Exh. HEN-11
Dockets UE-220066, UG-220067, UG-210918
Witness: Hanna E. Navarro

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**DOCKETS UE-220066, UG-220067, UG-210918 (consolidated)**
In the Matter of the Petition of **PUGET SOUND ENERGY** **For an Order Authorizing Deferred Accounting Treatment for Puget Sound Energy's Share of Costs Associated with the Tacoma LNG Facility**	

EXHIBIT TO TESTIMONY OF

HANNA E. NAVARRO

STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

PSE Response to UTC Staff Data Request No. 194, Attachment A

July 28, 2022

WUTC - Planning Process and future thoughts regarding benefits

Catherine Koch, Krista Malmgren, Jens Nedrud, Brian Tyson, Reid Shibata, Niecie Weatherby, Jeff Kensok

April 25, 2022

PUGET SOUND ENERGY

WUTC Questions

1a. Can you run through examples of how various qualitative benefits (such as Stakeholder benefit, platform for success, etc.) are quantified into dollars using the benefit calculation?

1b.Can you show examples of how risk benefit is calculated and the B/C ratio?

1c. Can you run through an optimization scenario of a recent portfolio where we can see how all these benefit calculations and other inputs turn into a final portfolio?

2a. We would like to have an informal conversation about any new benefits PSE is considering, particularly the 'equity' and 'named population' benefits.

i. How would a qualitative benefit such as 'equity' be assigned a weight, quantified, what data sources would be used, etc?

3. Grid modernization Exh CAK-5 Appendix C- we would like to have an informal conversation about how you are thinking about equity within the grid modernization strategy, and if any of those concepts carryover to the pipeline modernization plan.

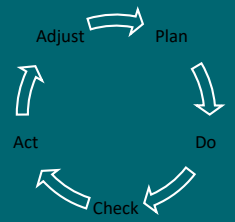
4. PBR Performance metrics- As they relate to named communities and equity, how do you see PSE's proposed performance metrics being used to influence the capital planning process? How do you see those metrics being used to evaluate if/how a completed project succeeded in achieving an equitable outcome?

PSE PUGET SOUND ENERGY

3. Grid modernization Exh CAK-5 Appendix C- we would like to have an informal conversation about

how you are thinking about equity within the grid modernization strategy,

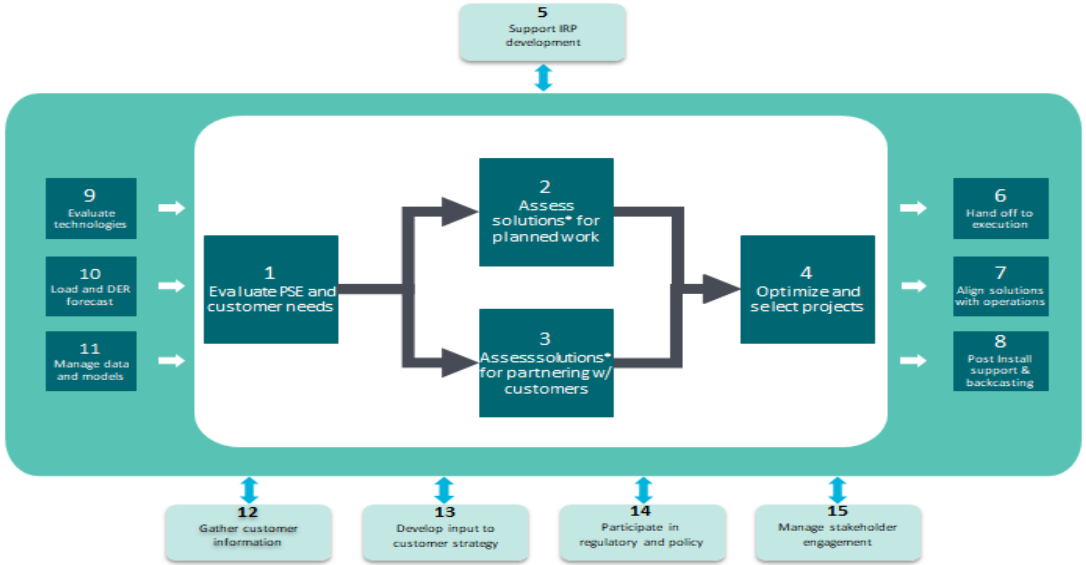
and if any of those concepts carryover to the pipeline modernization plan.



- Picture of the best grid and pipeline that meets community, customer, and PSE needs as the future approach's.
- It sets a tone for thinking about each step in the process
  - Plan – where should we invest resources; how should we be informed to make different choices
  - Execute – how do we manage the work; how do we make tradeoffs when needed; how do we behave when constructing; how do we pick routes
  - Operate and maintain – how do we operate differently in different areas; how do we prioritize actions

PSE PUGET SOUND ENERGY

Energy Delivery System Planning (DSP) Operating Model



*Solutions are Wired & Pipes/ NWA and NPA/Hybrid alternatives.

ET
ND
RGY

PSE's Diversity, Equity, and Inclusion ("DEI") Playbook maps a 10 year journey that focuses on 4 areas.

COMMUNITY
Supporting our communities is an important part of PSE's operations and a demonstration of our values. PSE's cash and in-kind donations to community causes support our business and strengthen our relationships. We make meaningful contributions to causes that directly benefit people of color and historically underserved communities. Our brand and customer-facing messages authentically reflect the voices and experiences of the customers we serve.

CUSTOMERS
Because our customer base grows more diverse by the minute, we're continually evaluating our products, services, brand and customer-facing messaging to ensure that we're meeting the needs of all of our customers, and delivering options that speak to them and add value to their lives. We seek to understand our customer's needs. The perspectives of historically underserved customers inform our decisions
and investments.

PEOPLE
We cultivate an environment and culture that is inclusive. Our people are valued for their unique backgrounds, points of view, expertise and experiences. Our workforce reflects the communities we serve and we live our values. We all have a voice. We do what's right. We have each other's back. Our people respect each other, leverage diverse perspectives through teamwork and recognize each other's accomplishments.

SUPPLIERS
It's simply good business to work with diverse suppliers. Cultivating a diverse supplier base yields a diversity of perspectives, experiences and expertise that benefits us all and helps strengthen the economic infrastructure of our communities. PSE's supplier development program provides equitable access to purchasing opportunities for a diverse array of minority-owned, women-owned and small businesses. These businesses are our partners. We understand their needs and have developed mutually beneficial relationships.

PSE PUGET SOUND ENERGY

Equity considerations in pipeline modernization will help ensure safe, reliable and affordable transition to clean energy

- Methane emissions and other outdoor air quality issues
- Incorporate equity measures in future project evaluation as defined by DSP
- Ensure all voices are heard and concerns understood
- Understand impacts and ensure equity on low carbons fuels

PUGET SOUND ENERGY

1a. Can you run through examples of how various qualitative benefits (such as Stakeholder benefit, platform for success, etc.) are quantified into dollars using the benefit calculation?

1b.Can you show examples of how risk benefit is calculated and the B/C ratio?

