parcels or areas
	Action B: Regularly update the priority development area map based on new developments and environmental information, such as changing permafrost and hydrologic information.	It is important to note that the City’s environment is constantly changing due to natural changes in the river as well as climate change impacts. New developments can also alter drainage patterns over time.

Strategy 3: Decrease barriers to additional commercial development and incentivize development patterns that support more commercial activity.

	Action A: Revise zoning code to allow shopping centers in appropriate zoning districts.	
	Action B: Consider setting aside a space to host markets where small businesses can rent booths and sell goods or services.	<i>See Chapter 8 - People & Economy.</i> This may be an opportunity to co-locate businesses to help more small businesses get off the ground and share spaces, parking, and customers. It would also be inclusive of artisans who run small businesses out of their homes and don’t have a physical retail space. This type of event could be hosted in an existing space like the cultural center or school.

Strategy 4: Facilitate redevelopment of properties that are underutilized, dilapidated, or abandoned.

	Action A: Compile a list of sites that appear to be underutilized, dilapidated, or vacant / abandoned.	This list can begin by considering some sites recommended by the community as part of the Comprehensive Plan Update process: ▪ Former Kilbuck School site. The site has been vacant since the school burned down. Though the site may be more complicated than it looks due to old utilities running down the middle, it could be replatted and these elements could be addressed. It has been suggested that it become a park; the site could also include additional residential and/or commercial development. ▪ The school district has a property with old fuel tanks that may no longer be in use. If that is the case, the tanks could be removed and the site could be redeveloped. There may be grants available to help with any remediation that might be needed.
	Action B: Implement a vacant building registration ordinance.	This would be a proactive approach to give the City a way to track, assist with clean-up or demolition, and potentially acquire vacant and/or abandoned properties. This can also facilitate sale of the properties while maintenance is completed.
	Action C: Examine and revise the Public Nuisance Abatement code (BMC 9.36) to improve its effectiveness and the efficiency of enforcement.	Currently, abatement is a very time-intensive process that makes it difficult for the City to undertake. Legal guidance would be needed to revise the code, and a potential Code Enforcement Officer could assist with abatement efforts.

GOAL 5: Using the Future Land Use Plan Map and its land use designations, encourage future development to have an organization of uses that is compatible.

Strategy 1: Implement and raise awareness about the Future Land Use Plan Map and how it is used.

	Action A: Add the Future Land Use Plan Map to the City's GIS maps.	<i>See Mapping section and Goal 6 below.</i>
--	---	--

	Action B: Post the explanation of Zoning versus Future Land Use Plan Map from this plan, as well as the table with Future Land Use designations, definitions, and implementing districts, to the Planning Department website.	
	Action C: Use the Future Land Use Plan Map as the basis for initiating discussions with landowners that could potentially develop their land in the priority development area.	<i>See Goal 4, Strategies 1 and 2 above.</i>
Strategy 2: Create a working group to alter code for zoning designations so that future development is more strategically organized.		
	Action A: Create a working group to assist the City Planner on potential changes to zoning code that could be brought forward to the Planning Commission and City Council for approval.	This would include the addition of the proposed new Multifamily Residential zone discussed above in Goal 2, Strategy 1 and below in Action C.
	Action B: Create an organized table for all uses and all zoning districts, clarifying which uses are permitted, and which require additional permitting or are not permitted.	A current version of this table should be used to help guide working group discussions. Once the working group has prepared potential code changes, they should create a proposed updated version of the table that could be adopted as part of zoning code.
	Action C: Consider eliminating the General Use (GU) zone.	Existing uses in the GU zone would be grandfathered in, and new developments could not rezone to GU anymore. This would encourage more specific requirements according to the Future Land Use Plan Map. The grandfathered GU zone could also be amended to include guidelines for redeveloping properties to incentivize making improvements according to surrounding development / Future Land Use Plan Map designation.

	Action D: Once the new Multifamily Residential zone is created (see Goal 2, Strategy 1, Action B), consider altering the traditional R zoning district to emphasize its focus on a less dense model that would encourage single-family and duplex development.	The creation of the proposed new Multifamily Residential (R2) zone is discussed in Goal 2, Strategy 1 above. Differentiating R2 from R could help clarify the difference and encourage both of their uses.
	Action E: Consider City-led rezones to help phase out the GU district and assign more specific zones (including newly implemented zoning districts) to applicable areas.	
	Action F: Examine the list of uses that require conditional use permits for all zoning districts and consider changes based on the intent of each district; the changes could be brought forward to the Planning Commission and City Council for approval.	This may provide insight on how to streamline the permitting process and help encourage the use of newer zoning districts, such as Neighborhood and Downtown Commercial and the proposed Multifamily Residential zone.

GOAL 6: Make spatial information and maps available to the public online using GIS.

Strategy 1: Publish online GIS maps that provide information that was identified as the highest priority for stakeholders.

	Action A: Publish the GIS version of the Zoning Map online.	
	Action B: Publish an online, interactive GIS map that can provide property lines, zoning, street addresses, and ownership information (when available).	Where possible, add the land uses present on each property (for example, single-family home, duplex, retail, and so on.)
	Action C: Publish an online GIS version of the Future Land Use Plan Map.	

Strategy 2: The Planning Department can continue to add to the GIS maps used internally or available to the public online, based on suggestions made by the community.

	Action A: Create a map or maps showing easements for trails, rights-of-way, and utilities.	
	Action B: Create a map that shows wetlands, stream or floodplain setbacks, contaminated sites, or other limitations to development related to preservation.	
	Action C: Explore opportunities to collaborate with other entities with local GIS data (such as ONC, BNC, AVCP, BIA, ADFG), forming a joint database.	This could be helpful for mapping trails, ownership, rights of way, and other features that are important to all of the major local stakeholder entities discussed in the introduction of Section 3.5.

Chapter 4 – Local Transportation

GOAL 4: Design new and reconstructed streets with a focus on providing safe and comfortable routes for all transportation modes and all users.

Strategy 2: Ensure adequate ROW for sharing the road and implementing Complete Streets.

	Action B: When plats are submitted, require the dedication of additional ROW when the current ROW does not meet width requirements.	
--	--	--

GOAL 8: Evaluate site development codes to better support safe access for all transportation modes.

Strategy 1: Provide for adequate and safe parking facilities and practices.

	Action A: Examine code to make sure appropriate numbers of parking spaces are provided for each type of land use (If changes are warranted, see Action C below).	Stakeholders indicated that some uses may not require sufficient spaces, while others may require too many. The Planning Department could lead a study of parking requirements in City code and any recommended revisions to the code, likely with the assistance of technical advisors.
	Action B: Facilitate shared parking between adjacent properties and uses when appropriate.	City code already provides for the possibility of shared parking between two or more contiguous uses (18.48.170.C). Shared parking agreements can help create more efficient site layouts and should be encouraged when possible / helpful to landowners. During site plan review applications, the Planning Department could assist property owners by helping identify shared parking opportunities. Then, the owners could coordinate with each other on potential agreements. The City could also provide a standardized agreement that property owners could use and record to memorialize the agreement.
	Action C: If changes are warranted to parking requirements or shared parking provisions in code, provide changes to the Planning Commission and City Council for approval.	The Planning Department could review these sections and try to make them easier to understand if there are sections that are confusing or cause issues for applicants.

Strategy 2: Provide for safe access for vehicles and non-motorized users.

	Action A: Consider consolidating driveway and parking design provisions in code or creating a separate driveway standards worksheet.	There are some existing code sections regarding driveway widths and distances from intersections, but the information could be consolidated. One option is for the City to remove it from code and instead create a driveway standards memo that can be updated more frequently and easily, as needed. Since the driveway standards are currently part of the City's code, a variance is required for any deviations from the requirements.
	Action B: Review commercial site design code to identify opportunities to improve safety provisions such as those encouraged by Crime Prevention through Environmental Design (CPTED) principles.	This could include requiring site lighting, which is especially important for the safety of non-motorized users.

Chapter 5 – Regional Transportation

GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 3: Support the development of relevant industrial uses and commercial amenities within the airport area.

	Action A: Consider creating an Airport zoning overlay to allow commercial development, such as grocery/convenience stores or dining in the industrial area within and around the airport.	Existing zoning districts may not facilitate the mix of uses desired within the airport area. For example, the Industrial zoning district does not currently allow commercial development, but this may be convenient for travelers. If the City and DOT determine that an overlay district would be helpful, a resolution creating it would likely require approval from the Planning Commission and City Council. Also note that the City owns some land near the airport, which could be leased and redeveloped if not needed by the City.
--	---	---

GOAL 2: Support DOT&PF in airport operations and planning.

Strategy 1: As requested by the FAA and/or DOT&PF, take actions that support smooth and secure airport operations.

	Action A: Examine FAA requirements and recommendations when reviewing potential land uses near the airport.	The Planning Department should factor this into reviews and may consider making recommendations. Requirements like tower height limits are already examined, but there are other recommendations that may be relevant. For example, residences near the airport are recommended to have bear proof trash containers.
--	---	---

Strategy 2: Participate in planning for the future of the airport.

	Action B: Encourage public participation in airport planning projects so that the City and community's needs are factored into plans.	The Planning Department can assist DOT and the City administration with tracking airport planning projects in order to help publicize meetings and comment opportunities, including via City social media.
--	---	---

Chapter 6 – Utility Infrastructure

GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gases.

Strategy 1: Facilitate large-scale projects to introduce more alternative energy sources to the local network.

	Action C: Create a guide to zoning code and permitting requirements that are applicable to alternative energy infrastructure such as wind turbines or solar panels, and work with AVEC to identify and propose changes to requirements that may create unnecessary barriers.	For example, this could include considering changes to BMC tall tower permitting requirements. The existing code section is long and complex; it should be reviewed and simplified to facilitate these processes, especially since there is often additional permitting required.
--	--	--

GOAL 4: Facilitate broadband development within the City of Bethel to advance community access to reliable internet service.

Strategy 2: When possible, streamline permitting of internet-related infrastructure.

	Action B: Review and amend tall tower permitting code to be simpler and more efficient.	Sometimes internet-related infrastructure requires constructing new towers or making changes to existing towers, which could trigger BMC tall tower permitting requirements. The existing code section is long and complex; it should be reviewed and simplified to facilitate these processes, especially since there is often additional permitting required.
	Action C: If / as needed to help facilitate improved internet connectivity in Bethel, review and amend other sections of BMC that may impact permits required for different types of internet-related infrastructure (besides cables and towers).	

Chapter 7 – Public Facilities & Services

GOAL 4: Manage City lands in an efficient, cost-effective, and forward-thinking manner.

Strategy 1: Maintain a map of City-owned lands and ownership changes.

	Action A: Create a map of City-owned lands using GIS and an associated database.	<i>See the GIS section in Chapter 3 – Housing & Land Use.</i>
	Action B: Identify undeveloped or underutilized properties currently owned by the City on the map.	
	Action D: Update the map as properties are acquired or sold, also tracking properties identified as potential acquisitions or potential properties to sell.	

Strategy 2: Improve processes for City property acquisition, sales, and leasing.

	Action D: Examine publicly owned lands for all potential uses, including open space use, before disposition.	
--	---	--

GOAL 8: Enhance the role of parks in the Bethel community.

Strategy 3: Establish a network of Bethel parks to serve all neighborhoods.

	Action A: Create and regularly update an on-line guide and map of all the parks in Bethel.	This should include discussion of the amenities included at each. It should also include a map showing the trails that connect the park system (<i>see Goal 10 in this chapter</i>). The guide should be posted to the City website. Also, through the website, there is potential to organize rentals of certain facilities, such as gazebos or picnic shelters for private events. Note that some public areas in the City have unclear management responsibility, such as the cemetery west of the airport. It should be clarified whether this is part of the City's park maintenance responsibilities.
	Action B: Using the development of the parks guide and map, identify areas with less access to nearby parks.	This should also identify underutilized park areas. For example, comments were received from the community that there is a run-down park area between Akakeek and Atsaq Streets.
	Action D: Require that new residential subdivisions reserve space for a park or open space.	This may require code changes to implement the requirement for open space. New subdivisions could be encouraged to follow the Planned Unit Development model or set aside park space in another way. Additional incentives should be explored that would encourage developments to have parks and open space. Like discussed in Action Item C, there would be a need to negotiate maintenance, construction, and liability for these open spaces, especially depending on final ownership / management.

GOAL 10: Enhance the network of trails and open spaces in Bethel.

Strategy 1: Improve access and comfort for trails.

	Action A: Add trails to the map and guide of parks and recreation facilities.	See Goal 8, Strategy 3 above.
--	--	--------------------------------------

Strategy 2: Maintain a network of open spaces.

