EXH. DJL-3 (Apdx. M)
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: DAVID J. LANDERS

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-240004** **Docket UG-240005**

APPENDIX M (NONCONFIDENTIAL) TO THE SECOND EXHIBIT TO THE PREFILED DIRECT TESTIMONY OF

DAVID J. LANDERS

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 15, 2024

PUGET SOUND ENERGY

Pipeline Mod: Integrity Management & Accelerated Actions

Corporate Spending Authorization (CSA)

Date Created:	Friday, February 10, 2023
Discretionary/ Non-Discretionary:	Discretionary
Multi Year Rate Plan:	Programmatic
Equity Impact:	Yes
Strategic Alignment:	Operate the Business-Safety
Estimated In-Service Date:	Sunday, December 31, 2028
Current State (Business Need):	PSE is required by PHMSA 192 Subpart P and O to have transmission and distribution integrity plans, follow them, identify pipeline risk and mitigate these risks. PSE is audited multiple times a year regarding it pipeline compliance with required law including it adherence to the integrity management requirements. PSE's Distribution Integrity Management Program (DIMP) plan and Transmission Integrity Management Program (TIMP) plan identify the risk to the system and develops mitigation plans based on risk through additional or accelerated maintenance activities. PSE currently administers 29 additional and accelerated plans in addition to the ones captured in the 2021 Pipeline Replacement Plan (separate CSAs) which focuses on elevated safety risks. As required by code, PSE reports the risks identified from these plans to the UTC through the Continuing Surveillance Report annually. PSE currently has over 39,000 risks identified in the system that have mitigation plans developed. This program also addresses emerging cathodic protection repairs found through inspection that are required to be repaired within 90 days and responds and repairs sewer cross bores found by plumbers. Finally, there are new PHMSA regulations associated the "Pipeline Safety: Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related Amendments" known as the Mega Rule, which potentially significantly increase operating costs for transmission pipelines that PSE needs to be prepare.

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Desired State (Proposed Solution):

The solutions for each of the 29 risk areas, but primarily are replacement of like kind assets including pipelines, regulators, services, risers, and smaller components such as caps. Additionally, programs installed protection barriers to prevent damage as well as excess flow valves to minimize release should failure occur. One program is the replacement of PSE's low-pressure system after the pipeline explosion in Merrimack Valley in 2018. Implement mitigation across the 29 risk areas to address the backlogs and prevent pipeline safety concerns and failures. To address these backlogs and emerging risks by 2030, PSE must invest approximately $185M between 2022 and 2030, roughly $21M per year. However, PSE has historically fallen short on this plan (i.e., 2022 completed $14M), delaying PSE's ability to address these risks appropriately and requiring increased funding in each subsequent year. Funding addresses trends associated with cathodic protection findings to ensure compliance timelines are met (which are audited by the UTC frequently) and safety issues address immediately for sewer cross bores that plumbers find in their customer sewer clearing work. PSE should be well prepared for work that will be required by the Transmission Mega Rule to ensure compliance. Future CSA is likely for the Mega Rule after scope and costs are better understood.

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Outcome/Results (What are the anticipated benefits):	These programs reduce the risk to employees and the public as they address potential failures next to and in some cases inside homes and buildings which are of high consequence as well as preventing damage which is PSE's top risk for its pipeline system. With the current gas field workforce having less than 5 years of experience, PSE employee risk is elevated and therefore mitigated by address these risks before failures require emergency response. This program will reduce PSE's risk profile from 525 risk points based on the probability of failure or leak occurring and the consequence to 150 by 2030. Additionally, this program addresses environmental safety by avoiding over 1700 metric tons of CO2e emissions annually. And of course, these investments ensure PSE remains in compliance with regulatory requirements which is audited 7-9 times a year by the UTC.

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Dependencies: No

Dependencies comment: None.

Escalation Included: No, escalation has not been included.

Total Estimated Costs: $220,000,000

Estimated Five Year Allocation:

Funds Type	ID	Line Item Description	Previous Years Actuals	Fiscal 2024 Requested	Fiscal 2025 Requested	Fiscal 2026 Requested	Fiscal 2027 Requested	Fiscal 2028 Requested
O&M	79205	5-Year Plan 7.7.23	$ -	$ -	$ -	$ -	$ -	$ -
Capital	W_R.10015.06.01.02	G Odorizer Componant Repl Bulk Dist	$ -	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000
Capital	W_R.10015.04.01.07	G Sewer Cross Bore Repair Service	$ -	$ 154,500.00	$ 159,135.00	$ 163,909.00	$ 168,826.00	$ 173,900.00
Capital	W_R.10015.04.01.06	G Sewer Cross Bore Repair Main	$ -	$ 318,270.00	$ 327,818.00	$ 337,653.00	$ 347,800.00	$ 350,000.00
Capital	W_R.10015.03.11.01	G DIMP Guard Posts	$ -	$ 190,962.00	$ 196,691.00	$ 202,592.00	$ 208,400.00	$ 220,000.00
Capital	W_R.10015.03.09.14	G Idle Riser Remediation	$ -	$ 4,400,000.00	$ 4,400,000.00	$ 4,400,000.00	$ 4,400,000.00	$ 4,400,000.00

Incremental O&M: No

Qualitative Benefits:

The primary benefit is public and employee safety, specifically through integrity risk reduction as well as methane emissions reduction. Project benefits are realized upon completion of the project and confirmed through annual risk evaluation and continuing surveillance report.

Quantitative Benefits:

Quantitative Benefits	Benefit Type	Previous Years	Fiscal 2024	Fiscal 2025	Fiscal 2026	Fiscal 2027	Fiscal 2028	Fiscal 2029	Remaining Costs	Life Total
Risk reduction - health and safety	Other	$ 103,000,000	$ 103,000,000	$ 103,000,000	$ 103,000,000	$ 103,000,000	$ 103,000,000	$ -	$ 206,000,000	$ 824,000,000

Risk Summary:

Project Risks vary and increase with work in the right of way due to permitting requirements. This work tends to be in older parts of the system as well such as Seattle where permitting requirements are excessive. This has been a program that has been the lever to address other budget overruns unfortunately.