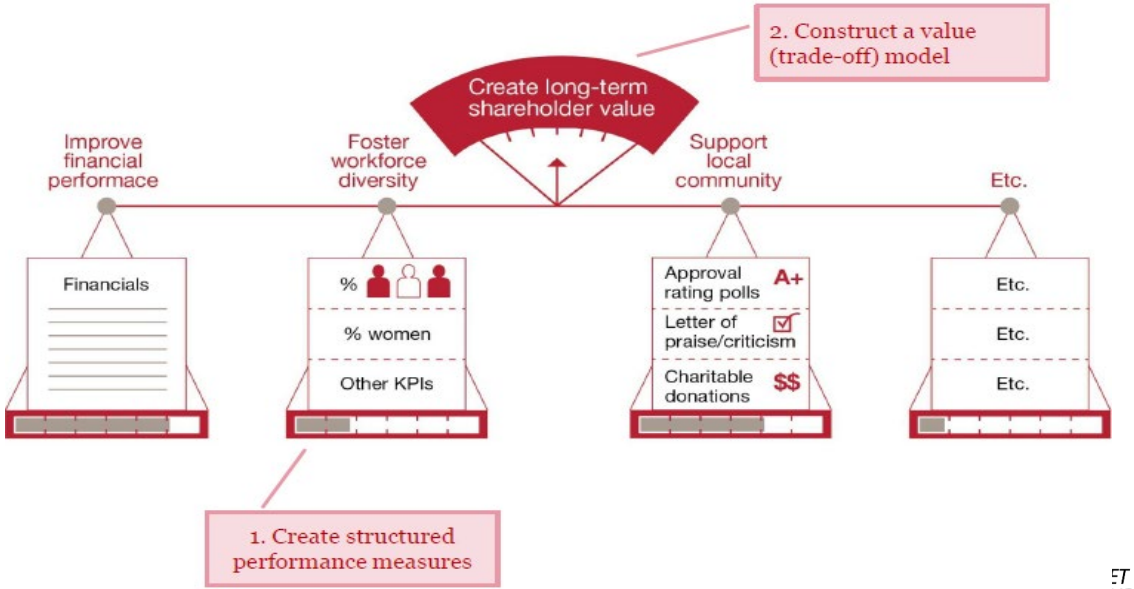
1c. Can you run through an optimization scenario of a recent portfolio where we can see how all these benefit calculations and other inputs turn into a final portfolio?

- PSE will show the iDOT tool for context and then walk through quantification examples using a spreadsheet.
  - Process that establish values and calculation
  - iDOT calculations happen within the program so hard to demonstrate
  - Walk through Stakeholder benefit
  - Walk through Platform for success has 4 benefits
  - Walk through Risk – will benefit be realized, will cost change
  - Optimization run for 2023 then show outcome in spreadsheet
    - Sensitivities

PSE PUGET SOUND ENERGY

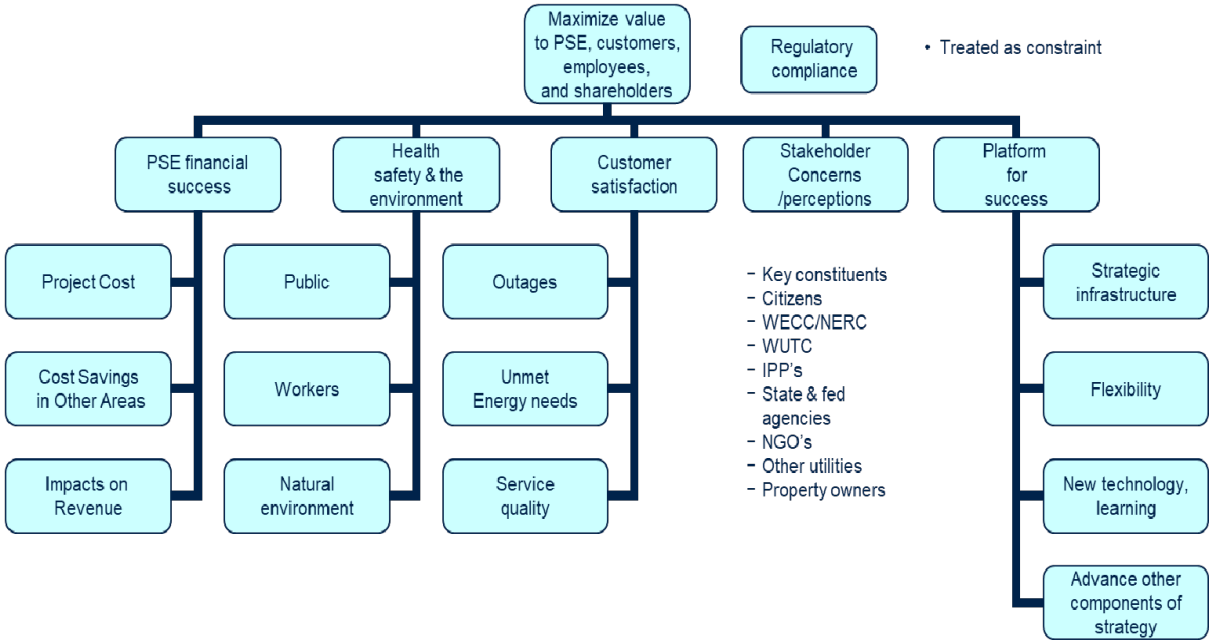
Multi-attribute utility analysis (MUA) is at the root of the valuation logic for intangible benefits

This is an example of MUA – our benefits are different



PSE SOUND ENERGY

A benefit hierarchy captures qualitative and quantitative benefits which are weighted by important to the business



PUGET SOUND ENERGY

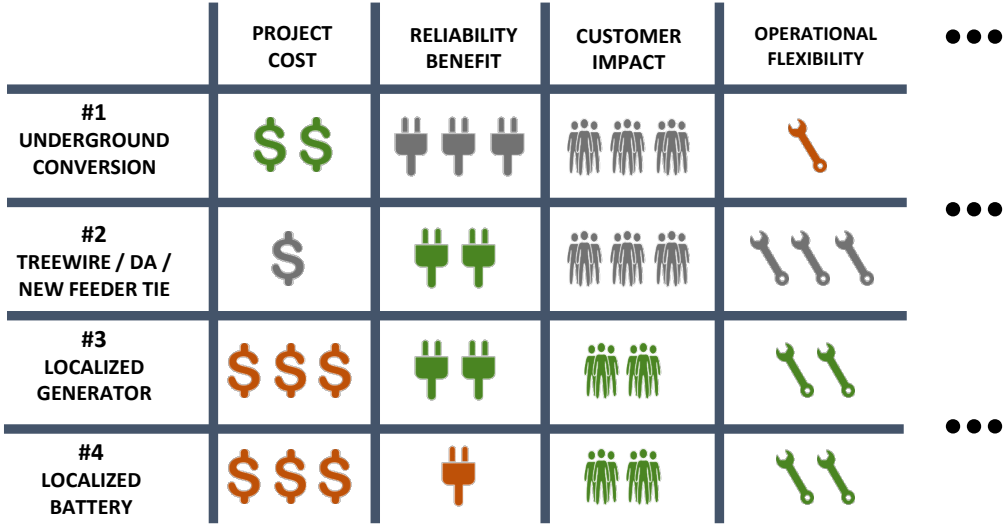
Jump to tool here

Guidance documents

Spreadsheet for stakeholder and platform for success

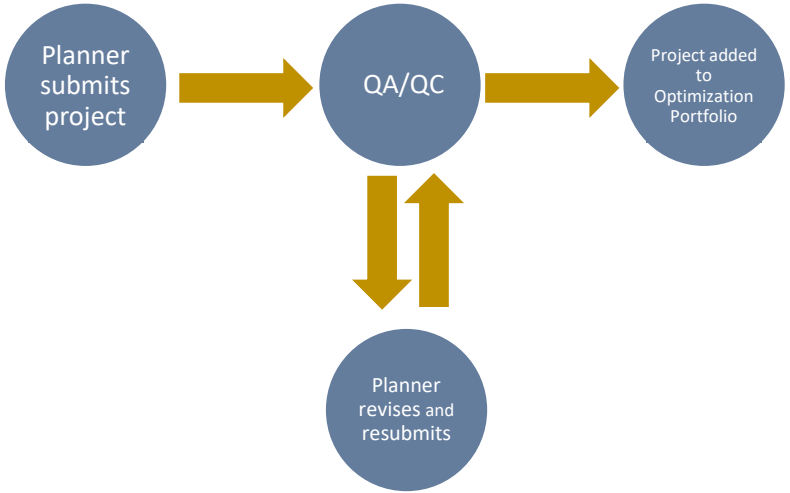
PSE PUGET SOUND ENERGY

iDOT can be used to determine the best alternative for a given need as well.



