PUGET SOUND EMERGENCY RADIO NETWORK

AGENDA
PSERN OPERATOR BOARD OF DIRECTORS MEETING
May 22, 2025

Location: PSERN Conference Room 19717 62nd Ave S, E102, Kent, WA 98032

Virtual meeting: Microsoft Teams (details below)

Date: Thursday, May 22, 2025

Time: 2:30 p.m. – 4:00 p.m.

Microsoft Teams Meeting: Members of the public are invited to participate in the meeting in person at the location above or virtually by telephone or video by using the following phone number and meeting ID: 1-323-433-2132 Meeting ID: 547299182#.

Directors: Kurt Triplett, Chair, Undersheriff Anderson in for Dwight Dively, Commissioner Chris Elwell, Vonnie Mayer, Chief Harold Scoggins, Chief Dan Yourkoski

Alternates: Diane Carlson, Shawn Hayes, Kristin Meitzler

Agenda Details

1. Call to Order – Meeting Chair 2:30 p.m.

2. Roll Call – Tracey Doss 2:30 p.m.

3. Public Comment – Meeting Chair 2:31 – 2:32 p.m.

   Board Chairperson to open floor for public comment. Members of the public are invited to address the Board of Directors for a period not to exceed three minutes.

4. Consent Agenda – Meeting Chair 2:32 – 2:33 p.m.

   Note: Directors can request to have any item removed from the consent agenda.

   a. Approve the March 27, 2025 Meeting Minutes

   b. Payment Approvals

   c. Resolution 24-01, Claims Agent

   (Decision: Approve the Consent Agenda)

5. Action Register Review – Meeting Chair 2:33 – 2:35 p.m.

PUGET SOUND EMERGENCY RADIO NETWORK

6.	Executive Director Report – Mike Webb	2:35 – 2:45 p.m.
7.	2026 Draft Operating and Capital Budgets – Tracy Plouse	2:45 – 2:55 p.m.
8.	Maloney Ridge Powerline Replacement – Mike Webb	2:55 – 3:05 p.m.

(Decision: Authorize the Executive Director to work with PSE on the Maloney Ridge powerline)

9.	Encryption Update – Mike Webb/Kristin Hanson	3:05 – 3:35 p.m.
10.	In-Building Coverage Assessment Update – Mike Webb	3:35 – 3:45 p.m.
11.	Operations Committee Report – Assistant Chief Lombard	3:45 – 3:55 p.m.
12.	Board of Directors Officer Report - Board Officers	3:55 - 3:58 p.m.
13.	Review New Action Items - Meeting Chair	3:58 - 4:00 p.m.

Adjourn Meeting

Next Meeting: June 26, 2025 @ 2:30

PSERN Board of Directors
Agenda Item #4

Title: Consent Agenda
PSERN Operator Board of Directors Meeting Date: May 22, 2025
PSERN Staff Contact: Tracey Doss, Administrator

Appendix A – March 27, 2025, Meeting Minutes
Appendix B – Payment Approvals
Appendix C - Resolution 25-01, Claims Agent

Date	Payment Type	Amount	Date	Payment Type	Amount
4/1/2025	EFT	12,800.45	3/27/2025	PERS Payment	25,194.50
4/3/2025	EFT	2,680.00	3/27/2025	Payroll and Taxes	140,327.30
3/25/2025	CHECK/EFT	94,914.77	4/10/2025	PERS Payment	25,086.52
3/21/2025	EFT	4638.51	4/10/2025	Payroll and Taxes	139,108.74
3/25/2025	EFT	32,083.24	4/24/2025	PERS Payment	25,078.08
3/25/2025	CHECK/EFT	43,485.97	4/24/2025	Payroll and Taxes	138,058.90
3/27/2025	EFT	43,730.44	5/8/2025	PERS Payment	24,752.83
4/3/2025	EFT	3,968.95	5/8/2025	Payroll and Taxes	136,708.82
3/25/2025	CHECK/EFT	3,249.63			$654,315.69
4/4/2025	CHECK	158,090.25			
4/10/2025	CHECK	5744.2		Total	$1,439,365.72
4/22/2025	CHECK	6,492.20			
3/25/2025	CHECK	56,050.34			
4/4/2025	EFT	831.60			
4/8/2025	EFT	28,665.63			
4/4/2025	EFT	9,772.16			
4/10/2025	CHECK	33,784.42			
4/10/2025	CHECK	34,654.54			
4/22/2025	CHECK	2,743.98			
4/10/2025	EFT	54,195.51			
4/15/2025	EFT	16,571.81			
4/22/2025	CHECK	15,076.42			
4/8/2025	EFT	535.00			
4/25/2025	EFT	9,188.76			
5/6/2025	CHECK/EFT	98,300.80			
4/30/2025	EFT	12,800.45			
		785,050.03			

MOTION: Approve the Consent Agenda.

PUGET SOUND EMERGENCY RADIO NETWORK

MINUTES
PSERN OPERATOR BOARD OF DIRECTORS MEETING
March 27, 2025

Location: PSERN Conference Room 19717 62nd Ave S, E102, Kent, WA 98032

Virtual meeting: Microsoft Teams (details below)

Date: Thursday, March 27, 2025

Time: 2:30 p.m. – 3:30 p.m.

Microsoft Teams Meeting: Members of the public are invited to participate in the meeting in person at the location above or virtually by telephone or video by using the following phone number and meeting ID: 1-323-433-2132 Meeting ID: 547299182#.

Directors: Kurt Triplett, Chair, Undersheriff Anderson in for Dwight Dively, Commissioner Chris Elwell, Vonnie Mayer, Mark Schmidt in for Chief Harold Scoggins, Chief Dan Yourkoski

Attendees: Spencer Bahner, Felix Corcoro, Daydra Denson, Tracey Doss, Sean Douglas, Adrian Englet, Jeff Floyd, Matt Fuller, Dino Lamanna, Anne Lasswell, Assistant Chief Chris Lombard, Amy McGinness, Tony Minor, Ric Myers, Tracy Plouse, Bob Potts, Alex Rampley, Bryan Sheward, Mike Webb

1. Call to Order – Meeting Chair — 2:30 p.m.

2. Roll Call – Tracey Doss — 2:30 p.m.

3. Public Comment – Meeting Chair — 2:31 – 2:32 p.m.

   The Chair opened the floor for public comment. There was no public comment.

4. Consent Agenda – Meeting Chair — 2:31 – 2:32 p.m.

   Note: Directors can request to have any item removed from the consent agenda.

   a. Approve the January 23 Meeting Minutes

   b. Payment Approvals

   Motion to approve the Consent Agenda was made by Vonnie Mayer, seconded by Mark Schmidt. Members unanimously approved the motion.

5. Action Register Review – Meeting Chair 2:32 – 2:33 p.m.

Mike Webb updated the Members on the status of the open action items.

6. Executive Director Report – Mike Webb 2:33 – 2:41 p.m.

Mike Webb reported on the activities, projects, and initiatives of the PSERN Operator since the last Board meeting in January and outlined upcoming meeting topics.

The Chair noted that Board Member Chief Yourkoski joined the meeting at 2:40.

7. 2024 Financial Results – Tracy Plouse 2:41 – 2:52 p.m.

Tracy Plouse provided preliminary year-end operating financial results as of December 31, 2024.

The Chair asked for an explanation of a corporate admin consulting service. Mike Webb responded that examples of costs in this category include legal fees, services related to policy development, auditing, website development, and other corporate administrative costs. Corporate admin costs refer to operating costs that are not employee-related nor network operating/vendor costs, as defined in the ILA cost allocation model.

8. Powerline Updates – Mike Webb 2:52 – 3:02 p.m.

Mike Webb updated the Board on the situation at the 3 PSERN sites that have inoperable power lines and the developments since the last update in January and requested expenditure approvals for engineering work at the 3 sites.

Undersheriff Anderson asked about security measures for the generators to prevent vandalism at the sites. Mike Webb answered that Maloney and McDonald are surrounded by barb wire fences. The Sobieski site backup generator is inside a building, and the 2 generators located outside and will be addressed as part of the site improvements. Sobieski is a difficult site to access due to snow levels for most of the year. All 3 sites have 24/7 surveillance.

Motion to authorize the Executive Director to proceed with design and engineering work for a set of improvements to site power capabilities at Maloney, Sobieski and McDonald, as outlined,

at a Not-to-Exceed cost of $85,000 plus applicable taxes was made by Vonnie Mayer, seconded by Undersheriff Anderson. The members unanimously approved the motion.

Motion to authorize the Executive Director to proceed with design and engineering of a new powerline to serve the Mt. McDonald site, as outlined, at a Not-to-Exceed cost of $50,000 plus applicable taxes was made by Mark Schmidt, seconded by Undersheriff Anderson. The members unanimously approved the motion.

9. 2025 and 2026-2030 Capital Requirements – Mike Webb 3:02 – 3:10 p.m.

Mike Webb gave an overview of the capital expenditure and replacement plan for 2025 and plans for 2026 - 2030. Items will be brought to the Board for approval at future meetings.

The Chair commented that in the Northend of Kirkland there are some on-street gaps in coverage and PSERN is working with the City of Kirkland on a solution which will be part of the plans brought forth in a future Board meeting.

10. Motorola Post Warranty Services (2026) – Alex Rampley 3:10 – 3:18 p.m.

Alex Rampley discussed how PSERN plans to take over the support services currently provided by Motorola, at the beginning of 2026. Motorola warranty support period expires at the end of 2025.

Mike Webb added that the 2025 budget approval included a forecast of how the rate stabilization funds would be used to offset cost increases, and these will need to be recalculated in the 2026 budget. Some cost savings relative to the previous forecast are expected to be available to lower the rate increase.

11. Operations Committee Report – Assistant Chief Lombard 3:18 – 3:27 p.m.

Assistant Chief Lombard briefed the Board on the Operations Committee and the encryption planning. PIOs have started to coordinate with the media to discuss how to get information after encryption is implemented.

Mike Webb added that the Seattle Fire PIO will give a presentation to the Board in May on the potential impacts of encryption.

Undersheriff Anderson mentioned that the Sheriffs' Office supports encrypting TAC channels but not the main frequencies to allow the public to monitor 911 calls and asked if there was anything he could do, such as have conversations with King County Chiefs?

Assistant Chief Lombard responded that the committee put together to discuss encryption had representation from 911, Fire and most all emergency responders. Fire has a need for encryption to protect personal information, even if it is not HIPAA. Dispatch will be unencrypted on the Fire side, and the Police representatives wanted all channels other than training, to be encrypted, including dispatch.

The Chair requested that due to time for other agenda items, detailed questions on encryption be held until the May meeting.

Chief Yourkoski mentioned that their PSAP will encrypt the main channel but have a 15-minute delay before broadcast.

Undersheriff Anderson reiterated that he has an interest in transparency for the public and supported the idea of a 15-minute delay.

Spencer Bahner commented (via Chat) that the City of Seattle Police will not be encrypting primary channels for dispatch but will encrypt the TAC ones.

12. Board of Directors Officer Report - Board Officers

    The Chair cancelled the agenda item due to time.

13. Review New Action Items - Meeting Chair

    The Chair cancelled the agenda item due to time.

    The Chair adjourned the Regular Meeting 3:27 p.m.

14. Closed session to discuss collective bargaining under RCW 42.30.140 (4)(b) – Corporate Counsel

PSERN Operator | Check Register - Consent Agenda | Page: 1

Check Issue Dates: 3/15/2025 - 5/12/2025 | May 12, 2025 09:50AM

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
03/25/2025	1569	American Tower	American Tower	6,492.20	413022701	Lease March 2025	GASB 87 Clearing - Leases
03/25/2025	1569	American Tower	American Tower	-6,492.20	413022701	Lease March 2025	GASB 87 Clearing - Leases
03/25/2025	1569	American Tower	American Tower	9,750.84	413023039	Lease- March 2025	GASB 87 Clearing - Leases
03/25/2025	1569	American Tower	American Tower	-9,750.84	413023039	Lease- March 2025	GASB 87 Clearing - Leases
03/25/2025	1570	Comcast	Comcast	760.94	7304 001001886157	Ethernet	Fiber/Backhaul Services
03/25/2025	1570	Comcast	Comcast	2,563.36	7304 001001886157	Ethernet	Fiber/Backhaul Services
03/25/2025	1570	Comcast	Comcast	760.60	7304 001001886157	Ethernet	Fiber/Backhaul Services
03/25/2025	1571	Cummins Sales and Servic	Cummins Sales and Servic	1,792.54	15-250311860	Generator Maintenance	Generator Maintenance
03/25/2025	1571	Cummins Sales and Servic	Cummins Sales and Servic	1,921.53	15-250311869	Generator Maintenance	Generator Maintenance
03/25/2025	1572	Federal Engineering, Inc.	Federal Engineering, Inc.	41,241.00	2025-1-2745	Consulting Services Backh	DO NOT USE Startup Services
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	5,083.69	10644	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	439.70	10645	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	3,223.41	10652	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	3,520.72	10684	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	5,203.96	10687	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
03/25/2025	1573	Fuelcare, Inc	Fuelcare, Inc	5,213.29	10698		Repairs & Maintenance - Sites
03/25/2025	1574	King County Finance	King County Finance	27,409.44	7010421	2025 Ring Hill Lease	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	.50	7010421	2025 Ring Hill Lease - onli	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	-27,409.44	7010421	2025 Ring Hill Lease	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	-.50	7010421	2025 Ring Hill Lease - onli	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	16,320.00	7010425	2025 Top Hat Lease	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	.50	7010425	2025 Top Hat Lease - onlin	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	-16,320.00	7010425	2025 Top Hat Lease	GASB 87 Clearing - Leases
03/25/2025	1574	King County Finance	King County Finance	-.50	7010425	2025 Top Hat Lease - onlin	GASB 87 Clearing - Leases
03/25/2025	1575	McKinstry Co. LLC	McKinstry Co. LLC	842.69	10280212	HVAC Repairs and Mainten	HVAC Maintenance
03/25/2025	1576	Motorola Solutions, Inc.	Motorola Solutions, Inc.	6,151.14	8252077922	Vehicle Charger Kit	Veh Parts & Supp
03/25/2025	1577	Northwest Snowcat Rental	Northwest Snowcat Rental	3,485.08	1941	Snow Cat Rental	Transportation Services
03/25/2025	1578	SourcePanel	SourcePanel	3,360.00	I010625B	Consulting	Consult Svcs Network
03/25/2025	1579	SPECTRASITE COMMUNI	SPECTRASITE COMMUNI	7,994.18	579769	Lease	GASB 87 Clearing - Leases
03/25/2025	1580	Spirit 105.3	Spirit 105.3	316.10	57016-45	site utilities Mar 2025	Utilities - Sites
03/25/2025	1581	TEGNA Inc.	TEGNA Inc.	56,050.34	KING 5 PSERN25 LEASE	King 5 PSERN 2025 Lease	GASB 87 Clearing - Leases
03/25/2025	1582	Tessco Technologies, Inc	Tessco Technologies, Inc	6,915.94	9400394350	MOD CARD FOR IMAX U	Site Parts/Supplies
03/27/2025	1583	Puget Sound Hardware Inc	Puget Sound Hardware Inc	16,497.70	13047	site parts and supplies	Site Parts/Supplies
03/27/2025	1583	Puget Sound Hardware Inc	Puget Sound Hardware Inc	-16,497.70	13047	site parts and supplies	Site Parts/Supplies
04/04/2025	1584	City of Kent Finance	City of Kent Finance	4,968.00	RI 75844	Lease 2025 - Cambridge T	GASB 87 Clearing - Leases
04/04/2025	1584	City of Kent Finance	City of Kent Finance	4,968.00	RI 75844	Lease 2025 -	GASB 87 Clearing - Leases
04/04/2025	1585	Comcast	Comcast	760.94	7304 001001970926	Ethernet	Fiber/Backhaul Services
04/04/2025	1585	Comcast	Comcast	2,563.36	7304 001001970926	Ethernet	Fiber/Backhaul Services
04/04/2025	1585	Comcast	Comcast	760.60	7304 001001970926	Ethernet	Fiber/Backhaul Services
04/04/2025	1586	Cummins Sales and Servic	Cummins Sales and Servic	3,402.96	01-250347907	Generator Maintenance	Generator Maintenance
04/04/2025	1586	Cummins Sales and Servic	Cummins Sales and Servic	959.15	15-250311913	Generator Maintenance	Generator Maintenance

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
04/04/2025	1586	Cummins Sales and Servic	Cummins Sales and Servic	959.15	15-250311985	Generator Maintenance	Generator Maintenance
04/04/2025	1587	Department of Transportati	Department of Transportati	67.60	RE 45 JE5988 L010	Utility Site	Utilities - Sites
04/04/2025	1588	Enduris Washington	Enduris Washington	250.00	D25-C11005-1	Insurance Claim - Auto Phy	Vehicle Maintenance
04/04/2025	1589	Federal Engineering, Inc.	Federal Engineering, Inc.	21,267.00	2025-1-2758	Consulting Services Backh	Consult Svcs Network
04/04/2025	1590	Lumen	Lumen	27,078.81	3340 728636789	Network IT Services	Fiber/Backhaul Services
04/04/2025	1591	Maicom LLC	Maicom LLC	859.56	CINV0156627	Battery Rental/Storage 6 m	Misc Services - Radio Site Svc
04/04/2025	1591	Maicom LLC	Maicom LLC	220.60	CINV0158077	Mar 2025 Rental/Battery St	Misc Services - Radio Site Svc
04/04/2025	1592	SMS Cleaning	SMS Cleaning	935.10	PSE KENT-0325	Monthly Janitorial Services	Janitorial Services
04/04/2025	1593	Spirit 105.3	Spirit 105.3	7,164.31	60709-10	Lease - Feb 2025	GASB 87 Clearing - Leases
04/04/2025	1593	Spirit 105.3	Spirit 105.3	2,876.93	61474-3	Lease March 2025	GASB 87 Clearing - Leases
04/04/2025	1594	Tracy Plouse	Tracy Plouse	11.00	SEAN03102025	Petty cash replenishment -	Parking, Tolls, Carwash
04/04/2025	1595	Washington State Patrol	Washington State Patrol	6,008.59	00184633	Lease - Feb 25 - King Lake	GASB 87 Clearing - Leases
04/04/2025	1595	Washington State Patrol	Washington State Patrol	6,008.59	00184634	Lease - Mar 25 - King Lake	GASB 87 Clearing - Leases
04/04/2025	1596	Washington Towers LP	Washington Towers LP	66,000.00	INTERURBAN PSERN25 L	Interurban 2025 Lease	GASB 87 Clearing - Leases
04/10/2025	1597	Anritsu Americas Sales Co	Anritsu Americas Sales Co	10,360.74	9000043336	Test equipment component	Tools & Supplies
04/10/2025	1597	Anritsu Americas Sales Co	Anritsu Americas Sales Co	2,971.81	9000043464	Test equipment component	Tools & Supplies
04/10/2025	1598	Lumen	Century Link	168.22	8298 APR 2025	Phone Service	Phone Service
04/10/2025	1599	City of Bellevue	City of Bellevue	4,534.20	52127	Lease March 2025	GASB 87 Clearing - Leases
04/10/2025	1599	City of Bellevue	City of Bellevue	1,210.00	52128	Lease March 2025	GASB 87 Clearing - Leases
04/10/2025	1600	City of Seattle	City of Seattle	33,784.42	FA2100195RB	012025 Othr Year - Northe	GASB 87 Clearing - Leases
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	1,051.78	01-250348518	Generator Maintenance	Generator Maintenance
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	772.74	01-250348553	Generator Maintenance	Generator Maintenance
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	2,175.71	01-250348616	Generator Maintenance	Generator Maintenance
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	727.11	15-250312059	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	77.25	15-250312060	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	231.75	15-250312061	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	1,539.04	15-250312062	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	202.57	15-250312066	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	1,285.76	15-250312067	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1601	Cummins Sales and Servic	Cummins Sales and Servic	149.87	15-250312068	Site Parts/Supplies	Site Parts/Supplies
04/10/2025	1602	FPI	FPI	1,697.00	98812	Fire Suppression	Fire Suppression
04/10/2025	1603	Fuelcare, Inc	Fuelcare, Inc	3,590.89	10723	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
04/10/2025	1603	Fuelcare, Inc	Fuelcare, Inc	5,505.44	10729	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
04/10/2025	1604	King County Finance	King County Finance	446.94	140479	Snow Plowing Services	Road Maintenance
04/10/2025	1605	Mission Critical Partners, L	Mission Critical Partners, L	1,679.00	24368	Project 24-254	Consult Svcs Network
04/10/2025	1606	Northwest Snowcat Rental	Northwest Snowcat Rental	2,743.98	1975	Snow Cat Rental	Transportation Services
04/22/2025	1606	Northwest Snowcat Rental	Northwest Snowcat Rental	-2,743.98	1975	Snow Cat Rental	Transportation Services
04/10/2025	1607	Tracy Plouse	Tracy Plouse	20.92	STAPLES031125	Reimbursement for office s	Office Supplies
04/22/2025	1608	American Tower	American Tower	6,492.20	413173476	Lease April 2025	GASB 87 Clearing - Leases
04/22/2025	1609	Automated Communication	Automated Communication	326.10	30606	Fire Monitoring 1st & 2nd	Fire Monitoring
04/22/2025	1609	Automated Communication	Automated Communication	330.30	30607	Fire Monitoring 1st & 2nd	Fire Monitoring