Benefit Risk is minimized as the completing the project realizes the benefit.

System Risk exists when work is not completed increasing over time as a result of aging or deterioration of the assets or conditions. This work can be performed in a planned manner, minimizing customer and system impact.

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Corporate Spending Authorization (CSA)

Change Summary:

Planning Cycle	Change Summary	Last Update Date
2022 Baseline Cycle	This CSA has been migrated into the EPPM tool at go-live as part of the Phase 1 EPPM implementation effort. The projects in this CSA were previously approved for the 2023-2027 capital plan. Please refer to the original CSA document for additional information (if available.)	2/10/2023
2023 Cycle 1	Updated based on last business plan	3/31/2023

PUGET SOUND ENERGY

Pipeline Mod: Integrity Management & Accelerated Actions

Corporate Spending Authorization (CSA)

Approval History:

Approved By	Date Approved
Approved by Cost Center Owner: Weatherby , Niecie	4/5/2023
Approved by Cost Center Owner: Weatherby , Niecie	4/7/2023
Approved by Director Sponsor: Landers , David	4/7/2023
Approved by Executive Sponsor: Jacobs , Josh	4/8/2023
CSA Status changed to Approved	4/8/2023
Approved by Cost Center Owner: Shrum , Bailey	12/4/2023
Approved by Director Sponsor: Shrum , Bailey	12/4/2023
Approved by Executive Sponsor: Shrum , Bailey	12/4/2023
CSA Status changed to Approved	12/4/2023
Approved by Cost Center Owner: Weatherby , Niecie	1/29/2024
Approved by Director Sponsor: Landers , David	1/29/2024
Approved by Executive Sponsor: Jacobs , Josh	2/2/2024
CSA Status changed to Approved	2/2/2024

SEWER CROSS BORE

ENERGY TYPE: GAS

1. SHORT DESCRIPTION

Due to historic and current construction practices of the industry, PSE has identified a risk of sewer system cross bores by gas pipelines within its service territory. To mitigate this risk, PSE conducts sewer video inspections to confirm clear or identify a cross bore and then repair.

2. BACKGROUND

The threat of sewer cross bores was identified through PSE's Distributed Integrity Management Program (DIMP) as an elevated risk to certain pipe installations. A sewer cross bore is a gas pipeline that has been inadvertently installed through an unmarked sewer pipe. Sewer cross bores occur when trenchless construction methods are utilized to install new natural gas pipe in areas where unmarked sewer lines exist. The state of Washington Damage Prevention Law requires excavators to use a One-call number locator service to alert underground facility owners of intended excavation activities and requires the marking of underground facilities in the area. However, sewer lines, and in particular sewer laterals, have proven to be difficult to locate. Sewer systems are often comprised of pipe that is not electronically locatable and sewer records are lacking in many areas. In addition, sewer lines on private property are the responsibility of the property owner, who does not possess the technology or records to be able to locate their sewer line. Sewer cross bores pose an elevated risk from failure due to the high consequence that may result if damage to the pipe causes gas to leak into the sewer. If there is a sewer cross bore and it causes a blocked sewer, plumbers typically use a drain cleaning machine to clear the blocked sewer which could damage the gas line, endangering people and property. Based on PSE's experience, it is more likely for plastic service lines in residential urban areas to be cross bored through sewers.

A sewer cross bore pilot program was conducted in 2012 and in 2013, and the Sewer Cross Bore plan was officially established to identify and remediate legacy cross bores. A risk model was developed to identify the highest risk locations. Of the model results, 60,000 locations were identified, representing the top 10% locations to be remediated. The Sewer Cross Bore plan was incorporated into the Pipeline Replacement Program (PRP) in 2020. The PRP allows accelerated replacement of gas facilities with elevated risk. Along with remediation of legacy cross bores, the plan has also implemented processes to inspect sewers in conjunction with blocked sewer calls and to perform post-construction sewer inspections any time a new gas line is installed by trenchless technology.

Table 1 - Sewer Cross Bore Plan (2013 – 2022)

Year	# of Parcel Inspections Completed	# of Legacy Parcel Inspections Completed	# of Cross Bores Found	# of Leaks
2010 – 2012	0	0	128	2
2013	1,926	303	86	1
2014	8,109	2126	113	1
2015	11,297	1502	124	2
2016	8,012	1705	138	5
2017	10,344	600	109	0
2018	7,526	299	96	1
2019	7,855	1,609	121	0
2020	19,999	8,009	84	1
2021	21,876	9,316	73	0
2022	15,261	7,180	59	0

3. STATEMENT OF NEED

Sewer cross bores occur because trenchless construction methods are utilized to install natural gas pipe in areas where unmarked sewer lines exist. Finding cross bores is needed because a cross bore can block a sewer line which may result in a plumber trying to clear the line. Clearing a blocked sewer with a cutter could sever the gas line resulting in uncontrolled gas leaking into homes through the sewer which may result in a fire or explosion. The Sewer Cross Bore plan is tracked in the Continuing Surveillance Annual Report and has identified sewer cross bore as one of the highest risks in PSE's distribution system.

3.1. NEED DRIVERS

- **Safety:** The main driver for the Sewer Cross Bore Program is to increase safety by remediating legacy sewer cross bores that have a potential to leak gas into homes through the sewer.

3.2. EQUITY

PSE evaluates equity in the planning process with consideration of the four core tenets of energy justice: Recognition Justice, Procedural Justice, Distributional Justice, and Restorative Justice in various steps of the process.

As specific studies are performed and projects proposed to further a business plan, planners review system, customers, and now equity data to recognize the specific customer burdens, whether there are highly impacted or vulnerable customers that are or will be affected by addressing the specific business need. Planners must prioritize where to focus their study

each year, thus the full understanding of the historic and ongoing inequities for the business plan is extrapolated at this time and will mature over time with greater tools and data.

