Exh. HLR-8

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BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-19 _______

DOCKET NO. UG-19 _______

EXHIBIT HLR-8

HEATHER L. ROSENTRATER

REPRESENTING AVISTA CORPORATION

Index for Business Case Justification Narratives Related to Major Investments in the Company's Electric and Natural Gas Energy Delivery Systems, Fleet, and Office and Operations Facilities for 2017 and 2018

Wood Pole Management

1 GENERAL INFORMATION

Requested Spend Amount	$9,000,001
Requesting Organization/Department	Asset Maintenance/Wood Pole Management
Business Case Owner	Mark Gabert
Business Case Sponsor	Bryan Cox
Sponsor Organization/Department	M51/WPM
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

Asset Management and Distribution Engineering provide ongoing analysis of distribution asset condition. This analysis is used to direct the Wood Pole Management work that includes inspecting and maintaining Avista's poles, hardware and equipment on a twenty year cycle. The operating guidelines are documented in the Distribution Feeder Management Plan (DFMP). The analysis is documented in the Electric Distribution System 2016 Asset Management Plan. Asset Maintenance then collaborates with Electric Operations and contractors to coordinate the work. Asset Maintenance tracks the work budget, scope, and schedule.

2 BUSINESS PROBLEM

The major drivers for the program are system reliability, improved cost performance, and reduced customer outages. These drivers are obtained by replacing defective poles, associated hardware, and equipment at its end of life. The National Electric Safety Code (NESC) is adopted as Washington State Law under WAC 296-45-045. More specifically Part 013 describes the application, Part 121 describes the inspection interval, and Part 212A describes documentation and correction of the pole inspection results.

The current Wood Pole Management (WPM) program inspects and maintains the existing distribution wood poles on a twenty year cycle and the transmission poles on a fifteen year cycle. Avista has 7,702 overhead distribution circuit miles. The average age of a wood pole is twenty-eight years with a standard deviation of twenty-one years. Nearly 20% of all poles are over fifty years old and we have an estimated 240,000 Distribution poles in the system. This means approximately 48,000 poles are currently over fifty years old. Our current inspection cycle allows us to reach approximately 12,000 poles each year. Along with inspecting the poles, we inspect distribution transformers, cutouts, insulators, wildlife guards, lightning arresters, crossarms, pole guying, and pole grounds. The average asset life of this equipment is fifty-five years and requires replacement along with the pole work. The inspections document asset condition and indicate what work is required to replace assets that are damaged or near failure point. The asset condition is observed and documented during the pole inspection process as indicated in both the S-622 Specification for the Inspection of Poles, and the Distribution Feeder Management Plan (DFMP). Designs and work plans are then created to replace the aging infrastructure. The construction work to replace the assets is part of this program.

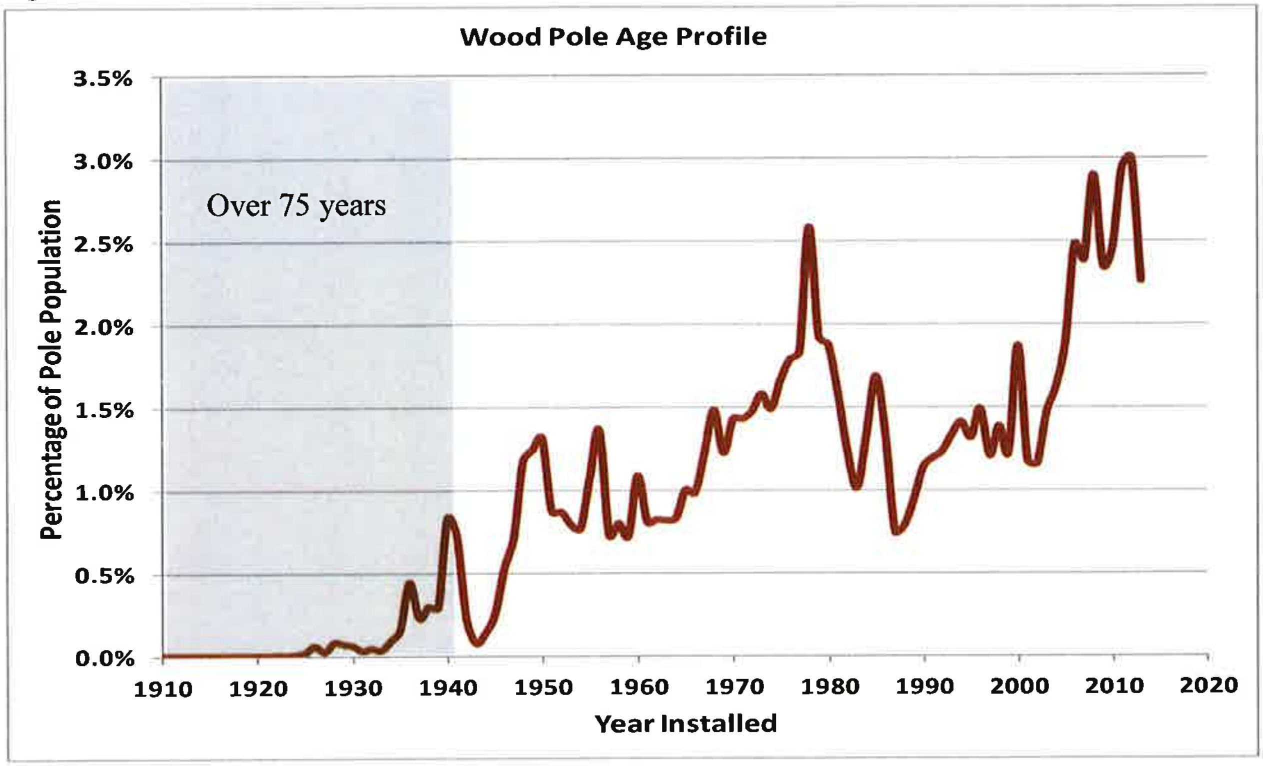
The work is required now to keep pace with the aging assets and expected failure rate. Figure 1 below shows the increased rate at which the poles are reaching the seventy-five year end of life. If this work is not maintained the aging infrastructure will cause an increasing rate of failures leading to increased outages and higher construction costs.

In addition to the risks of outages and failures with the aging equipment, the additional risks associated with this program pertain to the following:

Environmental: Risks include; large volume transformer oil spill, difficult hazardous waste cleanup, moderate to low volume or level of PCBs, minimal impact to waterways, repeated or moderate air emission exceedance. If the program is unfunded the potential occurrence is greater than 4 spills per year. If funded, the potential occurrence is less than 1 per 50 years.

Public Safety and Health: Risks include: a potential for serious injury for crews or the public, significant damage to equipment, property or business, public health infrastructure impact up to 48 hours. If the program is unfunded, the potential occurrence is less than 1 per 10 years. If funded the potential occurrence is less than 1 per 50 years.

Figure 1- Pole Age Profile



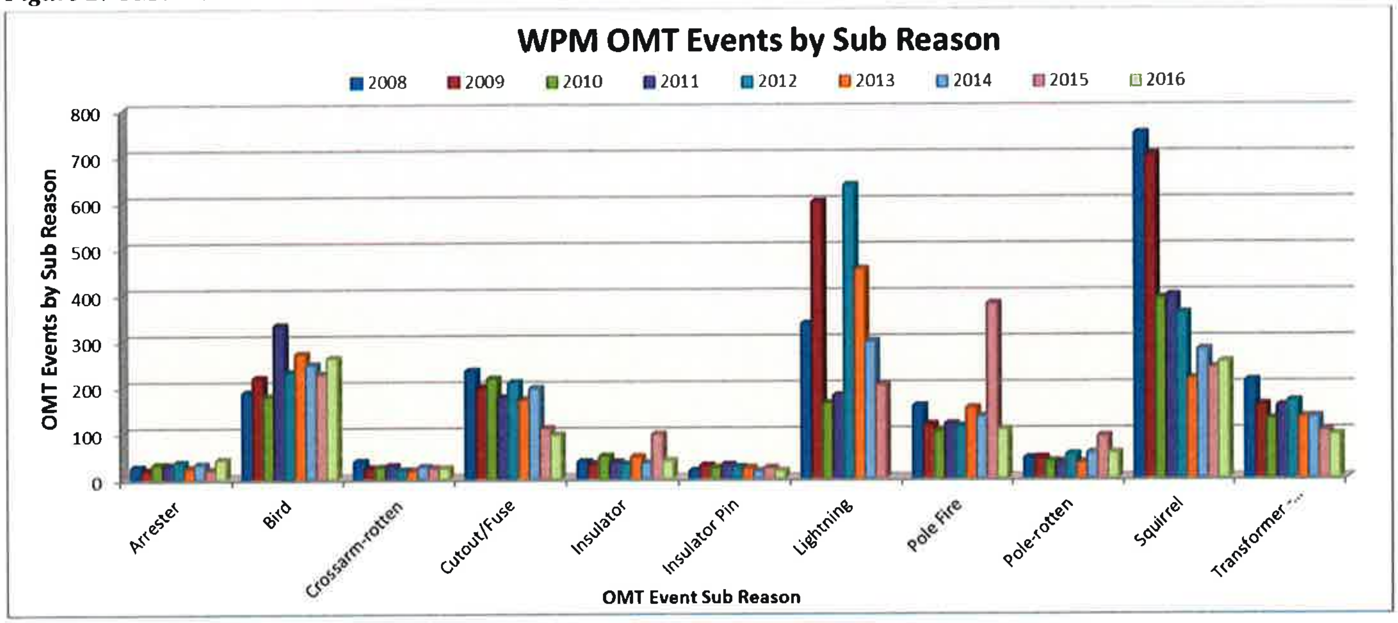
The Outage Management Tool (OMT) is used by Asset Management to track asset conditions and show trends of failures of specific equipment that should be targeted for replacement. This information is also used to track key Program performance as shown in Table 1 below. The number of outage type events has been reduced by over 40% from 2009 through 2015. This reduction in outage events results in significant customer benefit. This reduction also demonstrates increased reliability and safety along with a reduction in outages. The original goal for this KPI was to stay below the number of events averaged over 2005-2009 for WPM Related OMT Events. The goal will be re-evaluated in the future.

Table 1: Event Reduction Results

KPI Description	WPM Goal Related number of OMT Events	Actual WPM Related number of OMT Events	Projected Miles Follow-up Work**	Actual Miles Follow-up Work Completed
2009	1460	1320	500	372
2010	1460	1004	450	435
2011	1460	1004	459	333
2012	1460	1013	416	435
2013	1460	816	445	329
2014	1460	905	412	385
2015	1460	760	390	364

The type of OMT events are broken down into more detail in Table 2. Note there are significant improvements to some events such as; annual squirrel events being reduced from nearly 750 to around 240 events. This improvement has been realized by adding wildlife guards to the top of transformers in order to prevent squirrels from touching exposed power connections which can result in outages. Both the transformer and cutout\fuse events have been reduced by over 50% through the replacement of aged equipment. Table 2 also reveals a concerning upward trend of Pole-rotten events that indicate the impact of the aging poles. Note that the calculated cost to customers for a pole failure is $24,400 based on an average duration of 4.8 hours for 80 customers, per Asset Management. Other key OMT events that have been significantly reduced from 2009 to 2016 include Transformer, Cutout/Fuse, and Squirrel. The combined cost impact to customers in 2015 alone for those events was $2,265,600. See Figure 2.

Figure 2: OMT Events



Ultimately the impact of this Program can be associated with our Electric Systems Reliability metrics. The System Average Interruption Frequency Index (SAIFI) represents the average number of sustained interruptions per customer for the year. Avista reported a SAIFI score of 1.05 for the year 2015. The Asset Management group created Table 2 below to show the impact of this Program to our overall SAIFI score. The predicted contribution is about .211 which has a significant impact on the customer, whereas without WPM the contribution to SAIFI would be 0.57. This means the customer would experience 0.36 more outages per year without WPM. Without WPM and the contribution to SAIDI would be 1.27(Hours).

Table 2: SAIFI Metrics

Projected Metric Description	Projected WPM Contribution To The Annual SAIFI Number	Projected Number of Dist Poles Inspected	Model Predicted Material Use for WPM Follow-up Work	Projected Number of Pole Rotten OMT Events	Projected Number of Crossarm OMT Events
2009	0.214024996	12,600	4,792	137	32
2010	0.208489356	12,600	4,932	137	32
2011	0.211022023	12,600	5,010	137	32
2012	0.211022023	12,600	6,770	137	32
2013	0.211022023	12,600	8,592	137	32
2014	0.211022023	12,600	10,566	137	32
2015	0.211022023	12,600	12,606	137	32
Actual Metric Description	**Actual WPM Contribution To The Annual SAIFI Number**	**Actual Number of Dist Poles Inspected**	**Actual Material Use for WPM Follow-up Work**	**Actual Number of Pole Rotten OMT Events**	**Actual Number of Crossarm OMT Events**
2009	0.1863468	13,161	7,538	44	25
2010	0.19916836	15,553	7,904	37	23
2011	0.202462739	13,324	28,011	35	28
2012	0.16613099	17,318	28,120	52	19
2013	0.15640942	14,364	15,214	34	18
2014	0.241571914*	11,879	14,901	55	26
2015	0.225273848*	8,157	12,072	43	23

3 PROPOSAL AND RECOMMENDED SOLUTION

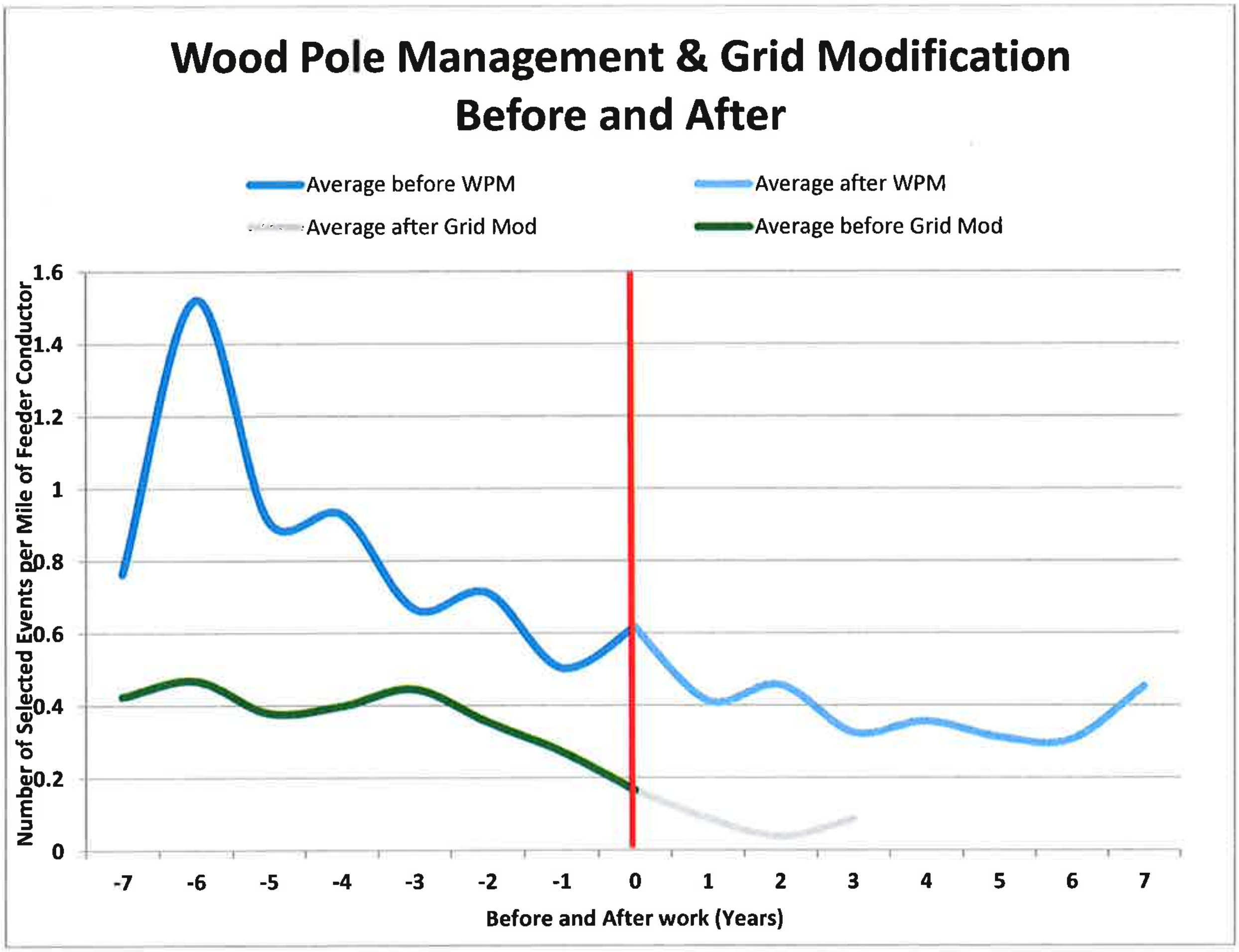
Option	Capital Cost	Start	Complete	Risk Mitigation
Do nothing	$0	Increases OMT events by 1700 events		
Distribution Wood Pole Management Program inspects all feeders on a 20 year cycle and repairs and replaces wood poles, crossarms, missing lightning arresters, missing/stolen grounds, bad cutouts, bad insulators, leaking transformers, replace guy wires not meeting current code requirements when the pole is replaced.	*$9,000,000M*	*012017*	*122017*	*Annually/indefinite*
Alternative 1: Distribution Wood Pole Management Program inspects all feeders on a 20 year cycle and repairs and replaces wood poles, crossarms, missing lightning arresters, missing/stolen grounds, bad cutouts, bad insulators, leaking transformers, replace guy wires not meeting current code requirements when the pole is replaced ***and replaces pre-1981 transformers***	*$10,712,022*	*012021*	*122021*	*Annually/indefinite*
Alternative 2: Everything in Alternative 1 except completed on a 10 year cycle.	*$17,296,437*	*012021*	*012021*	*Annually/Indefinite*

Based on analysis the current twenty year Wood Pole Management cycle delivers the best life cycle value for the funding level. Alternative 2 would decrease the inspection cycle down to ten years but at nearly double the capital cost. There is also additional O&M cost to support alternative 2. Asset Management and Distribution Engineering will continue to monitor system reliability to determine if adjustments are required in the future.

Distribution Wood Pole Management is an ongoing cyclical program that proactively replaces aging assets. By replacing assets before they fail, outage risks are reduced and replacement costs are reduced through planned work. Investing in the infrastructure increases life-cycle performance, safely, reliably, and is cost effective through the use of unit based pricing. Figure 2 below shows the significant improvement in "events per mile of feeder" resulting from this Program. The peak of events per mile was approximately 6 years ago when there were nearly 1.5 events per mile. The results after the Program show performance as low as .3 events per mile of feeder.

If funding were to be reduced, expected outages would increase. The team would need to prioritize which components would be replaced and which would be left. This would increase the likelihood that crews would need to revisit the same pole later if a remaining component were to fail.

Figure 3: Reduction of Events per mile before and after feeders are completed.



The primary stakeholders are Asset Management, Distribution Engineering, Environmental, Real Estate, Asset Maintenance, Electric Operations, and our electric customers.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Distribution Wood Pole Management and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Mark D. Gabert

Date: 4/6/2017

Print Name: Mark Gabert

Title: WPM Program Manager

Role: Business Case Owner

Signature:

Date: 4/17/17

Print Name: Bryan Cox

Title: Sr Dir of HR Operations

Role: Business Case Sponsor

5 VERSION HISTORY

[Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Mark Gabert	04/13/17	Bryan Cox	04/14/17	Initial version

Template Version: 02/24/2017

1 GENERAL INFORMATION

Requested Spend Amount	$17,500,000
Requesting Organization/Department	Asset Maintenance
Business Case Owner	Laine Lambarth
Business Case Sponsor	Bryan Cox
Sponsor Organization/Department	Asset Maintenance
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

- The program scope is defined by an analytical study done by the Program Engineer for each feeder and by the Distribution Feeder Management Plan which was created and is updated by consulting The Distribution Engineering Standards Engineer and Asset Management Manager.
- Reliability, avoided costs, and capital offset of future O&M expense data is collected and analyzed by Asset Management. This information is normalized and entered into a selection tool which then ranks the feeders.
- The regional distribution engineers for the East, South, North, West and Spokane regions are consulted regarding the feeder ranking and feeder prioritization within their respective regions.
- The program manager then balances the prioritized feeders between the states, rural/urban split, and regions.
- The program manager then collaborates with Electric Operations and Contractors to coordinate the work and track the budget, scope, and schedule.

2 BUSINESS PROBLEM

The Distribution Grid Modernization Program provides value to customers and shareholders through the following objectives of improving:

- Grid Reliability - Replacing aging and failed infrastructure that has a high likelihood of creating customer outages and a need of an unplanned crew call-out which costs more than planned work and would filter into higher rates for customers.
    - Without programs like Grid Modernization and Wood Pole Management there would be an average 40 pole failure events per year effecting an average of 80 customers for 4.8 hours per event. Totaling a customer impact value of approximately $24,000 per event totaling to $960,000 per year.

- Energy Efficiency - Replace equipment such as old conductor and transformers that have high energy losses with new equipment that is more energy efficient and improve the overall feeder energy performance. This creates the need for less power generation or acquisition and equates to lower rates for customers.
- Operational Ability - Replace conductor and equipment that hinders outage detection and install automation devices that enable isolation of outages.
    - This means shorter outrages for customers because the areas that failed can be identified faster and possibly reroute power automatically. Currently the Grid Modernization Program in the only company initiative installing these devices.
    - The installation of automated line devices on a feeder of 1600 customers reduces an average outage duration from 3 hours to 5 minutes per event for 1200 of those customers.
- Safety - Focus on public and employee safety through smart design and work practices.
    - Replacing aging and failed infrastructure that puts employees and customers at risk of property damage and injury.
    - Bringing infrastructure up to current National Electric Safety Code.
    - Eliminate PCB risk to the public by eliminating transformers containing known PCB's.
    - The Grid Modernization program lowers the risk of high severity safety (S4) events, defined below, as follows:
        - S4 events are categorized as having potential for multiple serious injuries or loss of an individual life; major damage to property or business, and a public health infrastructure impact up to 72 hours.
        - Base Case (do nothing) has the risk of 10 S4 events every 50 years with a total cost of $52.3M.
        - The Grid Modernization Program brings this risk down to 2 events in 50 years with a total cost of $10.4M.

Another Safety objective of The Distribution Grid Modernization Program is to address Washington State's Department of Transportation (WSDOT) Target Zero requirements, which states that utilities move all non-breakaway structures, such as power poles and pad mount transformers, out of highway clear zone as defined in the 10/2005 AASHTO "A Guide for Accommodating Utilities Within Highway Right-of-Way," which is attached for reference. Washington State law requires that we complete this task by year 2030. Currently this is the only program within Avista actively addressing this mandate. Additional Control Zone justifications include the following Washington Administrative Codes (WAC) and Revised Codes of Washington (RCW):

- WAC 468-34-350 - Control Zone Guidelines
- WAC 468-34-300 - Overhead Lines Location
- RCW 47.32.130 Dangerous Objects and Structures as Nuisances
- RCW 47.44.010 Wire and Pipeline and Tram and Railway Franchises - Application - Rules on Hearing and Notice
- RCW 47.44.020 Grant of Franchise - Condition - Hearing

- Selected Metrics include:
  - Energy savings provided by completed work
  - Number of circuit miles of work completed
  - Number of sustained outages (anything longer than 5 minutes) recorded in Avista's Outage Management Tool (OMT).

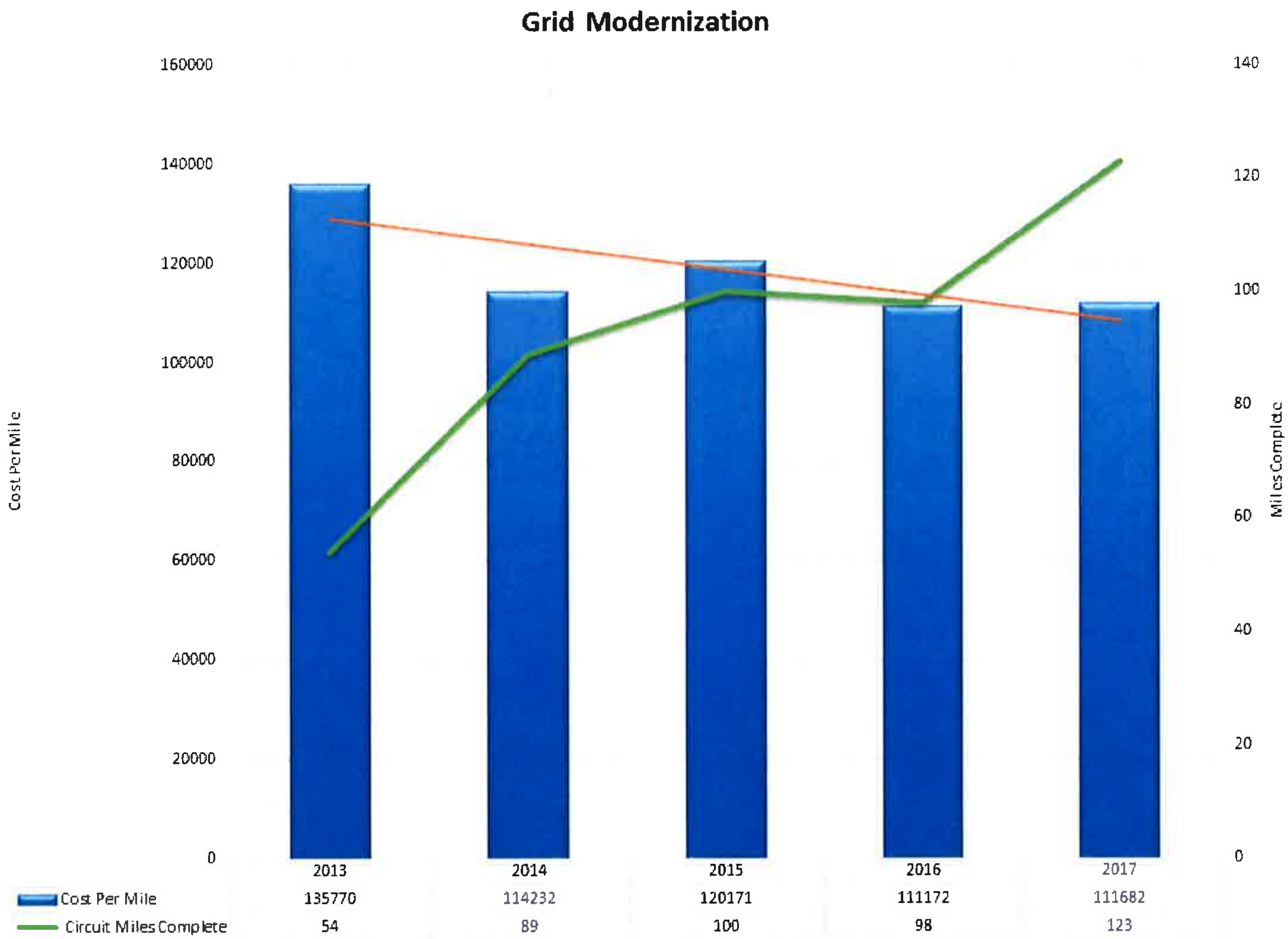
Based on Avista's 2015 Integrated Resource Plan dated August 31st, 2015, the realized and anticipated energy savings by identified feeders is shown in Table 1.

Table 1, Energy Savings based on Integrated Resource Plan

Feeder	Service Area	Year Complete	Annual Energy Savings (MWh)
9CE12F4	Spokane, WA (9th & Central)	2009	601
BEA12F1	Spokane, WA (Beacon)	2012	972
F&C12F2	Spokane, WA (Francis & Cedar)	2012	570
BEA12F5	Spokane, WA (Beacon)	2013	885
CDA121	Coeur d'Alene, ID	2013	438
OTH502	Othello, WA	2014	21
RAT231	Rathdrum, ID	2014	0
M23621	Moscow, ID	2015	413
WIL12F2	Wilbur, WA	2015	1,403
WAK12F2	Spokane, WA (Waikiki)	2016	175
RAT233	Rathdrum, ID	2019	471
SPI12F1	Northport, WA (Spirit)	2019	127
Total			**6,076**

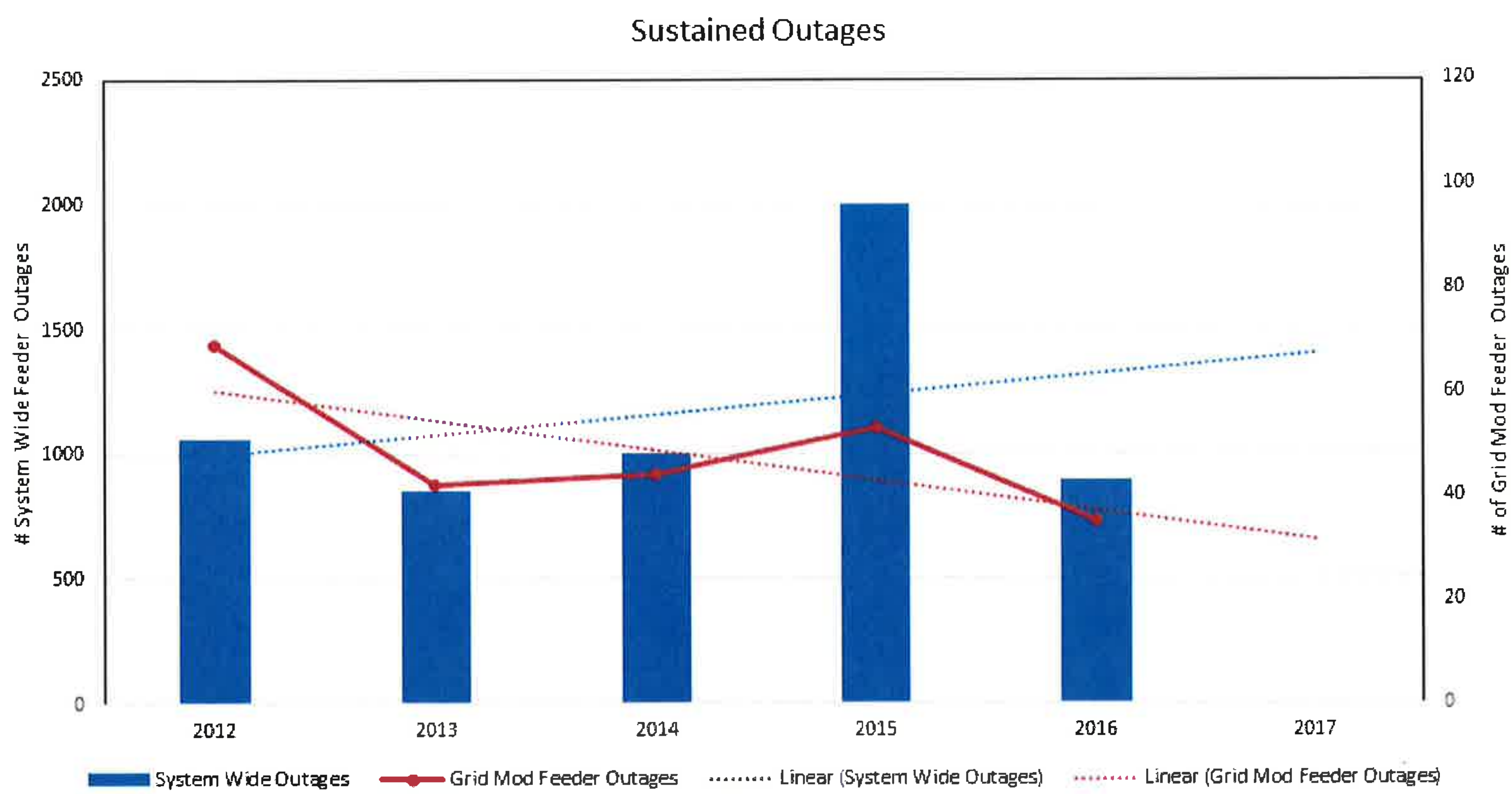
In order to address Avista's entire system and every customer in a 60 year cycle, the program would need to address an average of 190 miles per year of Avista's 11,300 total overhead and underground circuit miles. The miles of work planned is ultimately driven by the approved budget and generally can only be projected for 5 years. At the current funding level and average cost per circuit mile, represented in Table 2 below, it will take us approximately 90 years to address the entire system and every customer.

