A Review of Liberty's Customer First Program for Liberty Utilities (CalPeco Electric), LLC

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Preface

Algonquin Power & Utilities Corporation ("APUC") through its utility distribution and renewable generation subsidiaries, collectively known as Liberty, is implementing a set of multiple linked projects encompassing upgrades and systematic changes to core and essential Information Technology ("IT") infrastructure, operational technologies, and business processes throughout the company. The program, known as Customer First, is intended to upgrade systems that are obsolete or that struggle to meet customer expectations and other business requirements within its regulated utility services group, Liberty Utilities ("LU")[1] and the wholly owned portion of its unregulated renewable energy group, Liberty Power ("LP").[2] Ahead of implementing Customer First, an extensive review and analysis of Liberty's existing systems was conducted, and a set of business cases for the planned investment was developed. External consultants were engaged to opine on the process Liberty followed to determine that an enterprise system solution was prudent, as opposed to maintaining the legacy systems, or deploying numerous local solutions. The consultants also opined on the reasonableness and completeness of the process used to assess the benefits of Customer First, and the allocation of costs to the utility operating companies.

Customer First represents major system upgrades and improvements for Liberty and its operating utilities, including Liberty Utilities (CalPeco Electric) LLC ("CalPeco"), that leverages the capabilities and experience of the organization to address critical needs across our systems. Once Customer First is fully implemented, Liberty will shift from a disparate, largely unconnected application portfolio to a modern and connected platform designed to meet the needs of customers, employees, and other stakeholders in the present and future.

CalPeco's deployment of Customer First is beginning in 2021,and will continue through 2023.

Before deciding to implement Customer First, Liberty followed a process to evaluate the benefits of the investment to Liberty's customers and to the business overall, and to determine the allocation of costs and assignment of benefits across the operating companies. Charles River Associates ("CRA") was engaged by Liberty to evaluate the reasonableness and sufficiency of these processes.

1. Customer First Overview

Customer First is a set of enterprise-wide investments, upgrades, improvements, and changes to business processes to address existing and emerging needs across CalPeco, and it is organized into the following programs: Foundations, e-Customer, Employee Central, Procure to Pay ("P2P"), and Network Design and Operations.

Foundations includes significant upgrades to CalPeco's core financial, customer, and enterprise asset management systems. The other remaining upgrades focus on specific functional software including the customer portal, human resources ("HR") systems, procurement and inventory management systems, and outage management systems ("OMS").

Most of the Customer First investments are enterprise-level investments that will be implemented across Liberty Utilities in software installed centrally or maintained by the vendor in the cloud. As a result, the investments scale well, meaning the investment cost per customer tends to decrease as the number of customers in the initial deployment increase. A 50,000-customer utility like CalPeco benefits significantly from being part of an 800,000-customer organization. Liberty estimates that a similar standalone upgrade of CalPeco systems could cost three times more than its allocation of Customer First.

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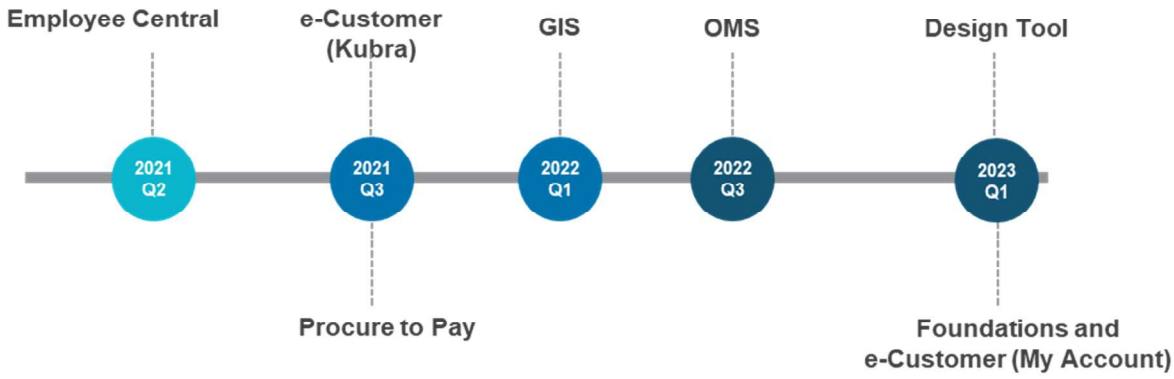
1 For the purposes of this report, Liberty Utilities comprises the Liberty Utilities Co. and Liberty Utilities (Canada) LP operating companies. Liberties Utilities Co. includes the U.S. regulated utilities while Liberty Utilities (Canada) LP includes the Canadian regulated utilities.

2 The renewable energy group also includes the Company's minority position in Atlantica Yield plc, a NASDAQ-listed company that acquires, owns, and manages a diversified international portfolio of contracted renewable energy, power generation, electric transmission, and water assets.

Customer First deployed at CalPeco beginning in late 2020 and will continue through the first quarter of 2023, as shown in Figure 1.

Figure 1: Customer First In-Service Date Schedule for CalPeco



CalPeco's 2020-2042 Customer First investments, cost estimates, and saving opportunities are summarized below. [3] Additional program level details are provided in the sections that follow.

Table 1 - CalPeco Customer First Estimates (2020-2042)

	2020	2021	2022	2023	2024	2025-2042	Total
Foundations	$0	$0	$0	$20,728,080	$0	$0	$20,728,080
e-Customer	$0	$241,274	$0	$0	$0	$0	$241,274
Employee Central	$0	$179,637	$0	$0	$0	$0	$179,637
Procure to Pay	$0	$117,323	$0	$0	$0	$0	$117,323
Network Design & Ops	$0	$0	$0	$2,084,566	$0	$0	$2,084,566
Capital Investment Costs	$0	$538,234	$0	$22,812,646	$0	$0	$23,350,880
Post-Implementation Costs	$39,404	$35,120	$35,120	$1,032,447	$1,047,516	$22,312,405	$24,502,012
Total Costs	$39,404	$573,354	$35,120	$23,845,093	$1,047,516	$22,312,405	$47,852,892
Operating Expense Savings	$0	$0	$0	$696,246	$1,066,250	$24,325,059	$26,087,555

2. Liberty's Approach

2.1. Identify Critical Needs

Many of the existing CalPeco systems were deployed at a time when CalPeco business requirements were materially different than they are today. The CalPeco systems that will be replaced or enhanced by

3 Cost estimates and savings are rolled out using a labor inflation rate of 3% and a non-labor inflation rate of 1.93%.

Customer First are becoming generally obsolete, costly to maintain, not well integrated with other Liberty systems, and potentially present security risks. CalPeco legacy systems often require significant maintenance and modification to meet business requirements and many lack critical functionality.

Recognizing the changing landscape, Liberty began evaluating and reviewing its existing systems and processes across multiple business objective areas in 2017. Liberty completed an enterprise capability assessment with the support of Utilligent, a leading professional services firm in utility technology road mapping. Utilligent worked with Liberty to identify the leading business processes, technology solutions, and operating model to meet its objectives. As part of the analysis, Utilligent conducted a maturity assessment of Liberty that involved scoring nine of the company's core business functions on a scale of 1 to 5. Liberty scored no higher than a 2 for any of the business functions evaluated. In other words, Utilligent considered all nine business functions to be less than satisfactory when measured against a well-accepted industry scale.

The results of the maturity assessment led Liberty to reevaluate how customer and business requirements were being met by the current information and operational technologies deployed across the company. Liberty identified the need to replace or upgrade several core systems to sufficiently close the gaps identified by Utilligent and to meet industry standards and accommodate future requirements, such as an increasingly digital customer base with expectations around ease of use and access to data, challenges in keeping energy affordable, an evolving regulatory landscape with new distributed energy resources, and the need for agility to respond to new challenges and opportunities.

2.2. Evaluate Feasible Solutions

Liberty owns and operates 26 regulated and unregulated utilities across North America. In total, those 26 utilities serve over 800,000 customers; however, most of the utilities owned by Liberty are small-to-medium sized utilities, including CalPeco. Liberty conducted an internal review and considered several options to remedy gaps that were identified in its existing disparate systems, including sustaining the legacy systems, developing localized solutions, and developing an enterprise solution.

2.2.1. Sustaining the Legacy Systems

Liberty's systems date back to 2001 and maintaining those legacy systems would not be sustainable. Many of the systems have grown obsolete and are no longer supported by their vendors. These systems lack functionality and require patches and workarounds, creating cybersecurity risks. Multiple databases and versions are used throughout Liberty, making upgrades difficult and expensive. Furthermore, the employees skilled in maintaining the existing systems and resulting workarounds have either retired or are nearing retirement. Replacements are difficult to find, as new IT professionals no longer learn the outdated programming skills necessary to work with these legacy systems.

2.2.2. Developing Localized Solutions

Developing localized solutions would not address key gaps related to information consolidation, process standardization, and data visibility across the Liberty enterprise. Furthermore, localized solutions were determined to not be cost effective to implement. Individual utilities would generally pay many times more to implement localized solutions than the implementation cost allocated to them under an enterprise solution. By way of example, the implementation cost of the global Customer First solution allocated to CalPeco is $23,350,880. Generally, utilities of CalPeco's size are unable to access SAP solutions due to the cost; however, for the sake of argument, implementation of an SAP or similar solution for CalPeco would cost approximately three times as much to do it alone.