PSE is building process and tools to enable procedural inclusion in defining the need and solutions through engagement with specific communities and community based organizations, increasing understanding of local needs and consequences to inform specific study development as well as options to address need. Maturity in where and how this occurs will increase over the next several years. Business plans will be updated as informed by this collective engagement to reflect broader equity benefits and burdens as engagement increases over time.

As specific projects are proposed, PSE investment decision optimization tool captures equity benefits. An optimized portfolio of projects across many business plans ensures the distribution of benefits and burdens are spread across all segments of the community and aim to ensure that marginalized and vulnerable communities do not receive an inordinate share of burdens or are denied access to benefits. As an initial step, PSE leverages Customer Benefit Indicators ("CBI") and information established as part of the 2021 Clean Energy Implementation Plan ("CEIP") to identify an equity framework to evaluate system projects. The CBI approach was developed through an iterative process that was coordinated with the Equity Advisory Group. These CBI span the core tenets of energy justice and provide a framework to evaluate the comparative equity benefit of each solution alternative considered. Refer to Table 1 for a brief description of the CBIs that address equity and the applicable benefits for the Sewer Cross Bore program. PSE will continue to adjust and refine equity consideration in projects when necessary as the process continues to mature.

Projects will be evaluated on each CBI category and a total equity benefit score will be provided.

Table 1: Equity Applicable Benefits

Customer Benefit Indicator	Description	Program Applicable Benefit
Customer Energy Savings	Solutions that lead customers to use less energy, which leads to less energy that must be purchased and potentially a reduction in planned system upgrades.	No
Greenhouse Gas Emissions	Solutions that lead to a reduction of greenhouse gas emissions, either directly or indirectly	Yes
Enables Cleaner Energy	Solutions that either directly integrate DER on the system or enable the grid to more readily accommodate future DER.	No
Air Quality	Solutions that either directly eliminate the source of a common pollutant or reduce the risk that could cause a common pollutant to increase, such as enabling Electric Vehicle or DER adoption	No

Resilience	Solutions that address major event outages or harden critical facilities to prevent catastrophic events from creating long duration outages.	Yes
Cost Reduction	Solutions that identify least cost alternatives and therefore reduce costs for all customers	Yes
Clean Energy Jobs	Solutions that increase clean energy jobs by furthering clean energy technology application, as described in the CEIP	No
Home Comfort	Solutions that deploy residential energy efficiency in either a targeted solution area or by leveraging load reduction from system wide energy efficiency installations	No

The program attempts to annually address the risk of sewer cross bores and is programmatically optimized based on total benefit value to cost. Specific program projects are identified based total benefit to cost with named communities receiving additional scored benefit based on vulnerable population designation and highly impacted community characteristics, ensuring investments are distributed appropriately to named communities.

Business plans in isolation do not address restorative justice, but continued planning process improvements which include considerations of data, tools, and documentation as well as operational practices will help to restore equity over time.

4. PLAN DETAIL

4.1. PLAN SIZE/POPULATION

The Sewer Cross Bore plan consists of a population of 400,000 parcels. Each parcel typically has one location to inspect, but experience has shown that in urban settings there may be more than one. The current target involves a population of 60,000 highest risk locations identified by the model. Additional locations are incorporated into the model as we gather information on new side sewer segments, and the highest risk locations are recalibrated by the model. From past trends, PSE predicts approximately one cross bore will be found for every 100 inspections.

4.2. PROPOSED COMPLETION DATE

The current target is to inspect the 60,000 highest risk legacy locations identified by the model by 2028. PSE will continue to incorporate new risk knowledge and develop an inspection strategy for the next highest risk population.

4.3. SUMMARY OF PLAN BENEFITS

- **Safety:** The Sewer Cross Bore plan mitigates the risk of cross bores that could endanger people and property if damaged by a plumber using a drain cleaning machine. Remediation of the original population of 60,000 locations is expected to

reduce risk by 30 risk points[1], out of 482 total distribution system risk points as of year-end 2022.

- **Stakeholder Relationships:** The plan improves our public perception from stakeholder groups such as UTC, cities, and customers through efforts to identify and remediate cross bores.

4.4 PRIMARY IDOT CATEGORIES

PSE's employs an Investment Decision Optimization Tool (iDOT) to evaluate benefits of projects and optimize the annual portfolios for construction. The top primary iDOT Categories this plan addresses are:

- Health and Safety
- Stakeholders

Table 2 – iDOT Benefit

2025 Forecast Cost ($)2	2025 iDOT Benefit ($)	2025 Benefit / Cost Ratio
$500,000 (CAP)	$6,579,109	13.16
$4,700,000 (O&M)	$4,700,000	1

O&M programs cannot be calculated in iDOT. For O&M Benefit/ Cost Ratio it is assumed every dollar spent gives a benefit of the same amount.

4.5 ESTIMATED COSTS

The programmatic costs to complete the Sewer Cross Bore plan from 2020 until 2028 is approximately $40.9 million. This is based on remediating the original population of 60,000 high risk locations at an accelerated rate.

5. ALTERNATIVES

5.1. SOLUTION ALTERNATIVES

Proactive Remediation: The selected alternative is to remediate locations of probable sewer cross bores as part of a planned approach prior to leaks occurring.

Reactive Remediation: The alternative not selected would be to wait until sewer cross bores are discovered, and then remediate. This could lead to hazardous leaks occurring in customer sewer lines which lead directly into their homes.

5.2. FUNDING ALTERNATIVES

[1] The plan benefit of risk reduction is quantified by using DIMP risk points. Through DIMP, plans are scored based on the probability of a failure or leak occurring and the consequence resulting from a failure or leak
[2] Includes Capital and O&M

No Action: Without a plan in place, PSE would face the risk of leaks occurring in customer sewer lines which lead directly into their homes.

Increased Funding: With increased funding, probable sewer cross bore locations could be remediated at a quicker rate. To fully realize the benefits of increased funding there would need to be additional field resources dedicated to the Sewer Cross Bore plan.

Decreased Funding: Reducing the current funding levels would result in probable sewer cross bore locations being remediated at a slower rate. This could lead to sewer cross bores being undetected.

