Exh. SSAG-4
Dockets UE-240006/UG-240007
Witness: Sofya Shafran Atitsogbe Golo

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **AVISTA CORPORATION,** **Respondent**	**DOCKETS UE-240006 & UG-240007 (Consolidated)**

EXHIBIT TO

TESTIMONY OF

SOFYA SHAFRAN ATITSOGBE GOLO

STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Avista's Response to UTC Staff Data Request No. 193

July 3, 2024

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	05/06/2024
CASE NO.:	UE-240006 & UG-240007	WITNESS:	Josh DiLuciano
REQUESTER:	UTC Staff	RESPONDER:	Mike Diedesch
TYPE:	Data Request	DEPT:	Distribution Services
REQUEST NO.:	Staff – 193	TELEPHONE:	(509) 495-4592
		EMAIL:	Michael.Diedesch@avistacorp.com

SUBJECT: Capital Additions

REQUEST:

A further driver is related to supporting the development of the new energy services grid of the future. Emerging technologies are driving an increase in digitization, distributed generation, energy storage, and other technologies that require adapting and upgrading the existing system." DiLuciano, Exh. JDD-1T at 5:19-22.

Please list technologies that Avista is going to bring online in RY1 and RY2 that Avista is installing specifically to upgrade the grid (transmission and distribution) in preparation for distributed energy resources including, but not limited to, distributed generation and energy storage. In your response, please include budget amounts, corresponding workpapers, and witnesses/sponsors/adjustments that reference these technologies. Please outline how each technology will contribute to adapting and upgrading the existing system for distributed energy resources, especially distributed generation and energy storage.

RESPONSE:

Avista will be installing certain technologies in 2025 and 2026 which will prepare its electric system to better handle a more distributed and digitized energy future. Investments will enhance situational awareness and control of the grid to allow for management of distributed assets in ways that benefit both transmission and distribution system utilization. Examples of projects with these investments as part of their scope include the Advanced Distribution Management System (ADMS), Connected Communities program, and the Solar Plus Storage Microgrid at the MLK Community Center.

ADMS is a foundational technology required for situational awareness, operation and automation related to distributed energy resources. As part of the ADMS project, Distributed Energy Resource Management (DERM) approaches will be evaluated and demonstrated in conjunction with the ADMS, showing how the system will provide the flexibility to support new approaches like non-wires alternatives and grid energy efficiency utilizing Distributed Energy Resources (DER). The business case for ADMS is attached: "Staff-DR-193 Attachment A - 2023 OMS_ADMS_Business_Case_Justification 2024-2028.pdf"

The Connected Communities program, part of a grant from the Department of Energy, will demonstrate the benefits of coordinating DERs such as grid enabled and efficient buildings and energy storage. Customer DERs and utility DERs will actively participate to provide location-specific grid services via a distributed grid control framework called OpenDSO. The business case for Connected Communities is attached: "Staff-DR-193 Attachment B - Business Case Connected Communities_Sept2022_Signed.pdf"

MLK Community Center Microgrid will install energy storage and distribution upgrades to coordinate resilient operation of the building, storage and solar. Resilience applications include distribution infrastructure peak load management during extreme weather (heat or cold) and islanded operation as a community resilience center during grid outages. The system will be integrated with Avista's ADMS and operated by Distribution Operations. The business case attached describes the project in detail: "Staff-DR-193 Attachment C - Business Case – Solar Plus Storage Microgrid-Final.docx." The project is also partially funded by the Named Communities Investment Fund and Connected Communities business case.

Solar Plus Storage Microgrid Project

EXECUTIVE SUMMARY

Avista Utilities is partnering with the Martin Luther King Jr Community Center and the City of Spokane to build neighborhood Community resilience hubs. Resilience hubs will serve the community under a three tiered system: resource hubs, relief hubs and emergency hubs. Under day to day normal operations, such facilities (Centers) serve as “resource hubs” for the community; a place to go for various services, a place to receive support resources like N95 masks or bottled water etc. For weather related emergencies (extreme cold or extreme heat), the centers will serve as mostly daytime “relief hubs”, like warming centers, cooling centers or safer air centers.

During an outage, the batteries can back up the delivery of electricity from Avista's distribution grid. The microgrid, solar panels and batteries will provide backup power storage for the community center during unplanned outages such as a windstorm, extreme heat event, or fire. The updates to the buildings heating ventilation and air conditioning will provide the center with a common space for cooling. This building is listed on the City of Spokane’s critical infrastructure and will provide support for customers who have medical power dependencies, as well as other vulnerable customer groups. The battery is scheduled for 13 years of service.

The Martin Luther King Jr. Community Center was awarded funding in the amount of $1,500,000 from the Department of Commerce to complete this project. Avista will be a subrecipient of the battery energy storage system (BESS). This business case will provide an accounting project and task to record the work Avista will be doing installaling the BESS

Avista’s future goal is to use the information and data gathered from this project to design programs around providing technical assistance and installation services to other private financed or non-profit organizations that have properties through the integration of on-site renewable generation, energy storage, and/or EV charging. This first-hand experience and empirical data from these community renewable energy programs, enabling Avista to model upfront, capture ongoing costs and benefits and better understanding storage strengths and weaknesses, would allow Avista to helpovercome clean energy access barriers that are impacting nearly half of our customers who rent or have low incomes. A final benefit given the increased requirements for clean energy is the strengthening of Avista's power grid.

Solar Plus Storage Microgrid Project

VERSION HISTORY

Version	Author	Description	Date
1.0	*David Schafer*	*Solar plus storage Microgrid*	*11/29/2023*
BCRT	*BCRT Team Member*	*Has been reviewed by BCRT and meets necessary requirements*	*SC 4/17/24*

GENERAL INFORMATION

YEAR	PLANNED SPEND AMOUNT ($)	PLANNED TRANSFER TO PLANT ($)
2024	**$1,500,000 (GRANT FUNDED)**	
2025		**$1,883,000**
2026		
2027		
2028		

Project Life Span	***20 years***
Requesting Organization/Department	Clean Energy Stratigy
Business Case Owner | Sponsor	David Schafer | Jason Thackston / Latisha Hill
Sponsor Organization/Department	Clean Energy Strategy
Phase	Initiation
Category	Project
Driver	Customer Service Quality & Reliability

1. BUSINESS PROBLEM

1.1 What is the current or potential problem that is being addressed?

The MLK Center does not currently have any backup power or solar generation at the location. This is a requirement for a Tier II relief center. Further, the City of Spokane currently does not have any community resilience centers. The solar and storage project will be implemented utilizing the concepts integral to the Clean Energy Implementation Plan (CEIP), with

strategic decisions that will maximize benefits for Named Communities within Avista's service area and help to ensure that all customers, especially those most vulnerable, receive the information, communication, and support they need related to power outages, extreme heat risk, and safety. This project is one example of how Avista is developing local clean energy infrastructure including roof top or community solar.

This building will be listed with the City of Spokane's critical infrastructure and will provide support for customers who have medical power dependencies, as well as other vulnerable customer needs. During an outage, the batteries can back up the delivery of electricity from Avista's distribution grid. The microgrid, solar panels, and batteries will provide backup power storage for the community center during unplanned outages such as windstorms, extreme heat events, or fire, etc. The project also includes a new roof system and energy efficiency updates to the building's heating ventilation and air conditioning equipment. These improvements/replacements will provide the center with a common space for community members in need of heating and cooling during emergencies..

1.2 Discuss the major drivers of the business case.

As a result of Avista's 2022 General Rate Case (GRC),[1] the Company agreed to work with its Energy Assistance Advisory Group (EAAG) to identify a new renewable energy project, or projects, for the direct benefit of low-income customers or customers residing in Named Communities. Avista discussed project opportunities that support the GRC requirements with its EAAG during its July 2023 meeting. Ultimately, the EAAG advocated for Avista to partner with a non-profit organization that supports low-income customers to provide solar plus battery storage. As a result of input from the EAAG, Avista and the Martin Luther King Jr Family Outreach Center (MLK Center), with approval from the City of Spokane, are funding a neighborhood resiliency community microgrid that will provide shelter and resources during extreme weather events.

[1] Docket UE-220053 et al, - Final Order 10/04, 103.

1.3 Identify why this work is needed now and what risks there are if not approved or if deferred or risks being mitigated by the request.

Avista Utilities, The Martin Luther King Community Center, and the City of Spokane partnered to submit a Department of Commerce solar plus storage grant application in March of 2023. Total funds requested were $1.5M. The highest score(s) for our region (region 9) will be awarded funds, minimum $15k maximum $1.5M with the project completion June 30th, 2025. The Martin Luther King Jr. Center / Avista grant was awarded the maximum allowance of $1.5M in August of 2023. The intake packet was submitted with an Avista match letter in October of 2023 to the department of Commerse.

1.4 Discuss how the proposed investment, whether project or program, aligns with the strategic vision, goals, objectives and mission statement of the organization.

At a time when everyone is increasingly aware of the growing need for energy resilience, this business case's goal is to accelerate the transition to renewable energy grid modernization through technical, policy, and project implementation. The business case will detail the project at the Martin Luther King Community Center located 500 S Stone Ave in Spokane Washington.

The microgrid in this project is a combination of energy resources, including generation & storage that are coordinated to serve specific loads, including in an islanded fashion. This community microgrid will cover a target grid area and relies on existing distribution feeders (i.e. power lines) to operate when islanded. This project will include both front-of-meter and behind-the-meter 100kW solar resources.