Table2, Grid Modernization Circuit Miles Addressed and Associated Cost



For tracking the impacts of the programs effect on sustained outages we monitor the OMT sub-reasons identified as potentially avoidable and most directly impacted by The Grid Modernization Program work. Through the end of 2015 there has been a reduction of 0.1 outages per mile of overhead work completed. Table 3, below, illustrates these reduction of outages and therefore the reliability advantages and reasons for the program. The red line represents the reduction of outages of these sub-reasons on the feeders that the Grid Modernization program has completed to date. You will see the Grid Modernization addressed feeder outages are trending down whereas the system wide outages are trending up. If 2015, which is when Avista experienced a large wind storm, was excluded the system wide outages would be trending slightly downward but the Grid Modernization addressed feeders are trending downward at a faster rate.

Table 3, OMT Sustained Outages related to Grid Modernization



3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Do nothing - Address issues as the infrastructure fails. This is the most risky as injury or property damage may occur and is estimated to increase the risk cost by $6.1M. It is also the most costly as usually it is done during off hours and ends up in overtime and is estimated to increase O&M by $2.5M. It is also unplanned and therefore takes longer to do. This option would also lead to higher and longer number of customer outages.	$9,000,000 per year		

[Recommended Solution] The Distribution Grid Modernization Program provides benefits to customers, employees, and shareholders by replacing problematic poles, cross-arms, cut-outs, transformers, conductor, etc. Additionally automated line devices are installed which increase energy efficiency and system reliability. 2017 request is for $17.5M as we continue to ramp up to the full recommendation.	*$21,000,000 per year*	*01 2012*	*12 2072*
[Alternative #1] Address issues through the different specific company initiatives, such as Wood Pole Management, Transformer Change Out, URD, Segment Reconductor, etc. This means that a crew would potentially go out to the same area multiple times. This costs more for set up and travel time, flagging, etc. which means higher rates for customers. This also means the customer could have multiple different planned outages and have multiple different street closers while the crews did specific work at multiple different times. The risk reduction is also cut in half compared to the comprehensive work completed by the Grid Modernization program.	*Per year*	*MM YYYY*	*MM YYYY*

The Grid Modernization Program combines the recommendations from two Avista system performance studies into its work activities to provide refreshed system feeders with new automation capabilities across Avista's distribution system. The first of these studies was performed in 2009 and had a system efficiencies team evaluate the potential energy savings for distribution system upgrades and analyzed the value of selective rebuild with "right sized" conductor replacements for reducing energy losses, improve reliability, and meeting future load growth demand. A second study was conducted in 2013 to assess the benefits of distribution feeder automation for increased reliability, operability, and load loss savings.

The reliability, energy losses, reductions in operations and maintenance (O&M) costs and capital investment from the individual efficiency programs under consideration were combined on a per feeder basis. This approach provided a means to rank and compare optimal feeder modernizing and net resource costs to achieve the desired benefits.

The system efficiencies team evaluated several efficiency programs to improve both urban and rural distribution feeders. The programs consisted of the following system enhancements:

- Conductor losses;

- Distribution transformer losses and PCB mitigation;
- Secondary district losses;
- Conservation Voltage Reduction (CVR);
- Integrated Volt/Var Control (IVVC), and;
- Fault Detection Isolation and Restoration (FDIR) opportunities;

The Grid Modernization Program's charter criterion has grown to include a more holistic approach to the way Avista addresses each project. This vital program integrates work performed under various operational initiatives at Avista including the Wood Pole Management Program, the Transformer Change-out Program, the Vegetation Management Program, various budgeted maintenance programs and the Feeder Upgrade Program.

The ancillary work of the Grid Modernization Program includes the replacement of undersized and deteriorating conductors, replacement of failed and end-of-life infrastructure materials including wood poles, cross arms, fuses and insulators. Inaccessible pole re-alignment, right-away, undergrounding, joint use coordination and clear zone compliance issues are addressed for each feeder section. This systematic overview enables Avista to cost-effectively deliver a modernized and robust electric distribution system that is more efficient, easier to maintain and more reliable for our customers.

The long-term plan aims to upgrade 190 circuit miles per year to cover the whole distribution system in a 60 year cycle. According to Avista's Asset Management subject matter experts a 60 year cycle is optimal due to the average mean time to failure and age profiles of our systems assets. It also coordinates well with the Wood Pole Management's (WPM) program 20 year cycle. The average cost for the Grid Modernization program to rebuild a circuit mile is $110,000. In order to meet the 60 year cycle $21M would be needed each year. Alternatively we could complete the entire system in 80 years for $15.5M each year, but that means we would not address the entire system until approximately the year 2093. This would not be prudent at Asset Management shows a bow wave of infrastructure reaching end of life by the year 2060. Currently the program is still ramping up to its fully desired resource needs and therefore has only requested $17.5M for 2017. The plan is to have enough resources, design, and funding in place to be able to construct the 190 circuit mile per year goal by 2019.

The Grid Modernization Program consists of the following fully allocated resources: Project Manager, Associate Project Manager, Distribution Engineer, six internal designers (customer project coordinators/CPC), and five contract designers and has the following part time shared resources: analyst, and two in-house and two contract field inspector/auditors. Construction labor usually consists of a mix of in-house and contract line crews totaling around eight to twelve five man crews. The program also interfaces with and relies on assistance from the following departments which might require additional resources; Real

Estate, Environmental, Contracts, Substation Engineering, Relay Shop, Electric Shop, SCADA, Network Systems, and Protection Engineering.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Distribution Grid Modernization business case and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Laine Lambarth Date: 4/17/17
Print Name: Laine Lambarth
Title: Grid Modernization Project Mgr
Role: Business Case Owner

Signature: Bryan Cox Date: 4/17/17
Print Name: Bryan Cox
Title: Sr Dir of HR Operations
Role: Business Case Sponsor

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Laine Lambarth	4/14/2017	Bryan Cox	4/14/2017	Initial version

Template Version: 02/13/2017

Distribution Minor Rebuild

1 GENERAL INFORMATION

Requested Spend Amount	$12,300,000
Requesting Organization/Department	Electric Operations
Business Case Owner	Cody Krogh
Business Case Sponsor	Bryan Cox
Sponsor Organization/Department	Operations
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

The Distribution Minor Rebuild work is overseen by the local area operations engineers, general foremen, and area construction managers. Often, the work addresses failed asset replacements or customer requests that are unplanned. Occasionally, larger projects with an identified need and short timeframe for implementation are constructed under the Distribution Minor Rebuild business. Minor Rebuild work occurs regularly and historical averages are used to estimate the appropriate funding allocations.

The local area operation engineers, general foremen, and area construction managers manage the work as it is identified throughout the given construction season. A more formal governance is currently being developed for this business case, which will provide a check or gate on which projects in the business become approved for scheduling.

2 BUSINESS PROBLEM

The work done under the distribution minor rebuild is driven by keeping the distribution system in reliable condition for customers and safe condition for the workers, responsiveness to unplanned damaged to distribution assets not related to weather events, as well as small customer driven rebuilds. Throughout the entire distribution system, minor rebuilds or replacements of asset units need to be completed to maintain system reliability and safety.

Below is a categorical breakdown which fall within the Distribution Minor Rebuild business.

Customer Requested Rebuilds – Work is initiated by an existing customer or property owner, and the costs associated with the work are typically reimbursed by the requesting party.

Trouble Related Work – Work required to repair damaged facilities related to non-storm related outages. A common example of trouble related work is a car hit pole.

Joint Use Requested Rebuilds – "Make-ready" work required to existing facilities in order to accommodate joint use installations. The costs associated with the joint use work are typically reimbursed by the requesting joint use party(s).

Deteriorated Pole Replacements – Changing out isolated wood poles that fail Avista's inspection standards that are not on schedule for a planned replacement under Avista's Asset Maintenance programs.

General Rebuilds – Work can be initiated through a variation of sources. General rebuild work is typically small in scope (i.e. one or two poles) and typically addresses unplanned work that is identified as priority because of:

- NESC code violations (e.g., inadequate clearance)
- Failed or failing equipment (e.g., rotten cross-arms)
- Inadequately sized or classed equipment for serving an existing customer or group of customers (such as an undersized transformer or fuses)
- Other minor projects include minor loop feeds, installing air switches, line regulators, line reclosers, and short reconductoring projects for reliability improvements.

Figure 1 shows a pie chart of the mentioned categorical breakdown to demonstrate the magnitude of each category. The figure gives a three year average, which has remained historically constant.

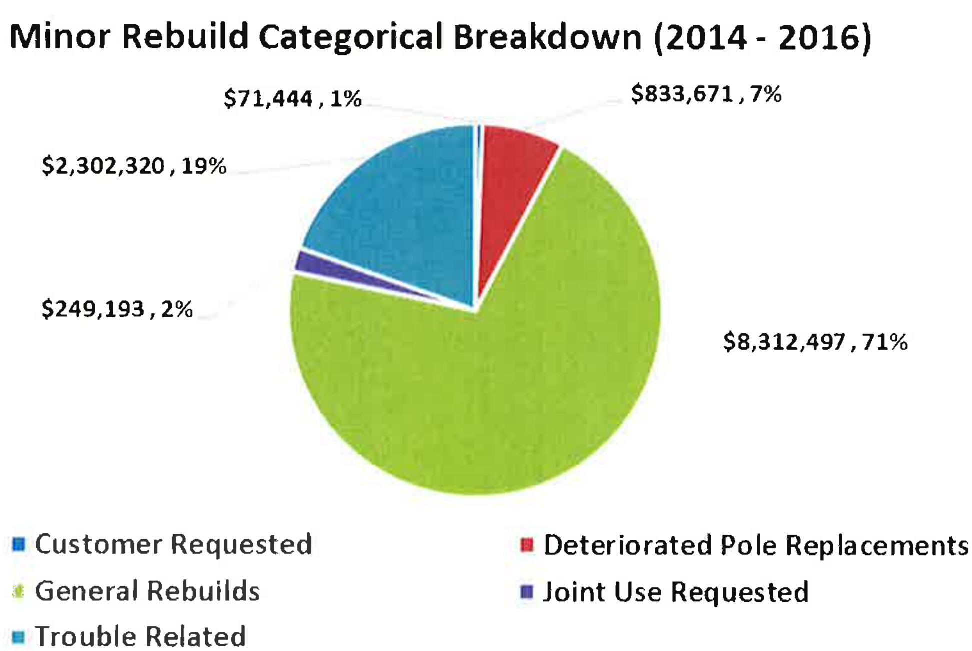


Figure 1: Distribution Minor Rebuild Categorical Breakdown

Distribution Minor Rebuild

In 2016, 1,115 work orders were created with the average cost equaling only $4,400, which demonstrates the business is made of thousands of small dollar amount jobs. Occasionally larger rebuild projects, such as small reconductor project, are undertaken as Distribution Minor Blanket projects. A common reason is the work is considered critical and non-discretionary. Only 28 work orders were created over $25,000, averaging $54,000 per work order in 2016.

Figure 2 displays a breakdown of the different types of charges that occur in the Minor Rebuild. The majority of charges are from specific work orders. Distribution Minor Rebuild work often consists of isolated, replacement of failed asset(s) that do not lend themselves to a specific project (i.e. trouble related work), which are charges falling under craft and non-craft expenditures.

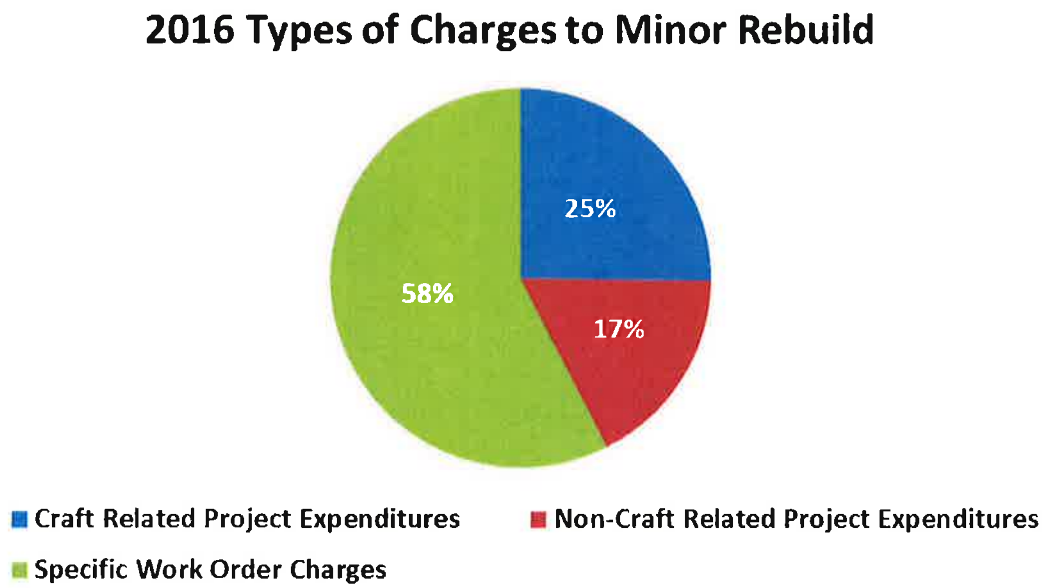


Figure 2: Types of Charges to Minor Rebuild (2016)

The following is a brief description of each type of charge.

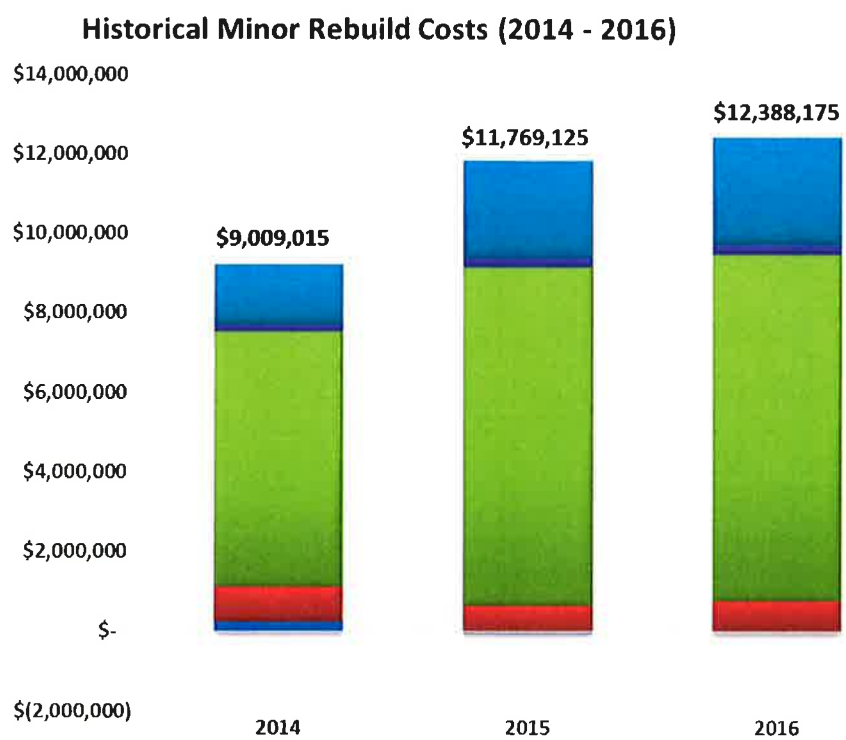
- **Craft Related Project Expenditures**: Craft labor (servicemen, general foremen, local rep), associated vehicle usage, trouble related work charges
- **Non-Craft Related Project Expenditures**: Non-craft labor, associated vehicle usage, contribution reimbursables (credits), and material issues/returns
- **Specific Work Order Charges**: The work order is referenced on timesheets, material requests, invoices, and vehicle charges/loadings.

Distribution Minor Rebuild work is one of the many components that contribute to the overall reliability of the distribution system as well as responsiveness to customer requested service demands and system safety. Safety is of utmost concern for linemen and the general public and the minor rebuild business funds the replacement of a car-hit pole in the alley, a broken cross-arm, a burned up transformer, or fixes a joint use code violation, and a myriad of other safety related projects. By not funding the business will also affect the ability to respond to customers' needs for modifications to their electrical service. Lastly, it is acknowledged some minor rebuilds left unrepaired will not result in immediate catastrophic failures to the distribution system (i.e. a broken pole pin insulator), but over time an adverse accumulation of unrepaired assets would greatly put line workers and the general public at risk as minor asset failures begin to deteriorate pockets of the distribution system.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Unfunded	$0	N/A	
Fund Unplanned Work (based on historical quantities)	$12,300,000	Continuous Program	

Figure 3 is the historical spend required to fully fund the Minor Rebuild business.



	2014	2015	2016
Trouble Related Rebuilds	$1,478,356	$2,400,179	$2,665,215
Joint Use	$190,489	$261,069	$254,814
General Minor Rebuilds	$6,389,964	$8,474,276	$8,703,540
Deteriorated Pole Replacement	$892,854	$678,196	$782,397
Customer Requested	$251,550	$(39,795)	$(17,792)

Figure 3: Minor Rebuild Historical Spend

Figure 3 shows a steady increase in costs for unplanned minor rebuild work from 2014 to 2016. The categories of Joint Use, General Minor Rebuilds, and Trouble

Related Rebuilds increased annually over the three years, while Deteriorated Pole Replacements remained steady in costs. Customer Requested Rebuilds are typically a credit to the business because most are reimbursed in part or in full by the customer. As shown in 2014, Customer Requested Rebuilds are not always reimbursed back to the business.

The Distribution Minor Rebuild business reaches across multiple departments in Engineering and Operations. The business involves operation area engineers, local customer project coordinators, and construction technicians who work directly with customers and perform all the designs for the business. Once the minor projects are designed and ready for construction, field personnel such as a Foremen, Journeyman Linemen, Line Servicemen, Meter men, Equipment Operators execute the work.

The Distribution Minor Rebuild business provides a solution for the utility to address small unplanned asset failures and customer driven modifications to the distribution system, but excludes fixes to the system considered to be maintenance. While the work is unplanned, minor rebuilds to the distribution system occur on a regular basis every year and make up a significant portion of the business within Engineering and Operations. While unplanned and isolated minor rebuilds will always exists in the distribution system, unplanned work is minimized to the greatest extent through other systematic infrastructure programs.

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The Distribution Minor Rebuild business aligns with the company's focus of **Safe & Reliable Infrastructure**, to invest in our infrastructure to achieve optimum life-cycle performance – safely, reliably and at a fair price.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Distribution Minor Rebuild and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature:		Date:	4-14-2017
Print Name:	Cody Krogh		
Title:	Mgr Asset Maintenance		
Role:	Business Case Owner		

Signature:		Date:	4-17-17
Print Name:	Bryan Cox		
Title:	Sr Dir of HR Operations		
Role:	Business Case Sponsor		

5 VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Landen Grant	4/13/2017	Cody Krogh	4/14/2017	Initial version

Template Version: 02/24/2017

1 GENERAL INFORMATION

Requested Spend Amount	$47,443,826
Requesting Organization/Department	Energy Delivery
Business Case Owner	David Howell
Business Case Sponsor	Heather Rosentrater
Sponsor Organization/Department	Energy Delivery
Category	Program
Driver	Customer Requested

1.1 Steering Committee or Advisory Group Information

The Energy Delivery Director Team assumes the role of advisory group for the New Revenue – Growth Business Case, with quarterly reporting to the Board of Directors through the Financial Planning & Analysis department. The appropriate extension and service tariffs are designed and updated by the Avista Rates Department, in cooperation with Construction Services, and the Financial Planning & Analysis department. All Customer Project Coordinators are trained regularly, by Rates and Finance, on tariff application.

2 BUSINESS PROBLEM

- The New Revenue – Growth Business Case is driven by tariff requirements that mandate obligation to serve new customer load when requested within our franchised area. Growth is also seen as a method to spread costs over a wider customer base, keeping rate pressure lower than would otherwise be experienced.
- Avista is required to serve appropriate new load, complying with our Certificate of Convenience and Necessity, and as part of our Obligation to Serve.
- Avista uses a rolling 12-month Cost Per New Service spreadsheet to measure ER1000, Electric New Revenue, and ER1001, Gas New Revenue spending. Device blankets are subject to demand for both new revenue and non-revenue installation and replacement.
- Enclosed are Internal Rate of Return runs from the Revenue Requirements Model for each state and service, showing the breakeven spending to achieve our current 7.29% authorized Rate of Return. These allow us to periodically validate the Line Extension tariffs, to ensure that we are not creating excessive rate pressure in connecting new customers.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Do nothing	$0		
Serve new customer load, and purchase appropriate devices	*$47,443,826*	*01 2017*	*12 2099*
No other alternatives allowed under current tariff.	*$M*	*MM YYYY*	*MM YYYY*

- The New Revenue – Growth Business Case will provide funds for connecting new Electric and Gas customers in accordance with our filed tariffs in each state
- Our obligation to serve, mandates that we must extend service to new customers in our franchised service areas. We do not currently have an alternative to serving new customers. All projects are subject to our Line Extension Tariffs, filed with each State Utility Commission.
- Enclosed is a spreadsheet showing projected spend through 2021 with a breakout by Expenditure Request for the New Revenue – Growth Business Case. Electric and Gas devices are also included, such as Meters, Transformers, Gas Regulators, and ERTs (Encoder Receiver Transmitter). Many of the Meters, Transformers, and ERTs are used as replacements for Transformer Change Out Program, Wood Pole Management, and Periodic Meter Changes. The costs are allocated based on an estimate of how many devices of each type will be used for replacement, rather than new connects. Those splits are shown on the spending summary.
- The New Revenue – Growth Business Case serves as support of several focus areas in Avista. We seek to serve the interests of our customers, in a safe and responsible manner, while strengthening the financial performance of the utility. Our growth contributes to strong communities, ongoing value to our customers, and the device portion of the business case keeps our system safe and reliable.
- The requested funds are broken down in the enclosed spreadsheet, and value assigned to each component.
- All new customers on Avista's system are benefitted by this business case. In addition, all customers who have their metering or regulation changed, or who have transformers replaced, benefit from this business case.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the New Revenue – Growth Business Case and agree with the approach it presents. Significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: David Howell Date: 4/14/17
Print Name: David Howell
Title: Director, Operations
Role: Business Case Owner

Signature: H. Rosentrater Date: 4/23/17
Print Name: Heather Rosentrater
Title: Vice President, Operations
Role: Business Case Sponsor

Signature: Date:
Print Name:
Title:
Role: Steering/Advisory Committee Review

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Neil Thorson*	*03/17/17*	*Heather Rosentrater*	*03/17/17*	*Initial version*

Template Version: 03/07/2017

ER		2016	2017	2018	2019	2020	2021
1000	**Electric New Revenue**						
	Residential Connects	5,030	5,060	4,886	5,067	5,177	5,177
	Residential Cost/Svc	2,300	2,500	2,500	2,500	2,500	2,500
	Residential Dollars	11,569,000	12,650,000	12,215,000	12,667,500	12,942,500	12,942,500
	Commercial Connects	1,000	850	821	851	870	870
	Commercial Cost/Svc	2,219	2,500	2,500	2,500	2,500	2,500
	Commercial Dollars	2,218,900	2,125,000	2,051,927	2,127,940	2,174,135	2,174,135
	ER1000 Total	**13,787,901**	**14,775,000**	**14,266,927**	**14,795,440**	**15,116,635**	**15,116,635**
1001	**Gas New Revenue**						
	Residential Connects	5,295	5,685	5,479	5,656	5,774	5,744
	Residential Cost/Svc	2,384	3,095	3,095	3,095	3,095	3,095
	Residential Dollars	12,624,683	17,592,801	16,955,313	17,503,058	17,868,220	17,775,382
	Commercial Connects	500	560	540	557	569	566
	Commercial Cost/Svc	2,384	3,000	3,000	3,000	3,000	3,000
	Commercial Dollars	1,192,133	1,680,000	1,619,124	1,671,430	1,706,301	1,697,435
	ER1001 Total	**13,816,818**	**19,272,801**	**18,574,437**	**19,174,488**	**19,574,521**	**19,472,818**
1002	**Electric Meters**						
		550,000	550,000	550,000	500,000	500,000	500,000
	ER1002 Total	**550,000**	**550,000**	**550,000**	**500,000**	**500,000**	**500,000**
1003	**Transformers**						
	Growth and Other	3,134,000	3,196,680	3,260,614	3,325,826	3,392,342	3,460,189
	WPM	100,000	300,000	350,000	1,200,000	1,200,000	1,200,000
	TCOP	3,000,000	2,000,000	2,000,000	-	-	-
	Fdr Rebuild	266,400	266,400	266,400	266,400	266,400	266,400
	ER1003 Total	**6,500,400**	**5,763,080**	**5,877,014**	**4,792,226**	**4,858,742**	**4,926,589**
1004	**Street Lights**						
		700,000	900,000	900,000	900,000	900,000	900,000
	ER1004 Total	**700,000**	**900,000**	**900,000**	**900,000**	**900,000**	**900,000**
1005	**Area Lights**						
		625,000	650,000	675,000	700,000	700,000	700,000
	ER1005 Total	**625,000**	**650,000**	**675,000**	**700,000**	**700,000**	**700,000**
1009	**Network Protectors**						
		950,000	960,000	980,000	980,000	980,000	980,000
	ER1009 Total	**950,000**	**960,000**	**980,000**	**980,000**	**980,000**	**980,000**
1050	**Gas Meters**						
	Growth	516,751	556,867	536,688	554,026	565,585	562,646
	PMC	1,427,681	1,470,512	1,514,627	1,560,066	1,606,868	1,655,074
	ER1050 Total	**1,944,432**	**2,027,379**	**2,051,316**	**2,114,092**	**2,172,453**	**2,217,720**

1051	**Gas Regulators**						
	Growth	103,350	237,997	229,373	236,783	241,723	240,467
	PMC	237,668	244,798	252,142	259,706	267,497	275,522
	ER1051 Total	**341,018**	**482,795**	**481,515**	**496,489**	**509,220**	**515,989**
1053	**Gas ERTs**						
	Growth	222,203	218,575	210,655	217,460	221,997	220,843
	PMC	479,803	494,196	509,022	524,293	540,021	556,222
	ERT Replacement	1,517,291	400,000	412,000	424,360	437,091	450,204
	ER1053 Total	**2,219,297**	**1,112,771**	**1,131,677**	**1,166,113**	**1,199,109**	**1,227,269**
1108	**Hallett & White Subst**						
		1,900,000	950,000	950,000	-	-	-
	ER1009 Total	**1,900,000**	**950,000**	**950,000**	**-**	**-**	**-**
Growth Business Case Summary							
ER1000	Electric New Revenue	13,787,901	14,775,000	14,266,927	14,795,440	15,116,635	15,116,635
ER1001	Gas New Revenue	13,816,818	19,272,801	18,574,437	19,174,488	19,574,521	19,472,818
ER1002	Electric Meters	550,000	550,000	550,000	500,000	500,000	500,000
ER1003	Transformers	6,500,400	5,763,080	5,877,014	4,792,226	4,858,742	4,926,589
ER1004	Street Lights	700,000	900,000	900,000	900,000	900,000	900,000
ER1005	Area Lights	625,000	650,000	675,000	700,000	700,000	700,000
ER1009	Network Protectors	950,000	960,000	980,000	980,000	980,000	980,000
ER1050	Gas Meters	1,944,432	2,027,379	2,051,316	2,114,092	2,172,453	2,217,720
ER1051	Gas Regulators	341,018	482,795	481,515	496,489	509,220	515,989
ER1053	Gas ERTs	2,219,297	1,112,771	1,131,677	1,166,113	1,199,109	1,227,269
ER1108	Hallet & White Subst	1,900,000	950,000	950,000	-	-	-
	Total Growth	**43,334,866**	**47,443,826**	**46,437,885**	**45,618,847**	**46,510,681**	**46,557,021**

State Income Tax Rate	0.47%
Federal Income Tax Rate	35.00%
Discount Factor	6.35%
Capital Class	2
Book Life (Years)	Update 55
Property Tax Rate	1.50%
O&M Escalation Factor	3.00%

(1) General Structures
(2) Generation, Transmission, and Distribution
(3) Other Equipment
(4) Transportation Equipment

Debt	[illegible]	[illegible]	[illegible]	[illegible]
Preferred Stock	[illegible]	[illegible]	[illegible]	[illegible]
Common Equity	[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]

Principal	11,000
Interest	6.35%
Term	55
Levelized Gr. Mar. Requirement	723
Lev ROE	219
NPV equity	3,329

IRR CALC

11,000	pv princ
840	pv lvlized margin
7.29%	IRR

Gross Revenue	100.0000%
Uncollectables	[illegible]
Commission Fees	[illegible]
Washington Excise Tax	[illegible]
Franchise Fees	0.0000%
Misc. Revenue Items	4.3287%
Before State Income Tax	95.6713%
State Income Tax	0.0000%
Before Federal Income Tax	95.6713%
Federal Income Tax	33.4850%
Conversion Factor	62.1863%

nominal sum	34,438
	(v)
PV GM	12,776
TERM	55
LEVELIZED	840

ID Electric - Residential

(a)	Capital Additions Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)	Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)	Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)	Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	ACTUAL ROR BY YEAR (u)	Savings or margin by year
Total => Period	7,850	7,850			7,850	7,850	(0)		7,850		4,437	7,631	0	3,356	1,236	55	4,064	28,629	11,000		
1	7,850	7,850	7,850	71	294	71	78	7,701	71	7,775	104	179	0	118	26	1	96	595	560	6.79%	840
2	0	0	7,701	214	567	143	148	7,409	143	7,555	202	348	0	117	45	3	186	1,044	923	4.59%	840
3	0	0	7,409	357	524	143	134	7,133	143	7,271	195	335	0	115	44	2	179	1,012	842	4.92%	840
4	0	0	7,133	500	485	143	120	6,871	143	7,002	188	323	0	112	42	2	172	983	768	5.25%	840
5	0	0	6,871	642	449	143	107	6,621	143	6,746	181	311	0	110	41	2	166	954	701	5.60%	840
6			6,621	785	415	143	95	6,383	143	6,502	174	300	0	108	40	2	160	927	641	5.95%	840
7			6,383	928	384	143	84	6,156	143	6,269	168	289	0	106	39	2	154	901	585	6.32%	840
8			6,156	1,070	355	143	74	5,939	143	6,047	162	279	0	104	38	2	149	876	535	6.69%	840
9			5,939	1,213	350	143	73	5,723	143	5,831	156	269	0	102	37	2	143	852	489	7.09%	840
10			5,723	1,356	350	143	73	5,508	143	5,616	151	259	0	100	36	2	138	827	447	7.51%	840
11			5,508	1,499	350	143	73	5,293	143	5,400	145	249	0	97	35	2	133	803	408	7.97%	840
12			5,293	1,641	350	143	73	5,077	143	5,185	139	239	0	95	34	2	127	779	372	8.47%	840
13			5,077	1,784	350	143	73	4,862	143	4,970	133	229	0	93	33	2	122	755	339	9.01%	840
14			4,862	1,927	350	143	73	4,647	143	4,754	127	219	0	91	32	2	117	730	308	9.60%	840
15			4,647	2,070	350	143	73	4,431	143	4,539	122	209	0	89	30	2	112	706	280	10.24%	840
16			4,431	2,212	350	143	73	4,216	143	4,324	116	199	0	87	29	1	106	682	255	10.95%	840
17			4,216	2,355	350	143	73	4,001	143	4,108	110	189	0	85	28	1	101	657	231	11.73%	840
18			4,001	2,498	350	143	73	3,785	143	3,893	104	179	0	82	27	1	96	633	209	12.60%	840
19			3,785	2,640	350	143	73	3,570	143	3,678	99	170	0	80	26	1	90	609	189	13.57%	840
20			3,570	2,783	350	143	73	3,355	143	3,462	93	160	0	78	25	1	85	585	171	14.66%	840
21			3,355	2,926	175	143	11	3,201	143	3,278	88	151	0	76	24	1	80	564	155	15.72%	840
22			3,201	3,069	0	143	(50)	3,108	143	3,154	85	145	0	74	24	1	77	549	142	16.52%	840
23			3,108	3,211	0	143	(50)	3,015	143	3,062	82	141	0	72	23	1	75	537	130	17.19%	840
24			3,015	3,354	0	143	(50)	2,922	143	2,969	80	137	0	70	23	1	73	525	120	17.89%	840
25			2,922	3,497	0	143	(50)	2,830	143	2,876	77	133	0	67	22	1	71	514	110	18.64%	840
26			2,830	3,640	0	143	(50)	2,737	143	2,783	75	128	0	65	22	1	68	502	101	19.44%	840
27			2,737	3,782	0	143	(50)	2,644	143	2,690	72	124	0	63	21	1	66	490	93	20.29%	840
28			2,644	3,925	0	143	(50)	2,551	143	2,598	70	120	0	61	21	1	64	478	85	21.21%	840
29			2,551	4,068	0	143	(50)	2,458	143	2,505	67	115	0	59	20	1	61	467	78	22.19%	840
30			2,458	4,210	0	143	(50)	2,366	143	2,412	65	111	0	57	20	1	59	455	72	23.25%	840
31			2,366	4,353	0	143	(50)	2,273	143	2,319	62	107	0	55	19	1	57	443	66	24.40%	840
32			2,273	4,496	0	143	(50)	2,180	143	2,227	60	103	0	52	19	1	55	431	60	25.64%	840
33			2,180	4,639	0	143	(50)	2,087	143	2,134	57	98	0	50	18	1	52	420	55	26.98%	840
34			2,087	4,781	0	143	(50)	1,995	143	2,041	55	94	0	48	18	1	50	408	50	28.45%	840
35			1,995	4,924	0	143	(50)	1,902	143	1,948	52	90	0	46	17	1	48	396	46	30.06%	840
36			1,902	5,067	0	143	(50)	1,809	143	1,855	50	86	0	44	17	1	45	385	42	31.83%	840
37			1,809	5,210	0	143	(50)	1,716	143	1,763	47	81	0	42	16	1	43	373	38	33.79%	840
38			1,716	5,352	0	143	(50)	1,624	143	1,670	45	77	0	40	16	1	41	361	35	35.97%	840
39			1,624	5,495	0	143	(50)	1,531	143	1,577	42	73	0	37	15	1	39	349	32	38.40%	840
40			1,531	5,638	0	143	(50)	1,438	143	1,484	40	68	0	35	15	0	36	338	29	41.13%	840
41			1,438	5,780	0	143	(50)	1,345	143	1,392	37	64	0	33	14	0	34	326	26	44.23%	840
42			1,345	5,923	0	143	(50)	1,252	143	1,299	35	60	0	31	14	0	32	314	24	47.77%	840
43			1,252	6,066		143	(50)	1,160	143	1,206	32	56	0	29	13	0	29	302	21	51.86%	840
44			1,160	6,209		143	(50)	1,067	143	1,113	30	51	0	27	13	0	27	291	19	56.62%	840
45			1,067	6,351		143	(50)	974	143	1,021	27	47	0	25	12	0	25	279	17	62.26%	840
46			974	6,494		143	(50)	881	143	928	25	43	0	22	12	0	23	267	16	69.02%	840
47			881	6,637		143	(50)	789	143	835	22	38	0	20	11	0	20	256	14	77.28%	840
48			789	6,780		143	(50)	696	143	742	20	34	0	18	11	0	18	244	13	87.61%	840
49			696	6,922		143	(50)	603	143	649	17	30	0	16	10	0	16	232	11	100.89%	840
50			603	7,065		143	(50)	510	143	557	15	26	0	14	10	0	13	220	10	118.59%	840
51			510	7,208		143	(50)	417	143	464	12	21	0	12	9	0	11	209	9	143.38%	840

State Income Tax Rate 0.47%
Federal Income Tax Rate 35.00%
Discount Factor 6.35%
Capital Class .... 2 (1) General Structures.
(2) Generation, Transmission, and Distribution.
(3) Other Equipment.
(4) Transportation Equipment.