4. PLAN DOCUMENT HISTORY

Date	Reason(s) for Update	Summary of Significant Change(s)	Modified By
1/27/2020	Initial Program Documentation - New plan template	Initial Program Document – Summarize historical plans	Parker Indorf
4/30/2021	2021 Business Case Update	Revised language throughout. Updated program summary and background	Parker Indorf
9/20/2021	Used and Useful Policy guidance	Updated benefits. Added alternative and cost information	Parker Indorf
12/17/2021	Annual Review	Minor word and format changes	Parker Indorf
9/7/2023	2024 MYRP update	Includes Equity, remove ISP, remove plan budgetary info	Parker Indorf

5. SUPPORTING DOCUMENTATION

Document Name
DIMP SUMMARY OF ADDITIONAL AND ACCELERATED ACTIONS
PIPELINE REPLACEMENT PROGRAM PLAN
CONTINUING SURVEILLANCE ANNUAL REPORT
DIMP RISK GRAPHIC

DISTRIBUTION INTEGRITY MANAGEMENT PROGRAM (DIMP)

ENERGY TYPE: GAS

1. SHORT DESCRIPTION

PSE's Distribution Integrity Management Program (DIMP), identifies the highest risk threats to the gas system and additional or accelerated actions are implemented in the form of maintenance programs. Programs are funded so that PSE can conduct field inspections to evaluate and carry out remediation options in order to reduce system risk.

2. BACKGROUND

Beginning in August 2011, the US Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) mandates that gas distribution pipeline operators implement a Distribution Integrity Management Program (DIMP). PSE's DIMP was developed to comply with this regulation and to reduce risks to its gas distribution system.

PSE monitors trends in system integrity data to identify new or existing threats to the gas distribution system. These threats are evaluated with respect to the specific assets in the gas system using a relative risk analysis to determine where additional or accelerated actions are required to reduce the risk. Programs are developed and implemented so that funding can be allocated effectively to specific risk reduction efforts. This information is updated annually in the Continuing Surveillance Report and Summary of Additional or Accelerated Actions.

3. STATEMENT OF NEED

DIMP programs are developed as additional or accelerated actions to mitigate higher risk threats in order to reduce hazardous leaks and to comply with the regulation.

3.1. NEED DRIVERS

Refer to the Summary of Additional or Accelerated Actions for individual program need drivers.

- **Safety:** DIMP programs address safety by remediating issues that may lead to damages or leaks.
- **Environmental:** DIMP programs reduce future methane emissions resulting from leaks.

3.2. EQUITY

PSE evaluates equity in the planning process with consideration of the four core tenets of energy justice: Recognition Justice, Procedural Justice, Distributional Justice, and Restorative Justice in various steps of the process.

As specific studies are performed and projects proposed to further a business plan, planners review system, customers, and now equity data to recognize the specific customer burdens, whether there are highly impacted or vulnerable customers that are or will be affected by addressing the specific business need. Planners must prioritize where to focus their study each year, thus the full understanding of the historic and ongoing inequities for the business plan is extrapolated at this time, and will mature over time with greater tools and data.

PSE is building process and tools to enable procedural inclusion in defining the need and solutions through engagement with specific communities and community based organizations, increasing understanding of local needs and consequences to inform specific study development as well as options to address need. Maturity in where and how this occurs will increase over the next several years. Business plans will be updated as informed by this collective engagement to reflect broader equity benefits and burdens as engagement increases over time.

As specific projects are proposed, PSE's investment decision optimization tool captures equity benefits. An optimized portfolio of projects across many business plans ensures the distribution of benefits and burdens are spread across all segments of the community and aims to ensure that marginalized and vulnerable communities do not receive an inordinate share of burdens or are denied access to benefits. As an initial step, PSE leverages Customer Benefit Indicators ("CBI") and information established as part of the 2021 Clean Energy Implementation Plan ("CEIP") to identify an equity framework to evaluate system projects. The CBI approach was developed through an iterative process that was coordinated with the Equity Advisory Group. These CBI span the core tenets of energy justice and provide a framework to evaluate the comparative equity benefit of each solution alternative considered. Refer to Table 1 for a brief description of the CBIs that address equity and the applicable benefits for the Distribution Integrity Management Program. PSE will continue to adjust and refine equity consideration in projects when necessary as the process continues to mature.

Projects will be evaluated on each CBI category and a total equity benefit score will be provided.

Table 1: Equity Applicable Benefits

Customer Benefit Indicator	Description	Program Applicable Benefit
Customer Energy Savings	Solutions that lead customers to use less energy, which leads to less energy that must be purchased and potentially a reduction in planned system upgrades.	No
Greenhouse Gas Emissions	Solutions that lead to a reduction of greenhouse gas emissions, either directly or indirectly	Yes
Enables Cleaner Energy	Solutions that either directly integrate DER on the system or enable the grid to more readily accommodate future DER.	No
Air Quality	Solutions that either directly eliminate the source of a common pollutant or reduce the risk that could cause a common pollutant to increase, such as enabling Electric Vehicle or DER adoption	No
Resilience	Solutions that address major event outages or harden critical facilities to prevent catastrophic events from creating long duration outages.	No
Cost Reduction	Solutions that identify least cost alternatives and therefore reduce costs for all customers	No
Clean Energy Jobs	Solutions that increase clean energy jobs by furthering clean energy technology application, as described in the CEIP	No
Home Comfort	Solutions that deploy residential energy efficiency in either a targeted solution area or by leveraging load reduction from system wide energy efficiency installations	No

The program attempts to annually address mitigating the highest risks in the system through additional and accelerated actions, and is programmatically optimized based on total benefit value to cost. Specific program projects are identified based total benefit to cost with named communities receiving additional scored benefit based on vulnerable population designation and highly impacted community characteristics, ensuring investments are distributed appropriately to named communities.

Business plans in isolation do not address restorative justice, but continued planning process improvements which include considerations of data, tools, and documentation as well as operational practices will help to restore equity over time.

4. PROGRAM DETAIL

4.1. PROGRAM SIZE/POPULATION

Refer to the Summary of Additional or Accelerated Actions for individual programs size and population.