Addressing three challenges community microgrids face: First to establish the selection of initial Community Microgrids to provide resilience to Critical Community Facilities (CCFs). Second to enhance community microgrids to offer resilience opportunities with the initial community microgrid footprint. Finally, Community Microgrids to larger footprints that can guarantee resilience to a wider list of facilities and include additional communities.

1.5 Supplemental Information – please describe and summarize the key findings from any relevant studies, analyses, documentation, photographic evidence, or other materials that explain the problem this business case will resolve.[2]

Community partners for this project include Avista, the MLK Center, the City of Spokane, and secured funding in the amount of $1,500,000 from the Department of Commerce to complete this project. As described in further detail below, Avista is committing funds for this project from its Named Communities Investment Fund (NCIF), energy efficiency tariff rider, connected communities fund, and electric vehicle (EV) charging and transportation budget.

2. PROPOSAL AND RECOMMENDED SOLUTION - *Describe the proposed solution to the business problem identified above and why this is the best and/or least cost alternative (e.g., cost benefit analysis).*

2.1 Please summarize the proposed solution and how it helps to solve the business problem identified above.

To maximize the benefits for the MLK Center and provide consistent power even when there is an outage given its status as a Tier II……. The project will install the largest allowable net-metering solar installation allowed, a 99 kW solar array. PVWatts was used to size the solar array and produce estimates for kWh production. The proposed array and battery energy storage system will provide significant benefits to the MLK Center through energy resiliency and reduced

[2] Please do not attach any requested items to the business case, rather be sure to have ready access to such information upon request.

energy bills. The added resiliency benefits will result in the MLK Center being relied upon for emergency shelter essentials during times of crisis. From a financial standpoint, using Avista's solar estimator tool, the solar array will provide an estimated annual savings of $12,120 reducing the financial impact of the center's electric bill. Finally, the solar array will also provide sustainability benefits in the form of significant CO2 reductions, that has meaningful environmental & health benefits.

A battery energy storage system analysis tool was used to run several studies to evaluate the size requirements of the battery storage. The analysis used the projected solar production and historical 15-minute maximum load from the 2021 (load was significantly lower during the 2022 summer due to multiple air-conditioning failures, which left the community center without cooling during the summer months). Outages were simulated on June 29th, which corresponded with the community center's maximum load and coincided with the 2021 heat dome event. An additional simulation of an outage was performed for December 13th to analyze the impact of low solar output conditions. Initial results indicated that a large battery, between one and two megawatt-hours, would be required to serve the building during an outage (depending on the percentage of building load served).

Based on the battery size required to supply the desired resilience, the complexity of owning and operating such a battery would be burdensome to the MLK Center. Instead, a microgrid framework was proposed whereby Avista would own and operate the battery and provide resiliency during a grid outage. This microgrid design has similarities to one previously deployed by Avista on the Washington State University Spokane campus. A new breaker will be installed to act as a point of common coupling (PCC) between the distribution system and the microgrid. During normal operation, electricity would be served to the microgrid through the PCC. When a grid outage is detected, the PCC breaker can isolate the microgrid from the distribution grid, allowing the battery to form an island to continue to provide electrical service to the microgrid. The high-level components of the microgrid include the PCC breaker, the battery storage system, an EV charging station, the MLK Center building, and the new solar array being installed. A microgrid controller will be deployed to manage the operation of the microgrid while islanded and while grid connected to provide grid services.

2.2 Describe and provide reference to CIRR/IRR analyses, relevant studies, documentation, metrics, data, analysis, risk reduction, or other information that was considered when preparing this business case (i.e., samples of savings, benefits or risk avoidance estimates; description of how benefits to customers are being measured; metrics such as comparison of cost ($) to benefit (value), or evidence of spend amount to anticipated return).[3]

NOT APPLICABLE TO THE SOLAR PLUS STORAGE GRATE

2.3 Summarize in the table, and describe below the DIRECT offsets[4] or savings (Capital and O&M) that result by undertaking this investment.

Offsets	Owned/Not Owned	Discriptions	Commerse Grant
Capital	Owned	Microgrid procurement design + critical load	$20,000
Capital	Owned	Dist. Area Engineer	$8,000
Capital	Owned	Project Engineer and overall design/test	$15,0000
Capital	Owned	Microgrid Controller Design	$40,000
Capital	Owned	Microgrid Protection Design	$40,000
Capital	Owned	ET Network Design and PM	$140,000
Capital	Owned	Integration EV chargers to Control Framework	
Capital	Owned	Relay Tech Design Involvement	
Capital	Owned	Civil Design	$25,000
Capital	Owned	Permitting with the City Spokane	$1,000
Capital	Owned	Interconnection application	$1,000
Capital	Owned	Battery costs for a 500kW / 1100kWh	
Capital	Owned	Microgrid equipment: Vault	$40,000
Capital	Owned	Microgrid equipment: PCC Switch/Breaker	$65,000
Capital	Owned	Microgrid equipment: Transformer	$40,000
Capital	Owned	Microgrid equipment: Underground powerlines	$120000
Capital	Owned	Microgrid equipment: Microgrid Controls hardware	$
Capital	Owned	Microgrid equipment: Site Prep	$30000
Capital	Owned	Labor: Battery	
Capital	Owned	Labor: Microgrid plant labor (13kV & BESS)	
Capital	Owned	Community outreach and engagement	
Capital	Owned	Town Hall	$

[3] Please do not attach any requested items to the business case, rather be sure to have ready access to such information upon request.

[4] Direct offsets are defined as those hard cost savings Avista customers will gain due to the work under this business case. Such savings could include reductions in labor, reduced maintenance due to new equipment, or other.

Capital	Owned	Collateral development	$
Capital	Owned	Marketing Campaign print and digital	$
Capital	Owned	Direct Mail	$
Capital	Owned	In person	$
Capital	Owned	Labor: Project management costs	$40000
Capital	Owned	Operations and Maintenance Planning/Training	$0

2.4 Summarize in the table, and describe below the INDIRECT offsets (Capital and O&M) that result by undertaking this investment.

Offsets	Offset Description	2024	2025	2026	2027	2028
Capital		$	$	$	$	$

2.5 Describe in detail the alternatives, including proposed cost for each alternative, that were considered, and why those alternatives did not provide the same benefit as the chosen solution. Include those additional risks to Avista that may occur if an alternative is selected.

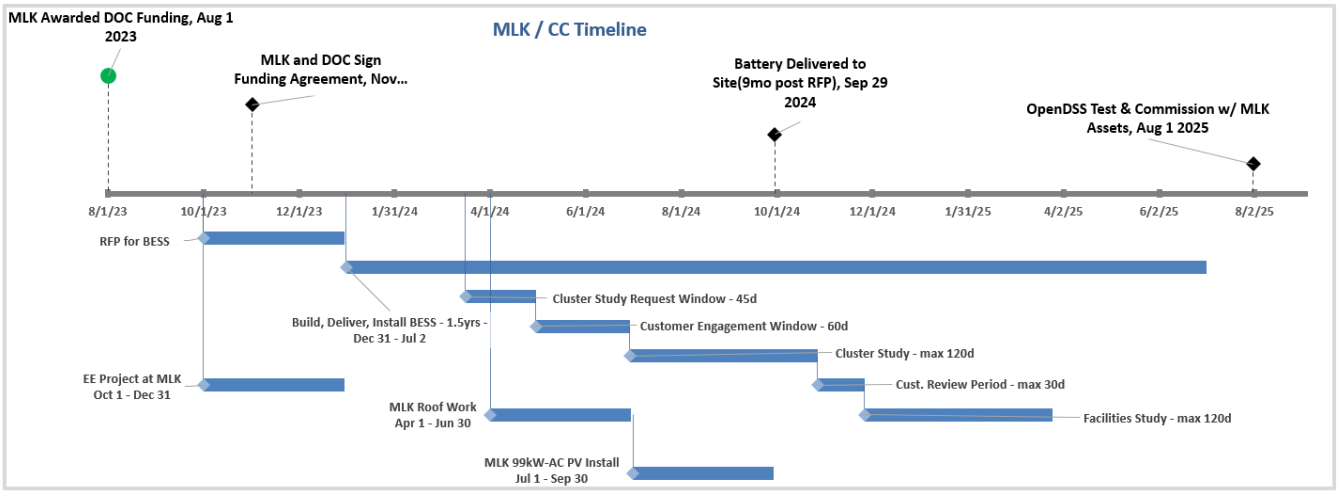
Not applicable to the solar plus storage grant

2.6 Identify any metrics that can be used to monitor or demonstrate how the investment delivered on remedying the identified problem (i.e., how will success be measured).

Summary of information demonstrating value, use, and impact of solar plus storage system over performance period.

- Collect 1 year of solar production on performance of system and impact on community resilience.
- Collect 1 year of solar and energy efficiecy saving/offsets for the MLK Community center

2.7 Please provide the timeline of when this work is schedule to commence and complete, if known.



2.8 Please identify and describe the Steering Committee/governance team that are responsible for the initial and ongoing approval and oversight of the business case, and how such oversight will occur.