Book Life (Years) .... Update 55
Property Tax Rate 1.50%
O&M Escalation Factor 3.00%

Debt .... [illegible] [illegible] [illegible] [illegible]
Preferred Stock .... [illegible] [illegible] [illegible] [illegible]
Common Equity .... [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible]

Principal 11,000
Interest 6.35%
Term 55
Levelized Gr. Mar. Requirement 723

IRR CALC
11,000 pv princ
840 pv lvlized margin
7.29% IRR

Lev ROE 219
NPV equity 3,329

Gross Revenue	100.0000%
Uncollectables	[illegible]
Commission Fees	[illegible]
Washington Excise Tax	[illegible]
Franchise Fees	0.0000%
Misc. Revenue Items	4.3287%
Before State Income Tax	95.6713%
State Income Tax	0.0000%
Before Federal Income Tax	95.6713%
Federal Income Tax	33.4850%
Conversion Factor	62.1863%

nominal sum 34,438 (v)
PV GM 12,776
TERM 55
LEVELIZED 840

WA Electric - Residential

(a)	Capital Additions Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)	Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)	Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)	Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	ACTUAL ROR BY YEAR (u)	Savings or margin by year
Total => Period	7,850	7,850			7,850	7,850	(0)		7,850		4,437	7,631	0	3,356	1,236	55	4,064	28,629	11,000		
1	7,850	7,850	7,850	71	294	71	78	7,701	71	7,775	104	179	0	118	26	1	96	595	560	6.79%	840
2	0	0	7,701	214	567	143	148	7,409	143	7,555	202	348	0	117	45	3	186	1,044	923	4.59%	840
3	0	0	7,409	357	524	143	134	7,133	143	7,271	195	335	0	115	44	2	179	1,012	842	4.92%	840
4	0	0	7,133	500	485	143	120	6,871	143	7,002	188	323	0	112	42	2	172	983	768	5.25%	840
5	0	0	6,871	642	449	143	107	6,621	143	6,746	181	311	0	110	41	2	166	954	701	5.60%	840
6			6,621	785	415	143	95	6,383	143	6,502	174	300	0	108	40	2	160	927	641	5.95%	840
7			6,383	928	384	143	84	6,156	143	6,269	168	289	0	106	39	2	154	901	585	6.32%	840
8			6,156	1,070	355	143	74	5,939	143	6,047	162	279	0	104	38	2	149	876	535	6.69%	840
9			5,939	1,213	350	143	73	5,723	143	5,831	156	269	0	102	37	2	143	852	489	7.09%	840
10			5,723	1,356	350	143	73	5,508	143	5,616	151	259	0	100	36	2	138	827	447	7.51%	840
11			5,508	1,499	350	143	73	5,293	143	5,400	145	249	0	97	35	2	133	803	408	7.97%	840
12			5,293	1,641	350	143	73	5,077	143	5,185	139	239	0	95	34	2	127	779	372	8.47%	840
13			5,077	1,784	350	143	73	4,862	143	4,970	133	229	0	93	33	2	122	755	339	9.01%	840
14			4,862	1,927	350	143	73	4,647	143	4,754	127	219	0	91	32	2	117	730	308	9.60%	840
15			4,647	2,070	350	143	73	4,431	143	4,539	122	209	0	89	30	2	112	706	280	10.24%	840
16			4,431	2,212	350	143	73	4,216	143	4,324	116	199	0	87	29	1	106	682	255	10.95%	840
17			4,216	2,355	350	143	73	4,001	143	4,108	110	189	0	85	28	1	101	657	231	11.73%	840
18			4,001	2,498	350	143	73	3,785	143	3,893	104	179	0	82	27	1	96	633	209	12.60%	840
19			3,785	2,640	350	143	73	3,570	143	3,678	99	170	0	80	26	1	90	609	189	13.57%	840
20			3,570	2,783	350	143	73	3,355	143	3,462	93	160	0	78	25	1	85	585	171	14.66%	840
21			3,355	2,926	175	143	11	3,201	143	3,278	88	151	0	76	24	1	80	564	155	15.72%	840
22			3,201	3,069	0	143	(50)	3,108	143	3,154	85	145	0	74	24	1	77	549	142	16.52%	840
23			3,108	3,211	0	143	(50)	3,015	143	3,062	82	141	0	72	23	1	75	537	130	17.19%	840
24			3,015	3,354	0	143	(50)	2,922	143	2,969	80	137	0	70	23	1	73	525	120	17.89%	840
25			2,922	3,497	0	143	(50)	2,830	143	2,876	77	133	0	67	22	1	71	514	110	18.64%	840
26			2,830	3,640	0	143	(50)	2,737	143	2,783	75	128	0	65	22	1	68	502	101	19.44%	840
27			2,737	3,782	0	143	(50)	2,644	143	2,690	72	124	0	63	21	1	66	490	93	20.29%	840
28			2,644	3,925	0	143	(50)	2,551	143	2,598	70	120	0	61	21	1	64	478	85	21.21%	840
29			2,551	4,068	0	143	(50)	2,458	143	2,505	67	115	0	59	20	1	61	467	78	22.19%	840
30			2,458	4,210	0	143	(50)	2,366	143	2,412	65	111	0	57	20	1	59	455	72	23.25%	840
31			2,366	4,353	0	143	(50)	2,273	143	2,319	62	107	0	55	19	1	57	443	66	24.40%	840
32			2,273	4,496	0	143	(50)	2,180	143	2,227	60	103	0	52	19	1	55	431	60	25.64%	840
33			2,180	4,639	0	143	(50)	2,087	143	2,134	57	98	0	50	18	1	52	420	55	26.98%	840
34			2,087	4,781	0	143	(50)	1,995	143	2,041	55	94	0	48	18	1	50	408	50	28.45%	840
35			1,995	4,924	0	143	(50)	1,902	143	1,948	52	90	0	46	17	1	48	396	46	30.06%	840
36			1,902	5,067	0	143	(50)	1,809	143	1,855	50	86	0	44	17	1	45	385	42	31.83%	840
37			1,809	5,210	0	143	(50)	1,716	143	1,763	47	81	0	42	16	1	43	373	38	33.79%	840
38			1,716	5,352	0	143	(50)	1,624	143	1,670	45	77	0	40	16	1	41	361	35	35.97%	840
39			1,624	5,495	0	143	(50)	1,531	143	1,577	42	73	0	37	15	1	39	349	32	38.40%	840
40			1,531	5,638	0	143	(50)	1,438	143	1,484	40	68	0	35	15	0	36	338	29	41.13%	840
41			1,438	5,780	0	143	(50)	1,345	143	1,392	37	64	0	33	14	0	34	326	26	44.23%	840
42			1,345	5,923	0	143	(50)	1,252	143	1,299	35	60	0	31	14	0	32	314	24	47.77%	840
43			1,252	6,066		143	(50)	1,160	143	1,206	32	56	0	29	13	0	29	302	21	51.86%	840
44			1,160	6,209		143	(50)	1,067	143	1,113	30	51	0	27	13	0	27	291	19	56.62%	840
45			1,067	6,351		143	(50)	974	143	1,021	27	47	0	25	12	0	25	279	17	62.26%	840
46			974	6,494		143	(50)	881	143	928	25	43	0	22	12	0	23	267	16	69.02%	840
47			881	6,637		143	(50)	789	143	835	22	38	0	20	11	0	20	256	14	77.28%	840
48			789	6,780		143	(50)	696	143	742	20	34	0	18	11	0	18	244	13	87.61%	840
49			696	6,922		143	(50)	603	143	649	17	30	0	16	10	0	16	232	11	100.89%	840
50			603	7,065		143	(50)	510	143	557	15	26	0	14	10	0	13	220	10	118.59%	840
51			510	7,208		143	(50)	417	143	464	12	21	0	12	9	0	11	209	9	143.38%	840

State Income Tax Rate 0.47%
Federal Income Tax Rate 35.00%
Discount Factor 6.35%
Capital Class .... 2 (1) General Structures.
(2) Generation, Transmission, and Distribution.
(3) Other Equipment.
(4) Transportation Equipment.

Book Life (Years) .... Update 45
Property Tax Rate 1.50%
O&M Escalation Factor 3.00%

Debt	[illegible]	[illegible]	[illegible]	[illegible]
Preferred Stock	[illegible]	[illegible]	[illegible]	[illegible]
Common Equity	[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]

Principal 5,424
Interest 6.35%
Term 45
Levelized Gr. Mar. Requirement 368

Lev ROE 106
NPV equity 1,563

IRR CALC
5,424 pv princ
416 pv lvlized margin
7.29% IRR

Gross Revenue	100.0000%
Uncollectables	[illegible]
Commission Fees	[illegible]
Washington Excise Tax	[illegible]
Franchise Fees	0.0000%
Misc. Revenue Items	4.3287%
Before State Income Tax	95.6713%
State Income Tax	0.0000%
Before Federal Income Tax	95.6713%
Federal Income Tax	33.4850%
Conversion Factor	62.1863%

nominal sum
16,989
(v)
PV GM
6,140
TERM
45
LEVELIZED

ID Gas - Residential

(a)	Capital Additions Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)	Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)	Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)	Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	ACTUAL ROR BY YEAR (u)	416
Total => Period	3,910	3,910			3,910	3,910	0		3,910		1,869	3,215	0	1,378	546	23	1,711	12,654	5,424		Savings or margin by year
1	3,910	3,910	3,910	43	147	43	36	3,830	43	3,870	52	89	0	59	13	1	48	305	286	6.48%	414
2	0	0	3,830	130	282	87	68	3,675	87	3,753	101	173	0	58	23	1	92	535	473	4.07%	414
3	0	0	3,675	217	261	87	61	3,527	87	3,601	97	166	0	57	22	1	89	518	431	4.41%	414
4	0	0	3,527	304	242	87	54	3,386	87	3,457	93	159	0	55	22	1	85	502	392	4.75%	414
5	0	0	3,386	391	223	87	48	3,252	87	3,319	89	153	0	54	21	1	82	487	358	5.11%	414
6			3,252	478	207	87	42	3,123	87	3,187	85	147	0	53	20	1	78	472	326	5.49%	414
7			3,123	565	191	87	37	2,999	87	3,061	82	141	0	51	20	1	75	458	297	5.88%	414
8			2,999	652	177	87	31	2,881	87	2,940	79	136	0	50	19	1	72	444	271	6.29%	414
9			2,881	739	174	87	31	2,763	87	2,822	76	130	0	49	19	1	69	430	247	6.72%	414
10			2,763	825	174	87	31	2,646	87	2,705	72	125	0	48	18	1	66	417	225	7.19%	414
11			2,646	912	174	87	31	2,528	87	2,587	69	119	0	46	17	1	64	404	205	7.71%	414
12			2,528	999	174	87	31	2,411	87	2,470	66	114	0	45	17	1	61	390	186	8.27%	414
13			2,411	1,086	174	87	31	2,293	87	2,352	63	108	0	44	16	1	58	377	169	8.88%	414
14			2,293	1,173	174	87	31	2,176	87	2,235	60	103	0	42	16	1	55	363	153	9.57%	414
15			2,176	1,260	174	87	31	2,058	87	2,117	57	98	0	41	15	1	52	350	139	10.33%	414
16			2,058	1,347	174	87	31	1,941	87	2,000	54	92	0	40	15	1	49	337	126	11.17%	414
17			1,941	1,434	174	87	31	1,823	87	1,882	50	87	0	38	14	1	46	323	113	12.13%	414
18			1,823	1,521	174	87	31	1,706	87	1,765	47	81	0	37	13	1	43	310	102	13.21%	414
19			1,706	1,607	174	87	31	1,588	87	1,647	44	76	0	36	13	1	40	297	92	14.44%	414
20			1,588	1,694	174	87	31	1,471	87	1,529	41	71	0	35	12	1	38	283	83	15.87%	414
21			1,471	1,781	87	87	0	1,384	87	1,427	38	66	0	33	12	0	35	271	74	17.31%	414
22			1,384	1,868	0	87	(30)	1,327	87	1,355	36	62	0	32	11	0	33	263	68	18.48%	414
23			1,327	1,955	0	87	(30)	1,271	87	1,299	35	60	0	31	11	0	32	256	62	19.52%	414
24			1,271	2,042	0	87	(30)	1,214	87	1,243	33	57	0	29	11	0	30	248	57	20.65%	414
25			1,214	2,129	0	87	(30)	1,158	87	1,186	32	55	0	28	10	0	29	241	52	21.89%	414
26			1,158	2,216	0	87	(30)	1,101	87	1,130	30	52	0	27	10	0	28	234	47	23.25%	414
27			1,101	2,303	0	87	(30)	1,045	87	1,073	29	49	0	25	10	0	26	227	43	24.75%	414
28			1,045	2,389	0	87	(30)	988	87	1,017	27	47	0	24	9	0	25	220	39	26.43%	414
29			988	2,476	0	87	(30)	932	87	960	26	44	0	23	9	0	23	213	36	28.30%	414
30			932	2,563	0	87	(30)	875	87	904	24	42	0	22	9	0	22	206	32	30.40%	414
31			875	2,650	0	87	(30)	819	87	847	23	39	0	20	9	0	21	198	29	32.78%	414
32			819	2,737	0	87	(30)	762	87	791	21	36	0	19	8	0	19	191	27	35.51%	414
33			762	2,824	0	87	(30)	706	87	734	20	34	0	18	8	0	18	184	24	38.65%	414
34			706	2,911	0	87	(30)	649	87	678	18	31	0	16	8	0	17	177	22	42.31%	414
35			649	2,998	0	87	(30)	593	87	621	17	29	0	15	7	0	15	170	20	46.65%	414
36			593	3,085	0	87	(30)	537	87	565	15	26	0	14	7	0	14	163	18	51.85%	414
37			537	3,171	0	87	(30)	480	87	508	14	23	0	12	7	0	12	156	16	58.20%	414
38			480	3,258	0	87	(30)	424	87	452	12	21	0	11	6	0	11	148	14	66.15%	414
39			424	3,345	0	87	(30)	367	87	395	11	18	0	10	6	0	10	141	13	76.36%	414
40			367	3,432	0	87	(30)	311	87	339	9	16	0	8	6	0	8	134	11	89.98%	414
41			311	3,519	0	87	(30)	254	87	282	8	13	0	7	5	0	7	127	10	109.04%	414
42			254	3,606	0	87	(30)	198	87	226	6	10	0	6	5	0	5	120	9	137.64%	414
43			198	3,693		87	(30)	141	87	169	5	8	0	5	5	0	4	113	8	185.31%	414
44			141	3,780		87	(30)	85	87	113	3	5	0	3	5	0	3	106	7	280.63%	414
45			85	3,867		87	(30)	28	87	56	2	3	0	2	4	0	1	98	6	566.62%	414
46			28	3,910		43	(15)	0	43	14	0	1	0	1	2	0	0	47	3	2605.95%	414
47			0	3,910		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	414
48			0	3,910		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	414
49			0	3,910		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	414
50			0	3,910		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	414
51			0	3,910		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	414

State Income Tax Rate	0.47%	
Federal Income Tax Rate	35.00%	
Discount Factor	6.35%	
Capital Class	2	(1) General Structures. (2) Generation, Transmission, and Distribution. (3) Other Equipment. (4) Transportation Equipment.
Book Life (Years)	Update	45
Property Tax Rate	1.50%	
O&M Escalation Factor	3.00%	

Debt	[redacted]	
Preferred Stock		
Common Equity		
Principal	4,186	
Interest	6.35%	
Term	45	
Levelized Gr. Mar. Requirement	284	
Lev ROE	82	
NPV equity	1,207	

IRR CALC	
4,186	pv princ
321	pv lvlized margin
7.29%	IRR

Gross Revenue	100.0000%
Uncollectables	[redacted]
Commission Fees	
Washington Excise Tax	
Franchise Fees	0.0000%
Misc. Revenue Items	4.3287%
Before State Income Tax	95.6713%
State Income Tax	0.0000%
Before Federal Income Tax	95.6713%
Federal Income Tax	33.4850%
Conversion Factor	62.1863%

nominal sum	13,102
(v)	
PV GM	4,735
TERM	45
LEVELIZED	321

OR Gas - Residential

(a)	Capital Additions Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)	Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)	Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)	Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	ACTUAL ROR BY YEAR (u)	Savings or margin by year
Total => Period	3,018	3,018			3,018	3,018	(0)		3,018		1,443	2,482	0	1,064	422	18	1,321	9,767	4,186		
1	3,018	3,018	3,018	34	113	34	28	2,957	34	2,987	40	69	0	45	10	0	37	235	221	6.47%	320
2	0	0	2,957	101	218	67	53	2,837	67	2,897	78	134	0	45	18	1	71	413	365	4.06%	320
3	0	0	2,837	168	202	67	47	2,723	67	2,780	74	128	0	44	17	1	68	400	333	4.39%	320
4	0	0	2,723	235	186	67	42	2,614	67	2,668	72	123	0	43	17	1	66	388	303	4.74%	320
5	0	0	2,614	302	172	67	37	2,510	67	2,562	69	118	0	42	16	1	63	376	276	5.10%	320
6			2,510	369	160	67	32	2,410	67	2,460	66	113	0	41	16	1	60	364	252	5.48%	320
7			2,410	436	148	67	28	2,315	67	2,363	63	109	0	40	15	1	58	353	229	5.87%	320
8			2,315	503	137	67	24	2,224	67	2,269	61	105	0	39	15	1	56	343	209	6.28%	320
9			2,224	570	135	67	24	2,133	67	2,178	58	100	0	38	14	1	54	332	191	6.71%	320
10			2,133	637	135	67	24	2,042	67	2,088	56	96	0	37	14	1	51	322	174	7.18%	320
11			2,042	704	135	67	24	1,952	67	1,997	54	92	0	36	13	1	49	312	158	7.69%	320
12			1,952	771	135	67	24	1,861	67	1,906	51	88	0	35	13	1	47	301	144	8.25%	320
13			1,861	838	135	67	24	1,770	67	1,816	49	84	0	34	13	1	45	291	131	8.87%	320
14			1,770	905	135	67	24	1,679	67	1,725	46	80	0	33	12	1	42	281	118	9.55%	320
15			1,679	972	135	67	24	1,589	67	1,634	44	75	0	32	12	1	40	270	107	10.31%	320
16			1,589	1,040	135	67	24	1,498	67	1,543	41	71	0	31	11	1	38	260	97	11.16%	320
17			1,498	1,107	135	67	24	1,407	67	1,453	39	67	0	30	11	0	36	250	88	12.11%	320
18			1,407	1,174	135	67	24	1,317	67	1,362	37	63	0	29	10	0	33	239	79	13.19%	320
19			1,317	1,241	135	67	24	1,226	67	1,271	34	59	0	28	10	0	31	229	71	14.42%	320
20			1,226	1,308	135	67	24	1,135	67	1,181	32	54	0	27	9	0	29	219	64	15.84%	320
21			1,135	1,375	67	67	0	1,068	67	1,102	30	51	0	26	9	0	27	209	57	17.28%	320
22			1,068	1,442	0	67	(23)	1,024	67	1,046	28	48	0	25	9	0	26	203	52	18.46%	320
23			1,024	1,509	0	67	(23)	981	67	1,003	27	46	0	24	9	0	25	197	48	19.49%	320
24			981	1,576	0	67	(23)	937	67	959	26	44	0	23	8	0	24	192	44	20.62%	320
25			937	1,643	0	67	(23)	894	67	915	25	42	0	22	8	0	22	186	40	21.86%	320
26			894	1,710	0	67	(23)	850	67	872	23	40	0	21	8	0	21	181	36	23.22%	320
27			850	1,777	0	67	(23)	806	67	828	22	38	0	20	8	0	20	175	33	24.72%	320
28			806	1,844	0	67	(23)	763	67	785	21	36	0	19	7	0	19	170	30	26.39%	320
29			763	1,911	0	67	(23)	719	67	741	20	34	0	18	7	0	18	164	28	28.26%	320
30			719	1,978	0	67	(23)	676	67	697	19	32	0	17	7	0	17	159	25	30.36%	320
31			676	2,046	0	67	(23)	632	67	654	18	30	0	16	7	0	16	153	23	32.74%	320
32			632	2,113	0	67	(23)	589	67	610	16	28	0	15	6	0	15	148	21	35.46%	320
33			589	2,180	0	67	(23)	545	67	567	15	26	0	14	6	0	14	142	19	38.60%	320
34			545	2,247	0	67	(23)	501	67	523	14	24	0	13	6	0	13	137	17	42.26%	320
35			501	2,314	0	67	(23)	458	67	480	13	22	0	12	6	0	12	131	15	46.59%	320
36			458	2,381	0	67	(23)	414	67	436	12	20	0	11	5	0	11	126	14	51.78%	320
37			414	2,448	0	67	(23)	371	67	392	11	18	0	10	5	0	10	120	12	58.13%	320
38			371	2,515	0	67	(23)	327	67	349	9	16	0	9	5	0	8	115	11	66.06%	320
39			327	2,582	0	67	(23)	283	67	305	8	14	0	8	5	0	7	109	10	76.27%	320
40			283	2,649	0	67	(23)	240	67	262	7	12	0	7	4	0	6	104	9	89.87%	320
41			240	2,716	0	67	(23)	196	67	218	6	10	0	6	4	0	5	98	8	108.91%	320
42			196	2,783	0	67	(23)	153	67	174	5	8	0	5	4	0	4	93	7	137.48%	320
43			153	2,850		67	(23)	109	67	131	4	6	0	4	4	0	3	87	6	185.09%	320
44			109	2,917		67	(23)	65	67	87	2	4	0	3	4	0	2	82	5	280.30%	320
45			65	2,984		67	(23)	22	67	44	1	2	0	2	3	0	1	76	5	565.95%	320
46			22	3,018		34	(12)	0	34	11	0	1	0	1	2	0	0	37	2	2603.31%	320
47			0	3,018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	320
48			0	3,018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	320
49			0	3,018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	320
50			0	3,018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	320
51			0	3,018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	##############	320

State Income Tax Rate	0.47%		
Federal Income Tax Rate	35.00%		
Discount Factor	6.35%		
Capital Class	2	(1) General Structures. (2) Generation, Transmission, and Distribution. (3) Other Equipment. (4) Transportation Equipment.	
Book Life (Years)	Update	45	
Property Tax Rate	1.50%		
O&M Escalation Factor	3.00%		

Debt	51.50%	5.20%	2.68%	1.74%
Preferred Stock	0.00%	0.00%	0.00%	0.00%
Common Equity	48.50%	9.50%	4.61%	4.61%
			7.29%	6.35%

Principal	6,013
Interest	6.35%
Term	45
Levelized Gr. Mar. Requirement	407
Lev ROE	117
NPV equity	1,733

IRR CALC

6,013	pv princ
461	pv lvlized margin
7.29%	IRR

Gross Revenue	100.0000%
Uncollectables	[illegible]
Commission Fees	0.2000%
Washington Excise Tax	[illegible]
Franchise Fees	0.0000%
Misc. Revenue Items	4.3287%
Before State Income Tax	95.6713%
State Income Tax	0.0000%
Before Federal Income Tax	95.6713%
Federal Income Tax	33.4850%
Conversion Factor	62.1863%

nominal sum

18,817

(v)

PV GM

6,800

TERM

45

WA Gas - Residential

	Capital Additions																				
	Tax Basis	Book Basis	Rate Base BOP	Accum. Book Deprec.	Tax Deprec.	Book Dep. on Tax Basis	Deferred Taxes	Rate Base EOP	Book Deprec.	Average Rate Base	Interest Expense	Equity Return	O&M & A&G Expense	Property Taxes	Misc. Revenue Items	State Income Tax	Federal Income Taxes	Total Gross Marg Reqmnt	Present Val Gross Marg Reqmnt	ACTUAL ROR BY YEAR	LEVELIZED 461
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	
Total => Period	4,335	4,335			4,335	4,335	(0)		4,335		2,072	3,565	0	1,528	606	26	1,897	14,029	6,013		Savings or margin by year
1	4,335	4,335	4,335	48	163	48	40	4,247	48	4,291	57	99	0	65	15	1	53	338	317	6.47%	459
2	0	0	4,247	145	313	96	76	4,075	96	4,161	112	192	0	64	26	1	102	593	525	4.06%	459
3	0	0	4,075	241	289	96	68	3,911	96	3,993	107	184	0	63	25	1	98	575	478	4.39%	459
4	0	0	3,911	337	268	96	60	3,754	96	3,833	103	177	0	61	24	1	94	557	435	4.74%	459
5	0	0	3,754	434	248	96	53	3,605	96	3,680	99	170	0	60	23	1	90	540	397	5.10%	459
6			3,605	530	229	96	46	3,462	96	3,534	95	163	0	59	23	1	87	523	362	5.47%	459
7			3,462	626	212	96	40	3,325	96	3,394	91	156	0	57	22	1	83	507	330	5.87%	459
8			3,325	723	196	96	35	3,194	96	3,260	87	150	0	56	21	1	80	492	301	6.27%	459
9			3,194	819	193	96	34	3,064	96	3,129	84	144	0	54	21	1	77	477	274	6.71%	459
10			3,064	915	193	96	34	2,934	96	2,999	80	138	0	53	20	1	74	462	250	7.18%	459
11			2,934	1,012	193	96	34	2,803	96	2,868	77	132	0	51	19	1	70	448	227	7.69%	459
12			2,803	1,108	193	96	34	2,673	96	2,738	73	126	0	50	19	1	67	433	207	8.25%	459
13			2,673	1,204	193	96	34	2,543	96	2,608	70	120	0	48	18	1	64	418	188	8.87%	459
14			2,543	1,301	193	96	34	2,412	96	2,478	66	114	0	47	17	1	61	403	170	9.55%	459
15			2,412	1,397	193	96	34	2,282	96	2,347	63	108	0	46	17	1	58	388	154	10.31%	459
16			2,282	1,493	193	96	34	2,152	96	2,217	59	102	0	44	16	1	54	373	139	11.15%	459
17			2,152	1,590	193	96	34	2,021	96	2,087	56	96	0	43	15	1	51	358	126	12.11%	459
18			2,021	1,686	193	96	34	1,891	96	1,956	52	90	0	41	15	1	48	344	113	13.19%	459
19			1,891	1,782	193	96	34	1,761	96	1,826	49	84	0	40	14	1	45	329	102	14.42%	459
20			1,761	1,879	193	96	34	1,631	96	1,696	45	78	0	38	14	1	42	314	92	15.84%	459
21			1,631	1,975	97	96	0	1,534	96	1,582	42	73	0	37	13	1	39	301	83	17.28%	459
22			1,534	2,071	0	96	(34)	1,471	96	1,503	40	69	0	35	13	0	37	291	75	18.45%	459
23			1,471	2,168	0	96	(34)	1,409	96	1,440	39	66	0	34	12	0	35	283	69	19.49%	459
24			1,409	2,264	0	96	(34)	1,346	96	1,378	37	64	0	33	12	0	34	275	63	20.62%	459
25			1,346	2,360	0	96	(34)	1,284	96	1,315	35	61	0	31	12	0	32	267	57	21.85%	459
26			1,284	2,457	0	96	(34)	1,221	96	1,252	34	58	0	30	11	0	31	260	52	23.21%	459
27			1,221	2,553	0	96	(34)	1,158	96	1,190	32	55	0	28	11	0	29	252	48	24.72%	459
28			1,158	2,649	0	96	(34)	1,096	96	1,127	30	52	0	27	11	0	28	244	43	26.39%	459
29			1,096	2,746	0	96	(34)	1,033	96	1,064	29	49	0	25	10	0	26	236	40	28.25%	459
30			1,033	2,842	0	96	(34)	971	96	1,002	27	46	0	24	10	0	25	228	36	30.35%	459
31			971	2,938	0	96	(34)	908	96	939	25	43	0	22	9	0	23	220	33	32.73%	459
32			908	3,035	0	96	(34)	845	96	877	23	40	0	21	9	0	21	212	30	35.45%	459
33			845	3,131	0	96	(34)	783	96	814	22	38	0	20	9	0	20	204	27	38.59%	459
34			783	3,227	0	96	(34)	720	96	751	20	35	0	18	8	0	18	196	24	42.25%	459
35			720	3,324	0	96	(34)	657	96	689	18	32	0	17	8	0	17	188	22	46.58%	459
36			657	3,420	0	96	(34)	595	96	626	17	29	0	15	8	0	15	180	20	51.78%	459
37			595	3,516	0	96	(34)	532	96	564	15	26	0	14	7	0	14	172	18	58.12%	459
38			532	3,613	0	96	(34)	470	96	501	13	23	0	12	7	0	12	165	16	66.06%	459
39			470	3,709	0	96	(34)	407	96	438	12	20	0	11	7	0	11	157	14	76.26%	459
40			407	3,805	0	96	(34)	344	96	376	10	17	0	9	6	0	9	149	13	89.86%	459
41			344	3,902	0	96	(34)	282	96	313	8	14	0	8	6	0	8	141	11	108.90%	459
42			282	3,998	0	96	(34)	219	96	250	7	12	0	7	6	0	6	133	10	137.46%	459
43			219	4,094		96	(34)	157	96	188	5	9	0	5	5	0	4	125	9	185.07%	459
44			157	4,191		96	(34)	94	96	125	3	6	0	4	5	0	3	117	8	280.27%	459
45			94	4,287		96	(34)	31	96	63	2	3	0	2	5	0	1	109	7	565.90%	459
46			31	4,335		48	(17)	(0)	48	16	0	1	0	1	2	0	0	53	3	2603.08%	459
47			(0)	4,335		0	0	(0)	0	(0)	(0)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	##############	459
48			(0)	4,335		0	0	(0)	0	(0)	(0)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	##############	459
49			(0)	4,335		0	0	(0)	0	(0)	(0)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	##############	459
50			(0)	4,335		0	0	(0)	0	(0)	(0)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	##############	459
51			(0)	4,335		0	0	(0)	0	(0)	(0)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	##############	459

1 GENERAL INFORMATION

Requested Spend Amount	$32,000,000
Requesting Organization/Department	Transmission Planning
Business Case Owner	Ken Sweigart
Business Case Sponsor	David Howell/Scott Waples
Sponsor Organization/Department	T&D
Category	Project
Driver	Mandatory & Compliance

1.1 Steering Committee or Advisory Group Information

- Ken Sweigart – Manager, Substation Engineering
- Project Engineer/Project Manager (PE/PM) – Sara Koeff

The assigned PE/PM holds stakeholder meetings to develop/confirm scope, schedule and costs. Also meets at time of pre-construction. Other meetings held as necessary.