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
04/22/2025	1609	Automated Communication	Automated Communication	489.15	30981	Fire Monitoring 3rd & 4th Q	Fire Monitoring
04/22/2025	1609	Automated Communication	Automated Communication	495.45	31008	Fire Monitoring 3rd & 4th Q	Fire Monitoring
04/22/2025	1610	Coit Services Washington,	Coit Services Washington,	856.50	SEA-C-000593709		Janitorial Services
04/22/2025	1611	Comcast	Comcast	667.13	1342 001001997736	Ethernet	Fiber/Backhaul Services
04/22/2025	1611	Comcast	Comcast	667.70	1342 001001997736	Ethernet	Fiber/Backhaul Services
04/22/2025	1612	Cummins Sales and Servic	Cummins Sales and Servic	386.25	15-250412240	Site Parts/Supplies	Site Parts/Supplies
04/22/2025	1613	Fuelcare, Inc	Fuelcare, Inc	3,825.24	10740	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
04/22/2025	1614	Lumen	Lumen	1,672.07	LGZ4 732232123	Network IT Services	IT Network Services - Kent Ofc
04/22/2025	1615	Northwest Snowcat Rental	Northwest Snowcat Rental	2,743.98	1975	Snow Cat Rental	Transportation Services
04/22/2025	1616	Sean Douglas	Sean Douglas	2,058.78	TRAVEL REIMB 03.16.25-	Reimbursement - IWCE Co	Training & Conferences
04/22/2025	1617	Spirit 105.3	Spirit 105.3	366.80	57016-46	site utilities Apr 2025	Utilities - Sites
04/22/2025	1618	Tessco Technologies, Inc	Tessco Technologies, Inc	2,296.76	9400394349	48 inch Unicable Kit	Tools & Supplies
04/22/2025	1618	Tessco Technologies, Inc	Tessco Technologies, Inc	95.75	9400398124	48 inch Unicable Kit	Tools & Supplies
04/22/2025	1618	Tessco Technologies, Inc	Tessco Technologies, Inc	493.69	9400404106	48 inch Unicable Kit	Tools & Supplies
04/22/2025	1619	WA State Dept. of Retirem	WA State Dept. of Retirem	25.00	1666062	2024 OASI annual admin. f	ER Payroll Taxes
04/22/2025	1620	Washington State Ferries	Washington State Ferries	23.75	RK441211	Travel - Ferries	Parking, Tolls, Carwash
05/06/2025	1621	Anthony Cheung	Anthony Cheung	236.00	TRAVEL REIMB. 04.06.25		Training & Conferences
05/06/2025	1622	Lumen	CenturyLink	25,716.97	732650412 3340	Network IT Services	Fiber/Backhaul Services
05/06/2025	1623	City of Bellevue	City of Bellevue	1,210.00	52299	Lease April 2025	GASB 87 Clearing - Leases
05/06/2025	1624	Comcast	Comcast	763.97	001002094885 7304	Ethernet	Fiber/Backhaul Services
05/06/2025	1624	Comcast	Comcast	2,560.19	001002094885 7304	Ethernet	Fiber/Backhaul Services
05/06/2025	1624	Comcast	Comcast	763.66	001002094885 7304	Ethernet	Fiber/Backhaul Services
05/06/2025	1624	Comcast	Comcast	64.95	001002094885 7304	Ethernet	Fiber/Backhaul Services
05/06/2025	1625	Cummins Sales and Servic	Cummins Sales and Servic	1,417.48	15-250412420	Generator Maintenance	Generator Maintenance
05/06/2025	1625	Cummins Sales and Servic	Cummins Sales and Servic	1,417.48	15-250412421	Generator Maintenance	Generator Maintenance
05/06/2025	1626	Department of Transportati	Department of Transportati	67.60	RE 45 JE5988 L011	Utility Site	Utilities - Sites
05/06/2025	1627	Fuelcare, Inc	Fuelcare, Inc	3,952.76	10771	TANK DIALYSIS CLEANIN	Repairs & Maintenance - Sites
05/06/2025	1628	Lumen	Lumen	2,389.04	J6HY 732099792	backhaul fiber	Fiber/Backhaul Services
05/06/2025	1629	Maicom LLC	Maicom LLC	220.60	CINV0164629	Apr 2025 Rental/Battery St	Misc Services - Radio Site Svc
05/06/2025	1630	Marion Asbury JR	Marion Asbury JR	236.00	TRAVEL REIMB. 04.06.25	Travel to Saltlake City for	Training & Conferences
05/06/2025	1631	Motorola Solutions, Inc.	Motorola Solutions, Inc.	341.62	8282113743	Master System Key Starter	Software Related - Network
05/06/2025	1632	Northwest Snowcat Rental	Northwest Snowcat Rental	3,592.52	1984	Snow Cat Rental	Transportation Services
05/06/2025	1633	Safeguard Business Syste	Safeguard Business Syste	362.40	9007593492	Banking supplies	Office Supplies
05/06/2025	1634	SMS Cleaning	SMS Cleaning	935.10	PSE KENT-0425	Monthly Janitorial Services	Janitorial Services
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	2,011.36	0425LEASE	April 25 Lease - Federal W	GASB 87 Clearing - Leases
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	2,011.36	0525LEASE	May 25 Lease - Federal W	GASB 87 Clearing - Leases
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	6,634.65	Q1 ANTENNA BILLINGS 2	T-Mobile for Fed.Way Q1 s	Sublease Revenue Share
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	11,166.18	Q1 ANTENNA BILLINGS 2	AT&T for Fed.Way Q1 subl	Sublease Revenue Share
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	5,561.90	Q1 ANTENNA BILLINGS 2	Verizon for Fed.Way Q1 su	Sublease Revenue Share
05/06/2025	1635	South King Fire & Rescue	South King Fire & Rescue	3,572.00	Q1 ANTENNA BILLINGS 2	Dish Wireless for Fed.Way	Sublease Revenue Share
05/06/2025	1636	Spirit 105.3	Spirit 105.3	7,164.31	60709-11	Lease - March 2025	GASB 87 Clearing - Leases

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
05/06/2025	1636	Spirit 105.3	Spirit 105.3	2,838.23	61474-4	Lease- April 2025	GASB 87 Clearing - Leases
05/06/2025	1637	Steelhead Communication	Steelhead Communication	1,158.86	20024	Tower beacon light replace	Tower Rigger Services
05/06/2025	1638	Tessco Technologies, Inc	Tessco Technologies, Inc	216.46	9400413994	Precision Die Set for RFA-	Tools & Supplies
05/06/2025	1639	Washington State Patrol	Washington State Patrol	6,008.59	00184876	Lease- April 2025	GASB 87 Clearing - Leases
04/22/2025	20250007	Allenfort & Associates	Allenfort & Associates	-40,126.00	2025-01	APX Radio Management S	Set-Aside Services
04/22/2025	20250007	Allenfort & Associates	Allenfort & Associates	-222,931.0	2025-01	APX Radio Management S	Software Related - Network
04/03/2025	20250050	Richard J Busch	Richard J Busch	720.00	193677	Legal - real estate	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	80.00	193677	Legal	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	120.00	193677	Legal - real estate	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	560.00	193677	Legal - real estate	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	840.00	193677	Legal - real estate	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	160.00	193677	Legal - real estate	Legal Services - EE Related
04/03/2025	20250050	Richard J Busch	Richard J Busch	200.00	193677	Legal - real estate	Legal Services - EE Related
04/22/2025	20250052	Puget Sound Energy	Puget Sound Energy	-412.34	1594 FEB 2025	Utilities	Utilities - Sites
03/21/2025	20250080	Wex Bank	Wex Bank	3,649.84	103159610	February 2025 Fuel	Vehicle Fuel
03/21/2025	20250081	Verizon	Verizon	988.67	6107241805	Mobile Phone Service	Mobile Phone Service
03/25/2025	20250082	Puget Sound Energy	Puget Sound Energy	412.67	7206 FEB 2025	Utilities	Utilities - Sites
03/25/2025	20250083	Puget Sound Energy	Puget Sound Energy	568.95	6745 FEB 2025	Utilities	Utilities - Sites
03/25/2025	20250084	Puget Sound Energy	Puget Sound Energy	511.60	1628 FEB 2025	Utilities	Utilities - Sites
03/25/2025	20250085	Puget Sound Energy	Puget Sound Energy	301.84	6935 MAR 2025	Utilities	Utilities - Sites
03/25/2025	20250086	Puget Sound Energy	Puget Sound Energy	94.39	1354 MAR 2025	Utilities	Utilities - Sites
03/25/2025	20250087	Puget Sound Energy	Puget Sound Energy	591.40	1792 MAR 2025	Utilities	Utilities - Sites
03/25/2025	20250088	Snohomish County PUD	Snohomish County PUD	180.70	0839 FEB 2025	Sites Utilities	Utilities - Sites
03/25/2025	20250089	Snohomish County PUD	Snohomish County PUD	271.98	0847 MAR 2025	Sites Utilities	Utilities - Sites
03/25/2025	20250090	Pacifica Law Group LLP	Pacifica Law Group LLP	2,847.00	96149	Legal Services Subleases	Legal Services - Subleases
03/25/2025	20250090	Pacifica Law Group LLP	Pacifica Law Group LLP	2,048.50	96149	Legal Services	Legal Services - Corp Admin
03/25/2025	20250090	Pacifica Law Group LLP	Pacifica Law Group LLP	4,433.00	96149	Legal Services	Legal Serv - Leases/Subleases
03/25/2025	20250091	United Rentals	United Rentals	5,342.93	239291533-005	Generator 45-49 KVA Tier	Generator Rental
03/25/2025	20250092	United Rentals	United Rentals	551.50	244229862-001	Generator Maintenance	Generator Rental
03/25/2025	20250093	American Tower	American Tower	6,492.20	413022701	Lease March 2025	GASB 87 Clearing - Leases
03/25/2025	20250094	American Tower	American Tower	9,750.84	413023039	Lease- March 2025	GASB 87 Clearing - Leases
03/25/2025	20250095	Summit Law	Summit Law	7,012.50	161253	Legal Services	Legal Services - EE Related
03/25/2025	20250096	CDW Government	CDW Government	31,531.74	AC8U14K	Software License / Subscri	GASB 96 Clearing - SBITA
03/27/2025	20250097	King County Finance	King County Finance	27,409.44	7010421	2025 Ring Hill Lease	GASB 87 Clearing - Leases
03/27/2025	20250097	King County Finance	King County Finance	.50	7010421	2025 Ring Hill Lease - onli	GASB 87 Clearing - Leases
03/27/2025	20250097	King County Finance	King County Finance	16,320.00	7010425	2025 Top Hat Lease	GASB 87 Clearing - Leases
03/27/2025	20250097	King County Finance	King County Finance	.50	7010425	2025 Top Hat Lease - onlin	GASB 87 Clearing - Leases
04/01/2025	20250100	WFT Company Two LLC	WFT Company Two LLC	9,374.00	APRIL 2025	Kent Facility Lease	GASB 87 Clearing - Leases
04/01/2025	20250100	WFT Company Two LLC	WFT Company Two LLC	3,426.45	APRIL 2025	CAM Charge 2025	Utilities - Kent Office
04/04/2025	20250101	WA Department of Revenu	WA Department of Revenu	762.94	FEB 2025 EXCISE TAX	B&O Tax	B&O Tax - Subleases
04/04/2025	20250101	WA Department of Revenu	WA Department of Revenu	68.66	FEB 2025 EXCISE TAX	Penalty Fees	Misc Services - Corp Tech

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
04/04/2025	20250102	Puget Sound Energy	Puget Sound Energy	744.08	6901 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250103	Puget Sound Energy	Puget Sound Energy	3,295.67	8846 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250104	Puget Sound Energy	Puget Sound Energy	449.71	1594 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250105	Puget Sound Energy	Puget Sound Energy	898.33	1115 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250106	Puget Sound Energy	Puget Sound Energy	388.57	1271 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250107	Puget Sound Energy	Puget Sound Energy	417.36	6778 MAR 2025	Utilities	Utilities - Sites
04/04/2025	20250108	Puget Sound Energy	Puget Sound Energy	2,318.11	8931 MAR 2025	Utilities	Utilities - Kent Office
04/04/2025	20250109	Seattle City Light	Seattle City Light	325.30	6974 MAR 2025	Utilities - Sites	Utilities - Sites
04/04/2025	20250110	Seattle City Light	Seattle City Light	37.12	5218 MAR 2025	Utilities - Sites	Utilities - Sites
04/04/2025	20250111	Seattle City Light	Seattle City Light	897.91	3648 MAR 2025	Utilities - Sites	Utilities - Sites
04/03/2025	20250113	United Rentals	United Rentals	3,968.95	241846361-004	Generator 19-29 KVA Tier	Generator Rental
04/08/2025	20250114	Richard J Busch	Richard J Busch	1,080.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	160.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	200.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	1,920.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	80.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	640.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	120.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	2,200.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	1,000.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	1,200.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	720.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	200.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	40.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	80.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	80.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	240.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250114	Richard J Busch	Richard J Busch	120.00	194482	Legal Services - Subleases	Legal Services - Subleases
04/08/2025	20250115	Pacifica Law Group LLP	Pacifica Law Group LLP	6,435.00	96773	Legal Services	Legal Services - Corp Admin
04/08/2025	20250116	PBS Engineering and Envir	PBS Engineering and Envir	543.75	5006	Geotechnical design servic	Consult Svcs Network
04/08/2025	20250117	United Rentals	United Rentals	5,342.93	239291533-006	Generator 45-49 KVA Tier	Generator Rental
04/08/2025	20250117	United Rentals	United Rentals	-3,968.95	241846361-005	Generator 19-29 KVA Tier	Generator Rental
04/08/2025	20250117	United Rentals	United Rentals	3,968.95	241846361-005	CORRECT invoice amount	Generator Rental
04/08/2025	20250117	United Rentals	United Rentals	3,968.95	241846361-005	CORRECT invoice amount	Generator Rental
04/15/2025	20250118	Wex Bank	Wex Bank	4,910.31	103800532	March 2025 Fuel	Vehicle Fuel
04/08/2025	20250119	Summit Law	Summit Law	2,295.00	162014	Legal Services	Legal Services - EE Related
04/10/2025	20250120	AWC Employee Benefit Tru	AWC Employee Benefit Tru	54,195.51	67858	Benefits April 2025	Benefits
04/15/2025	20250121	Caselle Inc	Caselle Inc	2,014.99	140366	April 2025 Invoice	Software Related - Admin
04/15/2025	20250122	Verizon	Verizon	978.67	6109738487	Mobile Phone Service	Mobile Phone Service
04/15/2025	20250123	Ziplyfiber	Ziplyfiber	134.85	8245 APR 2025	Site Utilities	Utilities - Sites
04/15/2025	20250124	Seattle City Light	Seattle City Light	283.55	8288 MAR 2025	Utilities - Sites	Utilities - Sites

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
04/15/2025	20250125	Tanner Electric Cooperativ	Tanner Electric Cooperativ	587.97	9624 MAR 2025	Utilities - Sites	Utilities - Sites
04/15/2025	20250126	Tanner Electric Cooperativ	Tanner Electric Cooperativ	361.22	9623 MAR 2025	Utilities - Sites	Utilities - Sites
04/15/2025	20250127	Chelan County PUD	Chelan County PUD	65.71	6311 MAR 2025	Site Utlilties	Utilities - Sites
04/15/2025	20250127	Chelan County PUD	Chelan County PUD	69.71	6311 MAR 2025	Site Utlilties	Utilities - Sites
04/15/2025	20250127	Chelan County PUD	Chelan County PUD	77.19	6311 MAR 2025	Site Utlilties	Utilities - Sites
04/15/2025	20250128	Puget Sound Energy	Puget Sound Energy	508.41	0505 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250129	Puget Sound Energy	Puget Sound Energy	549.55	0984 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250130	Puget Sound Energy	Puget Sound Energy	571.56	0992 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250131	Puget Sound Energy	Puget Sound Energy	668.31	1412 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250132	Puget Sound Energy	Puget Sound Energy	1,072.45	1818 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250133	Puget Sound Energy	Puget Sound Energy	389.52	1891 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250134	Puget Sound Energy	Puget Sound Energy	532.04	2055 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250135	Puget Sound Energy	Puget Sound Energy	403.97	7370 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250136	Puget Sound Energy	Puget Sound Energy	1,052.94	8861 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250137	Puget Sound Energy	Puget Sound Energy	251.42	1636 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250138	Puget Sound Energy	Puget Sound Energy	346.31	6976 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250139	Puget Sound Energy	Puget Sound Energy	344.86	2022 MAR 2025	Utilities	Utilities - Sites
04/15/2025	20250140	Puget Sound Energy	Puget Sound Energy	396.30	7206 MAR 2025	Utilities	Utilities - Sites
04/08/2025	20250141	Xpress Solutions Inc	Xpress Solutions Inc	535.00	INV-XPR022970	2025 Das Billing Services-	Misc Services - Corp Tech
04/22/2025	20250144	Puget Sound Energy	Puget Sound Energy	412.34	1594 FEB 2025	Utilities	Utilities - Sites
04/22/2025	20250145	Allenfort & Associates	Allenfort & Associates	40,126.00	2025-01	APX Radio Management S	Set-Aside Services
04/22/2025	20250145	Allenfort & Associates	Allenfort & Associates	222,931.00	2025-01	APX Radio Management S	Software Related - Network
04/25/2025	20250146	Puget Sound Energy	Puget Sound Energy	306.55	6935 APR 2025	Utilities	Utilities - Sites
04/25/2025	20250147	Puget Sound Energy	Puget Sound Energy	614.88	6745 MAR 2025	Utilities	Utilities - Sites
04/25/2025	20250148	Puget Sound Energy	Puget Sound Energy	1,139.83	1370 MAR 2025	Utilities	Utilities - Sites
04/25/2025	20250149	Puget Sound Energy	Puget Sound Energy	484.06	1628 MAR 2025	Utilities	Utilities - Sites
04/25/2025	20250150	Puget Sound Energy	Puget Sound Energy	421.07	1354 APR 2025	Utilities	Utilities - Sites
04/25/2025	20250151	Puget Sound Energy	Puget Sound Energy	619.51	1792 APR 2025	Utilities	Utilities - Sites
04/25/2025	20250152	Puget Sound Energy	Puget Sound Energy	3,296.75	8846 APR 2025	Utilities	Utilities - Sites
04/25/2025	20250153	Seattle City Light	Seattle City Light	1,808.26	6975 MAR 2025	Utilities - Sites	Utilities - Sites
04/25/2025	20250154	Snohomish County PUD	Snohomish County PUD	199.68	0839 MAR 2025	Sites Utilities	Utilities - Sites
04/25/2025	20250155	Snohomish County PUD	Snohomish County PUD	298.17	0847 APR 2025	Sites Utilities	Utilities - Sites
04/30/2025	20250156	WFT Company Two LLC	WFT Company Two LLC	9,374.00	MAY 2025	Kent Facility Lease	GASB 87 Clearing Kent Office
04/30/2025	20250156	WFT Company Two LLC	WFT Company Two LLC	3,426.45	MAY 2025	CAM Charge 2025	Utilities - Kent Office
05/06/2025	20250157	Puget Sound Energy	Puget Sound Energy	419.32	1594 APR 2025	Utilities	Utilities - Sites
05/06/2025	20250158	Puget Sound Energy	Puget Sound Energy	392.97	1271 APR 2025	Utilities	Utilities - Sites
05/06/2025	20250159	Puget Sound Energy	Puget Sound Energy	968.74	1115 APR 2025	Utilities	Utilities - Sites
05/06/2025	20250160	Puget Sound Energy	Puget Sound Energy	503.68	6778 APR 2025	Utilities	Utilities - Sites
05/06/2025	20250161	Puget Sound Energy	Puget Sound Energy	1,094.61	8931 APR 2025	Utilities	Utilities - Kent Office
05/06/2025	20250162	Seattle City Light	Seattle City Light	329.24	6974 APR 2025	Utilities - Sites	Utilities - Sites

Check Issue Date	Check Number	Merchant Name	Payee	Amount	Invoice Number	Description	Invoice GL Account Title
Grand Totals:				785,050.03			

PSERN PUGET SOUND EMERGENCY RADIO NETWORK

For adoption, Resolution 25-01 appoints Michel Webb as the Claims Agent for the PSERN Operator. Pursuant to RCW 4.96.020, the Claims Agent is able to receive claims made against the Puget Sound Emergency Radio Network Operator. The resolution is required to be in compliance with RCW 4.96.020.