	Action A: Identify and map open spaces within and around the developed area of Bethel that can be used for public recreation.	Note that this would include much of the Donut Hole, though some areas are privately held. There has been some desire expressed to preserve this as permanent open space. However, this is a logical place for development to expand. Future development should preserve some open space areas – <i>see Action Items B and C below.</i>
	Action B: Identify key future transportation connections across currently open areas such as the “Donut Hole.”	This is proposed to be completed as part of trail planning (<i>see Chapter 4 – Local Transportation</i>).
	Action C: Based on the map of key future connections through currently open space, as well as mapped areas that must be preserved due to wetlands or drainage, identify suitable locations for potential green belts.	Green belts are open strips of land on which building is restricted. Designating one or more green belt within the Donut Hole could help reserve an area to remain as open space, including paths and public recreation areas, even as parts of the Donut Hole might fill in with development. This would help maintain the natural character and recreational opportunities in the middle of Bethel, even as development might spread inward. While potential locations for green belts could be brainstormed at any time, it would make the most sense to designate them during future design processes for transportation corridors and/or subdivisions.

Chapter 8 – People & Economy

GOAL 3: Support subsistence rights and access to subsistence resources in Bethel and the surrounding region.

Strategy 1: Protect physical access to subsistence resources around Bethel.

	Action B: Require the dedication of parks and/or open spaces, such as green belts, in new subdivisions in order to maintain access to the undeveloped tundra.	<i>See Chapter 3 – Housing & Land Use and Chapter 7 – Public Facilities & Services, Parks and Recreation section for more action items on preserving open space.</i>
	Action C: Work to obtain public access easements over trails used to access fishing, hunting, or plant harvesting areas.	<i>See Chapter 4 – Local Transportation and Chapter 5 – Regional Transportation for more discussion of formalizing existing trails.</i>

GOAL 4: Prepare the City for a broad range of potential climate change impacts.

Strategy 1: Using the help of state and/or federal climate resilience resources, create City plans for climate adaptation and community resilience.

	Action A: Update the City's Hazard Mitigation Plan every five years.	The primary assistance available to communities to mitigate natural and other hazards is from the Federal Emergency Management Agency (FEMA) through development of a Hazard Mitigation Plan. Bethel's Hazard Mitigation Plan was completed in 2017 and is overdue for an update. These collaborative plans include a risk and capability assessment which identifies hazards and develops a mitigation strategy to be implemented by the City to prepare for natural and man-made hazards that could occur in the future.
	Action B: Consult with DCRA and consider preparing a Community Resilience and Climate Adaptation Plan.	Other communities have developed Climate Action Plans or Climate Adaptation Plans to more comprehensively address climate change. However, Hazard Mitigation Plans offer similar benefits. The City should consult with DCRA to determine if a more focused Climate Adaptation Plan should be prepared in addition to the Hazard Mitigation Plans, as this could potentially open the door to additional support or funding.

GOAL 6: Foster a thriving local business community.

Strategy 3: Create a business-friendly environment in Bethel.

	Action B: Examine BMC to consider allowing some small businesses to be a legal in residential zoned areas.	For many small business owners, it can be cost-prohibitive to rent a space besides one's home. Many small businesses can be compatible with residential settings, such as small arts and crafts operations or professional services that can be provided from a home office. The Chamber of Commerce, City Planning Department and Planning Commission could collaborate on this effort.
--	---	--

APPENDIX 11: POLICE DEPARTMENT ACTION ITEMS

Appendix 11 – Police Department Action Items PD

Chapter 4 – Local Transportation

GOAL 8: Evaluate site development codes to better support safe access for all transportation modes.

Strategy 1: Provide for adequate and safe parking facilities and practices.

	Action E: Continue inter-departmental collaboration to enforce parking violations that impact road safety and maintenance	The Public Works Department and Bethel Police Department (BPD) can work together to clarify where street parking is not permitted and priority areas for enforcement. To prevent people from continuing to park along streets where not permitted, BPD will need to enforce parking violations. Currently, the Public Works department lets BPD know if vehicles are hindering road maintenance, or BPD may identify derelict vehicles during patrols. Notices may be placed on vehicles to provide a deadline for them to be moved, and then BPD calls a towing operator to move vehicles to the landfill if necessary. The City Administration determines fines that could be charged for vehicles left in ROWs or on City property.
--	---	--

Chapter 7 – Public Facilities & Services

GOAL 6: Improve public safety facilities and services in Bethel.

Strategy 2: Continue to improve police service.

	Action A: Continually upgrade public safety dispatch and communications equipment.	The Bethel Police Department will be looking at replacing repeaters and console radios, updating its electronic dispatch infrastructure (e-911), and installing separate police communications infrastructure (radio tower) at the new police station. The new 80-foot tower will allow the department to move its existing antennas and other equipment from the KYUK Radio Station to the police station, where it will be more secure and save money in rental fees. The department also has a 311 non-emergency number that residents can call for information and services, but coordination is needed to allow cell phone users to be able to make calls.
	Action B: Purchase additional surveillance and other evidence collection equipment, as needed.	The department received grants in the past for new equipment. Additional surveillance equipment, such as at the Port, in parks, or on police vehicles, could also benefit investigations and safety.

	Action C: Provide additional training to Police and Community Service Patrol staff, as needed.	
	Action D: Make other upgrades and additions to police department facilities as needed, including the vehicle impound yard.	Recent additions include Council signing an agreement for police housing in apartments. The City is also collaborating with Bethel Friends of Canines (BFK9) on a new shelter project.

GOAL 7: Target specific public safety concerns within Bethel.

Strategy 2: Improve ATV and snowmachine safety, on and off Bethel roads.

	Action A: Pursue a partnership with the State of Alaska to offer ATV and snowmachine safety information and/or classes.	The State of Alaska already has some safety initiatives related to ATV safety, such as organizing opportunities to have ATVs checked for safety features.
	Action B: Require ATV registration to drive ATVs on roads within City limits.	Licensing processes are managed by the State of Alaska, but Bethel is already working on a smaller-scale registration system. The primary challenge is bringing people into compliance.

Strategy 3: Reduce drug abuse in Bethel.

	Action B: Continue collaboration with the Western Alaska Alcohol and Narcotics Team (WAANT, which includes Bethel Police, Kotzebue Police, Kodiak Police, and the Alaska State Troopers) to penalize drug trafficking and illegal alcohol bootlegging.	As part of efforts to reduce drug trafficking in Bethel, the Police Department recently obtained funding for a drug sniffing dog.
	Action C: Continue operation of the Community Service Patrol, the grant-funded service that picks up individuals under the influence and drops them off at places such as YKHC or their sobering center.	In turn, YKHC can help connect individuals with recovery resources.

Strategy 5: Improve animal care and control programs.

	Action A: Continue discussions on whether to hire a dedicated City animal control staff person to catch loose dogs and issue citations for animal cruelty.	Depending on staff resources available and ability to fund another position, there may be opportunities to combine these responsibilities with other existing operations.
	Action B: Support and coordinate with Bethel Friends of Canines (BFK9) on the new animal shelter project.	BFK9 provides dog care and training education, provides treatment to stray dogs (including for rabies and spay/neutering), and helps coordinate with animal rescue groups in Alaska to rehome animals. The Police Department and BFK9 are collaborating on a new shelter near the Public Works building, as well as programming.

APPENDIX 12: PORT OF BETHEL ACTION ITEMS

Appendix 12 – Port of Bethel Action Items PO

Chapter 5 – Regional Transportation

GOAL 3: Study and plan for potential changes to the river's course that may impact port operations.

Strategy 1: Keep up with regular dredging operations.

	Action A: Continue to complete hydrographic studies every two years, as required by the U.S. Army Corps of Engineers (USACE).	Note that a hydrographic study is different from a navigation study. This regularly completed study helps determine where dredging may be needed in the river by determining the depth of the water.
	Action B: Continue to dredge Brown's Slough annually.	This needs to be completed annually between the river and the bridge to allow passage for boats. There are a few different methods, including suction, dredge and biosolids press, or excavation during winter. There is some agency permitting required, and the work could be eligible for BUILD grant funding. The cost depends on the dredging method used.
	Action C: As needed and based on the hydrographic studies, dredge the river between the petroleum port and the entrance to the small boat harbor.	This makes the river more navigable for tugs, pilot boats, barges, and subsistence users. It is currently difficult for the City to predict how often this would need to be done, but continued regular completion of hydrographic studies may assist with determining a maintenance schedule. The City's current goal is to dredge the river in front of the entrance to the small boat harbor every five years, but the actual frequency has been closer to every ten years. The City could consider pursuing funding partnerships for this effort, such as with tribal organizations who share an interest in ensuring transportation to and from villages as well as access to subsistence fishing on the river. This could be organized as part of collaboration efforts discussed in Goal 6 of this chapter.

Strategy 2: Plan for potential future changes in the Kuskokwim River's course to mitigate potential impacts.

	Action A: Request assistance from USACE for funding and conducting a feasibility study for a potential navigation study of the river.	USACE indicated that this will be necessary before the City can complete a navigation study to look into how the course of the river may change. Both studies will likely use a cost sharing mechanism between the City and the Corps.
	Action B: Following the feasibility study, complete a navigation study to determine how changes in the river may impact larger ships' ability to access Bethel's port.	This is more extensive than the regular hydrographic studies and includes studying potential choke points for larger ships up and down the river.

	Action C: Continue to work with USACE to monitor the sea wall conditions to determine if, and at what rate, the river is undercutting the sea wall.	The City has approximately 10,000 feet of sea wall and rip rap to mitigate erosion. If the sea wall were to be undercut by the river, this would have major consequences. Regular monitoring of the seawall to determine required maintenance is needed.
	Action D: Develop an action plan for studies, monitoring, and maintenance activities needed to mitigate riverfront erosion and ensure navigability of the river around Bethel's port.	The action plan should be a living document that continually evolves in response to new issues and resources.
	Action E: Incorporate the Port's mitigation efforts into the City's regularly-updated Hazard Mitigation Plan (<i>discussed further in Chapter 8 – People & Economy</i>).	The Hazard Mitigation Plan was last updated in 2017 and includes discussion of several hazards relevant to the Port and waterfront, such as flooding and erosion. In the future, the Port should continue to participate in similar planning processes. As conditions can change more quickly than a Hazard Mitigation Plan may be updated, the Port should also focus on evolving its own mitigation planning and activities on a more frequent basis, as discussed in Action D above.
Strategy 3: Collaborate with other major waterfront property owners on riverfront management efforts.		
	Action A: As part of coordination with the private entity constructing a new cargo dock near the petroleum port in Bethel, explore partnership opportunities to obtain funding for hydrographic or navigation studies, sea wall monitoring, and maintenance or dredging efforts.	Associated with the Donlin Mine project, a new private cargo dock is planned near the existing petroleum port dock in Bethel. As part of the City's response to the Donlin Mine project, an action item in Chapter 8 – People and Economy is to maintain consistent communication with them as the project ramps up. As another major user of the Bethel riverfront, Donlin can be asked to participate in funding and/or applying for grants for necessary upkeep so that everyone can continue to rely on the critical port infrastructure in Bethel.
	Action B: If other major waterfront developments occur in Bethel, coordinate with the property owners / developers to incorporate measures to mitigate erosion and participate in City efforts to monitor and take action according to changes in the river.	This should include BNC, which owns a significant portion of the undeveloped waterfront within Bethel.

	Action C: Coordinate with other property owners along the Kuskokwim River to identify collaboration and cost-sharing opportunities for studies, dredging, and other maintenance.	<i>See Goal 6 in this chapter.</i> BNC and other village corporations own a lot of land up and down the river. Erosion that impacts Bethel impacts the entire region. Erosion is happening elsewhere as well and severely impacting fish camps.
--	---	---

GOAL 4: Maintain adequate port infrastructure to support shipping operations.

Strategy 1: Efficiently manage port infrastructure maintenance and repairs.

	Action A: Regularly inspect all public port infrastructure for a condition assessment and to predict future maintenance needs.	
	Action B: Create and maintain a list of maintenance needs at the port.	Some projects that have been identified include: ▪ Repair city dock ▪ Replace east timber wall at City dock
	Action C: Prioritize the list, determine whether current maintenance staff have the skills and equipment to complete the work or if specialized contractors will be needed, and prepare cost estimates.	Existing City maintenance staff are sometimes unable to complete some specialized repairs or construction work., due to lack of training or equipment The City should determine whether contractors would be better suited to complete the work.
	Action D: Pursue funding opportunities for more significant maintenance projects at the port, such as grants (which could be pursued in partnership with other entities such as tribal organizations), or partnership with private entities like Lynden.	Both projects listed above alongside Action B were estimated to cost around \$11 million and may be eligible for BUILD, or other grant funding.

Strategy 2: Identify new infrastructure that may be needed to improve port operations.