This project has also been reviewed by the Engineering Roundtable.

2 BUSINESS PROBLEM

The existing Westside #1 230/115 kV transformer exceeds its applicable facility rating for the P1 event of the Westside #2 230/115 kV transformer. System performance analysis indicates an inability of the system to meet the performance requirements in Table 1 of NERC TPL-001-4 in scenarios representing 2017 Heavy Summer for P1 events. While Avista intends to avoid proactively shedding customer load, an operating procedure to shed non-consequential load can be used until 2021 to mitigate system deficiencies (non-consequential load shedding is considered acceptable through the 84 month implementation of TPL-001-4).

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Alt 1: Status Quo			
Alt 2: Westside Transformer Replacement	*$32M*	*2015*	*2022*
Alt 3: Garden Springs 230kV Station Integration			
Alt 4: Replace Westside Transformers without Station Rebuild			

Alternative 1 – Status Quo/Do Nothing:

This alternative is not recommended because it does not mitigate the expected capacity constraints and does not adhere to NERC transmission planning standards.

Alternative 2 – Westside Transformer Replacement:

Replace the existing Westside transformers with 250 MVA rated transformers and reconstruct both the 230 kV and 115 kV buses at the station to double bus, double breaker. All associated system deficiencies will be mitigated.

Alternative 3 – Garden Springs 230kV Station Integration:

The Garden Springs 230 kV Station Integration project includes the installation of new 230/115 kV transformation in the Spokane area. The additional transformation will off load the Westside #1 and #2 230/115 transformers. In the future, the Garden Springs 230 kV Station Integration project will be necessary in addition to the Westside Transformer Replacement project.

Alternative 4 – Replace Westside Transformers without Station Rebuild:

Replacing the existing Westside transformers to 250 MVA rated transformers will mitigate the transformer overload system deficiencies but will create a short circuit breaker rating exceedance. Additional P2 bus outage system deficiencies will exist.

Solution:

Alternative 2: Westside Transformer Replacement is the recommended solution. Project scope includes the following:

Phase 1: Replace the existing Westside #1 230/115 kV transformer and construct necessary bus work and breaker positions. $11 million, energize 2018

Phase 2: Continue bus work and breaker replacement: $8 million, energize 2019

Phase 3: Replace the existing Westside #2 230/115 kV transformer and complete bus work to single bus configuration: $6 million, energize 2020

Phase 4: Complete bus work to double bus, double breaker on both the 230 kV and 115 kV buses: $7 million, energize 2022

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *Westside 230/115kV Station Rebuild Business Case* and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Date: 4/18/2017
Print Name: Kenneth Sweigart
Title: Manager, Substation Engineering
Role: Business Case Owner

Signature: Date: 4/18/2017
Print Name: Lamont Miles
Title: Manager, Transmission Design
Role: Business Case Owner

Signature: Date: 4/14/17.
Print Name: David Howell
Title: Director, Electrical Engineering
Role: Business Case Sponsor

Signature: Date: 4/19/2017
Print Name: Scott Waples
Title: Director, Planning and Asset Mgmt
Role: Business Case Sponsor

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Ken Sweigart*		*Above signatures*	*4/14/17*	*Initial version*

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$9,450,000
Requesting Organization/Department	T&D – TLD Engineering
Business Case Owner	Lamont Miles
Business Case Sponsor	David Howell/Scott Waples
Sponsor Organization/Department	Electrical Engineering
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

The Engineering Roundtable manages the prioritization of projects within this business case as supported by Asset Management studies and input from company subject matter experts. It is comprised of representatives from the following departments: Asset Maintenance, Asset Management, Compliance, System Planning, System Operations, Telecommunications, Transmission Contracts, Protection Engineering, Substation Engineering, Transmission Engineering, and Substation Support.

2 BUSINESS PROBLEM

The Transmission Major Rebuild – Asset Condition Business Case covers major rebuilds of transmission lines due to overall asset condition. Factors such as operational issues, ease of access during outages, and potential for communications build-out are also considered in prioritizing this work.

A relevant metric to this business case is the Probability, Consequence, and Risk Summary developed by the Asset Management group, which indicates which transmission lines are most in need of replacement due to end-of-life indicators. This list changes on an annual basis based on the work performed under this business case in the previous year. Another relevant metric is the System Operator's Log with a focus on tracking the number of outages related to asset failures.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Requested Start	Requested Complete	Risk Mitigation
Do nothing	$0	N/A		
Implement Transmission Major Rebuild – Asset Condition program at recommended spending levels	$21.1M	2017	N/A (Program)	• Lower Operating Risk • Transmission Outages caused by Asset Failures, and

Option	Capital Cost	Requested Start	Requested Complete	Risk Mitigation
				associated risk of fires
Implement Transmission Major Rebuild – Asset Condition program at current spending levels	$9.45M	2017	N/A (Program)	• Higher Operating Risk • Transmission Outages caused by Asset Failures, and associated risk of fires

The recommended solution is to replace poles, cross-arms, and other assets where the majority of assets have been determined to have reached their end of life.

There are no expected business impacts (such as staffing, etc.) to continue the program in place as it was split off of an existing business case.

Without replacing old and worn-out poles and cross-arms, our system will be increasing in risk for more failures and more risk of a major fire caused by a failure. As time moves forward, the number of failures and risk of a major fire will increase the difference in costs between doing nothing and continuing the Transmission Major Rebuild – Asset Condition program. Transmission outages can have significant consequences as they tend to impact a large number of customers and have the potential to start fires in dry areas.

Transfers to plant will typically occur lightly over a May-June timeframe for work that can be completed in the spring, and heavily in the October-December timeframe for work that has to be completed in the fall. Most of the work is typically completed in fall months due to access conditions and availability of outage windows.

This business case aligns with the organization's mission to deliver reliable energy service to customers by preventing the degradation of reliability of transmission service to the substations that serve them.

Internal stakeholders in this business case include all of the departments listed in the Steering Committee section.

Option 1: Do nothing – Not recommended

Option 2: According to Avista's Transmission System Asset Management Plan, "The 30-year replacement period is recommended at $21.1 million per year, split between $11.3 million for 115kV and $9.8 million for 230kV. This policy, when coupled with an ongoing, annual risk assessment and targeting of funds, over the long term will effectively reduce risks and minimize total lifecycle costs".

Option 3: Current funding level – Current spending on the Asset Condition risk category is $9.45 million annually. Funding levels will be reviewed on an annual basis.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Transmission Major Rebuild - Asset Condition Program and agree with the approach it presents. Significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Lamont A. Miles Date: 4/18/17
Print Name: Lamont A Miles
Title: Transmission Design Manager
Role: Business Case Owner

Signature: David Howell Date: 4/17/17
Print Name: David Howell
Title: Dir. Electrical Engineering
Role: Business Case Sponsor

Signature: Date: 4/19/2017
Print Name: Scott Waples
Title: Director Planning & Asset Mgmt
Role: Business Case Sponsor

5 VERSION HISTORY

[Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Lamont Miles		Above Signatures	4/17/17	Initial version

Template Version: 02/24/2017

GAS FACILITY REPLACEMENT PROGRAM (GFRP) ALDYL A PIPE REPLACEMENT

1 GENERAL INFORMATION

Requested Spend Amount	$20,000,000 - $22,000,000 Annually
Requesting Organization/Department	Natural Gas / Gas Facility Replacement Program
Business Case Owner	Michael B. Whitby
Business Case Sponsor	Heather Rosentrater / Mike Faulkenberry
Sponsor Organization/Department	Energy Delivery / Gas Delivery
Category	Program
Driver	Mandatory & Compliance

1.1 Steering Committee or Advisory Group Information

ADVISORY GROUP:

The Gas Facility Replacement Program (GFRP) Advisory Group consists of the GFRP's Program/Project Manager, Gas Operations Contract Construction Manager, Director of Natural Gas, and the Manager of Gas Design & Measurement. This group meets each month to review program wide Earned Value results, the status of the delivery of all individual projects, budget allocations and variances, internal resource demands, customer care results and issues, contractor performance, and to communicate potential program risks and shortfalls when necessary.

In addition, Avista's Asset Management Group provides periodic input, and or validation of the replacement plan and schedule.

The GFRP's annual work load is captured in an annual "Operating Plan & Projects" document.

2 BUSINESS PROBLEM

MAJOR DRIVERS OF THE GAS FACILITY REPLACEMENT PROGRAM:

As of August 2011 the US Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) mandates gas distribution pipeline operators to implement Integrity Management Plans, or in Avista's case, a Distribution Integrity Management Plan (DIMP) in which pipeline operators are required to identify and mitigate the highest risks within their system. For Avista, aside from third party excavation damage, the highest risks within our natural gas distribution system is Aldyl A Main Pipe (Manuf. 1964-1984), and the bending stress that occurs on Aldyl A service pipe where it is connected to steel main pipe.

More specifically, and as related to the risks identified above, in February 2012 Avista's Asset Management Group released findings in the ***"Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System"*** report. The report documents specific Aldyl A pipe in Avista's natural gas pipe system, describes the analysis of the types of failures observed, and the evaluation of its expected long-term integrity. The report proposed the undertaking of a twenty-year program to systematically replace select portions of Aldyl A medium density pipe within its natural gas distribution system in the States of Washington, Oregon, and Idaho.

Subsequently, the Gas Facility Replacement Program's (GFRP) was formed as the operational entity committed to structuring and implementing a systematic approach to mitigating the Aldyl A pipe risks as identified in aforementioned report.

GAS FACILITY REPLACEMENT PROGRAM (GFRP)
ALDYL A PIPE REPLACEMENT

AVISTA HAS A REGULATORY MANDATE TO COMPLETE THIS PROGRAM.

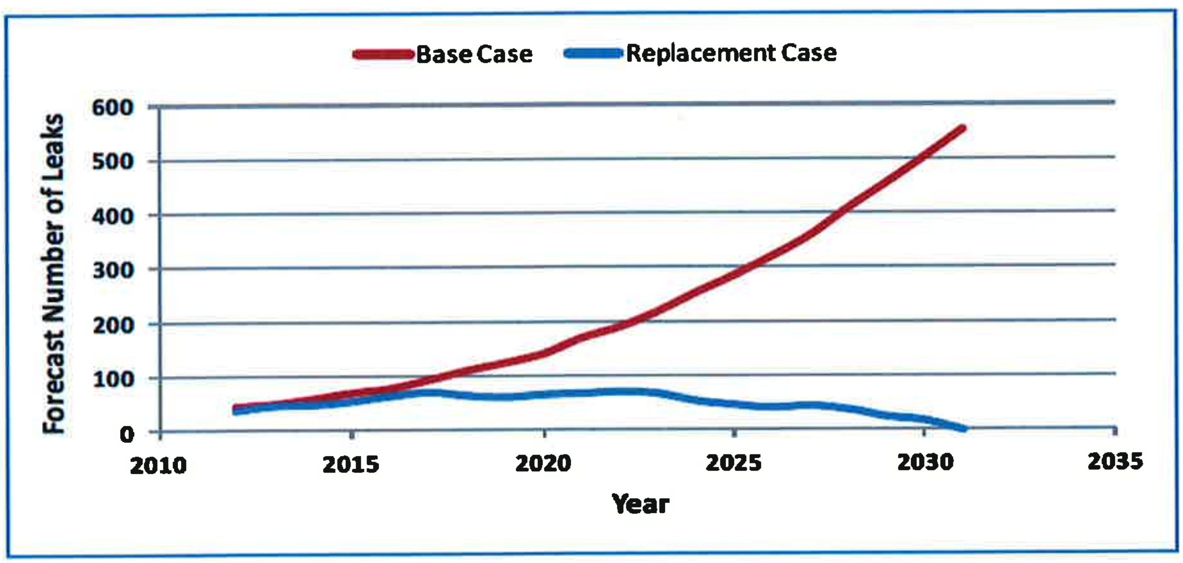
On December 31, 2012 the Washington Utilities and Transportation Commission (WUTC) issued its' policy statement on Accelerated Replacement of Pipeline Facilities with Elevated Risks which requires gas utility companies to file a plan every two year for replacing pipe that represents an elevated risk of failure. The requirement to file a Pipe Replacement Plan (PRP) commenced on June 1, 2013. In response to this order, Avista's first two-year PRP for 2014-2015 was submitted and approved in 2013 per Docket PG-131837, Order 01. Avista's second two-year PRP for 2016-2017 was submitted in 2015 and approved in 2016 per WUTC Docket PG-160292, Order 01. In Avista's filings, the *"Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System"* report serves as the pipe replacement "Master Plan", and two year pipe replacement goals which includes specific project locations, and the anticipated pipe replacement quantities.

While the Idaho Public Utilities Commission (IPUC) and the Oregon Public Utilities Commission (OPUC) have not required gas utility companies to file pipe replacement plans, Avista has submitted the *"Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System"* report for review, and communicates annual pipe replacement goals which includes specific project locations, and the anticipated pipe replacement quantities.

ALDYL A RISK MANAGEMENT: BASE CASE VS. REPLACEMENT CASE:

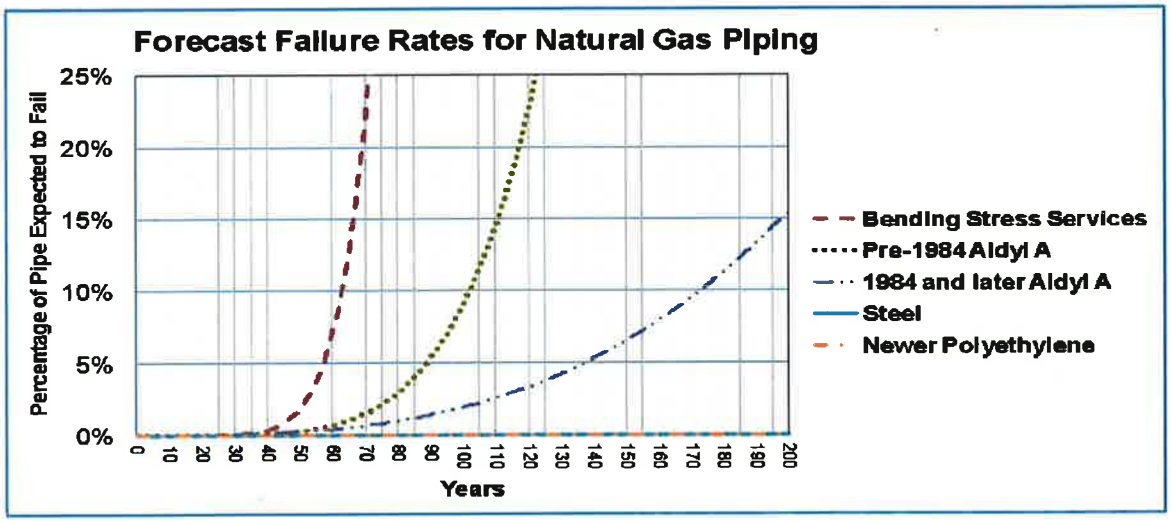
The need to conduct this program has been identified in "Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System" report. Further, and more specifically, due to the tendency for this material to suffer brittle-like cracking leak failures, Aldyl A will eventually reach a level of unreliability that is not acceptable. There is a potential harm to the public through damage to life and property and there is a high likelihood of increasing regulatory scrutiny from increasing failures. Not approving, or deferring this body of work would further exacerbate the risks as identified above.

The chart below identifies the expected number of material failures in Avista's Priority Aldyl A piping in two cases: Replacement Case – piping replaced over a 20 year time horizon, and Base Case – assumed that priority piping was not remediated under any program.



GAS FACILITY REPLACEMENT PROGRAM (GFRP)
ALDYL A PIPE REPLACEMENT

As outlined in "Forecasting Results" section of "Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System" report, Avista's forecast modeling tool "Availability Workbench Modeling" evaluates several classes of pipe which are represented as "curves" showing the percentage of the amount of pipe class that is projected to fail in each year of the forecasted time period. Figure 5 of the report is shown below:



The GFRP's Service Tee Transition Rebuild Program is structured to mitigate the risks associated with the "Bending Stress Services" category within a five-year time frame. The Aldyl A Main Pipe Replacement Program has been structured to mitigate the "Pre-1984 Aldyl A" over a twenty year time frame.

OBJECTIVES & MEASURES OF SUCCESS:

The objective of this investment and structured replacement program is to reduce risk by replacing at risk pipe, and by rebuilding Service Tee Transitions. Through rigorous Project Management efforts, the GFRP plans and tracks the performance of all projects, and utilizes Earned Value for cost analysis and for upstream reporting. Further, the GFRP tracks and reports Planned vs. Actual quantities by project, by year, by state jurisdiction, and also reports multi-year cumulative statistics.

REFERENCE STUDIES:

"Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System" report has been attached.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Replace all Priority Aldyl A Pipe in Avista's System in a Timeframe of 20 Years	*≈ $355M*	*01 2012*	*12 2031*

GAS FACILITY REPLACEMENT PROGRAM IMPACTS TO BUSINESS FUNCTIONS & PROCESSES:

The Aldyl A Pipe Replacement effort has been proposed and planned as a systematic twenty-year pipe replacement program. The program is expected to have a nominal impact to existing business resources, functions and processes since the GFRP has been structured to function as a "stand alone" program consisting of dedicated "internal" resources. The primary functions established for these internal resource are to plan, design, oversee, manage, and administer the significant body of projectized work as assigned to "external" contract construction resources.

Periodically, on an as-needed basis, the GFRP will call on other business units for support.

Since pipe replacement work is a capital expenditure, the impact to O&M cost has been minimal. Occasionally GFRP projects will encounter circumstances that necessitate O&M expenditures. When known, these O&M costs are estimated prior to construction. The GFRP tracks & monitors O&M costs each month.

ALTERNATIVES CONSIDERED:

To establish context, Avista's goal is operate a safe & reliable, and cost effective gas distribution system. Specifically as related to these goals, § XI of *"Avista's Proposed Protocol for Managing Select Aldyl A Pipe in Avista Utility's Natural Gas System"* report details the various time horizons modeled for the Aldyl A Pipe Replacement program.

To summarize, the primary alternatives modeled are as follows;

- **Do Nothing**

Pipe Replacement Strategies:

Since the "do nothing" option was not an acceptable or prudent approach, the Company evaluated different periods of time for removal of all Priority Aldyl A pipe, up to a program horizon of 30 years. Avista assessed the prudence of different approaches based on the forecast of likely natural gas leaks due to failed pipe, as well as the rate impact to customers.

- **Less than 20 Year Pipe Replacement Program**
- **Conduct a 20 Year Pipe Replacement Program (Optimal)**
- **Conduct a 25+ Year Pipe Replacement Program**

Based on the time horizon scenarios modeled, it was determined that the optimum timeframe for removing priority Aldyl A pipe was the 20 years..

GAS FACILITY REPLACEMENT PROGRAM (GFRP)
ALDYL A PIPE REPLACEMENT

RISKS ASSOCIATED WITH ALTERNATIVES CONSIDERED:

To summarize the primary alternatives and associated risks;

- **Do Nothing:**

  It has been determined that this type of pipe is at risk and is approaching unacceptable levels of reliability without prompt attention. The "Do Nothing" option exposes Avista to increased operational risks, and worse, is a potential harm to our customers and the public through damage to life and property, and a high likelihood of legal action against the Company and likely regulatory fines. For this reason it was deemed "not prudent" and is not a serious consideration.

- **Less than 20 Year Pipe Replacement Program:**

  Avista found that a timeline less than 20 years resulted in a greater cost impact to customers in the near term, and that it did little to reduce the forecast number of leaks expected each year. This approach did not effectively optimize the potential risks and rate impacts.

- **Conduct a 20 Year Pipe Replacement Program:**

  The report proposes and suggests that a Systematic Replacement Program conducted over a 20 year timeline is the optimum timeframe to prudently manage this risk, based on the forecast number of leaks and risks, and the rate impact to our customers.

- **Conduct a 25+ Year Pipe Replacement Program:**

  Lengthening the timeframe to 25 years resulted in more than a doubling of the number of leaks expected when compared to a 20 year horizon. Lengthening the timeline beyond 25 years was found to result in a substantial increase in the number of material failures expected.

As outlined above, Asset Management has identified 20 years as the optimum timeframe to prudently manage this risk. Avista's leadership has adopted this recommendation and has funded and staffed the program to achieve this objective. Furthermore, the three state Commissions that regulate Avista's natural gas operations have thoroughly examined this program in several rates proceedings, and in policy proceedings, and have deemed this approach to be prudent, cost effective, and in the interest of our customers.

TIMELINE:

Start: 2012

End: 2031

The annual list of projects are established as unique "blanket projects" that transfer to plant each month as they are "used & useful".

STRATEGIC ALIGNMENT & VISION:

The GFRP's Aldyl A Pipe Replacement efforts aligns with Avista's commitment to invest in our infrastructure to achieve optimum lifecycle performance – safely, reliably and at a fair price. The Program eliminates risk by replacing at risk pipe, which in turn increases system reliability. In effort to ensure a fair price for the work, the GFRP has established "Unit Price" type contract with a multi-year duration of 5 years. On five year intervals, the GFRP plans to test the market for "fair pricing" by issuing a Request for Proposal (RFP) and by receiving competitive proposals for the work. The first ever GFRP RFP yielded (7) interested contractors, (6) qualified proposals, and a two contracts; 1. Main Pipe Replacement. 2. Service Tee Transition Rebuild (STTR).

GAS FACILITY REPLACEMENT PROGRAM (GFRP)
ALDYL A PIPE REPLACEMENT

BUDGET JUSTIFICATION:

As a mandated Pipe Replacement Program, the recommended 20 year replacement approach does not include a specific cost/benefit analysis document, however based on recent pipe replacement cost experience, the program currently estimates the budget to be $20,000,000 - $22, 000,000 annually.

CUSTOMERS & STAKEHOLDERS:

Avista's customers and the general public expect our natural gas system to operate safely, and reliably without inconvenience or incidents. Avista is dedicated to, and focused on maintaining a safe and reliable system that shields the public from inconvenience and imprudent risks. The proposed pipe replacement program has been initiated with the purpose of mitigating the known risks within our natural gas distribution system. Given this context, the Gas Facility Replacement Program's portfolio of projects could therefore be considered as customer-related benefit.

The GFRP's Aldyl A Pipe Replacement projects touch many internal & external stakeholders. A comprehensive list of stakeholders can be located in the annual "GFRP Operating Plan & Projects" booklet.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the ***Gas Facility Replacement Program (Aldyl A Pipe Replacement)*** and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. Significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: [signature] Date: 4/07/17

Print Name: Michael B. Whitby

Title: Program/Project Manager

Role: Business Case Owner

Signature: [signature] Date: 4/17/17

Print Name: Mike Faulkenberry

Title: Director Natural Gas

Role: Business Case Sponsor

4 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Michael Whitby*	*04/07/2017*	*Mike Faulkenberry*	*04//17/2017*	*Initial version*

Template Version: 03/07/2017

GAS FACILITY REPLACEMENT PROGRAM (GFRP)
ALDYL A PIPE REPLACEMENT

supplant

1 GENERAL INFORMATION

Requested Spend Amount	$2,000,000
Requesting Organization/Department	B51 - Gas Engineering
Business Case Owner	Jeff Webb, Tim Harding
Business Case Sponsor	Mike Faulkenberry
Sponsor Organization/Department	B51 - Gas Engineering
Category	Project
Driver	Performance & Capacity

1.1 Steering Committee or Advisory Group Information

The Gas Planning department routinely runs an analysis on Avista's gas distribution system to identify areas of the system with insufficient capacity to serve firm customer's loads on a design day. (Avista defines design day as the projected system demand for a "coldest day on record" weather event). These deficient areas are given a priority level based on the severity of the risk associated with insufficient system capacity. The areas with the highest priority are selected for remediation and the project is assigned to Gas Engineering to evaluate options to provide sufficient capacity to meet firm gas demands on a design day. Options are reviewed with Gas Planning, Gas Operations, and other interested parties. The pros and cons of each options are then reviewed with the Gas Engineering Manager and a preferred alternative selected to proceed with a funding request.

2 BUSINESS PROBLEM

Based on load studies performed by the Gas Planning department, the distribution system in North Spokane has insufficient capacity to serve over 4,000 firm customers on a design day. Sufficient capacity is defined as pressures at or above 15 pounds per square inch (psig) in the distribution system on a design day analysis. Additionally, Avista serves the Inland Asphalt plant located north of this location and it is not able to be reliably served in spring and fall due to capacity limitations on the distribution system.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Option 1 – Do nothing	$0	N/A	
Option 2 – Install 12,000' of high pressure pipe to reinforce the North Spokane area.	$2M	*12 2016*	*12 2017*
Option 3 – Install 12,000' of intermediate pressure pipe to reinforce the North Spokane area.	$500K	12 2016	12 2017

Option 1 – Do nothing.

Without a reinforcement project, Avista is at risk of not having sufficient capacity to serve firm customer load in North Spokane on a design day scenario. See Image 1 on page 3 for a load study analysis showing the distribution system that is at risk.

Option 2 – Install 12,000' of high pressure pipe to reinforce the North Spokane Area.

This option includes the installation of 8" high pressure main, as well as a regulator station that will supply additional capacity to the North Spokane area. These new facilities will be installed on private easements – Ensuring long-term reliability and low operating costs. This new main will substantially increase capacity in the North Spokane area and load study model estimates that the increased capacity would result in no customers loosing gas service on a design day. See Image 2 on page 4 for a load study analysis showing how the proposed reinforcement provides sufficient capacity to the North Spokane area distribution system.

Option 3 - Install 12,000' of intermediate pressure pipe to reinforce the North Spokane Area.

This option includes the installation of 6" intermediate pressure main that will supply additional capacity to the North Spokane area. This new main will increase capacity in the North Spokane area. There are two major disadvantages of this option. First, the system will not meet Avista's minimum pressure requirement of 15 psig on a design day. Second, this option does not allow for growth that is, and will continue to happen in this region of North Spokane. See image 3 on page 5 for the load study analysis of this option.

Image 1 – Distribution System Pressures before Proposed Reinforcement

Image 2 – Distribution System Pressures after Proposed High Pressure Reinforcement (Option 2)

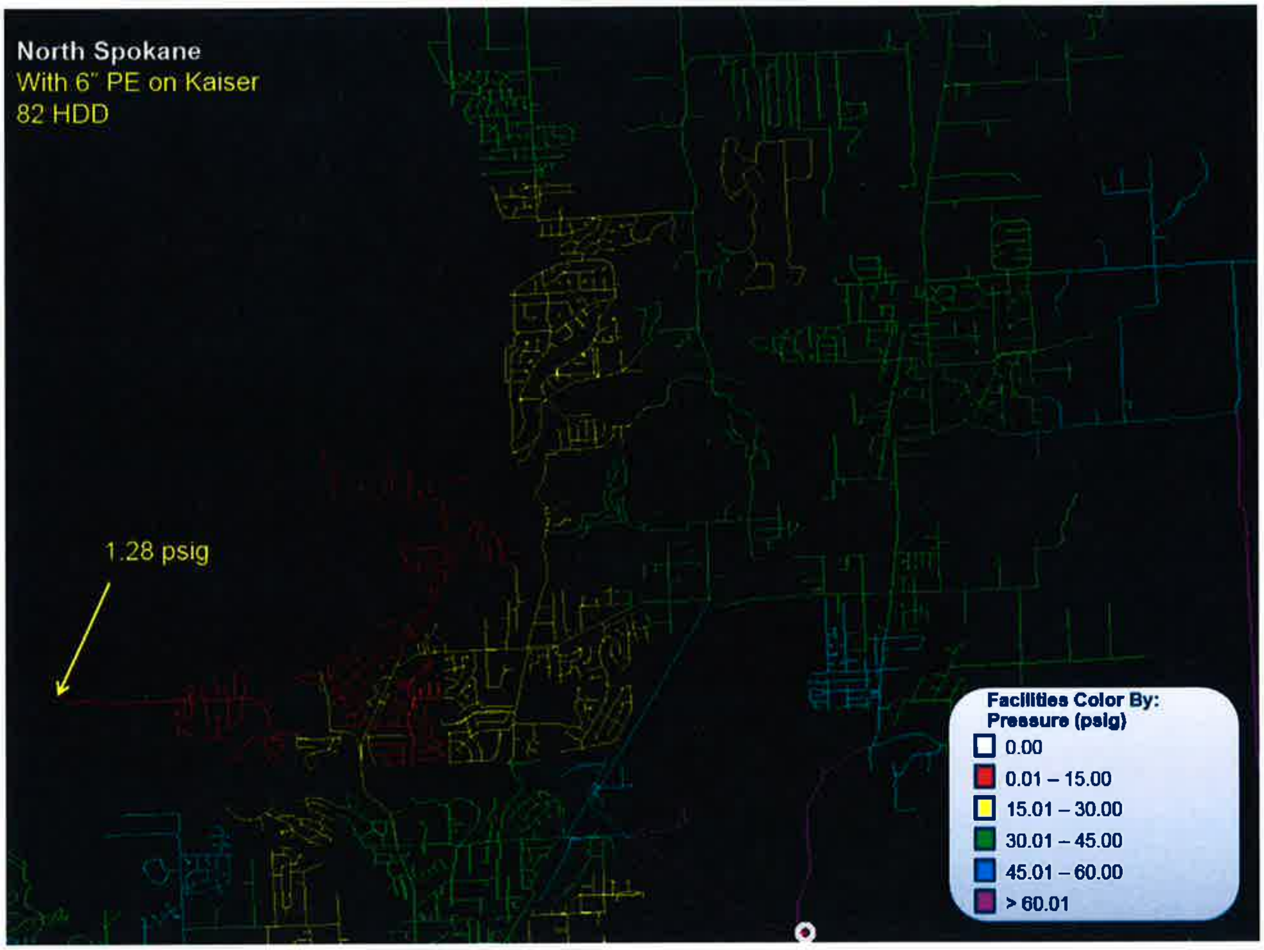


Image 3 – Distribution System Pressures after Proposed Intermediate Pressure Reinforcement (Option 3)

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Gas N Spokane Hwy 2 HP Main Reinforcement Business Case and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section 1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: ______________ Date: 4-17-17

Print Name: Jeff Webb

Title: Manger of Gas Engineering

Role: Business Case Owner

Signature: [signature] Date: 4/17/17

Print Name: Mike Faulkenberry

Title: Director of Natural Gas

Role: Business Case Sponsor

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Tim Harding	03/13/17	Mike Faulkenberry	04/17/2017	Initial version

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$100,000 - 2018
Requesting Organization/Department	B51 – Gas Engineering
Business Case Owner	Jeff Webb
Business Case Sponsor	Mike Faulkenberry
Sponsor Organization/Department	B51 – Gas Engineering
Category	Mandatory
Driver	Mandatory & Compliance

1.1 Steering Committee or Advisory Group Information

Gas Operations manages this category of work. They are notified of upcoming municipal projects that impact the gas system in their areas. When conflicts are identified that require relocating gas facilities, negotiations with the appropriate entities take place in an attempt to design around the conflict. If negotiations are not successful, and if required per the franchise agreement, then Avista will relocate the gas facility to avoid the conflict. If the relocate project is significant enough, then Gas Engineering will take over the project to design and manage. The overall program budget is managed by Gas Engineering.

