

STREAMLINING CAPITAL PLANNING WITH GIS






- Largest city in the Aleutians
- Population: ~5000

Capital and Major Maintenance Plan

- Five year plan updated annually
- About 20 projects per imminent fiscal year
- Totaling about \$20-30M per year
- Roughly 40 projects over a 5 year period

<p>CMMP Process Guide</p> 	<p>2021 To 2025</p>																																																																																
<p><i>CMMP Overview, CMMP Process At A Glance, CMMP & Budget Schedule, Sample Evaluation Form</i></p> <p>City of Unalaska, Alaska</p>																																																																																	
<table border="1"> <thead> <tr> <th>CMMP Process Overview</th> <th>August</th> <th>September</th> <th>October</th> <th>November</th> <th>December</th> <th>January</th> <th>February</th> <th>March</th> <th>April</th> </tr> </thead> <tbody> <tr> <td>Kick Off Meetings</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Training</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Nominations</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Internal Review</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Planning Commission Review</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Presentation to Council</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Council Adoption</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	CMMP Process Overview	August	September	October	November	December	January	February	March	April	Kick Off Meetings										Training										Nominations										Internal Review										Planning Commission Review										Presentation to Council										Council Adoption										
CMMP Process Overview	August	September	October	November	December	January	February	March	April																																																																								
Kick Off Meetings																																																																																	
Training																																																																																	
Nominations																																																																																	
Internal Review																																																																																	
Planning Commission Review																																																																																	
Presentation to Council																																																																																	
Council Adoption																																																																																	

Capital Projects?

- Based on project cost
 - A \$50,000 threshold for general fund projects
 - Proprietary fund projects over \$10,000
- 4 categories
 - Capital Projects
 - Major projects, often multi-year, requiring massive funding
 - Solid waste gasifier, dredging projects, major studies
 - Major Maintenance
 - Maintenance that requires massive funding or long term recurring maintenance
 - Powerhouse generator rebuilds, re-roofing, water storage tank painting
 - Major Purchase
 - A large 1 time purchase over \$50,000
 - Tasers, SCBAs, printers/plotters,
 - Rolling Stock
 - Vehicles normally a separate category, but major purchase vehicles get slides
 - New fire truck

CMMP 5-Year Progression Model

Nominations that have final engineering and design, are ready to construct or purchase.	Nominations have preliminary engineering and design numbers.	Nominations have ROM numbers.	Nominations have WAG numbers.	Nominations have WAG numbers.
<i>Next fiscal year budget</i>	<i>2 years out</i>	<i>3 years out</i>	<i>4 years out</i>	<i>5 years out</i>

ROM = Rough Order of Magnitude (number within 50% accuracy)
WAG = Wild-Approximate Guess

Old Process

- Department directors fill out project nomination forms and submit to Planning (Word Doc)
- Planning manually compiles funding requests into spreadsheets and slides (Excel and Publisher)
- Several back and forth editing steps transpire requiring multiple saved copies of the set of slides and the set of excel sheets
- Planning collects and manually compiles review scores
- Project funds re-arranged by year to avoid overburdening one year with projects/funds
- Project summaries submitted to City Council for comments (meaning more edits and copies) & approval

OUTPUTS

FY20-24 CMMP

Burma Road Chapel Upgrades | GENERAL FUND

Estimated Project & Purchase Timeline

Pre Design: FY 2020

Engineering/Design: FY 2021

Purchase/Construction: FY 2022



Project Description: This project replaces rotting foundation members and portions of rotting exterior siding, removes shingles, roof boards, damaged insulation, installs framing for eave soffit ventilation/increased depth for insulation, installs insulation to R-30, installs new roof boards, reroofs the building, paints the new eaves and trim.

Project Need: Siding on the PCR side of the Burma Road Chapel is showing severe signs of rot and water has seeped into portions of the wood rim joists causing rot along the foundation. The facility lacks proper insulation and ventilation below the roofing. It causes snow melt on the roof to run down to the eave and freezes where the walls and roof join together where there is less heat loss at that part of the roof structure. As ice dams grow larger, the water from the melting snows backs up and leaks between wood shingles into the building causing water damage. In FY08, metal flashing was installed on the eaves over the electric cable system to heat the flashing. The facility's life will be extended by eliminating further water damage to the structural components in the foundation and below the roof. The new roof will protect the facility for at least another 30 years.

Maintenance history includes: Repairs from 1940 to 1996 is largely undocumented. Work prior to 1996 adapted the structure to new uses as needs evolved. Past work includes: exterior painting, interior renovations, flooring, new shingles in 1995, boiler and fuel tank in 1998. As part of the DPW-Facilities Maintenance budget, we will replace the metal flashing and heat trace on the eave as an interim measure when the present system fails

Development Plan & Status (Include Permit and Utility Requirements): Concept stage.

Cost & Financing Data:

Cost Assumptions

Engineering, Design, Const Admin	70,000
Other Professional Services	10,000
Construction Services	350,000
Machinery & Equipment	-
Subtotal	430,000
Contingency (set at 30%)	129,000
TOTAL	559,000
Less Other Funding Sources (Grants, etc.)	-
Total Funding Request \$	559,000

Revenue Source	Appropriated Funds	Fiscal Year Funding Requests					
		FY20	FY21	FY22	FY23	FY24	Total
General Fund (DEPT)		10,000	70,000	479,000			559,000
1% Sales Tax							-
Grant							-
Proprietary Fund							-
TOTALS \$	-	10,000	70,000	479,000	-	-	559,000
Requested Funds:							

Summary Sheets



CITY OF UNALASKA CAPITAL & MAJOR MAINTENANCE PLAN FY 20

Responsible Department	Project Name	Appropriated	General Fund	Electric	Wastewater	Water	Solid Waste	Ports & Harbor	Airport	Housing	Proprietary Fund	Grant
			FY20 Request	2020	2020	2020	2020	2020	2020	2020	Subtotal	2020

1	Public Works	Burma Road Chapel - Foundation Replacement	0	10,000	0	0	0	0	0	0	0	0
2	Public Works	Captains Bay Road/Utility Improvement										
3	Public Works	Causeway Culvert Replacement										
4	Public Works	City Wide Drainage - Trapper Drive										
5	Public Works	Equipment Storage Building										
6	PCR	Aquatic Center Mezzanine & Office										
7	PCR	Gymnasium Floor Replacement										
8	PCR	Sitka Spruce Park Improvements										
9	PCR	Multi Purpose Facility										
10	PCR	Unalaska City School Playground Renovation										
11	PCR	Unalaska Public Library Improvement										
12	DPS	ALS Mankin										
13	DPS	Training Center										
14	DPS/Water	SCBA Replacement										
15	DPS	Aerial Ladder Replacement										
16	DPS	Radio System Upgrade										
17	DPS	Tsunami Siren System Upgrade										
18	Public Works	Henry Swanson House										
19	Electric	Generator Sets Rebuild										
20	Electric	Flywheel Energy Storage System										
21	Electric	4th Waste Heat Recovery Unit										
22	Electric	Powerhouse Cooling Water Inlet Clarifier										
23	Electric	34.5 kV Submarine Cable Replacement										
24	Electric	Automatic Meter Read System										
25	Water	Generals Hill Booster Pump										
26	Water	Pyramid Water Treatment Plant Modification										
27	Water	CT Tank Interior Maintenance and Painting										
28	Water	Pyramid Water Storage Tank										
29	Solid Waste	Reinsulation of Baler Building										
30	Solid Waste	Solid Waste Scale Upgrade										



Capital and Major Maintenance Plan FY2020 - FY2024 Estimated Project and Purchase Timelines

Pre-Design
Engineering/Design
Construction/Purchase

Programs or projects that are not active in other fiscal years. The purpose of this table is to provide an overview of the estimated project timelines identified in the nominations for the current CMMP and to display the allocation of valuable staffing resources. Projects identified in previous CMMP's that are not in need of additional funding in the current CMMP are not included below.

Fund or Department	Project	FY 20 Request	Total Project Cost	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Electric	Burma Road Chapel Roof Ventilation Upgrade	\$10,000	\$553,000					
Electric	Captain's Bay Road and Utilities	\$750,000	\$550,000,000					
Electric	Causeway Culvert Replacement	\$593,500	\$793,500					
Electric	City Wide Drainage Project - Trapper Drive	\$0	\$533,000					
Electric	DPS Equipment Storage Bldg.	\$0	\$1,545,830					
Electric	Aquatic Center Mezzanine and Office Space Expansion	\$0	\$520,000					
Electric	Gymnasium Floor	\$0	\$221,000					
Electric	Sitka Spruce Park Improvements	\$208,185	\$278,185					
Electric	Tennis Court Improvements/Multi-Purpose Facility	\$0	\$5,629,000					
Electric	UCSD Playground Renovations	\$1,326,485	\$1,626,485					
Electric	Unalaska Public Library Improvements	\$5,000,000	\$5,400,000					
Electric	ALS Mankin	\$143,000	\$143,000					
Electric	Fire Training Facility	\$0	\$3,057,130					
Electric	SCBA Replacement	\$410,800	\$410,800					
Electric	Aerial Ladder Replacement	\$0	\$1,630,000					
Electric	Radio System Upgrade	\$630,000	\$1,000,000					
Electric	Tsunami Siren Upgrade	\$261,879	\$261,879					
Electric	Henry Swanson House	\$119,340	\$119,340					
Electric	Volunteer Purchases	\$1,044,000	\$4,639,000					
Electric	Generator Sets Rebuild	\$1,714,056	\$9,320,019					
Electric	Flywheel Energy Storage System	\$0	\$2,425,310					



