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PACIFIC GAS AND ELECTRIC COMPANY

ENTERPRISE RESOURCE PLANNING (ERP) AND GEOGRAPHIC INFORMATION SYSTEMS (GIS) TRANSFORMATION

PREPARED TESTIMONY

PACIFIC GAS AND ELECTRIC COMPANY
ENTERPRISE RESOURCE PLANNING (ERP) AND GEOGRAPHIC INFORMATION SYSTEMS (GIS) TRANSFORMATION
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PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 1

EXECUTIVE SUMMARY

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
EXECUTIVE SUMMARY

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
EXECUTIVE SUMMARY

1. Introduction – A Required Transformation Designed to Deliver Customer Value

Pacific Gas and Electric Company (PG&E or the Company) requests approval to recover forecast costs of replacing its aging Enterprise Resource Planning (ERP) and Geographic Information System (GIS) platforms and transforming the business processes they support (ERP and GIS Transformation, Transformation, or Program).[1] The Transformation, as proposed will replace SAP ERP Central Component (SAP ECC) with SAP S/4 High Performance Analytics Appliance (S/4HANA) and Esri ArcGIS Desktop with Esri ArcGIS Platform, including the Utility Network[2] data model. PG&E forecasts that the resulting operational efficiencies will significantly exceed the forecast costs of the Transformation. Customers will receive the benefit of these efficiencies in future General Rate Cases (GRC) through lower cost-of-service and revenue requirements than would otherwise be required absent the Transformation.

PG&E's ERP and GIS platforms are closely integrated into virtually every aspect of day-to-day operations and are critical to safely and reliably serving more than sixteen million customers through approximately 50,000 miles of gas main, 4.5 million gas customer accounts, well over 100,000 miles of electric lines, 5.5 million electric customer accounts, and all associated equipment, as well as operating its power generation portfolio. PG&E relies upon its ERP system for work planning, execution, and accounting, including managing assets, labor, materials, and financial information. PG&E leverages GIS as the system of record for the location, connectivity, and spatial representation of millions of utility assets, supporting planning, engineering, asset management,

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1 PG&E stated in its 2027 General Rate Case testimony, all associated capital costs forecast for the planned replacement of ERP and GIS have been excluded from the 2027 GRC and will instead be included in a future CPUC application. A.25-05-009, PG&E Ex-10, p. 7-14.

2 A modern GIS model specifically created to manage utility assets and network connectivity.

wildfire mitigation, telecommunication, operations, and regulatory compliance across the enterprise. Together, these systems support every customer work order and tens of millions of inspections, repairs, and maintenance activities PG&E performs each year to safely and reliably operate its electric, gas, and power generation systems.

These critical operations currently depend on SAP ECC and Esri ArcGIS Desktop, both of which are approaching the end of vendor support. SAP will end standard maintenance for PG&E's current ERP platform in 2027,[3] and Esri will end support for ArcGIS Desktop, including ArcMap, the Geometric Network data model, and related tools PG&E currently operates, in February 2028.[4] PG&E's ability to meet its obligation to safely and reliably operate its gas and electric systems will be impaired if it continues to use these systems after vendor support stops. Cybersecurity risks have materially increased now that Artificial Intelligence (AI) can enable threat actors to identify and exploit vulnerabilities more rapidly and effectively than ever before. Additionally, continued reliance on aging platforms would require growing levels of manual intervention and make it progressively more difficult and costly to maintain reliable service and meet regulatory obligations.

A prolonged disruption of either platform could impair critical field and business operations, including outage and emergency response, customer connections, work and asset management, payroll and contractor payments, financial transactions, and regulatory reporting. It could also limit access to timely information about assets, network connectivity, completed work, crew assignments, and field activities, increasing safety, operational, customer, financial, cybersecurity, and compliance risks.

PG&E must therefore modernize these platforms and manage the associated risks before vendor support ends. Whether PG&E pursues a technical upgrade or the broader transformation proposed in this application,

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3 See Press Release by SAP News, SAP Extends Its Innovation Commitment for SAP S/4HANA, Provides Clarity and Choice on SAP Business Suite 7 (Feb. 4, 2020), available at: https://news.sap.com/2020/02/sap-s4hana-maintenance-2040-clarity-choice-sap-business-suite-7/ (accessed Oct. 20, 2026).

4 See Workpaper (WP) 1-1 for a copy of an e-newsletter dated January 19, 2023, from Jack Dangermond, President of Esri, notifying PG&E that Esri's support of ArcMap would end as of February 2028.

replacement is unavoidable. The principal question before the California Public Utilities Commission (CPUC or Commission) is which approach will deliver the greatest long-term customer value. After evaluating the options, PG&E determined that the prudent path is to transition to SAP S/4HANA and Esri ArcGIS Platform and use those platforms to transform business processes.