2.2.3. Developing a Global Solution

Liberty ultimately decided that an enterprise solution was the most reasonable and prudent means to close the identified gaps and position the enterprise for the future. A global solution benefits all Liberty customers because it provides this broad community of utilities with the ability to share knowledge and best practices that, in turn, will improve customer experience and operational efficiency. Through Customer First, Liberty is leveraging its scale to select a tier one enterprise solution that provides the

necessary functionality out-of-the-box. This enterprise solution will provide many benefits and position Liberty and the utilities it owns for the future. The centralized database and infrastructure eliminate redundant efforts, support intercompany transactions and hierarchies, and improve decision-making across Liberty. The enterprise solution vendor also offers guidance for future enhancements, ensuring that Liberty can efficiently respond to changing business requirements.

2.3. Third-Party Review

As noted in the Preface, CRA was engaged by Liberty to evaluate the reasonableness and sufficiency of these processes. In doing so, we made the following findings regarding the Customer First Program:

- The process used by the Liberty to determine the need for replacing its existing systems was reasonable and sufficient. Liberty worked with Utilligent, a leading professional services firm in utility technology road mapping, to evaluate and review its existing systems and processes, identifying key functional deficiencies relative to customer and general business requirements.
- The process followed by Liberty to determine that an enterprise system solution was necessary, as opposed to numerous local system solutions, was reasonable and sufficient. Liberty followed a reasonable path for identifying and vetting solution alternatives. Liberty identified a range of options, evaluated each of those options, and made its selection based on the best fit for Liberty and its customers.
- The process followed by Liberty to select the Customer First Program solutions software was reasonable and sufficient. Following industry practice, Liberty evaluated multiple top-tier software vendors before selecting SAP as its core enterprise technology platform and other related systems. Liberty also conducted an extensive RFP process to select its implementation partner, IBM.
- The process followed by Liberty to identify and evaluate the benefits of the Customer First Program was reasonable and sufficient. Liberty followed a process common in the industry to compare their status quo to their future state and assess the benefits to closing any gaps. Liberty thoroughly considered and analyzed the qualitative and quantitative benefits of the Customer First Program across Liberty's core business functions. Moreover, Liberty engaged Utilligent to help in the development of expected monetized benefits based on industry benchmarks and prior client experience.
- The process followed by Liberty to allocate costs to the benefitting companies was reasonable and sufficient. Liberty assigned the costs to categories in a logical manner that allowed for highly detailed application of their Cost Allocation Manual ("CAM") factors to each category. The result is an allocated cost that is fully compliant with the CAM and with the National Association of Regulatory Utilities Commissioners ("NARUC") cost allocation principles.

The section that follows provides a detailed description of Customer First, the system upgrades and improvements and changes to business processes at Liberty that will address existing and emerging business needs at CalPeco and enterprise wide.

2.4. Industry Review

Within the utility industry, the technologies that CalPeco is implementing are commonplace and necessary. A review of other utilities both within and outside California reveals that the standard that CalPeco and Liberty is setting is in line with the industry. These technologies are not experimental or cutting-edge but are instead industry-standard investments that have been proven to be effective and operational.

Within California itself, the largest investor-owned utilities, Pacific Gas & Electric ("PG&E"), Southern California Edison ("SCE"), and San Diego Gas & Electric ("SDG&E"), have each invested in similar technologies to what CalPeco is proposing to update their technological infrastructure.

- In PG&E's 2014 rate case, it proposed investments to implement a single Geographic Information System ("GIS"), workforce mobilization including scheduling and mobile work tools, a new customer portal, SAP work management, Design Tool, and OMS. These investments are similar to CalPeco

and offer similar functionalities that CalPeco expects from its Foundations and Network Design and Operations transformations. There are some nuances into what funding was approved by the California Public Utilities Commission ("CPUC"), but for the most part these projects were fully funded as they recognized the need and reasonableness of these investments.

- Over the course of three rate cases, SCE has applied for investments into numerous SAP technologies. In its 2009 rate case, SCE described the need for a new SAP Enterprise Resource Planning ("ERP") platform, a similar system to what CalPeco is implementing. This was approved by the CPUC and deemed reasonable. In its 2012 rate case, SCE applied for funding for a Customer Relationship Manager ("CRM"), another SAP technology. While the funding was reduced by 10%, it was still approved by the commission. In its 2018 rate case, SCE applied for a new Customer Information System ("CIS"). This was also approved by the CPUC. Each of these technologies are fundamentally similar to what CalPeco is doing.
- In 2017, SDG&E filed its application for the implementation of a new CIS system using SAP technologies. As part of a settlement with the CPUC, this was also agreed to and approved.

Outside of California, utilities have frequently implemented SAP technologies across multiple jurisdictions. Some examples include:

- American Water from 2008-2013 implemented SAP ERP, SAP Enterprise Asset Management ("EAM"), and a new SAP CIS across its utilities.
- National Grid from 2010-2012 implemented SAP ERP and GIS across its utilities.
- Evergy from 2015-2018 implemented new Oracle software including Customer Relations and Billing, CRM, and Meter Device Management ("MDM"). These were part of a new CIS system implemented across its utilities.

While the Customer First investment is significant, it is not implementing unproven technology. The technologies and systems that Liberty and CalPeco are investing are commonplace throughout the utility industry and address Liberty's significant needs and gaps.

3. Customer First

3.1. Foundations

Foundations will implement core business system changes that are expected to dramatically improve how CalPeco plans, engages with customers, and manages its assets, information, and finances. The capital expenditures are in three core enterprise-level systems and a set of supporting systems, many of which are developed by and licensed through SAP, the world's largest provider of enterprise application software.

3.1.1. Customer Information System

The CIS is an SAP application that manages customer information and billing. Core to the SAP solution is a single centralized relational database called HANA that will serve as the "single source of truth" for much of organization's data. All customer, financial, asset, inventory, employee, and other information for LU's utilities, including CalPeco, will be securely stored in the HANA database.[4] Data can be easily

4 CalPeco's policy is to comply with all applicable affiliate transaction rules established by the California Public Utilities Commission. For example, it is CalPeco's policy not to engage in anti-competitive behaviors. It is CalPeco's policy not to allow affiliate transactions to diminish staffing, resources, or activities in a manner that would result in degradation of the reliability, efficiency, adequacy, or cost of utility service or an adverse impact on customer service. It is CalPeco's policy that provision of shared corporate services will not provide a means to transfer confidential non-public utility information from the utility to an affiliate that would create the opportunity for preferential treatment or unfair competitive advantage for the utility's affiliate, lead to customer confusion or create significant opportunities for cross subsidy of affiliates.

accessed, reviewed, analyzed, manipulated, and reported using an array of mostly cloud-based applications, such as the ERP and the SAP Analytics Cloud ("SAC") systems.

The CIS system performs several critical customer service-related functions, including customer bill generation, customer account management, credit and collections, and accounts receivable. The CIS integrates with the CRM solution and other systems and will have extensive features and capabilities that will enable CalPeco to meet and evolve with customers' needs and requirements. For CalPeco, the new CIS will replace an outdated CIS system, Cogsdale, that struggles to meet customer and business requirements today, such as demand response program support and self-service enablement.

One of the most significant limitations is Cogsdale's ability to implement advanced rate structures. Rate structures have grown more complex over time in an attempt to better allocate costs with benefits, implement policies, and generally ensure equity. Cogsdale has limited ability to support advanced rate structures. Significant customization and workarounds are required, leading to higher costs through tailored solutions that increase risk including deployment timing.

The Smart Customer Manager ("SCM") application will be integrated with the CIS to provide the My Account user interface that will enable customers to set up an account profile and monitor their energy usage, see their bills, view their account balance and make payments, see a map of electric outages and report outages, and receive alerts about billing, payments and outages.

The CIS integrates with another SAP application, Click Service Edge ("Click"), that will significantly improve the customer experience, as well as improve the efficiency and effectiveness of customer service orders. Click creates a digital connection between the customer, the Customer Service Representative ("CSR"), the dispatcher, and the service technician that is assigned to the work. This digital connection allows customers to track work order status, providing a sense of comfort and understanding of when their service order will be completed. Work order tracking also enables CalPeco to optimize its field services. For example, the Click system will automate service order scheduling to optimize field resource use and will identify alternative solutions when delays occur.

The CIS, CRM, My Account, and Click applications and systems are expected to provide the following major benefits:

- **Increased ability to communicate with customers, especially regarding Public Safety Power Shut Off ("PSPS") events:** The new CIS will enable CalPeco to connect with customers through new digital channels and provide real-time alerts of important information, including PSPS events. In addition to PSPS notifications, the CIS and related systems will improve wildfire mitigation documentation and reporting for internal and external stakeholders.
- **Increased ability of CSR to resolve customer issues on the first call:** CalPeco representatives will have access to a "360-degree view" of the customer. In other words, all of a customer's information will be visible to the representative when they are engaged with the customer, including customer usage, billing, rates and rate plans, service order status and information, information on prior interactions, and outage and system status information.
- **Improved engagement options for the customer:** The new CIS will work in conjunction with a My Account to offer CalPeco customers a dashboard of expanded services that can be easily and quickly accessed. Customers will have access to near real-time information on billing, usage, account notifications, and outages. Customers can also set and make payments and manage preferences. This will include access to detailed usage information after the Advanced Metering Infrastructure ("AMI") system is implemented.[5]
- **Improved customer experience with service orders:** The Click application is expected to significantly improve a customer's experience with CalPeco when the company is called out for a

5 CalPeco received CPUC authorization for Phase 1 of its AMI system conversion in Decision 20-08-030/Application 18-12-001. CalPeco is seeking CPUC authorization for Phase 2 in its current general rate case application.

service order. Click ensures that customers are kept up to date on the schedule and provides optimization tools to allow the dispatcher to manage field resources.

