

**EXH. SLT-11  
DOCKETS UE-22\_\_\_/UG-22\_\_\_  
2022 PSE GENERAL RATE CASE  
WITNESS: SUZANNE L. TAMAYO**

**BEFORE THE  
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,**

**Complainant,**

**v.**

**PUGET SOUND ENERGY,**

**Respondent.**

**Docket UE-22\_\_\_  
Docket UG-22\_\_\_**

**TENTH EXHIBIT (NONCONFIDENTIAL) TO THE  
PREFILED DIRECT TESTIMONY OF**

**SUZANNE L. TAMAYO**

**ON BEHALF OF PUGET SOUND ENERGY**

**JANUARY 31, 2022**

**Transport Network Modernization  
 Corporate Spending Authorization (CSA) - Non-Infrastructure or Facilities**

**Before getting started:** This CSA template is to be used for requests that are not related to infrastructure or facilities. Contact the Capital Budget team ([CSA-TeamMail@pse.com](mailto:CSA-TeamMail@pse.com)) for any clarification needed and review the [CSA Standard](#).

The sections provided expand / are not limited to one row. **Ensure you are providing adequate information and backup documentation to support your business case.** If a section or item is not applicable, enter N/A; if unknown, enter TBD. The gray fields are provided as prompts; do not leave these fields with instructions visible.

<b>Date Submitted:</b>	2/27/2020
<b>Officer Sponsor:</b>	Margaret Hopkins
<b>Completed By:</b>	Jason Weber
<b>Phase Gate:</b>	<b>Initiation/Planning to Design</b>

**I. Project Overview**

You may copy/paste this section from the Initiation Proposal form. Be sure to update each section as applicable, noting any changes from the previous request/Gate.

**Problem Statement:** PSE’s obligation to provide reliable electric and gas services to our customers hinges on our ability to deploy a modern reliable communication infrastructure for all operational traffic. PSE’s existing communication infrastructure has been very reliable over the last 15+ years; however, our present technology is ending its useful life expectancy and is experiencing an industry wide shift in direction. Yesterday’s Time Division Multiplexing (TDM) networks are being replaced by carrier grade Multiprotocol Label Switching (MPLS) platforms thereby positioning PSE to realize our goal of becoming a modern digital utility providing reliable electricity and gas to our customers. The MPLS network will have improved network monitoring and analytics compared to the TDM network. This will provided better visibility to the MPLS network and mission critical circuits (i.e. relay protection, Remedial Action Schemes (RAS), and SCADA) allowing for quicker repair and recovery time.

PSE’s telecom transport network exists throughout PSE’s service territory. The transport network provides communication links for the majority of PSE’s site-to-site data traffic, including all mission critical transmission line relay protection and RAS. The current networking equipment is end-of-life according to the manufacture. We are currently experiencing diminishing vendor support, examples noted below:

- No further Research and Development (R&D) from vendor
- Equipment is no longer manufactured
- Equipment is no longer repaired by vendor
- Vendor no longer provides Technical Assistance Center (TAC) access
- Equipment requires costly 3<sup>rd</sup> party hardware repair and TAC support
- Component replacement to maintain reliable network operation is dependent upon refurbished hardware

This equates to a considerable reliability risk for PSE in the following areas:

- Transmission line Relay Protection
- Remedial Action Schemes (RAS)
- Electrical and Gas Supervisory Control And Data Acquisition (SCADA)
- Ability to execute on Grid Modernization efforts / Smart Grid

The current network utilizes TDM technology, which is rapidly becoming obsolete and offers limited bandwidth, limits our ability to deliver enhanced capabilities. TDM does not support newer end-user system protocols compared with newer MPLS technologies.

As PSE migrates towards newer technologies, our current TDM network will not be able to support this transition. Upgrading to a newer MPLS network will:

- Mitigate diminishing vendor supply and repair of TDM equipment.
- Avoiding operational cost required to maintain discontinued end-of-life equipment
- Enable PSE's transport network to scale and adapt to evolving future smart grid capabilities.

Out of necessity, PSE telecom began a TDM to MPLS conversion in 2014. At the current spend rate it was estimated a full modernization from TDM to MPLS could take between 12-15 years to complete. The goal of this CSA request is to take an accelerated approach towards upgrade and overhaul of the transport network in response to increasing technology demands. During 2019, the team completed the initiation and planning phase and will start the design phase in 2020.