PUGET SOUND ENERGY

There is a robust QA/QC process that ensures data and values have been entered consistent with guidance and all justification documents attached.



PUGET SOUND ENERGY

Jump to tool here

Optimization run

PUGET SOUND ENERGY

2a. We would like to have an informal conversation about any new benefits PSE is considering, particularly the 'equity' and 'named population' benefits.

i. How would a qualitative benefit such as 'equity' be assigned a weight, quantified, what data sources would be used, etc?

- Equity will be defined by burdens/disparities and will lean on ongoing CEIP work with the Equity Advisory Groups (EAG) Equity Assessment incorporating stakeholder and named community feedback.
- Identified benefits will relate to burdens/disparities and contribute to equity ideas
- Four steps in the planning process where equity can be considered
- Enhanced complex process to incorporate stakeholder inputs into planning tools that result in the expected outcome

PSE PUGET SOUND ENERGY

Align with CETA facilitated "Equity" thinking; Equity won't be one benefit but instead defined by the specific burdens

CETA Category	Customer Benefit Indicators	Metric
Energy Benefits, Non Energy Benefits and Burden Reduction	Improved participation in clean energy programs from highly impacted communities and vulnerable populations	Increase percentage of participation in energy efficiency, demand response and distributed resource programs or services by PSE customers within highly impacted communities and vulnerable populations Increase percentage of electricity generated by distributed renewable energy projects
Non-Energy Benefits	Increase in quantity and quality of clean energy jobs	Increase quantity of jobs based on: • Number of jobs created by PSE programs for residents of highly impacted and vulnerable populations • Number of local workers in jobs for programs • Number of part-time and full-time jobs by project Increase quality of jobs based on: • Range of wages paid to workers • Additional benefits offered • Demographics of workers
Non-Energy benefits	Improved home comfort	Increase total dollar in NPV in NEI benefits for EE programs.
Burden reduction	Increase in culturally- and linguistically-accessible program communications for highly impacted communities and vulnerable populations	Increase outreach material available in non-English languages
Cost reduction	Improved affordability of clean energy	Reduce median electric bill as a percentage of income for residential customers Reduce median electric bill as a percentage of income for residential customers who are also energy-burdened
Environment	Reduced greenhouse gas emissions	Reduce PSE-owned electric operations metric tons of annual CO2e emissions Reduce PSE contracted electric supply metric tons of annual CO2e emissions
Environment	Reduction of climate change impact	Increase avoided emissions times social cost of carbon
Public Health	Improved outdoor air quality	Reduce regulated pollutant emissions (SO2, NOx, PM2.5)
Public health	Improved community health	Reduce occurrence of health factors like hospital admittance and work loss days
Resilience	Decrease frequency and duration of outages	Decrease number of outages, total hours of outages and total backup load served during outages using SAIDI and SAIFI Reduce peak demand through demand response programs
Risk Reduction Energy Security	Improved access to reliable clean energy	Increase number of customers who have access to emergency power

PSE PUGET SOUND ENERGY

PSE's ongoing work for the 2023 biennial CEIP update

- **Incorporate the analysis** contained in the **2023 Electric Progress report and results of the 2021 All-Source and 2022 Targeted DER RFPs**
- Develop the building blocks for an **equity assessment for 2023 CEIP update**:

Continue to develop **data sources for CBIs and baseline data**

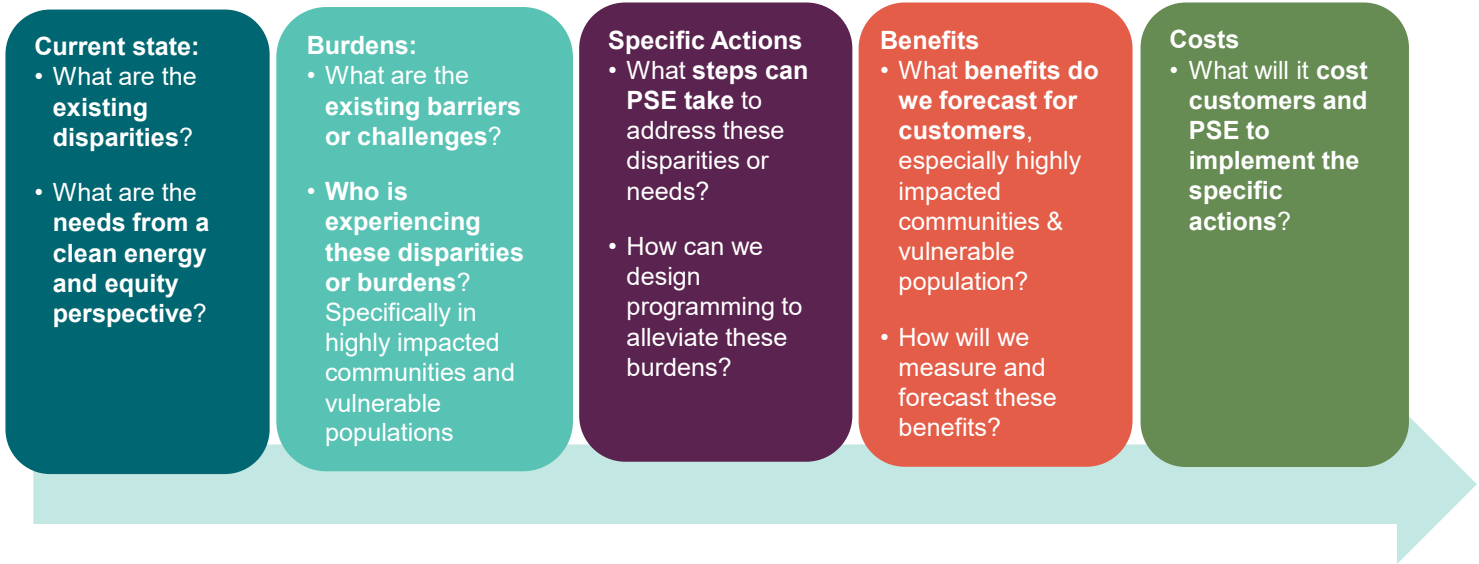
Assess and measure disparities within existing programs and **understand root factors causing disparities**

Engage highly impacted communities and vulnerable populations **on program design**

Report on progress for next CEIP:
- **Potential CBIs on**:
  - Fish and wildlife impacts
  - Wildfire impacts
  - Sense of pride and self sufficiency
  - Indoor air quality
- **Methodology for scoring and weighting CBIs**