- **Increased ability to segment customers and offer custom solutions:** AMI technology provides the interval usage data that can be analyzed and cross-reference to gain insights on customer usage and develop solutions targeted at specific populations (e.g., storage solutions for customers with high peak coincident usage). This can reduce costs for customers and the system overall and is expected to significantly improve customer experience.
- **Increased use of paperless billing:** The new CIS system and related systems will enable more payment channels for CalPeco customers to pay their bills electronically. Simplifying the online payment process is expected to increase e-bill adoption, reducing bill-related costs and waste.

3.1.2. Enterprise Resource Planning

The ERP system is an SAP application that will serve as the single source for many of Liberty's systems. The ERP is a system of integrated software applications that standardizes, streamlines and integrates business processes across finance, human resources, procurement, distribution, and other departments. The ERP system will operate on SAP's integrated software platform using common data definitions operating on the enterprise HANA database, as described in the previous section. For CalPeco, the ERP system will replace Microsoft Dynamics Great Plains ("MDGP"). In addition to the ERP system, the company will implement PowerPlan for asset accounting, retirement obligation, tax depreciation and deferred taxes which is integrated to SAP. This integration will facilitate charge derivation and true-ups between construction work in progress and removal work in progress using operations estimates. Also being implemented is SAP Analytics Cloud or SAC. SAC is a software as a service ("SaaS") financial planning and business intelligience platform, that integrates with SAP and enables users to discover, plan, predict and collaborate all on a single platform. SAC will enable quicker access to innovation, emphasis on clean, self-documenting design, enhanced visualizations and built in reporting capabilities including dashboards and predictive analytics capablilites.

Workforce Software is an advanced time attendance system that includes a sophisticated scheduling, workflow, and pay rules engine that will replace three existing time collection sytems, Ceridian Dayforce time, PeopleSoft time collection, and the in-house Time Tracker related to JD Edwards. Each of these systems is overseen and maintained by separate IT and HRIS resources. The company can expect a reduction in total cost of ownership for time collection applications. Total cost of ownership reductions would be generated through a lessening of on-premise infrastructure costs and reduced license fees. The implementation of Workforce Software across the Liberty business, combined with standardization and other time collection improvements, will result in less manual intervention required from time administrators, managers and field crew leads, as well as an overall reduction in both payroll costs and compliance risk. Workforce Software will support all fields required for labor distribution collection and reporting required by the business which is not available in Ceridian Dayforce. A further benefit is that the Workforce Software is fully mobile enabled, which will increase the ease of which time entry can be completed in the field.

CalPeco's Finance and Accounting departments currently use the MDGP system which has applications for financial management and supply chain management designed for small to midsize businesses. MDGP was originally developed by Great Plains Software, which was acquired by Microsoft in 2001. The MDGP system lacks functionality and requires significant manual intervention. In particular, fixed asset accounting is extremely manual as MDGP's job costing system is not set up for true assets. For example, if CalPeco were to design a substation, there would be no visibility into the substation components. If one of the assets failed, MDGP lacks the information necessary to replace the asset. Furthermore, individual cost codes must be manually setup and allocations must be manually determined.

The SAP ERP system provides benefits across CalPeco business functions, including Finance and Accounting, Customer Care, Supply Chain, and HR For Finance and Accounting, the ERP is expected to provide the following major benefits:

- **Significantly reducing the monthly, quarterly, and annual close cycles:** Because all of CalPeco's financial data will be centrally housed in HANA, close processes can move much more

quickly, relying on extensive automation that is not available with the solutions in place today. This will free up time for CalPeco and Liberty analysts to focus on higher-value activities rather than manual tasks.

- **Reducing the risk of errors:** The differences in finance and accounting systems today across the organization require extensive manual efforts and workarounds each month to close out and consolidate financial information. SAP will automate many of these processes and significantly reduce the risk of errors. This will enable employees to work more efficiently. Employees will be able to focus more of their efforts on data analytics and other higher value activities which will better inform decision making and provide increased compliance reporting required by the CPUC.
- **Improving the efficiency and effectiveness of fixed asset accounting:** The SAP ERP system and integrated PowerPlan application will automate many manual processes involving fixed asset accounting, improving efficiency and reducing human error.
- **Improving planning, budgeting, forecasting, and decision-making:** With more accessible, higher quality data, CalPeco and Liberty can improve planning and decision-making processes. For example, improved forecasting capabilities and monitoring of asset replacements resulting in better forecasting of the timing of capital expenditures. With a significant amount of capital projects over the next few years, it is necessary that CalPeco has high quality and accurate data to ensure that is prioritizing and budgeting effectively.

3.1.3. Enterprise Asset Management

The EAM system is an SAP application used to track the condition and manage the maintenance of Liberty's assets throughout each asset's lifecycle. For CalPeco, that includes all owned power generation and transmission and distribution ("T&D") assets (e.g., poles, wires, breakers, relays). The EAM is important for meeting increasing customer expectations for safe, affordable, and reliable energy. CalPeco can use insights from the EAM data analysis to inform maintenance cycles for generation and grid assets, avoiding equipment failures and outages, reducing operating costs, and improving system reliability. Because the EAM is an enterprise system, CalPeco will benefit from insights drawn from analysis of Liberty's entire asset portfolio. For instance, Liberty might observe repeated patterns in operating issues of a particular type of equipment used by an affiliate utility that would warrant considering an alternate supplier for CalPeco. These insights would not be available for CalPeco on its own. The EAM system can also be valuable in mitigating the risk of wildfire ignition from utility equipment with automated equipment tracking, risk and criticality assessments, and the optimization of maintenance cycles.

In conjunction with implementing SAP EAM, Liberty (and CalPeco) will be implementing SAP Asset Manager, which is a mobile application that integrates with the EAM. Asset Manager provides map-based navigation and detailed asset information to field workers who inspect, maintain, and report on the condition of assets including near real-time updating. The CPUC expects utilities to have the ability to update records on a near real-time basis especially post inspection reports including PSPS events. This application will improve the quality of data in the EAM and streamline work efforts.

CalPeco currently relies on the MDGP application Wennsoft for asset management. The system performs basic asset management functions including maintaining an equipment register, tracking maintenance by equipment type, and generating work orders. However, a paper copy of work orders is manually passed from Customer Care to planners to procurement and line operations via folder. There are no systems in place to assign work or optimize service personnel dispatch or track compliance with regulatory requirements for restoration or installation of new service connections. CalPeco has a 30-day requirement for interconnections under Rule 21. (Generating Facility Interconnections). Line operations supervisors and managers currently must spend time planning which jobs to do and when to scheduled. Additionally, work order data is disconnected from asset data. Field workers do not have a complete picture of asset conditions or where work is being prioritized. Efforts are largely focused on responding to infrastructure breakdowns, time or cycle-based maintenance and inspections, and sustaining asset operations to meet short term load or demands.

The new SAP EAM and Asset Manager systems will provide significant benefits over the existing Wennsoft system, including:

- **Increased workforce efficiency:** CalPeco lacks the scheduling and dispatch functionality of Asset Manager to optimize work, based on crew availability. Asset Manager is expected to reduce overall drive times and improve the productivity of the workforce. CalPeco's service territory includes areas that are fairly remote and rural. Optimizing crew schedules will lead to quicker response times and resolution of customer issues.
- **Improved asset performance:** Utilizing an enterprise-wide asset management system, CalPeco will be able to develop insights and leverage information from other Liberty utilities. This will inform maintenance and capital investment plans that can extend the life of assets and lead to less failures and potential outages.
- **Wildfire mitigation:** The new EAM and Asset Manager systems will provide more integrated processes for managing equipment condition and predicting equipment failures before they occur. This can be critical to preventing wildfires which can ignite from a downed wire. There are significant new CPUC requirements associated with wildfire prevention and mitigation.
- **Improved safety:** The new EAM system will provide field workers more accurate information on the location and condition of infrastructure. This is critical information for ensuring the safety of workers, particularly during outage events.

The EAM system integrates closely with systems like GIS, described below, and the Mobile Workforce Management ("MWM") system that the company is installing. CalPeco currently relies on a variety of paper and spreadsheet-based processes to manage equipment, estimate job costs, and manage the mobile workforce. This results in inefficiencies, challenges in evaluating system health and condition and developing work plans, and an inability to automate worker dispatch, among other things.

Alongside the core ERP, CIS, and EAM solutions, a set of smaller supporting or task-specific systems will be implemented that integrate with SAP and optimize the overall implementation. For instance, Click is a software that provides a mobile workforce the ability to acquire asset, outage, and service order information to accelerate and improve the customer experience for storm restoration and service orders.