CITY OF UNALASKA CAPITAL & MAJOR MAINTENANCE PLAN

FY 20 - FY24 Summary of Projects & Funding Sources

	Appropriated	FY20 Request	2021	2022	2023	2024	Total
General Fund Projects	5,467,569	11,900,789	1,421,793	31,661,078	4,409,990	26,733,900	81,595,119
Other Fund Projects		6,054,918	20,982,851	12,315,967	5,927,375	12,856,543	58,137,654
Total	5,467,569	17,955,707	22,404,644	43,977,045	10,337,365	39,590,443	139,732,773
Funding Source							
General Fund	5,467,569	11,900,789	1,421,793	31,661,078	4,409,990	26,733,900	81,595,119
1% Sales Tax							0
Electric Proprietary Fund		3,160,968	5,792,276	5,649,301	2,188,970	4,095,350	20,886,865
Water Proprietary Fund		1,006,800	2,541,975	3,333,333	40,000	0	6,922,108
Wastewater Proprietary Fund		40,000	50,000	3,333,333	0	0	3,423,333
Solid Waste Proprietary Fund		741,500	1,788,600	0	0	80,000	2,610,100
Ports/Harbors Proprietary Fund		1,105,650	7,405,000	0	3,094,655	775,000	12,380,305
Airport Proprietary Fund		0	0	0	0	0	0
Housing Proprietary Fund		0	0	0	0	0	0
Debt							0
Grants		0	3,405,000	0	603,750	7,906,193	11,914,943
Sub-Total Other Funds		6,054,918	20,982,851	12,315,967	5,927,375	12,856,543	58,137,654
Totals	5,467,569	17,955,707	22,404,644	43,977,045	10,337,365	39,590,443	139,732,773
Vertical Checkpoint							139,732,773

Tables



**City of Unalaska
Capital and Major Maintenance Plan
FY 2018**

General Fund						FY18 Financing Sources for Capital Cost					
Project #/ Type	Fund or Department	Project	Appropriated Funding	FY18 Request	Total	General Fund	City 1% Sales Tax	Proprietary	Debt	Other Grant	Total
	Public Works	S-Curves Pathway	66,000	52,000	118,000	52,000	-	-	-	-	52,000
	DPW & Facilities	Aquatics Center Column Repairs	5,000	40,000	45,000	40,000	-	-	-	-	40,000
	Public Safety	Radio Upgrade (Compliance)	-	110,000	110,000	110,000	-	-	-	-	110,000
	Public Safety	Haystack Security Fence	-	125,000	125,000	125,000	-	-	-	-	125,000
	Public Safety	Records Management System Upgrade (Grant Seized & Forfeited Funds)	91,000	409,000	500,000	409,000	-	-	-	-	409,000
	PCR - Library	Unalaska Public Library Improvements (Design)	12,500	30,000	42,500	30,000	-	-	-	-	30,000
	General Fund	Vehicle Replacement (Purchases)	-	-	-	-	-	-	-	-	-
Governmental Grand Total			174,500	766,000	940,500	766,000	-	-	-	-	766,000

Proprietary Funds						FY18 Financing Sources for Capital Cost					
Project #/ Type	Fund or Department	Project	Appropriated Funding	FY18 Request	Total	General Fund	City 1% Sales Tax	Proprietary	Debt	Other Grant	Total
	Electric										
	Electrical-Distribution	Automatic Meter Read System	-	119,362	119,362	-	-	119,362	-	-	119,362
	Electric	Vehicle Replacement (Purchases)	-	-	-	-	-	-	-	-	-
Electric Grand Total			-	119,362	119,362	-	-	119,362	-	-	119,362

	Water										
	Water	Genral Hill Water Booster Pump	-	21,600	21,600	-	-	21,600	-	-	21,600
	Water	Vehicle Replacement (Purchases)	-	-	-	-	-	-	-	-	-
Water Grand Total			-	21,600	21,600	-	-	21,600	-	-	21,600

	Wastewater										
	Wastewater	Vehicle Replacement (Purchases)	-	-	-	-	-	-	-	-	-
Wastewater Grand Total			-	-	-	-	-	-	-	-	-

	Solid Waste										
	Solid Waste	Composting	-	30,000	30,000	-	-	30,000	-	-	30,000
	Solid Waste	Cells 3&4 Partial Cell Closure	-	900,000	900,000	-	-	900,000	-	-	900,000
	Solid Waste	Vehicle Replacement (Purchases)	-	-	-	-	-	-	-	-	-
Solid Waste Grand Total			-	930,000	930,000	-	-	930,000	-	-	930,000

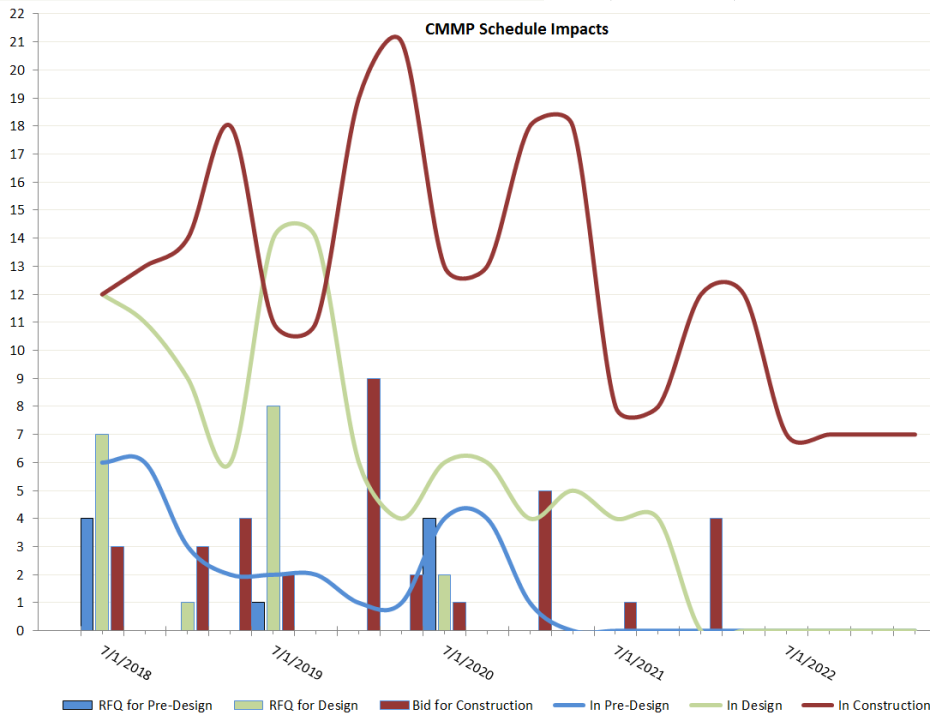
	silions III & IV Const)	3,005,858	47,682,000	50,687,858	-	-	47,682,000	-	-	-	47,682,000
		1,541,000	5,000,000	6,541,000	3,500,000	-	-	-	-	1,500,000	5,000,000
& Harbors Grand Total			4,546,858	52,682,000	57,228,858	3,500,000	-	47,682,000	-	1,500,000	52,682,000

		-	140,000	140,000	-	-	140,000	-	-	-	140,000
Airport Grand Total			-	140,000	140,000	-	-	140,000	-	-	140,000

		-	117,772	117,772	117,772	-	-	-	-	-	117,772
Housing Grand Total			-	117,772	117,772	117,772	-	-	-	-	117,772

Governmental Fund Total	174,500	766,000	940,500	766,000	-	-	-	-	-	-	766,000
Proprietary Funds Total	4,546,858	54,010,734	58,557,592	3,617,772	-	-	48,892,962	-	1,500,000	-	54,010,734
City Grand Totals	4,721,358	54,776,734	59,498,092	4,383,772	-	-	48,892,962	-	1,500,000	-	54,776,734

CMMP Schedule Impacts



Issues

- Error-prone
 - Manually copying numbers between different forms
 - Often using 10 key and multiple staffers time to verify changes made correctly and all numbers add up
- Frequent changes
 - New City Managers
- Mess of separate files
- New iteration with every update

Goals

- Enter once, multiple outputs
- Easy for multiple users to edit
- Easy to update projects once entered
- Deliver familiar outputs
- No new software or services

Process

Kick Off

Meetings for CMMP Staff, All Staff, Planning Commission and City Council

Training

Learn the new GIS data entry system

Understand ranking tool

Project Inception

Update existing nominations

Input new nomination

Update Rolling Stock

Initial Internal Reviews

2 Project reviews (one draft, one final)

Ranking of projects based on Council weighted categories

Public Review

Planning Commission Review

City Council Review

Final Editing

Edits based on Planning Commission and City Council Reviews

Final Adoption

Council votes on CMMP package

DATABASE DESIGN

What do we need to track?