Future Vision:

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To modernize our telecom network so it is capable of leveraging today's technology while supporting the needs of our customers to safely and efficiently receive electricity and gas.

Proposed Solution:

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Build a transport network that invests in digital capabilities. Which will ultimately replace PSE's existing and vulnerable transport network while providing continued support for existing legacy applications.

Improvements include:

- Tools for system monitoring and statistic reporting will enable PSE to respond to customers' service interruptions with increased efficiency.
- System management software will simplify key operator tasks and complexity required to provision end-to-end service connections resulting in increased system operator efficiency and gas and electric customer system reliability through enhanced automated intelligence.

Known neighboring utilities utilizing MPLS for telecom transport:

- Ameren
- Avista
- Chelan County PUD

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- Grays Harbor PUD
  - Hawaiian Electric
  - Idaho Power
  - Northwestern Energy
  - Pacific Corp
  - PGE (Portland General Electric)
  - Salt River Project
  - Tacoma PUD
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Primary ISP Alignment:

**Financial:** Strategic Five-Year Plan

**Customer:** Customer experience will be enhanced because PSE is investing in greater system reliability and information integrity for our critical communication assets, thereby providing reliable services for the communities PSE serves.

**Process & Tools:** System reliability and integrity, improve safety and security of operating systems, extract and leverage existing technical assets.

**People:** Develop/Retain best employees, innovation and continuous improvements  
 Safety: N/A

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Data Governance Considerations:

Straightforward and well understood     
  Complex and well understood     
  Complex and not well articulated

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OCM Considerations:

Impacted Users (Internal):  
 < 100       < 500       > 500  
 Impacted Customers (External):  
 None     < 100K Electric or < 1K Gas     > 100K Electric or >1K Gas  
 Internal Organizational Impact:  
 1 Dept or less     2-5 Dept     > 5 Dept / Business Platform / Enterprise

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Project Complexity:

Straightforward and well understood     
  Complex and well understood     
  Complex and not well articulated

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Cost Estimate Maturity Score:

**Class 4 - Concept Evaluation / Preliminary Budget**    [>>Review the Cost Estimates references here for scoring](#)

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Expected Start Date If Funded:

1/2/2020

Expected Project Duration:

5 Years

## **II. Phase Gate Change Summary**

*Include a summary description of changes, including reasons and justification since the last submission / Phase Gate. If details are included in a supporting document, include a link to that document and indicate section or guidance, as applicable.*

 Scope: N/A

 Budget - Initial Estimate: N/A

 Budget - Net of Changes: N/A

Schedule:	N/A
Benefits:	N/A
Risk Profile:	N/A

### III. Key Schedule and Financial Information

**Estimated Five Year Allocation:** Enter values in the cells below for years anticipated, up to five years, plus any expected future years. Ongoing O&M begins after project close-out.

Category:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Capital (incl. contingency)	\$1,000,000	\$1,500,000	\$1,589,000	\$2,589,000	\$2,589,000	\$2,089,000	\$11,356,000
Capital – Maintenance	\$0	\$89,000	\$89,000	\$89,000	\$89,000	\$89,000*	\$445,000
Project-related O&M (non-OCM)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project-related O&M (OCM)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OMRC (T&D only)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ongoing O&M	\$0	\$0	\$89,000	\$178,000	\$267,000	\$356,000	\$890,000
Cash O&M Benefits	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Payback in Years = N/A			Years = Total Costs / Annual Cash Benefits				

**\*Note: Annual Maintenance Costs are trued up at the beginning of each year. Year 6 maintenance costs are to pay for all routers/devices deployed in year 5.**

**Annual Cash Benefits Summary by Department:** Add/remove rows, as needed. Please insert hyperlink to Benefits Realization Plan for further detail in the Supporting Documents section below.