2 BUSINESS PROBLEM

Due to the Washington State DOT, North-South Corridor Project, a relocation of the gas facilities may be required. Scope and schedule are currently in flux and Avista is working with both WSDOT, City of Spokane, and Burlington Northern Railroad to minimize impacts to our 20" high pressure (HP) gas main. This work will likely happen in 2018.

See the Business Case entitled "Gas Replacement Street and Highway Program" for further justification of this type of project considered "work in request of others".

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Option 1 – Do nothing	$ TBD		
Option 2 – Preferred Solution, Complete replacements as necessary	$100,000	1-2018	12-2018

Option 1 – Do nothing

The nature of this work is considered "work in request of others". If the conflicts are not resolved through design changes or relocation of the gas facilities, Avista would be in conflict with franchise agreements and could be charged with delay of a project. This would not only be a financial burden on the company, but it would also greatly damage the working relationship between Avista and the municipalities.

Option 2 – Preferred Solution, Complete the replacements as necessary

By completing the projects as requested, then Avista meets the obligations under its franchise agreements, remains in good standing with the municipalities, and avoids financial penalties.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Gas N-S Corridor Greene St HP Main Business Case and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section 1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Date: 4-17-17

Print Name: Jeff Webb

Title: Manager Gas Engineering

Role: Business Case Owner

Signature: Date: 4/17/17

Print Name: Mike Faulkenberry

Title: Director of Natural Gas

Role: Business Case Sponsor

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Jeff Webb	04/17/2017	Mike Faulkenberry	04/17/2017	Initial version

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$6,000,000 – Annual Request
Requesting Organization/Department	B51 – Gas Engineering
Business Case Owner	Jeff Webb
Business Case Sponsor	Mike Faulkenberry
Sponsor Organization/Department	B51 – Gas Engineering
Category	Program
Driver	Failed Plant & Operations

1.1 Steering Committee or Advisory Group Information

This work is typically initiated by customers or Avista maintenance crews and is managed at the Local District level. Gas Engineering establishes the overall budget based largely on historical spend patterns and reports monthly updates to the Capital Planning Group based on feedback from the Local Districts. Gas Engineering is responsible for projects under this ER that require substantial design efforts such as farm tap retirements, highway or river crossings, and steel pipelines.

2 BUSINESS PROBLEM

The work in this annual program is mostly reactionary work and is difficult to predict aside from using historical trends. The following situations are typical triggers for such work: shallow facilities found by excavation (the excavation may or may not be related to gas construction), relocation of facilities as requested by others (except for road and highway relocations), leak repairs on mains or services, meter barricades (only in Washington State and only through the year 2020), and farm tap elimination. Each of these work types are further described below. Customer related benefits include reduced operations and maintenance (O&M) costs and improved safety and reliability from having facilities at the proper depth and from reduced leak rates of new plastic pipe versus older steel.

When shallow facilities are discovered, an appropriate response to the situation is determined by Local District Management. If the response to the situation is capital in nature, then the repair is funded from this program. If the scope of the project is large enough to warrant it, the project will be prioritized and risk ranked against other similar type projects. These types of projects allow Avista to remain in compliance and operate the gas facilities in a safe and reliable manner.

If requested by others (typically customers) to relocate facilities, Avista is bound by tariff language to do so at the customer's expense. Under certain circumstances, Avista may choose these opportunities to perform additional work beyond the immediate request to improve or update the gas system. Local District

Management and field personnel will evaluate the circumstances and make an appropriate decision based on a holistic view of the situation. Guidance to help evaluate the scenario is established in the Company Gas Standards Manual. An example might be to replace an entire existing steel service with modern plastic material instead of just replacing a small section of the steel service that is in conflict with a customer's home improvement project. This would eliminate the possibility of future deficiencies with the cathodic protection system on the steel pipes and reduce future maintenance related to that steel service. The charges for this additional work are put against this program.

When leaks are found on the gas system, it is sometime advantageous to replace a section of main or service as opposed to just repairing the leak. The Local District looks at the long term fix when possible, not just addressing the immediate concern but considers what is the right thing to do in these situations. This type of betterment falls under this program.

The need for a meter barricade can come from a variety of sources: customer, meter reader, atmospheric corrosion inspectors, or from company personnel. Each report is vetted by the Local District to ensure the need is warranted and then the job is scheduled for installation. Installation of meter barricades on existing meters sets is capital only in Washington State and only until through the year 2020.

A single service farm tap (SSFT) installed on a supply main is a common way to provide gas service to a small number of customers. The alternative is to install distribution main from an adjacent distribution system to serve the customer which may be cost prohibitive at the time. Many of these farm taps are reaching the end of their service life or need to be replaced for maintenance reasons. In areas of high concentrations of farm taps that have maintenance concerns, it is sometimes advantageous to rebuild one of them as a traditional regulator station (pressure reduction station), install distribution main to the other services from the adjacent farm taps, and then retire the other farm taps. This reduces O&M by having fewer stations to maintain.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Option 1 – Do nothing	$0	N/A	
Option 2 – Preferred Solution, Complete programmatic work as described	$6,000,000	01-2017	12-2017
Option 3 – Alternative Solution, Reduced funding	$3,000,000	01-2017	12-2017

Option 1 – Do nothing

Shallow facilities – Higher likelihood of being damaged and causing a gas leak.

Requested by others & leak repair – To miss the opportunity to better the system while already on-site doing work is shortsighted because we increase the chances of having to be back at the site to remedy other maintenance items at a later date. The decision to simply repair the leak or perform the customer requested work (quickest and easiest thing to do) eliminates the chance to improve the system as a whole, while increasing the chances of having to be back at the site later to fix another leak or maintenance concern. If leaks are not repaired, they must be monitored and re-evaluated on a periodic schedule to ensure they are not becoming a greater hazard to the public.

Meter barricades – Not installing meter protection is against Federal Rules and presents a significant safety risk to the public, especially if the facilities are damaged.

Farm tap elimination – If Avista is not allowed to optimize the gas distribution system by reducing the number of farm taps that are maintenance intensive, then eventually more staff will be required to perform this federally mandated work. Additionally, farm taps are normally located between the driving lane and the property line, are low profile, and are sometimes difficult for the public to see. This puts them at risk of vehicle damage.

Option 2 – Preferred Solution, Complete programmatic work as described

Shallow facilities – Lowering gas mains and services is not required by Federal Rules, but it is prudent. It reduces the chances of damage caused by excavation over and around the gas facilities. This is critical because damage from excavation is the highest risk to our gas facilities. Excavators are expecting gas pipes to be at the depths they are first installed at. When they are shallow because of grade changes that have been caused by others since installation, there is an increased risk of damage and threat to public safety.

Requested by others & leak repair – Betterment of the gas system when opportunities arise is the prudent way to operate a gas distribution system. Mobilizing crews and equipment to a site often covers the bulk of the costs for small projects, so making the most of the time once there is the sensible way to operate. Betterments as described in Section 2 are driven by Company Standards and best practices.

Meter barricades – Avista is mandated by Federal Rules to protect above ground facilities from damage. Gas meters located where vehicles are normally parked or driven create a hazard if the meter is not properly protected.

Farm tap elimination – When there are many farm taps located in close proximity to each other and when those stations have reason to be rebuilt, then it makes sense to rebuild just one of them and install distribution main to the other sites to provide a new source of gas. This allows the adjacent farm taps to be retired, reducing O&M and improving public safety. Triggers for rebuilding a farm tap may include; replacement of inadequate or obsolete equipment that is no longer supported, poor location of station (safety concerns), inability to perform proper maintenance, and capacity constraints.

The customers benefit from these types of projects by having a safer, well maintained distribution system. Also this is a prudent way to spend resources because many deficiencies at stations can be remedied under just one project. Additionally, the new main may be installed in front of structures without gas service, making it easier to serve them with gas in the future should choose to change their energy source.

Option 3 – Alternative Solution, Reduced funding

Shallow facilities – Likelihood of being damaged and causing a gas leak if fewer facilities were lowered.

Requested by others & leak repair – *This betterment would happen at a reduced rate, causing workload pressure on the maintenance personnel.* To miss the opportunity to better the system while already on-site doing work is shortsighted because we increase the chances of having to be back at the site to remedy other maintenance items at a later date. The decision to simply repair the leak or perform the customer requested work (quickest and easiest thing to do) eliminates the chance to improve the system as a whole, while increasing the chances of having to be back at the site later to fix another leak or maintenance concern. If leaks are not repaired, they must be monitored and re-evaluated on a periodic schedule to ensure they are not becoming a greater hazard to the public.

Meter barricades – Not installing meter protection is against Federal Rules and presents a significant safety risk to the public, especially if the facilities are damaged.

Farm tap elimination - *This optimization would happen at a reduced rate, causing workload pressure on the maintenance personnel.* If Avista is not allowed to optimize the gas distribution system by reducing the number of farm taps that are maintenance intensive, then eventually more staff may be required to perform this federally mandated work. Additionally, farm taps are normally located between the driving lane and the property line, are low profile, and are sometimes difficult for the public to see. This puts them at risk of vehicle damage.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Gas Non-Revenue Business Case and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section 1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature:		Date:	4-17-17
Print Name:	Jeff Webb		
Title:	Manager of Gas Engineering		
Role:	Business Case Owner		

Signature:		Date:	4/17/17
Print Name:	Mike Faulkenberry		
Title:	Director of Natural Gas		
Role:	Business Case Sponsor		

5 VERSION HISTORY

[Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Jeff Webb	04/17/2017	Mike Faulkenberry	04/17/2017	Initial version

Template Version: 02/24/2017

1 GENERAL INFORMATION

Requested Spend Amount	$24,000,000
Requesting Organization/Department	Facilities
Business Case Owner	Eric Bowles / Vance Ruppert, Facilities
Business Case Sponsor	Anna Scarlett, Manager, Shared Services
Sponsor Organization/Department	Shared Services
Category	Project
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

The Steering Committee is made up of a cross section of directors that represent groups impacted by the projects, as well as a couple members not directly affected to add an outside view. The current group is as follows:

- Director of Environmental Affairs
- Director of Shared Services
- Director of IT and Security
- Director of Natural Gas
- Director of Financial Planning and Analysis
- Director of Operations

The Advisory Group that assisted in shaping the "Business Problem and the "Proposal and Recommended Solution" consisted of the following stakeholders:

- Gas Operations: Mike Faulkenberry, Tim Mair, Craig Buchanan, Seth Shaffer, Jeff Webb, Fred Valentine. Previous stakeholders included David Howell and John Schwendener.
- Warehouse: Laurie Heagle, Gary Knight, Mike Cavallaro.
- Fleet Maintenance: Greg Loew.
- Facilities: Eric Bowles, Anna Scarlett, Vance Ruppert. Previous stakeholders included Laura Vickers and Mike Broemeling.

Other advisors may contribute input, approvals, or information as needed, and include:

- Vice President of Energy Delivery
- Executive Officers
- End Users

2 BUSINESS PROBLEM

The Dollar Road Service Center serves as the main gas operations facility for approximately 300,000 customers within the greater Spokane area. Approximately 70 Avista field crew and administrative support employees are based out of the site. This facility also supports our local gas crews in the Ritzville, Colville, and Davenport regions to help serve an additional approximately 50,000 customers.

The existing Dollar Road Service Center was constructed in 1956, at a size of approximately 22,000 square feet. Over the decades, previous capital projects included asphalting exterior yards for gas pipe lay down and material and equipment storage, as well as purchasing adjacent properties to increase our storage acreage. In the early 2010's, a vehicle storage and fleet maintenance building was constructed to support the gas operations functions.

This narrative is meant to address the 22,000 square foot main building that has been in service for nearly 70 years. Due to its long history, many of the main building components, systems, and equipment have deteriorated over time.

In 2011, Facilities prepared a survey of several of our existing sites that created an Asset Condition score. The Dollar Road Service Center scored the second lowest in terms of Asset Condition (see attached survey results).

As part of the survey, the following images were captured to represent current conditions:




3 PROPOSAL AND RECOMMENDED SOLUTION

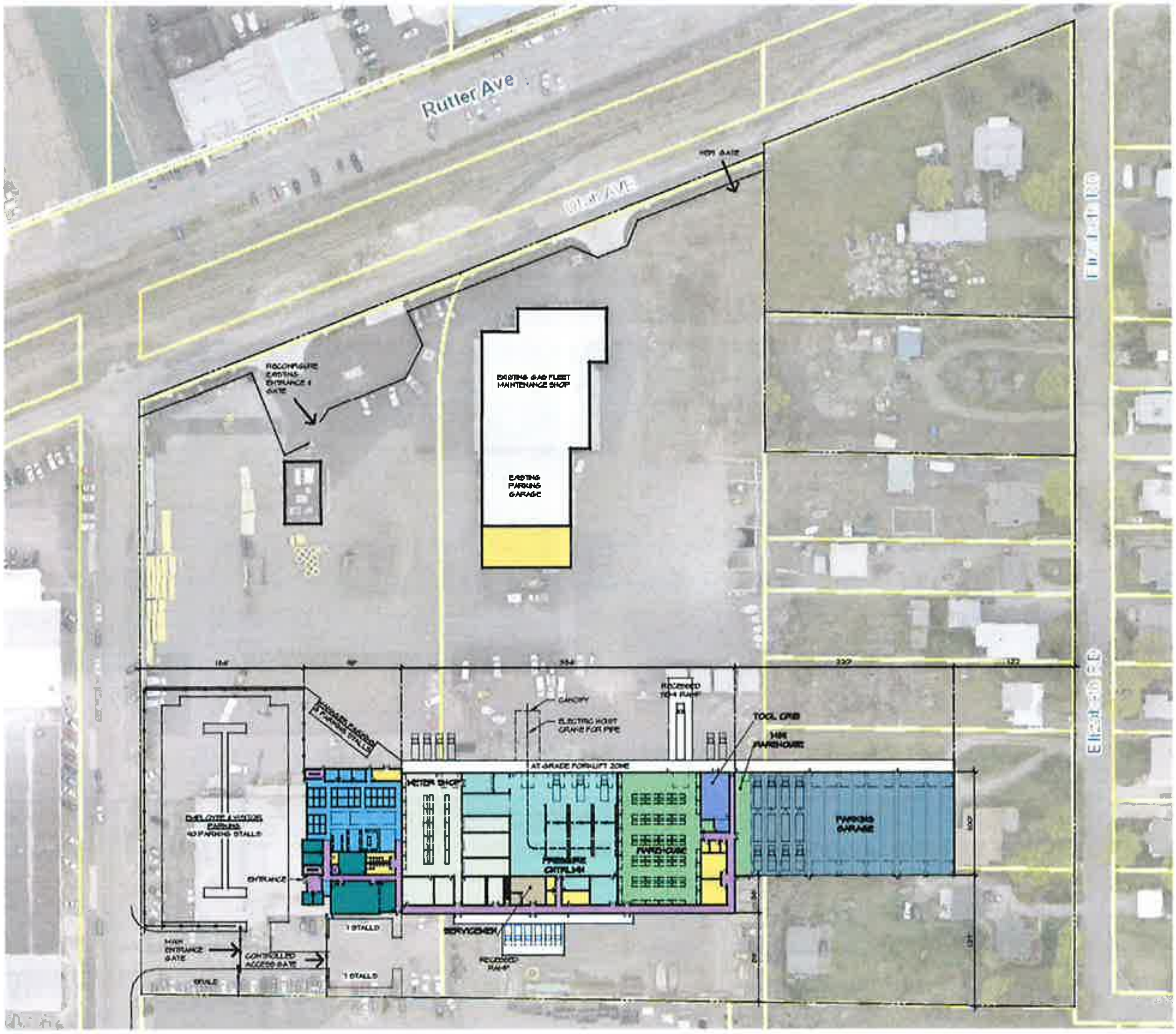
Option	Capital Cost	Start	Complete
Option 1 (Recommended) – Demolish existing building and build new Service Center on existing property.	$24,000,000	01/2016	12/2018
Option 2 – Purchase new property/site and build new Service Center.	$37,000,000 (approx.)	01/2016	12/2018
Option 3 – Do nothing, keep using existing building.	$21K capital yearly. $169K O&M yearly. (Both values are approximate averages from the last 5 years)	N/A	N/A

The three above options were produced with input from the Advisory Group listed above in Section 1, Item 1.1. Please note, individual stakeholders from the Advisory Group may not have been involved in producing all three options.

Option 1 – Demolish existing building and build new Service Center on existing property

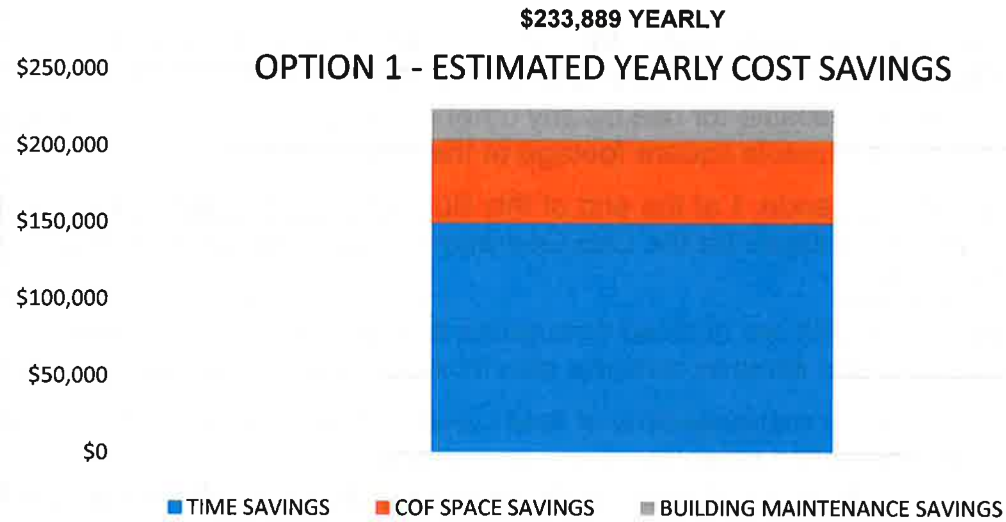
The recommended design solution is shown below. The existing building to be demolished is at the lower left of the image, shown underneath the new proposed parking lot. The vehicle storage and fleet maintenance building was constructed in 2011 and 2013 and is shown in white in the upper middle portion of the image. This option is proposed to begin construction in 2017 and end in late 2018.

New Dollar Road Service Center



The benefits this proposed design will provide include the following items 1 through 7.

1. Estimated Cost Savings. The chart below summarizes estimated yearly cost savings going forward.



- Time savings from increased efficiency and production capabilities of Avista employees leading to direct cost savings, is estimated at approximately $150,000 annually.
- Space savings for potential office space and parking uses will occur once the project is completed due to the relocation of approximately 10 gas meter shop employees from the main campus, and the capacity for relocating up to 30 more as needed, resulting in decreased pressure on the limited employee and parking space at the main campus.
- Building maintenance savings refers to the reduction in building, site, electrical, plumbing, or HVAC systems that will need repair and or maintenance once a new building is completed. The direct cost savings are conservatively estimated to be ($20,000) yearly going forward.

2. Non-quantifiable improvements in safety of Avista employees, including but not limited to:

- Service truck backing accidents.
- Air quality for welding and work that produces possible harmful vapors or particles.
- Providing clearly articulated paths of service vehicle traffic on site.
- Separating employee parking from service yard traffic and parking.
- Providing necessary clearances for employees that work with interior shelving and forklifts, build natural gas control gates, and pick materials such as 60 foot sticks of gas pipe in the storage yard.
- Providing gantry, trolley, and jib cranes as needed to prevent lost time accidents resulting from manual lifting and moving of equipment and materials.
- Providing canopies or covers for main forklift and pedestrian pathways

to prevent snow and ice slips, trips, and falls.

3. Non-Quantifiable Equipment Savings
    - Potential increased longevity of service vehicles/trucks due to being covered and/or in heated parking.
4. Create temporary office space for current Dollar Road employees during construction that will be become permanent after the project is completed. The space will be available for use by any other Avista group, which in turn will free up parking and usable square footage at the main campus.
5. Please see Appendix 1 at the end of this Business Case Justification Narrative for further advantages for the Gas Operations, Gas Meter Shop and Warehouse business units.
6. Customer benefits are outlined throughout the items above, but some clarifications and items to consider also include:
    - Faster response time of field crews due to increased efficiencies.
    - Increased reliability of gas operations.
    - Increased customer safety, especially during a safety event such as a broken gas line.
    - Accommodating future customers within the Spokane area. Between the 2000 and 2010 census Spokane population grew approximately 6%.
    - Ability to accommodate and assist customers outside the greater Spokane area, but within our overall service territory.

Option 2 – Purchase new property/site and build new Service Center

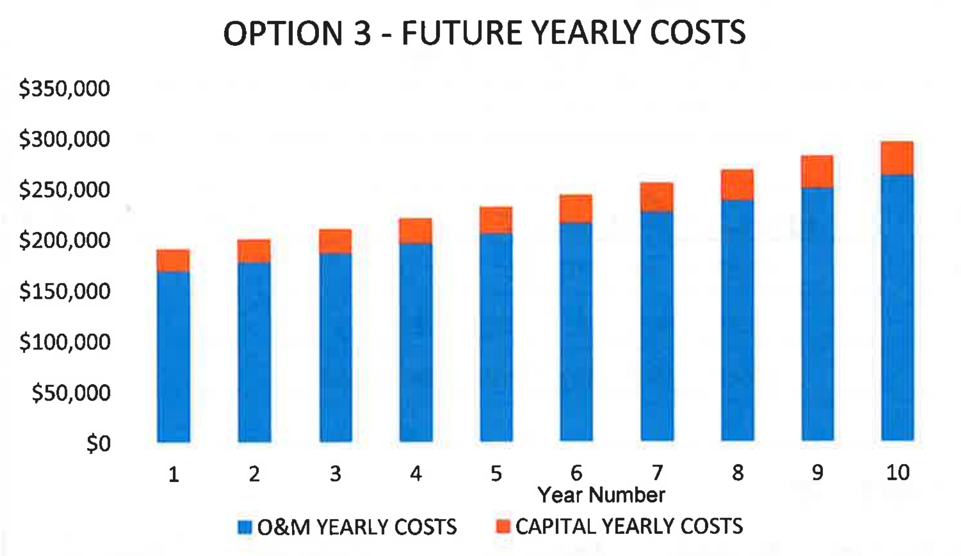
Facilities explored relocating the gas operations to an alternate sites, with the intent to build a facility similar to Option 1 above. In addition, the new site would have to build a new Fleet Maintenance Building and Vehicle Storage Building to replace their uses currently on the existing site. The estimated cost of this option would be $7 million for an alternate site, $24 million for the Option 1 facility above, and $6 million to replace the Fleet Maintenance and Vehicle Storage Buildings (total $37 million).

During the search for an alternate site, it was determined with David Howell and Tim Mair that based on service territory and travel, the new site must be roughly in the same centralized position of Spokane that it is now, which ruled out any lots on the north side or South Hill of Spokane, west towards the Airport, or east towards the Valley. We did find a lot of suitable size near Playfair Commerce Park, however it was a build-to-suit lease option only, not a purchase option. The central location desired resulted in no lots on the market (at that time) large enough for the Gas Operations team. It was thus decided to stay and expand upon the current site by purchasing residential properties to the east and re-zone them into LI Light Industrial Zoning.

Option 3 – Do nothing, keep using existing building

The third option will see ongoing yearly average costs at about $190,000 per year ($21,000 in capital and $169,000 in O&M costs). It should be noted that the O&M costs should expect to grow uniformly over time as the building must be maintained to remain in usable condition. Using a conservative uniform increase rate of 5% yearly it could be expected that within 10 years the O&M yearly costs would at least approach $265,000. At the same time, over that 10 years a total of approximately $2.1 million would be spent on O&M maintenance costs.

In regards to future capital costs, it should be expected that it will rise at a uniform increase rate of 10% yearly as building, site, and building systems are systematically replaced due to age or condition. Using this figure it could be expected that within 10 years the capital yearly costs would at least approach $33,000. At the same time, over that 10 years a total of approximately $270,000 would be spent on capital costs. However, catastrophic failures of the building, site, or any of its systems would require an immediate, and potentially costly, replacement from capital budget resources. It could create a spike in any given year of the capital cost spending due to the failure.



4 APPROVAL AND AUTHORIZATION

Dollar Rd Service Center

The undersigned acknowledge they have reviewed the ~~Campus Repurposing Phase 2~~ plan and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: [signature] Date: 5/1/17

Print Name: Eric Bowles

Title: Manager, Facilities

Role: Business Case Owner

Signature: A Scarlett Date: 5/1/17

Print Name: Anna Scarlett

Title: Manager, Shared Services

Role: Business Case Sponsor

Signature: [signature] Date: 4-28-17

Print Name: Heather Rosentrater

Title: Vice President, Energy Delivery

Role: Steering/Advisory Committee Review

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	Eric Bowles	04/25/17	Heather Rosentrater	04/25/17	New template

Template Version: 03/07/2017

Appendix 1

1. Gas Operations additional efficiencies obtained and justifications for Option 1, as per Tim Mair:

Heated Truck Parking Stalls:

- Protects the trucks from winter weather – shortens the time that it takes to get ready for use.
- Increases the life span of tools that are no longer in the elements.
- Dry's tools, equipment, and the trucks out for the next day's work.
- Eliminates the need for engine power cord connections, and snow removal of trucks.
- Mini warehouse will be in this area for loading trucks.

Pressure Control-men work area:

- At this time the area is over crowded with not enough area to work and walk.
- Improves the overall safety of employees working in the area.
- Large diameter pipe is being moved around by employees without full use of cranes. The new cranes will enable the employees to do the work with a crane.
- The new area will be better ventilated for clearing the area out when welding.

Covered Crane / Pipe Cleaning Area:

- Preparation of pipe needs to be outside for health and safety reason.
- Cleaning of this pipe outside will help keep the PC area inside clean and avoid trip hazards.
- Crane will be used to transport large diameter pipe into PC area for final prep and build of Regulator Stations.
- The crane and covered area will improve the overall safety for this area and the employees.

Welding Training Room:

- This room will have 3 training weld stations that are enclosed out of the weather.
- We have only 2 stations now that are outside on the dock.
- Improves safety, out of weather, and better training environment.

Tool Crib Area:

- Improved storage racks – safer to work around, more organized.
- More open area for the tools to be repaired.
- Locked area for storing of high cost items.

Gas Serviceman Area:

- Area is used to build meter sets and house out of stores parts for field work.
- Test equipment required in this area which is required to meet compliance regulations.

Main Office Area:

- Two conference rooms will facilitate the meeting requests for five different departments working out of the service center.
- Foreman's work area is consistent with other service centers. It will allow the foreman to complete paper work, check emails, follow up on training, and complete time sheets online.
- Cubicle space for field workers – this area will be used for computer based, training, checking emails, and field paper work.
- Existing office space for 26 employees new space for 31 employees allow for some growth.
- Large classroom – used for Quarterly, safety, training meetings and for emergencies.
- Break Room will be used for early AM crew meetings.

Covered Spoils Area:

- Sand, cold mix, and gravel that is left uncovered creates problems with dust, freezing of materials, additional weight for loading and hauling. This adds cost and time to the work that has to be done with this material.

2. Gas Meter Shop additional efficiencies obtained and justifications for Option 1, as per Fred Valentine:

The bullets points below help show how things will be improved (compared to current state) when the Dollar Road Service Center gets completed. To summarize:

1 – Material will be managed and distributed by one group. Currently, two different groups are doing this work.

2 – Material will be consolidated under one roof. Currently, there are at least 6 locations meters and regulators are being stored.

3 – Inventory will be easier to record when all material is in one warehouse.

4 – Shop size increase will allow more functional space.

5 – Work benches will be in each specific room and not in pedestrian areas as per current layout.

6 – Noise and debris will be confined to the specific room and not throughout the entire area, or adjoining neighbors.

7 – Material and equipment specific to each room will have a "destination" rather than a random placement for future attention.

8 – Shelves can be placed more appropriately to increase spacing for safer movement and use of units.

3. Warehouse additional efficiencies obtained and justifications for Option 1, as per Laurie Heagle:

- Increased number of stores inventory items from 670 in 2011 to 1200 in 2016. A 79% increase.
- Changes in gas standards and increased emphasis on gas growth continue to **increase both** the ***number of new items*** and the ***quantity of material needed*** to serve the company's needs. (Dollar Road is the distribution center for all of Washington and Idaho and some of Oregon.)

- Pallets of materials must be routinely placed in the aisles as there is not enough space to stage, put away or store materials on shelves/racking. This makes the storekeepers job to pull materials more challenging and time consuming.
- With the added number of items it is challenging to place frequently needed materials in locations to provide efficient and ergonomic access.
- The warehouse is not currently secured resulting in unexpected material shortages.

1 GENERAL INFORMATION

Requested Spend Amount	$28,000,000
Requesting Organization/Department	Facilities
Business Case Owner	Vance Ruppert / Eric Bowles, Facilities
Business Case Sponsor	Anna Scarlett, Manager, Shared Services
Sponsor Organization/Department	Shared Services
Category	Project
Driver	Performance & Capacity

1.1 Steering Committee or Advisory Group Information

The Campus Repurposing Phase 2 Steering Committee is made up of a cross section of directors that represent groups impacted by the projects, as well as a couple members not directly affected to add an outside view. The current group is as follows:

- Director of Environmental Affairs
- Director of Shared Services
- Director of IT and Security
- Director of Natural Gas
- Director of Financial Planning and Analysis
- Director of Operations

Advisors may contribute input, approvals, or information as needed, and include:

- Vice President of Energy Delivery
- Executive Officers
- End Users

Each project within this business case is reviewed and approved by the Steering Committee group, and regular updates are provided during project execution.

2 BUSINESS PROBLEM

The Campus Re-Purposing Plan is a multiyear plan (Phase 1 and Phase 2) that address the following issues:

- Employee space needs
- Improving safety and efficiency of campus traffic flow
- Outdated fleet maintenance space and processes
- Lack of materials storage yards, no short-term flexibility

- Alignment of campus parking and number of employees based at main campus

The Avista corporate campus comprises 28 acres located next to the Spokane River in heart of the Logan Neighborhood. The campus in just north of the downtown Spokane corridor. Avista also owns eight additional acres of property directly adjacent to the campus at the north end. This parcel is separated from the main campus by North Center Street (a main city arterial).

Avista's corporate campus footprint is currently bound to the east by the Spokane River, and to the west and south by the Mission Park and Burlington Northern Railroad, leaving minimal flexibility to manage company parking, employee and materials space needs.

The Avista corporate campus was built in 1958 to consolidate and house all utility operations that were at that time spread throughout the community. As business needs changed over time, one-off expansion projects were to reactively address changes in business need. Employee growth and materials storage increases through the years have created the need to locate employees and materials at offsite locations, requiring space leases and other non-optimal solutions to meet growing company space needs.

Strategic property purchases to the North of the campus have been ongoing since 1988 as they become available to help address the issue and grow the campus to give us future flexibility. The final properties between Avista and the neighboring Riverview Retirement Community were purchased in 2014, now allowing us to develop them for company use.

The decision was made in 2011 to take a holistic approach to these issues and create a single proposed solution for the Corporate Campus that would address current issues, and future needs. The campus repurposing planning group began working in 2011 to find a way to address the growing employee space needs, parking issues, campus materials storage issues, safety and traffic flow issues (Operations traffic and employee traffic mixing), as well as look into addressing the changing business needs of our vehicle fleet and operational processes.

The result of this approach is a total campus plan that repurposes the existing campus for the next 50 years, minimizing our reactive approach and ensuring the best long term results for the Company and Ratepayers.