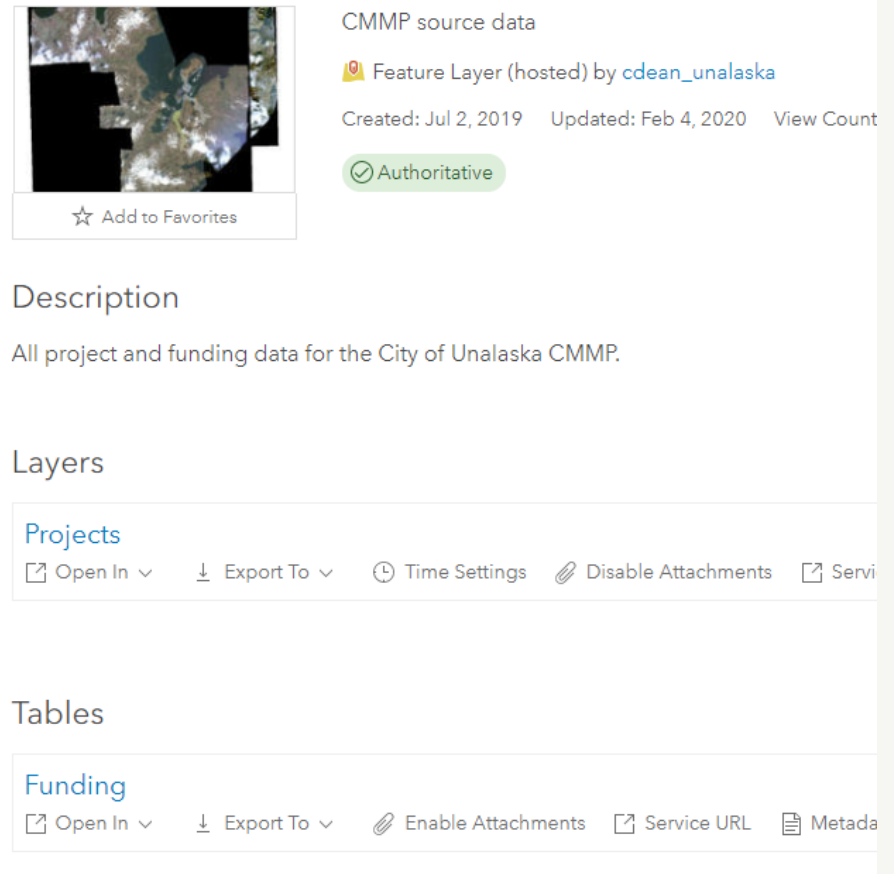
- General project details – department, description, location, etc.
- Timeline
- Funding
 - Fiscal Year
 - Source
 - Requested Amount
 - Approved Amount
- Attachments

ArcGIS Online

- No new software
- All web-based for end users
- User account management
- Built-in attachments support & hosting

ArcGIS Online

- Flexibility
 - Easily update database schema as needs change
- Spatial
- Editor tracking
- API
 - Easy to automate



The screenshot shows the ArcGIS Online interface for a specific item. At the top left is a thumbnail map of Alaska. To its right, the title 'CMMP source data' is displayed, followed by 'Feature Layer (hosted) by cdean_unalaska'. Below this, the creation and update dates are shown: 'Created: Jul 2, 2019' and 'Updated: Feb 4, 2020', along with a 'View Count' link. A green 'Authoritative' badge is present. Below the map thumbnail is an 'Add to Favorites' button. The 'Description' section contains the text: 'All project and funding data for the City of Unalaska CMMP.' The 'Layers' section shows a list with 'Projects' selected, and options for 'Open In', 'Export To', 'Time Settings', 'Disable Attachments', and 'Service'. The 'Tables' section shows a list with 'Funding' selected, and options for 'Open In', 'Export To', 'Enable Attachments', 'Service URL', and 'Metadata'.

CMMP source data

Feature Layer (hosted) by [cdean_unalaska](#)

Created: Jul 2, 2019 Updated: Feb 4, 2020 View Count

Authoritative

☆ Add to Favorites

Description

All project and funding data for the City of Unalaska CMMP.

Layers

Projects

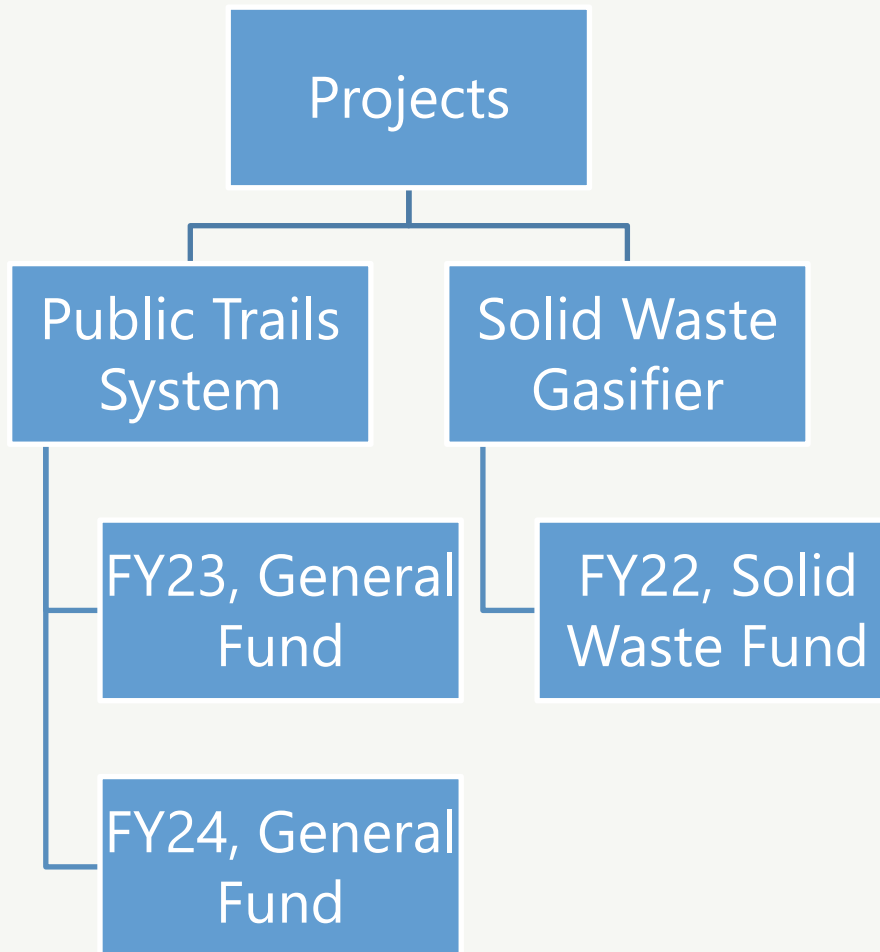
Open In ▾ Export To ▾ Time Settings Disable Attachments Service