3.2. e-Customer

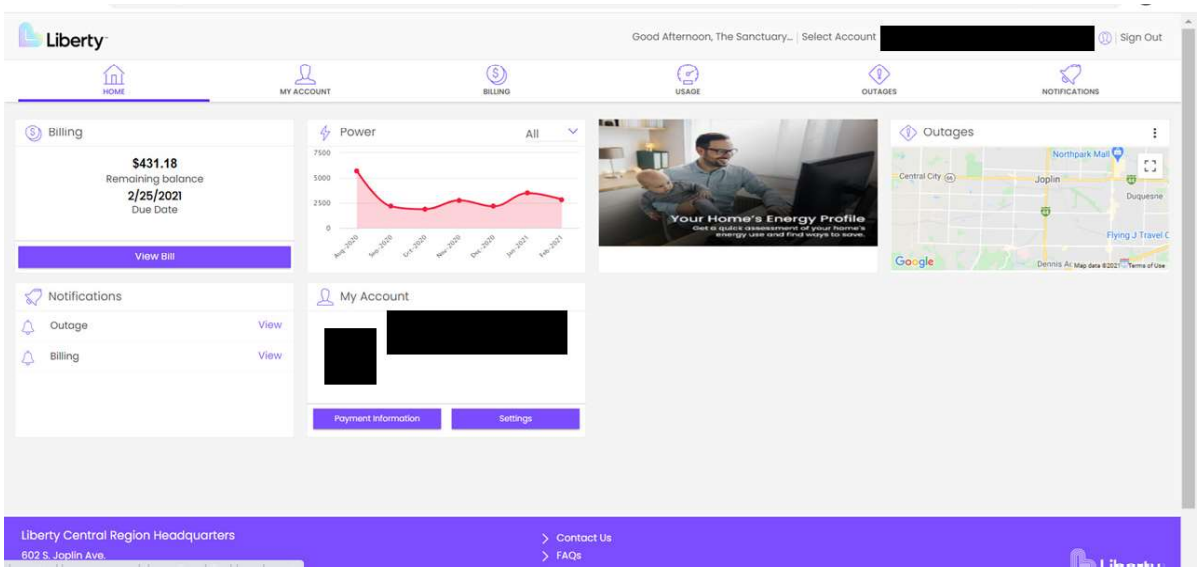
The e-Customer system implements a new software-as-a-service system that significantly enhances electronic customer engagement across Liberty Utilities. The system will improve upon existing features as well as create new features in the areas of bill payment, outage and billing-related notifications, and consumption review and analysis.

Liberty has selected two primary technologies to enable the system upgrade. First, Smart Energy Water's My Account is a cloud-based software that is integrated with the CIS, AMI, OMS, and payment processing system to provide customers on-demand information and capabilities with respect to billing, outages, usage, and other important notices. Second, Kubra is the payment processing system that integrates with My Account and provides multi-channel payment options for customers including online, through auto-pay, at terminals in walk-in centers, and through the Interactive Voice Response ("IVR") system. My Account and Kubra are intended to replace the current self-service tools, which vary by Company and do not provide the same level of service as the new technology.

Key features of My Account and Kubra include the following:

- **Single View:** through their My Account page, customers will have a dashboard view of their account including usage, account balances, and payment options.

Figure 2 - My Account Page View



- **Customer Options:** Customers can select the notifications they wish to receive regarding billing, payments, and outages.
- **Key Usage Information:** After AMI is implemented, customers will be able to see a detailed daily breakdown of usage and system costs.

Figure 3- Customer Energy Usage View

- **Payment Processing:** Simplified, consistently branded, multi-channel payment options through the Kubra technology.
- **Customer Analytics:** CalPeco can review customer selection of billing, payment, and outage notifications to make decisions regarding ways to engage customers in the future.

3.3. Employee Central

Across Liberty, HR is largely decentralized and managed by region; at CalPeco, HR falls under Liberty Utilities' West Region. Today, all core HR transactions are entered into the Ceridian system. Every hire, change, and input must be manually entered into Ceridian's system of record. Recruiting and onboarding functions lack dedicated systems and standardization, with most processes handled via paper or through email.

For example, to fill a new job position today, a hiring manager at CalPeco emails a form to secure approval. Once approved, the hiring manager sends the form to the recruiting team who must then set up and post the position. The recruiting team gathers the resumes received and returns them to the hiring manager. The hiring manager then reviews the initial resumes and sends them back to recruiting. Recruiting sends the hiring manager video interviews. The hiring manager then reviews the video interviews and sends them back. Onboarding is all paper-based and requires physical form completion and signatures.

Employee Central will implement SuccessFactors, a fully integrated HR, recruiting, and onboarding solution. SuccessFactors will replace the non-payroll core HR functions within CalPeco's existing software, Ceridian Dayforce. Today, CalPeco still relies on manual and paper-based HR processes, which create delays and reduce visibility and collaboration. Furthermore, the current system cannot support increased demands including position management. SuccessFactors will streamline recruiting, onboarding, and position management activities across the enterprise and provide greater overall capabilities in managing diversity and leveraging analytics for better decision-making.

Hiring managers will be able to utilize the new recruiting technology to track applicants and collaborate electronically (e.g. resume review, providing feedback). CalPeco employees will also be able to use the new internal career site to apply for jobs.

The new SuccessFactors system will provide significant benefits over Ceridian, including:

- **Greater recruiting, onboarding, and position management efficiency:** Process automation, data integration, and analytical tools will create efficiencies.
- **Improved diversity in hiring:** SuccessFactors will provide a greater ability to collect, report, and analyze diversity and inclusion data, leading to better long-term hiring and training decisions.
- **Improved employee and candidate experience:** SuccessFactors are expected to greatly improve the employee and candidate experience, which will in turn help attract and retain talent.

3.4. Procure to Pay

The Procure to Pay ("P2P") system implements a cloud-based technology platform called Ariba that will provide a self-service and integrated platform for requisition, mobile approval, purchasing, receiving, and invoicing. Although Ariba integrates with MDGP today, many procurement processes are manual and inconsistent across Liberty's decentralized and geographically dispersed company. Moreover, certain requisitioning, workflow approvals, purchasing, and invoice processes are still paper-based.

Ariba is a cloud-based application that leverages the HANA ERP database and will be implemented along with Foundations to integrate supplier management, strategic sourcing, procurement, and financial supply chain management processes. Key features include common catalogs for ensuring bulk discounts, the automation of purchase orders once requisitions are approved, simplified receiving and tracking of goods, and automated accounts payable. CalPeco's customers will benefit from P2P because it will reduce procurement costs by setting up common catalogs and enabling bulk discounts on products and services, as well as automating many manual processes.

Effective management of CalPeco's inventory is critical because of the threat of winter emergency situations. Currently, inventory at CalPeco is managed through the Great Plains Financial Information Management System. While Great Plains supports inventory, it has extremely limited capabilities: Great Plains only lists inventory on hand and requires significant manual intervention to process any issues. Great Plains also lacks visibility into any data outside the system, creating challenges with managing

inventory accuracy. For example, CalPeco is trying to implement vendor-managed inventory to reduce inventory, but Great Plains does not support this functionality.

Inventory is also ordered through Great Plains. Sales orders are pushed from Quadra, CalPeco's design estimation tool, and issued directly to jobs. However, Quadra does not record deadlines for material delivery dates. If a large quote is placed in advance, warehouse staffers will see the demand immediately in Great Plains and may purchase materials prematurely.

For supply chain activities at CalPeco, lack of data integration is a significant challenge. Communication between warehouse and planners is done via paper and spreadsheets. Data comes from multiple databases with different vendor and material numbers, requiring significant work to match information. With its standalone system, CalPeco cannot benefit as readily from sourcing or sharing across Liberty Utilities' enterprise.

Ariba and the broader SAP enterprise solution will create an integrated system where all supply chain data is captured through work or project orders. Estimates can be generated up front and then pushed directly into the SAP inventory system, creating greater visibility into material needs and deadlines. Work orders will require dates, and warehouse staff will receive lead times to meet required dates instead of relying on ad-hoc requirements. Updating work order information will no longer be limited to the design estimation tool, improving management of non-essential and essential stock. Work order processes must also be released before any material requirements show up in the inventory system.

The Ariba system will integrate with SAP to provide significant benefits to CalPeco, including:

- **Reduced inventory levels:** CalPeco will have greater visibility into when inventory is needed and be able to optimize purchasing to limit carrying costs.
- **Reduced supplier costs:** CalPeco expects to benefit from standardized procurement practices and increased buyer power to reduce supplier costs, including goods and services.
- **Reduced risk:** Standardized procurement practices and procurement specifications are expected to reduce the risk that costs will exceed estimates.

3.5. Network Design and Operations

The Network Design and Operations upgrade will implement a GIS, a new design estimation tool, and an upgraded OMS. These investments are expected to significantly improve electrical grid monitoring and diagnostics, grid control, reliability, operational accuracy and efficiency, and safety through improved mapping and data visibility.