Project steerco

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3. APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the *Solar Plus Storage Microgrid 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:	
Print Name:	David Schafer		
Title:	Sr. Project Manager		
Role:	Business Case Owner		

Signature:		Date:	
Print Name:			
Title:			
Role:	Business Case Sponsor		

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

EXECUTIVE SUMMARY

This businesses case is being submitted to address the cost share requirements towards a Department Of Energy (DOE) grant called connected communities Funding Opportunity Announcement (FOA). Avista is partnering with EDO, Pacific Northwest National Labs (PNNL), McKinstry, and Urbanova to create a business model to scale grid enabled and efficient buildings active participation in offsetting electric production and delivery of demand resources. EDO a business partnership between McKinstry and Avista Development is the prime in the proposal and represents the scalable business model for creating "Active Demand and Energy Management" services. Avista, a subcontractor in the proposal is responsible for designing customer product solutions which combine energy efficiency, building controls, and Distributed Energy Resources (DER) to be aggregated into a locational targeted virtual power plant. Avista will operate "as an aggregator" to schedule, dispatch and control the customer demand products to addresses system balancing requirements at the supply and delivery systems.

The business case will enable customers to actively manage their energy systems to improve performance and to reduce the energy cost burden. Today, many of the small commercial and businesses deploy building management systems which are underutilized or performing suboptimal. The customer product solutions will consist of a data acquisition and reporting mechanism to guide customers tune and refine the performance of their energy system. In addition, the customer solutions may combine solar and storage assets to the customer premise to derive additional benefits.

The Third & Hatch substation is the service boundary for the connected communities' pilot project. The Third & Hatch substation has eight distribution feeders which serve four distinct neighborhoods. A majority of these neighborhoods reside in the City of Spokane Opportunity zone. The products and service packaged in these neighborhoods will take into consideration energy value products for this segment of underrepresented communities. In addition, benefiting these neighborhoods with efficiency products can also address the capacity constraints of the station sourcing these neighborhoods.

VERSION HISTORY

Version	Author	Description	Date	Notes
1.0	*John Z. Gibson*	*Connected Communities Business Case*	*3/15/2021*	
2.0	*John Z. Gibson*	*Response to Ed Schlect Comments*	*4/20/2021*	
3.0	*Stephanie Myers*	*Updated for 2023 annual capital exercise*	*9/1/2022*	

Connected Communities FOA

GENERAL INFORMATION

Requested Spend Amount	$4,700,000
Requested Spend Time Period	5 years
Requesting Organization/Department	Energy Delivery
Business Case Owner | Sponsor	John Z. Gibson |
Sponsor Organization/Department	Energy Delivery
Phase	Planning
Category	Strategic
Driver	Performance & Capacity

1. BUSINESS PROBLEM

1.1 What is the current or potential problem that is being addressed?

Today, Avista production resources don't include a virtual power plant as a part of its resource mix. In Avista's Integrated Resource Plan (IRP) demand response consists of approximately 20 percent of its resource commitment. Avista has not deployed a dispatchable demand response program. The pilot project will enable the utility to develop operational capability around demand response programs or virtual power plant.

Today, Avista has not incorporated virtual power plants to address delivery system capacity constraints often referred to as non-wire. The Washington Utility and Transportation Commission (WUTC) has written statute requiring utilities to incorporate non-wire alternatives into its planning processes. Planning is unable to incorporate virtual power plants within its solution set without an understanding on how they perform. The pilot project addresses operational capability of virtual power plants to provide a test case for the planning department.

Avista's current energy efficiency programs consist of reimbursement incentives for energy efficiency improvements to the built environment. Recently, Avista energy efficiency team is deploying a program called "Active Energy Management". Under this program, the energy efficiency group will deploy a platform to actively manage the performance of commercial building management systems and provide recommendations to the building owner to improve their performance. Under the pilot program, the energy efficiency group will be able to incorporate dispatchable demand response under their active energy management program.

Avista's products and services group are reviewing a variety of product offerings for our customers. The product offering consists of small commercial solar, electric storage and energy hub. The products and services group have several questions regarding product adoption, and capability. The pilot project will bundle several products to deploy across a range of customer classes. The pilot project will evaluate adoption and capability of these deployed products.

1.2 Discuss the major drivers of the business case *(Customer Requested, Customer Service Quality & Reliability, Mandatory & Compliance, Performance & Capacity, Asset Condition, or Failed Plant & Operations)* and the benefits to the customer

The major business drivers of the business case are summarized below:

1) The utility is obligated to deploy dispatchable demand response in its IRP filing.
2) The utility is obligated to identify non-wire alternatives to address delivery constraints across our system.
3) The customer can benefit from resiliency product offering from the utility
4) The utility can enhance customer engagement by providing location specific aggregation services
5) The pilot project is being deployed in diverse and underrepresented communities

1.3 Identify why this work is needed now and what risks there are if not approved or is deferred

The connected communities FOA is a proposal to the Department of Energy (DOE). As a requirement of the proposal, the partners of the project our required to submit a letter of intent. The letter specifies the resource commitments by the participating members. The financial commitment is premised upon the proposal to be awarded by DOE. Avista has been awarded the connected communities grant by the DOE.

1.4 Identify any measures that can be used to determine whether the investment would successfully deliver on the objectives and address the need listed above.

The connected communities FOA investment would be successful if it achieved the following objectives:

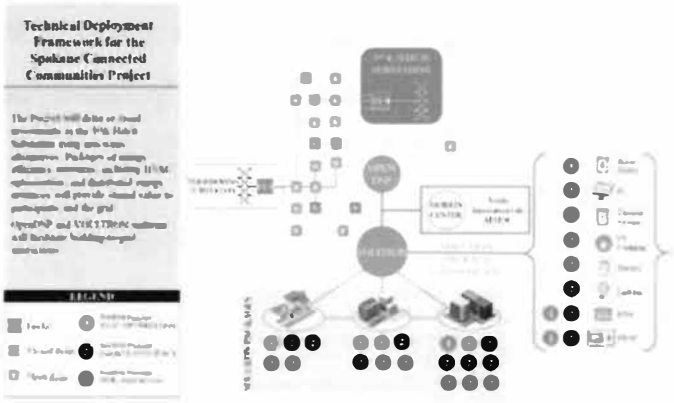
1) The product adoption rate for targeted customers within the pilot neighborhoods of fifteen percent.
2) The demand rate reduction resulting from the product solutions range between 500 KVA to 1.5 MVA.
3) The distributed technology platform and communication framework achieves reliability, responsiveness and dispatchable assets to participate in utility aggregation programs

1.5 Supplemental Information

1.5.1 Please reference and summarize any studies that support the problem

The technical proposal submittal is attached to this document.

1.5.2 For asset replacement, include graphical or narrative representation of metrics associated with the current condition of the asset that is proposed for replacement.



2. PROPOSAL AND RECOMMENDED SOLUTION

Option	Capital Cost	Start	Complete
Connected Communities FOA	$4.7 M	09/06/2022	09/06/2026
Implement Dispatchable Demand Response Independent of FOA	$12 M	2022	2030
Do Nothing	$0	n/a	n/a

2.1 Describe what metrics, data, analysis or information was considered when preparing this capital request.

The connected communities FOA team reviewed the following resources:

1) The system constraints on the Third and Hatch Substation
2) AMI data for neighborhoods severed by Third and Hatch Substation by preforming a cluster analysis to parse out demand versus energy services.
3) The IRP regarding the requirements for demand response
4) The demographic data available from Urbanova for underrepresented communities

2.2 Discuss how the requested capital cost amount will be spent in the current year (or future years if a multi-year or ongoing initiative). (i.e. what are the expected functions, processes or deliverables that will result from the capital spend?). **Include any known or estimated reductions to O&M as a result of this investment.**

The project budget cost sheet is shown below. The O&M cost reduction is occurring from federal match from the DOE.

Budget Year	Cost Estimate	O&M Reduction from Cost Share
2022	$225,000	$40,000
2023	$1,252, 854	$370,854
2024	$1,837,520	$672,520
2025	$1,014,178	$184,178
2026	$215,000	$142,048
2027	$83,903	$16,903

2.3 Outline any business functions and processes that may be impacted (and how) by the business case for it to be successfully implemented.

The business case will impact the following business processes:

1) Power supply will develop forecasting and scheduling capabilities for flexible demand combined with distributed energy resources on Avista distribution system
2) System Operations/Dispatch will be able to dispatch, and control flexible demand combined with distributed energy resources
3) Products and services group will be able to test and validate several product solutions for customers from solar to commercial solar.
4) Rates group will be able to evaluate performance base rate making by deploying added value products and services to our customer which will provide performance impact to the grid
5) Avista marketing group will incorporate tools to incorporate virtual power plants into their resource mix

2.4 Discuss the alternatives that were considered and any tangible risks and mitigation strategies for each alternative.

An alternative program would be to develop, market and deploy the products and services in this pilot without validating the value in a test market. By promoting a product and service without testing the outcome has the following risks

1) The product and/or service may not be adopted or desired by the customer
2) The delivery platform may not work as intended
3) The control platform response and latency of the controllable assets may be inadequate
4) The product and/or service installation obstacles may be insurmountable

2.5 Include a timeline of when this work will be started and completed. Describe when the investments become used and useful to the customer.

The timeline for the work is listed in the table below. The project will be staged in versus phases with the physical assets being use and useful throughout the project phases.

Budget Year	Cost Estimate	Physical Assets Use & Useful
2022	$225,000	
2023	$1,252, 854	Model Equipment PHIL
2024	$1,837,520	Service Package 1
2025	$1,014,178	Service Package 3
2026	$215,000	Technology Platform
2027	$83,903	

2.6 Discuss how the proposed investment aligns with strategic vision, goals, objectives and mission statement of the organization.