PSERN PUGET SOUND EMERGENCY RADIO NETWORK

RESOLUTION NO. 25-01

A RESOLUTION OF THE PSERN OPERATOR BOARD OF DIRECTORS APPOINTING AN AGENT TO RECEIVE CLAIMS FOR DAMAGES

WHEREAS, the Board of Directors (the "Board") of the Puget Sound Emergency Radio Network Operator (the "PSERN Operator") establishes policies and procedures relating to PSERN Operator operations; and

WHEREAS, pursuant to the provisions of RCW 4.96.020, the governing body of each local governmental entity shall appoint an agent ("Agent") to receive any claim for damages made under chapter 4.96 RCW; and

WHEREAS, the identity of the Agent and the address where such individual may be reached during the normal business hours of the local governmental entity are public records and shall be recorded with the auditor of the county in which the entity is located; and

WHEREAS, all claims for damages against a local governmental entity, or against any local governmental entity's officers, employees, or volunteers, acting in such capacity, shall be presented to the Agent within the applicable period of limitations within which an action must be commenced; and

WHEREAS, the failure of a local governmental entity to comply with such requirements precludes that local governmental entity from raising a defense under chapter 4.96 RCW.

NOW, THEREFORE, BE IT RESOLVED by the PSERN Operator Board of Directors as follows:

Section 1. The PSERN Operator Board hereby appoints the below listed Agent to receive any claims for damages made under chapter 4.96 RCW.

Agent Appointed: Mike Webb, Executive Director
Office Address: PSERN Operator Facility, 19717 62nd Ave S, E-102, Kent, WA 98032
Business Hours: Monday - Friday, 8:00 am – 5:00 pm

This resolution shall be recorded with the King County Auditor promptly after passage.

Section 2. If any portion of this resolution is declared unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining portions of the resolution.

Section 3. This resolution shall take effect immediately upon its passage.

ADOPTED at the regular meeting of the PSERN Operator Board of Directors, this 22 day of May 2025.

PSERN OPERATOR
KING COUNTY, WASHINGTON

_____
Kurt Triplett, Chair

PSERN
PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Operator Board of Directors
Action Log - Open Items

#	Date Opened	Item	Responsible	Due Date	Notes
13	2/24/22	Request for additional information related to In-Building Sites to include details of funding options for the remaining 10 areas recommended by the task force, any budget considerations, improvements found in Coverage Testing, impacts of additional sites on Operator rates, Operations Board and Technical Committee perspective, and impact on backhaul capacity.	Operator Staff	TBD	Planning work for how to fulfill this set of requests will begin once the in-building sites are live on the system and testing is complete. This action item was moved from the Project Action Log to the Operator Action Log on 4/27/23. Work has begun to prepare initial deliverables. It is expected to take about a year. Procurement for A&E firms have concluded.
23	12/12/24	Add a document review period to the financial policy manual.	Tracy Plouse/Mike Webb	TBD	
25	1/23/25	Provide additional information on encryption to the Board, including is there any requirement to provide access to communications to the public.	PSERN Staff	5/22/2025	Agenda item # 9
26	1/23/25	Provide updates on the results of the coverage testing assessment.	PSERN Staff	5/22/2025	Agenda item # 10

PSERN
PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Operator Board of Directors
Action Log - Closed Items and Archive

#	Date Opened	Item	Responsible	Date Closed	Notes
1	4/28/22	Summary of portfolio of PSERN leases	Project Staff	6/1/22	Operator
2	4/28/22	Budget workshop to discuss 2023 budget and rate setting	Mike Webb/ Tracy Plouse	12/12/24	Draft manual was presented at the September meeting, will be discussed in October, and is on the brought for approval in December.
3	6/23/22	Operator staff will send a calendar invite for the July 11, 2022 budget workshop.	Tracy Plouse	6/24/22	
4	3/24/22	Facility recommendation and approval	Mike Webb	8/25/22	Leased approved at 8/25 meeting.
5	6/23/22	Review availability for the August and September regular Board meetings.	Board Members	7/28/22	Need to confirm quorum
6	4/28/22	Provide a report on possible changes to the Operator ILA associated with a change to the milestone at which the Operator takes over operational responsibility. Assess the Motorola contract for any concerns.	Mike Webb	9/22/22	This pertains to the proposal to set the date for operational transition and PSERN service fee commencement to something other than FSA.

#	Date Opened	Item	Responsible	Date Closed	Notes
7	5/26/22	Review existing procurement policy to consider issues identified in Clark Nuber phase 1 report.	Mike Webb/ Tracy Plouse	9/22/22	Procurement policy amendments approved.
8	8/25/22	Update the draft budget and service fee estimates to reflect revised CPI rates.	Tracy Plouse	9/22/22	Updated budget report provided at September meeting.
9	9/22/22	Approval of warrant vouchers (checks) needs to be added to future board meetings as a standing item. This could be done as part of a consent agenda that would also include approval of previous meeting minutes.	Mike Webb/ Tracy Plouse	10/27/22	Will be incorporated as part of consent agenda starting with October meeting
10	9/22/22	Operator staff will bring additional information on the alternatives to modifying or setting the Operator Transfer date and the associated funding requirements and approaches	Mike Webb	10/27/22	Closed, follow up item added to action log.

#	Date Opened	Item	Responsible	Date Closed	Notes
11	1/26/23	Mike Webb will consult with legal counsel on the wording of the motion for the Board to approve the transfer agreement prior to sending for Council approval.	Mike Webb	2/23/23	This is complete. Wording for the agreement has been provided. Pacifica advised the wording to be" it is also recommended that the Board plan to approve the Agreement, in substantially final form."
12	10/27/22	The Operator will add the decision regarding collection of service fees from agencies beginning in 2024 to a future Board meeting.	Mike Webb/ Tracy Plouse	4/27/2023	FSA will not occur until December and there is no ability for the Operator to collect fees until after FSA. Recommend this item be closed. The Board of Directors agreed that this item should be closed at the 4/27/23 meeting.
14	3/24/22	2024 budget and service fee development.	Mike Webb/ Tracy Plouse	6/22/23	Budget approved in June.

#	Date Opened	Item	Responsible	Date Closed	Notes
15	3/24/22	Report on proposed plan for development of sublease agreement templates to be drawn up for discussion.	Mike Webb	5/25/23	Agenda item #8 of the 5/25/2023 Board meeting.
16	10/27/22	Operator staff will prepare a draft operational support agreement between the County and the Operator.	Mike Webb	5/25/23	Recommended to close this item as there is no OSA.
17	5/25/23	The Operator has an action item to come back with some further analysis and proposed budget scenarios for the June meeting.	Tracy Plouse	6/22/23	On the June agenda.
18	7/27/23	The PSERN Operator will look into options on how it could offset the higher out of pocket maximums and deductibles for transferring employees and bring this information to the Board in August.	Operator Staff	8/24/23	Completed August 24,2023
21	4/25/24	Provide information on how PSERN explores and negotiates subleases and how fees are determined.	Adrian Englet	7/25/2024	Presented at the July meeting.
19	1/25/24	Compile and create a fiscal policy manual.	Operator Staff	12/12/2024	Manual was approved by the Board at the December 12, 2024 meeting.

#	Date Opened	Item	Responsible	Date Closed	Notes
20	4/25/24	Follow up with FirstNet on subleasing space on PSERN towers.	Mike Webb	1/23/2025	PSERN had initial meeting with FirstNet, waiting on FirstNet. FirstNet has indicated they are not interested in subleasing on PSERN towers at this time.
22	12/12/24	Board Members to provide feedback on any additional items they would like to see added to the Board Workplan or to the Project and Initiatives list to be presented at the January meeting.	Mike Webb	1/23/2025	On January agenda.
24	12/12/24	Provide additional information on the microgrid solution, other alternative energy technologies and potential grant or funding opportunities.	Mike Webb	3/18/2025	Mike has not found any grant or funding options to date.

PSERN
PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Board of Directors Staff Report
Agenda Item #6

Title:	Executive Director Report – May 2025
Meeting Date:	May 22, 2025
PSERN Staff Contact:	Michael Webb, Executive Director
Action:	Discussion

SUMMARY:

This report provides a summary of the activities of the PSERN Operator (PSERN) since the last report to the Board at the March 27, 2025, meeting.

DISCUSSION:

Financial

- Final Year end 2024 results will be filed with the State at the end of May.
  - The results will be brought forward to the Board at the June meeting.
  - PSERN had approximately $1M in operating surplus for 2024, which is being proposed to be used to create an operating reserve in 2025 and beyond.
- Draft 2026 operating and capital budgets are provided for discussion in agenda item 9.
- The W2 issue reported at the March meeting was resolved by PSERN's payroll vendor in early April.

User Agencies

- No new radio end user SLA's have been executed.

Procurement Activity

- PSERN has selected LDC and entered into a Master Service Agreement following its RFQ 25001 for electrical engineering services (A&E)
  - An initial Work Order for engineering support for the Maloney, Sobieski and McDonald temporary generator replacement projects has been signed.

Projects and Initiatives

- Encryption planning and design are nearly complete and is shifting into implementation:
  - At its April and May meetings the Operations Committee endorsed recommendations made by the Technical Working Group with the assistance of the expanded encryption working group.
  - A further round of radio reprogramming to implement encryption changes will begin in the July timeframe, with the goal of completing the implementation in 2Q 2026 prior to the FIFA World Cup.
  - A more detailed overview of the encryption initiative is provided in agenda item 10.

- Hatfield Dawson has completed coverage modelling/assessment work for the remainder of the Primary Bounded Area.
    - PSERN technical staff have gathered field test data to enable the coverage predictions for North and West simulcast systems to be verified.
    - A more detailed overview of the status and future plans for the In-Building Coverage work is provided in agenda item 11.
- Negotiations are underway with WA DNR regarding extending PSERN's authority for locating additional fuel storage and generators at the site while the powerline is inoperable:
    - This includes discussions related to the timeline, responsibilities and requirements for powerline replacement.
- Puget Sound Energy has advised PSERN that they have completed the design of a new powerline to the Maloney Ridge site, have USFS approvals and expect construction to commence this summer and last through 2026:
    - More information is provided in agenda item 9.
- Federal Engineering has delivered an initial MPLS map and link matrix as part of their MPLS network assessment which PSERN staff are currently reviewing.
- The 2nd Touch codeplug effort is wrapping up:
    - Number of codeplugs initially identified: 615
    - Number of codeplugs completed: 496 (80.6%)
    - Remaining codeplugs for public safety will be done as part of the encryption implementation, as part of the first batch of encryption code plugs.
    - A few non-public safety codeplugs are in process and will be completed with the impacted agencies.
- DAS migration and validation of new DAS systems:
    - As of May 12th, 907 out of an estimated 1124 (81%) DAS systems across the County have migrated and been validated.
    - Work to authorize and validate new and migrating DAS installations is now subject to cost recovery from building owners and is ongoing.
- 2025 System Upgrade:
    - Motorola has completed a system survey and provided an impact assessment and scope of work:
        - A variety of hardware and software components will be replaced or upgraded at master sites, RF sites and dispatch sites.
        - PSERN is working with affected user agencies to schedule specific activities, with a particular focus on scheduling and coordinating dispatch console upgrades.
    - The target date for completion of the upgrade is September 5, with upgrade activities occurring during most of August and early September.

Operational Status and Updates

- SNO 911 radio system cutover occurred on May 6:
    - After the cutover it was determined that PSERN user codeplugs are missing some SNO911 frequencies and some PSERN radio IDs were not activated on the SNO911 system:
        - The radios will find the correct frequencies, but the process can take approximately one minute, which can cause delays in users accessing SNO911 talkgroups during mutual aid situations.
        - Interim codeplug updates to add the missing frequencies are being developed and will be deployed to agencies bordering Snohomish County by May 23rd.
        - PSERN is working with SNO911 to ensure all required radio IDs are activated.
    - The PSERN – SNO911 ISSI link has been upgraded and validated as a solution for interoperability, including dispatch center – dispatch center communication.
        - PSERN staff are visiting dispatch centers this week to add new resources to consoles.
    - Updates PSERN will work with agencies most affected to prioritize additional codeplug updates as part of the encryption rollout.
    - Discussions are underway with SNO911 to determine how to improve coordination between adjacent systems and avoid future issues during major system changes or updates.
- Discussions are continuing with Motorola regarding the set of post-warranty support services to be provided in 2026 and beyond, with current costs of $1.2M included in the 2026 operating budget.

Radio Site Leases and Subleases

- The following lease amendments and/or renewals are in progress:
    - City of Bellevue (Bellevue Station 9) – Updated amendment for subletting (Verizon and Dish Wireless) and adding utility easement for sublessees sent to the city for review.
    - KING 5 – Amendment for automatic renewal terms and establishing a commencement date for lease is complete.
- The following sublease applications/license agreements are in progress:
    - PANO AI – Agreements for Cowboy, Deception Creek, and Scenic are complete:
        - USFS has provided consent letters for PANO AI collocate at these sites.
    - Verizon (Federal Way) – license renewal is complete.
    - AT&T (Ring Hill) – license drafted and with AT&T for review.
    - T-Mobile (Ring Hill) – license currently with T-Mobile for approval.
    - T-Mobile (Federal Way) – renewal Agreement complete.
    - WSDOT (Federal Way & Rattlesnake) – amendments are complete.
    - Norcom (Norway Hill) – consent letter signed by the City of Bothell. Negotiations with Norcom continue.

- Norcom (Crista and Sobieski) – renewal negotiations are in progress. Agreements have been drafted and reviewed by NORCOM.
- RSN Wireless – licenses are complete with RSN Wireless for collocation at
  - Cowboy
  - Deer Creek
  - Maloney
- BPA (Deer Creek) – amendment negotiations continue for the move of their antenna to a 6' standoff so RSN can extend the tower.

PSERN Operations Committee

- The PSERN Operations Committee met on April 14th and May 12th:
  - At the April meeting, an update from SNO911 on their radio system transition plans was provided, along with endorsement of additional recommendations related to PSERN encryption.
  - At the May meeting, further updates on coverage assessment and encryption work were provided.

Upcoming Board Meeting Topics

- Topics expected to be brought forward over the next 3 board meetings include the following:
  - June 2025:
    - Approve 2026 operating and capital budgets
    - Final year 2024 operating results.
    - Approve 2025 expenditures for power improvements at Maloney, Sobieski and McDonald
  - September 2025:
    - Approve 2026 Board Meeting Schedule
    - Approve Motorola change order on Post Warranty services
  - October 2025:
    - Approve 2026 Board Meeting Schedule
    - 3Q 2025 financial results
- These topics are in addition to the regular standing items, including the Consent Agenda, Action Item Log, Executive Director's report, and any additional expenditure approvals that may be required.
- Please note that no meetings are scheduled for April, July and August 2025.

CONCLUSION:

This report has provided a summary of the activities of the PSERN Operator since the previous report in March 2025.

SUPPORTING DOCUMENTATION:

None

PSERN
PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Board of Directors Staff Report
Agenda Item #7

Title:	2026 Draft Operating and Capital Budgets
Meeting Date:	May 22, 2025
PSERN Staff Contact:	Tracy Plouse, Finance and Administrative Services Manager
Action:	Discussion

SUMMARY:

This report presents a preliminary 2026 operating budget and service fee rates, a preliminary capital budget and a cash set-aside proposal for the Board's review and discussion. Based on feedback from this meeting, final versions of these items will be brought forth for adoption by the Board at its June 2025 meeting.

BACKGROUND:

2025 Operating Budget and Service Fee Rates

At its June 2024 meeting, the PSERN Operator Board approved a 2025 operating budget and schedule of service fee rates, which have been used throughout PSERN's operations to date in 2025 to calculate user service fee billing and report on overall financial performance.

The approved 2025 budget also included forecasts for 2026-2029 (4 years). These forecasts considered the start of Motorola post-warranty support costs in 2026 and the application of Rate Stabilization funds (totaling $2.6M) over a three-year period starting in 2026.

The following numbers of radios and consoles were used in calculating service fee rates in the 2025 budget and beyond:

- Public Safety radios – 13,560
- Non-Public Safety radios – 5,050
  - *Total Radios – 18,610*
- Consoles – 143

Several decisions were made during the development of the 2024 and 2025 budgets by the Board of Directors regarding the details of how specific types of expenses would be used to calculate service fees (% split of corporate admin costs, personnel costs and network operating costs between radios and consoles). These cost allocation methods are continuing to be used in the 2026 budget and service fee development process.

2026 Capital Budget

An initial view of PSERN's future capital requirements was provided at the March 2025 meeting. That report showed a projected capital expenditure requirement of $637K in 2025 and $978K in 2026, excluding costs associated with the Maloney/Sobieski powerline replacement.

Cash Set-Asides

PSERN's cash classification is discussed further below. Most of the funds received from the PSERN project in the form of levy funds, cashflow startup funds, and rate stabilization funds, have been set aside

(earmarked) for specific purposes. As required by GASB policy, PSERN's accounting system consists of one proprietary (enterprise) fund and cash cannot be restricted within an enterprise fund. The cash has been internally designated as either a set-aside or available for operations. The set-aside funds will be tracked and updated as applicable expenditures are charged against them. The proposed cash set-aside structure is discussed in this report and will be included in the June 2025 request for budget approval.

ANALYSIS AND DISCUSSION:

Proposed 2026 Operating Budget

A preliminary 2026 operating budget has been developed based on the 2024 and 2025 budgets and actual expenses from current operations. However, some categories of operating expenses are still estimates as PSERN's operational history and experience only extends from January 2024 to approximately the end of April 2025 and PSERN will be assuming additional responsibility for certain maintenance and support services in 2026 that were previously part of Motorola's warranty services.

Overall operating expenses, excluding post warranty vendor support services, have increased by 7.2%. This includes all operating expenses net of sublease and interest revenue. Network costs have increased by 14.35%, excluding post warranty vendor support costs. This is due to some costs being reclassified from corporate/admin costs to network, and the increased scope of PSERN's operational responsibilities for radio site maintenance after the end of the initial system warranty.

Post warranty vendor supoprt cost estimates have been reduced from the $1.9M forecasted in June 2025 to $1.2M as a result of reduction in Motorola service scope as discussed at the March 2025 meeting. PSERN also intends to contract directly with OEM vendors for the microwave (Aviat) and MPLS network (Nokia) components of the system. It should be noted that some of this reduction in post warranty support costs is being used to increase network operating budget in other categories that were previously part of warranty services provided by Motorola (e.g. preventive maintenance for network equipment and radio site facilities).

The total net operating expenses prior to the application of rate stabilization funds has decreased compared to 2026 forecast presented in 2025 from **$11.8M** to **$11.3M**, due to the decrease in post-warranty support costs.

The following assumptions have been made in the development of the preliminary 2026 operating budget:

- Headcount is projected to be 24 FTE in 2026 and remains constant through 2030.
- Wages have been calculated using a general wage increase consistent with the projections in the 2025 budget and with progression through pay steps for eligible staff in 2026.
- Most recurring costs other than wages and benefits were escalated by 4% for 2026 (relative to 2025) and all subsequent years unless explicitly estimated, revised and/or updated. Post-warranty vendor service costs were escalated by 5% for 2027 and subsequent years.
- The following numbers of radios and consoles were used in calculating rates[1], which represents an increase of 297 radios:
    - Public Safety radios – 13,712,
    - Non-Public Safety radios – 5,195
        - *Total Radios – 18,907*

[1] Radio / console numbers are preliminary as agencies have until June 1st, 2025, to provide their radio projection numbers for the 2026 budget.

    - Consoles – 143

- Network operating expenses, including lease costs, have been reviewed and where possible, are based on actual costs incurred for 2024 and the first few months of 2025; however, certain expenses are still estimates and based on limited operational history and experience and will need to be adjusted as more operational experience is obtained.
- The following changes relative to the 2025 budget have been identified and addressed in the preliminary 2026 operating budget, including:
    - Some costs were reclassified between employee-related and corporate admin categories.
    - Addition of Radio Management software expenses - $157K increase
    - Review of interest revenue offset - $175K increase
    - Review of net lease and sub-lease expense - $328K decrease in expense
    - Review of site-related insurance - $205K increase
    - Addition of DC battery maintenance and repair - $215K increase
    - Review of site utilities expense - $100K increase
    - Addition of MSI post-warranty support services - $1.2M increase

Overall, the 2026 operating budget is projected to increase by **7.2%** from the 2025 budget, prior to the inclusion of $1.2M in post warranty vendor costs.