3.5.1. GIS

Liberty is moving to a common enterprise GIS solution. This will lead to a common system that presents synergies and reduces costs related to the management of disparate systems. Liberty settled on ESRI because ESRI is the preferred partner of SAP and is the most common GIS used within the Liberty family. The ESRI GIS will be implemented across Liberty, eliminating duplicated work and improving sharing of best practices between operating utilities like CalPeco. The GIS contains a digital representation of the utility's physical system that is essential for enabling field crews to accurately and efficiently locate assets. GIS will also be critical in the future to enable automated line switching to reduce the size and duration of outage events.

GIS is a foundation for multiple other systems. The GIS contains locational and network connectivity information about Liberty's assets that are relied on by the EAM system, the mobile workforce management system, the outage management system, engineering systems, and, in the future, the advanced distribution management system. For these systems to work effectively, it is imperative that CalPeco have an accurate digital model of the physical utility from a geo-spatial and asset attribute perspective. This functionality will further help CalPeco with the implementation of customer service interconnections including customer self-generation interconnections.

CalPeco will also benefit in the future by leveraging an accurate GIS system that is essential for grid automation and other advanced utility operational tools. For instance, the future grid should increasingly

be able to autonomously reconfigure electric flows to reduce outage events and outage times; however, this is only possible with detailed and accurate information on the location, size, and type of conductors, switches, reclosers, and transformers. It also requires customer or load connection points and clear circuit trace capabilities.

3.5.2. OMS

The Schneider OMS system will be integrated with the CIS and the My Account applications to provide timely and accurate information to customers and company personnel about the location and cause of outages. This functionality will be used by CalPeco during Public Safety Power Shutoff ("PSPS") events when high risk conditions for the threat of wildfire are present. Over the last decade, California has experienced increased, intense, and record-breaking wildfires. With the continuing threat of wildfires, the CPUC has provided electric utilities with the authority to proactively de-energize electric lines that could fail under certain weather conditions to reduce the likelihood that electric infrastructure can contribute to a wildfire. The OMS also provides valuable information to distribution reliability planners who can develop solutions to prevent future outages and identify any systemic trends. The OMS integrates with the GIS (necessary for accurate information on location and cause of outage), the Supervisory Control and Data Acquisition ("SCADA") system (system that monitors and controls the grid), and the CIS. The advanced network tracing tools within the integrated GIS and OMS allow CalPeco to isolate PSPS events, minimizing the number of affected customers.

4. Customer First Benefits

Although the primary driver for Customer First is replacing and upgrading a broadly obsolete and inadequate set of technologies across the Liberty enterprise, CalPeco has assessed the direct cost savings as well as opportunities for efficiencies that can be achieved by implementing Customer First. CalPeco completed a rigorous review of the specific needs of its systems which are tied back to the overall project, to produce this thorough analysis of the localized benefits.

Based on deployment schedule, annual benefits are estimated to begin in the first year of deployment (2023) and be fully realized in 2024. The reference year used for benefits is thus 2024 and the benefits will continue to grow afterwards due to inflation.

The benefit assumptions for CalPeco were inspected by CRA to ensure they were evidentially backed, accurately calculated, appropriately characterized and relied on consistent assumptions.

Outside of these local benefits, CalPeco expects that there may be additional quantitative benefits that will arise from savings related to corporate resources or will take longer to realize such as inventory levels, self-service adoption rates, and asset management. These benefits are not quantified in this report but will be more fully developed once Customer First has been implemented across all of Liberty's service territory. For this report, benefits are limited to benefits expected to be realized by CalPeco in 2023 and 2024.

4.1. Quantitative Benefits

Customer First is expected to deliver $696,246 in 2023 operating expense savings, and $1,066,250 per year in direct operating expense savings, beginning in 2024. These cost savings are summarized below and described further by functional detail.

4.1.1. Customer Care Benefits

Customer First is expected to deliver $752,375 per year in operating expense savings for CalPeco's Customer Care function once the system reaches maturity. The primary drivers of these estimated savings include:

- Reducing printing costs for bills – CalPeco expects that as the CIS is upgraded and with the new online portal features of My Account, customers will switch from manual billing methods to e-billing.

Currently in 2021, 10.38% of bills are through e-billing. CalPeco expects that number to rise to 20% in 2023 and 30% in 2024. CalPeco expects to save $80,348 annually by 2024.

- Reduced Billing labor costs – As a result of the new CIS and the resulting efficiencies described in Section 3.1.1, CalPeco expects to reduce its Billing staff headcount. By 2024, CalPeco expects to reduce its Billing staff headcount by 5 FTE (56%) from its current staff levels. This will generate annual savings of $519,045 by 2024
- Reduced Customer Care costs – With implementation of CIS, self-service improvements will reduce customer call volumes related to move and transfers. Currently, Moves & Transfers ("M&T") calls are 16.72% of calls in CalPeco. This volume is expected to be reduced to 10% in 2023 and 5% in 2024 resulting in staff changes and headcount reduction from 9 FTE in 2021 to 8 FTE in 2023 and 7 FTE in 2024. This is expected to result in annual savings of $152,982.

The opportunities for savings are listed below.

Table 2 - Customer Care Annual Operating Savings (2023-2042)

Functional Domain	Opportunity	2023	2024	2025-2042	Total
Billing and Credit & Collections	Reduce Billing Labor	$403,142	$519,045	$12,005,511	$12,927,698
	Reduce Printing Costs	$29,701	$80,348	$1,711,437	$1,821,486
Customer Care	Reduced Customer Care	$37,132	$152,982	$3,538,474	$3,728,588
Total		$469,975	$752,375	$17,255,421	$18,477,771

4.1.2. Finance and Accounting Benefits

Customer First is expected to deliver $107,944 per year in operational expense for CalPeco's Finance and Accounting functions once the system reaches maturity. As a result of the new ERP solution and the resulting efficiencies described in Section 4.2.2, the West Region Finance team expects to be able to reduce its staff headcount by 4 FTE by 2024. These West Region labor savings were then allocated to the West Region utilities. This leads to annual savings of $107,944 being allocated to CalPeco in 2024.

Table 3 - Finance and Accounting Annual Operating Expense Savings (2023-2042)

Functional Domain	Opportunity	2023	2024	2025-2042	Total
ERP:Core	Reduce Finance Labor	$26,172	$107,944	$2,496,745	$2,630,861

4.1.3. System Planning and Operations Benefits

Customer First is expected to deliver $101,930 per year in operational expense savings for CalPeco's System Planning and Operations functions once the system reaches maturity. The primary drivers of these estimated savings include a reduction in contracted services for dockhands resulting from the efficiencies described in Section 4.2.4.

Table 4 - System Planning and Operations Annual Operating Expense Savings (2023-2042)

Functional Domain	Opportunity	2023	2024	2025-2042	Total
Operations	Reduced Contracting Services	$100,000	$101,930	$2,357,641	$2,559,571

4.1.4. Information Technology Benefits

Customer First is expected to deliver $104,001 per year in operational expense savings for CalPeco's IT function once the system reaches maturity. The primary driver of these estimated savings is avoided software costs related to Great Plains and Cogsdale.

Table 5 - IT Annual Operating Expense Savings (2023-2042)

Functional Domain	Opportunity	2023	2024	2025-2042	Total
IT	Software Avoided Costs	$100,099	$104,001	$2,215,253	$2,419,353

4.2. Qualitative Benefits

In addition to the measurable quantitative benefits described above, there are numerous qualitative benefits and productivity improvements that will allow CalPeco to better provide service to its customers. Some of the Customer First benefits described in this section may be quantifiable in future years. However, most of these benefits support important business requirements and functions that are difficult to quantify, such as customer experience, safety, risk management, and reliability.

4.2.1. Customer Care Benefits

The new CIS will provide CSRs access to a holistic view of the customer via real-time system consolidation of customer records. This allows CSRs to increasingly resolve issues on the first call rather than through multiple points of contact and thereby improving customer satisfaction.

Additionally, new self-service capabilities and communication channels are expected to improve customer autonomy, reducing call center volume. Through the new My Account platform, customers will be able to pay bills, better understand their usage data, view live outage maps, subscribe to specific notifications, and report issues with their service. When customer inquiries arise, the Customer Care department will have more customer information (e.g. daily meter read histories) to address them. With AMI meter data and improved asset and work management systems, field workers will be able to more quickly identify and address outages and resolve customer work orders.

Customer First will enable the Customer Care team to work more effectively by providing:

- Simpler, more convenient, and more efficient ways for customer engagement (from CIS functionality in combination with the new e-Customer platform described below).
- Increased ability to resolve customer issues on the first call rather than through multiple points of contact.
- Enabling future options for customers to participate in energy solutions and conservation programs (e.g., behind the meter generation, storage, demand response, vehicle to grid).

- Improved meter reads and billing accuracy. Automated meter reads significantly improve meter read yield rates and reduce manual errors. With interval meter read data points stored in the MDM system, meter read estimates and bills are significantly more accurate.
- Seamless access to data across devices and platforms, which can aid CSRs in customer communications.