PSE PUGET SOUND ENERGY

Working with the EAG on the equity assessment



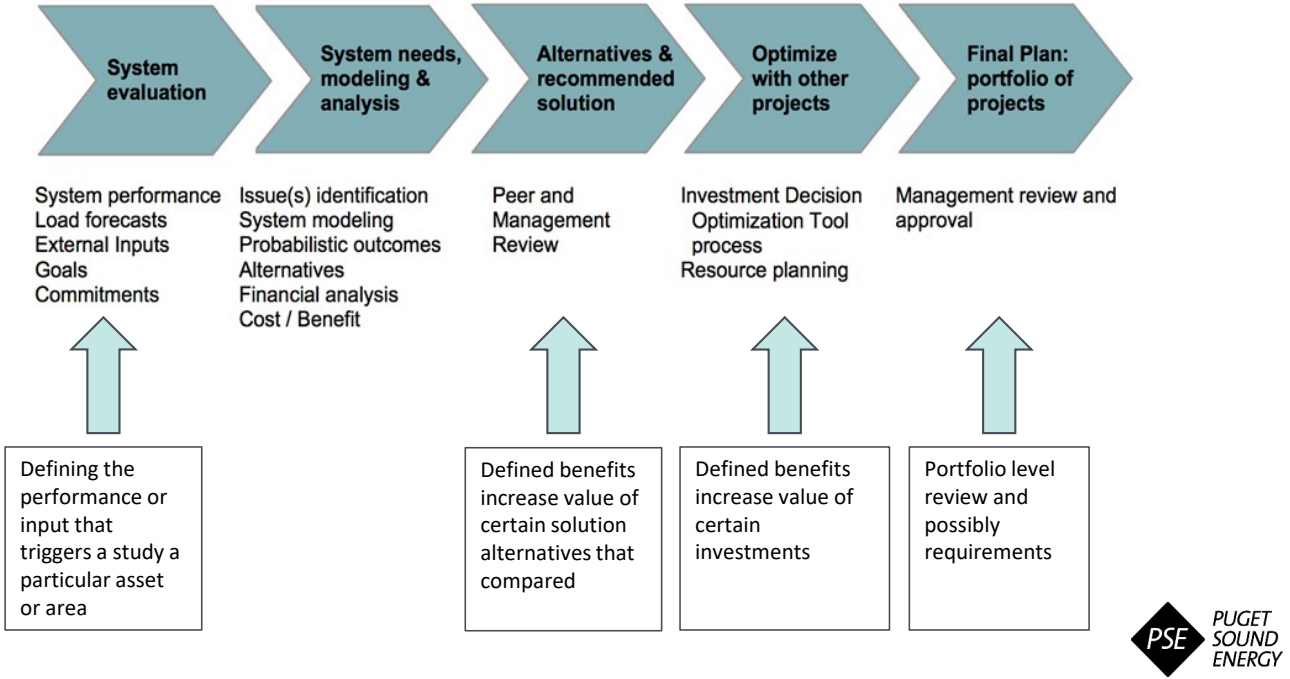
PUGET SOUND ENERGY

Additional benefits that will be considered can support CEIP type themes

Additional or relatable benefits	Objective
Methane/GHG Reduction	Environmental safety and public health
DEI culture	Drive roadmap
Resilience - critical facilities	Ensure critical facilities are available in extreme events
Leverage [AMI] assets	Drive innovation
Stakeholders - add VP, HIC, others	Support at risk communities
Reduced time to improvement	Increase speed to improved performance
Job creation or sustainment	Create or support jobs; Drive DEI roadmap
Enable renewable energy source	Reduce costs to integrate
Enable local climate action plan	Drive what matters to unique communities
Asset health / integrity risk reduction	Reduce system risk
Wildfire risk reduction	Reduce community health and safety
Decreases third party damage risk	Reduce emissions and public safety
Contributes to clean energy targets	Directly supports resource targets set in 2021 IRP
Contributes to decarbonization targets	Directly supports BNZ commitment relative to natural gas
SAIDI for HIC and VP, all outages, single year	Directly supports CEIP resiliency
SAIDI for HIC and VP, IEEE defined	Directly supports CEIP resiliency
SAIFI for HIC and VP, all outages, single year	Directly supports CEIP resiliency
SAIFI for HIC and VP, IEEE defined	Directly supports CEIP resiliency
Service Quality Indicies	Meet SQIs
Other metrics	TBD

PSE PUGET SOUND ENERGY

Four steps in delivery system planning process where “Equity” considerations can be incorporated.



PSE PUGET SOUND ENERGY

"Equity" may be considered differently in each step

System Evaluation

Current thresholds defined in planning guidelines. For example:
- Capacity – i.e., growth rate in an area, large new customer loads, asset utilization thresholds, equipment ratings and load limits
- Reliability and Resiliency – i.e., CMI thresholds; CEMI, complaints, SAIDI, SAIFI
- Define impact with new thinking (i.e., impact of an outage or length such as in ability to get to a job, remote learning, cost of loss of food) may change the thresholds to something lower in particular circuits or pipelines

Alternatives & Recommended solutions

If a need is in a named community, alternatives with additional considerations may be important. For example:
- One alternative may be to add capacity, while another may be to pursue demand response.
- If costs are equal and reliability is the same, then cost to the customer that considers energy burden may drive a demand response alternative that lowers customers overall usage and therefore bills.

Optimize with other projects

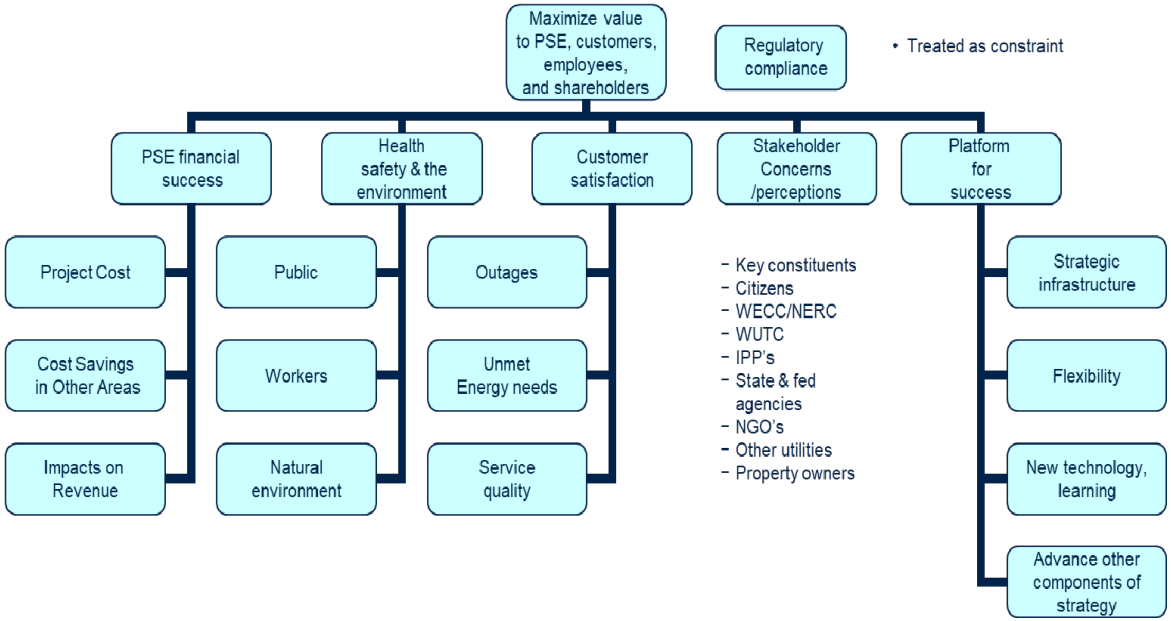
Benefits that mimic community burdens or equity disparities can be included. Example of options for integration:
- Benefit(s) tied to a specific burden or disparity in a "named community" are included along with its own weight per the Multi Utility Attribute Theory
- A benefit is called "named community" and like the stakeholder benefit a project gets extra points by scoring that benefit.

Final Plan

Review overall portfolio benefits relative to burdens; is there enough investment to drive a particular goal or strategy related to key CBI's or other identified disparities.
- Does the portfolio deliver enough "non-wires" MW to support CETA (i.e., 22 MW by 2025)
- Does the portfolio equitably improve SAIDI and SAIFI in named communities.

PSE PUGET SOUND ENERGY

A benefit hierarchy captures qualitative and quantitative benefits which are weighted by important to the business



PSE PUGET SOUND ENERGY

Considerations for monetizing benefits depends on how we incorporate the benefits

Optimize with other projects

Benefits that mimic community burdens or equity disparities can be included. Example of options for integration:

- Benefit(s) tied to a specific burden or disparity in a "named community" are included along with its own weight per the Multi Utility Attribute Theory
- A benefit is called "named community" and like the stakeholder benefit a project gets extra points by scoring that benefit.