The connected communities FOA aligns with the strategic focuses for the utility as described below:

1) Perform: The connected communities FOA will enable the utility with the organizational processes and technology platform required to deploy locational based virtual power plants across our system. The virtual power plant can help meet power resource requirements and delivery system constraints required for load balancing services.
2) People: The connected communities FOA will have significant engagement across multiple departments from the wholesale marketing group to the products and solutions team. The FOA will provide a common project platform to procure, deliver and productize Avista energy services.
3) Invent: The connected communities FOA is creating an ideation framework to reinvent the utilities delivery for energy services. This project will foster the engagement of multiple stakeholders in the delivery of energy products and solutions for our customers
4) Customer: The project will be deployed in underserved neighborhoods of East Central and Logan. The programs will reinvent utility product offerings to ensure underserved communities can participate in renewable programs.

2.7 Include why the requested amount above is considered a prudent investment, providing or attaching any supporting documentation. In addition, please explain how the investment prudency will be reviewed and re-evaluated throughout the project

The utility is leading an initiative to design and operationalize controllable demand response programs as customer solutions which address the following: 1) Energy Burden, 2) System Constraints, 3) Under Served Communities and 4) Clean Energy.

The customer solutions being proposed in this pilot program will identify the consumer need and cost effectiveness to deploy these solutions.

The project will document the benefits and any impacts from deploying customer solutions around Energy Efficiency (EE) measures and Grid Solutions (GS). The estimation of reductions in energy consumption and GHG emissions will be based on an industry approved measurement and verification (M&V) protocol, such as, the International Performance Measurement and Verification Protocol7 (IPMVP) Option 3 for estimating EE savings, and other measured benefits. This option is based on continuous measurement of energy use (such as utility billing data) at the whole building or panel-level during the baseline and post-retrofit periods. For automated fault detection and diagnostics8 (AFDD) and automated identification of Re-tuningTM/Retro-Commissioning (AIRCx) technologies, when a fault or an energy saving opportunity is identified and confirmed, the potential energy and cost savings will be estimated using engineering principles.

2.8 Supplemental Information

2.8.1 Identify customers and stakeholders that interface with the business case

The connected communities FOA partners are McKinstry, EDO, Urbanova, WSU,

2.8.2 Identify any related Business Cases

Two business cases Micro-Transactive Grid (CEF2) and Grid Enabled and Efficient Buildings (CEF3)

3. MONITOR AND CONTROL

3.1 Steering Committee or Advisory Group Information

The project steering committee consists of:

- Dana Anderson
- John Gibson
- Nicole Hydzik
- Dan Johnson
- Kelly Magalsky
- Mike Magruder
- Josh DiLuciano

The advisory/sponsor group will be the Invent Council.

3.2 Provide and discuss the governance processes and people that will provide oversight

The director steering committee as defined above will meet on a regular cadence. Decision making and general prioritization decisions for the business case and projects will be documented and monitored through meeting notes.

A project update will be provided to the sponsors at the Invent Council on an as-needed basis. The Invent Council is chaired by Ed Schlect with the following members: Heather Rosentrater, Jim Kensok, Kevin Christie, Latisha Hill, Jason Thackston, Curt Kirkeby and Hossein Nikdel.

Facilitators include:
Kit Parker – Project Manager – Connected Communities
Stephanie Myers – Program Manager – Connected Communities

3.3 How will decision-making, prioritization, and change requests be documented and monitored

The steering committee will meet on a regular basis and meeting notes will be recorded and documented summarizing decisions, prioritization and change requests.

4. APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the Connected Communities FOA 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:	9/7/2021
Print Name:	John Z. Gibson		
Title:	Director of Avista Innovation Lab Chief R&D Engineer		
Role:	Business Case Owner		

From: Rosentrater, Heather <heather.rosentrater@avistacorp.com>
Sent: Friday, September 16, 2022 1:57 PM
To: Myers, Stephanie <Stephanie.Myers@avistacorp.com>
Subject: RE: Connected Communities Business Case

Hi Stephanie,
I approve the updated Business Case and appreciate you adding my signature to the document already signed by John and Jason.
Thank you!
Heather

Signature:		Date:	9/7/2021
Print Name:	Jason Thackston		
Title:	Sr. VP Chief Strategy & Clean Energy Officer		
Role:	Business Case Sponsor		

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

EXECUTIVE SUMMARY

Avista's Outage Management Tool (OMT) is an in-house developed custom application that supports electric outage analysis, management, and restoration. OMT is a mission critical system which provides the functionality to manage the electric distribution grid, the overall life cycle of electric outages and the restoration processes for the Washington and Idaho service territories. The OMT application and data model were developed by Avista at a time when commercial outage management software was not available, have been used for nearly two decades and are approaching technology obsolescence. The existing Geographic Information System (GIS) operating platform on which OMT is built is scheduled by the vendor for end of life in 2028 and is recommended for replacement in the Atlas business case. The OMT application is showing increasing signs of fatigue (such as system instability during storm scenarios) and the loss of OMT would mean significant risks, increased costs, and customer benefit impacts which are detailed in the narrative below. The loss of OMT is rated 6th on Avista's corporate risk register, which means replacing it with a modern application is a top priority.

OMT works in synchronization with Avista's Distribution Management System (DMS), in order to monitor and control Avista's electric distribution network efficiently and reliably. The DMS is a commercial application used to monitor and control the portion of the distribution grid that is equipped with "smart grid" technology that enables remote monitor and control. It relies on Geographic Information System (GIS) data to determine the current operating state of the distribution system, which is provided via an outdated, custom-built data model import tool and OMT integration. Frequent integration failures result in the two systems being out of synch with each other, requiring a significant amount of manual intervention to resolve each week. The DMS marginally meets the current business needs but will not meet future needs for additional distribution grid automation and Distributed Energy Resources requirements to meet customer choice and Clean Energy Transformation Act requirements.

Avista foresees a future utility architecture that bridges use cases across Customer, Grid, Operations, and Utility Enterprise domains. This future will require a technology platform that enables the integration of these domains. The industry standard for this platform is an Advanced Distribution Management System (ADMS). Replacing Avista's OMT and DMS with a single ADMS will achieve improved operational awareness and grid management capabilities, enable real-time automated outage restoration, enable real-time grid optimization and performance, improve field and office worker productivity, and provide the ability to reengineer work processes and methods to support the continuous improvement of Avista's Distribution System Operator program. An ADMS solution incorporates industry best practices for optimized workflow, software performance and reporting which will provide Avista with the ability to respond to more stringent and detailed regulatory compliance reporting requirements, such as those for Wildfire Resiliency and the Clean Energy Transformation Act. A modern ADMS also enables the ability to deliver more geographically specific Estimated Restoration Time (ERT) information to electric customers during outages. The improved ERT accuracy and restoration status for customers will improve customer confidence in the information

which will reduce the number of calls received by our customer service representatives, as well as call durations.

The estimated project cost is $49 over a four-year planned project duration. Because of the importance of this project, and the fact that the primary reason ADMS projects fail or run over time and over budget is due to the inability to create and maintain an accurate distribution grid data model, initial development work on the data model was started in 2022. The bulk of the ADMS implementation effort is scheduled to start in Q2-2023, with a three month Phase 0 effort focused on validating the data model and identifying technically challenging use cases by running a series of tests utilizing the out-of-the-box software, using Avista's distribution grid data model and Avista's real-time distribution grid simulator. The Phase 0 effort will enable the project to efficiently proceed into the Phase 1 design and implementation effort in Q3-2023 with reduced risk to scope, schedule, and budget, improving the likelihood of completing the project as planned.

Since this is a multiyear project, the work needs to start in 2023 as scheduled in order to have the ADMS fully operational before the OMT operating platform is no longer supported and to meet increasing customer and regulatory expectations which cannot be achieved with the legacy OMT and DMS applications. Avista needs to proceed with the work now in order to be ready for the future, in a similar way to how planning is done for future power needs; i.e., we don't wait until we run out of power to build new generation. It would not be prudent to wait until after our current system completely fails to meet our needs to start an ADMS project.

A Request for Proposal (RFP) was released to the industry leading ADMS software vendors in Q3-2022. From that process, four vendors responded which were thoroughly evaluated and a recommendation to proceed with General Electric (GE) was made to executive leadership to proceed into contract negotiations with the successful bidder. The recommendation was approved, and contract negotiations were complete in Q1-2023.

VERSION HISTORY

Version	Author	Description	Date
1.0	Mike Littrel	Initial draft of business case	04/2017
2.0	*Mike Littrel*	*Updated business case format*	*07/2020*
3.0	*Mike Littrel*	*Updated program details and budget*	*07/2021*
4.0	*Mike Littrel*	*Updated program details and budget*	*08/2022*
5.0	*Mike Littrel*	*Updated program details and budget*	*04/2023*
BCRT	*BCRT Team Member*	*Has been reviewed by BCRT and meets necessary requirements*	

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

GENERAL INFORMATION

YEAR	PLANNED SPEND AMOUNT ($)	PLANNED TRANSFER TO PLANT ($)
2024	**$13.75M**	**$1.8M**
2025	**$9.6M**	**$24M**
2026	**$7.4M**	**$6.8M**
2027	**$4.5M**	**$4M**
2028	**$0**	**$0**

Project Life Span	***4 years***
Requesting Organization/Department	Enterprise Technology
Business Case Owner | Sponsor	Mike Littrel | Mike Magruder, Hossein Nikdel
Sponsor Organization/Department	Energy Delivery Technology Projects
Phase	Execution
Category	Project
Driver	Asset Condition

Definitions for the Category and Driver can be found on the Business Case Review Team Team's site see link.