4.2. PROPOSED COMPLETION DATE

Each DIMP program has a unique target date for completion or reaching steady state. Once at steady state, projects are completed within a year of being identified. Refer to the DIMP Risk Graphic for individual program details.

4.3. SUMMARY OF PROGRAM BENEFITS

- **Safety:** DIMP program benefits are determined by risk reduction for a given investment. Risk reduction is primarily accomplished by reducing individual program populations. As of year-end 2022 there were 482 risk points[1] remaining in the system with the target of risk to 150 risk points by 2030 to achieve steady state. Refer to the DIMP Risk Graphic for individual program risk reduction.
- **Stakeholder Relationships:** The DIMP programs demonstrate our commitment to safety to stakeholder groups such as UTC, cities, and customers through efforts to improve pipeline integrity
- **Methane Reduction:** Environmental safety benefit relative to methane emission reduction is measured by converting methane to carbon dioxide equivalent (CO2e). The DIMP programs reduce emissions by addressing risks that would otherwise lead to leaks. By attributing leak causes to individual DIMP programs these programs have a potential reduction of 1,704 metric tons CO2e annually.

Table 1 - CO2e Emission Reduction Potential

Leaks With DIMP Programs Addressing Cause (5 year average)	Average CO2e Per Leak (metric tons)	Annual CO2e Emissions (metric tons)
142	12	1,704

4.4 PRIMARY iDOT CATEGORIES

PSE's employs an Investment Decision Optimization Tool (iDOT) to evaluate benefits of projects and optimize the annual portfolios for construction. The top primary iDOT Categories the DIMP programs address are:

[1] The benefit of risk reduction is quantified by using DIMP risk points. Through DIMP, plans are scored based on the probability of a failure or leak occurring and the consequence resulting from a failure or leak

- Health and Safety
- Stakeholders

Table 2 – iDOT Benefit

2025 Forecast Cost ($)	2025 iDOT Benefit ($)	2025 Benefit / Cost Ratio
$31,794,014 (CAP)	$60,824,404	1.91
$4,441,265 (O&M)	$4,441,265	1

O&M programs cannot be calculated in iDOT. For O&M Benefit/ Cost Ratio it is assumed every dollar spent gives a benefit of the same amount.

Cost benefit analysis is also performed using iDOT to compare the benefit to a dollar value. The forecasted costs and benefits were evaluated for 2025, excluding the PRP plans which have stand-alone business plan documents.

4.5. ESTIMATED COSTS

The programmatic costs to complete the DIMP programs are what is needed to bring them to steady state. PSE's plan targets a reduction of about 40 risk points annually to a manageable steady state risk tolerance of 150 risk points by 2030. PSE estimates the investment to reach that target is approximately $185 million, from 2022 to 2030, in addition to ongoing investments for routine programs already at steady state and to initiate programs in the early stages of development.

Table 3 – DIMP Programs Estimated Total Investment

	Program	Estimated Total Investment (CAP $)
1	Bolt-On Service Tees	$0*
2	Encroachment Remediation	$0*
3	Extended Utility Facilities	$1.0M
4	Ground Faults and Lightning Strike Mitigation	$0*
5	High Pressure Main Assessment	$0*
6	Idle Risers	$13.2M
7	Low Pressure Distribution Systems Remediation	$22.0M
8	Mapping Accuracy	$0*
9	Modified Farm Taps	$25.0M
10	No Record Facility Remediation	$15.0M
11	Older Wrapped Steel Pipe Mitigation	$20.0M
12	Regulator Station Mitigation	$30.0M
13	Rockwell IPH Mitigation	Completed in 2021
14	Wrapped Steel Main in Casing	$20.0M
15	Wrapped Steel Service Assessment	$6.0M
16	Bridge and Slide Remediation	$2.0M

17	Celcon Service Tee Caps	$0*
18	Docks and Wharves Assessment	Routine
19	Double Insulated Flanged Valves	Routine
20	Encroachment MHC Survey	$1.0M
21	Excess Flow Valves	$0*
22	Heater Maintenance	$0*
23	High Pressure Valve Mitigation	Routine
24	High Voltage AC Mitigation	Routine
25	Industrial Meter Set Remediation	$0*
26	Pipe on Pipe Supports	Routine
27	Shallow Main and Service Remediation	$9.0M
28	Traffic Protection Enhancement	Routine
29	Damage Prevention	$21.5M

*Strategy is in development and will require additional funding and resources. This list excludes the highest risks that are in the Pipeline Replacement plan

5. ALTERNATIVES

5.1. SOLUTION ALTERNATIVES

Refer to DIMP Summary of Additional or Accelerated Actions for individual program strategies.

Proactive Remediation: DIMP programs typically employ the proactive strategy of identifying and remediating the entire population.

Reactive Remediation: The other alternative would be to remediate issues once they lead to a leak.

5.2. FUNDING ALTERNATIVES

No Action: Without individual programs in place, PSE system risks would continue to increase.

Increased Funding: With increased funding, DIMP programs are able to be expedited or address issues that carry a higher cost.

Decreased Funding: Reducing funding levels results in fewer projects being completed in a given year or projects being deferred to future years.

6. PLAN DOCUMENT HISTORY

Date	Reason(s) for Update	Summary of Significant Change(s)	Modified By
9/20/2021	Initial Program Documentation - New plan template	Initial Program Document – Summarize historical plans	Parker Indorf
12/17/2021	Annual Review	Minor word and format changes	Parker Indorf
9/7/2023	2024 MYRP update	Includes Equity, remove ISP, remove plan budgetary info	Parker Indorf

7. SUPPORTING DOCUMENTATION

Document Name
DIMP SUMMARY OF ADDITIONAL AND ACCELERATED ACTIONS
DIMP CONTINUING SURVEILLANCE REPORT
DIMP RISK GRAPHIC
PIPELINE REPLACEMENT PROGRAM PLAN

TRANSMISSION INTEGRITY MANAGEMENT PROGRAM (TIMP)

ENERGY TYPE: GAS

1. SHORT DESCRIPTION

PSE's Transmission Integrity Management Program (TIMP) mitigates risk by following the prescriptive requirements of the federal code. Recent changes to the transmission code (known as the Mega Rule) brought forth an enhanced record requirement for transmission lines which is leading PSE to evaluate whether it is prudent to replace, retire, or continue to maintain our transmission lines.