Tables

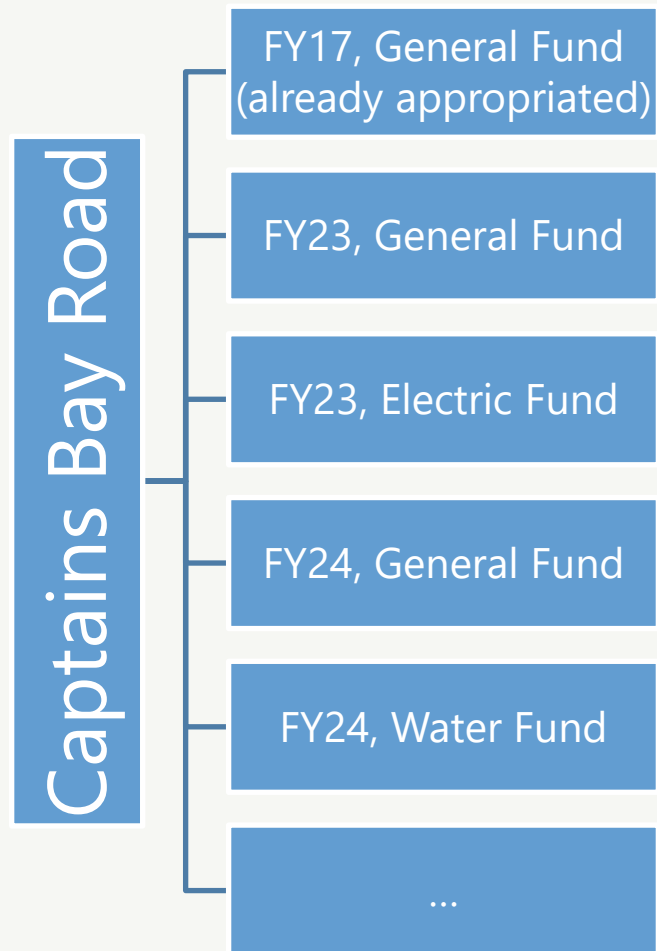
Funding

Open In ▾ Export To ▾ Enable Attachments Service URL Metadata

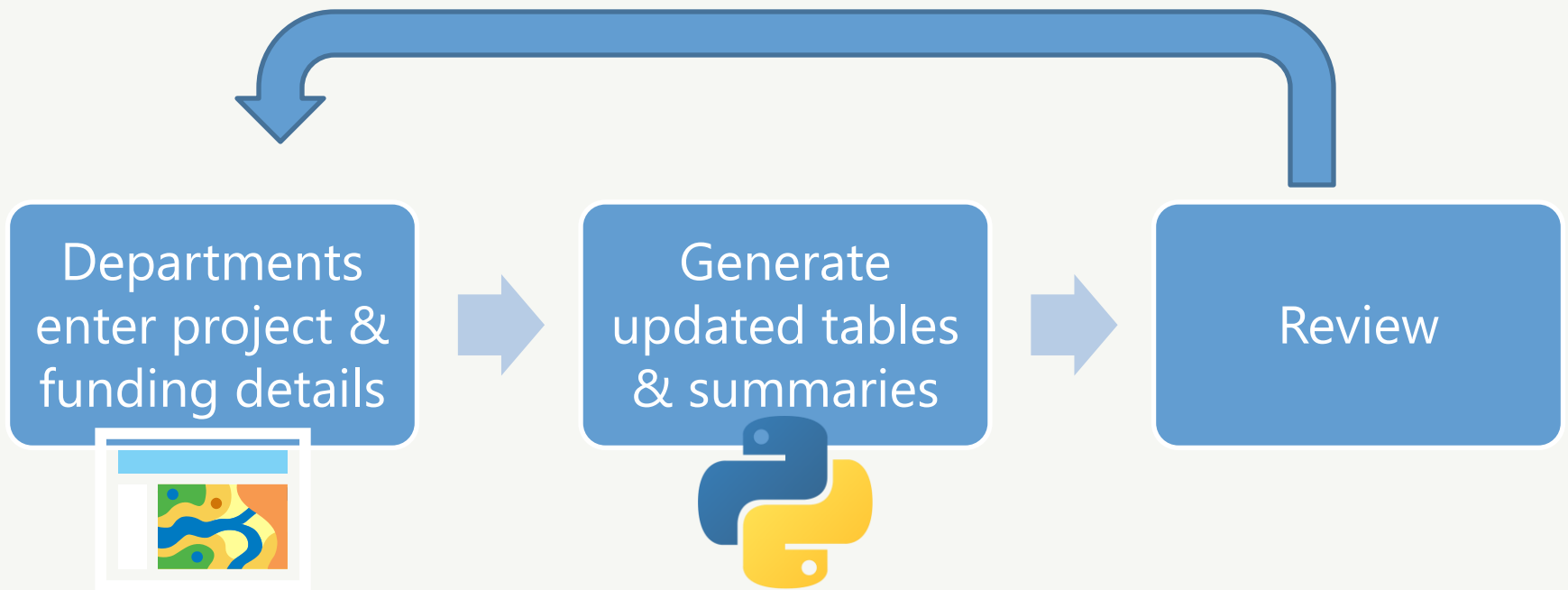
Structure



Structure



Workflow

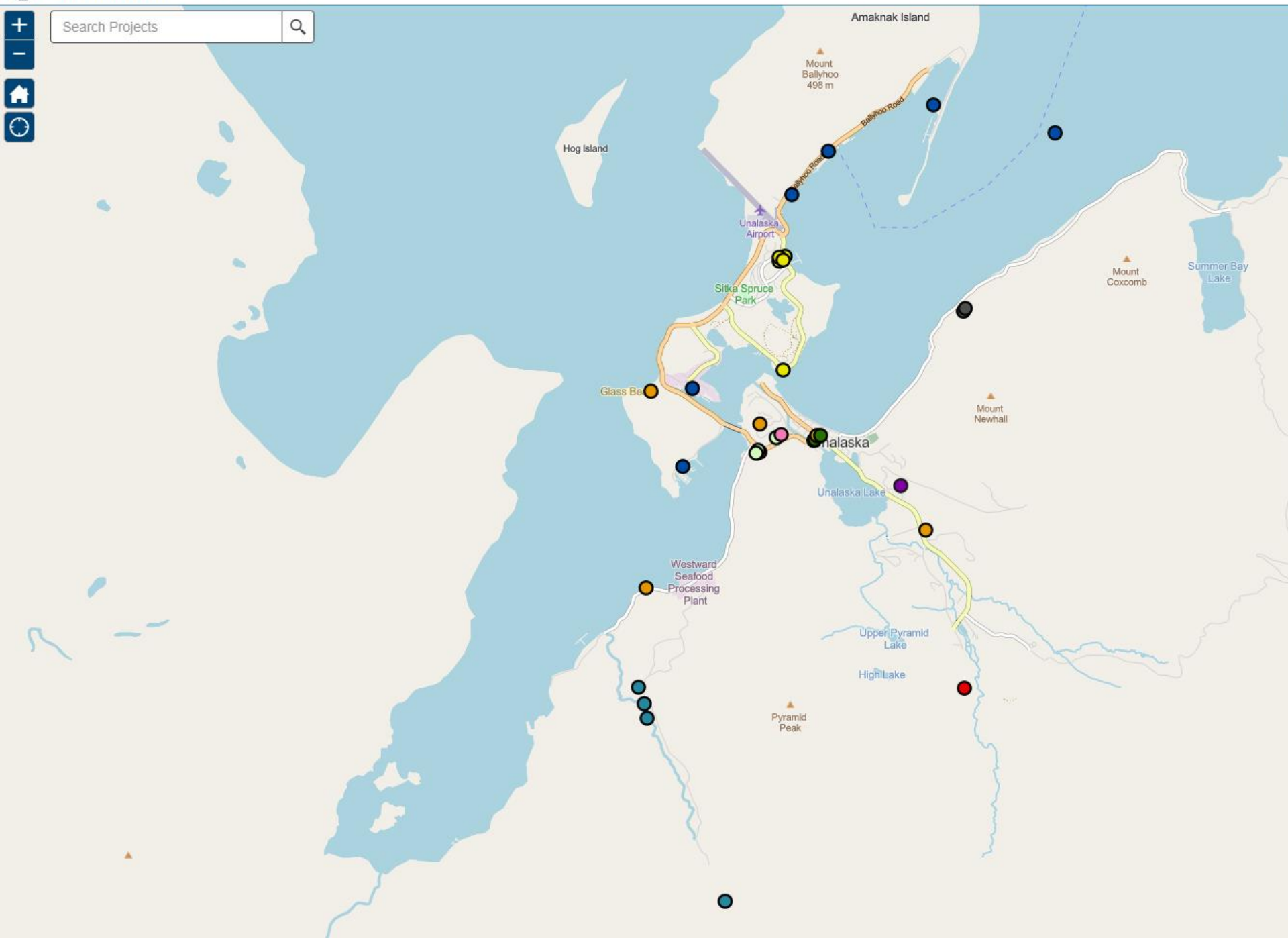


Editor

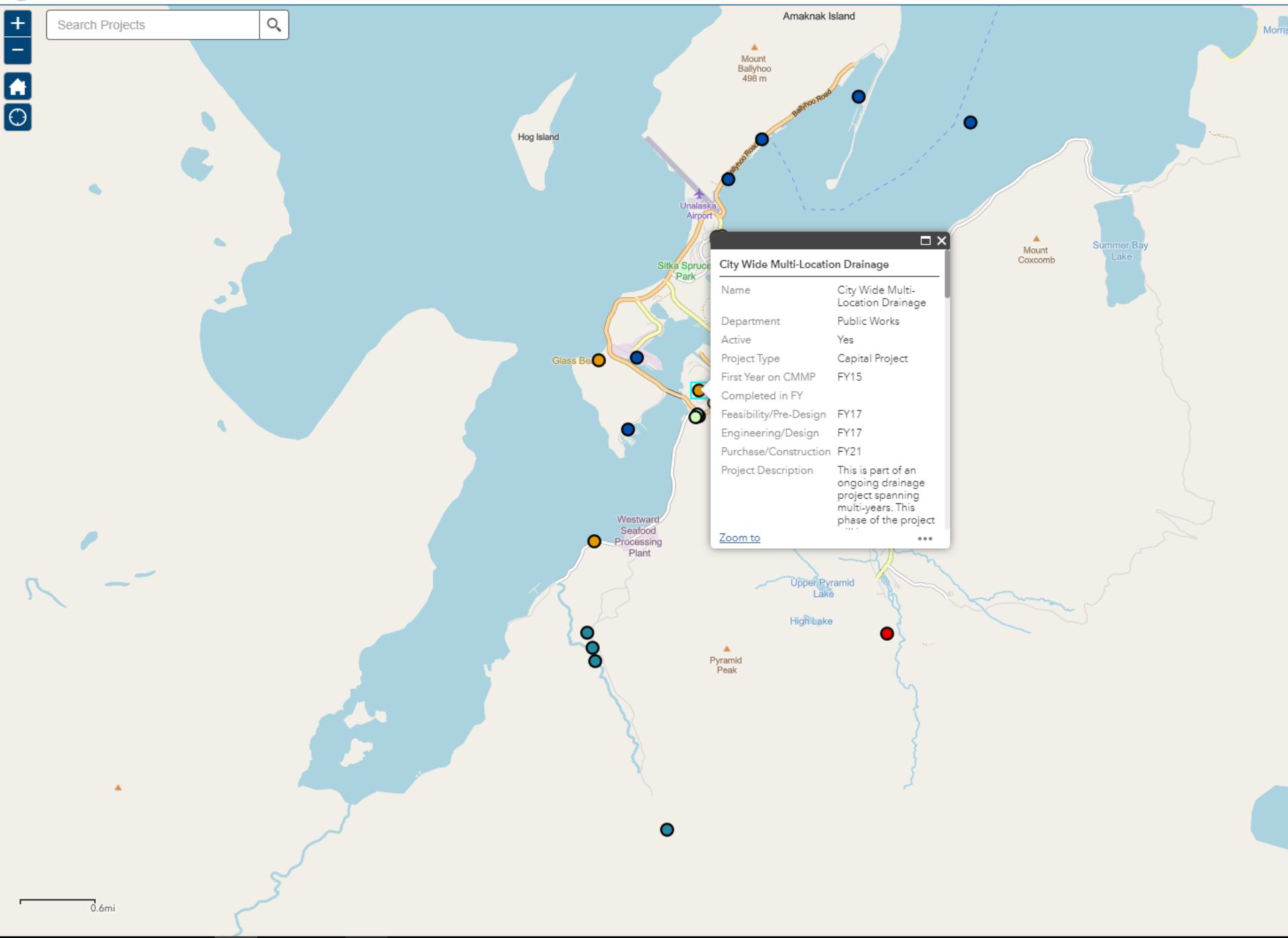
- Editable web map
- Privileges can be restricted by user or department
- All edits tracked by user and time
- Web AppBuilder
 - No programming required