Investment Drivers

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

1. BUSINESS PROBLEM - *This section must provide the overall business case information conveying the benefit to the customer, what the project will do and current problem statement.*

1. What is the current or potential problem that is being addressed?

Avista's current Outage Management Tool (OMT) has been used for nearly two decades and is approaching obsolescence. The technology is becoming more and more difficult to configure to meet the changing business needs and has exceeded its useful life. The software has already undergone two major conversions to extend the life to this point. Both changes achieved their goals; however, the code is now more fragile which has increased the complexity of supporting OMT.

Additionally, the existing system is custom built and requires continual maintenance and support by internal staff whose skillset is becoming scarce, as the fundamental code and architecture is complex and outdated. OMT does not have the full complement of functionality required to meet current and future needs of the Distribution System Operators as they respond to an increasingly complex and dynamic electric distribution grid. Outage incident processing performance can be very slow and unstable during high-volume outage conditions (storms), particularly in field division offices, impacting the ability to restore service quickly. When a new configuration request is surfaced, the change cannot always be implemented, as the custom code and architecture may not allow it. The existing operating platform used by OMT is currently scheduled for end of life in 2025.

The existing OMT workflow does not include a fully digital workflow for the field personnel who are responding to outage scenarios. This lack of a digital workflow creates gaps in situational awareness for both the field personnel and the Distribution Operators who are planning and coordinating the restoration effort. These gaps can lead to potential safety hazards and inefficiencies in the restoration process. It also creates gaps in the level of detail collected during the damage assessment and restoration activities. These details are becoming increasingly important to be able to report on for programs such as Wildfire Resiliency. Modern ADMS platforms include a fully digital workflow which enable both field and office personnel to have access to the same information and receive near real-time status updates during an outage event, improving safety and efficiency. A digital workflow also ensures that the damage and repair information is captured accurately and completely through the use a rule driven forms.

Switching (the process to de-energize a section of the electric grid for construction, maintenance, or repair) is another area for significant improvement in both effectiveness and safety. Currently switching plans are developed in a Word document through conversations with the people involved (Area Engineer, Foreman, Distribution Operators, etc.) and the plan steps are executed manually on the day of the planned switching activity. An ADMS provides a fully digital and integrated process for switch plan development, study mode, and execution of the switching activity. This fully digital process ensures that the switching meets all electric grid and safety requirements by monitoring each step of the plan against the actions taken and alerting the personnel if a step is missed, a step is invalid, or an error is made during the switching process. The switch plans are also stored in an online library for quick reference in order to have a highly reproducible process for future switch plans.

The existing Distribution Management System (DMS) has several challenges which the ADMS will address. First, the DMS relies on GIS data to determine the current operating state of the distribution system which is provided via an outdated, custom-built OMT integration. Frequent integration failures result in the two systems being out of synch with each other, requiring a significant amount of manual intervention to resolve each week. The DMS marginally meets the current business needs but will not meet future needs for additional distribution grid automation and Distributed Energy Resources requirements to meet customer choice, and Clean Energy Transformation Act requirements.

1.2 Discuss the major drivers of the business case.

Avista can gain significant operations and business advantages by replacing the OMT and the DMS with an ADMS. A modern ADMS can address many of the issues currently faced by Distribution System Operators and Electric Operations field personnel. The benefits of an ADMS fully integrated with other enterprise systems along with optimized business processes include; improved outage analysis and restoration capabilities, improved safety, improved status information to customer facing systems, and improved system reliability and dependability. Avista responds to multiple major storm events per year. An ADMS with a fully digital workflow has the potential to reduce the labor costs of these major events by at least 10%. Based on actual storm costs for 2017-2021 that’s an average savings of $340,379 per year (see table below) split 75% capital and 25% O&M.

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

Accounting Year	Summary Exp Category	Sum of Actuals	with ADMS	10% Savings
2017	Labor	$3,357,066	$3,021,360	$335,707
	Non-Labor	$4,460,419	$4,460,419	$0
2017 Total		**$7,817,485**	**$7,481,778**	**$335,707**
2018	Labor	$2,227,664	$2,004,897	$222,766
	Non-Labor	$2,649,948	$2,649,948	$0
2018 Total		**$4,877,611**	**$4,654,845**	**$222,766**
2019	Labor	$2,366,126	$2,129,514	$236,613
	Non-Labor	$5,341,119	$5,341,119	$0
2019 Total		**$7,707,245**	**$7,470,633**	**$236,613**
2020	Labor	$4,139,030	$3,725,127	$413,903
	Non-Labor	$14,288,254	$14,288,254	$0
2020 Total		**$18,427,284**	**$18,013,381**	**$413,903**
2021	Labor	$4,929,088	$4,436,179	$492,909
	Non-Labor	$14,398,068	$14,398,068	$0
2021 Total		**$19,327,156**	**$18,834,248**	**$492,909**
Annual Average		**$11,631,356**	**$11,290,977**	**$340,379**

A fully integrated ADMS provides capabilities that include: (1) a platform that integrates numerous utility systems to achieve improved operational awareness and grid management capabilities, (2) expanded real-time automated outage restoration, and (3) enables real-time optimization of electric distribution grid performance.

While improved customer experience is difficult to quantify, it is perhaps the most important business reason for justifying a new ADMS. During major outage event situations, the ability to communicate timely, accurate and consistent status of outages and estimated restoration time is of paramount importance to customers. Whether the customer hears directly from the utility, the media or a public agency, the information about the outage needs to be consistent. An ADMS is that vehicle to provide this timely, accurate and consistent information to customers.

Significant customer value from other corporate initiatives will be at risk if Avista lost the OMT and/or DMS capabilities and did not have an ADMS in place. This value is at risk if the ADMS project does not occur (or is delayed until OMT/DMS failure) because the Advanced Metering Infrastructure (AMI) meters simply provide near real-time data, they do not perform the analytics or initiate the optimization functions that produce the customer benefit. That work is currently accomplished by custom functionality within OMT and DMS, which would become native functionality within an ADMS. Some examples of these customer values from the August 2020 Avista Utilities Advanced Metering Infrastructure (AMI) Project Report include:

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

Benefit	Average Annual Customer Value
Early Outage Notification	$4,005,827
More Rapid Restoration	$2,269,968
Avoided Single Lights Out	$289,723
Reduced Major Storms Cost	$327,566
Conservation Voltage Reduction	$2,108,817

1.3 Identify why this work is needed now and what risks there are if not approved or if deferred or risks being mitigated by the request.

The OMT application and data model have been used for nearly two decades and are approaching technology obsolescence. Continuing to utilize OMT would continue to create Operating and Maintenance cost pressure while also creating risks of system failure during times of high demand (storms). Additionally, any investment in the current system is a sunk cost, as the system is limited in the additional functionality it can provide to our staff as they respond to electric customer outages on an increasingly complex distribution system and the underlaying platform in schedule for end-of-life in 2025. The current system is highly customized making it increasingly difficult to integrate with newer enterprise applications. OMT is a cornerstone to Avista's ability to manage the overall cycle of the electric outage and restoration processes for the Washington and Idaho electric service territories. If it is not replaced prior to system failure, it would likely double the amount labor required to complete the restoration efforts, while also increasing public safety risks and lowering customer satisfaction. Based on a five-year average of actual storm labor costs for 2017-2021 that's an addition cost of $3,403,795 per year (see table below) split 75% capital and 25% O&M. The costs and risks would continue to accumulate after the storm as daily operations would be impacted for the duration of an OMT system failure. The Avista Risk register has the impact range of an OMT system failure set at $1.0M - $10.0M.

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

Accounting Year	Summary Exp Category	Sum of Actuals	OMT/DMS Failure	Annual Cost Increase
2017	Labor	$3,357,066	$6,714,132	$3,357,066
	Non-Labor	$4,460,419	$4,460,419	$0
2017 Total		**$7,817,485**	**$11,174,551**	**$3,357,066**
2018	Labor	$2,227,664	$4,455,327	$2,227,664
	Non-Labor	$2,649,948	$2,649,948	$0
2018 Total		**$4,877,611**	**$7,105,275**	**$2,227,664**
2019	Labor	$2,366,126	$4,732,253	$2,366,126
	Non-Labor	$5,341,119	$5,341,119	$0
2019 Total		**$7,707,245**	**$10,073,372**	**$2,366,126**
2020	Labor	$4,139,030	$8,278,060	$4,139,030
	Non-Labor	$14,288,254	$14,288,254	$0
2020 Total		**$18,427,284**	**$22,566,313**	**$4,139,030**
2021	Labor	$4,929,088	$9,858,176	$4,929,088
	Non-Labor	$14,398,068	$14,398,068	$0
2021 Total		**$19,327,156**	**$24,256,245**	**$4,929,088**
Annual Average		**$11,631,356**	**$15,035,151**	**$3,403,795**

Since this is a multiyear project, the work needs to start as scheduled in order to have the ADMS fully operational before the OMT operating platform is no longer supported, and to meet increasing customer and regulatory expectations, which cannot be achieved with the legacy OMT and DSM applications. Avista needs to proceed with the work now in order to be ready for the future, in a similar way to how planning is done for future power needs; i.e., we don't wait until we run out of power to build new generation. Implementing an ADMS is a long-term project, so we don't want to wait until after our current system completely fails to meet our needs to start an ADMS project. If OMT is not replaced with a modern ADMS, the ability of Avista to meet current and future customer, regulatory, and compliance requirements will be at risk.

1.4 Discuss how the proposed investment, whether project or program, aligns with the strategic vision, goals, objectives and mission statement of the organization. *See link*.