Importantly, replacement itself requires substantial investment regardless of the approach selected. Over several decades, PG&E has implemented more than 82,000 ERP customizations and connected ERP and GIS with hundreds of applications used by more than 50,000 employees and contractors. Even a technical upgrade would require data conversion, integration remediation, cybersecurity modernization, testing, deployment, and program management. PG&E estimates that the technical upgrade alternative would cost approximately $1.5 billion while producing approximately $173 million in quantified customer benefits. This approach would address the immediate technology need but would largely preserve existing cumbersome business processes and would not achieve the substantial operational and customer benefits available through a broader transformation.

Although prudently tailored to PG&E's needs over time, the current software now requires users to navigate multiple screens and platforms and does not consistently provide integrated visibility into project requirements, labor, materials, asset information, and costs. PG&E therefore evaluated the merits of an incremental investment beyond the technical upgrade to fully leverage modern ERP and GIS capabilities. These capabilities enable more integrated and standardized business processes, improved access to high-quality data, reduced manual work and system fragmentation, stronger controls, and more efficient planning, resourcing, execution, and accounting of work across Work and Asset Management (WAM), Supply Chain, Finance, Human Resources (HR), Integrated Planning, and Enterprise Health & Safety (EH&S). To realize these benefits, PG&E will standardize and simplify business processes, train tens of thousands of coworkers on new tools and ways of working, improve data quality, governance, and accessibility, reduce ERP customizations, consolidate applications through greater use of standard ERP and GIS functionality, and modernize GIS through implementation of the Utility Network data model.

PG&E forecasts that replacing the existing platforms and using the new technology to transform business operations will require an additional $1.4 billion beyond the technical upgrade, for a total expected cost of approximately $2.9 billion. However, by simplifying, standardizing and integrating processes across the enterprise, PG&E expects to achieve significant efficiency gains that, when applied to the volume of work PG&E performs every year, will generate more than $9 billion in quantifiable benefits over the 2028 through 2039, resulting in a Benefit to Cost Ratio of 1.19. These benefits are expected to exceed the forecast costs of the Transformation, and, over time, reduce PG&E's cost to serve customers and contribute to lower future revenue requirements than would otherwise be necessary. PG&E therefore proposes a coordinated ERP and GIS Transformation[5,6] to capture these operational efficiencies and long-term customer benefits.

ERP and GIS perform distinct functions but are interdependent. ERP provides the systems and information used to manage activities such as work, materials, workforce, costs and financial accounting, while GIS provides geographic and network information about PG&E's assets and operations. Integrating these capabilities allows operational, geographic, and financial information to work together rather than remain fragmented across systems and business functions. For example, work on a utility asset depends not only knowing its location and how it operates within the connected network, but also understanding its condition and maintenance history, the work planned for it, the labor and materials required, and the associated costs. By connecting information and reducing manual handoffs, the Transformation will enable PG&E to proactively monitor assets and more efficiently deploy the right resources at the right time and location. This reduces the risk of asset failure, improves safety for customers and coworkers, and increases operational efficiency. Transforming ERP and GIS together allows PG&E to better connect and manage activities across the asset lifecycle.

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5 In other forums and internally, PG&E refers to the ERP Transformation as "Propel."

6 In other forums and internally, PG&E refers to the GIS Transformation as "Elevate."

PG&E's Transformation is the result of a multi-year planning and design effort. Through Phase Zero[7] planning and Enterprise Design[8] activities (described more in Chapter 2), PG&E evaluated alternative approaches, assessed the feasibility of standard vendor capabilities, analyzed implementation risks, and identified the operational improvements expected from a coordinated ERP and GIS Transformation. This early work was necessary to establish the foundation for the scope, deployment strategy, and benefit projections described in the following chapters. PG&E needed to begin these activities well in advance of this filing so the Company could appropriately develop the scope and resources required to develop an ERP and GIS Transformation that provides operational benefits and long-term customer value.

2. Why PG&E Must Transform – Acting Now Is Necessary and Prudent

Transformations of this scale require years of planning, design, testing, data migration, deployment, stabilization, and adoption. PG&E must therefore begin the transition before support ends to safely migrate thousands of users, substantial volumes of data, hundreds of system integrations, and critical business processes while continuing to provide safe and reliable service. Waiting until replacement becomes immediately necessary would reduce available options and increase implementation, operational, and customer risk.

Once vendor support ends, PG&E will have more limited access to vendor-provided security patches, compatibility updates, defect fixes, and technical support for core platform functionality. Continuing to operate these platforms under those conditions would require additional workarounds, specialized resources, and compensating controls, increasing costs and the risk of disruption. Beginning now allows PG&E to manage those risks through a planned transition rather than a compressed or reactive replacement.