2. BACKGROUND

TIMP has been incorporated by Pipeline and Hazardous Materials Safety Administration (PHMSA) into the Federal Pipeline Safety Regulations (49 CFR Part 192) since 2004. The code language is very prescriptive as to the requirements for transmission lines. A transmission line is defined in the federal code as follows:

> "A pipeline or connected series of pipelines, other than a gathering line, that:
> 1. Transports gas from a gathering pipeline or storage facility to a distribution center, storage facility, or large volume customer that is not down-stream from a distribution center;
> 2. Has an MAOP (Maximum Allowable Operating Pressure) of 20 percent or more of SMYS (Specified Minimum Yield Strength);
> 3. Transports gas within a storage field; or
> 4. Is voluntarily designated by the operator as a transmission pipeline."

PSE performs annual high and moderate consequence area (HCA/MCA) patrols to determine the proximity and types of occupied structures within the vicinity of each transmission line. The federal code requirements apply to all transmission lines, but there are additional requirements for transmission lines within "covered segments", which are all HCAs and certain areas outside of HCAs. This additional requirement involves a comprehensive risk identification process to determine the applicable threats to the covered segment and perform periodic integrity assessments based on those threats.

PSE has approximately 28 miles of transmission line segments and 15 transmission stations, of which the covered segments are 4.8 miles and 5 stations. A summary of PSE's transmission facilities, total mileage, covered segments, and transmission definition are shown in Table 1 and additional details are located in the TIMP Annual Report.

Table 1 – Transmission Line Summary

Name	Facility Type	Pipeline Mileage	Covered Segments	Transmission Definition
Cedar Hills	Pipeline	0.26	-	Upstream of Distribution Center
Jackson Prairie	Pipeline & Storage Field	16.54	-	Operates above 20% SMYS, Operates within Storage Field
Lynnwood-Greenwood	Pipeline	1.45	0.83	Operates above 20% SMYS
North Midway	Pipeline	2.85	2.22	Operates above 20% SMYS
Olympia	Pipeline	3.18	1.18	Operates above 20% SMYS
South Seattle	Pipeline	0.40	0.40	Operates above 20% SMYS
Sumas	Pipeline	3.65	0.20	Operates above 20% SMYS
Boeing-Frederickson GS (RS-2335)	Regulator Station	-	-	Upstream of Distribution Center
Canyon Mega RS (RS-2606)	Regulator Station	-	Yes	Operates above 20% SMYS
Chehalis GS (RS-1360)	Regulator Station	-	-	Operates above 20% SMYS
Duvall GS (RS-2499)	Regulator Station	-	Yes	Operates above 20% SMYS
Machias GS (RS-2418)	Regulator Station	-	-	Operates above 20% SMYS
Monroe GS (RS-2512)	Regulator Station	-	-	Upstream of Distribution Center
North Bothell TBS (RS-2242)	Regulator Station	-	-	Operates above 20% SMYS
North Seattle GS (RS-1338)	Regulator Station	-	-	Upstream of Distribution Center
North Seattle TBS (RS-1340)	Regulator Station	-	Yes	Operates above 20% SMYS
Novelty Hill GS (RS-2585)	Regulator Station	-	Yes	Operates above 20% SMYS
Redmond GS (RS-1342)	Regulator Station	-	-	Operates above 20% SMYS
South Tacoma GS (RS-2302	Regulator Station	-	-	Upstream of Distribution Center
Sumas DR (RS-2755)	Regulator Station	-	-	Operates above 20% SMYS
Sumas GS (RS-2754)	Regulator Station	-	Yes	Operates above 20% SMYS
W Olympia GS (RS-1359)	Regulator Station	-	-	Operates above 20% SMYS

The primary threats impacting our covered segments are External Corrosion and Third Party Damage. The integrity assessments we have used to evaluate these threats are External Corrosion Direct Assessment (ECDA) which involves performing an aboveground electrical survey to detect pipeline coating damage or In-line Inspection (ILI) which involves running a tool inside the pipeline that can detect metal loss and dents. PSE is required to perform an integrity assessment on all covered segments every seven years.

In 2020, PHMSA issued a major revision to the federal code, also known as the Mega Rule, as part of a decade-long effort in response to the 2010 Pacific Gas and Electric (PG&E) incident in San Bruno, CA. Following the San Bruno incident, it was determined that PG&E's integrity management program was deficient and ineffective because it was based on incomplete and inaccurate pipeline information.

The new code language requires that pipeline records must be traceable, verifiable, and complete (TVC). Traceable records can be clearly linked back to original information about the pipeline segment (ex. pipeline mill records). Verifiable records are those where information is confirmed by other complementary but separate documentation. Complete records are required to have a signature by the individual performing the work.

This record requirement exceeds the code requirements of when many transmission lines were put into service. Transmission line segments with missing or non-TVC records must have MAOP reconfirmation performed in accordance with the new code language. MAOP reconfirmation must be completed for 50% of transmission mileage by July 3, 2028 and 100% of transmission mileage by July 2, 2035.

There are six allowable methods for MAOP reconfirmation:

1. Materials verification & hydrostatic pressure test – Utilize destructive or non-destructive testing to collect pipeline information on yield strength, ultimate strength, and metallurgical properties. Also, perform a hydrostatic pressure test of the pipeline.
2. Pressure reduction – Reduce MAOP of pipeline to highest actual operating pressure divided by factor of 1.5
3. Engineering Critical Assessment (ECA) – Establish MAOP based on predicted failure of known anomalies from extensive history of in-line inspection and other records.
4. Pipeline replacement – Replace segment with a new pipeline.
5. Pressure reduction with leak survey and patrols - Reduce MAOP of pipeline to highest actual operating pressure divided by factor of 1.1. Increase patrols and leak survey to 6 times per year.
6. Alternative technology – Alternative must be approved by PHMSA.