The total 2026 operating budget is **19.9%** higher than the 2025 budget (increased from $9.4M to $11.3M) with post warranty vendor costs included, although it has been reduced from $11.8M to $11.3M in comparison to the 2026 forecast provided in June 2025.

Summary of 2026 Operating Budget

Costs for post-warranty support Motorola and several other vendors are assumed to start on January 1, 2026. Motorola post-warranty support costs have been estimated based on the schedule of payments in Change Order 14 of the Motorola contract. Additional information on the set of services included in the budget estimate is provided in a report presented at the March 2025 meeting.

Rate stabilization funds ($2.6M) have been applied in 2026 onwards to smooth out the rates to offset some of the post warranty support services that will start in 2026, as follows: $1.14M in 2026, $859K in 2027, $490K in 2028, and $121K in 2029. This results in a steady escalation in net operating expense (funded by service fees) of 7.8% in each of those years.

A summary of the PSERN Operator's proposed preliminary operating budget for 2026 and projected budgets for 2027-2030 are shown in Table 1 below. A more detailed budget report can be found in Appendix A.

Table 1: 2025 Budget Consolidated Operating Costs Summary - PRELIMINARY

Puget Sound Emergency Radio Network Operator
2026 Budget (with 4 year proforma 2026 - 2030) - 80/20 & Refined Network Split
Consolidated Operating Costs - Summary

		PROPOSED BUDGET					
Description		**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
annual increases for all expense categories (except salaries)			*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Revenue - investment income		(25,000)	(200,000)	(180,000)	(160,000)	(140,000)	(120,000)
Salaries & benefits		5,494,780	5,846,733	6,080,602	6,323,826	6,576,779	6,839,851
Employee related costs		227,150	363,610	378,155	393,281	409,012	425,372
Premise costs		212,080	248,311	258,244	268,574	279,317	290,489
Corporate admin costs		272,740	135,933	163,971	147,025	177,314	159,023
Professional services		-	-	-	-	-	-
King County services		-	-	-	-	-	-
Radio site facilities costs		1,689,550	1,623,930	1,688,887	1,756,443	1,826,700	1,899,768
Radio site systems costs		1,156,610	1,460,360	1,518,774	1,579,525	1,642,706	1,708,415
Network technology costs		398,060	1,825,600	1,910,624	1,999,649	2,092,865	2,190,471
	Total Operating Expenses	**9,425,970**	**11,304,478**	**11,819,257**	**12,308,323**	**12,864,694**	**13,393,389**
		#REF!	*19.9%*	*4.6%*	*4.1%*	*4.5%*	*4.1%*
"Smoothing" Rate Stabilization Allocation, 5% Operating Reserve Beginning 2027	Operating Reserve	-	-	-	-	-	-
		0%	*51%*	*41%*	*8%*	*0%*	*0%*
	Rate Stabilization Funds	-	(1,140,455)	(859,391)	(490,299)	(121,319)	-
	Total Operating Expenses	**9,425,970**	**10,164,023**	**10,959,866**	**11,818,024**	**12,743,375**	**13,393,389**

Service Fee Rates

The radio quantities used to determine the rates have been updated based on current best estimates, considering any changes and/or deactivations that are known at this time. User agencies have been provided with a deadline of June 1st 2025 to provide their radio projections for the 2026 budget. Changes to radio counts will be incorporated into the final budget that will be presented to the Board in June.

The proposed 2026 service fee rates for Public Safety and Non-Public Safety radios and Consoles for are provided in Table 2 below. The table shows rates before and after the application of rate stabilization funds and its effect in smoothing the rate increases over the 4 years. The 2025 service fee rates are included in the table for reference and are summarized as follows:

- Public safety radio rates increase from $36.92/month to $39.48/month (6.9%)
- Non public safety rates increase from $28.80/month to $30.79/month (6.9%)
- Console rates increase from $1013.18/month to $1018.77/month (0.5%)

The lower rate of increase for dispatch consoles is due to some expenses that are directly attributed to consoles having been reduced, primarily the costs of backhaul connections to the Bothell Police dispatch center which is now closed.

Table 2: 2026 Budget Summary Rate Table PRELIMINARY

Puget Sound Emergency Radio Network Operator
2026 Budget (with 4 year proforma 2026 - 2030) - 80/20 & Refined Network Split
Operator Cost Allocation Rates - Detailed Calculation

Description			Fiscal Year 2025	2026	2027	2028	2029	2030
Total Operating Expenses								
	subtotal - employee related	e	5,721,930	6,210,343	6,458,757	6,717,107	6,985,791	7,265,223
	subtotal - corporate/admin	a	459,820	184,245	242,214	255,599	316,631	329,512
	subtotal - radio	r	1,807,000	2,893,979	3,021,738	3,155,208	3,294,646	3,440,323
	subtotal - console	c	449,160	503,511	523,651	544,597	566,381	589,037
	subtotal - network	n	988,060	1,512,400	1,572,896	1,635,812	1,701,244	1,769,294
			9,425,970	11,304,478	11,819,257	12,308,323	12,864,694	13,393,389
			-	-	-	-	-	-
	radio %	x	81.6%	82.8%	83.1%	83.1%	83.1%	83.1%
	console %	y	18.4%	17.2%	16.9%	16.9%	16.9%	16.9%
			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	total costs recovered through radio		7,691,515	9,360,108	9,822,484	10,230,755	10,691,322	11,133,027
	total costs recovered through consoles		1,734,455	1,944,370	1,996,773	2,077,568	2,173,373	2,260,361
			9,425,970	**11,304,478**	**11,819,257**	**12,308,323**	**12,864,694**	**13,393,389**
total qty			-	-	-	-	-	-
13,712	monthly rate / public safey radio		36.08	43.91	46.08	47.99	50.15	52.23
5,195	monthly rate / non-public safey radio	78%	28.14	34.25	35.94	37.44	39.12	40.74
143	monthly rate / console		1,010.75	1,133.08	1,163.62	1,210.70	1,266.53	1,317.23
"Smoothing" Rate Stabilization Allocation, 5% Operating Reserve Beginning 2027								
	Operating expenses (baseline)		9,425,970	11,304,478	11,819,257	12,308,323	12,864,694	13,393,389
	Operating reserve		-	-	-	-	-	-
	Rate stabilization funds		-	*(1,140,455)*	*(859,391)*	*(490,299)*	*(121,319)*	-
			9,425,970	10,164,023	10,959,866	11,818,024	12,743,375	13,393,389
	After application of rate stabilization		-	-	-	-	-	(0.5)
	total costs recovered through radio		7,691,515	8,415,811	9,108,281	9,823,216	10,590,499	11,130,698
	total costs recovered through consoles		1,734,455	1,748,212	1,851,585	1,994,808	2,152,877	2,262,691
			9,425,970	**10,164,023**	**10,959,866**	**11,818,024**	**12,743,375**	**13,393,389**
			-	-	-	-	-	-
	monthly rate / public safey radio		36.92	39.48	42.73	46.08	49.68	52.22
	monthly rate / non-public safey radio		28.80	30.79	33.33	35.94	38.75	40.73
	monthly rate / console		1,013.18	1,018.77	1,079.01	1,162.48	1,254.59	1,318.58

Proposed 2026 Capital Budget

An initial view of PSERN's future capital requirements was provided at the March 2025 meeting. That report showed a projected capital expenditure requirement of $637K in 2025 and $978K in 2026, excluding costs associated with the Maloney/Sobieski powerline replacement.

This forecast has been updated since the March meeting as additional information has been obtained, including vendor quotes and other assessments. Updated capital expenditure requirements for 2026 are shown in the table below:

Item	**2026 Capital Expenditure**
Power reconfiguration and replacement of 24X7 generators at Tolt & 3 Sisters	$250K
Cambridge shelter renovation and HVAC replacement	$325K
Additional equipment spares and inventory	$100K
Genesis enhanced reporting	$500K
Vehicle replacements and outfitting	$190K
IT equipment, furnishings	$25K
TOTAL	**$1,390K**

All expenditures will be funded by existing set-aside funds – primarily the capital set-aside provided by the PSERN Project in 2023 and 2024, which has a balance as of April 30, 2025, of $8.825M.

Approval of this capital expenditure plan in 2026 will be requested at the June meeting, with the restriction that any individual project or expenditure greater than $250K (before tax) will require explicit board approval and a supporting business case. The Executive Director will provide capital expenditure updates at every board meeting as part of the Executive Director report.

Proposed 2026 Cash Set-Aside Structure and Classification

PSERN's proposed cash set-aside structure is summarized in Table 3.

- Cashflow set-aside was provided by the PSERN Project to provide cashflow in the first months of operations in 2024. Management's recommendation is to leave this set-aside designated for cashflow purposes.
- Maloney Power set-aside is comprised of funds received from the project for the specific use to repair and/or replace the power at the Maloney site (originally $3M). This set-aside will increase by the amount of monthly interest allocated and decrease by approved expenditures until exhausted.
- In-Building DAS Coverage Study set-aside is comprised of funds received from the project for this specific use (originally $1M). This set-aside will increase by the amount of monthly interest allocated and decrease by approved expenditures until exhausted.

- Rate Stabilization set-aside will be used beginning with the 2026 fiscal year, as approved by the Board with the adoption of the 2026 operating budget and will be expended over the board-approved period of time.
- Capital Expenditure set-aside includes $1.2M received from the project in 2023 and $8.64M received in November 2024 (project surplus). Board-approved expenditures as of April 30, 2025 in the amount of $596K and encumbrances of $378K are reflected in the balance of $8.82M. The proposed capital budget will use these funds for designated expenditures.
- Operating Surplus set-aside in the amount of $1.32M includes:
    - Operating revenues in excess of operating expenses in 2024 = $1.2M less uncollected receivables = $1,082,578. Users with delinquent invoices will be contacted in May and June.
    - Interest earned in 2024 that was not allocated to other set-asides was added. Note that beginning in 2025 this interest will be included in the interest revenue offset to operating costs.
    - One-time payment from the City of Seattle for fiber optic cable sales was added.
    - Two invoices received from Puget Sound Energy for McDonald site power were deducted from the balance.
    - Approval for initial costs to implement Trimble and Unity asset management software in the amount of $93,150 will be requested from this set-aside.

Table 3: Cash Set-Asides for Specific Purposes

Cash Set-Asides as of April 30, 2025

7919 Cash on Deposit U.S. Bank Operating	1,163,499	
0447 Cash on Deposit U.S. Bank Payroll Clearing	334,092	
0647 Cash on Deposit U.S. Bank FSA/HAS Fiduciary	-	
Cash on Deposit King County	70,783	
Cash on Deposit LGIP	17,299,605	
Petty Cash	150	
Credit Card Deposit	50,000	
Total Cash on Deposit	**$ 18,918,129**	

Set-Asides		**Set-Aside Amount Available**
Cashflow Set-Aside	500,000	**$ 500,000**
Maloney Power Set-Aside	3,000,000	
Add: Interest Earned	195,738	**$ 3,195,738**
In-Building DAS Coverage Study Set-Aside	1,000,000	
Add: Interest Earned	95,775	
Board Approved Expenditures	100,000	
Deduct: Expenditures to Date	(53,160)	
Deduct: Encumbrance Balance	(46,840)	**$ 995,775**
Rate Stabilization Set-Aside	2,619,406	**$ 2,619,406**
Capital Expenditure Set-Aside	9,800,126	
Board Approved Expenditures	850,000	
Deduct: Expenditures to Date	(586,247)	
Deduct: Encumbrance Balance	(388,623)	**$ 8,825,256**
Operating Surplus Set-Aside	1,082,578	
Add: Interest Earned through 12/31/2024	203,179	
Add: City of Seattle Cable Sales	141,210	
Board Approved Expenditures	-	
Deduct: Expenditures to Date	(103,535)	
Deduct: Encumbrance Balance	-	**$ 1,323,432**
Petty Cash	150	150
Credit Card Deposit	50,000	50,000
Total Set-Asides		**$ 17,509,756**

Interest Revenue (Operating Expense Offset in Budget)	**$**	**211,577**
Cash Available for Operating Expenses	**$**	**1,196,796**
		18,918,129
		-

CONCLUSION AND RECOMMENDATION:

This report has presented preliminary proposed 2026 operating and capital budgets for the PSERN Operator, along with proposed service fee rates. A discussion on the proposed categorization of set-aside funds on a go-forward basis has also been provided.

It is recommended that the Board review and consider the 2026 budget and services fees, capital budget and cash set-aside proposal as presented for staff to finalize and bring forward to the Board meeting in June. Staff will further verify costs and assumptions to provide a detailed budget for the Board to approve.

SUPPORTING DOCUMENTATION:

Appendix A: 2026 Operating Budget Detail

Appendix A: 2026 Operating Budget Detail

Puget Sound Emergency Radio Network Operator
2026 Budget (with 4 year proforma 2026 - 2030) - 80/20 & Refined Network Split
Consolidated Operating Costs - Detailed

Description		*for reference* Approved 2025	PROPOSED BUDGET 2026	2027	2028	2029	2030
			4%	4%	4%	4%	4%
OTHER NON-OPERATING REVENUE							
Interest	a	(25,000)	(200,000)	(180,000)	(160,000)	(140,000)	(120,000)
		(25,000)	(200,000)	(180,000)	(160,000)	(140,000)	(120,000)
SALARIES AND BENEFITS							
Salaries	e	3,584,320	3,839,410	3,992,986	4,152,705	4,318,814	4,491,566
Overtime	e	364,690	361,181	375,629	390,654	406,280	422,531
Standby/After Hours Pay	e	111,670	170,406	177,222	184,311	191,683	199,350
Benefits	e	989,040	1,080,034	1,123,236	1,168,165	1,214,892	1,263,487
ER Payroll Taxes	e	441,160	382,702	398,010	413,931	430,488	447,707
Payroll Processing	e	3,900	13,000	13,520	14,061	14,623	15,208
		5,494,780	5,846,733	6,080,602	6,323,826	6,576,779	6,839,851
EMPLOYEE RELATED COSTS							
Office Supplies	e	8,000	15,000	15,600	16,224	16,873	17,548
Tech Supplies	e	10,000	5,000	5,200	5,408	5,624	5,849
Vehicle Fuel	e	60,000	65,000	67,600	70,304	73,116	76,041
Vehicle Maintenance	e	52,000	70,000	72,800	75,712	78,740	81,890
Vehicle Parts and Supplies	e	-	10,000	10,400	10,816	11,249	11,699
Insurance - Auto	e	-	15,770	16,401	17,057	17,739	18,449
Travel - Parking, Tolls	e	5,000	5,200	5,408	5,624	5,849	6,083
Training & Conferences	e	48,000	32,000	33,280	34,611	35,996	37,435
Safety Supplies	e	25,000	26,000	27,040	28,122	29,246	30,416
Mobile Phone Service	e	12,150	12,640	13,146	13,671	14,218	14,787
Legal Services - EE Related	e	-	50,000	52,000	54,080	56,243	58,493
Consulting Services - EE Related	e		50,000	52,000	54,080	56,243	58,493
Postage, shipping	e	2,000	2,000	2,080	2,163	2,250	2,340
Misc Services - EE Related	e	5,000	5,000	5,200	5,408	5,624	5,849
		227,150	363,610	378,155	393,281	409,012	425,372
PREMISE COSTS							
Lease Expense - Kent Office	a	112,770	114,237	118,806	123,559	128,501	133,641
Utilities - Kent Office	a	58,090	57,600	59,904	62,300	64,792	67,384
Insurance - Kent Office	a	24,000	57,600	59,904	62,300	64,792	67,384
Janitorial Services	a	12,010	12,490	12,990	13,510	14,050	14,612
Security Services	a	4,190	4,320	4,493	4,673	4,859	5,054
Phone Service	a	1,020	2,064	2,147	2,232	2,322	2,415
		212,080	248,311	258,244	268,574	279,317	290,489

Appendix A: 2026 Operating Budget Detail

Puget Sound Emergency Radio Network Operator
2026 Budget (with 4 year proforma 2026 - 2030) - 80/20 & Refined Network Split
Consolidated Operating Costs - Detailed

Description		*for reference* Approved 2025	PROPOSED BUDGET 2026	2027	2028	2029	2030
CORPORATE Admin COSTS							
IT Network Services - Kent Ofc	a	66,310	21,000	21,840	22,714	23,622	24,567
Software & Tech Support	a	6,300	52,000	54,080	56,243	58,493	60,833
Misc Services Corp Admin	a	75,000	1,000	1,040	1,082	1,125	1,170
GASB 87 Clearing - SBITA	a	31,630	33,883	35,239	36,648	38,114	39,639
Legal Services - Corp Admin	a	90,000	25,000	26,000	27,040	28,122	29,246
B&O Tax - Corp Admin	a	-	1,500	1,560	1,622	1,687	1,755
Audit Services	a	2,000	-	22,600	-	24,408	-
Cash Management/Investment Services	a	1,500	1,550	1,612	1,676	1,744	1,813
		272,740	135,933	163,971	147,025	177,314	159,023
RADIO SITE FACILITIES COSTS							
Sublease Revenue		(554,670)	(895,240)	(931,050)	(968,292)	(1,007,023)	(1,047,304)
Leases - Sites		1,508,220	1,520,590	1,581,414	1,644,670	1,710,457	1,778,875
Legal Services - Leases	n	-	50,000	52,000	54,080	56,243	58,493
Insurance - Sites	n	470,000	675,000	702,000	730,080	759,283	789,655
Tower Inspection Services		28,000	29,120	30,285	31,496	32,756	34,066
Tower Rigger Services		67,500	70,200	73,008	75,928	78,965	82,124
Private Powerline R&M		20,000	20,800	21,632	22,497	23,397	24,333
Repairs & Maintenance - Facilities		126,500	126,500	131,560	136,822	142,295	147,987
Road Maintenance		24,000	24,960	25,958	26,997	28,077	29,200
Misc Services - Radio Site Facilities	n		2,000	2,080	2,163	2,250	2,340
		1,689,550	1,623,930	1,688,887	1,756,443	1,826,700	1,899,768
RADIO SITE SYSTEMS COSTS							
Fire Monitoring		8,620	3,000	3,120	3,245	3,375	3,510
Fire Suppresion		164,530	60,000	62,400	64,896	67,492	70,192
Generator Maintenance		140,220	120,000	124,800	129,792	134,984	140,383
Generato Rental			10,000	10,400	10,816	11,249	11,699
DC Battery Maintenance & Repair			215,710	224,338	233,312	242,644	252,350
HVAC Maintenance		69,160	98,760	102,710	106,819	111,092	115,535
Fuel/Diesel - Sites		188,170	196,000	203,840	211,994	220,473	229,292
Utilities - Sites		125,820	225,000	234,000	243,360	253,094	263,218
E-Line / Fiber		300,090	312,090	324,574	337,557	351,059	365,101
Fuel Systems R&M		40,000	60,000	62,400	64,896	67,492	70,192
Transportation Services	n		15,000	15,600	16,224	16,873	17,548
Site Parts/Supplies	n	120,000	124,800	129,792	134,984	140,383	145,998
Misc Services - Radio Site Systems	n		20,000	20,800	21,632	22,497	23,397
		1,156,610	1,460,360	1,518,774	1,579,525	1,642,706	1,708,415

Appendix A: 2026 Operating Budget Detail

Puget Sound Emergency Radio Network Operator
2026 Budget (with 4 year proforma 2026 - 2030) - 80/20 & Refined Network Split
Consolidated Operating Costs - Detailed

Description		*for reference* Approved 2025	PROPOSED BUDGET 2026	2027	2028	2029	2030
NETWORK TECHNOLOGY COSTS							
Software - Network	n	35,000	100,000	104,000	108,160	112,486	116,986
Jira software annual license	n	-	-	-	-	-	-
Tools & Supplies	n	65,000	67,600	70,304	73,116	76,041	79,082
Radio Management Hosting & Support	n	223,060	380,000	395,200	411,008	427,448	444,546
Network Consulting	n	75,000	78,000	81,120	84,365	87,739	91,249
MSI -post warranty support services (including upgrades)		-	**1,200,000**	**1,260,000**	**1,323,000**	**1,389,150**	**1,458,608**
		398,060	1,825,600	1,910,624	1,999,649	2,092,865	2,190,471
		9,425,970	**11,304,478**	**11,819,257**	**12,308,323**	**12,864,694**	**13,393,389**
"Smoothing" Rate Stabilization Allocation, 5% Operating Reserve Beginning 2027	5%	-	-	-	-	-	-
		-	(1,140,455)	(859,391)	(490,299)	(121,319)	-
		9,425,970	**10,164,023**	**10,959,866**	**11,818,024**	**12,743,375**	**13,393,389**
		4.6%	*7.8%*	*7.8%*	*7.8%*	*7.8%*	*5.1%*
	e	5,721,930	6,210,343	6,458,757	6,717,107	6,985,791	7,265,223
	a	459,820	184,245	242,214	255,599	316,631	329,512
	r	1,807,000	2,893,979	3,021,738	3,155,208	3,294,646	3,440,323
	c	449,160	503,511	523,651	544,597	566,381	589,037
	n	988,060	1,512,400	1,572,896	1,635,812	1,701,244	1,769,294
		9,425,970	11,304,478	11,819,257	12,308,323	12,864,694	13,393,389

PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Board of Directors Staff Report
Agenda Item # 8

Title:	Maloney Ridge Powerline Replacement
Meeting Date:	May 22, 2025
PSERN Staff Contact:	Michael Webb, Executive Director
Action:	Discussion and Decision

SUMMARY:

This report provides an update on recent developments related to restoration and reconstruction of the PSE powerline serving Maloney Ridge and Sobieski.