Avista Strategic Goals

Having a modern ADMS will improve field and office worker productivity, provide more accurate data, and provide the ability to reengineer work processes and methods to support the continuous improvement of Avista's outage management and restoration program. It will also provide Avista with the ability to respond to more stringent and detailed regulatory compliance reporting requirements, enable effective operation of an increasingly complex and dynamic electric distribution grid, and deliver more accurate Estimated Restoration Time (ERT) information to electric customers during outages. The improved ERT accuracy and restoration status for customers will improve customer confidence in the information which will reduce the number of calls

received by our customer service representatives, as well as call durations. The additional Distributed Energy Resource Management (DERM) functionality will support the long-term goals of the CEIP and Connected Communities project. CEIP and Connected Communities goals are described in more detail in section 2.6. A DERM provides the ability to actively manage energy resources such and wind, solar, batteries, etc. based on specific grid requirements in order to achieved goals such as increased distribution grid reliability.

1.5 Supplemental Information – please describe and summarize the key findings from any relevant studies, analyses, documentation, photographic evidence, or other materials that explain the problem this business case will resolve.[1]

Justification for system replacement is based on comprehensive assessments of technologies, processes and functions that were performed in 2015 by third-party consultants as part of an enterprise project planning process. The details of the assessments are available in the following supporting documents:

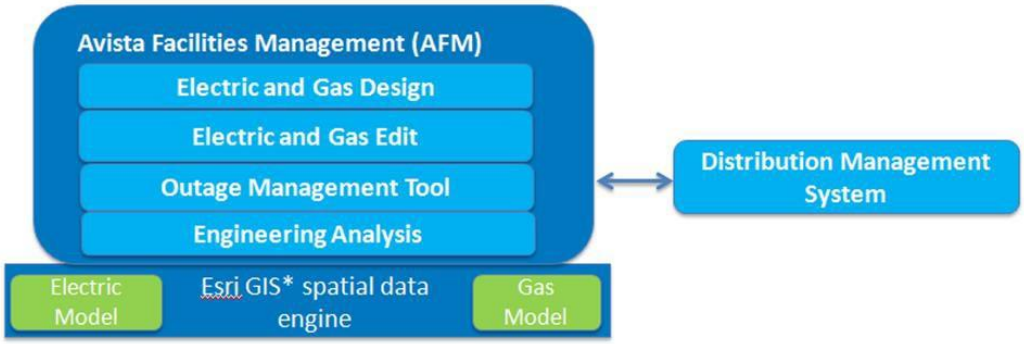
- Business Case
- Current State Report
- Future State Report
- Gap Analysis Report
- Industry Analysis Report
- Requirements Report
- Alternative Analysis Report

The Gap Analysis report includes a list of more than 30 gaps in the current state OMT/DMS applications that would be resolved/corrected with the implementation of an ADMS. The conclusion from the third-part consultant is:

> Avista can gain significant operations and business advantages by replacing OMT with a commercial OMS(ADMS). A new OMS(ADMS) can address many of the issues currently faced by dispatch and field personnel. Properly integrated with other systems with optimized processes, benefits to be realized include improved outage analysis and restoration capabilities, improved status information to customer facing systems, and improved system reliability and dependability. A new OMS(ADMS) will improve Avista's ability to respond to storm condition outages and restoration processes.

[1] Please do not attach any requested items to the business case, rather be sure to have ready access to such information upon request.

Outage Management System and Advanced Distribution Management System (OMS/ADMS)



An Esri Geographic Information System (GIS) serves as the foundational data structure on which Avista Facility Management (AFM) applications, including OMT, are built or rely on. AFM is the system of record for spatial electric and gas facility data and provides the connectivity model to support OMT. The following is a brief description of AFM tools.

- Electric and Gas Edit are tools inherent in the system used for data edits prior to committing final data changes and additions.
- Outage Management Tool is an in-house developed application that supports outage analysis and management.
- Engineering Analysis is a commercial tool used for engineering analysis modeling.
- Distribution Management System is a commercial application used to monitor and control the portion of the distribution grid that is enabled with “smart grid” technology. It relies on the GIS data from OMT to determine the current operating state.

2. PROPOSAL AND RECOMMENDED SOLUTION - *Describe the proposed solution to the business problem identified above and why this is the best and/or least cost alternative (e.g., cost benefit analysis).*

1. Please summarize the proposed solution and how it helps to solve the business problem identified above.

Avista foresees a future utility architecture that bridges use cases across Customer, Grid, Operations, and Utility Enterprise domains. This future will require a technology platform that enables the integration of these domains. The industry standard for this platform is an Advanced Distribution Management System (ADMS). Replacing Avista’s OMT and DMS with a single ADMS will achieve improved operational awareness and grid management capabilities, enable real-time automated outage restoration, enable real-time grid optimization and performance, improve field and office worker productivity, and provide the ability to reengineer work processes and methods to support the continuous improvement of Avista’s Distribution System Operator program. An ADMS solution also provides Avista with the ability to respond to more stringent and detailed regulatory compliance reporting requirements, such as

those for Wildfire Resiliency and the Clean Energy Transformation Act. A modern ADMS also enables the ability to deliver more geographically specific Estimated Restoration Time (ERT) information to electric customers during outages. The improved ERT accuracy and restoration status for customers will improve customer confidence in the information which will reduce the number of calls received by our customer service representatives, as well as call durations.

The additional Distributed Energy Resource Management (DERM) functionality will support the long-term goals of the CEIP and Connected Communities project. CEIP and Connected Communities goals are described in more detail in section 2.6.

Option	Capital Cost	Start	Complete
Alternative 1 - Recommended Solution - Replace the custom OMT and DMS applications with an ADMS	$45.5M	04/2023	12/2026
Alternative 2 – Rewrite Custom OMT and keep DMS	Not Available	01/2023	06/2026
Alternative 3 - Continue to utilize the custom OMT and DMS applications until OMT runs out of support in 2025	$1.0M	06/2023	12/2025

2.2 Describe and provide reference to CIRR/IRR analyses, relevant studies, documentation, metrics, data, analysis, risk reduction, or other information that was considered when preparing this business case (i.e., samples of savings, benefits or risk avoidance estimates; description of how benefits to customers are being measured; metrics such as comparison of cost ($) to benefit (value), or evidence of spend amount to anticipated return).[2]

Detailed documentation from industry experts as listed in section 1.5 above, along with project costs from recent comparable projects at other utilities were used to determine the amount of the capital funds request and duration of the business case.

Avista released a Request for Proposal (RFP) in Q3-2022 to qualified ADMS software vendors and implementors. The responses were evaluated and scored in order to determine the best ADMS solution. The RFP results were provided to the project governance group for review and approval to proceed. The decision was made to proceed into contract negotiations with the recommended solution from GE, which provided both a rich set of features and functionality and a very competitive price. An initial Phase 0 engagement is

[2] Please do not attach any requested items to the business case, rather be sure to have ready access to such information upon request.

planned to refine the project's scope, schedule and budget which will reduce the risks of unforeseen issues impacting the project as work proceeds.

The funds in this business case will be utilized to fund the replacement of OMT and DMS with an ADMS. The project is estimated to have a four-year duration. Upon completion, the ADMS will fully replace both the existing Outage Management Tool and the Distribution Management System. The project

is scheduled to start in Q2-2023, with a three month Phase 0 effort focused on validating the data model and identifying technically challenging use cases by running a series of tests utilizing the out-of-the-box GE software, using Avista's distribution grid data model and Avista's real-time distribution grid simulator. The Phase 0 effort will enable the project to efficiently proceed into the Phase 1 design and implementation effort in Q3-2023 with reduced risk to scope, schedule, and budget, improving the likelihood of completing the project as planned. The project will ramp up during 2023, then have a levelized spend for multiple years over the duration of the project.

The Regulatory Affairs Team has reviewed the project and determined that an internal rate of return calculation would not be needed for this project.

2.3 Summarize in the table, and describe below the DIRECT offsets[3] or savings (Capital and O&M) that result by undertaking this investment.

The ADMS project is not forecasting any direct offsets because there will be no staffing or software reductions as a result of this project.

Offsets	Offset Description	2024	2025	2026	2027	2028
Capital	N/A	$	$	$	$	$
O&M	N/A	$	$	$	$	$

2.4 Summarize in the table, and describe below the INDIRECT offsets[4] (Capital and O&M) that result by undertaking this investment.

Modernizing Avista's outage management software and business processes is anticipated to provide the following indirect labor savings from improved work efficiencies for Field personnel and Distribution Operations personnel who respond to electric outages. The five-year estimated saving (starting in 2025) is estimated to be $1.0M.

[3] Direct offsets are defined as those hard cost savings Avista customers will gain due to the work under this business case. Such savings could include reductions in labor, reduced maintenance due to new equipment, or other.

[4] Indirect offsets are those items that do not directly reduce the current costs of the Company, but may serve to reduce future hirings, improve efficiencies, reduces risk (cost or outage), or allows current employees to focus on higher priority work.

Outage Management System and Advanced Distribution Management System (OMS/ADMS)

These high-level estimated savings are based on a review of current and previous projects completed at Avista with a uniform efficiency value applied based on the types of applications deployed. The following are high-level estimates, and the Company does not currently have a way to track if these benefits will be realized.