Stakeholder Types	Weights
--	0
Citizens	1
Property Owners	1
Media	1
WECC/NERC	2
WUTC	2
IPPs	1
State and Federal Agencies	2
NGOs	1
Other Utilities	1
Cities	2
Other Key Constituents	1

Manageable and meaningful benefit impact

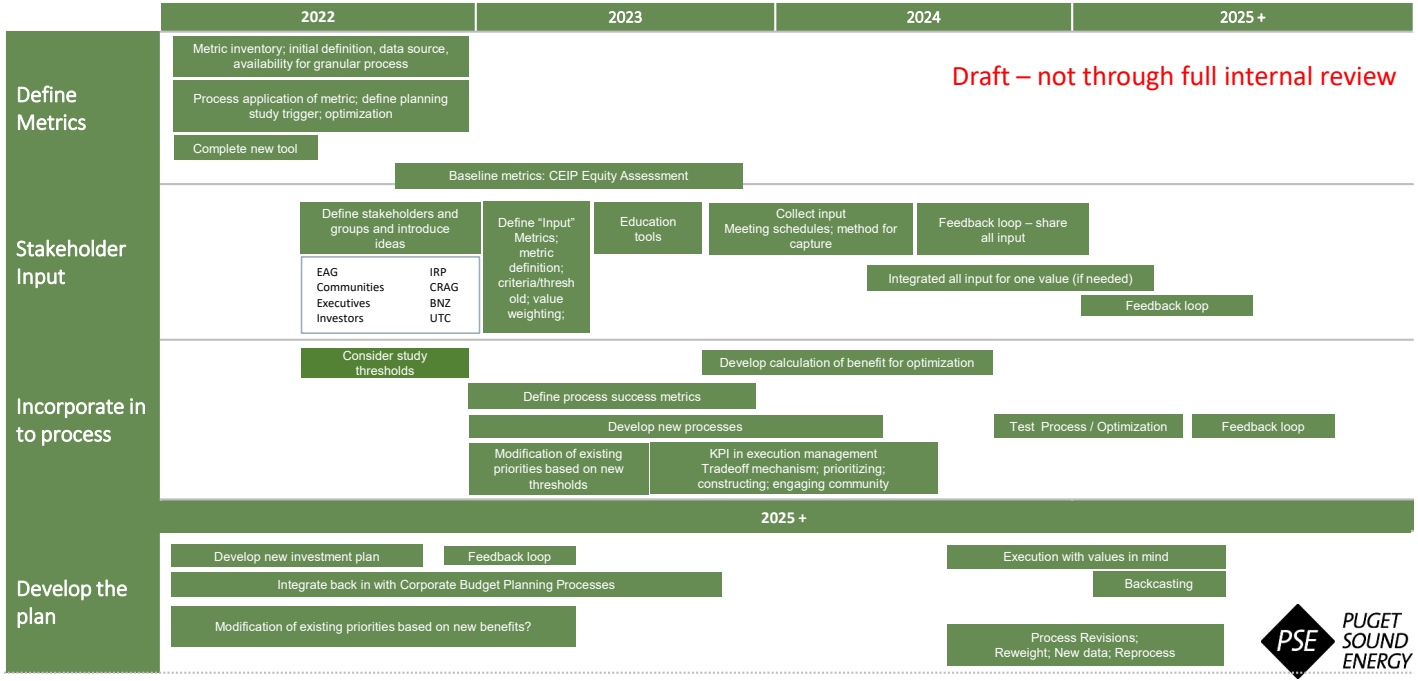
- Have to be a to manageable number of benefits.
- Have to able to attribute to a specific project / asset
- Meaningful if significant differential to result in final plan
- Leverage current monetizing approach; establish benchmark for relating all benefits

Sources

- CEIP CBI data and data sources
- Expert studies and research
- Internal customer data systems or map systems
- Regulatory reporting calculations
- Stakeholder process

PSE PUGET SOUND ENERGY

Enhancing Delivery System Planning Process with new benefits reflecting equity and closing the gap on disparities



4. PBR Performance metrics

As they relate to named communities and equity, how do you see PSE's proposed performance metrics being used to influence the capital planning process?

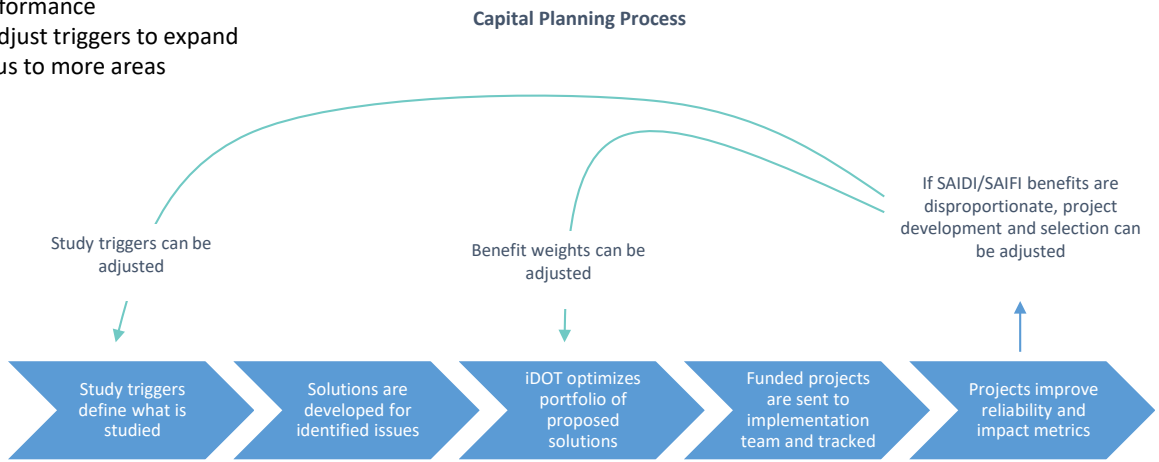
How do you see those metrics being used to evaluate if/how a completed project succeeded in achieving an equitable outcome?

- PSE proposed metrics
  - Total SAIDI and SAIFI for named communities
  - SQI-3 similar SAIDI and SQI-4 similar SAIFI for named communities
- Tracking HIC and VP separately in CEIP reporting
- Reshape trigger thinking
- Disparity monitoring

PSE PUGET SOUND ENERGY

Performance metric incorporation today

1.Understand difference in performance
2.Adjust triggers to expand focus to more areas

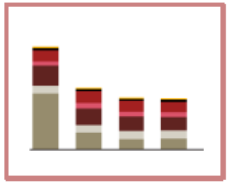


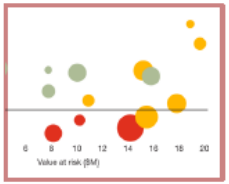
PSE PUGET SOUND ENERGY

Appendix

PUGET SOUND ENERGY

iDOT helps standardize the approach to planning

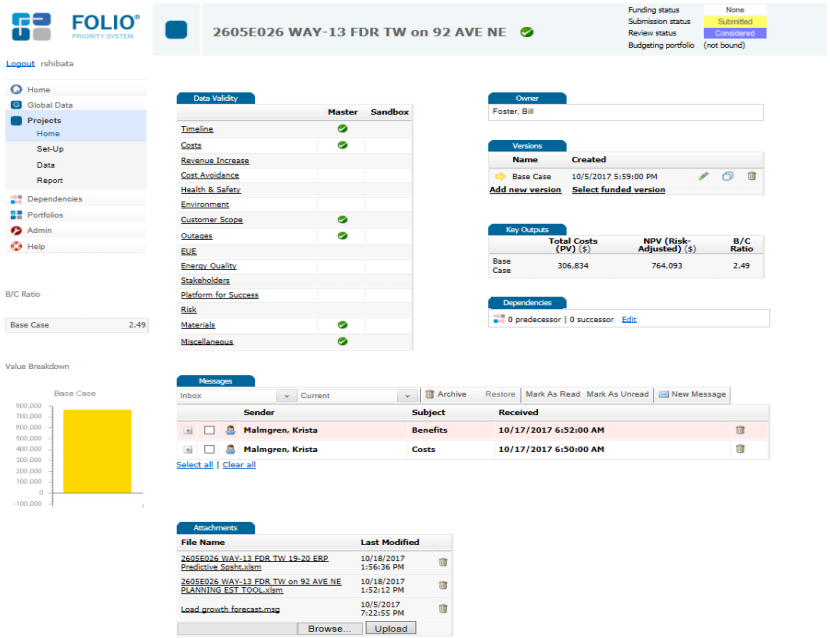



Framework	Business Cases	Portfolio Management	Portfolio Analysis	Decision Support
Create a customized approach to valuation using both business metrics and executive strategic priorities	Allow project planners to submit business cases in a standardized template format, and document costs and benefits	Support data quality processes by allowing portfolio managers to review business cases, request clarifications, etc.	Generate reports comparing the relative merits of each project based on the company's strategic priorities and expanding on traditional cost-benefit analysis	Executives gain better visibility into the portfolio of opportunities and can make better decisions as to which projects to pursue and which ones to abandon or defer