	Action A: Coordinate with port management, current shipping operators, and other stakeholders to identify infrastructure needs to support current and future shipping operations.	This could include Lynden, petroleum companies, and discussions guided by the Port Commission. Examples of infrastructure additions that have been identified include: ▪ Improved security infrastructure for the port ▪ Potential expansion of the petroleum / freight dock (estimated cost would be \$17 million)
	Action B: As part of the regular LRTP process, document the port's existing conditions, issues, and needs; this would be used to create a prioritized list of infrastructure and maintenance needed.	<i>See Chapter 4 – Local Transportation – Goal 1 for additional context on the LRTP process.</i> A feasibility study was completed in the past, which included concept plans for the future of the port, but a separate Port Master Plan would be difficult to fund.
	Action C: Pursue funding opportunities for additional infrastructure expansions that would improve port operations, such as grants (which could be pursued in partnership with other entities such as tribal organizations), and partnership with private entities like Lynden.	

GOAL 5: Maintain infrastructure to support the use of small boats and float planes for transportation, commerce, subsistence, and recreation.

Strategy 1: Maintain infrastructure for small boat users.

	Action A: Regularly inspect the existing small boat harbor infrastructure and manage its use to help determine maintenance and/or expansion needs.	
	Action B: Consider developing additional parking at the small boat harbor.	There is a nearby City-owned lot that may be able to be developed for additional parking to support the small boat harbor. The City might also consider charging vehicle parking fees beyond the existing boat mooring fees.
	Action C: Facilitate transit and taxi access to and from the small boat harbor by incorporating signage to direct passengers to appropriate loading areas.	
	Action D: Add any maintenance needs to the prioritized list created as part of Goal 4, Strategy 1 above.	
	Action E: Evaluate the costs associated with maintaining small boat harbor infrastructure and dredging.	It would be helpful for the Port to determine approximate yearly costs to assist in setting mooring and other potential fee amounts; longer-term project costs could also be factored into the cost and fee considerations.
	Action F: Based on approximate yearly costs for maintenance as well as other longer-term projects that may need funding, consider gradual fee increases and/or creating new fees for various types of small boat harbor users (such as for businesses using the harbor, or vehicle parking fees) to help fund operations and improvements.	Increased mooring fees can assist with funding that may be obtained as part of the implementation of projects on the prioritized list created in Goal 4, Strategy 1.

Strategy 2: Maintain infrastructure for float plane users.

	Action A: Continue to place gravel on Lomack Beach to protect it from erosion associated with launching float planes.	There are float plane docks located on H-Marker and Hangar Lakes, but these lakes are not long enough for fully loaded planes to taxi. Therefore, some float plane traffic does need to take off on the river despite concerns about various types of traffic conflicts on the river. Some community members have suggested a float plane dock be constructed at the beach to mitigate erosion, but others do not believe this is something the City should invest in; there could be issues related to current, weather, and skiffs using the dock instead of planes. For now, placing gravel seems to be the solution as it relates to erosion.
	Action B: Create a maintenance agreement with DOT&PF to clarify land and facility ownership and shared maintenance responsibility for Hangar Lake Road and the float plane docks at Hangar Lake.	Currently, the City occasionally assists the State in maintaining Hangar Lake Road by placing gravel along the roadway, but the responsibility mostly lies with the State for road maintenance and oversight of float plane use of Hangar Lake. There are existing docks, but they are located in a swampy area and could use improvements; this has been a challenge as ownership of the docks is unclear. For longer-term maintenance and improvement of Hangar Lake as a key float plane facility for Bethel, research should be completed to determine the ownership of existing facilities and, MOUs may be needed to clarify the responsibilities for the roadway, lake, and associated facilities.
	Action C: Consider partnerships (with government agencies and/or private entities) or ways to levy user fees for float plane facilities on the river and lakes in and around Bethel to help fund erosion control measures.	The City should explore partnerships or other funding opportunities to help find a better long-term solution to address erosions concerns other than placing gravel on Lomack Beach, such as: ▪ Working with DOT&PF and/or a private entity to construct a float plane dock on the river that works despite the concerns discussed as part of Action A above ▪ Encouraging more float plane use of Hangar Lake when possible, based on plane loads Finding appropriate and feasible ways to charge fees for facility use could help fund these types of projects.

GOAL 6: Support the improvement and expansion of other modes of regional transportation.

Strategy 4: Facilitate potential regional transit opportunities as they arise.

Action B: If interest in a river (and/or ice road) transit or taxi service arises, explore how the City's port can help accommodate it.

Currently, some people informally ferry people back and forth from villages. The City is unlikely to provide a river transit service, but it could help support landing facilities if a private operator or tribal organization were interested. The small boat harbor only handles skiffs and no larger vessels, so there may be a need to set space aside.

Chapter 7 – Public Facilities & Services

GOAL 7: Target specific public safety concerns within Bethel.

Strategy 1: Improve maritime safety through educational programs.

Action B: Through the Port, organize boating safety classes.

The Port used to offer boating safety classes, but they are now only offered occasionally by other organizations. Either by organizing its own classes or partnering with other organizations, the Port should work to make safety classes available on a yearly basis.

Chapter 8 – People & Economy

GOAL 2: Minimize potential negative impacts to Bethel from the Donlin Mine efforts and maximize potential benefits.

Strategy 2: Work with the Donlin project to plan for additional traffic associated with Donlin Mine.

Action A: Obtain full details about the planned dock construction south of the Bethel petroleum dock (associated with the Donlin Mine project).

	Action B: Given Donlin’s significant anticipated impacts to the Port of Bethel, jointly work with Donlin on port and waterway studies and improvements needed.	A port and waterway study and improvements could also be included in the MOU that the City Manager will coordinate, discussed in this goal, Strategy 1, Action A. For further discussion of port and waterway studies and improvements, see <i>Chapter 5 – Regional Transportation</i>.
--	--	---

GOAL 3: Support subsistence rights and access to subsistence resources in Bethel and the surrounding region.

Strategy 1: Protect physical access to subsistence resources around Bethel.

	Action A: Maintain the small boat harbor facility, and identify future expansion needs and priorities for funding to ensure sufficient access for subsistence users.	See more information about the Port, including the small boat harbor, in <i>Chapter 5 – Regional Transportation</i>.
--	--	---

Strategy 2: Support research and advocacy efforts that seek to protect access to subsistence resources.

	Action A: As opportunities arise, provide information or resources to support the activities of subsistence resource advocacy groups.	For further discussion of advocacy groups, such as the Kuskokwim River Inter-Tribal Fish Commission, see the background information in this Fishing and Subsistence section.
--	---	---

This page has been intentionally left blank.

APPENDIX 13: PUBLIC WORKS DEPARTMENT ACTION ITEMS

Appendix 13 – Public Works Department Action Items

Chapter 3 – Housing & Land Use

GOAL 3: Reserve space to accommodate community needs and desired development.

Strategy 2: Create and regularly maintain a list of community facility and infrastructure needs that will require land.

	Action A: Create and maintain a list of community facility and infrastructure needs in order of priority, and include specific spatial needs such as general location and approximate area of land required.	The City Manager and the Planning Department should create and maintain the list, in collaboration with leaders from each department. Some items on the list would go hand-in-hand with the Capital Improvement Plan (<i>see Chapter 7 – Public Facilities & Services</i>). As a start, consider including the following space needs for the community (other than housing): ▪ Additional schools that may be needed as the population continues to grow ▪ Additional civic or public works buildings needed ▪ Parks and open space, distributed around different areas of Bethel ▪ Port expansion areas, as needed ▪ Water and wastewater treatment facilities (<i>see Chapter 6 – Utility Infrastructure for more discussion of water and sewer</i>) ▪ Alternative energy generation (wind, solar, etc.) and energy storage sites ▪ Likely new road and other transportation corridors
	Action B: As applicable, identify and initiate coordination with entities that need to be involved in the implementation of community facilities and infrastructure (such as the Public Works department for wastewater facilities, or AVEC for alternative energy generation sites).	<i>See Chapter 6, Utility Infrastructure for more information on coordination with Public Works and AVEC, for example.</i>

Chapter 4 – Local Transportation

GOAL 2: Plan for an organized, proactive approach to surface transportation facility maintenance.

Strategy 1: Clarify surface transportation facility maintenance responsibilities.

	Action A: Building on publicly available DOT&PF maps, create a maintenance re-responsibility map for all transportation facilities in Bethel (including roads and trails).	The Public Works Department should be responsible for this effort. This should include a map showing management and maintenance responsibility for each transportation facility. The Ownership and Maintenance Responsibility map in the 2020 Draft LRTP can serve as a starting point. This map could eventually be published online using GIS – <i>see the Mapping section in Chapter 3 – Housing & Land Use.</i>
--	--	---

Strategy 2: Clarify surface transportation facility maintenance responsibilities.

	Action A: Prioritize identifying and implementing the most effective ways to control dust on gravel roads, shoulders, and trails, such as watering, emulsifiers, chip sealing, or other surface treatments.	This is a top priority for the community. Part of identifying the best methods will include testing. As part of the typical maintenance schedule and best practices created for Strategy 3 below, a schedule could be established for when different types of treatments should be applied to gravel roads based on weather conditions and/or dust levels.
	Action B: Regularly inspect roads for major potholes that need to be filled / grated, and complete maintenance work as needed.	As part of the typical maintenance schedule and best practices created for Strategy 3 below, guidance should be provided on roadway deterioration to minimize the risk of larger and more costly repairs and damage to vehicles.
	Action C: Regularly inspect transportation facilities for overgrowth, blockage, or freezing culverts and other drainage facilities, and complete maintenance work as needed.	As part of the typical maintenance schedule and best practices created for Strategy 3 below, best practices could be established for how and when to clear culvert and drainage facility issues and whether preventative measures could help.
	Action D: As part of the snow removal prioritization plan, incorporate sites for storing snow, to avoid large berms building up within the road ROW.	If there is excess space on City properties, these areas should be evaluated for use as snow disposal areas. The City could also consider approaching owners of conveniently located vacant properties and creating snow disposal agreements to use that space for snow storage. For any snow disposal area, consideration should be given to existing drainage and impacts to adjacent properties.

	Action E: Monitor City signage to ensure it meets public needs for wayfinding and safety. Maintain areas around signs to ensure that visibility is not impacted by vegetation overgrowth, snow/ice cover, vandalism, or other issues.	As part of the typical maintenance schedule and best practices created for Strategy 3 below, maintain a database to track regular sign inspections and maintenance that may be needed.
	Action F: Enforce the removal of ROW encroachments that hinder road maintenance operations.	This can include the City trimming vegetation that extends into the ROW from private property and ordering the removal of other encroachments, including objects such as junk cars. The removal of illegally parked vehicles is also addressed more specifically in Section 4.6, Goal 8, Strategy 1, Action E.
Strategy 3: Establish improved systems to track maintenance operations.		
	Action A: Raise awareness about the Report a Problem feature on the City website that should be used to report road maintenance needs.	Residents reporting issues may tend to use Text My Gov, but they should be referred to use Report a Problem when appropriate; this may help track the life cycle of maintenance issues, identify recurring issues, and plan future maintenance strategy.
	Action B: Investigate and consider implementing a software program to track maintenance operations.	There may be options that directly interface with something like the Report a Problem form, allowing both the public and City staff to input records of issues. As Public Works keeps record of action taken and other information in this type of system, a useful record would be created to help inform future planning.
	Action C: Create a typical maintenance schedule based on expected work needed on a seasonal basis, as well as best practices for responding to maintenance needs.	This should include expected amounts of surface repairs or treatment and drainage facility clearing in the warmer months and snow and ice clearing and management schedules for the winter. This would help in creating budgets and compiling the overall prioritized list of transportation facility projects that also includes larger construction projects. It would also help predict staffing needs.

	Action D: Create a map of all City transportation supporting elements such as signage, lighting, culverts, other drainage systems, etc.	This could also be used to help track recurring maintenance issues based on location. GIS could be used to prepare a map for the Public Works department to reference and continually update. The Environmental Assessment prepared for the private Donlin Mine project may contain information that is helpful for this effort, particularly related to drainage in Bethel. While expensive, lidar could be used to map topography and better understand drainage.
Strategy 4: Create a prioritized City road maintenance plan.		
	Action A: Create a prioritized City road maintenance plan, and incorporate it into the transportation facility funding strategy and Capital Improvement Plan (see <i>Goal 6 below</i>).	The Public Works Department has been leading related efforts. Currently, approximately three gravel roads get prioritized for rehabilitation each year, and gravel lasts 3-5 years, so the City has determined this is sufficient to get through all the roads as needed; this calculation will continue to change as Bethel grows. A more detailed, prioritized maintenance plan should identify which roads are paved or graveled, how and when to address issues such as potholes or drainage problems, and snow maintenance prioritization. This prioritized plan, maintenance schedule, and best practices created for Action G above can inform each other as they are developed.
	Action B: Identify and prioritize more major road rehabilitation projects, and incorporate them into the transportation facility funding strategy (see <i>Goal 6 below</i>).	Road rehabilitation projects are more significant projects than regular maintenance. This could be the mechanism for identifying existing gravel roads that should be reconstructed as paved roads.
Strategy 5: Design new and rehabilitated road and other transportation facilities to proactively minimize maintenance needs.		
	Action A: Continually evaluate materials for road surfacing and other transportation facility construction to improve quality/durability and reduce dust, such as chip sealing, emulsifiers, or other innovative construction methods.	Consider innovative materials and construction methods that may work specifically for Bethel. The Denali Commission, University of Alaska, and DOT&PF continues to complete research on Alaska and permafrost-specific design. A project is currently underway to test Bethel soil samples to determine the type of emulsifier that would best work with the soil. This could make a significant difference in durability. Emulsifiers were difficult to use in the past since roads need to be temporarily closed and the Bethel road system is limited, but with the new Tundra Ridge Road for an alternative route, emulsifiers could be more broadly used in Bethel in the future.