4.2.2. Finance and Accounting Benefits

The ERP solution consists of a suite of applications containing multiple, integrated modules that link business processes across functional areas, such as Customer Care, Billing, Human Resources, Supply Chain, Finance and Accounting, Work Management, and Asset Management. This integrated solution will replace three separate ERP systems across the Liberty enterprise and will enable the Finance and Accounting teams to work more effectively by enabling:

- Reduced monthly, quarterly, and annual financial close cycle through process automation and system standardization across utilities.
- Reduced risk of errors from disparate systems and manual workarounds.
- Efficient vendor invoicing replaces manual aspects of set-up and payment.
- An integrated enterprise view of the Liberty's business and associated analytics to support sound decision-making.
- Streamlined employee expense submission, approval, payment, and auditing.
- Improved planning, budgeting, forecasting and financial consolidation, with significantly improved data access and less time spent on manual activities.

4.2.3. Supply Chain Benefits

The ERP solution and Procure to Pay will enable employees involved in the supply chain to work more effectively by enabling:

- Automated purchase order processes, supplier invoice routing, and approval processes.
- Ability to obtain volume discounts with vendors through consolidation of purchasing and better analysis of spending.
- Reduced procurement engineering hours through improved use of standard specifications and equivalencies.
- Reduced inventory levels as a result of better inventory tracking and work management practices (enabled by integrations with MWM and EAM systems).
- Reduced materials spending and overages due to better standards and business analytics.

4.2.4. System Planning and Operations Benefits

The EAM solution and the Network Design and Operations solution will enable the System Planning and Operations team to work more effectively by enabling:

- Improved asset operating life through preventative maintenance and transparent access to information.
- Improved resource utilization and prioritization through improved financial management, control of enterprise-wide investments, and optimization of strategic resources.
- Reduced maintenance costs through the streamlining of maintenance activities and consolidation of critical tasks.
- Increased reliability with more accurate information on the location and potential cause of outages, leaks, and other system events.

- Reduced manual interventions, duplicate data entries, and erroneous information through use of auto-correcting mobile field devices linked to the asset management system.

4.2.5. Human Resource Benefits

The Employee Central solution will enable the HR team to work more effectively by enabling:

- Employee lifecycle automation that will simplify and accelerate HR transactional work done by managers and employees.
- Reduced hiring time by improving workflow, reducing manual processes, and enabling better collaboration during the hiring process.
- Improved collection, reporting, and analysis of diversity and inclusion data.
- Automated reporting and analytics capabilities, which reduce time spent extracting, compiling, analyzing, and distributing HR data.

4.2.6. Information Technology Benefits

Customer First will enable the IT team to work more effectively by enabling:

- Reduced business continuity risks: increased availability and better disaster recovery.
- Increased compliance and security, such as data protection and security monitoring.
- Improved IT service delivery, including subscription-based hosted services and lessened cycle times for updates.
- Improved leadership focus on the forward term and continuous improvement opportunities.

Through many of the operational and data quality benefits described above, Customer First will also improve employee morale and productivity. Providing employees with modern interfaces and automation functionality allows employees to focus more time on greater value-add activities such as data analysis.

4.3. Third-Party Review

CRA was engaged by Liberty to complete a thorough review of the process followed by Liberty to identify and evaluate the benefits of Customer First. We found that the process was reasonable and sufficient, and that it followed a process common in the industry to compare their status quo to their future state and assess the benefits to closing any gaps. We also found that Liberty thoroughly considered and analyzed the qualitative and quantitative benefits of Customer First across its core business functions.

5. Customer First Costs

5.1. Capital Investment

As discussed in the overview, CalPeco's Customer First capital expenditures total $23,350,880. This total reflects CalPeco's allocation, as described in Section 6, of the estimated enterprise-wide cost of Customer First. The total Customer First investment, by program, is listed below.

Table 6 - Capital Investment Costs (2020-2042)

	Capital Investment Costs (2020-2024)
Foundations	$20,728,080
e-Customer	$241,274
Employee Central	$179,637
Procure to Pay	$117,323
Network Design & Ops	$2,084,566
Capital Investment Costs	$23,350,880

5.2. Post Implementation Operating Expenses

Post implementation Operating Expenses include annual support fees, software maintenance, hosting, managed services, and internal labor. Ongoing support costs begin in 2020 and are estimated to ramp up through 2023. From 2024 on, the costs are projected to increase with inflation.

Table 7 - Post-Implementation Operating Expenses (2020-2042)

	2020	2021	2022	2023	2024	2025-2042	Total
Foundations	$0	$0	$0	$973,572	$996,864	$21,233,502	$23,203,938
e-Customer	$0	$0	$0	$23,755	$18,489	$393,821	$436,065
Employee Central	$0	$7,487	$14,973	$14,973	$14,973	$318,929	$365,190
Procure to Pay	$39,404	$20,147	$20,147	$20,147	$17,190	$366,152	$483,187
Network Design & Ops	$0	$0	$0	$0	$0	$0	$0
Post-Implementation Costs	$39,404	$27,634	$35,120	$1,032,447	$1,047,516	$22,312,405	$24,064,625

6. Allocation of Costs to the Utility Operating Companies

The proper allocation of Customer First costs is a critical step in seeking cost recovery approval during a general rate case. This section describes in detail how Liberty allocated the budget for Customer First. It describes the dissection of the budget and how the CAM was applied to the capital budget costs as well as the post implementation operating costs. CRA participated in the finalization of the capital budget and the operating expense estimates. CRA also participated in the development of the allocation models that apportioned the costs to the individual Liberty jurisdictions including CalPeco.

6.1. The Customer First Budget

Five of the six system upgrades are being managed at the corporate level where all costs are being initially recorded. The one exception is the AMI program. AMI is managed and budgeted for at the local region or utility level. Currently, only Liberty Utilities' Central Region is in the process of AMI deployment. All the costs of the AMI project included in the Customer First budget are related to the Central Region deployment. Other companies will be added, as they receive local regulatory approval, and budget for the

costs.[6] Accordingly, the cost allocation and revenue requirement work conducted by CRA was limited to the other five system upgrades.

Table 8 shows the overall capital budget for each of the system upgrades and improvement.

Table 8: Total System Upgrades Budget ($)

Total System Upgrade Budget	
Customer First Foundation	$340,601,221
Network Design	$22,707,647
e-Customer	$4,900,132
Procure to Pay (Ariba)	$2,113,977
Employee Central (Success Factors)	$2,916,099
Advanced Metering (AMI)	$46,142,722
Total Customer First	**$419,381,798**

6.2. Algonquin Cost Allocation Manual (CAM)

6.2.1. Cost Allocation Principles

NARUC provides guidance to regulated utilities on a number of topics, including Cost Allocation. The Guidelines for Cost Allocations and Affiliate Transactions were developed by NARUC in 1998 and are included as Appendix 1 of Algonquin's CAM. The guidelines are intended to provide guidance to regulated utilities in the development of cost allocation procedures. The guidelines list 7 specific cost allocation principles:

1. Costs should be collected and classified on a direct basis for each asset, service, or product.
2. Indirect costs should be on a fully allocated cost basis.
3. Allocated costs should be traceable to the books of the regulated utility.
4. The allocation methods should be designed to prevent cross subsidization between regulated and unregulated utilities and ensure equitable cost sharing among the regulated utilities.
5. Costs should be classified as regulated, non-regulated, or common to both.
6. The primary cost driver of common costs, or a relevant proxy should be used to allocate common costs.

6 A small amount of costs related to system set up were incurred in the Central Region deployment that should be shared by any other utility when they implement AMI. The Central Region portion of those costs was absorbed as part of the current implementation. The balance is being held at the corporate level, and the appropriate share will be allocated to other companies as they deploy AMI.

7. Indirect costs should be spread to the services or products to which they relate, using relevant cost allocators.[7]

6.2.2. Application of the CAM to the Customer First Budget

In the application of the CAM[8] to Customer First, costs that were unique to one business group were so identified and assigned accordingly. All other common costs were allocated in accordance with the CAM, based on appropriate factors that best represent the driver of the costs being allocated. Specifically, factors were chosen using the 2020 factors developed using the methodology specified in the CAM in Tables 4a and 4b. The methodologies described therein are specific to shared services departments, which identify the appropriate cost driver. For example, the Finance methodology weights Revenue, O&M expense, and Net Plant equally.[9] Factors are developed each year, based on the prior year's actual results, according to the methodology weights.

Consistent with the CAM, the first step is to allocate common costs between the regulated (Liberty Utilities) and unregulated (Liberty Power) business groups. The Liberty Utilities cost was then allocated to the individual utilities using the Utility Four Factor Methodology, described in Table 2 of the CAM[10]. Factors are developed each year, based on the previous year's actual results, and are weighted 40% by Customer Count, 20% by Net Plant, 20% by Non-Labor Expenses, and 20% by Labor Expenses.[11] In cases where the costs are specific to a particular modality, the base, over which the Utility Four Factor Methodology is applied, is adjusted to include only the utilities that should receive the costs. For example, the OMS costs only apply to electric utilities. Thus, only electric utilities are included in the base, and new factors are calculated using the Utility Four Factor methodology to reflect the relative relationship of just the electric companies to one another. In some cases, costs that are allocated to legal entities are further allocated to specific utilities within that entity. For example, corporate allocations are made to Midstates Gas, and then further allocated to Liberty's Missouri, Illinois and Iowa jurisdictions.