PSE completed a transmission records review, and it was determined that all of PSE's transmission line segments, except for Jackson Prairie, will require MAOP reconfirmation. This totals 11.8 miles of pipe and 15 stations. PSE will perform engineering studies in 2023 and 2024 to determine the appropriate method for MAOP reconfirmation for each segment. High level estimates for materials verification with pressure test and replacement were

developed in 2019. Estimates for all available options will be updated based on the results of the engineering studies. Retirement will also be evaluated on a case-by-case basis.

As MAOP reconfirmation impacts the majority of PSE's transmission facilities, there may be an opportunity to also reduce our transmission footprint while reducing safety risk. Segments that are transmission due to higher stress (>20% SMYS) present an opportunity to replace with more robust pipe so that hoop stress on the pipe is reduced and replacement pipe is classified as distribution.

3. STATEMENT OF NEED

The TIMP program is compliance driven based on pipeline safety regulations for transmission line segments.

3.1. NEED DRIVERS

- **Safety:** Pipelines that are designated as transmission are subject to TIMP regulations due to operating at a higher stress or as critical supply upstream of PSE's distribution system. MAOP reconfirmation will enhance pipeline safety by validating our assumptions for safe operating pressures or replacing with more robust materials to lower the stress on the pipe.
- **Compliance:** The revisions to the federal code for transmission lines have specific compliance dates. MAOP reconfirmation must be complete for approximately 5.9 miles of transmission pipeline by 2028 and the complete 11.8 miles of pipeline and 15 regulator stations by 2035.

3.2. EQUITY

PSE evaluates equity in the planning process with consideration of the four core tenets of energy justice: Recognition Justice, Procedural Justice, Distributional Justice, and Restorative Justice in various steps of the process.

As specific studies are performed and projects proposed to further a business plan, planners review system, customers, and now equity data to recognize the specific customer burdens, whether there are highly impacted or vulnerable customers that are or will be affected by addressing the specific business need. Planners must prioritize where to focus their study each year, thus the full understanding of the historic and ongoing inequities for the business plan is extrapolated at this time and will mature over time with greater tools and data.

PSE is building process and tools to enable procedural inclusion in defining the need and solutions through engagement with specific communities and community based organizations, increasing understanding of local needs and consequences to inform specific study development as well as options to address need. Maturity in where and how this occurs will increase over the next several years. Business plans will be updated

as informed by this collective engagement to reflect broader equity benefits and burdens as engagement increases over time.

As specific projects are proposed, PSE's investment decision optimization tool captures equity benefits. An optimized portfolio of projects across many business plans ensures the distribution of benefits and burdens are spread across all segments of the community and aim to ensure that marginalized and vulnerable communities do not receive an inordinate share of burdens or are denied access to benefits. As an initial step, PSE leverages Customer Benefit Indicators ("CBI") and information established as part of the 2021 Clean Energy Implementation Plan ("CEIP") to identify an equity framework to evaluate system projects. The CBI approach was developed through an iterative process that was coordinated with the Equity Advisory Group. These CBI span the core tenets of energy justice and provide a framework to evaluate the comparative equity benefit of each solution alternative considered. Refer to Table 2 for a brief description of the CBIs that address equity and the applicable benefits for the Transmission Integrity Management program. PSE will continue to adjust and refine equity consideration in projects when necessary as the process continues to mature.

Projects will be evaluated on each CBI category and a total equity benefit score will be provided.

Table 2 - Equity Applicable Benefits

Customer Benefit Indicator	Description	Program Applicable Benefit
Customer Energy Savings	Solutions that lead customers to use less energy, which leads to less energy that must be purchased and potentially a reduction in planned system upgrades.	No
Greenhouse Gas Emissions	Solutions that lead to a reduction of greenhouse gas emissions, either directly or indirectly	Yes
Enables Cleaner Energy	Solutions that either directly integrate DER on the system or enable the grid to more readily accommodate future DER.	No
Air Quality	Solutions that either directly eliminate the source of a common pollutant or reduce the risk that could cause a common pollutant to increase, such as enabling Electric Vehicle or DER adoption	No
Resilience	Solutions that address major event outages or harden critical facilities to prevent catastrophic events from creating long duration outages.	No
Cost Reduction	Solutions that identify least cost alternatives and therefore reduce costs for all customers	No

Clean Energy Jobs	Solutions that increase clean energy jobs by furthering clean energy technology application, as described in the CEIP	No
Home Comfort	Solutions that deploy residential energy efficiency in either a targeted solution area or by leveraging load reduction from system wide energy efficiency installations	No

The program attempts to annually address transmission compliance requirements and is programmatically optimized based on total benefit value to cost. Specific program projects are identified based total benefit to cost with named communities receiving additional scored benefit based on vulnerable population designation and highly impacted community characteristics, ensuring investments are distributed appropriately to named communities.

Business plans in isolation do not address restorative justice, but continued planning process improvements which include considerations of data, tools, and documentation as well as operational practices will help to restore equity over time.

4. PLAN DETAIL

4.1. PLAN SIZE/POPULATION

PSE's transmission system consists of approximately 28 miles of transmission pipelines and 15 transmission stations. The covered segments that require integrity assessments are 4.8 miles and 5 stations. MAOP reconfirmation is required for 11.8 miles of pipeline and all 15 stations.

4.2. PROPOSED COMPLETION DATE

Integrity assessments are ongoing for transmission covered segments at seven-year intervals. The entire population of MAOP reconfirmation is scheduled to be completed by 2035, with half of the mileage to be completed by 2028.

4.3. SUMMARY OF PLAN BENEFITS

- **Safety:** The TIMP plan mitigates risk by performing MAOP reconfirmation to validate safe operating pressure for transmission lines or replacing with more robust pipe.
- **Code Compliance:** The plan mitigates our compliance risk by prioritizing resources to meet the changing code requirements.