	Action B: As paving technology continues to improve and become more available, use paved surfaces instead of gravel for new or rehabilitated roads of collector classification and above.	Contemporary paving materials and construction techniques lend themselves to easier maintenance and can be designed to anticipate conditions that are likely to occur, like frost-heaving.
	Action C: Improve the implementation of adequate drainage facilities, keeping in mind maintenance needs.	The City has identified a need to continually acquire and install more culverts around town. They have recently been installed at a rate of about eight per year, which has not been enough to keep up with the existing drainage issues experienced in the City. In some cases, drainage analysis may be needed to determine the best solution. For example, in some locations, bridges instead of culverts may be needed (such as on Ptarmigan Street, where beavers are repeatedly damming culverts for a below-grade creek crossing). City maintenance workers who are often tasked with installing drainage may not have the training needed. The City could consider contracting out this work or enlisting the help of organizations such as the Alaska Municipal League or DOT&PF for additional training to improve decision-making and installation practices.
	Action D: At the same time as undertaking road rehabilitation projects, assess whether there is additional ROW needed or encroachments that need to be addressed; address these as part of the design process.	Some roads are not located where they are supposed to be based on the plats or other documents that created them – some centerlines are significantly off-center, making some road projects complicated. While the City knows there may be many similar issues around town, when projects are happening an optimal time to verify documentation and make any replatting or other changes as needed. The City also expressed concern that there are some roads so narrow that paving them does not seem worthwhile. If it is possible to obtain additional ROW at the time of road rehabilitation, this could help make more effective roads for moving cars and other users as well as providing space for snow storage and drainage.

GOAL 3: Develop the surface transportation network to reduce travel times, alleviate congestion, and support future development.

Strategy 1: Identify missing links in the surface transportation network.

	Action A: Track traffic data, population and traffic forecasts, and significant future development plans and use these to assist with the identification and prioritization of surface transportation projects through LRTP updates.	When available, the City should use traffic data to understand changes in travel demand and congestion and assist with planning roadway improvements that respond to future population and traffic needs. The City should coordinate with ADOT&PF to obtain data they collect on Bethel roads. On top of ADOT&PF data, the City should assess if other traffic data is needed based on potential future road improvements or new road connections. If so, the City can work to collect data on roughly an annual basis for key locations; this could help show growth or changes in traffic patterns over time. ADOT&PF completes traffic studies in Bethel and could likely share the results with the City upon request.
	Action B: Starting with the Priority Projects map in the 2020 LRTP, create a map that shows new road connections that may be needed in the future.	Tundra Ridge Road is one example of a road connection that has existed informally for some time, but is now becoming a formalized ROW that will help reduce travel times across town and alleviate congestion on CEHH. There are other road connections identified in the 2020 Draft LRTP that should be included in this map, and additional potential connections should be added as they are identified by the City and/or community.
	Action C: Based on locations of likely future land development, add locations of potential future road and other surface transportation connections that would support connectivity for this additional development.	See <i>Chapter 3 – Housing & Land Use</i> for discussion on locations of likely future development. Development through parts of the “Donut Hole” in the middle of town would be the most efficient location for additional development, so the following connections have been discussed (which would also help alleviate current traffic): ▪ The City is applying for funding for the north-south “Donut Hole Road” between CEHH and Ptarmigan Street (stopping at the fitness center on the way) to help address increasing traffic associated with the YKHC campus. This would mostly travel through City land. ▪ An east-west connection across the Donut Hole, connecting to the north or south side of H-Marker Lake Potential future connections should be considered as part of each LRTP process and tentatively mapped.

Strategy 2: Use the LRTP to prioritize and guide implementation of new surface transportation construction projects.

	Action A: Based on the map, create a prioritized list of new surface transportation construction projects.	This would likely start with the prioritized list from the 2020 LRTP, and the list could be adjusted as needed through future LRTP updates.
	Action B: Incorporate the prioritized list of new transportation projects into the funding strategy (<i>Goal 6</i>).	Use the prioritized list of new surface transportation projects to inform the funding strategy to support the highest priority projects being funded first.
	Action C: Working with key stakeholders and the community, use the five-year LRTP update cycle as an opportunity to revisit and update the prioritized list of new road projects.	

GOAL 4: Design new and reconstructed streets with a focus on providing safe and comfortable routes for all transportation modes and all users.

Strategy 1: Throughout the local transportation system, increase the focus on safety for all users.

	Action A: Regularly evaluate crash data; pedestrian, bicyclist, and motorist use; and other road safety data to identify areas for improvement.	
	Action B: Using community input, identify locations (especially along key routes for non-motorized users) that need safety improvements such as crosswalks, additional lighting, and/or signage.	Some examples that have been identified include: ▪ There is significant pedestrian traffic near the Cultural Center, including children who need to cross the road. ▪ In locations where there are currently no set-aside facilities for non-motorized users, signage or striping can help remind drivers to be mindful of non-motorized users on the road.

	Action C: Plan safety improvements as individual projects and/or as part of other transportation projects, keeping in mind that federal Safe Streets and Roads for All (SS4A) funding may be available.	ADOT&PF utilized this funding for signage and crosswalk striping near the schools in Bethel; when planning road projects, Bethel should seek to provide safety improvements whenever possible given that special funding programs exist to help with these types of costs.
Strategy 2: Ensure adequate ROW for sharing the road and implementing Complete Streets.		
	Action A: Ensure that new ROWs created as part of subdivisions meet minimum width requirements per code.	
	Action C: Consider developing a set of typical roadway cross-sections for reference in City or private development projects involving new or reconstructed roads.	
Strategy 3: When implementing Complete Streets, prioritize the most safe and comfortable facilities for non-motorized transportation that space will allow.		
	Action A: Ensure that Complete Streets (BMC 12.05) is being considered and used to the extent possible in the design of new and reconstructed roads.	

	Action B: When deciding the location and type of non-motorized facilities to be included in a Complete Streets project, prioritize a separated pathway or boardwalk on at least one side over a shoulder for non-motorized users, when possible. When there is insufficient space for a separated pathway or boardwalk, create a shoulder or shoulders for walkers, bicyclists, and other non-motorized users.	This is especially important when constructing facilities along busy gravel roads. Road dust is an issue for pedestrians and other non-motorized users on roadway shoulders. Also, separated facilities are safer and more comfortable. If the project is a reconstruction and it requires significant property acquisitions to have sufficient ROW, alternative mechanisms to provide non-motorized facilities (i.e., walkway easements) may be appropriate.
	Action C: Along existing and new shoulders for non-motorized transportation, implement measures to discourage the shoulders' use as parking or an unofficial turn lane.	On paved roads, this should minimally include a solid line to indicate the space is not a lane and should only be used by vehicles in an emergency. Other delineating techniques could be used when a painted line is not an option, such as reflective elements. Regardless of road surface material, "No Parking" or other signage indicating that the shoulder is intended for non-motorized use would also assist to demarcate space and make it clear that road sharing is a priority.
	Action D: If a shoulder or separated path for non-motorized users will be gravel, consider implementing methods to reduce dust impacts.	

GOAL 5: Improve and expand the trail system.

Strategy 1: Address trail and boardwalk maintenance needs more efficiently.

	Action A: Continually monitor and test new trail building techniques and materials that are affordable, easy to maintain, and suitable for the frequently changing character of the tundra ground.	
--	--	--

	Action B: Transition Bethel trail building methods (including reconstruction of existing routes) away from high-cost and difficult-to-maintain boardwalks and towards less expensive surface-level trails with footbridges and ramps to cross streams and pipes where necessary.	The Community Parks and Recreation Committee emphasized that the City may have further success expanding the trail network if it adopts a strategy that allows for inexpensive trail surfacing for “better” trails (without the need for striving for more “perfect” trails). This strategy would have to factor in the potential need for more frequent maintenance. One option for an inexpensive material could be utilizing locally made woodchips from clearing operations, though this would require further discussion as there may be additional equipment needed and/or specifications for the woodchips used. The Committee recognized that woodchips would likely sink into the tundra like other materials have, but at least the organic material would be less expensive and might be less harmful to the environment as compared to rubber or plastic products.
	Action C: Identify and potentially add pedestrian amenities to more locations, including lighting and benches.	Lighting has been installed in some areas, but this should continue along more boardwalks or major trails. There is potential for benches to be funded by individual sponsorships (such as in exchange for a dedication plaque on the bench). These could be located along trails and/or at parks and other key public locations. This action can be pursued in collaboration with Parks and Recreation.
	Action D: Add amenities for bicyclists at parks and recreation facilities, such as bike racks and bike “fix-it” stations.	This action can be pursued in collaboration with Parks and Recreation.
Strategy 2: Address trail and boardwalk maintenance needs more efficiently.		
	Action A: Encourage the use of the Report a Problem feature on the City website for the public to report trail and boardwalk maintenance issues, including hazards or vandalism.	By enlisting the help of trail users in the community to report issues, this could cut down on the need for maintenance staff or public safety personnel to go around town and inventory issues.

	Action B: Initiate an Adopt-a-Trail and/or boardwalk and trail maintenance volunteer group to assist when City maintenance staff does not have capacity to respond to trail / boardwalk maintenance issues.	To assist City maintenance staff, the community could help with trail and boardwalk maintenance. This could be through an Adopt-a-Trail program with opportunities for sponsorship signage. This could also be a community service opportunity for younger people, and it would encourage more people to feel a sense of ownership over the public boardwalks, potentially reducing vandalism.
	Action C: As maintenance issues are reported and repairs are made, record any recurring maintenance issues (types of issues or problematic areas).	This information should be maintained by the Public Works Department. The data may reveal which types of trails or areas need the most maintenance, or which repair materials need to be ordered and how often. This may also indicate materials that don't hold up as well over time. The City has already reported that the wood construction used for boardwalks is expensive and is a maintenance issue; a goal is to use gravel or some similar surface material to lower cost of construction and maintenance.
	Action D: Alter trail maintenance and construction best practices over time to mitigate common maintenance issues.	If boardwalks continue to exist in Bethel, there may be a more weatherproof, synthetic treatment or material that could be tested. Otherwise, the City has expressed a desire to focus on gravel trails going forward; there is a project planned to replace the Pinky's Park boardwalks with gravel due to continuous maintenance challenges. Gravel trails sometimes settle over time, so additional types of fill or structural enhancements could continue to be tested as well as emulsifiers.
Strategy 4: Expand the trail system by formalizing popular trails and adding new trails.		
	Action C: Investigate what would be needed to formalize informal and potential new trails.	This will include determining property ownership to be able to seek easements. If existing popular trails cannot be formalized, new alternative routes that connect the same locations could be proposed.

	Action D: Coordinate with owners of properties that have informal or potential new trails through them to obtain easements or use agreements.	If there are certain routes that cannot be formalized, they may be rerouted through locations where property owners are more willing to allow passage through. The City could also consider the use of relocatable trail easements that allow flexibility of maintaining the trails as well as moving the trail easements as areas are further developed. For example, the City-managed waterfront trail is popularly used and well-maintained. However, the trail informally continues through private property at the south end. The owner has allowed people to use it but is not committed to creating a permanent trail as future development plans have not yet been determined and may not be compatible with a walking trail. The waterfront trail may need to more clearly end where it formally ends or be re-routed elsewhere. Potential trails through the Donut Hole are another example of the need for coordination with private property owners (such as BNC) in order to determine if they would be open to connections in certain locations.
	Action E: For trails within or through larger properties, consider forming agreements or partnerships for private management / maintenance of the trails.	For example, community members expressed a desire for the trail system on BNC land in southwest Bethel to be improved. Stakeholders indicated that this is a popular area for berry picking. The City could discuss with BNC whether they have interest in officially maintaining public access to these trails, and the City could potentially show the trails on the trails map (with a note that this area is BNC land and subject to their management).