Offsets	Offset Description	2024	2025	2026	2027	2028
Capital	Improved Storm Response	$	$255K	$255K	$255K	$255K
O&M	Field personnel	$	$80k	$80k	$80k	$80k
O&M	Distribution Operations Personnel	$	$120K	$120K	$120K	$120K
O&M	Improved Storm Response		$85K	$85K	$85K	$85K

OMS/ADMS Indirect Savings Estimates

Field Personnel Annual Indirect Offset Potential

Estimated Number of Users	85	
Estimated Efficiency per User	15	minutes per incident
Estimated Usage Incidents per year	60	
Standard Hourly Labor Rate	$85.00	
Estimated Percent of Users in WA	75%	
Estimated Annual Indirect Labor Offset	**$81,281**	

Distribution Operations Annual Indirect Offset Potential

Estimated Number of Users	10	
Estimated Efficiency per User	10	minutes per day
Estimated Usage Days per year	365	
Standard Hourly Labor Rate	$85.00	
Estimated Percent of Users in WA	75%	
Estimated Annual Indirect Labor Offset	$38,781	

Estimated Annual Indirect Labor Offset $120,063

Improved Storm Response

Avista can gain significant operations and business advantages by replacing the OMT and the DMS with an ADMS. A modern ADMS can address many of the issues currently faced by Distribution System Operators and Electric Operations field personnel. The benefits of an ADMS fully integrated with other enterprise systems along with optimized business processes include; improved outage analysis and restoration capabilities, improved safety, improved status

information to customer facing systems, and improved system reliability and dependability. Avista responds to multiple major storm events per year. An ADMS with a fully digital workflow has the potential to reduce the labor costs of these major events by at least 10%. Based on actual storm costs for 2017-2021 that's an average savings of $340,379 per year (see table below) split 75% capital and 25% O&M.

Estimated Annual O&M Indirect Labor Offset $85,095
Estimated Annual Capital Indirect Labor Offset $255,294

Accounting Year	Summary Exp Category	Sum of Actuals	with ADMS	10% Savings
2017	Labor	$3,357,066	$3,021,360	$335,707
	Non-Labor	$4,460,419	$4,460,419	$0
2017 Total		**$7,817,485**	**$7,481,778**	**$335,707**
2018	Labor	$2,227,664	$2,004,897	$222,766
	Non-Labor	$2,649,948	$2,649,948	$0
2018 Total		**$4,877,611**	**$4,654,845**	**$222,766**
2019	Labor	$2,366,126	$2,129,514	$236,613
	Non-Labor	$5,341,119	$5,341,119	$0
2019 Total		**$7,707,245**	**$7,470,633**	**$236,613**
2020	Labor	$4,139,030	$3,725,127	$413,903
	Non-Labor	$14,288,254	$14,288,254	$0
2020 Total		**$18,427,284**	**$18,013,381**	**$413,903**
2021	Labor	$4,929,088	$4,436,179	$492,909
	Non-Labor	$14,398,068	$14,398,068	$0
2021 Total		**$19,327,156**	**$18,834,248**	**$492,909**
Annual Average		**$11,631,356**	**$11,290,977**	**$340,379**

2.5 Describe in detail the alternatives, including proposed cost for each alternative, that were considered, and why those alternatives did not provide the same benefit as the chosen solution. Include those additional risks to Avista that may occur if an alternative is selected.

Alternate 1 (Recommended) – Implement an ADMS - The current OMT has a recent history of performance challenges which may only be mitigated with considerable investment or replacement. Continuing to invest in a custom system with no vendor support is not a sustainable long-term solution. There are network management functionality limitations and performance related issues with the current data model that are addressed by a modern ADMS. The support by Esri for the current software solution will be ending in January 2025. Continuing to use OMT beyond that date would become increasingly costly and risky without an investment in an upgrade. Staying on the current platform version includes risks, such as:

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- As the version goes out of support from Esri, Avista will not be able to receive patching from Esri to respond to cyber security vulnerabilities.
- Performance challenges and instabilities of OMT during major storm events will continue to exist because a GIS platform is not architected to handle the large volume of data and data changes that occurs during a storm event.
- Keeping OMT in the GIS environment rather than moving it to a separate ADMS platform, would cause the system to continue to be suspectable to configuration changes made to support GIS Edit functionality which has an inadvertent negative impact on OMT, which occurred in 2022.
- Continued integration failures between OMT and the DMS resulting in the two systems being out of synch with each other, requiring a significant amount of manual intervention to resolve each week.
- The DMS marginally meets the current business needs but will not meet future needs for additional distribution grid automation and Distributed Energy Resources requirements to meet customer choice Clean Energy Transformation Act requirements. A future DMS replacement project would be required to address these shortcomings.

- Having a modern, dependable outage management system is critical for Avista to provide safe and reliable energy for the customers. The ADMS project Request for Proposal (RFP) results received in late 2022 for Alternative #2 (Implement an ADMS) validate that the first costs of implementing an ADMS are comparable to an attempted rewrite of OMT, without the risks and limitations Alternative #1 and all the short and long term benefits of having a modern ADMS.

Alternative 2 – Rewrite OMT - Avista could endeavor to rewrite the current OMT application to function on the new Esri operating platform and data model. An initial effort estimate on this alternative indicates that it would have a lower first cost than implementing an ADMS however this alternative has several areas of high risk that would likely overshadow the initial costs savings. Examples include:

- Avista has made a corporate decision that it is not a software development company and will instead purchase and configure industry standard applications to reduce the risks and costs of owning and maintaining custom applications.
- OMT is a mission critical system. At the time it was originally developed by Avista there were no commercially available outage management applications that met Avista's requirements. That is no longer the situation.
- No other utility has written a custom OMT application using the new Esri operating platform. This first of its kind development effort has many unknowns that Avista would discover along the way likely increasing timelines, costs, and risks. Avista would also carry the sole responsibility

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for resolving performance/accuracy/reliability issues that will inevitably crop up in production with a first-generation application.

- Keeping OMT in the GIS environment, rather than moving it to a separate ADMS platform, keeps the outage system closely coupled to the GIS data model. This will introduce new risks and complexities as Avista transitions to Esri's new data model in the next 3-5 years. Having a separate ADMS platform will isolate the ADMS from future Esri data model changes.
- Keeping OMT in the GIS environment rather than moving it to a separate ADMS platform, would cause the system to continue to be suspectable to configuration changes made to support GIS Edit functionality which has an inadvertent negative impact on OMT. A change made in 2022 to support Edit introduced a data problem which did not reveal itself for several months, but eventually lead to a failure in OMT during an outage event.
- A rewrite of the existing functionality would not provide the improved safety, performance, and data accuracy features that a fully digital workflow through and ADMS would provide. Because a GIS environment is not built for the high volume of data and high rate of data change that is required during outage scenarios. This leads to slow performance as the volume of data and increases. This performance issue would not be overcome with a rewriting of the OMT application, because the underlying architecture would still have the performance limitation.
- Rewriting OMT is estimated to take about the same number of years as implementing an ADMS but does nothing to address the current shortcomings of the existing DMS or its inability to fulfill future needs of Distributed Energy Resources requirements to meet customer choice and Clean Energy Transformation Act requirements. These shortcomings would need to be addressed in a future project, extending the timing for when Avista would be able to meet those requirements and significantly increasing the total cost of ownership.

- **Alternative 3** – Continue to use OMT **-** There's an option to continue to use the existing OMT in its current format with continued minor enhancements to keep it operational. It would not resolve any of the issues that have been identified throughout this narrative. In addition, delaying the start of a project to replace OMT and the DMS with a modern ADMS increases the risk that the existing systems will fail before an ADMS project can be completed. Avista needs to proceed with the work now in order to be ready for the future, in a similar way to how planning is done for future power needs; i.e., we don't wait until we run out of power to build new generation.

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2.6 Identify any metrics that can be used to monitor or demonstrate how the investment delivered on remedying the identified problem (i.e., how will success be measured).

Avista tracks a large number of electric system reliability statistics (SAIDI, SAIFI, CAIDI, etc.) that can and will be used to benchmark and measure success of the project. The project team will work with key stakeholders to determine which reliability statistics would be directly or indirectly influenced by the increased capabilities and functionality of an ADMS and use those as one measure of the success for the project.

As mentioned in Section 1.2 there are a series of high customer value items enabled by the data provided to OMT/DMS from the AMI meters. Those metrics will be monitored to ensure the values are maintained and where possible improved with the integrated ADMS capabilities, such as automatic “ping” of AMI meters to validate power has been restored.

Wildfire Resiliency is a key focus area for Avista. The ADMS project team will coordinate closely with the Wildfire Resiliency team to determine key metrics they are tracking to ensure the planned fully digital damage assessment and restoration workflow accurately captures the necessary data.

Program details for the Clean Energy Implementation Plan (CEIP) and metrics are still being developed, however, it’s clear that the plan will include the need for additional grid automation, new Distributed Energy Resources, and new non-wires alternatives for customers such as time of use rates and energy efficiency. Many of these potential alternatives of being explored in the Connected Communities project which is planned to start in 2023 and run for five years. Results of the project will be used to determine which alternatives will move out to the larger customer base. The ADMS project Team will be coordinating with the Connected Communities team as both projects are underway.

In order to achieve these goals a future utility architecture that bridges use cases across Customer, Grid, Operations, and Utility Enterprise domains is required. This future will require a technology platform that enables the integration of these domains. The industry standard for this platform is an Advanced Distribution Management System (ADMS). As details of the CEIP and others become more well defined in the coming years, the ADMS team will work collaboratively with these teams to determine specific metrics that will be achieved via the capabilities of the ADMS.