BACKGROUND:

Reports at the December 2024 and March 2025 meetings outlined the current status of the power situation at PSERN's Maloney and Sobieski sites. Continuing to participate in the PSE line to Maloney Ridge only is the preferred alternative identified in the December report (Alternative 4 – total one-time cost estimate $4.9M) with the lowest expected lifecycle cost.

Puget Sound Energy (PSE) has been working on design and permitting of a replacement line to Maloney Ridge as outlined in Appendix A and are preparing to start construction this summer. They have recently received approval to proceed from the US Forest Service.

The powerline to Maloney Ridge is subject to a Service Agreement between PSE and the users at Maloney Ridge - PSERN and the consortium responsible for the other major wireless installation at Maloney Ridge known as the Maloney Ridge Users Association. PSERN executed this agreement in March 2024 as successor to King County as part of the Transfer Agreement.

It makes PSERN and the Users Association responsible for all costs associated with maintenance, repair and replacement of the line as incurred. PSERN is able to terminate its participation in this agreement on 30 days' notice but would be responsible for its share of costs should it decide to subsequently reconnect to the powerline.

DISCUSSION/ANALYSIS:

The attached letter (Appendix A) from PSE outlines the current status of their work to implement a new powerline to Maloney Ridge to serve PSERN's radio site and the facilities of the Maloney Ridge Users Association as of May 1st. The letter also indicates that their current plans cover the implementation of a new powerline to Maloney Ridge only, with the extension to serve PSERN at Sobieski being on hold at the present time. This is consistent with PSERN's plans to acquire the existing feeder between Maloney and Sobieski as outlined in the December report.

PSERN has been working on acquiring the temporary feeder implemented by PSE that connects Maloney to Sobieski. As discussed in the March report, engineering work to determine cost and scope for upgrading the temporary feeder to a permanent solution is underway. Additional costs to upgrade the feeder to connect power to Sobieski were originally estimated at $900K but are expected to reduce significantly due to recent design changes. An updated cost estimate for this work will be prepared as part of the engineering study

authorized at the March meeting.

PSERN's share of the one-time cost for the new Maloney line is identified as **$4M**, which is in line with recent previous estimates provided to PSERN by PSE. This amount is more than the $3M that PSERN currently has set aside for this project and as noted, does not cover the full cost to extend the line to Sobieski. The additional $1M would need to be sourced from surplus PSERN Project funds currently held by PSERN which are approximately $8.8 M.

PSE has requested a "proof of funds" letter from PSERN before construction can commence on the line to Maloney Ridge. This letter was issued by the Local Government Investment Pool (LGIP) as Appendix B. This letter indicates that PSERN has the required funds available, but it does not commit PSERN to funding its share of the powerline, beyond the existing obligations in the Service Agreement.

A new service agreement will not be executed among PSE, PSERN and the Maloney Ridge Users Association to replace the legacy agreement that PSERN inherited from King County through the transfer agreement. PSERN has the ability to terminate its participation in that agreement at any time. Until it does, it will continue to be responsible for its share of costs as per the existing agreement.

Appendix C and D to this report provide additional information on the US Forest Service's recent approval and authorization for PSE to commence construction on the new powerline to Maloney Ridge. They also outline approval from the USFS for PSERN to upgrade or replace the existing temporary feeder between Maloney and Sobieski.

RECOMMENDATION AND NEXT STEPS:

As the alternative of continuing to participate in the PSE line to Maloney Ridge and take over the existing feeder between Maloney and Sobieski was identified as the most cost-effective option in the December report, it is recommended that PSERN continue to participate in the Maloney Ridge powerline Service Agreement with PSE.

As a result, PSERN should continue to work with PSE to support and facilitate the replacement of the Maloney Ridge powerline under the terms of the existing Service Agreement.

It is therefore requested that the Board of Directors approve the following motions:

- **MOTION**: That the PSERN Operator Board authorize the Executive Director to work with PSE to support and facilitate the replacement of the Maloney Ridge powerline, with a maximum financial obligation to PSERN of $4M.

CONCLUSION:

This report has provided an update on recent developments related to restoration and reconstruction of the PSE powerline serving Maloney Ridge.

It is recommended that PSERN continue to work with PSE to support and facilitate the replacement of the Maloney Ridge powerline under the terms of the existing Service Agreement.

SUPPORTING DOCUMENTATION:

Appendix A – Letter from PSE

Appendix B – Proof of Funds Letter from LGIP

Appendix C – Transmittal Letter from USFS

Appendix D – USFS Decision Memo

Appendix A – Letter from PSE

Puget Sound Energy
P.O. Box 97034
Bellevue, WA 98009-9734
pse.com

05/01/2024

To the customer group at Maloney Ridge,

As you are aware, PSE has designed and engineered a solution to repair and overhaul the now failed Maloney Ridge electric system. The purpose of this letter is to inform you, the customer base, of the updated cost estimate and timeline for construction. Also, to inform you that PSE is going to require a proof of funds letter before construction can commence.

The initial cost estimate was twelve million dollars. However, since that estimate was completed the scope has decreased, but material costs have increased. For the scope, PSE will be focusing on restoring the system from the base up to Maloney Ridge site and not continuing to Sobieski for the time being. The new estimated cost of this work is about 8 million dollars.

PSE respectfully asks for the proof of funds of four million dollars from both PSERN and the Maloney Ridge Users Association. We are requiring this letter to help mitigate risk and show prudency with the utility commission. Please submit the letter to Daniel.Herbst@pse.com no later than 5/9/2025.

The work is still slated to begin this summer, weather and conditions permitting. Our construction may still last two summer seasons. We will update you periodically as we go so that you may plan accordingly. Please be advised that, as of today, PSE is still waiting on the US Forest Service permit. However, we are hopeful to have it approved and in hand any day now.

As always, please don’t hesitate to reach out to me with questions or any concerns

Sincerely,

Danny Herbst
Major Account Executive – Puget Sound Energy

OFFICE OF THE TREASURER
STATE OF WASHINGTON
Mike Pellicciotti
LOCAL GOVERNMENT INVESTMENT POOL

May 9, 2025

RE: Proof of Funds Letter

To Puget Sound Energy:

This letter serves to confirm that The Puget Sound Emergency Radio Network Operator, with its principal place of business at 19717 62nd Ave S, Suite E-102, Kent, WA 98032, maintains account(s) at The Office of the State Treasurer's Local Government Investment Pool with available funds in excess of Four Million United States Dollars (USD 4,000,000.00) as of May 9, 2025.

The undersigned hereby verifies that these funds are available if required for contractual obligations related to the Maloney Ridge Puget Sound Energy electric system.

This verification of funds is provided as a courtesy to the recipient and implies no obligation on the part of The Office of the State Treasurer's Local Government Investment Pool.

If you require any additional information, please contact our office directly.

Sincerely,

Staci Ashe

Staci Ashe | LGIP Administrator | Office of the State Treasurer |staci.ashe@tre.wa.gov | 360-902-9017

United States Department of Agriculture | **Forest Service** | **Mt. Baker-Snoqualmie National Forest**
Skykomish Ranger District
74920 N.E. Stevens Pass Highway
P.O. Box 305
Skykomish, WA 98288-0305
(360) 677-2414

File Code: 2720
Date: May 15, 2025

Adrian Englet
Puget Sound Emergency Radio Network Operator
19717 – 62nd Avenue S., Suite E102
Kent, WA 98032

Re: Decision Memo for PSE Foss-Maloney and King County Sobieski powerline replacements

Dear Mr. Englet,

Please find attached Decision Memo (DM) signed by District Ranger Michael Smith that approved replacing the failed buried power cables that service both the Maloney Ridge and Sobieski Mountain Communications Sites on the Skykomish Ranger District. Puget Sound Energy (PSE) is approved to replace an approximate 7-mile section of a failed 7.2 kV underground power line along Forest Service Road 68 to Maloney Ridge, and King County/Puget Sound Emergency Radio Network Operator (PSERN) is approved to replace a failed 1.1-mile off-road buried segment to Sobieki Mountain. The 1.1-mile buried power segment is currently permitted to King County (Permit No. SKY216, issued on 1/30/2020). The failed buried power cable is to be replaced within the same 10-foot wide corridor permitted to King County, as shown on the survey plat dated 8/27/2020 that you had prepared as a requirement of reissuing Permit No. SKY216.

Please review a description of the approved proposed actions and findings in the DM, including Project Design Criteria (PDC, Appendix A). These PDC's, along with construction stipulations that were made part of Permit No. SKY216 (Operating Plan, Appendix C), are to be implemented during construction.

The temporary power cable in which PSE had placed on top of the overland corridor to Sobieski Mountain may utilized and buried within the existing permitted corridor, with PSE's consent. Otherwise, the temporary cable should be removed once the buried replacement cable is operational.

There is no specific time period to complete this work, other than it should occur during the snow free season and not conflict with PSE's installation of the lower power line along Forest Road 68. However, during the Closed Fire Season, from April 1 through October 30, a Construction Fire Plan that lists primary contact numbers of the PSERN project leader, contractor's on-site supervisor, and equipment to be used should be submitted to the special use administrator for the District Ranger's approval prior to mobilization. Also, if the State Industrial Fire Precaution Level (IFPL) rises to a Level II or III in that region of the project, a waiver request should be submitted to the District Ranger, as stated in the DM.

We will plan to reissue Permit No. SKY216 in the name of the PSERN Operator prior to the start of construction, although the construction is not dependent on this. This letter, including Appendix A PDC's of the Decision Memo, Permit SKY216 terms and conditions, and Appendix C construction stipulations, will serve as a notice to proceed to begin construction.

Should you have any questions concerning this approval, feel free to contact the permit administrator, Eric at 360-691-4396 or email: eric.ozog@usda.gov.

Sincerely,

MICHAEL SMITH
2025.05.15 08:05:09
-07'00'

MICHAEL SMITH
District Ranger

Decision Memo
PSE Foss-Maloney Power Line Replacement

PALS # 65736

USDA Forest Service
Skykomish Ranger District, Mt. Baker-Snoqualmie National Forest
King County, WA

Background

After more than 30 years in service, Puget Sound Energy's (PSE) Foss-Maloney power line has reached the end of its usable life. The current underground powerline sections, consisting of a 7-mile cable buried along FSR 68 to the Maloney Ridge communications site and a 1-mile segment buried direct from Maloney Ridge to the Sobieski Mountain communications site, are past their expected lifespan and are experiencing frequent failures. The multiple repairs have not guaranteed reliability as new breaks are occurring in different locations along the line. As a temporary solution, a cable was placed above ground along the existing underground route from Maloney to Sobieski. Both cables to Sobieski have failed, and PSE is now running diesel generators constantly to provide power to both of these critical telecommunication sites. The 7-mile section to Maloney will be retrenched in the same location along FSR 68, and the failed 1-mile segment of cable to Sobieski will be replaced in the original underground footprint to reduce construction costs.

Users of both communications sites include Puget Sound Emergency Radio Network Operators, Burlington Northern Santa Fe Railroad, Bonneville Power Administration, AT&T, T-Mobile, Ziply Fiber, Washington State Department of Transportation, Washington State Patrol, Washington Department of Natural Resources, Snohomish County Emergency Radio System, King County Fire District 40, StarTouch (a wireless internet provider), and the USFS.

Decision

I have decided to implement the action as follows:

PSE or their contractor will trench approximately 7 miles along FSR 68 to place 2-inch conduit along the route, sectionalized in prefabricated concrete vaults approximately .25 miles apart. The conduit will contain a single-phase 7200-volt electric cable. The trench will be 8 inches wide and 40 inches deep to maintain 36 inches of cover over the buried conduit, with a minimum of 30 inches of cover through rocky areas. The vaults measure 30x30x24 inches and will be buried at grade level to facilitate access to repair the line if needed. The completed project will have approximately 30 vaults.

The existing trench resides on the edge of the current road surface for the first 7 miles of FSR 68, and the new construction will be in the same footprint and create no new surface area disturbance outside of the road prism. To make trenching easier, roadside vegetation (small trees/shrubs or dead/damaged trees, protruding limbs) that has grown into the road prism and

interferes with construction and equipment maneuverability or poses hazards to the work crew will be removed or trimmed with a brushing machine. Most roadside trees adjacent to the trench are dead red alder and western hemlock ranging from 3" to 16" in diameter. The current road surface will be stabilized by adding and compacting backfill, and the seven miles of road surface along the route will be regraded according to USFS specifications.

The replacement of the 1-mile length of cable running underground up the hill from Maloney to Sobieski will be retrenched and laid in the original footprint of the cable segment as defined in the legal description in the special use permit issued to King County. PSE would also install an electrical switch/meter on an above ground frame on posts at the bottom of the cable lay off of FSR 68 near the Maloney site spur road junction, where the line to the Sobieski site starts going up the hill. The same electric cable and trenching depth as the roadside construction will be used, and the surface will be filled and revegetated post-project according to USFS specifications.

The proposed construction will take two years, working approximately 6 months during the snow-free season (May – October) each year. PSE or their contractor will use a reasonable amount of the parking location near the start of FSR 68 and use pullouts along FSR 68 to store equipment and materials during the construction week, to be hauled in on Mondays and hauled back out on Fridays. Work on weekdays may cause short-term impacts to public vehicle access, but one lane of the lower FSR 68 will be kept open as far as the FSR 6835 junction on weekdays to maintain access, although there could be intermittent delays. FSR 68 can be closed on weekdays above the FSR 6835 junction. Public vehicle access on FSR 68 to the trailheads will be maintained on weekends and federal holidays.

Equipment used for trenching will include a backhoe/excavator; PSE may need to utilize a jackhammer/hydraulic breaker in case rock is encountered along the lower road or the upper off-road section. Noise levels of equipment:

Equipment	Typical Noise Level (dBA) 50ft from source
John Deere 410 Backhoe/85 Excavator	80
135 Excavator	90
Rock Drill	98
Breaker	101

Construction will follow BMPs to control runoff and mitigate any turbidity created by the trenching activity. The existing drainage culverts (approximately 40) that traverse FSR 68 along the trench line were inspected and do not require replacement unless damaged by the trenching. Puget Sound Energy submitted a Construction Stormwater Pollution Prevention Plan (7/16/2024). They also provided standard techniques for temporary erosion and sediment control, and stream crossing diagrams for installing conduit above or below culverts. Forest Service hydrology and fisheries resource staff reviewed these plans, and the stream crossings in the field (May 15 and August 1, 2024). The top of one large shallow-fill culvert on a perennial stream crossing is extremely close to the road surface, so PSE will install a jacketed conduit above the pipe, then add compacted aggregate

to raise the road surface to ensure a minimum 30" of backfill above the conduit, according to Forest Service standards. No stream or other body of water will be altered or redirected as a result of project work.

This action is categorically excluded from documentation in an environmental impact statement (EIS) or an environmental assessment (EA). The applicable category of actions is identified in agency procedures as *36 CFR 220.6(e)(2): Construction or reconstruction of existing telephone or utility lines in a designated corridor.*

I find that there are no extraordinary circumstances that would warrant further analysis and documentation in an EA or EIS. I took into account resource conditions identified in agency procedures that should be considered in determining whether extraordinary circumstances might exist:

Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species –

- Wildlife:
  - Project **May Affect, Likely to Adversely Affect** (LAA) the Northern Spotted Owl and Marbled Murrelet due to noise-producing activities within disruption distance of suitable nesting habitat. Effects to Critical Habitat of both species are also determined to be **LAA**.
  - The project **May impact Individuals But will not contribute to a trend toward federal listing** for the following R6 Sensitive Species: Harlequin duck, northern goshawk, little brown myotis bat, Western bumble bee, Suckley Cuckoo bumble bee, and Johnson's hairstreak butterfly. The project would have **No Impact** on the remaining R6 Sensitive Species.
  - The project would not contribute to a negative trend in the viability of the Management Indicator Species on the Forest.
  - The project, as currently described, is not expected to trigger pre-disturbance surveys for Survey and Manage Species. Ground disturbance is occurring withing the existing disturbed and exposed area of the road prism. Habitat and the necessary microclimate would not be found in the project footprint, nor would these species be expected to be present.
- Fisheries:
  - There are two stream crossings along the route typed as fish habitat. If the culverts are damaged and need to be replaced, the replacements will need to be sized to pass fish and aquatic organisms per FS-approved stream simulation methods. Approximate locations: 47.689577 -121.296092 and 47.664951 -121.288398. If applicable, PSE will need to acquire their own separate hydraulic project approval.
  - ESA: Chinook, steelhead and bull trout and their designated critical habitats are in the Foss River. Due to the proximity of the work areas to these fish and critical habitats, even with BMPs (for sedimentation, contaminants) the potential for sediments or

contaminants to reach the Foss River is possible, particularly from grading or at stream crossings. With BMPs, such sediments or contaminants would not have an effect to fish or fish habitat that could be meaningfully measured. The effect determinations for these three species and their designated critical habitats are all **May Affect, Not Likely to Adversely Affect**.

- EFH: With BMPs, project activities **Would Not Adversely Affect** essential fish habitats for Chinook, coho, or pink salmon in the Foss River or downstream in the south Fork Skykomish River.
- Sensitive: Pacific lamprey are not in the project area; project activities would have **No Impact** on Pacific lamprey.
- MIS: Project activities would not affect the productivity or viability of MBS management indicator fish species at the Forest-level.
- ACS: The project as proposed would not prevent, retard, or contribute significantly to the achievement of the Aquatic Conservation Strategy objectives at the scale the ACS objectives were described; the project would be consistent with the Aquatic Conservation Strategy.

- Botany:
  - No Threatened or Endangered plants would be impacted by the project. The project footprint is not in whitebark pine (Pinus albicaulis; Threatened) habitat as defined by the 2023 Maxent model (v00; Nacify et al. 2023). There is **No Effect** to whitebark pine and no BA is necessary.
  - No Region 6 Sensitive plant populations are expected in the disturbance footprint. There are known populations 350 feet into the forest from road edge; these would not be impacted by project activities. No BE is necessary.
  - Revegetation of disturbed ground needs to be with genetically-appropriate native plant material. Approved options for this project are described in Botany Design Criteria #3, below.
  - This project area was surveyed for invasive plant infestations in summer 2023 in anticipation of this project. Weeds requiring treatment prior to ground disturbing work were documented on a little over 4.5 miles of the area that the trenching will occur. Treatment will be implemented around construction timelines with forest Invasive Plants Specialist.

Flood plains, wetlands, or municipal watersheds – There are no floodplains, wetlands, or municipal watersheds located within the project area.

Congressionally designated areas such as wilderness, wilderness study areas, or national recreation areas – Project is not within any congressionally designated areas.

Inventoried roadless areas or potential wilderness areas – Project is not within any inventoried roadless areas or potential wilderness areas.

Research natural areas – Project is not within any research natural areas.

American Indians and Alaska Native religious or cultural sites – American Indian religious or cultural sites are not present within the project boundaries.

Archaeological sites, or historic properties or areas – Provided the power line burial is restrained to the existing road prism and the previously disturbed corridor from the Maloney site to the Sobieski site, the project would be exempt from survey as the environment meets the conditions described in FSM 2363.15: "Past natural or human-caused ground disturbance has modified the surface so extensively that the likelihood of finding evidence of cultural resources is negligible."

Tribal Consultation

The Snoqualmie, Tulalip, and Colville Tribes were consulted about this project and their input was considered in the development of the final action. Responses were received from the Snoqualmie Tribe and the Tulalip Tribes.