3. PROPOSAL AND RECOMMENDED SOLUTION

Campus Repurposing Phase 2 includes three major projects:

1. **North Center Re-Route**
2. **Construct New Fleet Building**
3. **Construct Parking Garage**

These three projects are connected and largely dependent on each other because of location, timing and the overall campus design. The projects will ultimately allow us to:

- Expand and consolidate the campus footprint while establishing a formal boundary between the Avista campus and the Riverview campus.
- Modernize the aged Fleet Building and address Fleet queuing needs.
- Expand and locate campus parking to align the available number of parking spaces with the number of employees working onsite, improving employee and public safety by reducing parking sprawl.
- Separate operations traffic from pedestrian traffic to improve safety and increase workflow efficiencies.

Campus Repurposing Phase 2

Project 1: North Center Street Re-Route

Avista-owned properties separated from campus by North Center Street

North Center Street currently divides us from the eight acres of property owned to the north on Ross Court. Re-routing North Center Street will allow us to consolidate our campus to include these properties. As North Center Street is a major city arterial that connects Indiana Street to Upriver Drive, a considerable amount of traffic uses the street daily. This traffic creates an ongoing safety risk to employees moving back and forth between the properties. It also creates challenges with securing the lots during business hours (gates, entrances, etc.).

Beginning in 2013, Avista began discussion with Riverview to plan the future development of each of our campuses. Riverview management expressed concern with future development on our adjacent properties due to the proximity of these properties to their resident housing. With no formal separation between our campuses, they were concerned with the height of proposed buildings as well as idling diesel trucks next to their resident properties.

Several options were considered (see options listed below). After many discussions, there was interest on both sides to explore rerouting North Center Street to the north in order to: 1) consolidate our properties into our secured campus; and 2) give Riverview a formal separation between our campuses.

Ross Court Property Options (re-route of North Center Street)	Capital Cost	Start	Complete	Risk Mitigation
Option 1 (Recommended): North Center rerouted around our Ross Court properties, adding eight acres to the Campus	$6M	2016	2017	Riverview prefers this option due to formal separation.
Option 2: no reroute (minimum development required to make Ross Court property usable). North Center Street remains in place creating a separated campus to the North, accessed by crossing North Center. Fencing, gates, and lot development still required.	$3,000,000	2016	2017	Risk involved in transporting materials across a major City Arterial. Strong opposition from Riverview on any development other than basic storage.
Option 3: no reroute, with tunnel or bridge connection to Ross Court North Center Street would remain and a tunnel or bridge would be created to safely access Ross Court and create a single secured Campus.	$8,000,000	2016	2017	Higher maintenance costs for bridge or tunnel. Strong opposition from Riverview on any development other than basic storage
Option 4: Do nothing	$0	Basic storage use only with no development. Property does require basic Civil and site work to be usable though.		

<u>Option 1 (recommended): Reroute North Center Street to consolidate Ross Court properties with the main campus.</u>

The re-route of North Center Street would allow us to create a new operations entrance to our campus, separating operations traffic from pedestrian traffic and resulting in operations workflow efficiencies and improved safety of the company and employees.

Campus Repurposing Phase 2

Recommended Option	
Positive Benefits	**Negatives**
Allows the creation of a new Operations entrance	Issues with City permitting?
Riverview's preferred option due to formal separation. No opposition to future developments options	Closure of North Crescent Street to access apartments behind Riverview
Single connected/secured Campus	
Better Operations traffic flow from entry, drop off, and parking	
Create a formal separation between Avista and Riverview	
Better separation of employee and Operations traffic would dramatically lessen safety risk to the company	

Options 2 and 3: No reroute, leave North Center Street in place and secure as separate campus.

A minimum of Option 2 or 3 would be required to make the Ross Court properties usable; however, these options would not allow separate operations entrance to be added.

Options1 and 2	
Positive Benefits	**Negatives**
Lower cost options (Option 1 lower cost, Option 2 similar cost)	Development options we are considering would be strongly opposed by Riverview due to direct adjacency of our operations to their resident properties
Slightly larger usable area vs Option 1	Two separate campuses requiring constant traffic across North Center Street creates safety risk (Alternative 2 only).
Alternative 2 would create a single Campus access	Alternative 2 would require higher O&M cost for tunnel or bridge
Quicker project execution	These 2 alternatives will not allow for a new Operations entrance

Project 2: Construct New Fleet Operations Facility

Avista's existing fleet operations building is located in the heart of the main campus and was originally built in 1958 to centralize all Avista fleet maintenance operations.

Vehicle and Building Size

The original fleet building was built to house smaller half-ton pick-ups and has been expanded twice through the years to accommodate the increased size of the new service trucks, once in 1978 and again in 1999. The size of vehicles in today's fleet have continue to increase since 1999 and some of the current fleet is difficult to service in the existing building. The current building is much smaller than City of Spokane and Waste Management facilities, which utilize similar-sized vehicles. Many of our larger trucks cannot be worked on in the existing space without leaving the doors open.

Existing Fleet Building Location

CNG

Avista has added vehicles fueled by compressed natural gas (CNG) to our fleet over the past four years. The existing fleet building is not CNG rated and all CNG-fueled vehicles must be taken offsite for repairs. To make the building CNG compliant would require the addition of a new emergency exhaust system. The estimated cost to make the building CNG compliant is around $1.3 Million

Environmental

The hydraulic lift system installed in the existing building did not include secondary containment when originally installed, and testing has indicated possible leakage of hydraulic oil in the soil under the building. Relocation of the building will allow us to completely encase all new hydraulic systems and mitigate any current or potential leakage.

Safety

The existing fleet staging and queuing area is also in the heart of the campus and is directly adjacent to multiple parking canopies and surface parking areas. This staging area is small and requires multiple trips in and out of the area for day-to-day operations. A main employee walkway also goes through this major traffic area and brings considerable safety risk to the company as some of the pedestrian traffic can be hidden by the parking canopies. Moving the fleet building to the north will allow for increased queuing area and lessen the employee and operations traffic risk considerably.

Building Conditions

In addition to compliance, environmental and safety issues, the existing building has a number of conditions that affect operations and employee safety and health, including the issues below (see attachment *Corp Fleet Building Issues* for complete list).

- Current facilities have bays less than 14' wide. Current trucks are 103" wide at the mirrors, leaving limited space for maneuvering and working on vehicles.
- We cannot lift rear tandem axle trucks with in ground lifts. We utilize wheel lifts which add 38" to the width of the vehicle. This leaves less than 2' for the technician to move himself and his tools into position. Tandem axle trucks make up 35% of the Avista Fleet. This effects productivity.
- Roof leaks at multiple points.

Options and Alternatives

Fleet Operations Options	Capital Cost	Start	Complete	Risk Mitigation
Option 1 (Recommended): Build a new CNG-compliant Fleet Operations building at the north end of the property and address the existing issues. • This options would allow us to use the existing fleet footprint for the Parking Garage and move all	$10,000,000	2017	2018	Major safety risk mitigated with employee and Ops traffic mixing.

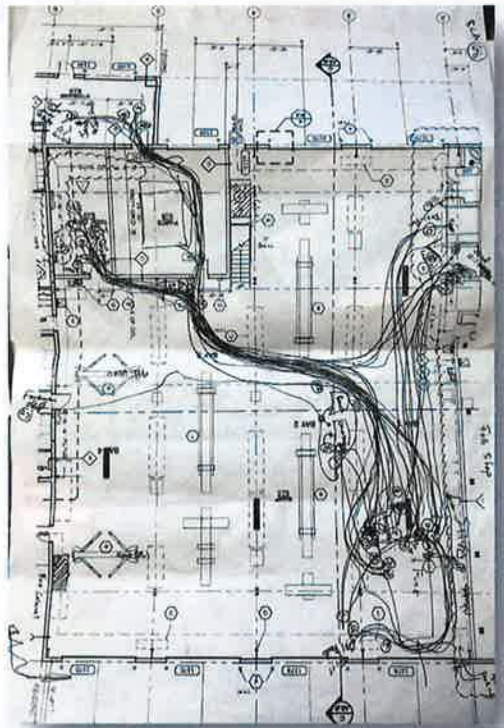
Operations traffic to the North end of the Campus.				
Option 2: Address the major issues in the existing building separately. • Replace Hydraulic systems, replace the constantly leaking roof, and install a CNG compliant exhausting system. • Increase the building in the future if needed.	$4,000,000	2017	2018	• Location not optimal in regards to safety and risk • Environmental and compliance issues • Continued rising of maintenance costs due to age of the building and systems
Option 3: Do nothing	$0	Still need to address the future impact of larger fleet vehicle sizes, aging hydraulic systems, non-compliant CNG space, and most importantly the safety risk due to the constant traffic and employee mixing.		

Option 1 (recommended): Construct a new fleet operations facility at the north end of the campus.

Constructing a new fleet operations center operations building strategically located at the north end of the campus would achieve a number of objectives:

- Enable us to increase the size of bays to accommodate larger fleet vehicles
- Address CNG compliance requirements and environmental issues related to the aging current facility
- Increase efficiency and safety of pedestrians and operations traffic on campus
- Increase efficiency of fleet operations

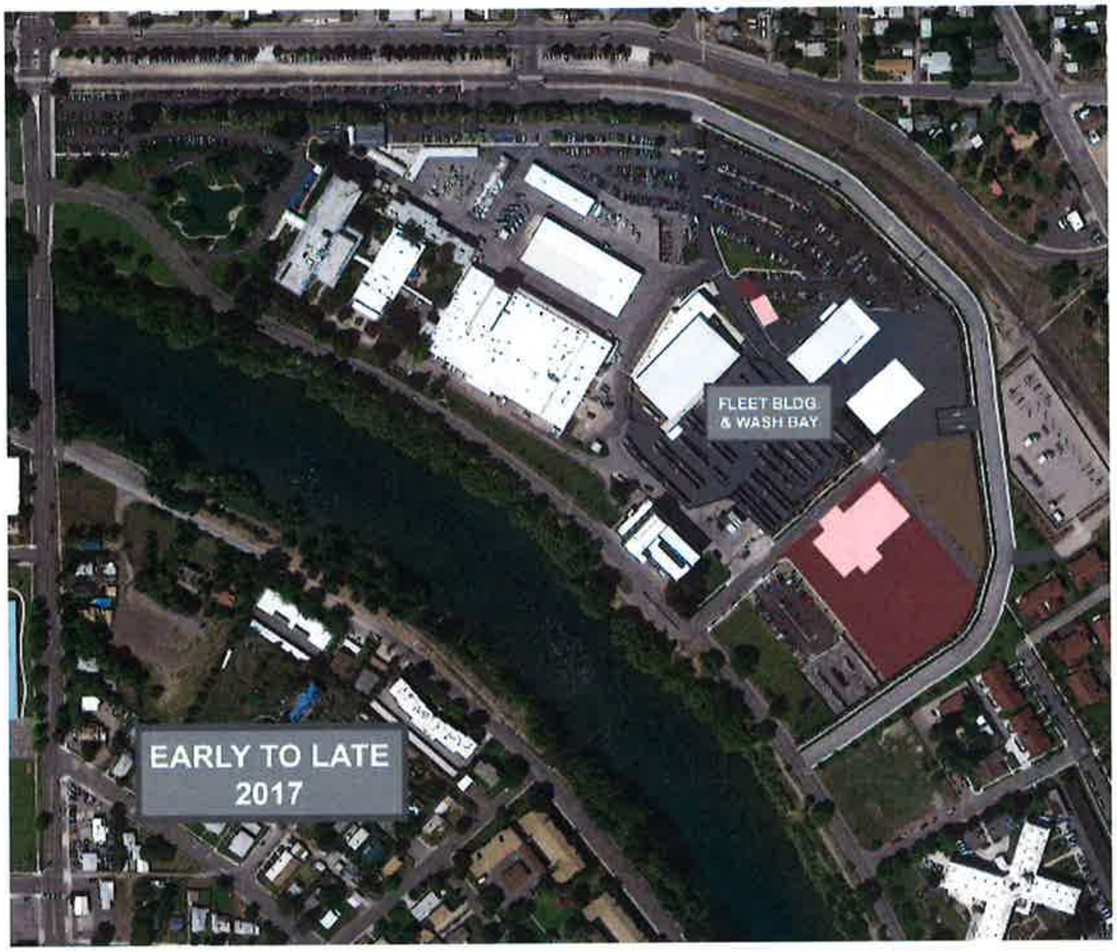
A pre-design BPI process was undertaken in early 2016 to look at efficiencies that would be created by a new building and new processes. It was discovered that the poor layout of the existing building resulted in numerous extra steps taken each day resulting in wasted time and resources. The new building was designed using industry best practices, and observed employee workflow.



BPI Spaghetti workflow diagram

See attached bullet points for a comprehensive list of issues that a new building would address.

Recommended Option: New Fleet Building on Ross Court



Option 2: Address individual issues with existing building

Remodeling the existing building to accommodate fleet vehicles that no longer fit the current facility is not possible within the current footprint's size. In addition, this option does not address environmental, compliance or safety concerns described above. To make the building CNG compliant would require the addition of a new emergency exhaust system. The estimated cost to make the building CNG compliant is around $1.3 Million

Option 3: Do Nothing:

Doing nothing is not a viable option. New hydraulic lifts would be required soon, and basic space, environmental and compliance issues would still need to be addressed. We would need to reevaluate how to continue servicing CNG vehicles.

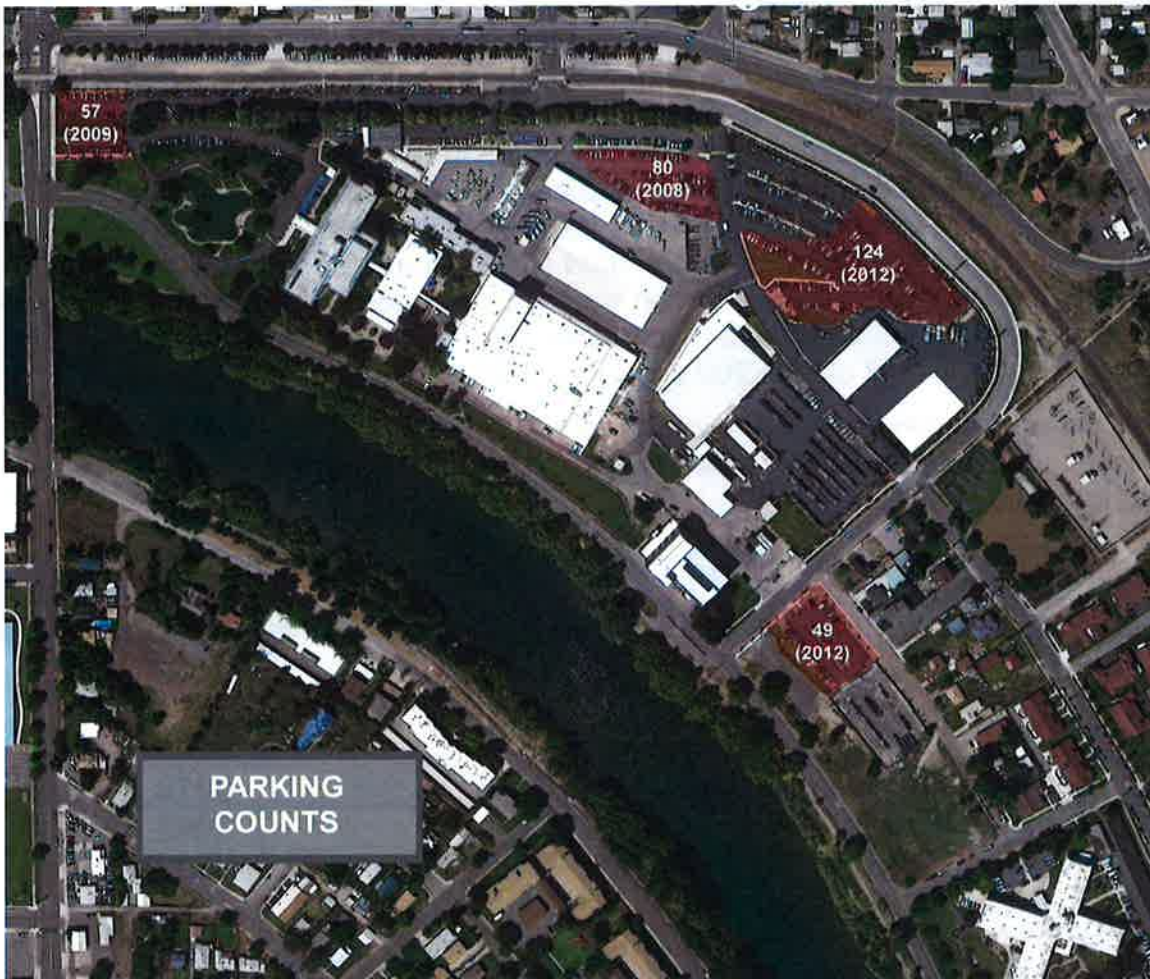
Project 3: Parking Garage

As of June 2016, Avista has a headcount of approximately 1,280, including company and contracted employees, reporting to the main campus facility. The number of parking spaces available for employees is approximately 728 (not including visitor and disabled parking). Assuming not all employees are on the property at any one time, a minimum of 400 additional parking spaces are required each day to address the current existing need as well as additional spaces for future flexibility. Avista leases parking space along Perry Street from Burlington Northern Railroad (BNR), in an open-ended lease that can be cancelled by BNR with 30 days written notice. Employees walk across railroad tracks to get to and from the buildings and these parking areas. Additionally, loss of this lease would result in the loss of almost 200 parking spaces.

Aligning campus parking with employee count has been addressed through the years by relocating materials storage yards from the campus footprint and adding surface parking lots (see below).

Action Taken	Year	Parking Spaces
Mission Campus Parking Space Count	2008	538
Added Spaces South Mission Lot	2009	+ 57
Added Spaces Transformer Storage Lot	2009	+ 55
Expanded North Pole Yard	2012	+124
Added North Ross Court	2012	+ 49
Total Current Parking Spaces (including Disability and Visitor Parking)		**823**
Total Parking Spaces Available (excluding Disability and Visitor Parking)		**728**
Estimated Employees/Contractors Assigned to Mission Campus as of June 2016*		1282
Estimated Employee/Contractors e not at Mission Campus on any one day (15%)		-129
Shortage of Parking Spaces to Meet Current Need for Employees/ Contractors Assigned to Mission Campus**		**425****

Campus Repurposing Phase 2



Using valuable campus real estate for parking lots has required us to take our operations vehicles and materials storage offsite to our Beacon substation property more than a mile away, increasing crew time and resources to access materials and vehicles each day.

This daily deficit in parking is currently absorbed in gravel lots on Ross Court and along the railroad tracks on Burlington Northern Railroad land. This parking is not in compliance with City of Spokane parking code, and we could be required to cease at any time. Additional parking overflow beyond these locations usually takes place in the immediate neighborhoods around Avista, and has resulted in frustrated calls, threats, and visits from our residential neighbors.

The proposed parking garage is intended as a long-term solution to the employee and visitor parking deficiency and related safety concerns.

Safety

With our current parking conditions, employees and visitors face a number of ongoing safety risks:

- The main building and service center, where the majority of regular and contract employees are located, is separated from parking areas by railroad tracks, busy arterials (Mission and Perry Streets), and operations areas, forcing pedestrians to cross these areas throughout the day.
- Operations traffic peaks in the mornings and afternoons, when employees are often walking to or from their vehicles.
- Parking areas are open and must be maintained throughout year to keep lots safe and clear of seasonal conditions. Even with ongoing maintenance, lost work days due to slipping and falls on the main campus (both inside and outside) is estimated at 11,000 days since 1997. In the first quarter of 2017, Avista experienced a record number of slips, trips and falls related to icy conditions.
- While we have full-time security on campus with cameras and patrol staff, there is no security off campus to protect employees, visitors and their vehicles.

Options and Alternatives

We analyzed three primary options for adding up to 500 parking spaces to fully solve the parking issue and give protection against the loss of the BNR leased space:

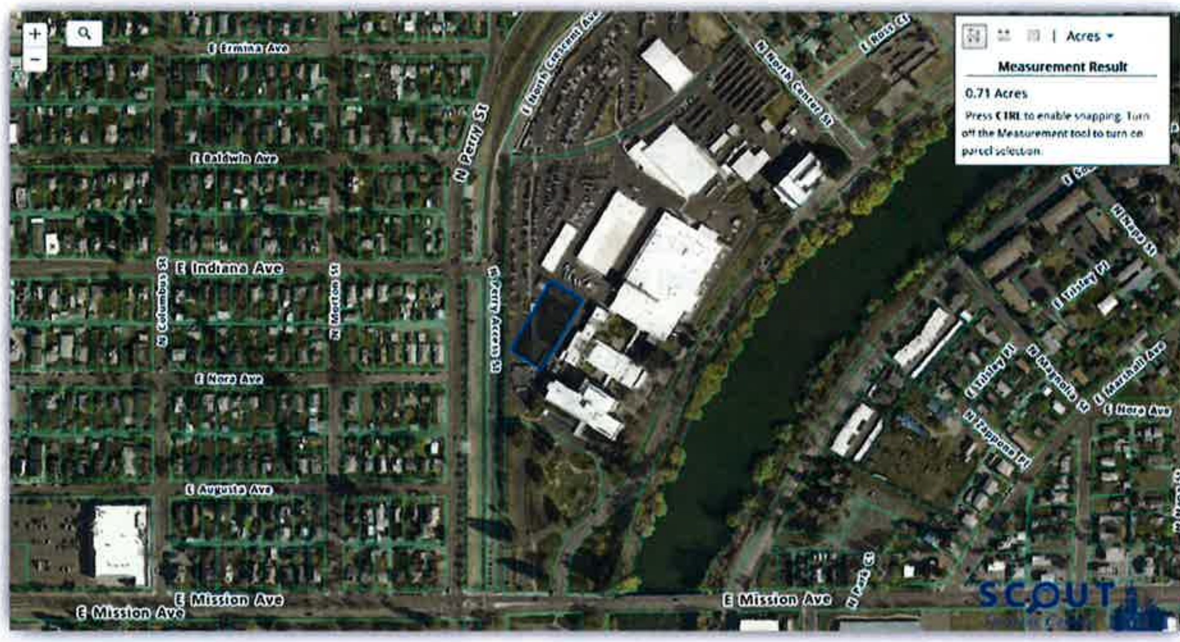
- **Option 1 (recommended)** – Construct a parking garage in the location of the original fleet building. The garage would be a four-story structure with five levels of parking.

- **Option 2** – Convert property at the north end of campus (Ross Court) into parking lots.
- **Option 3** – Purchase properties to the east of campus, across Perry Street, and develop parking lots.

Ross Court Property Options (re-route of North Center Street)	Capital Cost	Start	Complete	Risk Mitigation
Option 1 (Recommended): Build Parking Garage Build a 4-story 500-space parking garage in the location of the existing Fleet Building.	$12,000,000	2018	2018	• Coverage in the event of the loss of BNR leased space. • Employees would not need to park in the neighborhood.
Option 2: Convert Ross Court property into parking to address current deficit Pave the remaining four acres of undeveloped Ross Court property and make a parking lot. Would need to include drainage swales, parking island vegetation, and sidewalks to be comply with city code.	$3,000,000	2017	2018	• Not highest and best use of existing property. Will only net ~175. spaces. • Would impact Fleet construction project as this space is earmarked for the new building. • Risk of impact from losing BNR lease still possible.
Option 3: Purchase properties to the east of Avista to build 500 parking spaces (10 acres required) Purchase 10 acres of property along Perry to the east and develop to create 500 parking spaces.	$16.2M	2016	2017	• Risk of not getting all properties. • Highest maintenance costs (snow removal, crack seal, seal coat, 15-year average asphalt replacement).
Option 4: Do nothing	$0	• Risk of City of Spokane compliance issues with using Ross Park in its current form. This can be called out at any time. • Negative perception from local neighbors due to parking overflow in front of their houses. • Loss of BNR lease would be catastrophic to employee parking with no immediate resolution.		

Option 1 (recommended): Build a 4 story Parking Garage

This option will minimize the physical footprint required (only 0.71 acres). Constructing it in the location of the original Fleet Building will locate parking density next to employee workspace density, maximizing safety and operations efficiency.



Parking Garage Footprint

Option 1 (Recommended): Building a four-story parking garage with five levels of parking	
Positive Benefits	**Negatives**
Locates parking density near employee density.	Customer perception of structure
Will drastically reduce slips, trips and falls experienced by employees walking through 20 acres of existing parking lots each day, reducing risk and L&I claims to the Company.	Possible environmental issues under existing fleet footprint
Majority of parking would now be secured within the Campus.	
Will dramatically reduce the risk to the company from employee and Operations traffic mixing in the north lot areas.	
Lowest O&M maintenance costs, and longest life vs. asphalt lot.	
Lowest snow removal cost vs.10 acres of traditional blacktop.	
Could allow us to repurpose campus real estate back to materials storage.	

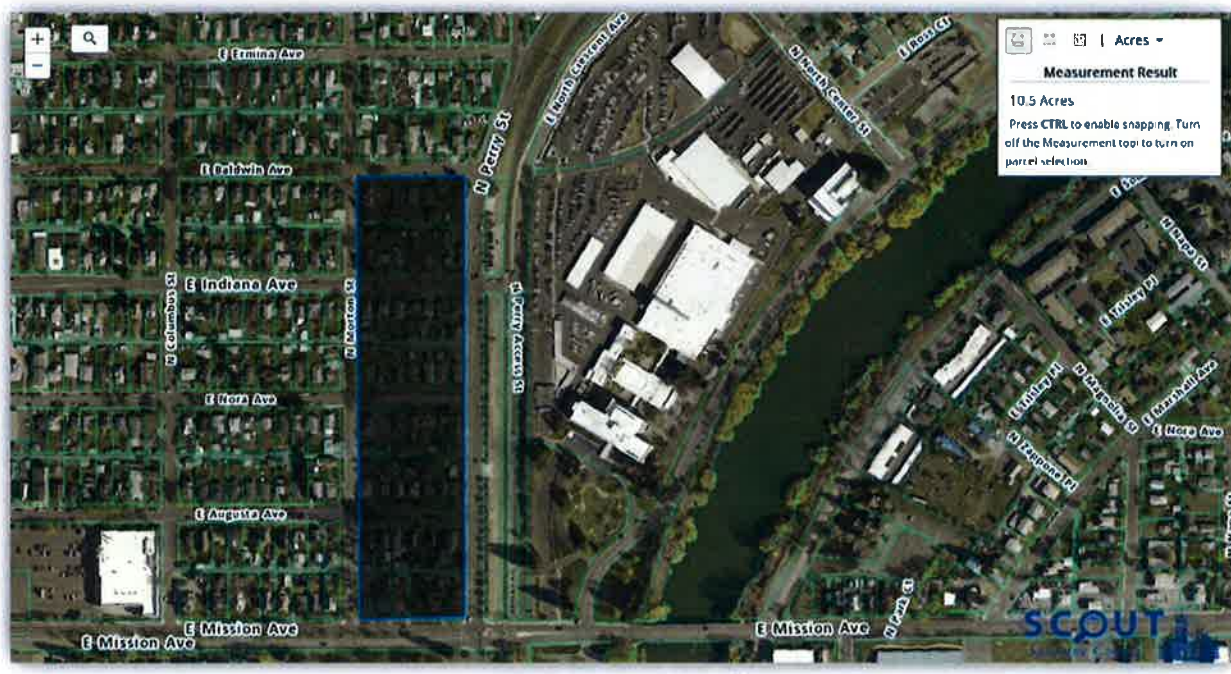
<u>Option 2: Convert Ross Court property into parking to address current deficit</u>

Converting property on the north side of Campus (Ross Court), would only address part of the current parking deficit, with a net of approx. 175 spaces. This solution doesn't address a potential BNR lease loss and would impact plans for the new fleet facility.

Option 2: Pave existing Ross Court properties to be used for parking	
Positive Benefits	**Negatives**
Lower cost vs. recommended	Not highest and best use of purchased properties on Ross Court. High cost vs strategic value (when including property purchases). No option for a new Fleet Building.
Quickest Solution	Solution would only address the current parking deficit, (only net approx. 175 spaces) Doesn't address BNR lease loss.

Option 3: Purchase properties to the east of Avista to build 500 parking spaces

Traditional parking lot construction for 500 spaces would require 10 acres of land to accommodate 208 drainage swales, vegetation for heat island mitigation, and other items required by the City of Spokane. The only available option for adding additional land to the campus would be the properties to the east, on the other side of Perry Street. These would be difficult and costly to acquire, and add additional challenges of expanding the campus into a residential area separated by a major arterial.



500 spots using surface parking construction

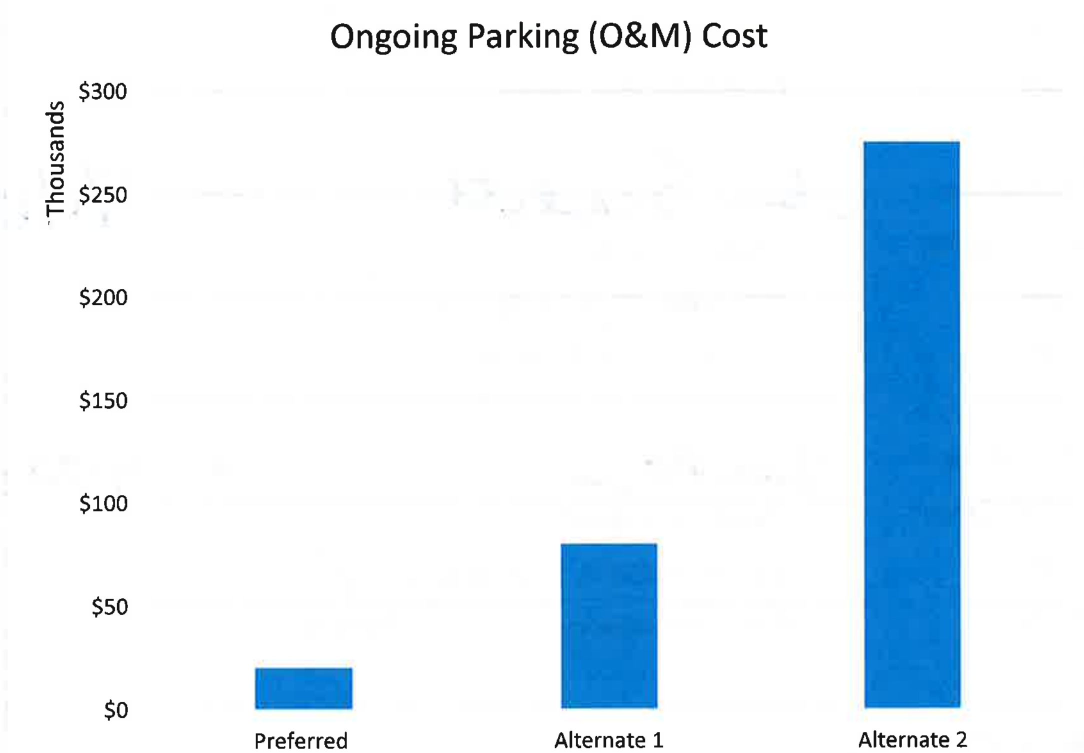
Option 3: Purchase 10 acres to the east and build 500 spaces	
Positive Benefits	**Negatives**
Would net the full 500 spaces	Highest cost option
	High risk of not getting all properties required to build. Risk of street vacations not being approved.
	Increased risk of injury with 500 employees crossing Perry Street daily.
	Highest cost maintenance option, (snow removal, crack seal, sealcoat, complete asphalt replacement every 15-20 years).

Option 4: Do Nothing

This option would not solve the parking deficiency or the problems it has created:

- Operations vehicles and materials storage offsite at Beacon substation property
- Non-compliant parking
- Neighborhood impacts

Do Nothing	
Positive Benefits	**Negatives**
Lowest Cost	Does not address the current parking deficit
	Still out of compliance with current City of Spokane parking code
	Frustration from neighbors due to employees parking in front of their houses.
	At risk if BNR lease is ever lost.



Ongoing O&M costs include snow removal, crack seal, seal coat, and asphalt renewal at 15 years. Parking Garage useful life based on 45 years.

See attached PowerPoint Presentations for high level explanations.

APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Campus Repurposing Phase 2 plan and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: [signature] Date: 5/1/17
Print Name: Eric Bowles
Title: Manager, Facilities
Role: Business Case Owner

Signature: [signature] Date: 5/1/17
Print Name: Anna Scarlett
Title: Manager, Shared Services
Role: Business Case Sponsor

Signature: [signature] Date: 4-28-17
Print Name: Heather Rosentrater
Title: Vice President, Energy Delivery
Role: Steering/Advisory Committee Review

VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	Eric Bowles	04/24/17	Heather Rosentrater	04/25/17	New template

Template Version: 02/24/2017

Index for Business Case Justification Narratives Related to 2019 Pro Forma Electric and Natural Gas Energy Delivery Systems, Fleet, and Office and Operations Facilities

South Region Voltage Control (N. Lewiston Reactor) Project

1. GENERAL INFORMATION

Requested Spend Amount	$8,000,000
Requesting Organization/Department	Transmission Planning
Business Case Owner	Ken Sweigart
Business Case Sponsor	David Howell/Scott Waples
Sponsor Organization/Department	T&D
Category	Project
Driver	Mandatory & Compliance

1.1 Steering Committee or Advisory Group Information

- Ken Sweigart – Manager, Substation Engineering
- Project Engineer/Project Manager (PE/PM) – Adam Newhouse

The assigned PE/PM holds stakeholder meetings to develop/confirm scope, schedule and costs. Also meets at time of pre-construction. Other meetings held as necessary.

2. BUSINESS PROBLEM

There is an ongoing issue with high voltage on the 230 kV transmission system in the Lewiston/Clarkston area. The high voltage problem is persistent most months of the year (the exception is heavy summer loading months) and the high voltage peaks during the overnight hours. This high voltage condition is a result of the expansion of Avista's 230 kV transmission network. Although there are many benefits to a large networked transmission system, one negative outcome is that long, lightly loaded transmission lines produce large amounts of line charging current (leading reactive MVAR), which increases system voltage. Currently, there is no practical way to correct this high voltage issue with the existing 230 kV transmission system beyond taking lines out of service.

3. PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Alt 1: Do nothing			
Alt 2: North Lewiston Reactors	*$8M*	*2016*	*2019*

Alternative 1:

This alternative is not recommended because it does not mitigate the expected capacity constraints, and does not adhere to NERC Compliance regulations.

Alternative 2:

Install two 50 MVAR shunt reactors at the North Lewiston Station on the 230 kV bus. The reactors allow for adequate voltage control to maintain voltage below applicable facility ratings during normal and contingency scenarios.

Solution:

Alternative 2: North Lewiston Reactors. Project scope includes the following:

Install two 50 MVAR shunt reactors to the existing 230 kV bus at North Lewiston Station. The project has already been initiated including procurement of the reactors.

4. APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *South Region Voltage Control Business Case* and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: [signature] Date: 4/18/2017
Print Name: KENNETH SWEIGART
Title: MANAGER SUBSTATION ENGINEERING
Role: Business Case Owner

Signature: [signature] Date: 4/17/17.
Print Name: David Howell
Title: Director Electrical Engineering.
Role: Business Case Sponsor

Signature: [signature] Date: 4/19/2017
Print Name: Scott A Waples
Title: Director, Planning & Asset Mgmt
Role: Business Case Sponsor

VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Ken Sweigart*		*Above signatures*	*4/14/17*	*Initial version*

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$12,850,000 per year on-going
Requesting Organization/Department	T&D – Substation Engineering
Business Case Owner	Ken Sweigart
Business Case Sponsors	Josh DiLuciano and Scott Waples
Sponsor Organization/Department	T&D
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

The Engineering Roundtable manages the prioritization of projects within this business case as supported by Asset Management studies and input from company subject matter experts. The Engineering Roundtable is comprised of representatives from the following departments: Asset Maintenance, Asset Management, Compliance, System Planning, System Operations, Telecommunications, Transmission Contracts, Protection Engineering, Substation Engineering, Transmission Engineering, and Substation Support.

2 BUSINESS PROBLEM

Replacing and upgrading major substation apparatus and equipment as it approaches end of life or becomes obsolete is necessary to maintain safe and reliable operation of Avista's transmission and distribution systems. Rebuilding significant portions of stations may be necessary to accommodate the replacement of failing or obsolete equipment since new standard-use apparatus and equipment is often of higher capacity and newer technology and may need to meet updated equipment spacing and operating standards. While asset condition is the primary driver triggering the need to replace major apparatus and equipment, additional factors that may contribute to the need to broaden the scope of a station rebuild project include operational and maintenance requirements, updated design and construction standards, SCADA communications, future customer load-service needs, and other programs (e.g. Grid Modernization). Future complete station rebuilds and/or replacements will be outside the scope of this business case and will be addressed individually.

Major apparatus include high-voltage circuit breakers, lower voltage circuit breakers and reclosers, circuit switchers, capacitor banks, power transformers and step voltage regulators. Associated equipment includes relays, meters, surge arrestors, station rock and fencing, panel houses, instrument transformers, high-voltage fuses, air switches, autotransformer diagnostic equipment, batteries and chargers, and panel houses.

Failure to replace old and obsolete equipment will increase the risk of more frequent and/or extended duration of outages due to major equipment failure and inability to maintain major apparatus. Substation outages may have significant consequences as they tend to impact a large number of customers.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Requested Start	Requested Complete	Risk Mitigation
Alternate 1: Do nothing	$0	N/A		
Alternate 2: *Maintain present level of Station Rebuilds*	$12.85M	2017	N/A (Program)	• Lower Operating Risk
Alternate 3: *Maintain minimum level of Station Rebuilds*	0-$12M	-	N/A (Program)	• Higher Operating Risk

The recommended approach is to replace station apparatus and equipment as needed due to asset condition and consider broader station rebuilds when the majority of assets in the impacted area of a station have been determined to have reached their end of life.

This business case aligns with the Company's mission to deliver safe and reliable electric service to customers by preventing the degradation of reliability and mitigating the frequency and duration of outages due to equipment failure.

Option 1: Do nothing – Not recommended

Option 2: Maintain current funding level – Current spending on the Asset Condition risk category is $12.85 million annually. Project prioritization will be supported by Asset Management and substation subject matter experts for prioritization of work within this risk category. Project and funding levels will be reviewed on an annual basis.

Option 3: Reduce current Asset Condition capital improvements. Not recommended. May lead to a reduction in the level of reliability and or operating flexibility that can be achieved by the transmission and distribution systems.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *Substation – Station Rebuilds Program Business Case* and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Date: 5/19/2017
Print Name: Kenneth Sweigart
Title: Manager, Substation Engineering
Role: Business Case Owner

Signature: Date: 5/19/17
Print Name: Josh DiLuciano
Title: Director, Electrical Engineering
Role: Business Case Sponsor

Signature: Date: 5/19/2017
Print Name: Scott Waples
Title: Director, Planning and Asset Mgmt
Role: Business Case Sponsor

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Ken Sweigart*		*Above signatures*	*4/14/17*	*Initial version*
2.0	*Jeff Schlect*	*5/17/17*	*Above signatures*	5/19/17	*Consolidation of capital maintenance and major rebuild cases*

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$19,789,874
Requesting Organization/Department	Transmission Services
Business Case Owner	Josh DiLuciano
Business Case Sponsor	Heather Rosentrater
Sponsor Organization/Department	T&D
Category	Project
Driver	Customer Requested

1.1 Steering Committee or Advisory Group Information

- Ken Sweigart – Manager, Transmission Line Design Engineering
- Glenn Madden – Manager, Substation Engineering
- Project Engineer/Project Manager – Aaron Tremayne and Adam Newhouse
- Randy Gnaedinger – Transmission Contracts Analyst

The assigned PE/PM holds stakeholder meetings to develop/confirm scope, schedule and costs. Also meets at time of pre-construction. Other meetings held as necessary.

2 BUSINESS PROBLEM

The Interconnection Customer representing the Rattlesnake Flat Wind Farm Development (Avista Interconnection Project #49) has proposed construction of a new 144MW nameplate capacity wind generation facility, and has chosen an interconnection to Avista's Lind-Washtucna 115kV Transmission Line at a point approximately 4.5 miles southeast of Avista's Lind Substation. The Point of Interconnection (POI) will be the new 3-position ring bus Neilson Substation with a line position dedicated to the Interconnection Customer. The Interconnection Customer chose the POI from a number of options developed by Avista's Transmission Planning Group during the FERC-mandated interconnection study process. Per the FERC process, the Interconnection Customer and Avista have signed an Interconnection Agreement that include required milestones for completion of this project.

These milestones include, the Interconnection Customer providing deposits totaling $1,041,500 (equivalent to the project's associated Direct Assigned Costs) in the 2018-2019 time frame, and Avista's completion of the project with an in service date prior to September 30, 2020.

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Alt 1: Status Quo: Do nothing.			
Alt 2: Build Network Upgrade Facilities required to support the Rattlesnake Flat Wind Farm nameplate output of 144MW.	*$19,789,874*	*2018*	*2020*

Due to the nature of the rules governing the Interconnection Process the POI location is selected by the Interconnection Customer, therefore only one alternative is shown.

Alternative 1:

This alternative is not recommended because it does not comply with rules set forth by FERC governing interconnection requests. Options are available for funding, design, and construction, but not as to whether the project can be avoided.

Alternative 2:

This alternative meets the requirements of the Interconnection Customer's request, and best satisfies the integration requirements of the wind project. This alternative also addresses a Transmission Line Asset Condition project (Lind-Warden) previously identified and prioritized to construct in the 2018-2019 time frame. This alternative is the best solution for the long term.

Solution:

Alternative 2: The scope recommended consists of the following:

Transmission Provider Network Upgrades	
Rebuild 22 miles of 115 kV transmission with OPGW from Lind-Warden – permitting, engineering, design, procurement and construction (includes Distribution Underbuild)	$11,150,000
Rebuild 4.5 miles of 115 kV transmission with Optical Ground Wire (OPGW) from Neilson to Lind – permitting, engineering, design, procurement and construction (includes Distribution Underbuild)	$ 2,900,000
Point of Interconnection 115 kV Substation (Neilson) – engineering, design, procurement and construction of (2) line positions, protection and control of a 3-position ring bus station	$ 2,500,000
Construct Communications Path(s) for Operation of the (POI) 115 kV Neilson switching station, Lind Substation, and Warden Substation – engineering, design, licensing, land acquisition, building construction, and installation	$ 689,874
Lind Substation capacity upgrades 115 kV substation –engineering, design, procurement and installation of protection and control (two relay upgrades and mobile installation)	$ 550,000
Replacement of the Roxboro circuit switcher - engineering, design, procurement and installation of protection and control (includes mobile installation)	$ 250,000
Warden Substation capacity upgrades - engineering, design, procurement and installation of protection and control (two breaker replacements, two relay upgrades, and one relay modification)	$ 1,250,000
Othello Switching Station capacity upgrades - engineering, design, procurement and installation of protection and control construction (two relay upgrades)	$ 500,000

Subtotal Network Upgrades	**$ 19,789,874**

IN SERVICE: 8/31/2020

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *Rattlesnake Flat Wind 115kV Integration Project* and agree with the approach it presents. Significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Date: 4/22/19
Print Name: Josh DiLuciano
Title: Director
Role: Business Case Owner

Signature: Date: 4-22-19
Print Name: Heather Rosentrater
Title: VP, Energy Delivery
Role: Business Case Sponsor

Signature: Date:
Print Name:
Title:
Role: Steering/Advisory Committee Review

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*<Author name>*	*mm/dd/yy*	*<name>*	*mm/dd/yy*	*Initial version*

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$11,850,000
Requesting Organization/Department	T&D – TLD Engineering
Business Case Owner	Lamont Miles
Business Case Sponsor	David Howell/Scott Waples
Sponsor Organization/Department	Electrical Engineering
Category	Program
Driver	Mandatory & Compliance

1.1 Steering Committee or Advisory Group Information

The Engineering Roundtable manages the prioritization of projects within this business case based on the annual Corrective Action Plans developed by the System Planning group. The Engineering Roundtable is comprised of representatives from the following departments: Asset Maintenance, Asset Management, Compliance, System Planning, System Operations, Telecommunications, Transmission Contracts, Protection Engineering, Substation Engineering, Transmission Engineering, and Substation Support.

2 BUSINESS PROBLEM

The Transmission Construction – Compliance Business Case covers the Transmission rebuild and reconductor work necessary to maintain compliance with the NERC Reliability Standard TPL-001-4 – Transmission System Planning Performance Requirements ("Standard"). This standard mandates that an annual planning assessment be conducted and corrective actions be identified and implemented to remedy any system performance deficiencies. Corrective Action Plans must be completed within the required timeframe to meet the system performance requirements dictated by the Standard.

The implementation of this business case will be considered successful if these projects are all completed prior to the required compliance dates identified in the Engineering Roundtable Project List, which are copied from the Corrective Action Plans (within the annually published Avista System Planning Assessment).

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Requested Start	Requested Complete	Risk Mitigation
Do nothing	$0	N/A		
Implement Transmission Construction – Compliance program	*$11.85M*	*2017*	*N/A (Program)*	*Potential fines (up to $1M/day) for possible noncompliance with NERC Reliability Standards*

The recommended solution is to build, rebuild, or reconductor transmission lines as identified in the Corrective Action Plans to stay in compliance with NERC mandatory and enforceable Reliability Standards, most notably TPL-001-4.

If Avista does not implement this business case, the company is at risk of violating NERC Reliability Standard Requirements and could be subject to penalties of up to $1M per day for the duration of any such violation. Following a "do nothing" option for this business case would likely be treated as an aggravating factor by the regulatory authority when assessing enforcement actions. Relevant sections of the NERC Sanction Guidelines are cited below.

NERC Sanction Guideline Summary[1]

> ***2.9 Concealment or Intentional Violation***
>
> *NERC or the Regional Entity shall always consider as an aggravating factor any attempt by a violator to conceal the violation from NERC or the Regional Entity, or any intentional violation incurred for purposes other than a demonstrably good faith effort to avoid a significant and greater threat to the immediate reliability of the Bulk Power System.*
>
> ***2.10 Economic Choice to Violate***
>
> *Penalties shall be sufficient to assure that entities responsible for complying with Reliability Standards do not have incentives to make economic choices that cause or unduly risk violations of Reliability Standards, or incidents resulting from violations of the Reliability Standards. Economic choice includes economic gain for, or the avoidance of costs to, the violator. NERC or the Regional Entity shall*

[1] NERC Rules of Procedure, Appendix 4B, *Sanction Guidelines of the North American Electric Reliability Corporation,* July 1, 2014, pp 4-5.

treat economic choice to violate as an aggravating factor when determining a Penalty.

2.15 Maximum Limitations on Penalties

In the United States, the maximum Penalty amount that NERC or a Regional Entity will assess for a violation of a Reliability Standard Requirement is $1,000,000 per day per violation. NERC and the Regional Entities will assess Penalties amounts up to and including this maximum amount for violations where warranted pursuant to these Sanction Guidelines.

This business case aligns with the organization's commitment to comply with all applicable laws and regulations. The amount requested represents the portion of the Transmission Reconductors & Rebuilds business case that is being spent on compliance-related projects in 2017. Annual funding will fluctuate based on the scope identified in the Corrective Action Plans.

Internal stakeholders in this business case include System Planning, System Operations, and Compliance.

4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *Transmission Construction* and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: Lamont A. Miles Date: 4/18/17
Print Name: Lamont A. Miles
Title: Transmission Design Manager
Role: Business Case Owner

Signature: David Howell Date: 4/18/17.
Print Name: David Howell
Title: Dir Electrical Engineering
Role: Business Case Sponsor

Signature: [signature] Date: 4/19/2017
Print Name: Scott Waples
Title: Director Planning & Asset Mgmt
Role: Business Case Sponsor

5 VERSION HISTORY

[Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	*Lamont Miles*		*Above signatures*	*4/14/17*	*Initial version*

Template Version: 02/24/2017

1 GENERAL INFORMATION

Requested Spend Amount	$6,500,000
Requesting Organization/Department	Facilities
Business Case Owner	Eric Bowles / Vance Ruppert
Business Case Sponsor	Anna Scarlett
Sponsor Organization/Department	H07
Category	Project
Driver	Asset Condition, Performance & Capacity

1.1 Steering Committee or Advisory Group Information

The Steering Committee is made up of a cross section of directors that represent groups impacted by the projects, as well as a couple members not directly affected to add an outside view. The current group is as follows:

- Director of Environmental Affairs
- Manager of Shared Services
- Director of IT and Security
- Director of Natural Gas
- Director of Financial Planning and Analysis
- Director of Operations

Each project within this business case is reviewed and approved by the Steering Committee group, and regular updates are provided during project execution.

The Advisory Group that assisted in shaping the "Business Problem and the "Proposal and Recommended Solution" consisted of the following stakeholders:

- Deer Park Operations: Frank Binder. Previous stakeholder included Bryan Cox.
- Real Estate: Rod Price, Dave Atherton, Ron McGregor.
- Warehouse: Laurie Heagle. Previous stakeholder included April Spacek.
- Fleet Maintenance: Greg Loew.
- Facilities: Eric Bowles, Anna Scarlett, Vance Ruppert. Previous stakeholders included Laura Vickers and Mike Broemeling.

Other advisors may contribute input, approvals, or information as needed, and include:

- Vice President of Energy Delivery
- Executive Officers
- End Users

2 BUSINESS PROBLEM

The Deer Park Service Center serves as the main electrical and gas operations facility for approximately 16,500 customers in the Deer Park and surrounding area, such as Colbert, Chattaroy, Elk, and Loon Lake. Approximately 10 Avista field crew and administrative support employees are based out of the site. This facility also supports our local operations during storms and power outages in the north Spokane County and Stevens County regions to help serve an additional approximately 34,000 customers.

The existing Deer Park Service Center was constructed in approximately 1971, and many of its building components, systems, and equipment have deteriorated over time. Over the decades, previous capital projects included new and replacement asphalt for exterior storage yards, re-roofing, a vestibule addition, a new pole building for service vehicle truck parking, etc.

In 2011, Facilities prepared a survey of several of our existing sites that created an Asset Condition score. The Deer Park Service Center scored the third lowest in terms of Asset Condition (see attached for survey results).

As part of the survey, the following images were captured and are representative of current conditions:

In addition to the low-scoring facility conditions, the original 1971 design of the service center was meant to accommodate a customer base half of what it is now currently serving. In just the city of Deer Park alone, the U.S. Census registered a 282% increase in population between 1970 and 2010. Please see table below for additional representative growth rates within the service center's overall territory from 1995 – 2013.

	1995	2013
Number of Employees Reporting to Site	6	10
Number of Electric Customers	4141	9477
Number of Gas Customers	3506	5040
Number of Electrical Poles	3200	5991
Number of Transformers	1500	2987
Miles of Conductor	1101	1550

With this growth increase, two additional meter readers, one lineman, and one groundman were added to the employee count in this facility since 1995. However, this in turn added three new Avista service vehicles as well as increased personal employee vehicle parking, further encroaching on the available square footage of the 1971 facility.

In addition, more materials, equipment, and vehicles are necessary to maintain the electric and gas systems for the growing customer base. As such, the existing exterior storage yard and the interior warehouse/stores space is becoming too small for these increasing amounts of inventory.

There are also environmental concerns with the existing site located near railroad tracks, and close proximity to a city water well. In 2013-14, during a routine asphalt replacement project, contaminated soil and debris were discovered which required remediation and proper removal and clean up. There could be additional areas of costly contamination if future projects expose them.

The existing service building is tight for modern line truck and service vehicle sizes, which have grown considerably in length since Avista's 1970 fleet. Currently several trucks must be parked outside due to not being able to fit inside the building.

3 PROPOSAL AND RECOMMENDED SOLUTION

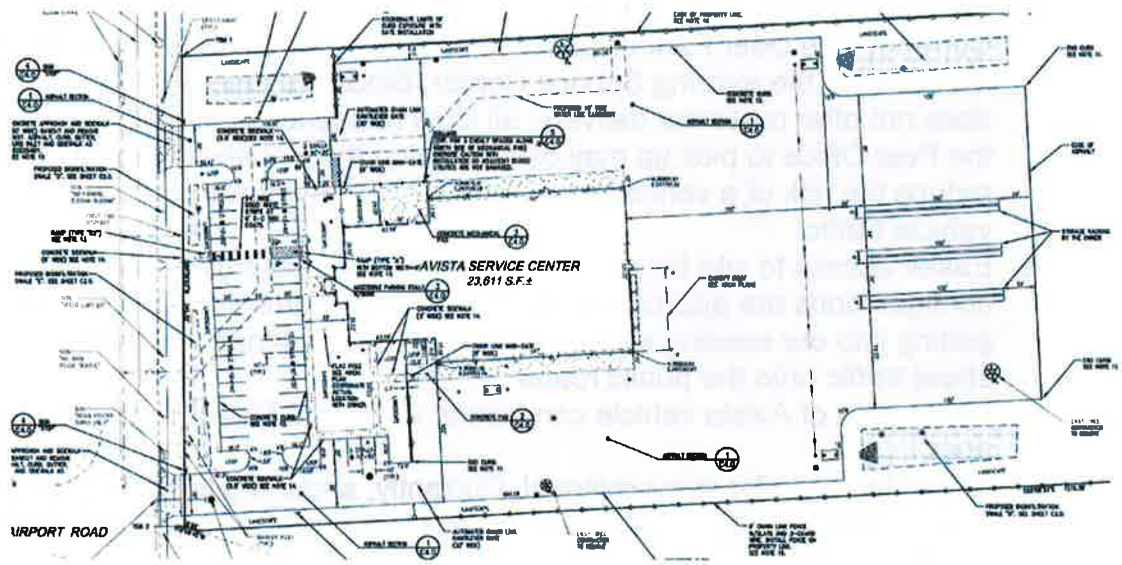
Option	Capital Cost	Start	Complete
Option 1 **(Recommended)** –	$6,500,000	01/2015	12/2018

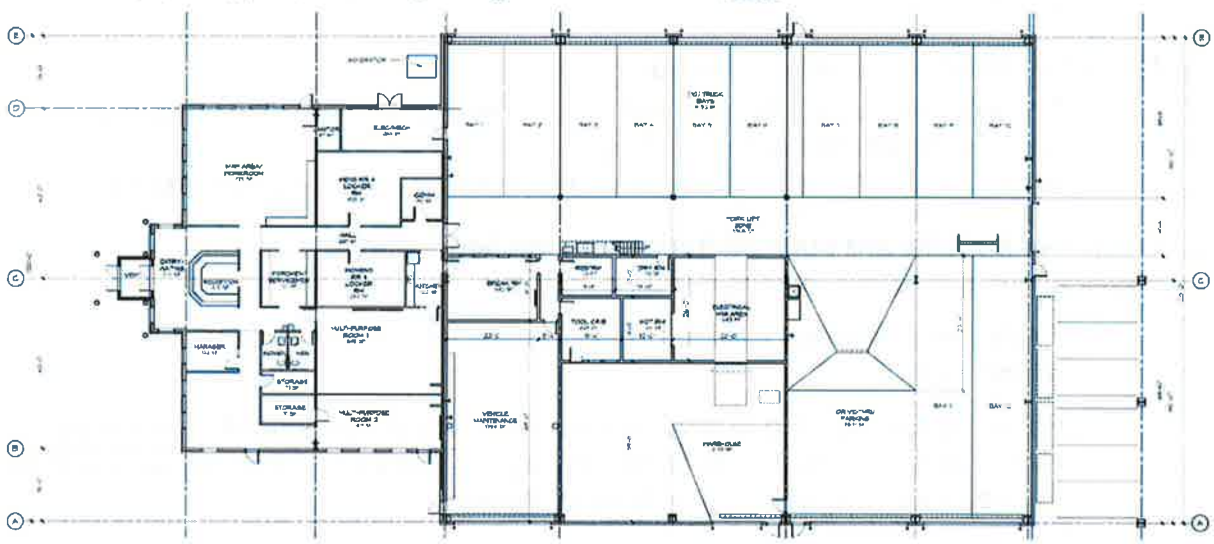
Purchase new site and construct new service center			
Option 2 – Purchase neighboring land next to existing site and build new / expand as needed.	~ $4,000,000	01/2015	12/2018
Option 3 – Do nothing.	$49K capital yearly. $54K O&M yearly. (Both values are approximate averages from the last 5 years)		

The three above options were produced with input from the Advisory Group listed above in Section 1, Item 1.1. Please note, individual stakeholders from the Advisory Group may not have been involved in producing all three options.

Option 1 – Purchase new site and construct new service center ($6.5 million).

The recommended design solution is shown in the two drawings on the next page. Avista's Real Estate Department has located a vacant 10-acre lot in a new road extension and Local Improvement District (LID) created by the city of Deer Park, to promote industry and business within city limits. As part of the partially Federal-funded LID, the city installed sewer and water utilities to the site. Avista would develop and asphalt the street-side five acres of the lot and build a new 24,000-square-foot building.





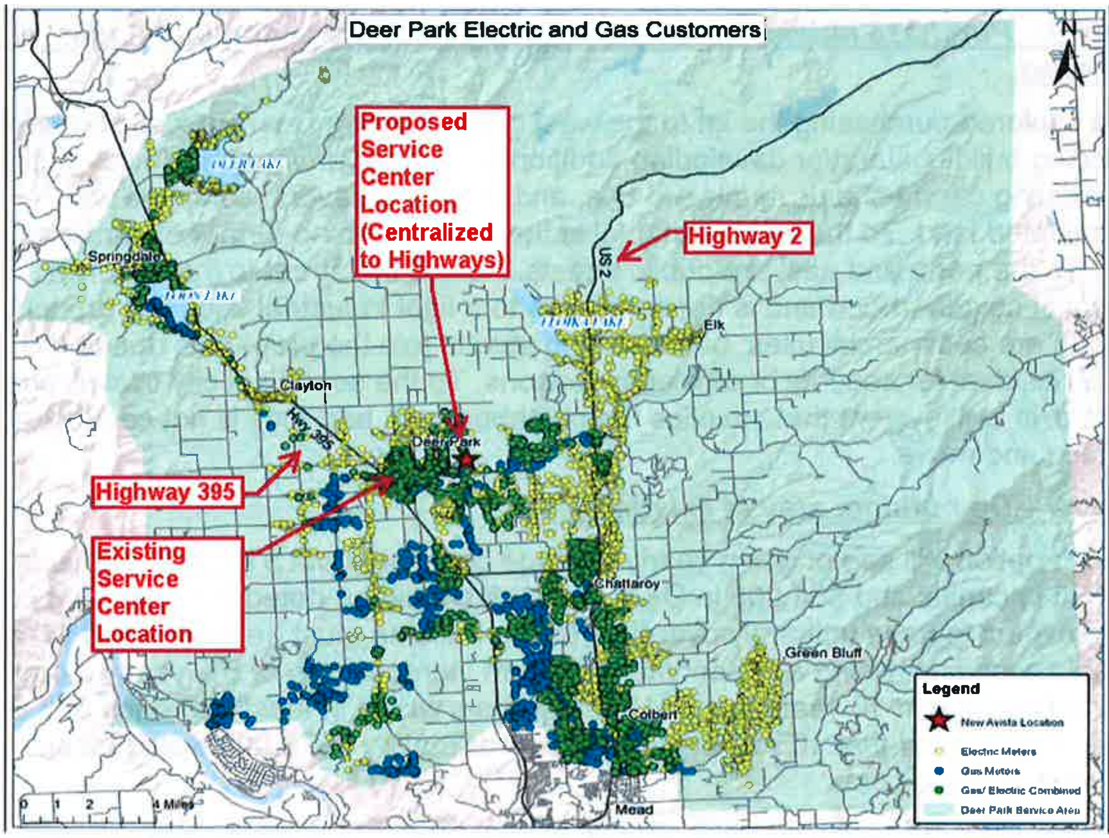
The benefits this proposed design will provide include the following Items 1 through 4:

1. Estimated Cost Savings. The total cost savings, resulting from increased efficiency and production capabilities of Avista employees leading to direct cost savings, is estimated to be $59,046 yearly going forward.
2. Non-quantifiable improvements in safety of Avista employees, including but not limited to:
   - Reduced risk of service truck backing accidents.
   - Clearly articulated paths of service vehicle traffic on site.
   - Separate employee and visitor parking from service yard traffic and

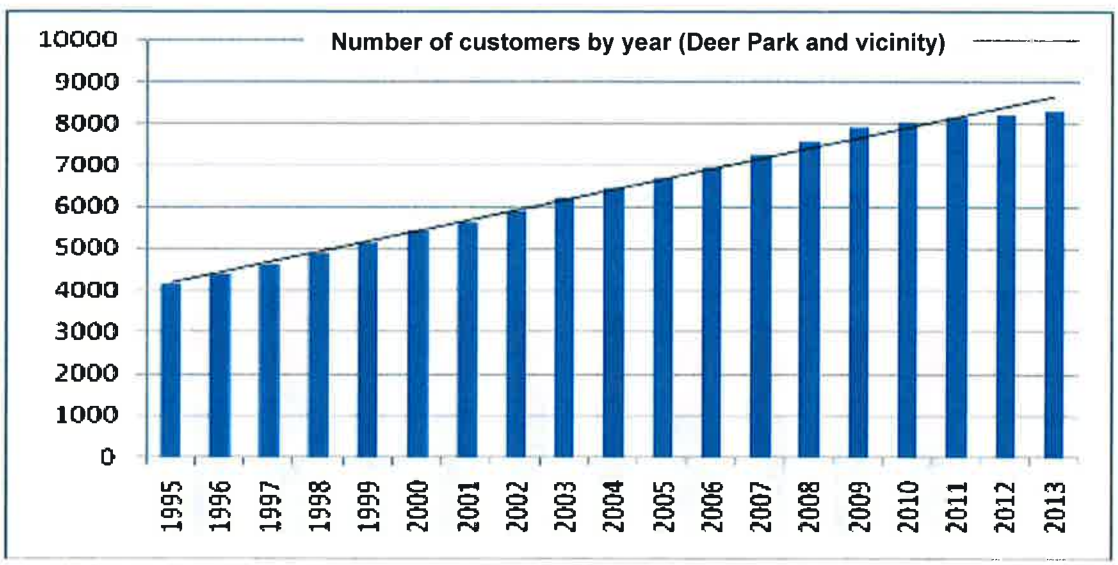
parking.
- Better clearances for employees that work with interior shelving and forklifts, and pick materials in the storage yard.
- Cranes to prevent lost time accidents resulting from manual lifting and moving of equipment and materials.
- Covered and heated parking areas to reduce the risk of lost time accidents or injuries from slips, trips, and falls.
- Security for lone workers in the office.
- Currently, the Deer Park Post Office and its 3,800 mailboxes are directly northeast of the existing Service Center. Since the Deer Park Post Office does not offer customer delivery, all local residents drive and/or walk to the Post Office to pick up mail daily. Moving the Service Center would reduce the risk of a vehicular or pedestrian accident with our service vehicle traffic.
- Easier access to site for operations vehicles. Avista truck and trailer configurations are approximately 70 feet long. Currently there is difficultly getting into our existing service center, and occasionally Avista blocks street traffic onto the public roads.
- Elimination of Avista vehicle congestion within the Deer Park downtown area.
- Dedicated area for snow removal. Currently, snow is piled near public streets, and melting snow occasionally floods the existing storage building on site.

3. Non-Quantifiable Equipment Savings
   - Potential increased longevity of service vehicles/trucks due to being covered and/or in heated parking.
   - Better deterrent for theft concerns of materials, vehicles, or equipment.

4. Customer benefits are outlined throughout the items above, but some clarifications and items to consider also include:
   - Faster response time of field crews due to increased employee efficiencies.
   - Faster response time of field crews due to centralized location between Hwy 2 and 395, especially during outages. Please see territory map below to show location, and proximity to customers.



- Increased reliability of electric and gas operations.
- Increased customer safety due to the above three items, especially during a safety event such as an electric outage.
- Accommodating future customers and growth within the Deer Park and vicinity territory, assuming growth rates shown on historical data mentioned in "Business Problem" section, and graphically shown below.



- Ability to accommodate and assist additional customers south to Spokane or north to Colville in the event of an electric outage.

Option 2 – Purchase neighboring land next to existing site and build new / expand as needed.