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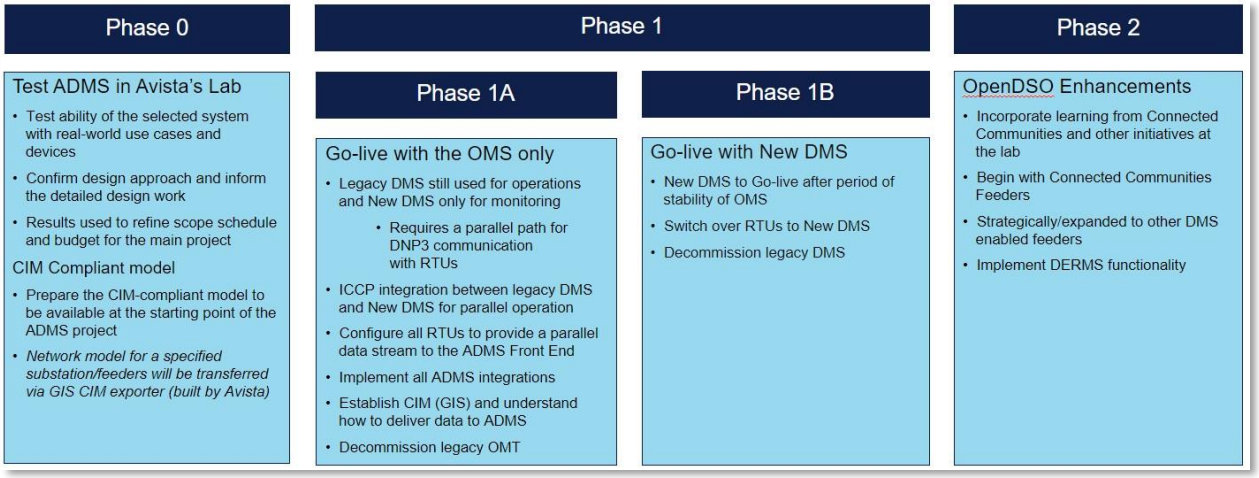
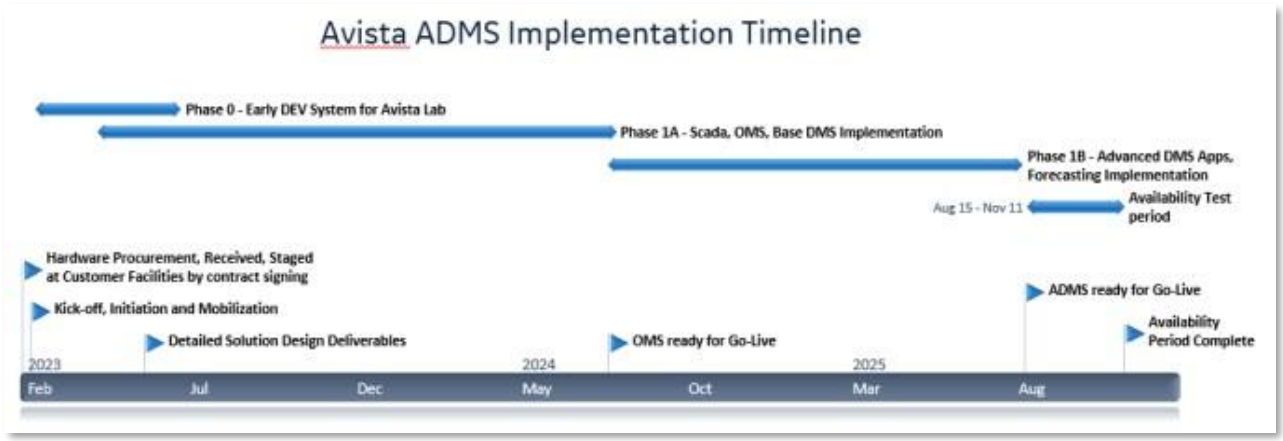
2.7 Please provide the timeline of when this work is schedule to commence and complete, if known.

The ADMS project is scheduled to start in mid-2023 and estimated to have a four-year duration. Upon completion, the ADMS will fully replace both the existing Outage Management Tool and the Distribution Management System and provide additional Distributed Energy Resource Management (DERM) functionality in support of the CEIP and Connected Communities project. The investment is planned to be deployed in two phases. First phase is planned to be used and useful in 2025 and the second phase in late 2026. The project costs related to each phase would transfer to plant in those years.



Preliminary Project timeline from the RFP Response



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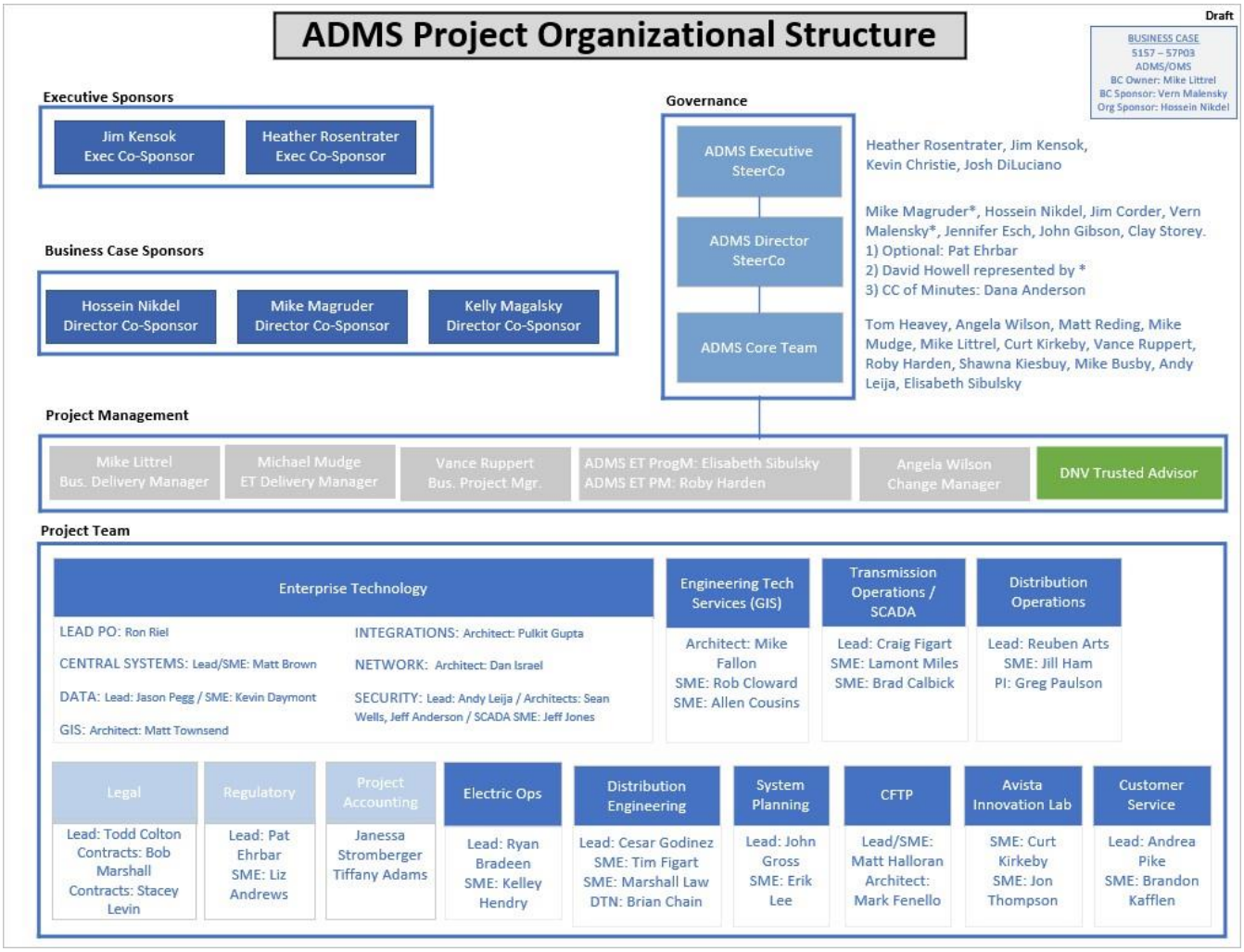
2.8 Please identify and describe the Steering Committee/governance team that are responsible for the initial and ongoing approval and oversight of the business case, and how such oversight will occur.

This business case will have two levels of governance: The Executive Technology Steering Committee (ETSC), and Project Steering Committee that will be formed as part of the project initiation. The committees will review monthly project status reports, which identify project scope, schedule, and budget, as well as any risks and/or issues that the project team has identified.

Status reports to the steering committees will be used as the official review and approval process for prioritization and change requests. Risks, issues and change requests will be documented in project logs and kept as artifacts of each project within Enterprise Technology's project management software system.



3. APPROVAL AND AUTHORIZATION

The undersigned acknowledge they have reviewed the **Outage Management System and Advanced Distribution Management System** 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:	DocuSigned by: Mike Littrel 9DDE7FC206184AF...	Date:	May-05-2023 | 9:02 AM PDT
Print Name:	Mike Littrel		
Title:	Manager of Energy Delivery Technology Projects		
Role:	Business Case Owner		

Signature:	DocuSigned by: Mike Magruder 13E5B221EEEE401...	Date:	May-05-2023 | 11:10 AM PDT
Print Name:	Mike Magruder		
Title:	Director of Transmission Ops & System Planning		
Role:	Business Case Sponsor		

Signature:	DocuSigned by: Hossein Nikdel E4E2D9C7EE47475...	Date:	May-05-2023 | 10:35 AM PDT
Print Name:	Hossein Nikdel		
Title:	Director of Applications and Systems Planning		
Role:	Business Case Sponsor		