Department Name	Annual Amount	Benefit Description
N/A		

**Ongoing Annual O&M by Department:** (e.g., maintenance, FTEs, cloud storage, etc.)  
 Add/remove rows, as needed.

Category	Year 1 & 2	Year 3	Year 4	Year 5	Year 6	Year 7
IT Shared Services	\$0	\$89,000	\$178,000	\$267,000	\$356,000	\$445,000

**Non-Cash Benefits / Future Cost Avoidance:**

Upgrading to an MPLS network aligns PSE with our goal of transitioning to emerging digital technologies. A new MPLS network would assist in avoiding high costs related to finding refurbished and often unreliable equipment to maintain our current TDM network. As previously stated, this technology is becoming outdated industry wide.

### High-Level Schedule

**Guidance:** The following is an example of a high level schedule. Timeline detail may be shown on a monthly, quarterly or yearly (etc.) basis, and should reflect major phases and high level milestones.

**Options:** Utilize the below Visio template – OR – insert a similar view (e.g., MS Project/Primavera rollup). If you insert a similar view, delete the below template and instructions.

To update the below timeline, double click on the image and change the dates in the Start and Finish columns. Once you click outside the image, Visio will close. It may take 30 seconds to a minute after you have clicked outside of the image for the bars to reflect the revised dates.

Line #	Lifecycle Phase	Start	Finish	2019				2020				2021				2022				2023				2024				2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	Initiation	1/2/2019	7/4/2019	█																								
2	Planning	7/5/2019	12/31/2019					█																				
3	Design	1/1/2020	12/22/2020					█																				
4	Execution	2/1/2021	9/30/2024									█																
5	Close-out	10/3/2024	11/29/2024																	█								

### IV. Data Governance

All projects require a discussion with the Data Services Data Governance (DG) Manager, email [dataservices@pse.com](mailto:dataservices@pse.com) to coordinate. Consider the project’s data needs such as data quality, metadata, data

integration, data sharing, and data lifecycle management. DG can help you to minimize project risk and improve your estimates when you **visualize, store or move data**.

DG Controls	Description
Data Quality	N/A
Data Integration	N/A
Metadata	N/A
Data Lifecycle	N/A
Data Sharing	N/A

### V. Project Alternatives

**Project Alternatives Assessment:** Identify alternatives assessed with this project. If a separate Business Needs and Alternatives document is created, utilize this section to identify critical/top alternatives, and include a link to the supporting document for further detail. Add/remove rows as needed.

Alternative	Pros	Cons	Cost	Duration
Do Nothing	PSE will not allocate resources time and funds to implement an MPLS network.	PSE will continue to use and invest in our existing legacy TDM system, which is a becoming antiquated.		Until PSE chooses another transport network option, cost likely to increase every passing year.
Continue to use annual refresh budget to sustain a minimal deployment.	Costs for building the network would be spread out over a longer period of time.	It will take 12 – 15 years to upgrade PSE’s Transport network with increasing annual costs while maintaining two	This method is expected to cost more over the long run maintaining	12 – 15 years.

Alternative	Pros	Cons	Cost	Duration
		different types of technology on our transport network (TDM and MPLS). We are currently experiencing unreliable quality control repairs by 3 <sup>rd</sup> party vendors on our TDM equipment.	two different technologies.	
Several vendors were considered during an evaluation selection process. The closest alternative was SEL ICON.	By comparison, SEL ICON may have been an easier deployment.	SEL ICON is based upon a SONET ring network. It uses proprietary protocols, which could introduce integration risk with other systems. Additional design requirements were required to move from a mesh network to a ring network. SEL ICON could be integrated into an MPLS network, which would require an additional router and associated cost per site.	Comparative	

**VI. Risk Management Summary**

Identify anticipated risks associated with this project. Consider Project Dependency, Project Timing, Resourcing and Regulatory risks. When the project risk register is created, utilize this section to identify critical/top risks and include a link to the risk register in the Supporting Documents section below. Add/remove rows as needed.

Risk	Likelihood	Impact of Occurrence	How Monitored	Mitigation
Cooperation among various PSE teams to coordinate resources. (Substation Operations, Relay Protection, Network, Technicians, Load Office, System Operations, Gas Operations, EMS, IT Facilities)	Medium	High	Resource allocation tool.	Meet with the various departments in Q1/Q2 of 2020 to discuss their needed resources and scheduling of work.
Vendor product availability	Medium	High	Coordination with vendor management team.	Project planning and ordering for upcoming deployment.  Maintain proper inventory of parts in the PSE store warehouse.