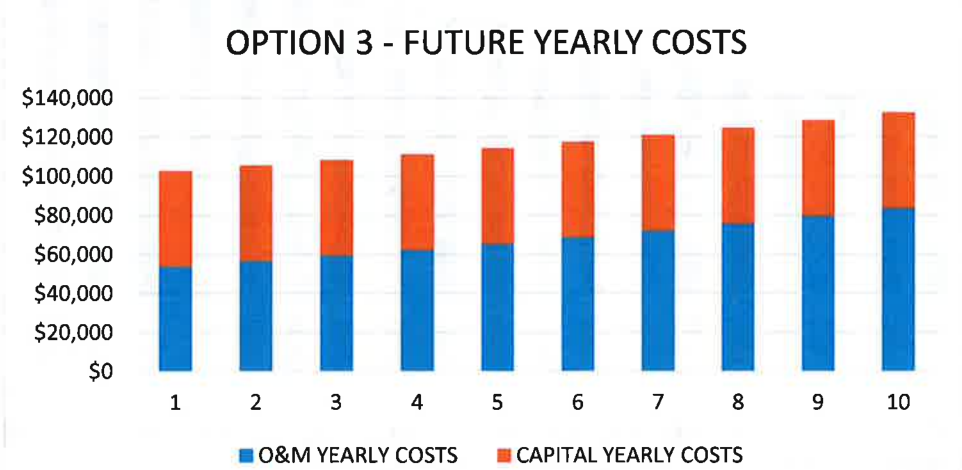
Avista explored purchasing the lot to the west of the existing Deer Park site, in hopes of expanding buildings and/or developing additional storage yard space. However, the lot is an existing car mechanic / junkyard use, and there are several concerns with contaminated land. To the west of that lot is the railroad, so no further expansion could occur. To the north and east are public streets. Across the street to the east is a residential neighborhood and is not conducive to a light industrial use. The properties to the north are commercial uses, but not being able to join the properties due to the public road is not ideal for security or efficiency reasons. To the south is a city owned property with its own well system that supplies the neighborhood, and thus is not conducive to purchase and move.

Option 3 – Do nothing, stay at existing site.

The third option will see ongoing yearly average costs at about $103,000 per year ($49,000 in capital and $54,000 in O&M costs). It should be noted that the O&M costs should expect to grow uniformly over time as the building must be maintained to remain in usable condition. Using a conservative uniform increase rate of 5% yearly it could be expected that within 10 years the O&M yearly costs would at least approach $83,000. At the same time, over that 10 years a total of approximately $678,000 would be spent on O&M maintenance costs.

In regards to future capital costs, it should be expected that yearly spend will be roughly half of the 5 year average ($49,000 yearly) as building, site, and building systems are systematically replaced due to age or condition. Using this figure, a total of approximately $486,000 would be spent on capital costs over 10 years. However, it must be noted that catastrophic failures of the building, site, or any of its systems would require an immediate, and potentially costly, replacement from capital budget resources. It could create a spike in any given year of the capital cost spending due the failure.

This option also does not address proximity to railroad tracks and the city water well or potential residual soil contamination from the adjacent site.



4 APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the ~~Campus Repurposing Phase 2 plan~~ Deer Park Service Center and agree with the approach it presents and that it has been approved by the steering committee or other governance body identified in Section1.1. The undersigned also acknowledge that significant changes to this will be coordinated with and approved by the undersigned or their designated representatives.

Signature: [signature] Date: 5/1/17

Print Name: Eric Bowles

Title: Manager, Facilities

Role: Business Case Owner

Signature: [signature] Date: 5/1/17

Print Name: Anna Scarlett

Title: Manager, Shared Services

Role: Business Case Sponsor

Signature: [signature] Date: 4-28-17

Print Name: Heather Rosentrater

Title: Vice President, Energy Delivery

Role: Steering/Advisory Committee Review

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	Vance Ruppert	04/25/17	Heather Rosentrater	04/25/17	New template

Template Version: 03/07/2017

1 GENERAL INFORMATION

Requested Spend Amount	$7,700,000
Requesting Organization/Department	Fleet
Business Case Owner	Greg Loew, Manager, Fleet Services
Business Case Sponsor	Anna Scarlett, Manager, Shared Services
Sponsor Organization/Department	Shared Services
Category	Program
Driver	Asset Condition

1.1 Steering Committee or Advisory Group Information

The Fleet capital replacement program is based on the Vehicle Replacement Model that is a product of our Utilimarc benchmarking subscription. The model uses benchmark data, purchase and auction data, combined with nationwide vehicle information that Utilimarc uses to build an accurate and robust model. The Fleet Specialist for Capital then takes the results of the model to validate, verify usage and work with operations managers to ensure that the identified unit meet their business needs. Capital projects requests are created for each discrete project (vehicle/equipment) that is approved by the Fleet Manager with notifications to the Manager of Shared Services and the Vice President of Operations.

2 BUSINESS PROBLEM

Fleet equipment as it ages experiences a growth in cost related to its operation. Those costs are driven by the requirement of more parts and more labor required to keep that unit up and running. As your fleet's average age increases you will see a steady but accelerating trajectory of costs servicing hours required. It can be described as more complex repairs requiring more hours and parts to fix. Those increasing costs are not just the burden of Fleet; the users will see the impact in lost productivity/downtime. In a 2011 analysis of Avista's class 46 vehicles and a subsequent analysis done in 2016 saw a 52% reduction in the labor hours required per truck by bringing the classes average age from 9.5 years to the industry average of 5.5 years.

	2010	*2011*	*2012*	*2013*	*2014*	*2015*
AVA Avg Age	*8.03*	*7.81*	*7.59*	*6.81*	*6.55*	*6.23*
Industry Avg Age	*6.11*	*6.27*	*6.27*	*6.56*	*6.53*	*6.38*
Avg Op Cost / Unit	*$10,924*	*$11,558*	*$11,534*	*$10,845*	*$9,739*	*$9,285*

3 PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Option 1 (Recommended): Fully fund replacement program	*$7,700,000*		
Option 2: Partially fund program	*$3,700,000*		
Option 3: No funding	*0*		

Option 1 (Recommended) – Fully Fund Replacement Program

The Fleet asset model is optimized for the lowest total cost of ownership. Our life cycle model seeks the goal of balancing risk and limited investment dollars. The model allows Fleet to provide users with a reliable and safe tool that is ready for work at any given moment. The fully funded option allows our capital purchasing model of equipment to continue replacing aging equipment in a predictive manner that keeps technician staffing levels constant to the predictive number of repair work orders generated. The program does not include additions to the existing fleet. The analysis of the data by Utilimarc shows that this fully funded model over time will yield the lowest cost per vehicle.

The recent large outages from the summer of 2014 and November 2015 show the strength of our fleet. During those thousands of hours of combined operation we only had two minor breakdowns that we were able to quickly repair and return to service before the start of the operator's next shift.

The customer benefits from this in two distinct ways. One, that crews are quicker to respond to issues because they operate reliable equipment that can be ready for duty. Two, that costs for customers remain steady from a fleet cost perspective because we have a constant investment in the equipment along with a progressive maintenance that has a monthly average over 95% of vehicles ready for duty. By pursing the recommended investment path we avoid rising maintenance costs, outside of economic inflationary trends, and increasing down time due to mounting demand repair work orders. Additionally, this investments allows us to purchase equipment that has modern emissions controls or alternative energy sources allowing us reduce carbon emissions from our fleet vehicles.

Option 2 – Partially Fund Replacement Program

The partially funded, option 2 continues to replace vehicles but at reduced amount when compared to the recommended option. The combined ownership and maintenance costs to appear to be nominally less in costs over the time of the model. However what you see is a rapidly aging fleet in the last two thirds of the model which have increasing work order counts for repairs and significant impacts to reliability/uptime not shown in the total fleet costs.

Option 3 – Do Not Fund Replacement Program

Option 3 is a plan designed to replace a unit only at failure. This model has rapidly increasing costs due to significant repairs required. This model will require increasing numbers of repair work orders to be assigned to outside vendors since company technicians will be able to handle only incrementally more work than today. This outside work has a higher price per hour and higher parts costs due to vendor markups. This model will lead to increasing down time of equipment as it ages. The repairs will become more costly and consume more technician time. Increasingly, even with the best preventative maintenance plan, there will be unplanned failures in the field downing a crew while the issue is addressed. This model was practiced at Avista for over 20 years and led to clusters of vehicles failing at approximately the same time and creating capital constraint issues.

Vehicle Replacement Analysis

The following information demonstrates the effect of three different replacement strategies on Avista's Fleet performance. Three projections were built using Utilimarc Vehicle Replacement Model (VRM) to show the effect of different levels of capital commitment on fleet maintenance cost, ownership cost, average age, and demand repairs. In the Full Budget (Option 1) scenario, vehicles are replaced in line with each vehicle's calculated, optimal, lifecycles with an annual capital cost starting at approximately $8,000,000. The Half Budget (Option 2) scenario cuts the annual replacement budget in half to start at approximately $3,700,000. The No Budget (Option 3) scenario restricts the annual capital cost to $0.

Summary

The table below shows the effects of each budget on annual vehicle ownership and maintenance cost for Avista's fleet. The full projections are provided on the pages to follow.

Annual Vehicle Ownership and Maintenance Cost	2016	2020	2025	2030
Full Budget	$9,588,817	$9,735,956	$10,604,849	$11,700,794
Half Budget	$9,439,904	$9,274,112	$10,197,151	$11,658,431
No Budget	$9,350,935	$9,145,384	$10,854,088	$13,913,603

Avista's fleet is currently ahead of its ideal lifecycle. This is shown by the increase in average age we see under even the Full Budget scenario. Because of this, the No Budget scenario is marginally cheaper in the first few years of the projection (<2%). However, by the 15th year, the No Budget scenario is 19% higher than the two alternative scenarios. Avista would also see average age increase from 9.0 years to over 20 years under this worst-case scenario.

The Full Budget scenario is marginally more expensive then the Half Budget scenario in these projections, but will begin to outperform the Half Budget scenario beyond the 15th year. While their total costs are comparable, the Full and Half Budget scenarios differ in how money is being spent. Under the Full Budget scenario, capital investment is larger each year, but maintenance costs are significantly lower. The Full Budget scenario also offers younger units for the crews to operate (average age of 9.22 in the 15th year) vs

14.74 in 15th year) and fewer demand repairs (7,082 work order in the 15th year). Conversely, The Half Budget scenario sees a smaller capital investment each year, but the unit for the crews to operate will be older (average age of 14.74 in year 15) and will see more demand repair (9,671 work orders in the 15th year).

Vehicle condition, availability and downtime should also be considered in these scenarios. In order to maximize safety, reliability and responsiveness for customer needs, including emergency outage restoration, vehicles should be equitable in terms of standards and in optimal working condition.

Assumptions

- Inflation: All capital, ownership and maintenance costs are increase annually be 2% to account for inflation.
- Consistent Replacement: The replacement model is programed to replace a consistent number of unit each year to achieve more predictable capital requirements and avoid replacement bubbles. When many vehicles are concentrated in relatively few vintages, these "bubbles" can cause sudden increases in parts and labor cost, vehicle downtime, and technician requirements. Replacing a constant number of unit each year avoids this problem, but consequently the model will occasionally replace a unit before it reaches in lifecycle or let a unit run beyond its lifecycle.
- Maintenance: Maintenance cost includes the cost of all parts and labor needed to maintain the asset over the course of its lifetime. Note that maintenance cost does not include the cost of fuel or any administrative or corporate overheads. While there will be some fuel efficiencies associated with running younger vehicles, the unpredictable nature of the price fuel make it difficult to quantify the savings associated with these efficiencies.
- Maintenance Savings: The replacement model maintains a constant cost per wrench-turning hour of technician labor. This means that when maintenance cost increase or decrease, the model adjusts staffing levels to meet the increased or decreased demand for labor. This should be considered alongside historic overtime and contract labor practices when interpreting these results.

Cost Tables

Full Budget	2016	2017	2018	2019	2020
Annual Maintenance (Parts, Labor, Vendor) Cost	$4,742,786	$4,856,108	$4,976,085	$5,129,998	$5,303,926
Annual Ownership Cost	$6,559,724	$6,390,102	$6,363,332	$6,262,211	$6,210,697
Annual Capital Budget	$8,010,456	$7,625,997	$8,550,766	$7,983,602	$8,457,832
Units Replaced Annually	112	106	106	103	104
Average Age	8.47	8.38	8.36	8.42	8.51
Units Out of Lifecycle	134	110	74	57	41
Annual Demand Repair Work Orders	6,609	6,637	6,660	6,711	6,768

3.7M Budget	2016	2017	2018	2019	2020
Annual Maintenance (Parts, Labor, Vendor) Cost	$4,945,378	$5,262,213	$5,553,296	$5,876,138	$6,194,199
Annual Ownership Cost	$6,130,531	$5,589,192	$5,260,460	$4,914,123	$4,665,065
Annual Capital Budget	$3,719,912	$2,905,936	$4,096,366	$3,574,700	$3,664,350
Units Replaced Annually	50	44	50	46	47
Average Age	9.11	9.59	10.01	10.47	10.92
Units Out of Lifecycle	186	203	202	238	247
Annual Demand Repair Work Orders	6,899	7,191	7,434	7,694	7,942

No Replacement	2016	2017	2018	2019	2020
Annual Maintenance (Parts, Labor, Vendor) Cost	$5,236,220	$5,756,008	$6,296,020	$6,859,429	$7,436,489
Annual Ownership Cost	$5,735,049	$4,936,895	$4,259,317	$3,682,958	$3,191,696
Annual Capital Budget	$-	$-	$-	$-	$-
Units Replaced Annually	-	-	-	-	-
Average Age	9.77	10.76	11.74	12.71	13.69
Units Out of Lifecycle	281	322	403	457	572
Annual Demand Repair Work Orders	7,276	7,828	8,380	8,932	9,485

Fleet Services Capital Plan

Full Budget	2021	2022	2023	2024	2025
Annual Maintenance (Parts, Labor, Vendor) Cost	$5,469,634	$5,626,095	$5,806,710	$5,936,489	$6,088,050
Annual Ownership Cost	$6,231,649	$6,252,235	$6,244,883	$6,383,525	$6,422,122
Annual Capital Budget	$8,744,956	$8,763,990	$8,633,034	$9,629,551	$8,990,833
Units Replaced Annually	103	111	101	106	103
Average Age	8.62	8.65	8.77	8.83	8.93
Units Out of Lifecycle	34	40	41	38	32
Annual Demand Repair Work Orders	6,834	6,880	6,945	6,956	6,990

3.7M Budget	2021	2022	2023	2024	2025
Annual Maintenance (Parts, Labor, Vendor) Cost	$6,505,655	$6,847,961	$7,168,380	$7,465,391	$7,801,053
Annual Ownership Cost	$4,509,902	$4,243,790	$4,133,092	$4,111,033	$4,009,498
Annual Capital Budget	$4,301,788	$3,281,927	$3,841,499	$4,613,173	$4,025,692
Units Replaced Annually	49	45	46	50	46
Average Age	11.35	11.80	12.23	12.60	13.01
Units Out of Lifecycle	307	330	366	400	418
Annual Demand Repair Work Orders	8,169	8,404	8,618	8,790	8,985

No Replacement	2021	2022	2023	2024	2025
Annual Maintenance (Parts, Labor, Vendor) Cost	$8,036,849	$8,660,759	$9,299,771	$9,958,388	$10,638,865
Annual Ownership Cost	$2,772,141	$2,413,132	$2,105,273	$1,840,887	$1,613,357
Annual Capital Budget	$-	$-	$-	$-	$-
Units Replaced Annually	-	-	-	-	-
Average Age	14.66	15.63	16.59	17.55	18.50
Units Out of Lifecycle	620	681	734	769	793
Annual Demand Repair Work Orders	10,037	10,588	11,140	11,691	12,242

Full Budget	2026	2027	2028	2029	2030
Annual Maintenance (Parts, Labor, Vendor) Cost	$6,226,667	$6,411,144	$6,535,809	$6,698,371	$6,853,080
Annual Ownership Cost	$6,549,886	$6,593,568	$6,783,330	$6,851,754	$6,967,321
Annual Capital Budget	$9,764,701	$9,296,048	$10,423,336	$9,731,966	$10,310,050
Units Replaced Annually	112	106	106	103	104
Average Age	8.93	8.95	9.02	9.13	9.22
Units Out of Lifecycle	23	20	16	17	19
Annual Demand Repair Work Orders	6,995	7,048	7,045	7,074	7,082

3.7M Budget	2026	2027	2028	2029	2030
Annual Maintenance (Parts, Labor, Vendor) Cost	$8,099,925	$8,432,876	$8,704,428	$9,019,315	$9,318,223
Annual Ownership Cost	$3,998,122	$3,899,631	$3,982,001	$3,957,415	$3,994,430
Annual Capital Budget	$4,534,552	$3,542,320	$4,993,447	$4,357,539	$4,466,822
Units Replaced Annually	50	44	50	46	47
Average Age	13.34	13.75	14.06	14.41	14.74
Units Out of Lifecycle	422	443	459	477	497
Annual Demand Repair Work Orders	9,136	9,314	9,419	9,555	9,671

No Replacement	2026	2027	2028	2029	2030
Annual Maintenance (Parts, Labor, Vendor) Cost	$11,342,717	$12,068,385	$12,823,413	$13,603,405	$14,412,019
Annual Ownership Cost	$1,417,138	$1,247,603	$1,100,859	$973,611	$863,098
Annual Capital Budget	$-	$-	$-	$-	$-
Units Replaced Annually	-	-	-	-	-
Average Age	19.46	20.41	21.36	22.31	23.25
Units Out of Lifecycle	828	860	889	921	940
Annual Demand Repair Work Orders	12,793	13,343	13,894	14,444	14,994

Methodology

Annualized Total Cost

For each class, Utilimarc's Vehicle Replacement Module (VRM) determines what lifecycle achieves the lowest cost to own and maintain an average asset over its lifetime. This done by calculating the *annualized total cost* for each potential lifecycle. Annualized cost total is the sum of all ownership and maintenance cost a unit obtains over the course of its life, divided by the number of years the unit is in service. Minimizing annualized total cost guarantees the lowest total cost over the life of the asset. As an example, the table below shows the annualized cost for the possible lifecycles of a light duty pickup truck.

Replacement Age	Annualized Total Cost	Deviation
1	$5,964	12.3%
2	$5,759	8.4%
3	$5,598	5.4%
4	$5,476	3.1%
5	$5,390	1.5%
6	$5,337	0.5%
7	$5,313	0.0%
8	$5,316	0.1%
9	$5,345	0.6%
10	$5,397	1.6%
11	$5,472	3.0%
12	$5,567	4.8%
13	$5,682	7.0%
14	$5,816	9.5%

Consider the following three replacement scenarios over a 14-year financial period:

Scenario 1: A fleet manager plans to replace this vehicle every year. The annualized cost of this replacement strategy is $7,811. Over the 14-year period, this replacement strategy will cost fleet 14 x $5,946 = $83,244.

Scenario 2: A fleet manager plans to replace this vehicle every seven years. The annualized cost of this replacement strategy is $5,810. Over the 14-year period, this replacement strategy will cost fleet 14 x $5,313 = $74,382.

Scenario 3: A fleet manager plans to replace this vehicle every fourteen years. The annualized cost of this replacement strategy is $6,913. Over the 14-year period, this strategy will cost fleet 14 x $5,816 = $81,424

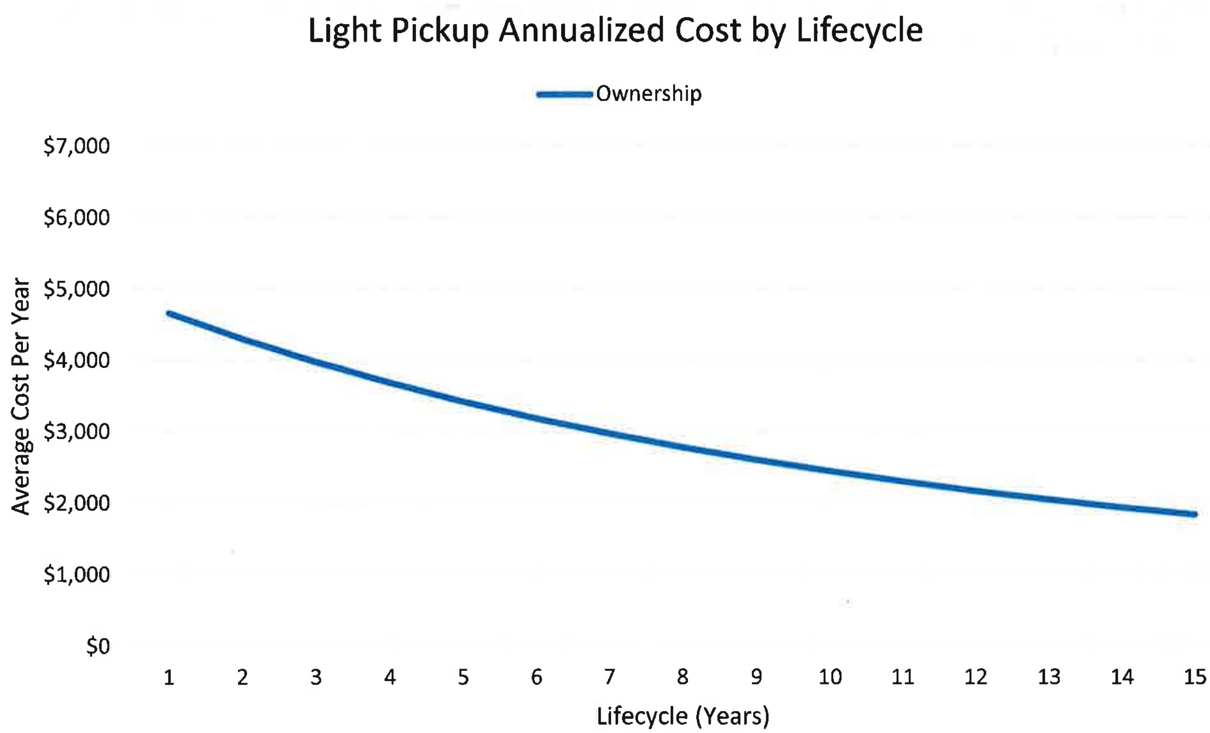
The table below summarizes the calculations in the previous example.

	Chosen Replacement Age	Financial Period (Years)	Annualized Cost	Total Cost for Financial Period
Scenario 1	1	14	$5,946	$83,244
Scenario 2	7	14	$5,382	$74,382
Scenario 3	14	14	$5,816	$81,424

This example illustrates that by minimizing annualized total cost achieves the lowest total cost of ownership over the life of the vehicle. Utilimarc recommends replacing units within 1.0% of the true lowest cost of ownership. This generally provides a three-year range for replacement, which allows for flexibility when planning replacement without dramatically affecting overall cost.

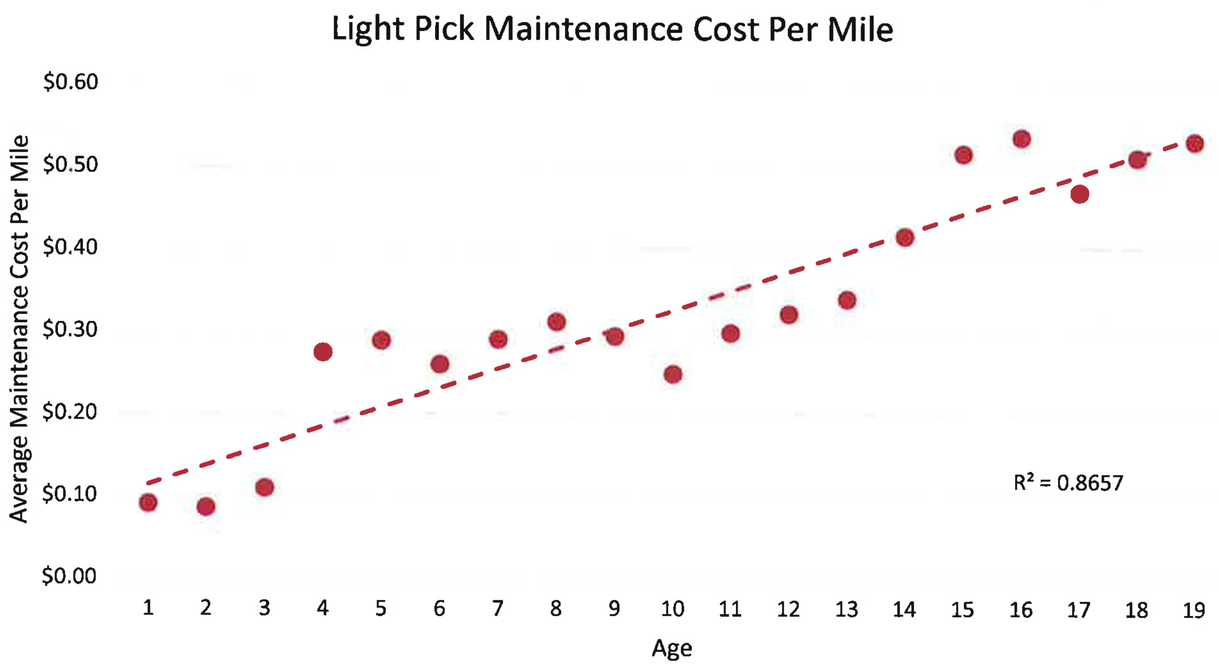
Modeling Ownership Cost

The Vehicle Replacement Model uses an exponential decay model to project the ownership cost of an asset over its lifetime. Each asset is assumed to lose 18% of its current book value every year as a cost of depreciation. This decay rate of 18% is established based on historical auction information from companies across the industry. *Annualized Ownership Cost* is calculated by taking the cumulative sum of each year of depreciation for the asset and dividing by the number of years the asset is in service. Continuing the example from the previous section, the graph below shows the annualized ownership cost for a light pickup truck for each potential lifecycle.

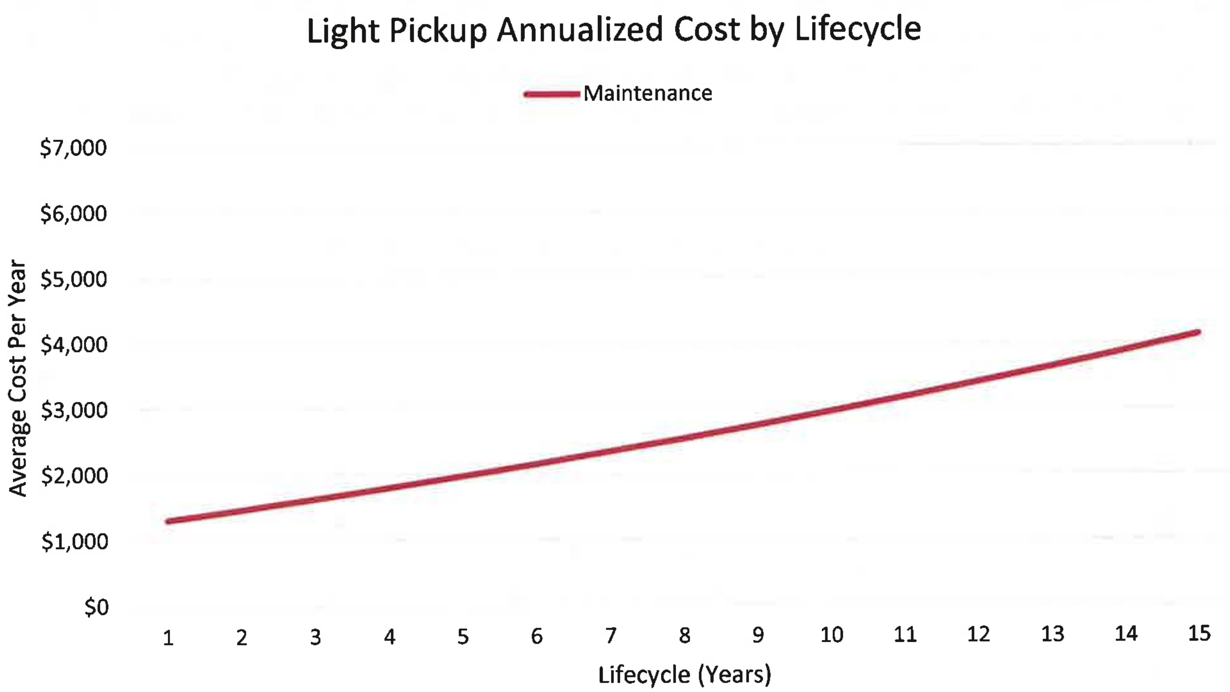


Modeling Maintenance Cost

The Vehicle Replacement Model uses a linear regression model to project the maintenance cost of an asset over its lifetime. These class specific models are built using historical, maintenance cost per mile data taken from the Utilimarc data. In the graph below, the red dots represent the average historical maintenance cost per mile for a light pickup truck of each age. The red, dashed line represents the linear regression model used to estimate the maintenance cost of an average pickup. The linear regression model helps predict the increase cost of maintenance associated with running older vehicles.

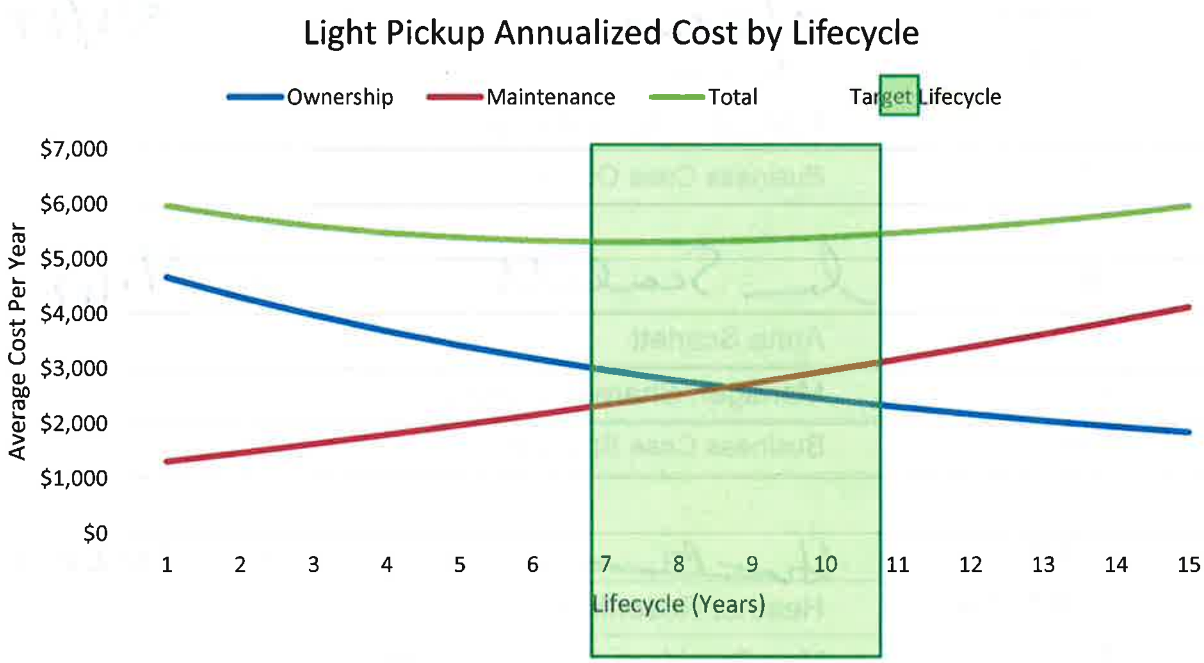


Annualized Maintenance Cost is calculated by taking the cumulative sum of each year of maintenance cost for the asset and dividing by the number of years the asset is in service. The graph below shows the annualized maintenance cost for light pickup trucks, based on the linear regression model and a calculated average annual mileage.



Modeling Annualized Total Cost

Annualized total cost is calculated by taking the sum of annualized maintenance and ownership cost. The graph below shows the annualized total cost for a light duty pickup truck. The target lifecycle is indicated by a green shaded zone. This is a visual representation of the table from pg. 7 and demonstrates how the model identifies each lifecycle.



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Signature: Date: 5/1/17
Print Name: Greg Loew
Title: Manager, Fleet Services
Role: Business Case Owner

Signature: A Scarlett Date: 5/1/17
Print Name: Anna Scarlett
Title: Manager, Shared Services
Role: Business Case Sponsor

Signature: Date: 4-28-17
Print Name: Heather Rosentrater
Title: Vice President, Energy Delivery
Role: Steering/Advisory Committee Review

5 VERSION HISTORY

Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	*Greg Loew*	*04/25/17*	*Heather Rosentrater*	*04/25/17*	*New template*

Template Version: 03/07/2017