GOAL 8: Evaluate site development codes to better support safe access for all transportation modes.

Strategy 1: Provide for adequate and safe parking facilities and practices.

	Action D: Using signage and/or announcements via various City channels, clarify locations where street parking is not permitted in areas with compliance issues.	Stakeholders have noted that people sometimes park on shoulders or along roads that pedestrians frequently use creating safety concerns for non-motorized users. Signage could be installed in certain areas, or rules around parking in shoulders could be developed and enforced.
--	--	--

	Action E: Continue inter-departmental collaboration to enforce parking violations that impact road safety and maintenance	The Public Works Department and Bethel Police Department (BPD) can work together to clarify where street parking is not permitted and priority areas for enforcement. To prevent people from continuing to park along streets where not permitted, BPD will need to enforce parking violations. Currently, the Public Works department lets BPD know if vehicles are hindering road maintenance, or BPD may identify derelict vehicles during patrols. Notices may be placed on vehicles to provide a deadline for them to be moved, and then BPD calls a towing operator to move vehicles to the landfill if necessary. The City Administration determines fines that could be charged for vehicles left in ROWs or on City property.
--	---	--

Chapter 5 – Regional Transportation

GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 1: Facilitate efficient and organized access to the airport.

	Action A: Advocate for clear loading and unloading areas for taxicabs and private vehicles at the main jet terminal.	As part of Action A in this strategy, assigned to the City Manager, responsibility for managing loading areas in the airport area will be determined. While this may be the responsibility of DOT&PF or an airline operator, Public Works can help advocate for improvements to help with traffic flow.
	Action E: Advocate for more wayfinding signage in the airport area to direct parking and pick-up / drop-off traffic, as well as pedestrian traffic between different airlines, parking areas, and other amenities.	As part of Action A in this strategy, assigned to the City Manager, responsibility for managing signage in the airport area will be determined. While this may be the responsibility of DOT, Public Works can help advocate for improvements to help with directing traffic. Wayfinding signage could be for directing people to different airlines or parking areas, for example. During peak times (typically based on the Alaska Airlines jet schedule), the City has reported that the road gets narrow due to loading traffic. Crosswalks for pedestrian safety may also be needed.

GOAL 2: Support DOT&PF in airport operations and planning.

Strategy 1: As requested by the FAA and/or DOT&PF, take actions that support smooth and secure airport operations.

Action B: If a new landfill or sewage lagoon is constructed, place it as far from the airport as practicable to avoid attracting wildlife that could be harmed, damage airport equipment, and disrupt operations.

Like landfills, sewage lagoons can be wildlife attractants. The FAA recommends such facilities be six miles from airports, but many Alaskan communities receive exemptions due to their small size. The existing sewage lagoon is under six miles away, but it is located away from the airport.

Chapter 6 – Utility Infrastructure

GOAL 1: Advance projects in Bethel to increase electricity production from alternative energy sources to reduce both costs and generation of greenhouse gasses.

Strategy 1: Facilitate large-scale projects to introduce more alternative energy sources to the local network.

Action D: As part of the strategic plan discussed in Action B, identify the best locations in Bethel for wind, solar, or other alternative energy generation and storage, and examine City-owned sites for suitability.

The City could identify unused open space on already-developed City property that could be offered to AVEC for small-scale lease projects, like single wind turbines or solar panels. If there are larger areas of City land that are not identified for other potential uses, the City and AVEC could look into setting them aside for alternative energy production leases.

Strategy 2: Update City facilities to be more energy efficient.

Action A: When updating existing City facilities or constructing new City facilities, design should consider including alternative energy sources, such as solar or wind power instead of diesel.

It is important to note that AVEC needs to be informed of proposed alternative energy projects and provide approval. Until energy storage innovations are hopefully made in the future, facilities likely still need to be connected to the AVEC grid for when they are not generating sufficient electricity by alternative means.

GOAL 2: Regularly seek ways to lower water and sewer bills for customers.

Strategy 1: While the hauled portion of the Bethel water and sewer system continues, evaluated hauled operations to look for efficiencies that may help reduce rates.

Action B: Work with DOT&PF to get exemptions to allow for heavier (more efficient) water and sewer haul trucks.

Strategy 2: Expand the piped water and sewer system, as it operates profitably and offsets losses from the hauled network.

Action B: Repair existing deficiencies to the existing piped water and sewer network to maximize the system's efficiencies.

Strategy 3: Evaluate and reduce costs associated with production and distribution of water and collection and treatment of wastewater.

Action B: Request an audit of water and sewer operations and maintenance from the Alaska Rural Utility Collaborative with a focus on improving cost, efficiency, resilience, and reliability.

Action C: Increase financial efficiency, automate operations and billing, explore cost effective freeze protection efforts, and explore subsidized technical support through non-profits and state and federal agencies.

GOAL 3: Transition Bethel's water and sewer utilities to fully piped systems serving all residences and businesses.

Strategy 1: Complete each phase of projects outlined in the PER.

	Action B: Identify available land and begin acquiring easements (as needed) for future facilities, such as the truck fill station, pipes, and additional source water well.	
	Action C: Implement each phase of the PER.	Provide updates to the community so that they are aware of the progress.
	Action D: As PER phases are implemented, monitor the capacity of the existing sewage lagoon to determine if another lagoon cell will be needed, and when it may be needed.	

Strategy 2: Focus on maintenance to protect the City's utility investments and avoid unnecessary costs.

	Action A: Construct security fences around all water treatment plants.	
	Action B: Improve Supervisory Control and Data Acquisition (SCADA) compatibility of Bethel's water treatment plants and lift stations to reduce the manual monitoring tasks performed by staff.	
	Action C: Provide information to the community on how to use the piped sewer system, restrictions on what can be dumped into the system, and who is responsible for maintenance costs associated with different elements of the system.	Examine City code to determine if additional clarification is needed with regards to maintenance cost responsibilities.

Strategy 3: During the phases of the PER and beyond, manage the piped system to be as efficient and accessible as possible, as well as equitable in cost.

	Action A: Complete a rate study every 10 years; utilize results of the rate study to set rates appropriately.	
	Action B: Establish a process for non-residential properties to be informed about the piped system progress in their area and how and when to connect to the piped system.	Commercial properties in central areas will likely be required to plan and fund their own connections to the piped system as it comes to their area. Responsibilities between the City and property owners will need to be clear and transparent.
	Action E: If water usage becomes an issue due to water supply or excessive usage, install meters in conjunction with a tiered rate system to encourage less water usage and increase revenue.	

GOAL 4: Facilitate broadband development within the City of Bethel to advance community access to reliable internet service.

Strategy 1: Monitor the buildout of internet-related infrastructure in Bethel.

	Action A: Request information from GCI regarding locations of existing fiber optic cable within Bethel.	The City is aware that GCI has already installed a significant amount of cable in Bethel, including across Brown's Slough and Tundra Ridge. GCI likely obtained easements or rights from either the City or other property owners / easement holders (such as sharing AVEC easements). It would be helpful information for the City to keep tabs on the existing system as it develops.
--	--	---

Strategy 2: When possible, streamline permitting of internet-related infrastructure.

	Action A: Prioritize facilitation of rights-of-way within city-owned land or city-held easements for laying fiber optic cable (FOC).	
--	---	--

Chapter 7 – Public Facilities & Services

GOAL 3: Optimize the management of City revenue and spending.

Strategy 2: Regularly update fees and other charges.

	Action B: Keep up-to-date utility rates by completing utility rate studies every 10 years.	
--	---	--

GOAL 6: Improve public safety facilities and services in Bethel.

Strategy 1: Continue to improve fire and emergency medical infrastructure and services.

	Action B: As the City's piped water system is expanded, install fire hydrants.	Like the Fire Department's action item to construct a new fire substation, more fire hydrants would also help lower insurance rates.
--	---	--

Chapter 8 – People & Economy

GOAL 2: Minimize potential negative impacts to Bethel from the Donlin Mine efforts and maximize potential benefits.

Strategy 2: Work with the Donlin project to plan for additional traffic associated with Donlin Mine.

	Action C: Coordinate with DOT&PF to monitor potential impacts to the capacity of Chief Eddie Hoffman Highway and whether improvements would be needed.	Monitoring capacity and potential needed improvements to Chief Eddie Hoffman Highway could be included in the MOU that the City Manager will coordinate, discussed in Strategy 1, Action A. For further discussion of roadway transportation planning considerations, see <i>Chapter 4 – Local Transportation</i> .
--	---	--

This page has been intentionally left blank.

APPENDIX 14: TRANSIT MANAGER ACTION ITEMS

Appendix 14 – Transit Manager Action Items

Chapter 4 – Local Transportation

GOAL 7: Improve the public transit system to be more convenient and responsive to the community's needs.

Strategy 1: Use data collection to inform changes to the transit system or back up capital needs and potential grant applications.

	Action A: Expand data collected on ridership to reflect times of day and days of the week.	The Transit Manager currently collects total number of passengers using each stop on a monthly basis. This shows which stops are most popular and what areas rely on transit service the most. However, additional data such as daily passenger counts could help inform if there are days of the week when more frequent service would be most useful for transit riders.
	Action B: Expand data collected on ridership to reflect how many passengers enter or exit the bus at each stop.	Currently, the transit system counts passengers per stop, but does not differentiate between passengers entering or exiting the bus. Adding this distinction in the data could help determine which stops are the most popular trip origins versus destinations.
	Action C: Create a comment form on the City website's transit page to collect questions, comments, or issues reported by riders.	Transit riders may have suggestions to improve the system.

Strategy 2: Improve access to information about the transit system.

	Action A: Post signs with schedules and routes at bus stops and inside key community facilities.	Durable printed versions of the schedule and route could be posted at bus stops as well as on bulletin boards in key community facilities. These could include a QR code that people could scan with smartphones to access the Transit page of the City website. The City has reported frequent vandalism of signs at bus stops, so City maintenance staff could monitor this and make repairs when needed.
	Action B: Ensure that Complete Streets (BMC 12.05) is being considered and used to the extent possible in the design of new and reconstructed roads.	

	Action C: Incorporate transit information into visitor information on the City’s website.	<i>See Chapter 8 – People & Economy.</i>
	Action D: When there are updates to routes or schedules, share within the City to be posted on City social media (as well as in the newspaper and City newsletter to continue to remain accessible to those not using social media).	
Strategy 3: Make changes or expansions to the transit services provided.		
	Action A: Consider adding a stop at the airport or partnering with another organization to add another transit link between the airport and the central city.	While a stop at the airport is commonly suggested, it was tested in recent years. The stop seemingly had low ridership, making it difficult to justify funding that stop, and there is no designated space for luggage on buses. Most people who do not drive to the airport use taxi cabs or YKHC’s shuttle. If a stop is implemented again, the following strategies could be used: ▪ The City could work with the airport to post wayfinding and signs showing transit routes and schedules. ▪ The schedule could be limited to times based on the passenger jet schedule. ▪ The stop could be located slightly up the road at Tower Road to avoid congestion in front of the terminal. ▪ <i>See Strategy 4, Action B for ideas related to luggage space.</i> Alternatively, the City could pursue a partnership with YKHC’s shuttle to provide a transfer pass to allow people to pay to ride to YKHC and then transfer to the existing transit services there at the hospital.

	Action B: Annually, evaluate altering the transit route(s) to include additional stops that are commonly requested by community members, such as the Fitness Center.	There used to be a second transit route in addition to the current transit route. It served the City Subdivision area, including the Fitness Center, Pinky's Park, the vocational school, and the surrounding area; these stops are commonly requested. An additional bus was recently purchased, to arrive in the next couple of years, so some of these stops may be reinstated in a second route. If / when routes are changed or expanded to include new destinations like the Fitness Center, this should be advertised to help raise awareness and garner ridership to these destinations. Over time, routes should be examined and reconfigured to incorporate new stops in the most strategic and efficient way. For example, Tundra Ridge Road could influence the shape that routes take. All new road connections should be considered as they are completed.
	Action C: Review ridership data and/or community comments to consider running the transit system later into the evening.	This was provided in the past when there were two transit routes and may become more feasible going forward. Evaluate running transit services to 8pm or 10pm. This may be the key to more people using transit to access destinations such as the Fitness Center. It may be possible to organize evening routes to skip stops not typically used in the evening. This would need to be informed by the data collected.
	Action D: Consider decreasing headways from one hour to half an hour, either throughout the day or during times of peak use.	This could potentially be implemented only during peak times, informed by the ridership data that is gathered as part of Actions in Strategy 1.
Strategy 4: Maintain and improve the transit fleet.		
	Action A: Use a database to track maintenance needs and expected lifespans of buses and make repairs and/or replace buses as needed.	Due to poor road conditions in Bethel, buses need frequent repairs and wear out very quickly. If routes expand, this will lead to even more wear and tear on buses. Besides continuing to strive for better roads, Bethel will need to regularly plan for repairs and purchasing new buses. Buses sometimes take a couple of years to arrive, and the City noted that ideally there would be one more vehicle in the fleet than the number of routes, so this needs to be proactive. To help track all of this information, the Transit Manager should use a database to track the year buses were purchased, their expected lifespan, and repairs needed and/or completed.