Public Involvement

This action was originally listed as a proposal on the Mt. Baker-Snoqualmie National Forest Schedule of Proposed Actions and updated periodically during the analysis. No public comments were received concerning this project.

Findings Required by Other Laws and Regulations

This decision is consistent with the 1990 Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan as amended by the April 13, 1994 Record of Decision for Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. The project was designed in conformance with select Forest-wide standards and guidelines for the area:

- Special use evaluation, permit issuance, fees and administration will be in accordance with Forest Service Manual 2700 or as revised, and 36 CFR 251 (Forest Plan, pg. 4-137).
- Existing developments in Late-Successional Reserves such as…utility corridors, and electronic sites are considered existing uses with respect to Late-Successional Reserve objectives, and may remain, consistent with other standards and guidelines (Record of Decision, Northwest Forest Plan, April 1994, pg. C-17).

The Clean Water Act of 1948 (as amended in 1972 and 1987) establishes as federal policy for the control of point and non-point source pollution and assigns the States the primary regulatory authority for enforcing the Act. Clean Water Act compliance will be achieved through the application of effective best management practices (BMPs) (USDA 2012). All activities are designed to protect water quality and aquatic resources through the use of BMPs, and by implementing the project's Construction Stormwater Pollution Prevention Plan, which are the primary mechanisms to enable the achievement of state water quality standards and minimize non-point impacts.

The responsible official and/or applicable specialist(s) have determined the proposed action is in compliance with the following Executive Orders (EO), which were deemed pertinent based on the nature of the proposal:

EO 11988, Floodplain Management – requires determination of action occurring in a floodplain, using HUD floodplain map or more detailed map if available.

- The project area is not within any mapped floodplains.

EO 11990, Protection of Wetlands – avoid actions within wetlands unless there are no practical alternatives, and the action includes all practicable means to minimize harm to wetlands.

- The project area is not located within identified wetlands.

EO 13007, Indian Sacred Sites – avoid adversely affecting the physical integrity of these sites.

- There are no Indian Sacred Sites known or identified in the project area. PDC's are identified in Appendix A of this Decision Memo. The Mt Baker Snoqualmie Inadvertent Discovery Plan will be followed should a discovery occur.

EO 13175, Consultation and Coordination with Indian Tribal Governments - agencies consult with Indian tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

- Tribes were consulted as listed above and any responses were addressed.

EO 13112, Invasive Species – prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

- This project area was surveyed for invasive plant infestations in summer 2023 in anticipation of this project. Weeds requiring treatment prior to ground disturbing work were documented on a little over 4.5 miles of the area that the trenching will occur. Forest Invasives Coordinator is implementing pre-work herbicide applications.

EO 13186, Migratory Birds – identify actions that may have a measurable negative effect on migratory bird populations.

- Wildlife biologist has determined that there will be no measurable negative effect on migratory bird populations because of the limited size, scope, and intensity of proposed activities.

Administrative Review and Implementation

This decision is not subject to administrative appeal. Implementation of this decision may occur immediately following the date of this Decision Memo.

Contact

For additional information concerning this decision, contact: Eric Ozog, Special Uses Administrator, at eric.ozog@usda.gov.

MICHAEL SMITH
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MICHAEL SMITH
Skykomish District Ranger

We make every effort to create documents that are accessible to individuals of all abilities; however, limitations with our word processing programs may prevent some parts of this document from being readable by computer-assisted reading devices. If you need assistance with any part of this document, please contact the Mt. Baker-Snoqualmie National Forest at 425-783-6000.

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Appendix A: Project Design Criteria

Wildlife:

1. Contractor or PSE will notify the USFS as soon as possible if active nest sites of raptors or other special status species are discovered during the course of project activities in order to determine if any protection measures are necessary (For compliance with LRMP 4-124[3]).
2. Project activities that generate disturbance during any portion of the marbled murrelet nesting season (April 1 to September 23) within disruption distance (≤110 yards or less for chainsaws or heavy equipment) of suitable murrelet habitat shall not begin until two hours after sunrise and must cease 2 hours before sunset (Between April 1 and September 23). (Affected sections of FSR 68 are from approximately MP 2-2.5, 4.8- 5.8, 6.0-6.3, 6.6 -7.0, 8.2-8.4, 8.7-8.9, 9.9-10.1, and 10.9 -11.1. A map showing the affected sections of road can be provided).
3. Any exposed pipe should be capped or screened to prevent wildlife from becoming trapped and incapable of escape from such structures. All other types of structures capable of wildlife entrapment should be properly capped or screened.
4. All ground-based cables, wires, and similar debris should be secured so that wildlife species such as deer, elk, and other smaller bodied mammals do not become entangled which may cause injury or death.
5. Excavations such as holes or other barriers to wildlife movement should be barricaded or eliminated to avoid injury or death to wildlife.
6. No blasting.

Fisheries:

1. Large woody material removed from a culvert inlet shall be put back into the stream channel downstream of the culvert unless doing so would cause degradation of habitat (such as on a stacked road where another culvert is directly downstream).
2. If water drafting is needed for grading, MBS Water Drafting Requirements shall be followed (separate attachment).
3. The project shall be implemented in accordance with PSE's Construction Stormwater Prevention Plan (GeoEngineers, July 16, 2024), Techniques for Temporary Erosion and Sediment Control, and Culvert Crossing specifications (October 23, 2024).

Applicable PDCs from the 2025 Programmatic:

4. W1. Apply applicable PDCs from "Road Maintenance" category above. (SEE BELOW)
5. W3. Evaluate the clearing widths actually needed to protect the line prior to issuing permits and limit the permit to these widths.
6. W4. Minimize the treatment of vegetation that could contribute shade or woody material to perennial streams to the minimum that will protect the line. Where possible, increase heights of vegetation that will be left as distances increase laterally from lines.
7. W5. Limit the use of native-surface and gravel roads for pole maintenance to the dry season (generally June to October) to minimize the risk of erosion and sediment delivery to streams.
8. W6. Directionally fall hazard trees toward streams and riparian areas where it is safe and feasible to do so.

9. W7. Hazard trees can be topped for wildlife habitat, provided the high stump would not be a risk to falling on utility lines.
10. W8. Do not remove cut hazard or blowdown trees in riparian areas. If blowdown trees in riparian areas need to be cut, keep logs as long as possible. Trees may be dropped into streams with approval of the aquatics resource specialist.

Applicable Road Maintenance PDCs from the 2025 Programmatic:

11. F2. Minimize disturbance of existing vegetation in ditches and at stream crossings. Leave grass in the ditch when or where the ditch is properly functioning to minimize exposed soil and transport to fish-bearing streams. The ditch should be moving water without over topping the ditch regardless of the vegetation in the ditch. There may be times when vegetated ditches are at capacity with trapped fines and are no longer functioning properly. In these situations, ditch cleaning may be needed to regain a functioning ditch.
12. F4. Do not place sediment removed from drainage ditches onto the surface of any road that is hydrologically connected to a stream or wetland. Remove and place this material in a stable site which is not hydrologically connected to any stream or wetland.
13. F9. Maintain, operate, and store all maintenance vehicles and mechanized equipment to minimize the risk of spills and leaks of all fluids.
14. F10. For any vehicle or mechanized equipment to be operated within 150 feet of any stream or any wetland that is hydrologically connected to streams, inspect daily for fluid leaks before leaving the vehicle staging area. Repair any and clean the vehicle or equipment before resuming operation.
15. F11. Use bio-based hydraulic fluid when feasible and/or working near streams.
16. F12. Refuel mechanized equipment, store mechanized equipment overnight, and perform maintenance and repairs activities at least 150 ft from streams and wetlands or locations approved by USFS aquatics staff.
17. F13. Do not enter wetted stream channels with mechanized equipment except where no practicable alternative exists.
18. F14. Develop and implement a spill containment plan that includes having a spill containment kit on-site and a previously identified containment location.
19. F17. Do not apply dust-abatement materials (for example, ligninsulfonate or magnesium chloride) within 24 hours of predicted rain. Do not apply at stream crossings or other locations that could result in direct delivery to a water body (e.g., do not apply within 25 feet of a water body or stream channel). All applications magnesium chloride must meet the state of Washington's water quality Criterion for chloride (Water Quality Standards for Surface Waters of the State of Washington (epa.gov)). Limit applications of ligninsulfonate to a maximum rate of 0.5 gal yd-2 of road surface, assuming a 50:50 (ligninsulfonate to water) solution.

Botany:

1. Any previously undocumented Threatened or Endangered (TE), Region 6 Sensitive (S), or Survey & Manage (S&M) plants located before or during project implementation will be appropriate managed by active coordination between contractor/purchaser, Forest Service Line Officer, project administrator, and Forest Service Botanist.

2. Protect TES and S&M plants by either applying site-specific mitigations and/or reviewing MBS population data for any plants located before or during project implementation to ensure project impacts do not move the species toward listing as threatened or endangered. Mitigations may include buffering occurrences, avoidance of occurrences, salvage/storage and replanting or other measures determined through coordination with botanist.
3. Revegetation of disturbed soil will include both of the following, unless approved by Forest Service Botanist:
    a. Source-identified blue wildrye (*Elymus glaucus*) from an appropriate source location, such as: "GP High" biotype from BFI Native Seeds based in Moses Lake, Washington. Seed at 20 lbs/acre (see reference page "ELGL 20 lb per page.docx" in project folder).

Invasive Species:

1. Any vehicles, tools, or heavy equipment used for ground disturbing work must be washed of soil and plant material prior to arriving on the MBSNF and before leaving the project area to reduce the spread of weeds.
2. Work from lightly infested areas to highly infested areas and/or from high elevation to low elevation if possible to further reduce the spread of weeds.
3. Any imported material must be inspected/certified for weeds prior to being brought onto the Forest. Requests for inspections for commercial rock, gravel, and sand sources must be sent to the Forest Invasive Species Coordinator no less than 3 weeks prior to being imported onto the Forest.
4. Any straw, hay, or mulch being brought onto the Forest must come from a source that has been certified by the Washington Weed Free Hay and Mulch Program (WWHAM).

Heritage:

1. If a previously unidentified cultural resource is discovered during project implementation, the activity shall be stopped in the area of the find and a reasonable effort to secure and protect the resource be made. The Heritage Specialist shall be notified and the Forest will fulfill its responsibilities in accordance with the Programmatic Agreement and other applicable regulations.
2. If human remains are discovered, all work must stop in the area of the discovery and NAGPRA protocols followed.

Recreation:

1. To maintain public vehicle access, one lane of the lower FSR 68 is to be kept open as far as the FSR 6835 junction on weekdays, with intermittent delays of approximately 30 minutes.
2. Public vehicle access on FSR 68 to the trailheads will be maintained on weekends and federal holidays.

Fire:

1. To minimize effects on emergency response to fires or other emergencies in and around the project area, a maximum 2 hour wait time for road closures during operations shall be implemented. At the end of the work day these roads shall be left passable for emergency responses (though they may be closed to public traffic).
2. To reduce fuel loading, any slash generated by vegetation management or hazard tree removal, shall be lopped-and-scattered, chipped in place, chipped and hauled for disposal elsewhere, or masticated (mulching). Tree stems shall have branches de-limbed, so no stems or cut branches are left suspended above the ground. The maximum depth of the logs and slash shall not exceed 18 inches above ground level, to hasten decay and reduce the risk of wildfire.

3. Vegetation management operations shall be in accordance with state law governing industrial operations on forested lands. The current law defines an Industrial Fire Precaution Level (IFPL) schedule, and restricts the operation of spark-emitting equipment during IFPL II or above. A waiver of specific IFPL restrictions may be requested from the District Ranger during IFPL II and III periods. The waiver request should identify the project's unique fire risk mitigations or conditions that warrant special exemption to the restrictions. A current Fire Plan must be included with the request; this plan should list, at minimum, contact information for the project leader and on-site supervisor, a list of personnel and equipment that will be on-site, and the planned dates of operation.

PSERN
PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Board of Directors Staff Report
Agenda Item # 9

Title:	Encryption Update
Meeting Date:	May 22, 2025
PSERN Staff Contact:	Michael Webb, Executive Director
Action:	Discussion

SUMMARY:

This report provides an update on current status and plans for the implementation of encryption on the PSERN radio network by user agencies.

BACKGROUND:

To ensure operational communications were maintained, transition to the PSERN radio network in 2023 involved the bridging of analog talkgroups on the legacy KCERCS system to corresponding digital talkgroups on the PSERN system. Dual programming of user radios enabled all users to transition to the new digital talkgroups gradually, over a period of a few days.

This method of transition enabled user agencies to maintain interoperability without requiring a highly complex and synchronized cutover. It also enabled PSERN to gradually migrate radio spectrum capacity (800 MHz RF channels) to the new system during the transition period. However, it created the need for two programs of work to be undertaken post-transition:

1. The removal of legacy system programming from all user radios (also known as "Second Touch"), and
2. The subsequent reconfiguration of the system, talkgroups and end user radios to implement encryption for public safety agencies.

PSERN and its user agencies, including radio shops, began work on the Second Touch reprogramming in the fall of 2023, and that process is now complete for public safety users.

PSERN began work to plan and implement encryption in January 2025.

DISCUSSION/ANALYSIS:

Overview of Encryption and the Planning Process

Encryption in P25 radio systems provides for secure digital voice communications using a standardized encryption algorithm, known as AES-256[1]. It prevents unauthorized parties from eavesdropping on voice communications, as decoding or decrypting radio transmissions requires knowledge of a secret key stored within authorized user radios.

Encryption is a critical means for assisting agencies using the radio system to protect the integrity of criminal investigations and response, the safety of emergency responders and the public and the privacy of those who need their help.

[1] Advanced Encryption Standard - Wikipedia

The effort to plan the implementation of encryption has required collaborative work between PSERN, its user agencies, operators of neighboring P25 radio systems and Federal partners that provide interoperability with PSERN. A set of policy, technical and operational decisions needed to be made before implementation could begin, as summarized below:

- Which talkgroups will be encrypted and what keys will be used?
- How often will encryption keys be changed?
- Which user agency personnel will have privileged access to PSERN systems for the purpose of administering the keying and re-keying process?
- How will end user radio programming need to change and what, if any, impacts on user experience will occur?
- What radios will need to be upgraded to support encryption and are there other technical limitations?
- How will keys be shared with agencies and radio systems outside of PSERN that use PSERN talkgroups for interoperability purposes?
- Will there be any technical compatibility issues with non-PSERN radios requiring access to encrypted PSERN talkgroups, and how will those be addressed?
- Will access to public safety talkgroups need to change for certain types of user agencies, such as schools or public works?
- How will the transition take place?
- How will user agencies implementing encrypted communications continue to provide media and the public information on emergent events, given that scanners will no longer be functional?

PSERN has facilitated resolution of these questions collaboratively through its Operations Committee and Technical Working Group. Both groups have met regularly since the beginning of the year, with the Technical Working Group dealing with technical and operational matters in detail on behalf of user agencies and providing advice and recommendations to the Operations Committee.

<u>Types of Communications to be Encrypted</u>

The PSERN radio system supports encryption of all voice communications.

The decision to encrypt a particular type of communication must be made on a talkgroup-by-talkgroup basis and is the choice of an end user agency or groups of agencies that are the primary users of a particular talkgroup.

In some cases, talkgroups are used by multiple agencies. This primarily occurs in two cases:

1) Shared dispatch talkgroups
    - The dispatch center (e.g. Valleycom or Norcom) has taken on the responsibility to work with its user agencies to determine whether to encrypt, and
2) Interoperability talkgroups
    - PSERN and the Technical Working Group have developed recommendations which have been endorsed by the Operations Committee.

The table below summarizes the results of the planning work:

Service	Talkgroup Type	Encrypted or Clear
Law Enforcement	Dispatch	Some Encrypted, Some Clear
Law Enforcement	Tactical & Car-Car	Encrypted
Fire	Dispatch	Clear
Fire	Tactical	Some Encrypted, Some Clear
All	Interoperability	Some Encrypted, Some Clear

Encryption is only being applied to Public Safety (i.e. Law Enforcement, Fire and EMS) talkgroups and certain talkgroups used for interoperability between those services at this time. Some non-public safety agencies received encryption-capable radios during PSERN radio deployment, for purposes of interoperability with public safety agencies. However, implementation of encryption for non-public safety talkgroups is currently out-of-scope and will be addressed at a future date.

Implementation Timeline

Although many details of the implementation of encryption on PSERN remain to be finalized, the following provides a preliminary outline of the work to be completed and the associated timeline:

Activity or Milestone	Completion Date - Planned or Estimated
PSERN staff training on encryption by Motorola	January 2025
Technical and operational requirements complete	April 2025
Public Safety master codeplugs complete	June 2025
System configuration updates	July 2025
Development of individual public safety agency codeplug updates	July – December 2025
End user radio reprogramming	August 2025 – February 2026
Dispatch console updates and reconfiguration (post system upgrade)	November 2025
Activation of encryption for public safety and interoperability talkgroups	Q1 2026
Completion of encryption implementation	Q2 2026

The timeline is being carefully coordinated with other activities in 2025 affecting the PSERN system, including the system upgrade planned for August and September 2025.

This timeline only addresses the implementation of encryption for public safety talkgroups used by Police, Fire and EMS agencies.

As was the case with Second Touch reprogramming, user agencies and radio shops will be responsible for

applying updated programming to the radios they use or are responsible for supporting. PSERN will support this process using its centralized Radio Management system and through the deployment of device programmers that enable agencies to re-program their radios on a self-service basis.

Once radios have been reprogrammed, the user will have the ability to select whether to use encrypted or clear communications for a transition period, prior to all radios for that agency getting updated. A date for making encryption permanent will be established as the reprogramming progresses and after this date, users will no longer be able to make the selection.

Media and Public Access to Radio Communications

Once encryption is implemented, media outlets and other members of the public that currently monitor public safety communications on PSERN, will not be able to continue monitoring talkgroups that will be encrypted.

End user agencies will need to determine which mechanisms should be implemented to continue to provide media outlets with real-time or near-real-time information on emergency events they are responding to. It is possible for individual agencies to stream a near-real-time or delayed audio feed over the internet using services such as Broadcastify.

PSERN has been working with user agency representatives to support their planning in this area but is not planning to undertake any technical work to make encrypted communications publicly available.

Public and Media Communications Plan

PSERN has also been working with the Seattle Fire Public Information Officer to finalize a communications plan for advising the public and media regarding the implementation of encryption on PSERN. An update on this work will be provided at the May Board meeting.

NEXT STEPS:

In the coming weeks and months, work will be focused on three areas:

- Development and rollout of new codeplugs for public safety agency radios.
- Developing and finalizing an implementation and transition plan.
- Outward public and media communications.

CONCLUSION:

This report has provided an update on plans for and current status of the implementation of encryption on the PSERN radio network by user agencies.

SUPPORTING DOCUMENTATION:

None

PUGET SOUND EMERGENCY RADIO NETWORK

PSERN Board of Directors Staff Report
Agenda Item # 10

Title:	In-building Coverage Assessment Update
Meeting Date:	May 22, 2025
PSERN Staff Contact:	Michael Webb, Executive Director
Action:	Discussion

SUMMARY:

This report discusses the results of coverage assessment undertaken to date and future work planned to provide additional details on In-Building Coverage (IBC) requirements for the PSERN system.

BACKGROUND:

PSERN Project and In-Building Task Force Work

The PSERN Operator Board of Directors has been tracking the following action item, which resulted from the work of the In-building Task Force (IBTF) that was established during the PSERN Project:

- *Request for additional information related to In-Building Sites to include details of funding options for the remaining 10 areas recommended by the (In-Building) Task Force, any budget considerations, improvements found in Coverage Testing, impacts of additional sites on Operator rates, Operations Board and Technical Committee perspective, and impact on backhaul capacity.*

This action was assigned to the PSERN Operator in early 2023, and $1,000,000 in funding was transferred from the Project to the Operator to fund this work as part of the Transfer Agreement. The work is to be carried out in multiple phases that will be discussed below.

Testing of the coverage provided by the system as designed and built by Motorola was conducted during the PSERN Project, prior to FSA. The system was shown to meet the contracted service reliability target of 97%, which was measured by dividing the service area into 0.2 x 0.2 mile "tiles" and testing each one using an industry-standard methodology. A total of 24,645 tiles were tested in the Primary Bounded Area (PBA), which excludes the 3 highway corridors.

Subsequent to the IBTF work, a decision was made by the Project to direct Motorola to add additional "In-building" sites to the system design to provide 17 dB of additional signal margin for building penetration purposes in 3 specified areas corresponding to downtown Seattle, Bellevue and Renton. System coverage was re-tested in these 3 polygons and shown to meet the contracted performance requirements.