iDOT day to day

PSE PUGET SOUND ENERGY

iDOT is PwC's Project Portfolio Optimization tool called Folio



iDOT determines the best set of projects that deliver the optimal benefit-cost portfolio for given financial constraints.

iDOT does not prioritize or rank projects.

PUGET SOUND ENERGY

An example of how a qualitative benefit is calculated and monetized

Key Outputs

	Total Costs (PV) ($)	NPV (Risk-Adjusted) ($)	B/C Ratio
Base Case	475,000	34,016,371	71.61

Base Case

Label	Unit	Value Breakdown
Revenue Increase	$	0
Capital Cost Avoided	$	0
Maintenance Cost Avoided	$	0
Public Health & Safety	$	0
Worker Health & Safety	$	0
Environmental Impact	$	0
Outage Concern (Electric)	$	4,258,559
Outage Concern (Gas)	$	0
EUE Avoided (Electric)	$	0
EUE Avoided (Gas)	$	0
Quality Improvement (Electric)	$	28,743,931
Quality Improvement (Gas)	$	0
Stakeholder Perception	$	1,015,686
Infrastructure	$	0
Learning	$	0
Flexibility	$	0
Contribution To Strategy	$	0
Intrinsic Risk	$	-1,805

Stakeholder Perception Benefit Calculation

	Stakeholder Type Weight	Stakeholder Type Without Project Perception Weight	Stakeholder Type With Project Perception Weight	Stakeholder Metric
Citizens	1	-0.1	0.1	0.2
Media	1	-0.3	0.1	0.4
WUTC	2	-0.3	0.1	0.8
Benefit input Total				1.4
Units Per Point				2
Normalized Weight				1.451
Dollar Value of Benefit				**$ 1,015,686**

Stakeholder Metric = Weight * (Perception with project - Perception without project)
Normalized Weight = Stakeholder Weight/Impacts to Revenue Weight
Dollar Value of Benefit = (Benefit Input Total/Units Per Point) * Normalized Weights * $1M

Stakeholder Perception Ratings

Scale Definition

Scale Definition

Label	Definition	Value
1	Improved relationships, praise.	0.1
0	No observable response, one way or the other.	0
-1	Undocumented complaints and criticisms.	-0.1
-2	Documented criticism and complaints, letters to UTC, degradation of relationships.	-0.3
-3	Severe criticism, legal responses, including threats of lawsuits and nominal monetary fines. Loss of trust. Project decision will be the subject of at least one, adverse, local news story.	-1
-4	Significant monetary fines likely, highly negative national news stories, lawsuits will definitely be filed. Project decision will be the subject of multiple local news stories.	-3
-5	Significant monetary fines and charges of criminal conduct will result. Public demonstrations will occur. Lawsuits will definitely be filed and a complete breakdown in working relationships will result. Project decision will be the subject of at least one national news story.	-10

Close

PSE PUGET SOUND ENERGY

Guidance documents ensures consistency in value across many different types of projects and planners

Electric Regional System Planning Guidelines

iDOT Electric Regional System Planning Project Templates - scoring suggestions

	Inputs	Capacity: New/Extend/Tie	Reliability/Capacity: Regulator	Reliability/Capacity: Switch Rplc	Reliability: TW/CU repl/ Conv/Rebuild	Reliability: DA	Programs: Reclosers/ GOP
	Inputs that impact B/C – Score only the significant drivers of the projects						
Financials	Timeline	Yes	Yes	Yes	Yes	Yes	Yes
	Project Costs	Yes	Yes	Yes	Yes	Yes	Yes
	Revenue Increases	Yes					
	Cost Avoidance - Capital Cost Savings		Sometimes[1]				
	Cost Avoidance - Maintenance Cost Savings	Yes		Sometimes[1]			
Health, Safety and Environment	Public Health and Safety						
	Worker Health and Safety			Sometimes			
	Environment						
Customer Satisfaction	Customer Scope	Yes	Yes	Yes	Yes	Yes	Yes
	Outages		Sometimes		Yes	Yes	Yes
	Unserved Energy	Yes	Sometimes				
	Energy & Service Quality		Sometimes		Sometimes	Sometimes	
Stakeholder Concerns	Stakeholder Perceptions	Sometimes	Sometimes		Sometimes	Sometimes	Sometimes
Platform for Success	Flexibility	Yes				Yes	Sometimes
	Contribution to Strategy					Yes	
	Strategic Infrastructure	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	
	Learning						
Project Risk	Cost	Yes	Yes	Yes	Yes	Yes	Yes
	Benefit	Yes	Yes	Yes	Yes	Yes	Yes

Stakeholder Guidance

Stakeholder Type	Scored when:
Citizens	Since all projects impact citizens this should be used only in instances where there is an organized group of citizens. Above and beyond the normal.
Property Owners	Since all projects impact property owners this should be used only in instances where there is an organized group group of property owners such as an active homeowners association or a NIMBY group
Media	The project addresses concerns that had previously been reported in any media outlet or probably would be reported if we didn't address the problem.
WECC/NERC	Project is a result of the WECC/NERC requirements
WUTC	Any project where the UTC is a major player.
IPPs	Independent Power Producers
State and Federal Agencies	Must be a different agency than the UTC. If project impacts multiple agencies, each agency must express different concerns.
NGOs	Non-governmental organization
Other Utilities	Other utilities can include telephone, cable, or other gas and electric utilities.
Cities	Project potentially impacts PSE's working relationship with any city. Examples include taking advantage of a public improvement project or there is a potential loss of customers to municipalization.
Other Key Constituents	Project potentially impacts PSE's working relationship with any Major Account or Business Account (customers must be on the Managed Customer Account List worksheet)

PSE PUGET SOUND ENERGY

There are many supporting tools to capture and develop data for input into iDOT

ELECTRIC COST ESTIMATING TOOL

Regional System Planning Budget Estimating Tool
Cost Basis Last Updated: 4/15/2021
System Planner: Bill Foster
Notification: NA
Project Description INSTALL #2 TW down strean of NK486 to pole 219286-170175
Region: Region
City: Issaquah
County: King

Alternative Code	Alternative Description	Chosen Alternative	Capital WBS	Capital WBS Description	OMRC WBS	OMRC WBS Description	Capital Estimate	OMRC Percentage	OMRC Estimate	Relative Difficulty	Likely Year In-Service	City	County	OH Treewire Feeder (Wire Feet)	OH Treewire Lateral (Wire Feet)
1	OH #4 ACSR rebuild with #2 TW	YES	R.10009.08.02.10	E-OH Syst Rel Upgr-Tree Wire-Dist	R.10009.08.02.30	OMRC-E-OH Syst Rel Upgr-Tree Wire-Dist	$ 462,580	2.68%	$ 12,374	Somewhat Difficult	2023	Issaquah	King		8,400
2	Underground Conversion	No	R.10009.08.02.10	E-OH Syst Rel Upgrades-UG Convers-Dist	R.10009.08.02.30	OMRC-E-OH Syst Rel Upgrades-UG Convers-Dist	$ 1,020,713	0.80%	$ 8,178	Somewhat Difficult	2023	Issaquah	King		-