	Action B: Consider adding features to buses to improve accessibility and convenience.	The City noted that typical wheelchair lifts for buses break quickly, and there are no local businesses able to fix them. Alternative lift designs or incentivizing a local business to undertake repairs is recommended. Also, additional storage capacity on buses would assist with improving passenger use and comfort, including: ▪ Luggage or cargo space, especially if a stop is added at the airport. This could also help with people transporting groceries. ▪ Bicycle racks The Public Works department should work with the Grant Manager to explore grant applications to fund new buses (which could potentially include installation of cargo space or bicycle racks, since the need for funding to cover these improvements could be discussed in grant applications).
--	---	---

Chapter 5 – Regional Transportation

GOAL 1: Create a well-functioning airport area for travelers and businesses.

Strategy 1: Facilitate efficient and organized access to the airport.

	Action C: Consider adding a transit stop around the airport.	<i>See the Public Transit Section in Chapter 4 – Local Transportation for considerations about this potential stop.</i>
--	--	--



College of Indigenous Studies
P.O. Box 368 • Bethel, Alaska 99559-0368 • (907) 543-4500 • 1-800-478-5822 • www.uaf.edu/bethel

Kuskokwim Consortium Library

April 1, 2024-June 30, 2024 Activity Report for the City of Bethel

KCL's mission is to improve the quality of life for all members of the community by meeting the cultural, recreational and informational needs of the University of Alaska's Kuskokwim Campus and the community of Bethel.

Some of our targeted outreach initiatives to improve the quality of life for all people include:

- Sponsoring the Dolly Parton Imagination Library through a partnership with Bethel Community Services Foundation.
- Literacy, research and educational outreach to organizations that serve youth/college students.
- One-on-one support with technology and forms.
- Outreach to the Bethel Housing Coalition, Bethel Winter House, and Food Bank to improve access to resources for marginalized members of the community, and sponsoring Project Homeless Connect events.

The library sponsors many programs and events throughout the year that connect the community and provide informational, recreational and educational opportunities.

Current Staff:

Theresa Quiner, Library Director
Mikayla Miller, Youth Services Librarian
Thomas Daniel, Circulation Technician
Scott Clifford, our new Jesuit Volunteer just shipped from Pennsylvania!



Bethel Friends of Canines stopped by with puppies for a stress relief break with library staff!



Program highlights:

April: We kicked off April with a Brown Bag Lunch called “**Tips and Tricks for iPhone Photography**” with community member and professional photographer Ryan Noeker.

On Saturdays we held more weekly drop in programs that included **Adult Crafting**, **Saturday Storytime**, **Chess Club**, and a **Pokemon Game Day**. We had noticed that many of the kids who use the library love Pokemon and collect the cards, but did not know how to play the game. Local community member Buddy (Alfred) Jackson shared his love of the game by teaching kids how to play. The first weekend in April we hosted a summer reading sign up event at Saturday Market in order to promote our fun reading programs over the summer. Visiting artist Jimmy Riordan joined us for a three day **zine making workshop**, and many adults and children enjoyed creating zines, which are small handcrafted small-batch publications.

In May, we kicked off with another **Summer Reading** sign up at the Southwest Alaska Art Group’s First Friday event. We enjoy bi-monthly **Toddler Times**, which is an opportunity for children to work on developing motor and social skills while parents can socialize and drink coffee. We kicked off our **Summer Reading Program** on May 17 with a teen program in collaboration with TWC’s Teens Acting Against Violence group, and hosted a teen video game night with an **Among Us** tournament. We love taking our programs outside, and hosted two **Community Birding** programs with the local birding community, and another **Finding Fiddleheads** plant walk with community member Carey Atchak.

In June we kicked off with a very fun **Kids Cooking Class**, again in collaboration with TAAV. Kids and teens learned some basic cooking skills like how to chop vegetables, boil water and more as they made spaghetti and meatballs from scratch. We partnered with the Teens Acting Against Violence Group to help organize a community **Pride celebration**, and held an ethnobotany walk showing people where and how to harvest **Wild Rhubarb**. We enjoyed leading kids in a sewing program teaching them how to do basic hand sewing. Community member Lailtrice Graham led a program called **Kitchen to Cosmetics**, and taught people how to make skin care products out of materials that people generally have on hand in their kitchens. Our Jesuit Volunteer led another **Painting program** for adults. Painting programs are always well attended popular programs.



We started off the fiscal year with the last of our summer reading programs in July and August. We had been collaborating with GBH Boston, Alaska Public Media, and tribal representatives for the past year to develop a Molly of Denali two day camp. The theme was **Molly Community Science Salmon Protector Camp**. We held the camp in July, and it was a huge success. We combined cultural and traditional knowledge with Western Science concepts, and brought in community members to lead different activities. Elder Ayaprun Jones and 4-H’s Tina Uta helped lead the camp, and activities



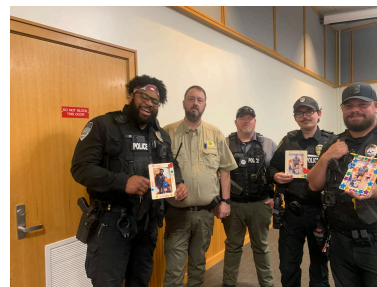
included learning to cut fish, learning to test the fish for age/ sex/ length using scientific tools,

learning a traditional dance about salmon, and learning about the salmon life cycle. If more funding is obtained, the camp curriculum will be developed further and made available to other organizations through PBS kids.

We also worked with Alaska Public Media to do a two day



Family Learn and Grow workshop, which taught parents how to work with their kids to develop their social/ emotional skills. We worked with the Bethel Police Department to do a Crafting with a Cop workshop which was well received by the community, and artist Jimmy Riordan came back out to lead a **week long Artapalooza**



program where kids learned a different art technique every day. We also hosted another Dutch Oven Cooking Class and learned how to amp up our camp cooking techniques.

We wrapped up the summer with our annual summer reading celebration where we give away books and raffle off the prizes from the reading raffle. Because this event aligned with the Olympics, the theme for the celebration this year was “**Silly Olympics**”, and we worked with volunteers and community organizations to lead the kids in a variety of silly competitions like “Blind Tug of War”. Even the Police and Fire departments got in on the fun, and competed against each other in the tug of war competition. We ended the raffle with a dance off for the “Silliest Olympian” trophy. Jeremiah West competed against and was victorious in beating the new Police Chief in a dance off for the “Silliest Olympian Trophy.”



In September, we brought out Cooperative Extension Agent Jasmine Shaw from the Sitka office to do **three days of CES workshops**. She provided pressure gauge testing and time for people to drop in and ask their gardening and food preservation questions. She also led a gardening 101 workshop, a canning workshop, and a workshop on fermenting and pickling. She loved working with the community here, and we plan to bring her out again this winter to lead more workshops.

We also worked with the Southwest Alaska Arts Group and KYUK to do our third annual

Tales on the Tundra storytelling event. 6 storytellers took to the stage to tell a story from their own life, and local band PNKS performed. Almost 100 people attended the show, and it reached an even larger audience when it aired on KYUK and on the library’s YouTube channel. Scan the QR code to watch the full show!



Project updates:

- The library has two outstanding grant applications out to receive funding as a subrecipient for **National Digital Equity/ Literacy grant programs**.
 - One would provide funding for two additional full time staff positions at the library to expand our hours and to expand on our digital literacy services. The



program would also provide funding for people who complete digital literacy workshops and classes to receive a laptop for home use.

- The second application is to receive funding to make the library more user friendly for people working on the public computers. It would allow us to replace some of the furniture in the library. We would replace the current computers carrels with nicer carrels which would include a family workstation like this. We would also replace the existing conference table in the Alaska room with a table that is outfitted with locking drawers that contain laptops so we can expand the number of computer terminals we have available in the library, and have a space where we could have computer workshops during normal library operating hours. We would also replace the soft seating with new seating that has laptop trays and charging stations built into each chair, which is a huge need because we don't have enough outlets in the library.
- We are continuing to work on the Rasmuson Collection Development Grant to replace a lot of the adult non-fiction collection. This is a two year project, and we may ask for an extension.
- We are hoping to seek funding to digitize the Tundra Drums newspaper in the next two years. We have been in discussion with the copyright owner about the project, and he has expressed a willingness for the project. We have drafted a legal document with UA Legal for him to sign, and are pending his signature. We will apply for a Native American Library Services Enhancement Grant this winter to fund the project.



Professional Association/ Conference attendance:

- Theresa and Mikayla were able to attend the American Library Association Annual Conference in San Diego in June for the first time, and learned a lot through the many workshops attended.
- Theresa attended and presented at the Alaska Library Association/ Pacific Northwest Library Association Conference in August. Over 50 people attended the presentation titled "Community Outreach Done Right" and she presented on the library's outreach work with the Bethel Housing and Homelessness Coalition. The discussion included tips for how other communities and libraries can use what the BHHC learned for successful coalition work to tackle community problems.

Statistics April 1, 2024--September 30, 2024

- Active library card users: 2,562
- New library card registrations since April 1: 337
- Visitors to the library:
 - April: 2821
 - May: 2093
 - June: 2208
 - July: 2057
 - August: 1891
 - September: 2005
 - Total: 13,075
- Public computer sessions:
 - April: 489
 - May: 297
 - June: 337
 - July: 291
 - August: 341
 - September: 388
 - Total: 2143
- Alaska Room reservations for meetings or student use:
 - April: 18
 - May: 5
 - June: 4



- July: 2
- August: 6
- September: 10
- Total: 45
- Reference/ research assistance requests:
 - April: 84
 - May: 128
 - June: 80
 - July: 67
 - August: 126
 - September: 136
 - Total: 621
- Family/ Community events (all ages):
 - April: 7
 - May: 4
 - June: 1
 - July: 7
 - August: 1
 - September: 1
 - Total: 21
- Adults only programs:
 - April: 1
 - May: 0
 - June: 3
 - July: 2
 - August: 1
 - September: 3
 - Total: 10
- 12-18 (teen) programs:
 - April: 0
- May: 1
- June: 5
- July: 0
- August: 0
- September: 0
- Total: 6
- 6-11 year old programs:
 - April: 2
 - May: 1
 - June: 1
 - July: 2
 - August: 0
 - September: 2
 - Total: 8
- Birth to 5 years old:
 - April: 2
 - May: 0
 - June: 2
 - July: 2
 - August: 0
 - September: 2
 - Total: 8
- Outreach (to schools, etc):
 - April: 3
 - May: 0
 - June: 0
 - July: 0
 - August: 1
 - September: 5
 - Total: 9
- **Total programs/ outreach: 62**
- **Total attendance in programs 1317**

Upcoming fall programs and events

- Indigenous Peoples' Day Community Celebration October 14, 12-8 p.m.
- Toddler Times October 21 & 28, November 11 18, and December 16 at 11 a.m.
- Rocky Horror Picture Show, October 26, 9 p.m.-midnight
- Trunk or Treat, Halloween Carnival, and Haunted House October 31, 5:30
- Project Homeless Connect November 12, 12-2 p.m.
- Winterfest Carnival December 7



MEMORANDUM

Date: September 30, 2024

To: Lori Strickler, Acting City Manager

From: Lee Foley, Planning Director

Subject: Planning Director's August Report

September 2024 Events

- **Property Issues/Public Nuisances:**

- 1. **No new issues or nuisances identified**

- **Site Plan Permits:** Planning received two (2) Residential Site Plan Permits and two (2) Commercial Site Plan Permits. All have been processed.
- **Planning Commission:** During the regularly scheduled meeting on Thursday, September 12, 2024. Commission members reviewed and approved Bethel Comprehensive Plan 2045. The members also considered the City's application to rezone Lots 4, 5, & 6, Block 7, USS 3230 AB from Public Lands & Institution (PLI) to General Use (GU). The application was not approved due to administrative errors. Subsequently, the Commission held a Special Meeting on September 19, 2024, and approved the City's application for rezoning. Changes to the Bethel Official Land Use Map were incorporated and promulgated, reflecting the approved rezoning application. A Lot Line Adjustment to reflect one (1) lot instead of three (3) is being processed.
- **Abandoned Vehicles:** Met with the Director of Public Safety on September 10, 2024, and toured the City, identifying abandoned and/or junk vehicles, growing junk yards, areas that potentially contribute to public safety hazards, and speaking with residents and owners. Subsequently, met with the Port Director to review the plan to remove two (2) vehicles from the Dock. The Director of Public Safety, Port Director, Landfill Manager, Public Works Director, and Planning will work

collaboratively to develop a comprehensive plan for dealing with this issue.