PSERN Operator Work

Because of reports of coverage issues in the Kirkland/Bothell area, PSERN prioritized further work in 2024 on an assessment of the coverage provided by the North Simulcast system, which provides service to the north and east of Lake Washington, including Bellevue, Kirkland, Bothell, Issaquah, etc. Hatfield Dawson was awarded the project as one of the firms on PSERN's A&E (Architectural and Engineering services) roster of firms qualified to undertake RF and microwave engineering activities on an ongoing basis.

Subsequently, authorization to address the remaining RF systems within the PBA – West Simulcast, South

Simulcast, Northeast Simulcast and the McDonald and 3 Sisters ASR sites – was provided. The simulcast systems serving highway 2, I-90 and highway 410 have not been assessed.

As of the end of April 2025, this initial phase of work has been completed by Hatfield Dawson. The results and recommendations have been reviewed with the PSERN Technical Working Group and Operations Committee at their May meetings and will be discussed below. A summary of Hatfield Dawson's report is provided as Appendix C.

Distributed Antenna Systems (DAS)

In addition to the work discussed above, PSERN has been actively facilitating the migration of in-building distributed antenna systems (DAS) from KCERCS to PSERN and is supporting the implementation of new DAS systems in new or renovated buildings in support fire code requirements. To date, 906 DAS systems have been migrated, and another 217 buildings (total 1123) are in the process of having DAS systems implemented.

The large number of active DAS systems has resulted in many larger buildings in King County having good in-building coverage, although there is an ongoing risk of harmful interference from those DAS systems.

DISCUSSION/ANALYSIS:

Results of Coverage Assessment Work to Date

PSERN's goals in undertaking this work were as follows:

- Complete independent coverage assessment for the Primary Bounded Area (PBA).
- Develop the ability to visualize and query system coverage in all parts of the PBA, including identifying where overlapping coverage is provided from multiple systems and the levels of in-building coverage.
- Develop coverage maps that can be used to assist in responding to user agency reports of system coverage and performance issues.
- Identify recommendations for short-term changes to improve system performance within the PBA.

The following activities were included in the project scope:

- Develop a coverage performance model using industry-standard or proprietary RF propagation models applicable to 800 MHz P25 Phase II operation for both uplink and downlink.
- Import technical and equipment details of the existing system (as built) into a coverage prediction tool that can predict system coverage performance, including signal strength, signal reliability and Delivered Audio Quality (DAQ).
- Run coverage prediction and display/visualize coverage prediction data using coverage prediction tool and another GIS-based visualization tool such as Google Earth.
- Utilize up-to-data land use and terrain data as inputs to the coverage prediction tool. USGS 2021 land use data has been utilized, which represents a significant change from when the system design was completed using 2012 land use data.
- Develop reports and plots that enable PSERN to access, query and otherwise visualize predicted system coverage and area reliability, including area reliability with additional in-building signal margin added in specific areas.

- Identify any concerns or issues with the design and configuration of the included systems that may result in significant coverage deficiencies. The consultant will identify potential short-term changes to antenna type/model, placement and orientation and other system configuration parameters.
- The consultant will not prepare a comprehensive set of recommendations for construction of new RF sites to improve in-building coverage as part of this project – that will be undertaken in a future scope of work once assessment of locations requiring additional in-building coverage are identified.

This phase of work is foundational to the remainder of the In-Building Coverage assessment work.

Findings from Work-to-Date

The primary deliverables from the coverage assessment work are a set of coverage prediction maps, that show the predicted coverage reliability across King County provided by the following systems:

- West, North, South and Northeast simulcast systems
- McDonald and 3 Sisters ASR sites

4 sets of predictions have been provided for each system, corresponding to 0, 6, 12, and 18 dB of excess signal, otherwise known as "building penetration margin".

These maps were provided electronically, in Google Earth (KMZ) and ESRI (Shapefile) format and can be overlaid upon each other and visualized at various levels of detail. PSERN staff have been using Google Earth to visualize the results to date, with a focus on the 0 dB (outdoor coverage) predictions to date.

The findings and key observations from reviewing these predictions are as follows:

- The modelling shows coverage consistent with contract requirements and the results of the coverage acceptance testing done during PSERN Project, including the 97% area reliability objective
- A high degree of overlapping coverage from multiple systems is provided in most areas within the Primary Bounded Area, which results in a high level of system resiliency to individual site or system failures
- Some localized areas are showing coverage below the outdoor coverage standard of 95% simulcast reliability (DAQ 3.4, portable on-hip)

Several of the areas that show coverage below the standard have been tested by PSERN staff and shown to have adequate outdoor coverage but are close to the performance threshold. An example of such an area is Totem Lake Village in Kirkland, an area which has had coverage issues reported by users.

In reviewing the areas with coverage at or near the performance threshold, it has been concluded that the coverage prediction model is pessimistic in areas that experience shadowing from terrain. However, the relative performance between different areas is believed to be accurate and consistent so locations that are predicted to be below the performance threshold should be the highest priority for further investigation and testing.

A set of screenshots from Google Earth that illustrate the coverage predictions, including areas of below-standard coverage, are provided in Appendix A. A close-up of the Totem Lake area and the associated drive test results are also provided. Using the tool and the prediction data, PSERN staff can create localized maps for most areas in the County, including identifying which system provides coverage in that area.

A Hatfield Dawson has provided some recommendations for changes (specifically simulcast configuration and antenna changes) to certain sites to improve performance. The executive summary in Appendix C specifically

discusses potential steps to improve or optimize performance in the Totem Lake area of Kirkland, including simulcast configuration changes or the implementation of a new radio site at the LWIT campus. PSERN staff are still reviewing these recommendations to determine the risk, cost and overall impact and as discussed below, a decision to implement a new site needs to be considered in the broader context of the need for improved in-building coverage across the region.

Future In-Building Coverage Analysis Work

Appendix B outlines the phases for the full scope of IBC assessment work. The coverage modelling work recently completed corresponds to Phase 1.

The next step will be to undertake Phase 2 and Phase 3 concurrently. For Phase 2 (Analysis and Visualization of Coverage Test Data), PSERN is planning to engage with ESRI via a state contract to set up an ARCGIS Online environment (cloud hosted) that will provide a robust and secure environment for storage, visualization and analysis of system coverage and related performance data.

This ARCGIS Online environment will cost approximately $7,000 per year for software licensing for all PSERN users, and up to $50,000 in professional services to set up and configure the application will be required. This will be funded from PSERN's 2025 and 2026 operating budgets.

For Phase 3 (Develop Revised In-Building Coverage Criteria), PSERN is drafting a Work Order Request to have one of the vendors on its RF/microwave engineering roster develop an updated set of in-building coverage polygons and signal margins for all cities within the Primary Bounded Area, as outlined in Appendix B. The results of this work, along with work undertaken in Phase 1 and Phase 2, will identify locations where additional radio sites may be needed to increase the level of in-building coverage and the relative priority and benefit of those.

As noted, some localized areas have been identified as having outdoor coverage close to or below the performance standard. These areas will be assessed in Phase 3 as a matter of priority.

RECOMMENDATIONS AND NEXT STEPS:

PSERN staff will evaluate and assess the risk and impact of implementing the configuration changes identified by Hatfield Dawson. The potential for implementing a new radio site to improve the Totem Lake area of Kirkland will be further investigated to determine costs and timelines, although it should also be assessed in the broader context of the need for improved in-building coverage across the region.

The Phase 2 work identified above will be undertaken using PSERN staff resources, with expenses (ARCGIS licensing and setup) to be funded out of the 2025 and 2026 operating budgets.

The cost estimate for the Phase 3 work has not been developed to date. Once the Work Order Request is drafted and vendor responses are received, this project will be brought back to the Board with a request to approve expenditure of additional IBC funds to complete Phase 3.

CONCLUSION:

This report discussed the results of coverage assessments undertaken to date and future work planned to provide additional details on In-Building Coverage (IBC) requirements for the PSERN system.

Additional work on Phase 2 and Phase 3 of the IBC initiative will be undertaken shortly.

SUPPORTING DOCUMENTATION:

Appendix A – Screen Shots from Google Earth

Appendix B – Phases of Work for In-Building Coverage Assessment

Appendix C – Hatfield Dawson Report – Executive Summary

Appendix A – Screen Shots from Google Earth

Figure A.1 – County-Wide Coverage Prediction (4 Levels)

This prediction shows predicted levels of in-building coverage across the County (within the Primary Bounded Area), ranging from 0 dB (outdoor) to 18 dB of additional signal for building penetration. The prediction reflects portable radio on-the-hip performance.

County-wide Coverage Prediction – 4 Levels

Legend

0 dB –
6 dB –
12 dB –
18 dB –

95% Reliability

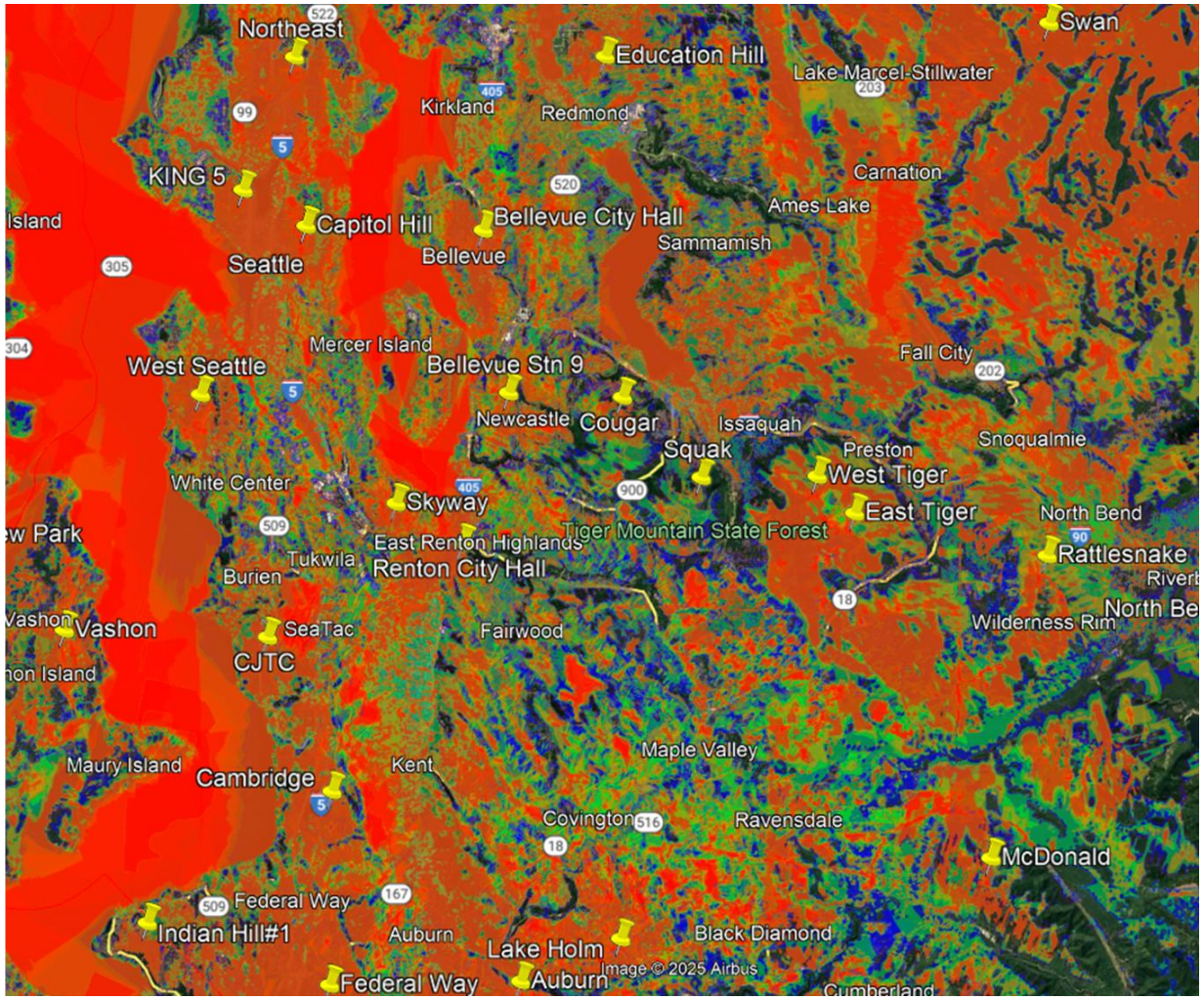


Figure A.2 – County-Wide Outdoor Coverage Prediction

This prediction shows the areas within the County (blue) that are predicted to be above the Outdoor coverage threshold and identifies 7 developed or built-up locations where coverage is predicted to be at or below the performance threshold. Testing of some (but not all) of these areas shows adequate but marginal outdoor signal, while some areas exhibit no performance issues.

County-wide Outdoor Coverage Prediction

Developed locations predicted to be at or near performance threshold:

- Totem Lake
- Canyon Park
- SE Redmond
- Factoria
- North Mercer Island
- Shilshole Marina
- North Tukwila

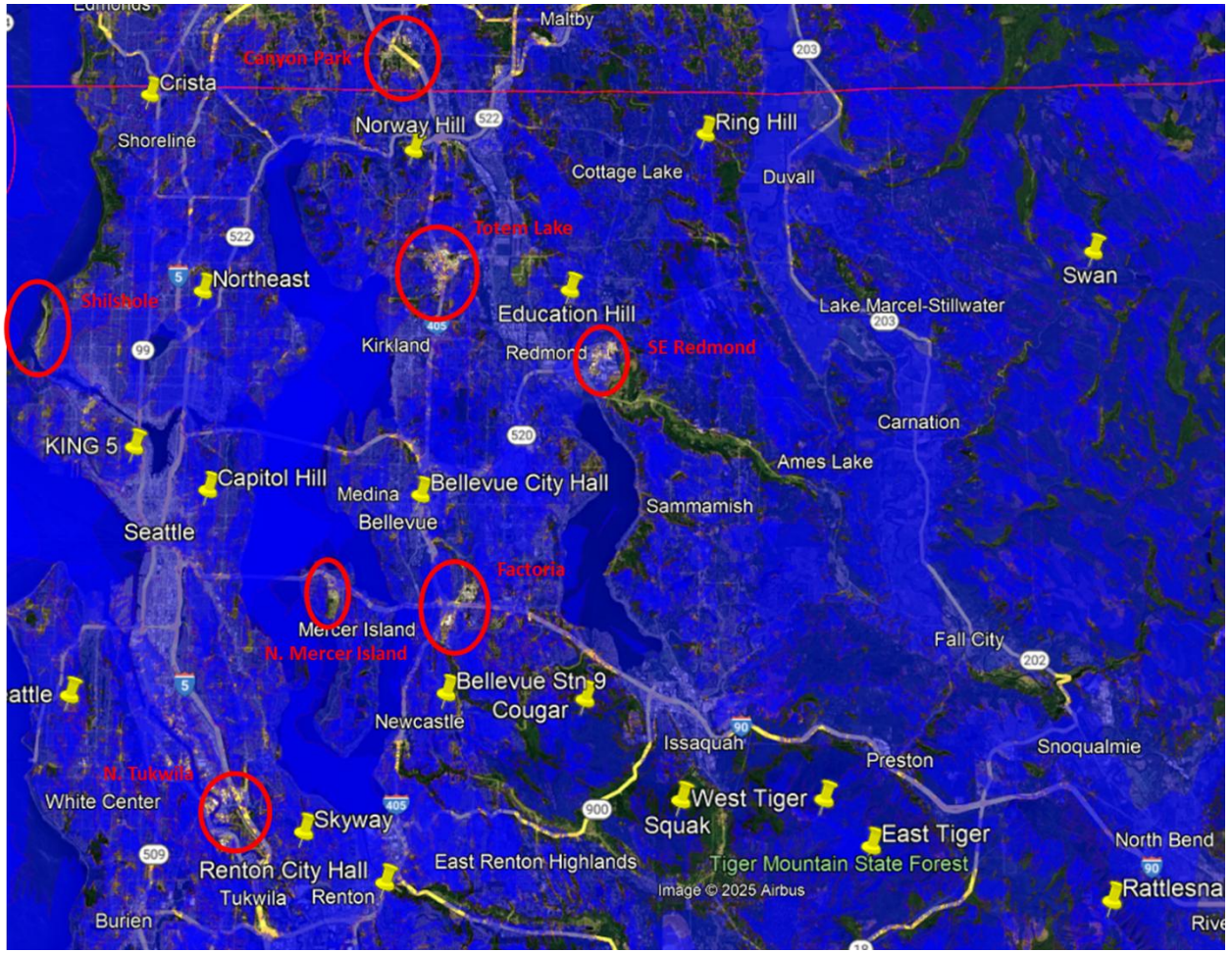


Figure A.3 – Totem Lake Area Closeup

This prediction shows the areas in the vicinity of Totem Lake (Kirkland) corresponding to different levels of in-building coverage (from 0 dB – outdoor to 18 dB). Areas without a color have predicted signal below the 95% reliability standard.