CUSTOMERS INQUIRIES REGARDING RELIABILITY ISSUES LOG

Circuit	Task Code	Transformer Grid Nbr	Meter Number	Business Partner	Address	City	Zip Code	County
PAW-17	Engineering Electric Reliability Inquiry	615645-153614	A091632512	1201147149	STEVEN LESLIE	15021 JOY LN SW	PORT ORCHARD	98367	Kitsap
PRA-12	Engineering Electric Reliability Inquiry	614976-157167	U023065852	1003593777	CHAD FULLERTON	1606 153RD STREET CT NW	GIG HARBOR	98332	Pierce
		615274-157409	H998726073	1003977977	JOHN PETRICH	15769 SUNNY COVE DR SE	OLALLA	98359	Kitsap
		615310-156789	A011377368	1002755873	PATRICK WILLIAMS	5582 SEALRNERD	OLALLA	98359	Kitsap
PRA-13	Engineering Electric Reliability Inquiry	615215-158810	U090644636	1001479596	PAMELA BENTLEY	11352 SE CHERRY ST	PORT ORCHARD	98366	Kitsap
PRA-15	Engineering Electric Reliability Inquiry	617312-156164	U012428510	1201207510	SHELBY REYNOLDS	3345 SE COUGAR LN	PORT ORCHARD	98367	Kitsap
PRA-16	Engineering Electric Power Quality	616181-157293	U011222168	1003195978	ELENA KOMROSKY	13052 OLALLA VALLEY RD SE	OLALLA	98359	Kitsap
FWD-15	Record Only-Electric Power Quality	316586-167745	Z992730761	1003193347	FAIRWOOD GOLF CLUB	17124 151ST AVE SE	RENTON	98058	King
FWD-16	Engineering Electric Power Quality	316928-167171	H995552711	1000534301	THOMAS REMY	13406 SE FAIRWOOD BLVD	RENTON	98058	King
FWD-17	Engineering Electric Reliability Inquiry	315878-167464	U095067640	1200685933	KRISTEN ROHDE	19430 144TH PL SE	RENTON	98059	King
PAW-11	Engineering Electric Power Quality	314018-163967	U095065711	1005981689	QIQI CHEN	25208 35TH AVE S	KENT	98032	King
GAG-12	Engineering Electric Power Quality	453515-163474	Z936827264	1002928972	COACH STORES	260 FASHION WAY	BURLINGTON	98233	Skagit
GAR-13	Engineering Electric Reliability Inquiry	566163-156699	Z993751879	1001428736	COMMENCEMENT BAY CORRUGATED	13414 142ND AVE E	ORTING	98360	Pierce
		566434-156824	H961123632	1201078111	LINGTAO JIANG	12521 STATE ROUTE 162 E	PUYALLUP	98374	Pierce
QBK-13	Engineering Electric Power Quality	439983-156611	H975493261	1002229737	PATRICIA COTHRAN	3520 SEASHORE AVE	GREENBANK	98253	Island
QLA-12	Engineering Electric Reliability Inquiry	468931-173662	A091789972	1004593302	VLADKO KVASNICA	16044 ALPINERD	DEMING	98244	Whatcom
		469316-173899	A091657784	1004192783	CHRISTINA HEIMEN	7022 RAINIER WAY	DEMING	98244	Whatcom

OUTAGE BENEFIT TOOL

Project Name	**2406E070 WIS-12 #2 TW NK00486 2021 (SYFI) Predictive Spreadsheet (final)**
Study Date	7/30/2021
Study Period	2016-2020
NOTIFICATION	NA

Note: the yellow highlighted solution is the preferred

	Residential	Commercial	Industrial	Maj. Acct.
Customers out in Study Area	377	16	0	0
Total Customers on Circuit	1341	106	0	0

BASE CASE: these are the outages on WIS-12 from the circuit and the area outages beyond NK00486	**5 Year Average**
Base Case: **Without Project Outages**, Average Frequency	2.60
Base Case: **Without Project Outages**, Average Duration	339.74

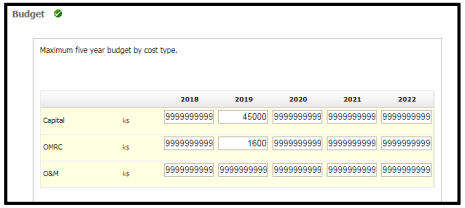
Alternative 1: Replace 3 phase #4 ACSR wire starting at NK00486 with # 2 TW to pole 219286-170183.	**5 Year Average**
With Solution Alternative 1: Outages, Average Frequency	1.20
With Solution Alternative 1: Outages, Average Duration	176.46

INPUT THESE VALUES IN IDOT MISCELLANEOUS METRICS		CIRCUIT LEVEL RELIABILITY METRICS	
5 yr average non-MED CMI saved	70,361	5 yr average non-MED SAIDI Sav	48.63
5 yr average non-MED CI Saved	393	5 yr average non-MED SAIFI Sav	0.27
5 yr average non-MED Outages Saved	100		

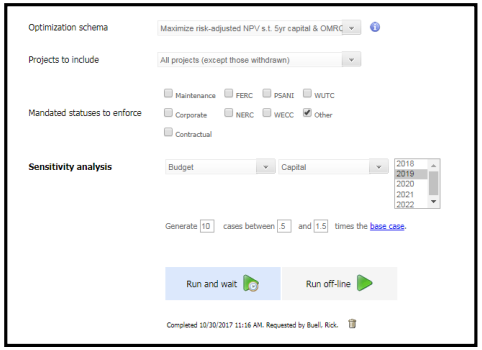
PSE PUGET SOUND ENERGY

Optimization results can tell us what would be funded if constraints and options were changed.