Risk	Likelihood	Impact of Occurrence	How Monitored	Mitigation
Engineer and technician knowledge and understanding of new network and technologies	Medium	High	Will consult with Nokia and SCI on training options	Nokia will provide training. The consulting firm of SCI will also provide information and guidance during the execution phase
Resources availability including technicians and engineers to design, and migrate services.	High	High	Project planning and monitoring competing projects that could reduce available resources.	Confirm PSE resource availability and/or work with consultant companies to provide support.
TDM network has diminishing vendor supportability and new product production.	Medium	High	Inventory control to track the limited hardware available	Expedite deployment of MPLS network.
Insufficient power and rack space in comm rooms and/or substation control houses	Medium	High	Sites visits to comm sites and substations	IT facilities to review the DC batteries deployed at comm sites & substations. Deploy new DC batteries or upgrade existing DC batteries. Add additional relay racks.
Integration of new MPLS network traversing existing microwave system.	Low	Medium	While working with our consulting firm we will create test plans and implement them in our new lab prior to field production.	Upgrading microwave software to support synchronized timing. Include additional GPS timing equipment throughout the network.
Our current ability to accurately anticipate overheads is a financial concern.	Medium	Medium	Monthly reports.	CSA BA will be encouraged to monitor burn rate and provide appropriate monthly reports.



## VII. Supporting Documentation

Insert hyperlinks to the documents or embed a copy of a document in the sections below. If you embed a document, remove placeholder rows provided. If you choose to provide hyperlinks, ensure access to the referenced location is setup/provided in advance. Add/remove rows, as needed.

*\*Not required for projects less than \$1 million, but may be required by your aligned PMO.*

<b>Cost Estimating and Budget:</b>	<a href="#">Transport Network Modernization - IT Cost Estimate</a>
<b>Business Needs and Alternatives*:</b>	See chart above
<b>Benefits Realization Plan:</b>	<a href="#">Transport Network Modernization - Benefits Plan</a>
<b>Project Audit Checklist:</b>	<a href="#">Project Audit Checklist</a>
<b>OCM Sizing Worksheet*:</b>	<a href="#">OCM Sizing Worksheet Transport Network Modernization</a>
<b>Risk Register*:</b>	<a href="#">Transport Network Modernization - Risk Log</a>
<b>Cost Estimation Classification Document*:</b>	<a href="#">Transport Network Modernization - Cost Estimation Classification</a>

## VIII. CSA Approvals


Add/remove rows as needed in the table below. All impacted Benefit Owners must approve the CSA at each Phase Gate for projects greater than \$1 million. Email approval is acceptable, send copies to the Capital Budget team at [CSA-TeamMail@pse.com](mailto:CSA-TeamMail@pse.com). For a project in the Strategic Project Portfolio (SPP) review the [Escalation Criteria](#) for appropriate escalation and approvals.

For guidance on approval authority levels, follow [CTM-07 Invoice Payment Approval](#).

Note: The Project Manager is responsible for ensuring full required approval is obtained, sending proof of approvals to the Capital Budget team, and maintaining the final signed copy with the project documentation.

*\*Not required for projects less than \$1 million.*

Prepared By	Title	Role	Date	Signature
Brad Stevenson	IT M2 Telecom	Contributor	11/25/2019	
Chad Nelson	IT Architect Networks	Contributor	11/25/2019	
Casey Hutchinson	Sr Telecom Engineer	Contributor	11/25/2019	
Joel Snow	Sr IT Project Manager	Contributor	1/24/2020	

Approved By	Title	Role	Date	Signature
Jason Weber	Mgr Information Technology (M3) Energy Control Sys/Telecomm	Sponsor	2/7/2020	
Jeff Neumann	Dir IT Infrastructure Svcs, IT Infrastructure	Director	2/7/2020	 RE Review Requested - Transport Network Modernization - CSA.msg
Margaret Hopkins	VP & Chief Information Officer	Officer		
		Benefit Owner*		

Please direct any questions to either:

1. The Capital Budget team at [CSA-TeamMail@pse.com](mailto:CSA-TeamMail@pse.com), or
2. The Enterprise Project and Performance Project Practices team at [EPP-ProjectPracticesTeam@pse.com](mailto:EPP-ProjectPracticesTeam@pse.com)