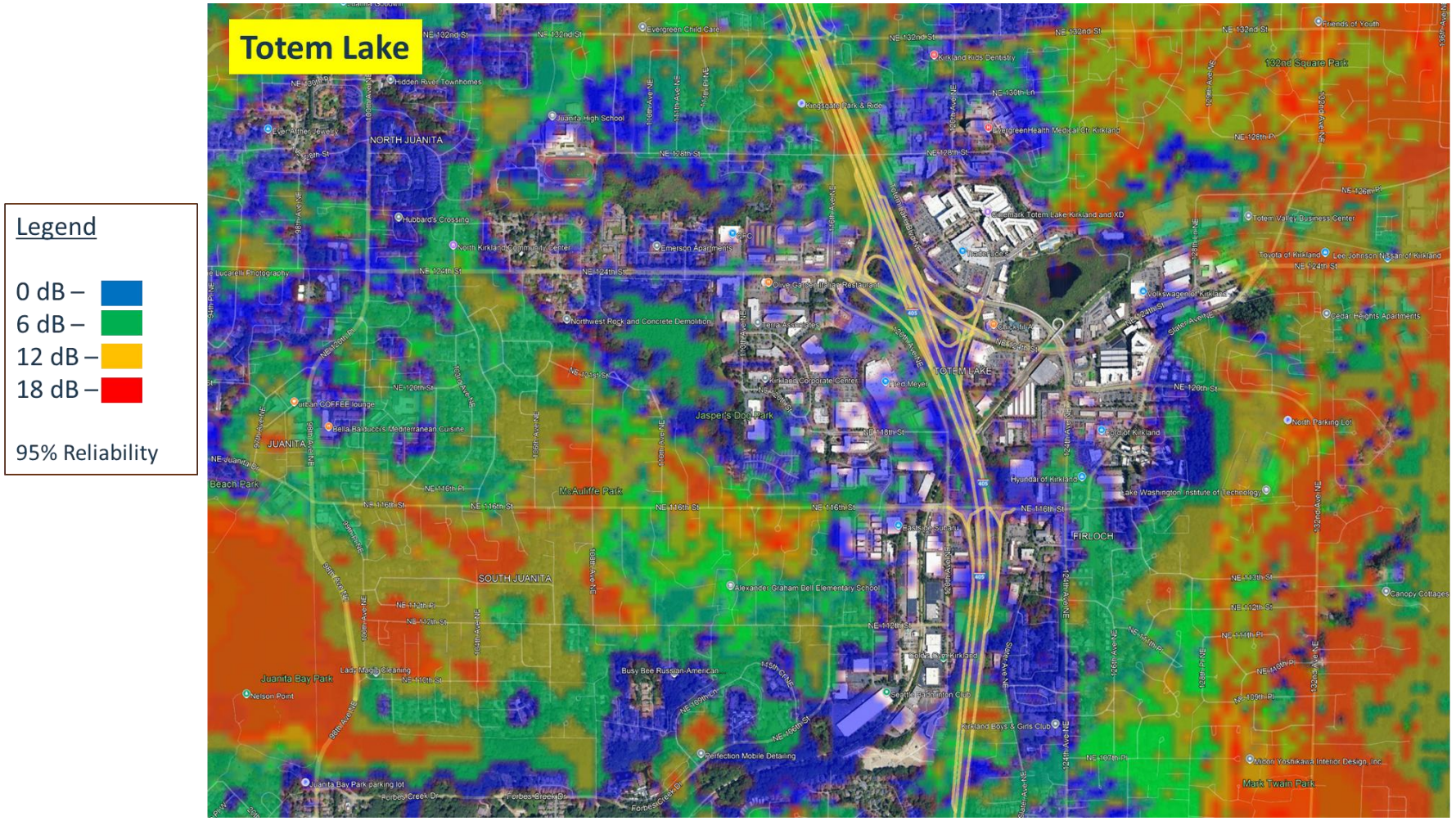
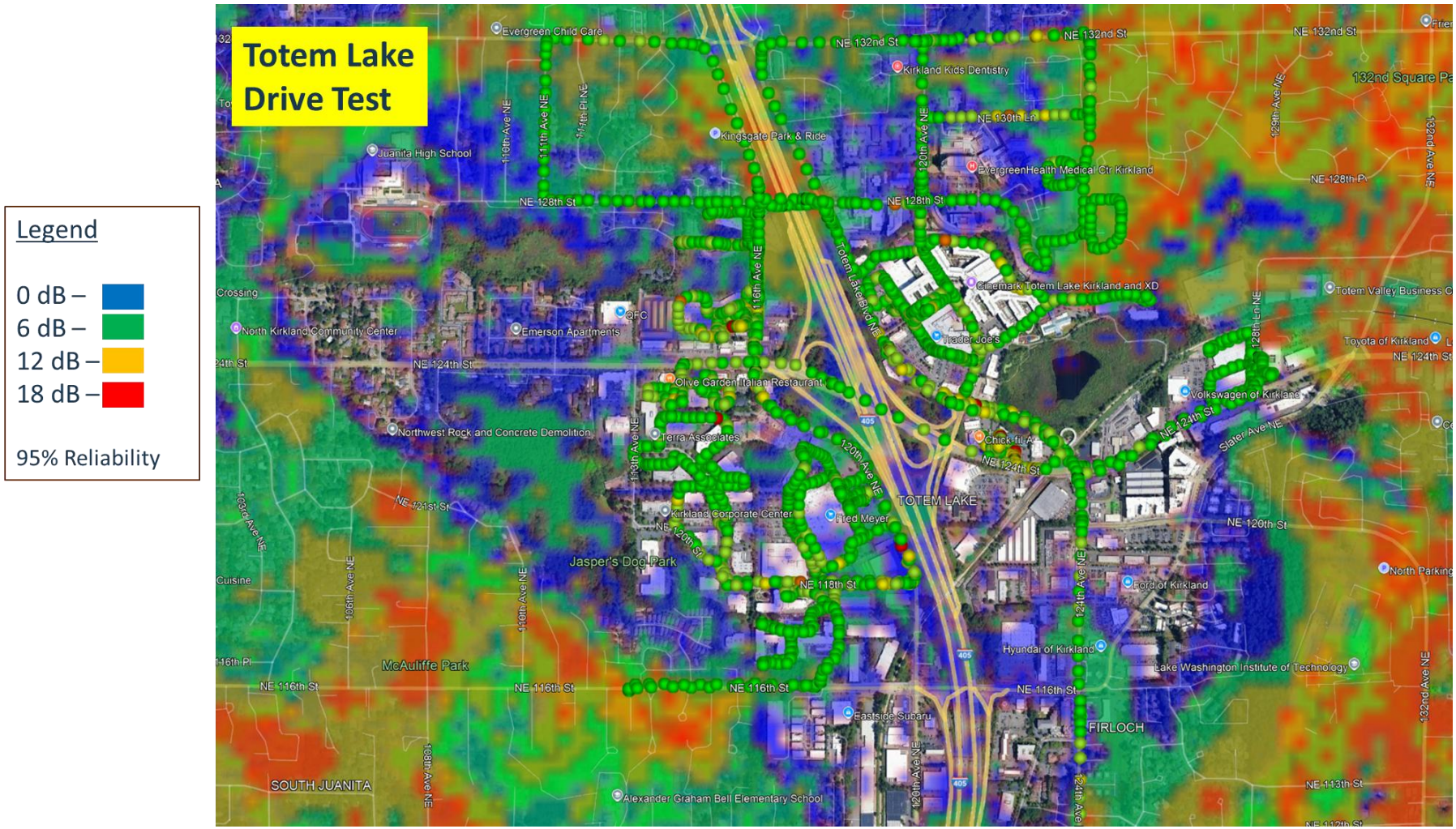


Figure A.4 – Totem Lake Area Closeup

This prediction shows the areas in the vicinity of Totem Lake (Kirkland) corresponding to different levels of in-building coverage (from 0 dB – outdoor to 18 dB) overlaid with drive test data collected by PSERN. Areas without a color have predicted signal below the 95% reliability standard, although the majority of measurments collected in those areas show adequate outdoor signal.



Appendix B – Phases of Work for In-Building Coverage Assessment

This appendix provides an outline of the full program of work to complete the In-Building Coverage Assessment study that was identified by the PSERN Project and subsequently assigned to the PSERN Operator.

The timing and scope of each phase will be defined in individual scopes of work that will be included in Work Order Requests to be submitted to consultants on PSERN's A&E roster for RF, Microwave and Network Design services.

The coverage assessment for the Primary Bounded Area (Phase 1) is complete.

Phase 1 – Coverage Modelling and Assessment - Complete

- Develop a performance model using industry-standard or proprietary RF propagation models applicable to 800 MHz mobile operation for both uplink and downlink:
    - This will include both uplink and downlink link budgets and applicable performance models.
- Import technical and equipment details of the existing system (as-built) into a coverage prediction tool that can predict:
    - Uplink and downlink RSSI, BER and DAQ
    - Time Domain Interference predictions
    - Best server locations/areas based on Motorola system configuration
- Run coverage prediction for each RF subsystem and import coverage prediction data into GIS visualization tool (or use visualization tools built into coverage prediction tool).
- Develop reports and plots that enable PSERN to access and query predicted system coverage and area reliability, including area reliability with additional in-building signal margin in specific areas included.
- Identify any concerns or issues with the design and configuration of the included systems that could result in significant coverage deficiencies. If appropriate, the consultant should identify potential short-term changes to antenna type/model, placement and orientation, or other system configuration parameters.

At the completion of this phase of work, PSERN should be able to visualize and query system coverage anywhere in the Primary Bounded Area (full PSERN coverage area less highway corridors) relative to the contractual system design standard (including IBC areas already defined). This information can then be used to correlate what Motorola measured during system acceptance with predicted coverage based on the as-built system design.

This phase of work will also identify short- and medium-term changes to existing radio sites (primarily simulcast timing or antenna changes) that might provide incremental improvement to system coverage.

Phase 2 – Analysis and Visualization of Coverage Test Data

- Analyze coverage test data generated by Motorola (collected over the period of late 2021 – early 2023)
- Import all coverage test data into a GIS based tool that will enable PSERN to visualize DAQ and BER performance relative to contract objective (PBA 97% area reliability, DAQ 3.4, portable on hip, 95% for

highways outside PBA, 2.4% downlink BER, 2.6% uplink BER).

- Import results of coverage assessments undertaken in Phase 1 in Shapefile format.
- Incorporate into GIS model the 3 "In-Building Polygons" for which 17 dB additional signal margin is required (Seattle, Bellevue, Renton)
- The GIS tool needs to incorporate a variety of base maps, including orthophotos, and other feature layers (rivers, highways, etc.).
- The GIS tool must be able to provide reports on area reliability given the criteria above – with or without the IBC polygons.

At the completion of this phase of work, PSERN should have a tool and datasets that can be used to interactively access, and query system coverage performance as measured back in 2021-2023 and as measured and predicted through recent work.

Phase 3 – Develop Revised In-Building Coverage Criteria

- Develop and propose additional in-building coverage signal margin polygons, based on assessment and categorization of land use, terrain, building type, construction, and density.
    - The Consultant will have to source the required data, which may necessitate some analysis of readily available data sets such as 3D building profiles.
- PSERN will request several scenarios with different in-building coverage margins (for example, one scenario could be to increase the 17 dB used to date to 21 dB in certain areas)
- In all scenarios there should be multiple "tiers" of in-building margin (e.g. suburban residential single story 6 dB, suburban residential multi-story 9 dB, urban multi-story 15 dB, dense urban 21 dB, etc.)
- Ensure coverage reports/plots developed in Phase 1 can be run with revised in-building polygons in multiple scenarios so that locations potentially requiring additional radio sites can be identified.

At the completion of this phase of work, PSERN should understand the areas where new sites might be justified based on re-defined in-building coverage criteria.

It should be noted that there is no definitive or "absolute" level of building penetration margin (i.e. 18 dB) that will guarantee full in-building coverage in any particular area due to the wide variability of building characteristics, size and layout. The trend towards improving energy efficiency, specifically the use of low-emissivity glass designed to block infrared radiation, significantly reduces the ability for radio signals to penetrate newer buildings.

As a result, the results of this work will involve the development of several scenarios, each involving different levels of in-building margin and corresponding estimate of additional sites required to provide that margin. The benefit and priority of each new site will be assessed.

It should be noted that this phase of work will also need to consider the areas, such as Totem Lake Village, where coverage is marginal relative to the current outdoor (0 dB building) coverage criteria.

Phase 4 – Drive Testing

- Undertake drive testing to verify and fine-tune the coverage prediction model created/used in Phase 2

across the full PBA area:

  - Methodology and test procedure (including tile size, number of measurements over distance, etc.) should be as per TSB-88C recommendations.

- King County should be broken into 4 regions, to be completed in the following order:
  - Primary bounded area (excluding City of Seattle) north of I-90
  - Primary bounded area (excluding City of Seattle) south of I-90
  - City of Seattle
  - Highway corridors – Hwy 2, 410 and I-90 outside of PBA
- There may be some areas outside of the County needing to be tested (e.g. Bothell, Lynnwood for Sound Transit purposes)
- Update and refine the coverage prediction and propagation model developed in Phase 2

This phase of work can be done currently with the Phase 3 work. At the completion of Phase 4, PSERN should have an updated and verified coverage prediction model to be used in determining current in-building signal margins and deficient areas based on updated coverage criteria.

Phase 5 – Develop Recommendations for Additional Radio Sites

- Develop recommendations for the addition of new radio sites, including search rings.
- Identify whether any modifications to existing sites are warranted (relocating or modifying antennas, including azimuth, down tilt, and changes to power levels, etc.).
- Recommendations should be in order of priority or magnitude of improvement as defined by increased area reliability considering revised in-building requirements developed in Phase 3.

After Phase 5, PSERN will need to undertake financial analysis so that it can prepare recommendations for its stakeholders regarding the addition of new sites or modifications to existing sites, including alternatives for funding the implementation of additional sites.

EXECUTIVE SUMMARY

Overview

The following report presents the coverage analysis Hatfield and Dawson (H&D) performed for the Puget Sound Emergency Radio Network (PSERN). The purpose is to provide an independent review of PSERN's coverage as contracted and implemented. The contractual requirements were:

- *DAQ* (*Delivered Audio Quality*) of 3.4 as measured by the equivalent *BER* (*Bit Error Rate*) of 2.4%
- 97% *Covered Area Reliability* as shown on Motorola-provided predictive maps
- 97% *Bounded Area Reliability* for certain regions/cities

The following report is a culmination of many coverage predictions and comparisons to both earlier reports prepared by PSERN's vendor, Motorola, and measurements taken by PSERN personnel. This report discusses the means and methods of modeling coverage and the limitations of predicting and measuring results. A set of recommendations is included for potential improvements to coverage reliability. Appendices include a glossary and a paper describing radio propagation in greater detail. Terms in this summary that appear in the glossary are in italics.

Limitations of Coverage Predictions

Radio Frequency (RF) propagation is a highly complex phenomenon across an environment, affecting it in hundreds of ways. To precisely predict the radio propagation between two points, the direct path from one point to another and all reflective paths would need to be computed. Also, the amount of absorption, reflection, and refraction (bending) must be known for all objects involved. Because each factor cannot be modeled or even identified in a database, coverage predictive models combine radio propagation physics with statistics to provide an estimate based on typical environmental effects.

As a result, a best-effort method is used. Values of different categories of environments are researched, and their effects on propagation are averaged. The direct path between the transmitter and receiver is evaluated, and reflective paths are treated as statistical variations. There are several base methods for this, many of which were created in the mid-twentieth century, with the limitations of the computational power of the computers current at that time (or even hand calculations) in mind.

H&D generally used Anderson2D, developed by Dr. Harry Anderson, a Physics professor at the University of Oregon at the time of his research and publication of his model. Following publication, he founded EDX Wireless, the creators of SignalPro®: the propagation predictive software H&D uses. SignalPro supports many of the other methods listed above. An extensive study published in the Institute of Electrical and Electronics Engineers (IEEE) compared many of these methods; Anderson2D was more consistent than the alternative methods. The models involved in the study are in the following table, and the results can be found here:

https://edx.com/documents-library/#flipbook-new_2d_prop_model_ieee_aug1997/1/

Model	Developed	Description
Bullington	1950s	Analytical model, mostly applied to the VHF band
Longley-Rice	1960s	An analytical model, developed primarily for TV
Okumura	1968	Empirical model, all data gathered in Tokyo
Okumura-Hata	1980	Based on Okumura, added more effects from building clutter
Epstein-Petersen	1953	Analytical model, evaluated terrain blockages at 850 MHz
Deygout	1966	Analytical, evaluated terrain blockages
Edwards-Durkin	1969	Empirical model based on the VHF band
Anderson2D	1993	Ray tracing analytical model

Motorola uses a version of Okumura-Hata but calculates the effect of terrain blockages (called "*diffraction*") using a trade-secret method. Because Anderson2D is a ray tracing analytical model, H&D has experienced that Anderson2D is more sensitive to terrain blockages than Motorola's method. This is likely due to Okumura-Hata's reliance on empirical data to calculate terrain losses based on the *terrain undulation height* and *average terrain slope* by applying a single factor for each characteristic instead of calculating a specific loss due to terrain blockage.

No coverage prediction models can fully predict coverage; however, H&D's chosen model, Anderson2D, has been shown to track better than other models in many cases, albeit biasing toward more conservative, especially with terrain.

Predictive Goals: Tile and Area Reliability

Predictive coverage maps were created by Motorola during the PSERN Project, guaranteeing coverage within a certain statistical reliability level at a specific level of audio quality. The test divides the area into a grid of test tiles where one sample is taken in each tested tile (one sample is an average of multiple measurements across approximately 50 feet). In PSERN's case, the tile size was 0.2 miles by 0.2 miles. They then calculate the sampling error based on the number of test points and add that error figure to their prediction inputs. For example, if there is a 1% sampling error due to the number of tiles sampled for a map guaranteeing 97% area reliability, Motorola will internally calculate at 98% area reliability.

For comparison, H&D has set the predictive model to calculate a point for every 0.02 mile, so SignalPro calculates 100 points for every grid sample in the CATP.

This means that contractual maps were not focused on any singular area of small coverage holes, as the goal of the contract was to pass 97 out of every 100 tiles sampled. In reality, most of these tiles are predicted to pass 99% to 100% of the time. This means that the contractual predicted area included tiles below 97% individually, as long as, on average, they could pass 97 out of 100

across the entire area.

This report provides maps based on Tile Reliability and not Area Reliability. The goal is to identify potential marginal coverage locations instead of verifying a statistical number across an entire area. The 95% Tile Reliability maps shown equate to 97% to 99% Area Reliability, depending on the mix of tile reliabilities; the Bounded Area Reliability section of the report discusses this in more detail. This approach will identify potential issues more readily, but will be more conservative than the contractual coverage required.

One final note about overall reliability is that the Motorola coverage test was based on the four principal simulcast sites providing coverage. The Bounded Area Reliability map section will describe this in more detail, but the report assumes that subscriber radios effectively roam between simulcast systems. The maps in this report show that Motorola met the Bounded Area Reliability requirements within the contract.

	*Maps in this report predict tile reliability to identify potential issues. Motorola maps predicted and measured area reliability to prove a contractual requirement.*

Comparison of Predictions and Results

Adjusting for area versus tile reliability discussed above, maps in this report support that Motorola met the contractual coverage requirements as documented by their predictive and measured coverage maps.

The new, more conservative model indicates potential areas of marginal coverage. PSERN personnel have measured many of these areas. Whereas Motorola's Coverage Acceptance Test Plan (CATP) used 0.2-mile by 0.2-mile sample points across the entire service area, PSERN collected many more samples in concentrated areas. These measurements contained very few samples that did not meet the required audio quality level for the system; however, many of the samples had signal strength levels that did not meet the required level to guarantee that the audio would be acceptable. This has to do with the *faded sensitivity* of the receiver in an environment with constantly changing signal effects called a *Rayleigh field*. The paper included in the appendices describes this phenomenon in detail. The point is that signals can vary with space and time, so where marginal signal levels are present, the resulting audio may be acceptable one time but not another time.

This is another reason that coverage is never guaranteed for either 100% of the locations or 100% of the time. So much additional signal level would be required to meet such a requirement that the cost of such a system, if even possible, would not be pragmatic.

	*The predictive maps in this report agree within the variation of the prediction and measurements. The variations related to propagation may change the end user's audio experiences at different times at the exact location, where signal strength is marginal.*

Simulcast and Suggested Improvements

The report includes a more detailed discussion of how simulcast works and how it is modeled with additional details in the appendix. The overall goal of simulcast design and configuration is to harmonize the arriving signals from each site by controlling the relative level of each signal and the time difference of when those signals arrive. This is primarily done by adjusting the transmitter's launch time at each site for timing and the antenna patterns to adjust relative signal levels at given points.

Predicting these signals involves calculating the signal levels arriving from each site. Because these signal levels vary, this calculation is repeated multiple times (H&D generally sets the program to perform calculations 1,000 times for each location), because, as noted above, signals vary. The program then uses *Monte Carlo* analysis, which involves counting how many times the calculations say the signal is acceptable as a ratio of the total times the signal is calculated. The name refers to dice rolls, which is, in essence, what the computer is doing by randomizing the variables affecting the signals.

Because the relative timing of arriving signals is involved, there can be areas where there is sufficient signal strength for acceptable audio; however, due to the *Time Delay Interference (TDI)* of the signals arriving, the resulting signal does not provide acceptable audio. That is because some signals are out of phase with one another and destructively combine.

Motorola's initial combination of launch delay times and antenna patterns was excellent. H&D's experienced consultants are generally able to significantly improve upon an initial simulcast design. The report identifies some potential improvements, but they are relatively minor and potentially influenced by the underlying Anderson2D coverage model rather than the Okumura-Hata coverage model used by Motorola.

Potential improvements are presented as suggestions. They are broken down into two types: those involving no equipment (antenna) replacement and those involving equipment replacement. It is recommended that PSERN staff review the areas predicted to improve and measure the BER at those locations. If the measurements indicate that TDI may be present, enact the suggested change and re-measure for improvements and areas of importance, if any, with the potential to degrade. Start with the changes that do not include purchasing new antennas, then try with new antennas if deemed warranted. This approach acknowledges that coverage is incredibly complex, and modeling it is a best effort, but in general, we have had success with proposed changes.

	*The initial simulcast design was excellent; however, the report identifies potential improvements. These should be considered and, if implemented, verified by measurements before and after implementation.*

Totem Lake

One specific area of concern was the Totem Lake area. The as-is North Simulcast coverage maps in the report show relatively low signal levels due to terrain, but would be sufficient outside buildings if not for some TDI issues. Because there are critical buildings in this area, additional maps were created examining the addition of one more site to the North Simulcast system at the Lake Washington Institute of Technology (LWIT). The predominance of this site in the immediate area would overcome the TDI issues, which are currently predicted, and provide better indoor coverage to the nearby City of Kirkland buildings. However, some of the simulcast improvements suggested without adding the LWIT show some improvements to coverage in the area. PSERN measurements in this area on the street were typically in the -104 dBm range, which would be considered marginal. However, in most cases, the BER criteria for acceptable audio quality were met. -104 dBm is too low to use successfully as a donor signal for a DAS system, but the signal level on a rooftop where a donor antenna would be placed should be greater. If there are existing DAS in city buildings, the signal at the donor antenna should be checked.

If the roof has adequate signal levels and there are DASs in city buildings in the area, PSERN should first evaluate the simulcast improvement recommendations before proceeding with adding a new site.

The LWIT site's evaluation is based on an antenna placed on the roof at approximately 40' AGL (Above Ground Level) and assumes no nearby obstacles are in front of it. These assumptions should be verified in the field before proceeding with this site.

	*A site, identified by PSERN staff, was analyzed in the report and predicts improved coverage in the Totem Lake area, primarily to provide better in-building coverage within the City of Kirkland's buildings.*

Recommendations for Next Steps

- Measure areas flagged as potential issues by computer predictive coverage maps.
- Adjust simulcast settings, beginning with changes, not including new antennas, and check in the field.
- Further evaluation of the measured data around Totem Lake, a cost/benefit analysis of a new site at LWIT, and similar treatment of other areas of concern, if identified by field

measurements.