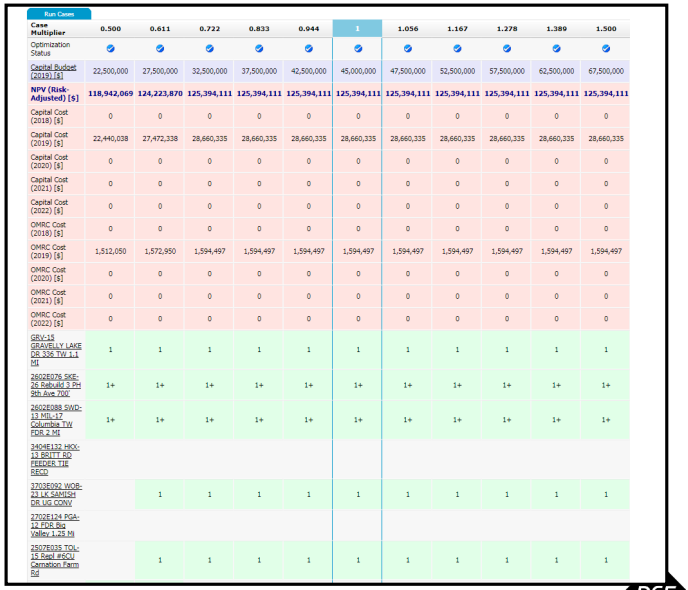
Annual Budget Constraints



Optimization options



Optimization results



Run Cases

Case Multiplier	0.500	0.611	0.722	0.833	0.944	1	1.056	1.167	1.278	1.389	1.500
Optimization Status	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Capital Budget (2019) [$]	22,500,000	27,500,000	32,500,000	37,500,000	42,500,000	45,000,000	47,500,000	52,500,000	57,500,000	62,500,000	67,500,000
NPV (Risk Adjusted) [$]	**118,942,069**	**124,223,870**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**	**125,394,111**
Capital Cost (2018) [$]	0	0	0	0	0	0	0	0	0	0	0
Capital Cost (2019) [$]	22,440,038	27,472,338	28,660,335	28,660,335	28,660,335	28,660,335	28,660,335	28,660,335	28,660,335	28,660,335	28,660,335
Capital Cost (2020) [$]	0	0	0	0	0	0	0	0	0	0	0
Capital Cost (2021) [$]	0	0	0	0	0	0	0	0	0	0	0
Capital Cost (2022) [$]	0	0	0	0	0	0	0	0	0	0	0
OMRC Cost (2018) [$]	0	0	0	0	0	0	0	0	0	0	0
OMRC Cost (2019) [$]	1,512,050	1,572,950	1,594,497	1,594,497	1,594,497	1,594,497	1,594,497	1,594,497	1,594,497	1,594,497	1,594,497
OMRC Cost (2020) [$]	0	0	0	0	0	0	0	0	0	0	0
OMRC Cost (2021) [$]	0	0	0	0	0	0	0	0	0	0	0
OMRC Cost (2022) [$]	0	0	0	0	0	0	0	0	0	0	0
GRV-15 GRAVELLY LAKE DR 336 TW 1.1 MI	1	1	1	1	1	1	1	1	1	1	1
2602E076 SKE-26 Rebuild 3 PH 9th Ave 700	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+
2602E088 SWD-13 MIL-17 Columbia TW FDR 2 MI	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+
3404E122 HKX-13 BRITT RD FEEDER TIE RENO											
3703E092 WOB-23 LK SAMISH DR UG CONV		1	1	1	1	1	1	1	1	1	1
2702E124 PGA-12 FDR Big Valley 1.25 MI											
2502E035 TOL-16 Sept #6OU Carnation Farm Rd		1	1	1	1	1	1	1	1	1	1

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Project Portfolio is finalized after reviewing for additional considerations such as resource capacity

2018 & 2019 iDOT Optimization, 10/5/2017							iDOT Funded				iDOT Not Funded		
Corp Hierarchy L1	Corp Hierarchy L2	Corp Hierarchy L3	PDEF Description	WBS Descrip	Project	b/c ratio	2018 Capital	2018 OMRC	2019 Capital	2019 OMRC	2018 Capital	2018 OMRC	2019 Cap
Strategic Initiatives	Reliability Roadmap	Other Reliability Projects	CAP-ELECTRIC SYSTEM WORK	OH SYST REL UPGR-TREE	1602W020 PRI-23 Maytown Rd CU Replacement	1.06					$ 772,015	$ 65,985	$
					160W116 D-352 BLU-16 Mima Acres DR SE TW	6.86	$ 455,000	$ 39,000	$ -	$ -			
					1702E104 LON-23 Y-154 HARTS LAKE LOOP RD TW	42.08	$ 42,286	$ -	$ 422,858	$ 36,142			
					1801E076 MCA13-PAT15 Fdr TW Tie	4.62	$ 60,020	$ -	$ 60,020	$ -			
					1801E076 MCA-16 Pacific Feeder TW	177.54	$ 160,299	$ 13,701	$ -	$ -			
					1801W020 PLG-17 O-471 PLEASANT GLADE RD #2TW	1.98					$ 175,000	$ 8,000	$
					1802W104 MOT-16 Mottman Rd SW 336 TW	34.78	$ 170,433	$ 14,567	$ -	$ -			
					1901E116 LUH-17 O-707 MERIDIAN #2 3PH TW	5.38	$ 8,983	$ -	$ 8,983	$ -			
					1902E036 GRV-12 Veterans Dr SW 336 TW	1.87					$ 560,000	$ 48,000	$
					2004E034 CED-17 92ND AVE E 336TW P754	3.56	$ 111,472	$ 9,528	$ -	$ -			
					2004E075 STW-13 PIONEER WAY E 336TW	1.91					$ 198,992	$ 17,008	$
					2007E012 CUM-15 SE 392nd St Reconductor TW	1.22					$ 477,639	$ 40,824	$
					2104E024 LAT-17 8th Ave SW	4.77	$ 7,190	$ -	$ 7,190	$ -			
					2105E044 LEA15-MST23 336 ACSR TW	1.6					$ 259,887	$ 22,213	$
					2106E112 OSC-23 SE 368th Way TW	1.06					$ 148,882	$ 12,700	$
					2107E112 CUM-15 Lk Walker CU rplc add 2ph	1.67					$ 607,663	$ 51,937	$
					2107E128 CUM-15 SE 384th St Cu Repl, TW, add Phase	2.52					$ 498,700	$ 59,200	$
					2205E038 GLC-15 #2 ACSR TW SE 208 ST	2.44	$ 169,100	$ 14,400	$ -	$ -			
					2205E062 GLC-14 SE 227TH PL B-PH TW	0.65					$ 82,821	$ 7,079	$
					2205E069 ORC-17 94TH AVE S 3PH #2 TW RECON	5.25	$ 6,311	$ -	$ 6,311	$ -			
					2205E120 KNT-37 94 PL #2 ACSR TW	1.8					$ 329,108	$ 28,129	$
					2206E133 FCR-12 MAPLE VLY BLACK DIAMOND RD 336TW	31.88	$ 210,968	$ 18,032	$ -	$ -			
					2301E012 SIN-24 RBLD Berry Lake 1.1Mi	2.25					$ 272,000	$ 37,000	$
					2302E076 FNW-13 FDR TW Bethel Burley 4.5 Mi	5.11	$ 50,000	$ -	$ 50,000	$ -			
					2304E122&119 NNO-15 Marine View TW	7.21	$ 95,535	$ 8,165	$ -	$ -			
					2401E040 CHI15 B PH TW FDR Erlands Pt 4,600'	75.11	$ 26,164	$ -	$ 261,638	$ 22,362			
					2401E040 CHI-16 TW FDR Seabeck Hwy 2.7 M	2.91					$ 734,000	$ 100,000	$
					2401E136 RPT-23 SIN-23 RBLD Tie 2 Mi	1.53	$ 25,000	$ -	$ 25,000	$ -			
					2402E124 EPO16 Rebuild TW FDR Kitsap St 2 Mi	1.41					$ 688,181	$ 58,819	$
					2405E092 EGT-12 A&C FDR TW Project	8.64	$ 134,000	$ 14,900	$ -	$ -			
					2406E042 KLA-17 Recon 1750' A&Cph 336TW 251Av SE	306.13	$ 94,245	$ 8,055	$ -	$ -			
					2501E136 TRA-22 TW FDR Tracyton BLVD 2.1 Mi	36.87	$ 30,700		$ 307,000	$ 78,000			
					2502E136 MUR-16 TW FDR HS rd 1.8 Mi	2.07	$ 25,000	$ -	$ 25,000	$ -			
					2504E141 OVE 15 #2 TW REL Project along 84 AVE NE	1.57					$ 492,000	$ 53,000	$
					2505143 KWH-23 FDR TW Recond W LK Samm	7.7	$ 80,000	$ 5,100	$ -	$ -			
					2702E136 KIN21 B PH TW FDR SR 104 2 Miles	9.67	$ 22,249	$ -	$ 22,249	$ -			
					2702E136 KIN22 B PH TW FDR W Kingston Rd 1.5 Mi	53.08	$ 38,048		$ 380,480	$ 32,520			
					3101E048 CPV-15 Fort Casey Road Tree Wire	30.04	$ 65,686	$ 5,614	$ -	$ -			
					3201E036 HLC-23 W BEACH RD TREE WIRE	8.3	$ 197,900	$ 13,200	$ -	$ -			
					3301E048 CLV-16 NORTHGATETW(SR20)	4.22	$ 28,725	$ -	$ 287,249	$ 24,551			

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