Search Projects



Search Projects



City Wide Multi-Location Drainage

Name	City Wide Multi-Location Drainage
Department	Public Works
Active	Yes
Project Type	Capital Project
First Year on CMMP	FY15
Completed in FY	
Feasibility/Pre-Design	FY17
Engineering/Design	FY17
Purchase/Construction	FY21
Project Description	This is part of an ongoing drainage project spanning multi-years. This phase of the project

[Zoom to](#)

City Wide Multi-Location Drainage

Name	City Wide Multi-Location Drainage
Department	Public Works
Active	Yes
Project Type	Capital Project
First Year on CMMP	FY15
Completed in FY	
Feasibility/Pre-Design	FY17
Engineering/Design	FY17
Purchase/Construction	FY21
Project Description	This is part of an ongoing drainage project spanning multi-years. This phase of the project will improve storm drain infrastructure and control runoff from spring snow melt and rainfall which has been an ongoing cause of erosion on
Project Need	The Road Improvement Master Plan, completed in 2009-2010, identified drainage improvements as a high priority task in order to keep water off road surfaces and out of the road base. Gravel and paved roads without adequate drainage surface. Improved water quality in our lakes, streams, and ocean has also been identified as high priority by the community and the Alaska Department of Fish and Game.
Project Plan and Funding	This portion of our City Wide Multi-Location Drainage (Munis number PW203) project is fully designed and was included in the 2017 bid package. Because bids came in higher than our budget allowed, the Trapper Drive portion was
Plans/Comp Plan	A: No, B: Yes, C: Yes, D: Yes, E: No, F: No
Regulatory Compliance	A: No, B: No, C: No
Infrastructure/Public Safety	A: No, B: Targeted, C: Yes, D: No, E: No, F: No, G: No
Quality of Life/Health & Wellness	A: No, B: Yes, C: Targeted, D: No, E: Yes, F: No, G: No, H: No
Impact on Operational Budget	A: No, B: No, C: No, D: No, E: No, F: No, G: No
External Funding	0
Timing/Location	A: No, B: No, C: No, D: No, E: No, F: No
Innovation	A: No, B: Yes, C: Yes

Attachments:

[City Wide Multi-Location Drainage.pptx](#)
[Witnessed Bid Tab - Trapper Drive.pdf](#)

Edited by cdean_unalaska on Tuesday at 10:17 AM

Related tables:

Funding



Search Projects

Amaknak Island

Projects

Name *

Department *

Active

Project Type

First Year on CMMP

Completed in FY

Feasibility/Pre-Design

Engineering/Design

Purchase/Construction

Project Description

Project Need

Project Plan and Funding

Plans/Comp Plan

Regulatory Compliance

Infrastructure/Public Safety

Quality of Life/Health & Wellness

Impact on Operational Budget

External Funding

City Wide Multi-Location Drainage

Public Works

Yes

Capital Project

FY15

FY17

FY17

FY21

B I U | | |

This is part of an ongoing drainage project spanning multi-years. This phase of the project will improve storm drain infrastructure and control runoff from spring snow melt and rain cause of erosion on Trapper Drive for several years.

B I U | | |

The Road Improvement Master Plan, completed in 2009-2010, identified drainage improvements as a high priority task in order to keep water off road surfaces and out of the road without adequate drainage deteriorate and require much more frequent maintenance of the driving surface. Improved water quality in our lakes, streams, and ocean has also been a community and the Alaska Department of Fish and Game.

B I U | | |

This portion of our City Wide Multi-Location Drainage (Munis number PW203) project is fully designed and was included in the 2017 bid package. Because bids came in higher than budgeted, the Trapper Drive portion was removed from the bid award with the intent to conduct the work at a later date. Regan Engineering has completed plans and specifications for this work. Cost estimate with a 10% inflation factor included. Council initially funded this project via the FY2013 CMMP and Budget Ordinance 2012-04 which was approved and adopted on May 22, 2012.

A: No, B: Yes, C: Yes, D: Yes, E: No, F: No

A: No, B: No, C: No

A: No, B: Targeted, C: Yes, D: No, E: No, F: No, G: No

A: No, B: Yes, C: Targeted, D: No, E: Yes, F: No, G: No, H: No

A: No, B: No, C: No, D: No, E: No, F: No, G: No

0

OUTPUTS

Printed Reports

- Automatically generated as CMMP is updated
- Multiple forms

Requested Amount	Year	2021	2022	2023	2024	2025	Requested Total	Appropriated Funds	Grand Total
unding Source									
Electric Proprietary Fund		\$5,498,276	\$3,275,967	\$3,978,970	\$1,855,350	\$1,892,457	\$16,501,020	\$650,062	\$17,151,082
34.5 kV Submarine Cable Replacement		\$60,000	\$120,000	\$2,160,000			\$2,340,000	\$0	\$2,340,000
Captains Bay Road & Utility Improvements			\$1,000,000				\$1,000,000	\$0	\$1,000,000
Electric Energy Storage System		\$3,549,938					\$3,549,938	\$650,062	\$4,200,000
Generator Sets Rebuild		\$1,748,338	\$1,783,305	\$1,818,970	\$1,855,350	\$1,892,457	\$9,098,420	\$0	\$9,098,420
Powerhouse Cooling Water Inlet Cleaning and Extension		\$40,000	\$372,662				\$412,662	\$0	\$412,662
Wind Energy Study		\$100,000					\$100,000	\$0	\$100,000
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
4-Plex Roof Replacement		\$10,000	\$45,000	\$445,500			\$500,500	\$0	\$500,500
Aerial Ladder Replacement		\$1,690,000					\$1,690,000	\$0	\$1,690,000
Aquatics Center Mezzanine and Office Space Expansion			\$800,000	\$100,000	\$720,000		\$1,620,000	\$0	\$1,620,000
Burma Road Chapel Upgrades		\$70,000	\$479,000				\$549,000	\$10,000	\$559,000
Captains Bay Road & Utility Improvements			\$6,800,000	\$7,800,000	\$7,800,000	\$7,800,000	\$30,200,000	\$2,000,000	\$32,200,000
City Wide Multi-Location Drainage		\$366,793					\$366,793	\$3,450,000	\$3,816,793
Community Center Playground Replacement						\$300,000	\$300,000	\$0	\$300,000
DPS RMS Upgrade							\$0	\$500,000	\$500,000
Entrance Channel Dredging			\$4,000,000				\$4,000,000	\$2,500,000	\$6,500,000
Equipment Storage Building		\$10,000	\$185,000	\$1,350,830			\$1,545,830	\$0	\$1,545,830
Fire Training Center			\$2,192,078	\$1,653,660			\$3,845,738	\$12,000	\$3,857,738
Fire Station Renovation							\$0	\$0	\$0
Gymnasium Floor					\$51,000	\$221,000	\$272,000	\$0	\$272,000
Police Station							\$0	\$0	\$0
Public Trails System			\$100,000	\$400,000			\$500,000	\$0	\$500,000
Tasers for Police		\$54,000					\$54,000	\$0	\$54,000
Unalaska Public Transportation Study		\$200,000		\$130,000			\$330,000	\$0	\$330,000
Wind Energy Study							\$0	\$495,000	\$495,000
Grant			\$3,405,000				\$3,405,000	\$0	\$3,405,000
Robert Storrs Small Boat Harbor Improvements (A & B Floats)		\$3,405,000					\$3,405,000	\$0	\$3,405,000