4.4 PRIMARY iDOT CATEGORIES

PSE's employs an Investment Decision Optimization Tool (iDOT) to evaluate benefits of projects and optimize the annual portfolios for construction. The top primary iDOT Categories this plan addresses are:

- Health and Safety
- Stakeholders

Table 3 – iDOT Benefit

2025 Forecast Cost ($)[1]	2025 Benefit ($)	2025 Benefit / Cost Ratio
$2,900,000 (O&M)	$2,900,000	1

O&M programs cannot be calculated in iDOT. For O&M Benefit/ Cost Ratio it is assumed every dollar spent gives a benefit of the same amount. Capital expenditures are to be evaluated in iDOT as project alternatives are selected.

4.5. ESTIMATED COSTS

High level estimates were developed for the MAOP reconfirmation options and an analysis will be completed as part of the engineering studies in 2023 and 2024. Estimated costs for integrity assessments assume that in-line inspection will be required for all covered segments. If a transmission line is replaced with non-transmission piping, the integrity assessments would no longer be required.

The programmatic costs through 2035 will be a mix of CAP and O&M, ranging up to $111.2 million (CAP) for full replacement or $35.9 million (O&M) for all materials verification and pressure tests plus an additional $8.5 million (O&M) for periodic integrity assessments. See Tables 4 and 5 for cost estimates for each transmission pipeline and station.

[1] Includes Capital and O&M

Table 4 – Transmission Pipeline MAOP Reconfirmation Cost Options

Segment	Materials Verification and Pressure Test	Pressure Reduction	Replacement	Integrity Assessments (2024-2035)
Cedar Hills (RNG)	$1.3MM (O&M)	N/A	$2.5MM (CAP)*	N/A
Lynnwood-Greenwood	$2.6MM (O&M)	N/A	$7.6MM (CAP)	$0.6MM (O&M)
North Midway	$6.9MM (O&M)	N/A	$32.0MM (CAP)	$4.4MM (O&M)
Olympia	$3.7MM (O&M)	$250k (O&M)	$16.7MM (CAP)	$0.3MM (O&M)
South Seattle	$2.8MM (O&M)	N/A	$4.3MM (CAP)	$0.5MM (O&M)
Sumas (Generation)	$2.5MM (O&M)	N/A	$19.1MM (CAP)*	$0.6MM (O&M)

*Transmission by function, pipeline would remain transmission if replaced.

Table 5 – Transmission Station MAOP Reconfirmation Cost Options

Station	Materials Verification & Pressure Test	Replacement	Integrity Assessments (2024-2035)
Boeing-Frederickson GS (RS-2335)	$0.3MM (O&M)	$0.3MM (CAP)	N/A
Canyon Mega RS (RS-2606)	$0.2MM (O&M)	$0.3MM (CAP)	$0.2MM (O&M)
Chehalis GS (RS-1360)	$1.5MM (O&M)	$1.2MM (CAP)	N/A
Duvall GS (RS-2499)	$2.0MM (O&M)	$1.2MM (CAP)	$0.5MM (O&M)
Machias GS (RS-2418)	$2.0MM (O&M)	$1.2MM (CAP)	N/A
Monroe GS (RS-2512)	$0.2MM (O&M)	$0.2MM (CAP)	N/A
North Bothell TBS (RS-2242)	$2.0MM (O&M)	$3.0MM (CAP)	N/A
North Seattle GS (RS-1338)	$0.2MM (O&M)	$0.3MM (CAP)	N/A
North Seattle TBS (RS-1340)	$2.0MM (O&M)	$6.0MM (CAP)	$0.5MM (O&M)
Novelty Hill GS (RS-2585)	$1.5MM (CAP)	$5.0MM (CAP)	$0.5MM (O&M)
Redmond GS (RS-1342)	$2.0MM (O&M)	$5.0MM (CAP)	N/A
South Tacoma GS (RS-2302)	$0.2MM (O&M)	$0.1MM (CAP)	N/A
Sumas DR (RS-2755)	$0.8MM (CAP)	$2.0MM (CAP)	N/A
Sumas GS (RS-2754)	$2.0MM (CAP)	$3.0MM (CAP)	$0.5MM (O&M)
W Olympia GS (RS-1359)	$0.2MM (O&M)	$0.5MM (CAP)	N/A

5. ALTERNATIVES

5.1. SOLUTION ALTERNATIVES

Capital Replacement: Replacement of the transmission pipeline or station will allow for new pipe to be installed with the required records to justify its operating conditions. This option provides an opportunity to address other operational or integrity concerns. Also, this may allow for some transmission line segments to be replaced with non-transmission pipe.

Material Verification & Pressure Test: This option involves performing several digs along the transmission line so that either non-destructive or destructive testing can be performed to reconfirm material properties. Additionally, a hydrostatic pressure test is required. For this to be performed, the transmission line must be taken out of service for several weeks.

Material Verification & Engineering Critical Assessment: This option involves performing several digs along the transmission line so that either non-destructive or

destructive testing can be performed to reconfirm material properties. Additionally, perform an ECA following the requirements in the code to establish MAOP based on predicted failure of known anomalies from extensive history of in-line inspection and other records. This would typically be performed by an engineering consultant.

Pressure Reduction: Pressure reduction is being considered for the Olympia pipeline, but is not feasible for the other pipelines and stations.

Retirement/electrification: Retirement is an option, but PSE's transmission lines are typically critical feeds or provide needed resiliency. For single feed areas or constrained areas, retirement analysis would also require implementation of piped and non-pipe alternatives to offset the risk introduced by retirement.

5.2. FUNDING ALTERNATIVES

No Action: Without a plan in place, PSE would fail to meet compliance obligations with the federal code.

Increased Funding: With increased funding, a comprehensive plan can be implemented to meet the compliance timeframes set forth by the federal code.

Decreased Funding: With decreased funding, PSE would be at risk of failing to meet compliance obligations with the federal code.

5. PLAN DOCUMENT HISTORY

Date	Reason(s) for Update	Summary of Significant Change(s)	Modified By
9/7/2023	Initial program document and 2024 MYRP update	New document created	Parker Indorf

6. SUPPORTING DOCUMENTATION

Document Name
TIMP ANNUAL REPORT