- **Vacancies:** There are no vacant positions in the Planning Department.
- **Large Projects:**
 1. **Ptarmigan Street Encroachments** – Initial letters sent to ten (10) entities and/or individuals on June 6, 2024. whose properties encroach on the City's right-of-way A second round of letters with an Agreement Contract was developed collaboratively by Planning, the City Attorney, and the Acting City Manager and will be promulgated before the end of September.
 2. **City of Bethel Professional Housing Project** – Land levelled and filled with pile driving ongoing.
 3. **AC Store Construction** – Belated Commercial Site Plan approved with conditions, but work has not recommenced to date. The site plan fee has been remitted to the City.



William Arnold, Public Works Director
 1155 Ridgecrest Drive
 PO Box 649 Bethel, AK 99559
 P: (907) 543-3110
 F: (907) 543-2046
 warnold@cityofbethel.net

MEMORANDUM

DATE: 09.30.2024
TO: City Manager
FROM: Bill Arnold, Public Works Director
SUBJECT: Manager's Report – Public Works Department
Programs/Divisions

Hauled Utilities: We have lost two employees will have three newly hired come mid- October. This month we have had two claims filed against the city. Outside of this our team has kept all scheduled and extra service caught up for the month of September 2024. I need to thank V& E and road maintenance for all the support they have given us throughout the month. Building maintenance thank you for replacing the thermostat in the hauled Utility office. I would like to thank Tom from the port for delivering water to almost every barge this season, this was a great benefit to the hauled utilities department. This month we have responded to a few lift stations with utility maintenance.

Utility Maintenance:

Property Maintenance:

Pool Building	9/26/2024 Work on boilers and boiler system controls
Public Works Building	9/3/2024 Repair Hauled Utilities overhead door. Repair Toilet Hauled Utilities.
	9/8/2024 Repair latch on door southside.
	9/11/2024 Lower all city flags to half-mast.
	9/12/2024 Renumber city fuel tanks
	9/13/2024 Renumber city fuel tanks
	9/17/2024 Repair Hauled Utilities toilet
	9/18/2024 Replace Hauled Utilities thermostat
	9/16/2024 Building crate for pole light material
	9/23/2024 Relocate pole light material to public works
	9/27/2024 Make keys for contractors coming for utility maint
City Hall	

	9/04/2024 Make Keys for DMV
	9/11/2024 Check Heat DMV office.
	9/12/2024 Make keys for DMV
	9/16/2024 Work on leak under building
	9/20/2024 Cutoff 3" pipe pushing up floor by rear door
Fire Department	
	9/11/2024 Open Valves for heat.
Police Department	
	9/02/2024 Work on overhead door. Replace ballast in light fixture.
	9/09/2024 Help move new furniture upstairs
	9/25/2024 Work on boiler in shop
	9/26/2024 Work on boiler in shop
	9/27/2024 Work on boiler in shop
Courthouse Building	
	9/10/2024 Escort Long looking at heating system for upcoming contracted work.
	9/17/2024 Repair toilet courtroom 6
	9/19/2024 Adjust boiler
	9/23/2024 Adjust boiler
Transit Bus Building	9/11/2024 Work on new compressor
Port Office Building	9/19/2024 Repair damaged circuits in warehouse
	9/23/2024 Repair damaged circuits in warehouse
Bus Barn	9/3/2024 Work on office for Streets and Roads.
	9/04/2024 Bleed fuel line for furnace.
	9/09/2024 Work on office for Streets and Roads.
	9/11/2024 Work on office for Streets and Roads.
	9/12/2024 Work on office for Streets and Roads.
	9/13/2024 Work on office for Streets and Roads.
	9/17/2024 Work on office for Streets and Roads.
	9/18/2024 Work on office for Streets and Roads.
	9/19/2024 Work on office for Streets and Roads.
	9/23/2024 Work on office for Streets and Roads.
	9/24/2024 Work on office for Streets and Roads.
	9/24/2024 Work on overhead door
	9/25/2024 Work on office for Streets and Roads.
Boardwalk	
	9/9/2024 Replace missing planks
	9/20/2024 Remove bikes from boardwalk
Dog Pound	
	9/05/2024 Repair leaking water line.
	9/23/2024 Check for leaks in kennel troughs and under building
	9/24/2024 Turn on heat pump

Play Parks in General	
x10 Parks	
	9/9/2024 Bolt trash can to rail to prevent tipping over at owl park. Pick up trash at
	Parks.
	9/17/2024 Pickup trash at all parks.
	9/23/2024 Pickup trash at all parks.
Cemetery Airport	
	9/9/2024 Replace broken rope on flagpole.
	9/17/2024 Replace rope on flag pole
	9/24/2024 Level storage building
All City Buildings	9/01/2024 Building checks and rounds
	9/02/2024 Building checks and rounds
	9/03/2024 Building checks and rounds
	9/04/2024 Building checks and rounds
	9/05/2024 Building checks and rounds
	9/06/2024 Building checks and rounds
	9/07/2024 Building checks and rounds
	9/08/2024 Building checks and rounds
	9/09/2024 Building checks and rounds
	9/10/2024 Building checks and rounds
	9/11/2024 Building checks and rounds
	9/12/2024 Building checks and rounds
	9/13/2024 Building checks and rounds
	9/14/2024 Building checks and rounds
	9/15/2024 Building checks and rounds
	9/16/2024 Building checks and rounds
	9/17/2024 Building checks and rounds
	9/18/2024 Building checks and rounds
	9/19/2024 Building checks and rounds
	9/20/2024 Building checks and rounds
	9/21/2024 Building checks and rounds
	9/22/2024 Building checks and rounds
	9/23/2024 Building checks and rounds
	9/24/2024 Building checks and rounds
	9/25/2024 Building checks and rounds
	9/26/2024 Building checks and rounds
	9/27/2024 Building checks and rounds
	9/28/2024 Building checks and rounds
	9/29/2024 Building checks and rounds
	9/30/2024 Building checks and rounds

Road Maintenance: Business as usual maintained lots of roads. Built a large pad on 5th Ave for professional housing.

Vehicles and Equipment: As usual V&E has been servicing and repairing vehicle and equipment as needed

Transit System:

September was another busy month with steady ridership. The riders consisted of 871 Seniors, 20 Youth, 103 Adults, 154 Disabled, and 1,140 Pass riders. 82 Day Passes along with 500 Day Passes were purchased by TWC and 15 Month Passes along with ONC buying 11-3 Month Passes for their clients. Bus 440 logged 2,292 miles and purchased 270.302 gallons of fuel. Total fares came to \$5,289.00.

At the middle of this month I went to a workshop in Montana which RTAP and TSI sponsored for Transit Substance Abuse Management and Program Compliance to which I received my certification. Also, this month the Transit department paid for 2 new transit buses with 5339 grant funds. The new buses will be arriving on the last barge of the season.

Landfill & Hauled Refuse: The landfill and hauled refuse had another busy month in September. The dumpster truck hauled 72 loads of trash into the landfill, other misc. city trucks hauled 32 loads into the landfill, Private citizens hauled 365 loads into the landfill, there was 3444 yards of commercial trash delivered to the landfill, we received 18 unit with freon in them to be drained and disposed of, we received 2 cars durn the month of September, and 69 load of dirt for covering the trash. I am still waiting for the final report on the inspection that was done in July. We are also receiving on the last barge 22 new dumpster. I am still looking for a permanent Landfill Tech with a CDL License.

Staffing Issues/Concerns/Training:

MEMORANDUM

DATE: September 26, 2024
TO: Lori Strickler, Acting City Manager
FROM: John Sargent, Grant Manager



SUBJECT: Grant Manager's Report for October 8, 2024 Bethel City Council Meeting

Grant Awards

The City was awarded \$75,000 from the Alaska Division of Homeland Security & Emergency Management to pay a consulting firm to develop a cybersecurity plan. The City may pursue capital funding next year for the recommended capital expenditures that appear in the plan.

Grant Applications in Preparation

Justice Assistance Grant (JAG)

Police Chief Harris chose to use the \$11,116 formula JAG grant to be part of the funds used to purchase new security cameras and door card reader program for the police station. In the grant application, I said the City would pay the remaining project amount of \$60,326.36.

Jesuit Volunteer Application

The Acting City Manager approached me with the idea of preparing a grant application to Jesuit Volunteer Corps Northwest to request a part-time Jesuit Volunteer for one year to serve as Community Parks and Recreation Coordinator. This staff position would assist the City in its effort to reestablish the Parks and Recreation Department.

VSW State Revolving Loan

I will complete the Questionnaire required for the City to be able to apply for a State Revolving Loan for the City's water treatment plant upgrades and hopefully qualify for a forgiveness portion. The project cost is \$2,787,000. I

EPA Grant for Removal of Derelict Vessels

The City must apply for a grant from the Environmental Protection Agency in order to secure the \$5.018 million appropriation from Senator Murkowski's Office.

Energy Efficiency and Conservation Block Grant Program

The City of Bethel has a chance to secure \$75,220 in formula grant funding from Energy Efficiency Conservation Block Grant Program. City Administration is planning to purchase a solar power project for use at the YK Fitness Center.

Grant Administration

Homeland Security Grant - Fencing

I prepared and issued a Request for Proposals to hire a fence company to purchase and install 1,050 feet of chain-link security fencing around the new Vehicle & Equipment Shop. Although late in the season, the City will see if it is possible for a company to install the fence in October. If not, the successful bidder will be contracted for spring barge delivery and June 2026 fence installation.

COPS Hiring Grant

I completed the Final Progress Report to close the City's COPS Hiring Grant that provided \$125,000 to cover salaries and benefits of a new police officer position over three years. The City received \$125,000. The City met its requirement to fund the position in Year 4, which ended June 30, 2024.

Current Grants

See list on following pages.

#	Grant	Amount	Expiration
1	Coronavirus Capital Project Fund	\$ 9,000,000	12/31/2026
	The State of Alaska, Dept. of Commerce, Community and Economic Development, Division of Community and Regional Affairs, is expected to produce the Grant Agreement for the City of Bethel by October 27, 2024. The City met all the NEPA and Section 106 requirements requested by the grantor.		
2	Denali Commission Grant	\$ 500,000	9/30/2026
	Grant awarded for construction of Bethel Multiuse Community Center (new gymnasium).		
3	CSP - DHSS FY 2024	\$ 323,081	6/30/2025
	A review of a Detail Ledger report on the first quarter of CSP spending shows that the City has charges for gasoline, cell phone usage, and insurance, which has not always been the case. The first quarter progress and financial reports are due October 30, 2024.		
4	23SHSP-GY23 – Virtual Simulator & Fencing	\$ 268,000	9/30/2025
	The City prepared and issued a Request for Proposals to hire a contractor to purchase and install the fencing around the City's new V&E Shop. Two addendums have been issued based on questions from prospective proposers. Hopefully, the City can get the fence installed in October 2024. The City was denied its reallocation request to purchase a keyless door entry system and building security cameras in lieu of the approved virtual shooting simulator purchase. The City will complete the Environmental, Historical and Preservation documents necessary for the simulator purchase.		
5	COPS Hiring Program - School Resource Officer (SRO)	\$ 125,000	6/30/2023
	City completed final progress report and final financial report to close the grant. City Finance Dept. collected the full \$125,000 grant amount after it completed the finance reports.		
6	Yukon-Kuskokwim Health Corporation Diabetes Prevention & Control Program	\$ 4,738	None
	To do: Complete Final Report and close grant.		
7	Coronavirus Local Fiscal Recovery Fund (ARPA)	\$ 3,361,604	12/31/2024
	The City must spend the remaining grant funds by December 31, 2024. The construction of the Chemical Storage Building and engineer fees are expected to consume the grant balance.		
8	Designated Legislative Grant > YK Fitness Center Gym/Track Design	\$ 500,000	6/30/2026
	DOWL, LLC estimates that it has incurred about half of the grant funds in its work designing the new Bethel Multituse Community Center (gym).		
9	Designated Legislative Grant Public Safety Communication Tower	\$ 500,000	6/30/2028
	STG, Inc. hired to purchase and install the Public Safety Communications Tower.		
10	Designated Legislative Grant > Dust Control	\$ 1,200,000	6/30/2029
	City ready to respond to State with Scope of Work, Budget, and Timeline, which are needed for the State to draw up a grant agreement.		