Department	Project	2021	2022	2023	2024	2025	Requested Total	Appropriated Funds	Grand Total
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
Electric		\$5,498,276	\$3,275,967	\$3,978,970	\$1,855,350	\$1,892,457	\$16,501,020	\$650,062	\$17,151,082
Electric	34.5 kV Submarine Cable Replacement	\$60,000	\$120,000	\$2,160,000			\$2,340,000	\$0	\$2,340,000
Electric	Captains Bay Road & Utility Improvements		\$1,000,000				\$1,000,000	\$0	\$1,000,000
Electric	Electric Energy Storage System	\$3,549,938					\$3,549,938	\$650,062	\$4,200,000
Electric	Generator Sets Rebuild	\$1,748,338	\$1,783,305	\$1,818,970	\$1,855,350	\$1,892,457	\$9,098,420	\$0	\$9,098,420
Electric	Powerhouse Cooling Water Inlet Cleaning and Extension	\$40,000	\$372,662				\$412,662	\$0	\$412,662
Electric	Wind Energy Study	\$100,000					\$100,000	\$0	\$100,000
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
General Fund	4-Plex Roof Replacement	\$10,000	\$45,000	\$445,500			\$500,500	\$0	\$500,500
General Fund	Aerial Ladder Replacement	\$1,690,000					\$1,690,000	\$0	\$1,690,000
General Fund	Aquatics Center Mezzanine and Office Space Expansion		\$800,000	\$100,000	\$720,000		\$1,620,000	\$0	\$1,620,000
General Fund	Burma Road Chapel Upgrades	\$70,000	\$479,000				\$549,000	\$10,000	\$559,000
General Fund	Captains Bay Road & Utility Improvements		\$6,800,000	\$7,800,000	\$7,800,000	\$7,800,000	\$30,200,000	\$2,000,000	\$32,200,000
General Fund	City Wide Multi-Location Drainage	\$366,793					\$366,793	\$3,450,000	\$3,816,793
General Fund	Community Center Playground Replacement					\$300,000	\$300,000	\$0	\$300,000
General Fund	DPS RMS Upgrade						\$0	\$500,000	\$500,000
General Fund	Entrance Channel Dredging		\$4,000,000				\$4,000,000	\$2,500,000	\$6,500,000
General Fund	Equipment Storage Building	\$10,000	\$185,000	\$1,350,830			\$1,545,830	\$0	\$1,545,830
General Fund	Fire Training Center		\$2,192,078	\$1,653,660			\$3,845,738	\$12,000	\$3,857,738
General Fund	Fire Station Renovation						\$0	\$0	\$0
General Fund	Gymnasium Floor				\$51,000	\$221,000	\$272,000	\$0	\$272,000
General Fund	Police Station						\$0	\$0	\$0
General Fund	Public Trails System		\$100,000	\$400,000			\$500,000	\$0	\$500,000
General Fund	Tasers for Police	\$54,000					\$54,000	\$0	\$54,000
General Fund	Unalaska Public Transportation Study	\$200,000		\$130,000			\$330,000	\$0	\$330,000
General Fund	Wind Energy Study						\$0	\$495,000	\$495,000
Grant			\$3,405,000				\$3,405,000	\$0	\$3,405,000
Robert Storrs Small Boat Harbor Improvements (A & B Floats)		\$3,405,000					\$3,405,000	\$0	\$3,405,000
Electric		\$5,498,276	\$3,275,967	\$3,978,970	\$1,855,350	\$1,892,457	\$16,501,020	\$650,062	\$17,151,082
Electric	34.5 kV Submarine Cable Replacement	\$60,000	\$120,000	\$2,160,000			\$2,340,000	\$0	\$2,340,000
Electric	Captains Bay Road & Utility Improvements		\$1,000,000				\$1,000,000	\$0	\$1,000,000
Electric	Electric Energy Storage System	\$3,549,938					\$3,549,938	\$650,062	\$4,200,000
Electric	Generator Sets Rebuild	\$1,748,338	\$1,783,305	\$1,818,970	\$1,855,350	\$1,892,457	\$9,098,420	\$0	\$9,098,420
Electric	Powerhouse Cooling Water Inlet Cleaning and Extension	\$40,000	\$372,662				\$412,662	\$0	\$412,662
Electric	Wind Energy Study	\$100,000					\$100,000	\$0	\$100,000
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
General Fund	4-Plex Roof Replacement	\$10,000	\$45,000	\$445,500			\$500,500	\$0	\$500,500
General Fund	Aerial Ladder Replacement	\$1,690,000					\$1,690,000	\$0	\$1,690,000
General Fund	Aquatics Center Mezzanine and Office Space Expansion		\$800,000	\$100,000	\$720,000		\$1,620,000	\$0	\$1,620,000
General Fund	Burma Road Chapel Upgrades	\$70,000	\$479,000				\$549,000	\$10,000	\$559,000
General Fund	Captains Bay Road & Utility Improvements		\$6,800,000	\$7,800,000	\$7,800,000	\$7,800,000	\$30,200,000	\$2,000,000	\$32,200,000
General Fund	City Wide Multi-Location Drainage	\$366,793					\$366,793	\$3,450,000	\$3,816,793
General Fund	Community Center Playground Replacement					\$300,000	\$300,000	\$0	\$300,000
General Fund	DPS RMS Upgrade						\$0	\$500,000	\$500,000
General Fund	Entrance Channel Dredging		\$4,000,000				\$4,000,000	\$2,500,000	\$6,500,000
General Fund	Equipment Storage Building	\$10,000	\$185,000	\$1,350,830			\$1,545,830	\$0	\$1,545,830
General Fund	Fire Training Center		\$2,192,078	\$1,653,660			\$3,845,738	\$12,000	\$3,857,738
General Fund	Fire Station Renovation						\$0	\$0	\$0
General Fund	Gymnasium Floor				\$51,000	\$221,000	\$272,000	\$0	\$272,000
General Fund	Police Station						\$0	\$0	\$0
General Fund	Public Trails System		\$100,000	\$400,000			\$500,000	\$0	\$500,000
General Fund	Tasers for Police	\$54,000					\$54,000	\$0	\$54,000
General Fund	Unalaska Public Transportation Study	\$200,000		\$130,000			\$330,000	\$0	\$330,000
General Fund	Wind Energy Study						\$0	\$495,000	\$495,000
Grant			\$3,405,000				\$3,405,000	\$0	\$3,405,000
Robert Storrs Small Boat Harbor Improvements (A & B Floats)		\$3,405,000					\$3,405,000	\$0	\$3,405,000
Electric		\$5,498,276	\$3,275,967	\$3,978,970	\$1,855,350	\$1,892,457	\$16,501,020	\$650,062	\$17,151,082
Electric	34.5 kV Submarine Cable Replacement	\$60,000	\$120,000	\$2,160,000			\$2,340,000	\$0	\$2,340,000
Electric	Captains Bay Road & Utility Improvements		\$1,000,000				\$1,000,000	\$0	\$1,000,000
Electric	Electric Energy Storage System	\$3,549,938					\$3,549,938	\$650,062	\$4,200,000
Electric	Generator Sets Rebuild	\$1,748,338	\$1,783,305	\$1,818,970	\$1,855,350	\$1,892,457	\$9,098,420	\$0	\$9,098,420
Electric	Powerhouse Cooling Water Inlet Cleaning and Extension	\$40,000	\$372,662				\$412,662	\$0	\$412,662
Electric	Wind Energy Study	\$100,000					\$100,000	\$0	\$100,000
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
General Fund	4-Plex Roof Replacement	\$10,000	\$45,000	\$445,500			\$500,500	\$0	\$500,500
General Fund	Aerial Ladder Replacement	\$1,690,000					\$1,690,000	\$0	\$1,690,000
General Fund	Aquatics Center Mezzanine and Office Space Expansion		\$800,000	\$100,000	\$720,000		\$1,620,000	\$0	\$1,620,000
General Fund	Burma Road Chapel Upgrades	\$70,000	\$479,000				\$549,000	\$10,000	\$559,000
General Fund	Captains Bay Road & Utility Improvements		\$6,800,000	\$7,800,000	\$7,800,000	\$7,800,000	\$30,200,000	\$2,000,000	\$32,200,000
General Fund	City Wide Multi-Location Drainage	\$366,793					\$366,793	\$3,450,000	\$3,816,793
General Fund	Community Center Playground Replacement					\$300,000	\$300,000	\$0	\$300,000
General Fund	DPS RMS Upgrade						\$0	\$500,000	\$500,000
General Fund	Entrance Channel Dredging		\$4,000,000				\$4,000,000	\$2,500,000	\$6,500,000
General Fund	Equipment Storage Building	\$10,000	\$185,000	\$1,350,830			\$1,545,830	\$0	\$1,545,830
General Fund	Fire Training Center		\$2,192,078	\$1,653,660			\$3,845,738	\$12,000	\$3,857,738
General Fund	Fire Station Renovation						\$0	\$0	\$0
General Fund	Gymnasium Floor				\$51,000	\$221,000	\$272,000	\$0	\$272,000
General Fund	Police Station						\$0	\$0	\$0
General Fund	Public Trails System		\$100,000	\$400,000			\$500,000	\$0	\$500,000
General Fund	Tasers for Police	\$54,000					\$54,000	\$0	\$54,000
General Fund	Unalaska Public Transportation Study	\$200,000		\$130,000			\$330,000	\$0	\$330,000
General Fund	Wind Energy Study						\$0	\$495,000	\$495,000
Grant			\$3,405,000				\$3,405,000	\$0	\$3,405,000
Robert Storrs Small Boat Harbor Improvements (A & B Floats)		\$3,405,000					\$3,405,000	\$0	\$3,405,000
Electric		\$5,498,276	\$3,275,967	\$3,978,970	\$1,855,350	\$1,892,457	\$16,501,020	\$650,062	\$17,151,082
Electric	34.5 kV Submarine Cable Replacement	\$60,000	\$120,000	\$2,160,000			\$2,340,000	\$0	\$2,340,000
Electric	Captains Bay Road & Utility Improvements		\$1,000,000				\$1,000,000	\$0	\$1,000,000
Electric	Electric Energy Storage System	\$3,549,938					\$3,549,938	\$650,062	\$4,200,000
Electric	Generator Sets Rebuild	\$1,748,338	\$1,783,305	\$1,818,970	\$1,855,350	\$1,892,457	\$9,098,420	\$0	\$9,098,420
Electric	Powerhouse Cooling Water Inlet Cleaning and Extension	\$40,000	\$372,662				\$412,662	\$0	\$412,662
Electric	Wind Energy Study	\$100,000					\$100,000	\$0	\$100,000
General Fund		\$2,400,793	\$14,601,078	\$11,879,990	\$8,571,000	\$8,321,000	\$45,773,861	\$8,967,000	\$54,740,861
General Fund	4-Plex Roof Replacement	\$10,000	\$45,000	\$445,500			\$500,500	\$0	\$500,500
General Fund	Aerial Ladder Replacement	\$1,690,000					\$1,690,000	\$0	\$1,690,000
General Fund	Aquatics Center Mezzanine and Office Space Expansion		\$800,000	\$100,000	\$720,000		\$1,620,000	\$0	\$1,620,000
General Fund	Burma Road Chapel Upgrades	\$70,000	\$479,000				\$549,000	\$10,000	\$559,000
General Fund	Captains Bay Road & Utility Improvements		\$6,800,000	\$7,800,000	\$7,800,000	\$7,800,000	\$30,200,000	\$2,000,000	\$32,200,000
General Fund	City Wide Multi-Location Drainage	\$366,793					\$366,793	\$3,450,000	\$3,816,793
General Fund	Community Center Playground Replacement					\$300,000	\$300,000	\$0	\$300,000