6.3. Detail Process Description

Liberty has created two allocation models containing all the details of the process described in this report. The "LU/LP" (Liberty Utilities/Liberty Power) model provides all of the detail supporting the allocation of the Foundations costs between Liberty Utilities and Liberty Power. The "All Programs" model provides the allocation of the Liberty costs from the LU/LP model to each individual utility including CalPeco and also provides the allocation of the other four system upgrades and improvements that are part of the overall Customer First program. In applying the CAM to the various system upgrades, and in some cases expenditure types within the transformation, Liberty dissected the costs to determine as much information as possible about the cost drivers to most accurately allocate the costs. Costs were first examined to determine if any cost, or portion of a cost, could be identified as benefitting only Liberty Power or only Liberty Utilities. The remainder of the costs were then allocated using one or more of the factors from the CAM. Finally, the Liberty costs were allocated to the individual utilities including CalPeco using the Utility Four Factor allocators and adjusting the base, where necessary, as not all costs apply to all of the individual utilities. Each section below describes the specific process utilized for that particular group of costs.

6.3.1. Customer First Foundation

Foundations is by far the largest of the system upgrades. As such, more detail was available to identify different cost drivers that in turn required different cost allocators. As a first step, the Foundations costs

7 See *Guidelines for Cost Allocations and Affiliate Transactions in Appendix 1 of Algonquin's Cost Allocation Manual.*

8 The January 2017 APUC CAM and the June 2020 CAM allocations were used for allocation of Customer First costs.

9 See *CAM pp 17-21.*

10 June 2020 CAM percentages were used.

11 See *CAM pp. 14-15.*

were divided into the main component parts identified in the program budget: Implementation Costs, Software, Third Party Vendors, Third Party Contractors, Liberty Labor, Facilities, IBM Extended Payment Plan, Program Carrying Costs, and Contingency.

Implementation Costs

IBM is the system integrator. IBM costs are captured in the program budget as Implementation Costs. The Foundations implementation consisted of three main work streams: ERP, EAM, CIS. As a first step in the allocation process, IBM identified the relative cost for each of the three workstreams. Based on IBM's analysis, the CIS workstream represents 41% of their cost, the ERP workstream represents 34% and the EAM workstream represents 25%. Similarly, IBM analyzed the time spent on various functions within the CIS, ERP, and EAM workstreams to further dissect the portion of costs dedicated to only Liberty Power, only Liberty Utilities, or both Liberty Power and Liberty Utilities.

For the CIS workstream, IBM determined that all work benefited Liberty Utilities only. For the EAM workstream, 28% of the work benefitted Liberty Utilities only while 72% of the work benefitted both Liberty Utilities and Liberty Power. For the ERP workstream, 20% of the work benefitted Liberty Utilities only while 80% benefitted both Liberty Utilities and Liberty Power. The implementation costs were then assigned to reflect these portions, shown below in Table 9. By multiplying the stream percent by the portion of that stream related to Liberty Utilities, and separately to joint Liberty Power and Liberty Utilities benefit, the calculated costs that were not able to be identified specifically as CIS, EAM, or ERP are allocated 55% to Liberty Utilities and 45% to both Liberty Power and Liberty Utilities. Table 9 shows that calculation.

The final step in the allocation of the Implementation costs between Liberty Power and Liberty Utilities was to apply the appropriate allocation factors to the joint costs. Based on an examination of the nature of the costs, it was determined to use the IT factor to allocate EAM costs and the Finance factor to allocate ERP costs.

Table 10 shows the final allocation of Implementation costs between Liberty Power and Liberty Utilities. The costs for Liberty are allocable to all Liberty individual utilities, as are the costs of all of the sub-sections within the Foundations system upgrade. As such, the allocation from Liberty Utilities to all the individual utilities is done in one step, after all the Foundations costs are allocated between Liberty Power and Liberty Utilities.

Table 9: IBM Implementation Streams ($)

Streams (IBM)	Total Cost	IBM Allocation	LU Only	LU/LP Shared	Allocation to LU for costs that apply to CIS/ERP/EAM	Allocation to LU/LP shared for costs that apply to CIS/ERP/EAM
Customer Services (CIS)-IBM	$56,181,766	41%	100%	0%	41%	0%
Enterprise Asset Management (EAM)- IBM	$34,257,175	25%	28%	72%	7%	18%
Back Office Operations (ERP)-IBM	$46,589,757	34%	20%	80%	7%	27%
Total	**$137,028,698**				**55%**	**45%**

Table 10: Implementation LU/LP Allocation ($)

Implementation LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$75,058,808	$0	$61,969,890	$51,416,590	$10,553,300	$126,475,398	$10,553,300

Software

Similar to the process for Implementation Costs, internal staff analyzed the various software costs and determined if the software was related to CIS, EAM, ERP, or to all three. The factors for CIS, EAM, and ERP developed for the Implementation costs were then used to determine the percentage of software costs assignable to the regulated utilities including CalPeco, and the portion to be allocated between regulated and unregulated entities. The software was further analyzed to determine the most appropriate allocator to use from the CAM, ultimately leading to the use of the Finance, HR, and IT allocators. Table 11 shows the final allocation of $29,544,989 of software costs.

Table 11: Software LU/LP Allocation ($)

Software LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$14,968,631	$0	$14,576,358	$11,770,022	$2,806,336	$26,738,653	$2,806,336

Third Party Vendors

A number of third party vendors are providing services to Customer First. For this segment of costs, each vendor's costs were analyzed in consultation with internal staff familiar with the work of the various vendors to determine if the vendors supported CIS, EAM, ERP, or all three. The process for allocation then followed the process described above. Based on the nature of the vendor's services, the appropriate allocator from the CAM was selected. Allocators used for Third Party Vendors included Finance, HR, Internal Audit, and IT. Table 12 shows the final allocation of $23,316,679 of Third Party Vendor costs.

Table 12: Third Party Vendor LU/LP Allocation ($)

Third Party Vendors LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$9,909,768	$108,956	$13,297,955	$10,934,724	$2,363,230	$20,844,493	$2,472,186

Third Party Contractors and Liberty Labor

Costs for Liberty personnel and others hired as contract labor working on and charging time to Customer First are categorized as third party contractors or Liberty labor. The process for allocating labor costs, whether internal payroll or outside contractors, is the same. Liberty determined whether the labor costs were in support of CIS, EAM, ERP, or all three systems. The allocation process for labor costs was identical to the other cost groups described above. For contract labor, the allocators included Finance, HR, and IT. For Liberty labor, the allocators included Finance, HR, IT, Communications, Compliance, and

Legal. There was one difference in the treatment of third party contract labor as compared to Liberty labor. Third Party contractor costs include any reimbursable expenses. Liberty labor expenses are reported separately. For Liberty labor, the expenses were allocated to Liberty Utilities and Liberty Power, based on the overall allocation process. This resulted in 90% of the employee expense costs being assigned to Liberty Utilities, and 10% to Liberty Power. Table 13 and Table 14 depict the results for the allocation process for Third Party Contractors ($22,439,112) and Liberty Labor ($68,888,271), respectively.

Table 13: Third Party Contractors LU/LP Allocation ($)

Third Party Contractors LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$12,326,861	$0	$10,112,251	$9,076,389	$1,035,862	$21,403,250	$1,035,862

Table 14: LU Labor Liberty/LP Allocation ($)

Liberty Labor LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$38,219,645	$2,525,990	$28,142,636	$24,046,190	$4,096,446	$62,265,834	$6,622,436

Facilities

The Facilities costs represent the costs of maintaining the facilities occupied by staff, contractors, and consultants during the project development stage. These costs include rent, supplies, repairs, maintenance, cleaning, and security. Facilities costs were considered to benefit both Liberty Utilities and Liberty Power. Based on previous methodology used for costs shared by all workstreams, 55% portion was allocated to Liberty Utilities only. The remaining costs benefitting both Liberty Utilities and Liberty Power were allocated using the Facilities allocator from the CAM. Table 15 shows the final allocation of $1,914,500 of Facilities costs.

Table 15: Facilities LU/LP Allocation ($)

Facilities LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$1,048,686	$0	$865,814	$613,862	$251,952	$1,662,548	$251,952

IBM Extended Payment Plan ("EPP")

A portion of the financing of Customer First is through an extended payment arrangement with IBM. The interest paid to IBM as compensation for the deferred payments is capitalized as part of the overall financing of the program. The allocation of this capitalized interest expense is calculated in the same manner as the associated Implementation charges. Table 16 shows the final allocation of $4,019,384 of EPP costs.

Table 16: IBM EPP LU/LP Allocation ($)

IBM EPP LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$2,201,657	$0	$1,817,727	$1,508,173	$309,554	$3,709,830	$309,554

Program Carrying Costs

When Customer First costs are incurred prior to deployment, Liberty will incur carrying charges that would otherwise be recovered if the asset was built at the local utility level. Liberty is capitalizing these carrying costs of Customer First. The carrying charge is calculated only on the balances associated with Foundations and Network Design because the other projects are lower cost projects with shorter development times. The interest charge is split between Liberty Utilities and Liberty Power, based on the overall composite percentage derived from the other cost groups in Foundations. This is calculated to be 92% to Liberty Utilities and 8% to Liberty Power. Table 17: Program Carrying Costs LU/LP Allocation ($) shows the allocation of the Program Carrying Costs of $9,080,709.