11	State and Local Cybersecurity Grant Program (SLCGP)	\$ 75,000	9/30/2026
The City of Bethel will hire a consultant or use DOWL, LLC to conduct a cybersecurity review of the City's IT network, equipment, software, and physical layout. The City may use recommendations in the plan as grant requests next year.			
12	Healthy & Equitable Funding	\$ 242,057	12/31/2024
The contractor installed two sets of playground equipment in June 2024. The City will seek reimbursement as soon as the last bills are paid.			
13	VSW Capital Improvement Project Grant	\$ 13,860,000	
City hired an electrical firm to complete the water treatment plant improvements. These improvements are necessary to make the plant ready to connect water pipes to the new school and the Martina Oscar Subdivision.			
14	APEI Safety Grant	\$ 5,000	9/30/2025
The City's Streets and Roads Division will purchase orange cones and barricades to keep workers and the public safe during road work.			

Total \$ 29,964,480



CITY OF BETHEL

Post Office Box 1388

Bethel, Alaska 99559

Phone: 907- 543- 2047

TO: City Manager
FROM: Human Resources
SUBJECT: Monthly Manager Report

DATE: September 30, 2024

The following identifies significant projects that were in addition to general personnel action-based activities (hiring, terminations, benefits review, employee support, etc):

Recruitment and Hiring

Department	Budgeted Positions	Applications Received	Vacancies	<u>Change Since Last Report</u>		
				Pending Offers	Hired	Separated
Administration	4	9*	2			
City Clerk	2		0			
Finance	9	1	3			-1
Planning	2		0			
Attorney	1		0			
Public Safety						
<i>Admin</i>	3	9*	0		+1	
<i>Fire</i>	10	1	1		+1	
<i>Police</i>	31	7	6		+4	
Public Works						
<i>Admin</i>	2	9*	1			
<i>Streets/Roads</i>	6	1	2			
<i>Prop Maintenance</i>	5	1	1			
<i>Refuse/Landfill</i>	3		0			
<i>Hauled Services</i>	19	6	14	+1		-1
<i>Piped Water/Plants</i>	9	2	3			
<i>Vehicles & Equip</i>	7		3			-1
Transit	2.5		.5			
Port and Harbor	3		0			
Parks and Rec	1	3	1			
Total	118.5	31	37.5	*Applications for Admin Asst.- General		

The new City website seems to have expanded the City's exposure on both Indeed and Google searches, as identified by applicants noting "how they heard about the job".

A total of 31 applications were received by HR during September for advertised vacancies. Of these, the City received 9 applications for administrative assistant positions, which were reviewed for vacancies in Administration, Public Safety/Fire and Public Works.

Current vacancies at the Management Team level include City Manager, Finance Director, and the newly-posted Community Parks and Recreation Director.

While Hauled Services has 14 vacancies (one permanent hire has a pending offer for October 7th), the City has 9 temporary drivers available on staff to fulfill the community's water and sewer utility needs.

NeoGOV Transition

Offboarding is still in development, with fewer instances to test forms and checklists.

The E-forms component is complete, with the majority of September's Personnel Action Requests (PARs) completed electronically. In addition, Policy Acknowledgements have begun through the system. Because the system requires an employee to download a policy before acknowledging it, the process results in multiple copies of the policy stored in the City's network, in addition to superseded policies being retained. HR is obtaining a quote from NeoGov to add the Policy management component to the City's HR suite to help streamline policy management.

Online Timekeeping

HR continues to work with Caselle on requirements to transition to online timekeeping.

Workplace Safety, Injuries and OSHA Notifications

There were no reported workplace injuries during the month.

Ongoing and Future Projects

- Attendance at the October Alaska Society of Human Resource Management (ASHRM) annual conference.
- Updating classification and compensation data.
- Job Description review and updates.
- Presentation and acknowledgment of City Drug and Alcohol Policies.
- Updating the Employee Handbook, last adopted by City Council in 2015.



CITY OF BETHEL
OFFICE OF
JAMES C. HARRIS
CHIEF OF PUBLIC SAFETY
harrisjc@cityofbethel.net



September 2024 Monthly Report
Police Department

Personnel:

Current Staffing			
Position	Allocated	Staffed	Vacant
Safety Patrol (three grant funded)	3	3	0
Community Service Officer	2	2	0
Evidence and Record Custodian	1	1	0
Administrative Assistant/Taxi Inspector	1	1	0
Public Safety Dispatcher (one E911 funded)	5	2	3
Public Safety Dispatch Supervisor	1	0	0
Peace Officers (one grant funded/reimbursed SRO)	20	16	4

Operations:

Operations Tempo				
	September 2024	August 2024	September 2023	2024 Total
Calls Total	833	922	1027	15510
Reports Total	113	168	92	1259
Intoxicated Pedestrian Calls	129	129	114	1323
Driving Under Influence Calls	11	9	12	126
Domestic Violence Reports	16	14	12	248
Disturbance Calls	73	61	78	795
Subject Removal Calls	30	64	66	586
Animal Calls	30	30	19	314
Animal Bite Reports	1	0	0	9
Sexual Assault Reports	1	1	1	30
Death Investigation Reports	0	2	2	10

Dispatch: (907) 543-3781 FAX: (907) 543-5086



**CITY OF BETHEL
OFFICE OF
JAMES C. HARRIS
CHIEF OF PUBLIC SAFETY
harrisjc@cityofbethel.net**



PERSONAL:

Daneila Cordoba from LAPD was hired as a police Officer start date of 09/25/2024

Adam Rivers was hired And has begun work

Sophie Poe was hired as admin assistant for police and fire

We are currently working on two background investigation for potential new hires .

Chief Harris, Officer Charles and Sgt Roberson attended a symposium for Alaska Safe Roads, Officer Charles was present an award as was Officer Parkin for their contribution to safe roads initiative. Chief Harris excepted the award for Officer Parkin due to him being on leave.

Evidence Custodian Patricia Watson Started Work .

TRAINING:

Lt. Wigner attended an Evidence training

Other:

(*) calls for service security checks removed from this number. Officers conducted 107 security checks.

Bethel Fire Department September Report

Total calls 87

Fire Calls: 13

EMS Calls: 74

Most fire calls were lockouts both car and house and false alarms made up most fire calls.

One Notable Fire Call

On 9-19-24 at 1:29 a.m. Firefighters responded to the report of something on fire in the pit. Firefighters found a vehicle on fire as well as a front-end loader equipment on fire. Firefighters extinguished both fires. The cause of the fires is under investigation.

Dispatch: (907) 543-3781 FAX: (907) 543-5086



**CITY OF BETHEL
OFFICE OF
JAMES C. HARRIS
CHIEF OF PUBLIC SAFETY
harrisjc@cityofbethel.net**



Notable EMS Calls

On 9-7-24 at 12:57 a.m. medics responded to the report of a person that was stabbed in the thigh. Patient was assessed and transported to the hospital. Patient medevac'd to Anchorage.

On 9-9-24 at 8:52 a.m. medics responded to the report of a person with a cut on their abdomen. Patient was assessed and transported to the hospital.

On 9-16-24 at 1:26 p.m. a medic responded with the National Guard Blackhawk for a search and rescue. Medic and Blackhawk crew located the individuals and transported them back to Bethel. They were reported to have no injuries.

Staffing

Career Staffing. 10 out of 12 positions added one firefighter trainee and one administration assistant to be shared with the police department.

Volunteering staffing. 26 volunteers

City of Bethel, Alaska

Acting City Manager's Office

September 18, 2024- October 1, 2024

Ongoing Projects

Community Center Expansion

There will be a mandatory pre bid meeting on October 18th to discuss with the potential bidders the details and scope of the project.

Animal Control Center

A meeting is being coordinated between DOWL, Architects Alaska, and Bethel Friends of Canines to determine if there are construction modifications that can be made to reduce the construction costs. We anticipate meeting the first week of October.

Boardwalk Lighting/Park Lighting

The contractor performed a drop in of the electrical line for the light posts. The contractor is awaiting additional supplies prior to scheduling the next phase of the project.

Bethel Heights/Martina Oscar Water/Sewer Project

Our water facility team members, DOWL, and two contractors met to identify an action plan for the near future shutdowns of the water distribution system to allow for the instillation of the high-power pump. This installation will need to occur before freeze-up and will help ensure the Bethel Heights Water Treatment Plant, has enough water pressure to supply Ayaprun. The City team will be coordinating with DEC for the shutdown. During these shutdowns the team plans to address a few other areas where there are major leaks.

Piped Utility Audit

The piped utility team completed an audit of piped services which is being compared the current account lists to ensure customers have accounts with the City. This cross reference will take a bit more time than expected because of unexpected staff shortages.

Professional Housing Development

The Planning Commission approved the re-zone on September 19th. Since, the contractor has completed driving the piles on the property.

Ptarmigan Encouragements DOT STIP Project

The Planning Department has sent out a second notice of municipal property encroachment, request to cure. This time the notice included an agreement for the violators to cure the encroachment by June 30, 2025. DOWL, and the State of Alaska DOT will be meeting late October to discuss the project. We should have an update in November.

Bethel Police Department Server Replacement

On September 17th Alaska Communications completed the server transfer of information. The new system is up and running.

Tundra Ridge Road State of Alaska Department of Transportation Project

The City performed a final walkthrough of the Tundra Ridge Road on October 1. Public access to the roadway is delayed one week because the signs are not yet installed.

Community Parks and Recreation Director Recruitment

The City has received three applications for the position. We will organize a hiring committee to evaluate the applicants at the end of the month.

Piped Water Audit

The piped utility team completed their walking audit of the piped services. On or shortly after October 1, we will run a report of utility account holders and compare that list with the audit list to identify who has not yet complied. Once that list is created, we will send a letter to the property owners providing notice of violation.

Request for Proposals, Bids, Qualifications

Fencing at V&E Shop Request for Proposal

The construction of a fence around the new location of the Vehicle and Equipment Shop Request for Proposal will close October 7th.

Yukon Kuskokwim Community Center Expansion Request for Qualifications

Expected to open October 7th, and Close on October 28

General

- Updating our property damage claims against the City processes.
- Updating some personnel policies to include Vehicle Use Policy and Union leave bank Use Procedures.
- Through the walkthroughs of the Tundra Ridge Road, we were able to make some connections with the State DOT. They will be working on designs for the Chief Eddie Hoffman project which we asked to be updated on regularly.
- We have engaged in a partnership with the Alaska Municipal League in their grant application to the U.S. Economic Development Administration for disaster response and mitigation training on a statewide level. Partnership coordination and resource sharing is a necessity in everyday life but becomes more impactful during a disaster.
- AML is also working on applications for the Digital Equity Coalition funding. We confirmed with AML our interest in obtaining their help in the application process to assist in funding internet and computer equipment at the Community Center.
- The City has a number of trucks and large equipment items that came in on the last barge. The Team is working to ensure the items are registered, paid for, and working.



City of Bethel

Finance Department

Manager's Report for September 2024

Date: September 1-30, 2025

To: Lori Strickler, Acting City Manager

From: Cynthia Sharp, Deputy Finance Director

Subject: Management Report, September 2024

Current Events within the Finance Department

Sales tax: is currently working on reviewing all accounts to make sure they are current on their sales tax filings. Making contact with clients to get updated information. And continues to study and learn more about the BMC-Sales Tax/business license portion.

Utility Billing: is currently in training learning how the monthly processes work, making sure the procedures are followed and on schedule.

Accounts payable/Payroll: is working on cleaning up old accounts in the system. Merging vendors, making sure there are W-9's on file for vendors, etc. The payroll portion she is in training and doing very well.

General Ledger: Keeps us all in balance

Finance Committee

Finance Committee meeting worked on business license modifications to send to Council

Personnel

Open positions: Finance Director /Front Desk

City of Bethel, Alaska

City Clerk's Office

Council Meetings

October 8, 2024 Regular City Council Meeting
October 14 2024 Special City Council Meeting
October 22, 2024 Regular City Council Meeting

City Clerk's Office

-City Hall hosted early voting for the City's Regular Election and for the State's REAA Election. Mon-Fri. 8:30-5pm, with extended hours on the 17th and 24th until 6:00pm.

-GovHR has reopened the search process for hiring a City Manager.

- Continuing to troubleshoot wrinkles with the City's Website and Archiving Software.

- Wrapping up the City's October 1st Regular Election. The event was run successfully and professionally. I would like to thank all the election workers and chairs for helping to make the election process easy and streamlined for the voters. Also, a big thank you to Lori for walking me through the election season and being a resource to draw from to help me figure out all the processes and deadlines which had to be met.

Task	Period Total	Year to Date Total
Passport Appointments	5	57
Burial Permits/Reservations	4	34
Notary Services	2	26
Meeting Minutes Drafted	3	20
Resolutions Drafted	1	7
Ordinances Drafted	-	2
AM/IM Drafted	-	4

Committee/Commission Vacancies	Regular	Alternate
Community Parks and Recreation Committee	full	1
Planning Commission	full	2
Port Commission	1	2
Public Safety and Transportation Commission	full	2
Community Action Grant Technical Review Board	full	full
Public Works Committee	3	2
Finance Committee	1	2
Ethics Board	full	1