Timeline

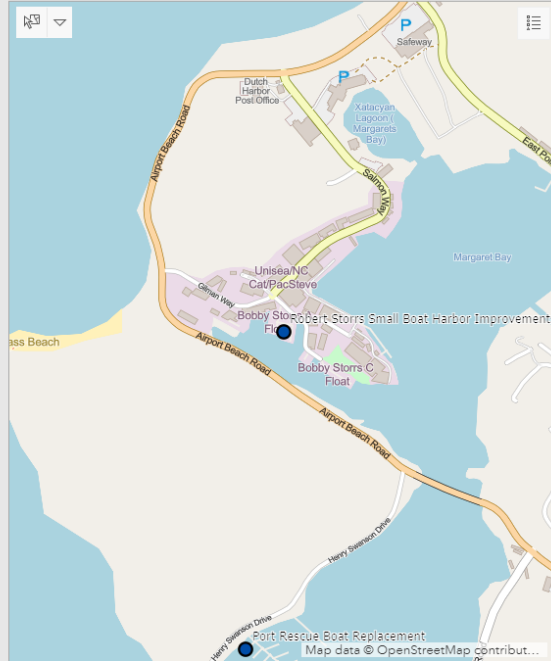
Department	Name	2021	2022	2023	2024	2025
Electric	34.5 kV Submarine Cable Replacement					
	Electric Energy Storage System					
	Generator Sets Rebuild					
	Powerhouse Cooling Water Inlet Cleaning and Extension					
	Wind Energy Study					
Fire	Aerial Ladder Replacement					
	Fire Station Remodel					
	Fire Training Center					
Housing	4-Plex Roof Replacement					
PCR	Aquatics Center Mezzanine and Office Space Expansion					
	Community Center Playground Replacement					
	Gymnasium Floor					
Planning	Unalaska Public Transportation Study					
Ports	Entrance Channel Dredging					
	LCD & UMC Dredging					
	Port Rescue Boat Replacement					
	Restroom Unalaska Marine Center					
	Robert Storrs Small Boat Harbor Improvements (A & B Floats)					
	UMC Cruise Ship Terminal Design					
Public Safety	DPS RMS Upgrade					
	Police Station					
	Tasers for Police					
Public Works	Burma Road Chapel Upgrades					
	Captains Bay Road & Utility Improvements					
	City Wide Multi-Location Drainage					
	Equipment Storage Building					
	Public Trails System					
Solid Waste	Oil Separator and Lift Station Replacement					
	Solid Waste Gasifier					
Water	CT Tank Interior Maintenance and Painting					
	Icy Lake Road Reconstruction					
	Pyramid Water Storage Tank					
	Pyramid Water Treatment Plant Chlorine Upgrade					
Totals	Pre Design	5	2			
	Engineering	6	6	5	2	
	Construction	8	8	7	5	3
	Grand Total	19	16	12	7	3

Dashboard

CMMP Overview

Public Safety Electric Solid Waste Water Public Works Fire Housing PCR Planning Ports

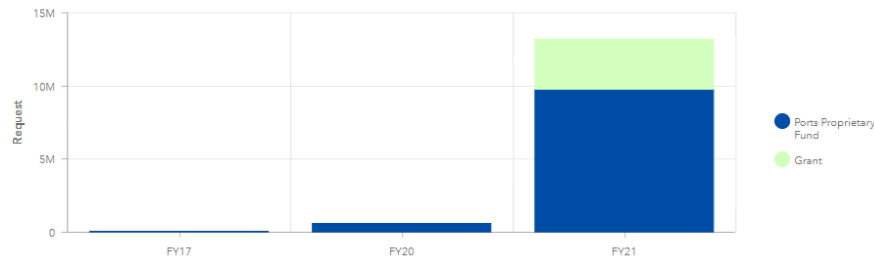
- Entrance Channel Dredging
Ports
- LCD & UMC Dredging
Ports
- Port Rescue Boat Replacement
Ports
- Restroom Unalaska Marine Center
Ports
- Robert Storrs Small Boat Harbor Improvements (A & B Floats)**
Ports
- UMC Cruise Ship Terminal Design
Ports



Robert Storrs Small Boat Harbor Improvements (A & B Floats)

Name	Robert Storrs Small Boat Harbor Improvements (A & B Floats)		
Department	Ports		
Active	Yes		
Project Type	Capital Project		
First Year on CMMP	FY15		
Completed in FY			
Feasibility/Pre-Design	FY19		
Engineering/Design	FY20		
Purchase/Construction	FY21		
Project Description	This project is an additional phase to the Robert Storrs Float improvement project. It will remove the existing A and B Floats at the Harbor and reconfigure the Harbor to accommodate the new float system ADA gangway and create uplands for parking and a public restroom. It will also include a fire suppression system, electric and year-round water supply to Harbor users and new piling		
Project Need	This project would include replacing the deteriorated floats and reconfiguring the floats and fingers of A and B Floats to include updated electrical systems, lighting, fire suppression, year-round utilities, and an ADA-required gangway. Based on current engineer concepts, a reconfiguration of A and B Floats will at minimum create 30 additional slips plus linear tie options to accommodate part of the 37 vessel waiting list. Reconfiguration will also allow for development of the uplands for a certain amount of required parking and a public restroom. Because the current floats were relocated, they were arranged in the harbor based on the materials at hand and not with consideration to the best use of the basin. In order to accommodate the vessel demand at the Robert Storrs Harbor, reconfiguration of the floats would allow for better use of the basin based on bathymetry and navigational approaches and also allow for additional vessel slips, with minimal fill and no dredging. It will add a significant number of slips for vessels 60' and		

Last update: a few seconds ago



Last update: a few seconds ago

FY17, Ports Proprietary Fund: \$50,000
FY20, Ports Proprietary Fund: \$600,000
FY21, Grant: \$3,405,000
FY21, Ports Proprietary Fund: \$9,764,000

Last update: a few seconds ago

Last update: a few seconds ago

PROJECT REVIEW

Issues

- Time consuming
- Ambiguous
- Transparency

Old Format

Sample Evaluation Form



Reviewer:			Project Name:			
OBJECTIVE	3	2	1	0	SCORE	NOTES
<i>HEALTH & SAFETY</i>	Required to eliminate hazard	Maintains or improves safety	Desired to eliminate/reduce potential hazard	No risk value		
<i>MANDATED OR STATUTORY REQUIREMENT</i>	Non-Discretionary; Compliance deadline 2 years or less	Non-Discretionary; Compliance deadline > 2 years	Discretionary; Regulating Agency recommendation	No mandate or statutory requirement		
<i>QUALITY OF LIFE</i>	Not Available now & high demand	Available now but inadequate	No impact	Reduces service (negative impact)		
<i>ECONOMIC DEVELOPMENT</i>	Diversifies economy/attracts new type of industry	Attracts new/expands existing industry/business	No economic impact	Hampers economic growth		
<i>SUSTAINABILITY</i>	Provides infrastructure for future	Provides revenue for future	No future impact	Future tax burden		
<i>SYNERGY</i>	Materially affects 3 or more projects in the CMMP	Materially affects 2 or more projects in the CMMP	Materially affects one project in the CMMP	No impact on other CMMP projects		
<i>CONSISTENCY</i>	Identified in a City Council adopted plan	Included in a written study or report conducted by staff or consultant	Included in plans or goals of city staff	Not included in any written plan		
<i>BUDGET</i>	Enough funds in current year's surplus to cover the project	Enough in net assets to cover the project	General fund surplus can cover the project	No net assets and not able to use general fund		
				TOTAL SCORE:		

New Process

- In an effort to make evaluations fair and transparent, we have set 9 scoring categories. Within these categories are several questions to generate a total score out of 5. All questions will be allotted a point value. The points for each section will be totaled, to generate a score from 1 to 5 (1 being the lowest score, 5 being the best score). These scores will then be multiplied by a weight for each category, assigned by the council. Finally, all the weighted scores will be totaled for a final composite score.