Table 17: Program Carrying Costs LU/LP Allocation ($)

Program Carrying Costs LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$0	$0	$9,080,709	$8,320,115	$760,594	$8,320,115	$760,594

Contingency

Customer First established a contingency fund within the project at its inception to reflect required changes to the program as development proceeded. At the time of this report, the remaining contingency is $44,368,879. Similar to the Program Carrying Costs, this remaining contingency is allocated using the overall composite percentage derived from the other cost groups in Foundations. Table 18 depicts the result of that calculation.

Table 18: Contingency LU/LP Allocation ($)

Contingency LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$0	$0	$44,368,879	$40,652,572	$3,716,307	$40,652,572	$3,716,307

Table 19 shows the sum of the results from Table 10 through Table 18, representing the total allocation of the Foundations upgrade cost of $340,601,221 between Liberty Power and Liberty Utilities.

Table 19: Summary Foundations LU/LP Allocation ($)

Summary Foundations LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$153,734,056	$2,634,946	$184,232,219	$158,338,637	$25,893,582	$312,072,693	$28,528,528

Allocation of Foundations Liberty Costs to Individual Utilities

Having obtained the total of the Liberty costs for the Foundation system upgrades and improvements, the last step is to allocate that cost to all of the individual utilities including CalPeco. As described in Section 6.2 above, the allocation methodology established in the CAM is the Utility Four Factor methodology, which allocates the costs to the individual utilities based on a weighting of four measures of relative size: customers, net plant, labor expenses, and other expenses. For the most part, the Utility Four Factor allocation percentages are used to allocate the Foundations costs, with one minor exception. Liberty's transmission affiliate, Tinker, is the beneficiary of the ERP portion of Foundations, but not the EAM or CIS portions. Tinker is a regulated transmission company and thus does not need the EAM or CIS upgrades. To accommodate this exception, the "All Programs" model calculates a separate Utility Four Factor Allocation table that excludes Tinker and re-calculates the relative relationship of the remaining companies. The full Utility Four Factor table is used to allocate the ERP portion of the costs, while the modified table without Tinker is used to allocate the EAM and CIS portions of Foundations. The result of this allocation process yields an allocated Foundations investment to CalPeco of $20,728,080.

6.3.2. Network Design

The Network Design system upgrades has three separate parts: GIS, OMS, and Design Tool. In addition, as described above, a capitalized carrying charge was calculated on the Network Design CWIP balances. As a result, $671,999 is included in the Network Design budget. All of Network Design is for the sole benefit of Liberty, so there is no allocation of costs to LP. However, the three different cost categories benefit different utility modalities. GIS benefits electric, gas, water, and waste water companies, OMS benefits only electric companies, and Design Tool benefits electric and gas companies. While all three will utilize the Utility Four Factor methodology, the allocation factors are adjusted to include only the appropriate companies in the base for allocation. The carrying charge is allocated as a composite of the three categories. The "All Programs" model contains the adjusted allocation tables to apply to the three cost areas in Network Design. Table 20 shows the 100% allocation of Network Design to Liberty Utilities. The portion allocated to CalPeco is $2,084,566.

Table 20: Network Design LU/LP Allocation ($)

Network Design LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$22,707,647	$0	$0	$0	$0	$22,707,647	$0

6.3.3. e-Customer

Like Network Design, e-Customer is entirely for the benefit of Liberty Utilities, and therefore has no allocation of costs to Liberty Power. Also, like Network Design, e-Customer has multiple sub programs with different allocation characteristics. My Account is a service that all individual utilities will ultimately receive as part of the Foundations implementation. However, the Empire District (set of utilities in Central Region) is implementing an earlier version of My Account in early 2021. As such, all My Account costs that are included in the Customer First budget are allocated to the Empire District. The second part of the e-Customer system is Kubra. Kubra is a payment processing service being implemented across Liberty

except for Tinker Transmission[12]. However, two of the companies, New England Gas, and New Brunswick Gas, will implement Kubra together with Foundations. Costs for their implementation are not included in the Kubra costs in the Customer First budget. Accordingly, the Kubra costs are allocated using a modified Utility Four Factor table that excludes New England Gas, New Brunswick Gas, and Tinker. That table is contained in the "All Programs" model. Table 21 depicts that all e-Customer costs are assigned to Liberty Utilities. The portion allocated to CalPeco is $241,274.

Table 21: e-Customer LU/LP Allocation ($)

e-Customer LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$4,900,132	$0	$0	$0	$0	$4,900,132	$0

6.3.4. Procure to Pay

Procure to Pay benefits both Liberty Utilities and Liberty Power. As the Procure to Pay system impacts the procurement function, the allocator chosen from the CAM is the Purchasing factor which allocates 84% of the cost to the regulated business group and 16% of the cost to the unregulated business group. The Liberty Utilities portion is then allocated to the individual utilities using the Utility Four Factor methodology. Table 22 shows the allocation for Procure to Pay. The portion allocated to CalPeco is $117,323.

Table 22: Procure to Pay LU/LP Allocation ($)

Procure to Pay LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$0	$0	$2,113,977	$1,767,279	$346,698	$1,767,279	$346,698

6.3.5. Employee Central

Like Procure to Pay, Employee Central benefits both Liberty Utilities and Liberty Power. Since this system relates to employees, the HR factor from the CAM is used which allocates 93% of the costs to the regulated business group and 7% of the costs to the unregulated business group, based on number of employees. The Liberty Utilities portion is then allocated to the individual utilities using the Utility Four Factor methodology. Table 23 shows the allocation for Employee Central costs. The portion allocated to CalPeco is $179,637.

Table 23: Employee Central LU/LP Allocation

Employee Central LU/LP Allocation						
LU Only	LP Only	Joint	LU Allocation	LP Allocation	Total LU	Total LP
$0	$0	$2,916,099	$2,705,930	$210,169	$2,705,930	$210,169

12 Tinker Transmission is excluded from the allocation of e-Customer costs, as this regulated company is a transmission company whose customers are not serviced by a CIS system or the e-Customer functionality.

6.4. Total Customer First Allocation Summary

Table 24 shows the total Customer First costs by program and the allocation between Liberty Utilities and Liberty Power. In total, 93% of the Customer First costs are allocated to Liberty Utilities, and 7% are allocated to Liberty Power. The portion allocated to CalPeco is $23,350,880.

Table 24: Total Customer First LU/LP Split ($)

Programs	Total Cost	LP Allocation	LU Allocation	LP (6%)	LU (94%) Liberty
Foundations	$340,601,221	8%	92%	$28,528,527	$312,072,694
Employee Central	$2,916,099	7%	93%	$210,169	$2,705,930
Procure to Pay	$2,113,977	16%	84%	$346,698	$1,767,279
E-Customer	$4,900,132	0%	100%	$0	$4,900,132
Network Design	$22,707,647	0%	100%	$0	$22,707,647
AMI	$46,142,722	0%	Empire	$0	$46,142,722
Total	**$419,381,798**	**7%**	**93%**	**$29,085,394**	**$390,296,404**

6.5. OpEx Costs

Post-implementation operating costs were identified for Foundations, e-Customer My Account, Procure to Pay and Employee Central.

For Procure to Pay and Employee Central, the costs are annual post implementation software maintenance contracts. These systems go live in late 2020 and 2021. Accordingly, the annual cost is shown, beginning in 2020 for Procure to Pay, and 2021 for Employee Central. For Customer First Foundations, IBM Hosting and Application Management Services ("AMS") estimates by year were obtained from the internal staff, with input from IT technical teams. Software charges are post implementation maintenance charges associated with Foundations software. The amounts by year were determined by identifying and expensing maintenance, cloud and hosting software charges based on the percentage of companies that implemented Foundations each year. New staffing was assumed to begin at the completion of Foundations implementation in 2024. My Account was spread by year, representing the expected costs as new companies are added to the My Account functionality. The allocation of the costs to Liberty Utilities and to the individual utilities is accomplished by a process that takes into account the Utility Four Factor methodology as well as the Foundations release schedule. For Foundations, the overall Liberty Power percentage of 8% was used. For the other systems, the OpEx was allocated in the same manner as the capital costs. The portion of Post Implementation Operating Expenses allocated to CalPeco is detailed in Section 5.2.

6.6. Billing of Customer First Costs to Affiliates

The capital costs of each of these system improvements are aggregated into intangible assets recorded at Liberty's corporate level. Once the Customer First assets/programs are deployed to Liberty Utilities and Liberty Power, the respective allocated amount of the Customer First assets will be charged to the individual affiliate companies. Each regulated utility will then include its allocated share of the Customer

First assets in its rate base and include depreciation on that asset in its cost of service for cost recovery purposes.

6.7. Third-Party Review

As described earlier in the report, Liberty engaged CRA to evaluate the benefits of the investment to the Company's customers and to the business overall and to determine the allocation of costs and benefits amongst benefitting operating companies. CRA believes that the development of the model segregated the budgeted costs in a logical manner to categories that allowed a very detailed application of the Company's CAM and that the Company applied the appropriate CAM factors to those budget categories. The result is an allocated budget that is fully compliant with the Company's CAM and with NARUC cost allocation principles. The model is an adaptable model that can be used as budgets are modified, or as actual costs replace budgeted costs.