Example: You answer the Infrastructure/Public Safety section with 4 "Yes" answers, and 3 "No" answers.

$4/7 = 0.57$	Raw Score
$0.57 \times 5 = 2.86$	Scaled Category Score
$2.86 \times 3 = 8.58$	Weighted Score
8.58	
$+ \text{Other Categories}$	
Composite Score	

Quality of Life / Health & Wellness

Quality of Life / Health & Wellness are a characteristic that makes the City a favorable place to live and work. A large park with amenities to satisfy all community members would greatly impact the quality of life. Bike/jogging trails, new recreation facilities and flood control measures improve the overall health of the community.

The score could be based on answers to the following questions:

- A. Does the project enhance the quality of life for a wide range of community members?
- B. Will the proposed project have a positive impact on the health of Unalaska's residents?
- C. **How widespread is that potential impact?**
Answer with: Widespread, Targeted, or Minor
- D. Will the project attract new residents, businesses or visitors to the City?
- E. Does the project serve to preserve the integrity of the City's residential neighborhoods?
- F. Does the project help create a beautiful and clean community?
- G. Does the project specifically promote the responsible use of resources?
- H. Does the project encourage participation in recreational and cultural activities accessible to all community members?

Impact on Operational Budget

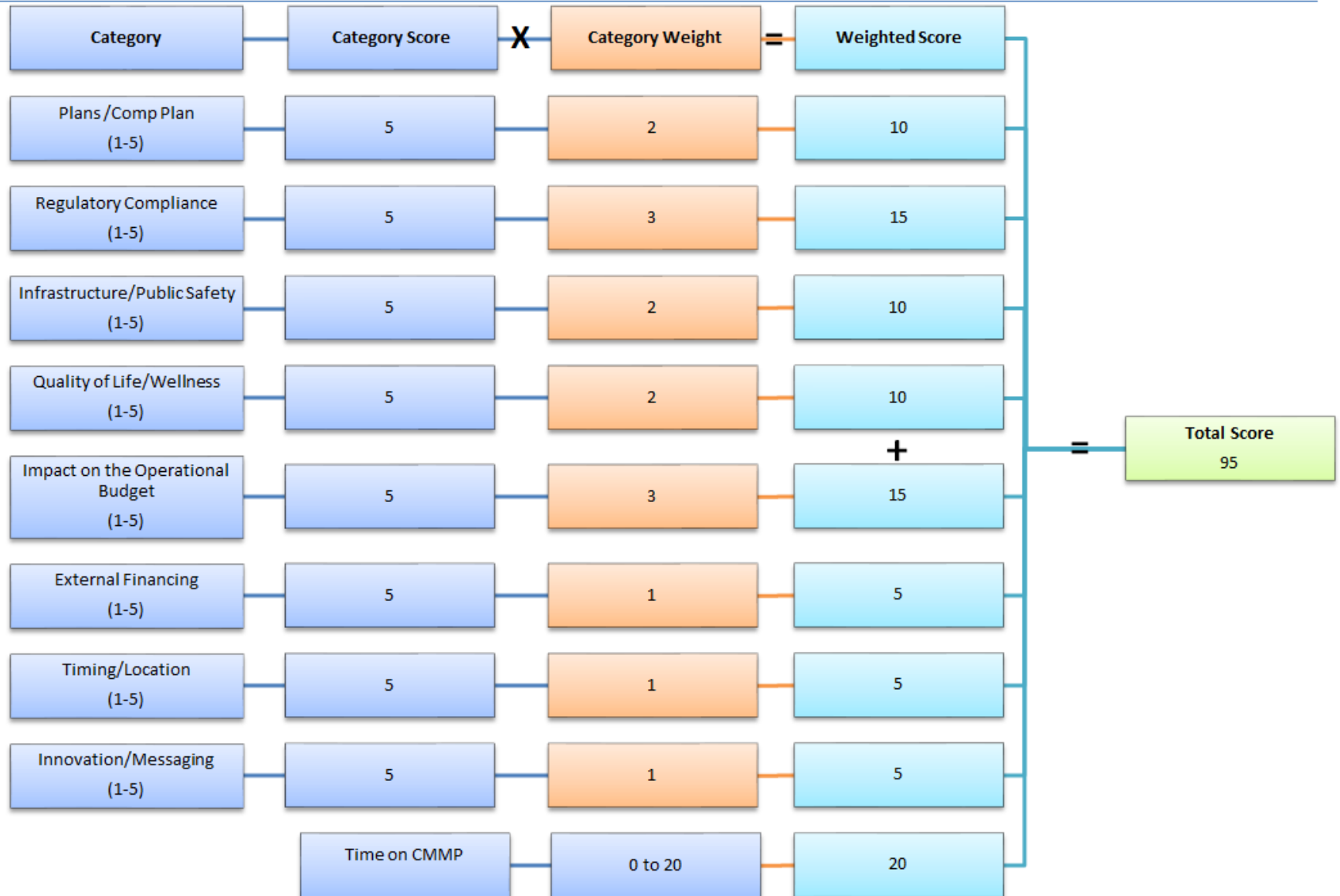
Some projects may affect the operating budget for the next few years or for the life of the facility. A new facility will need to be staffed and supplied, therefore having an impact on the operational budget for the life of the facility. Replacing a light with a more energy efficient model may actually decrease operational costs.

The score could be based on answers to the following questions:

- A. Will the project require additional personnel to operate?**
- B. Will the project require additional annual maintenance?**
- C. Will the project require additional equipment not included in the project budget?**
- D. Will the project reduce staff time and City resources currently being devoted, and thus have a positive effect on the operational budget?
- E. Will the efficiency of the project save money?
- F. Will the project present a revenue generating opportunity?
- G. Will the project help grow a strong, diversified economic base to help offset any additional costs?

New Format

City of Unalaska CMMP Evaluation System Diagram



Interface

	cdean_unalaska	Sign Out
<input type="radio"/> DPS RMS Upgrade		
<input type="radio"/> Police Station		
<input type="radio"/> Tasers for Police		
<input checked="" type="radio"/> 34.5 kV Submarine Cable Replacement		
<input checked="" type="radio"/> Electric Energy Storage System		
<input checked="" type="radio"/> Generator Sets Rebuild		
<input checked="" type="radio"/> Powerhouse Cooling Water Inlet Cleaning and Extension		
<input checked="" type="radio"/> Wind Energy Study		
<input type="radio"/> Oil Separator and Lift Station Replacement		
<input type="radio"/> Solid Waste Gasifier		
<input checked="" type="radio"/> CT Tank Interior Maintenance and Painting		
<input checked="" type="radio"/> Icy Lake Road Reconstruction		
<input checked="" type="radio"/> Pyramid Water Storage Tank		
<input checked="" type="radio"/> Pyramid Water Treatment Plant Chlorine Upgrade		
<input checked="" type="radio"/> Burma Road Chapel Upgrades		
<input checked="" type="radio"/> Captains Bay Road & Utility Improvements		
<input checked="" type="radio"/> City Wide Multi-Location Drainage		

CMMP Project Evaluation

Plans/Comp Plan

A. Is the proposed project called for in the City's Comprehensive Plan which was approved by City Council? If so, which section? (answer No or Yes with relevant page numbers)

☒ No

☐ Yes

B. Is the proposed project identified in one or more of the City Master or Departmental Plans that were provided to City Council? If so, which plan? (answer No or Yes with plan title)

☒ No

☐ Yes

C. Is the proposed project listed as a high priority, or over time, has it become a high priority of staff, a standing advisory board, or the City Council due to an expressed need?

☒ No

☐ Yes

Wind Energy Study

Name	Wind Energy Study
Department	Electric
Active	Yes
Project Type	Capital Project
First Year on CMMP	FY18
Completed in FY	
Feasibility/Pre-Design	FY20
Engineering/Design	FY21
Purchase/Construction	FY22
Project Description	This initial phase of the project for Wind energy studies and research that will further determine the viability of wind energy.
Project Need	The community of Unalaska continues to explore alternative energy capability. If Wind energy is effective it is a great way to increase production of a friendly method.
Project Plan and Funding	There are several steps required to understand whether wind energy is a viable alternative. The first step in the process is to develop preliminary studies to determine whether there are standards for sustainable wind energy. A determination needs to be made on whether to obtain all of the proper permits from the state. Wind studies would include construction of a test site and gather data for 12-15 months.
Plans/Comp Plan	A: No, B: No, C: No, D: No, E: No
Regulatory Compliance	A: No, B: No, C: No
Infrastructure/Public Safety	A: No, B: Minor, C: No, D: No, E: No, F: No
Quality of Life/Health & Wellness	A: No, B: No, C: Minor, D: No, E: No, F: No
Impact on Operational Budget	A: No, B: No, C: No, D: No, E: No, F: No
External Funding	
Timing/Location	A: No, B: No, C: No, D: No, E: No, F: No
Innovation	A: No, B: No, C: No

Process

Reviewers
score each
project

Tabulate
scores



Report for
Council

Next Steps

- Automate more
- UI improvements
- Continuity – ongoing project tracking

Questions?



Presentation icons are the intellectual property of Esri and are used herein with permission. Copyright © 2019 Esri. All rights reserved."