To manage these risks while maintaining safe and reliable service, PG&E plans to transition to the new platforms through a phased deployment. PG&E's

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7 Phase Zero was the initial planning and evaluation stage of the ERP and GIS Transformation that established strategic direction, confirmed scope and requirements, evaluated solution options, and developed the business case and governance framework needed to proceed into detailed design and implementation.

8 Enterprise Design was the process of developing and validating the future-state operating model, business processes, applications, data structures, and deployment strategy required to achieve the program's objectives and guide implementation.

phased deployment strategy, described in Chapter 2, is designed to manage implementation risk in a controlled manner, accounting for technical complexity, number of coworkers impacted, operational disruption, and more. PG&E expects to deploy critical ERP functionality from Q2 2027 through Q2 2030 and transition critical GIS functionality from Q3 2027 through Q1 2029, while later Transformation activities continue through 2030 to complete remaining deployments, integrations, data conversion, stabilization, adoption, and retirement of legacy systems.

Because the phased transition will extend beyond certain standard vendor-support dates, PG&E will need to operate portions of the legacy ERP and GIS environments while individual releases are deployed, stabilized, and transitioned to the new platforms. During this period, PG&E will execute available temporary vendor-direct and/or third-party support agreements, leverage internal technical expertise, and deploy appropriate risk-mitigation measures to maintain continuity of critical business operations. These measures provide a bridge to the new platforms, but they do not eliminate the increasing operational, cybersecurity, compatibility, and support risks associated with continued reliance on aging technology. PG&E's phased deployment strategy is therefore designed to limit the duration of that reliance while managing the technical complexity and potential operational disruption of transitioning systems that support critical work across the enterprise.

The need to act extends beyond vendor support. Enterprise technology has advanced substantially since PG&E originally implemented its current platforms in the 1990s, while important activities and information remain distributed across multiple systems, spreadsheets and manual processes. These limitations require reconciliation and rework, constrain integration among business functions, and make it more difficult to adjust as operational conditions change. Continued reliance on this aging environment would make these challenges increasingly difficult and costly to manage.

Given vendor support timelines, the limitations of the current environment, and the complexity of the transition, acting now is both necessary and prudent. Early action enables PG&E to manage the transition in a controlled manner while maintaining safe and reliable service for customers.

3. Why a Full Transformation Is the Most Prudent Option

Given the need to replace its aging ERP and GIS platforms, PG&E evaluated three options: Do Nothing, Technical Upgrade, or Transformation. The Do Nothing option would rely on extended support, targeted remediation, and incremental fixes. Although it requires the lowest near-term investment, it does not resolve end-of-support, cybersecurity, technical debt,[9] or process efficiency risks and the platforms would ultimately still need to be replaced. The option defers, rather than avoids, the required investment and the associated customer costs and is therefore not viable.

A Technical Upgrade would replace the unsupported ERP and GIS software while making only the changes necessary to continue business operations. While this option would address the immediate need to replace unsupported technology, it would leave most of the underlying operational inefficiencies intact. Existing process fragmentation, customizations, manual workarounds, disconnected data structures, and duplicative activities would largely remain in place. PG&E estimates that this option would require approximately $1.5 billion of investment while producing only approximately $173 million of quantifiable customer benefits. It would also make future upgrades and adoption of new functionality slower and more costly because PG&E would continue to maintain the existing customized and fragmented systems and processes.

By contrast, the Transformation uses the required technology replacement to simplify and standardize business processes, reduce customizations and manual work, improve data quality and accessibility, and strengthen integration across functions. The Transformation therefore converts an unavoidable technology expenditure into an investment that produces substantial and measurable customer value and establishes a more efficient operating environment for decades to come. For an incremental investment of approximately $1.4 billion beyond the technical upgrade, PG&E forecasts more than $9 billion in customer benefits from 2028 through 2039.

The technical upgrade would largely preserve the status quo processes on a newer technology platform, which would also negatively impact all future

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[9] Technical Debt is the accumulated complexity created by customizations, integrations, workarounds, and legacy system dependencies that increases the effort, cost, and risk associated with maintaining, upgrading, and enhancing technology over time.

technical work. The Transformation fundamentally improves how PG&E plans, manages, executes, and accounts for work across the enterprise and sets the company up for faster, easier technical maintenance and functionality adoption in the future. Because the replacement of these platforms is unavoidable, the incremental investment in transformation is the more prudent alternative for customers: it produces substantially greater benefits, and establishes a simpler and more adaptable technology environment.

4. Transformation Scope and Benefits

This approach provides significant new and incremental benefits to customers across six main ERP operational workstreams. These operational workstreams unlock specific benefits on their own, but also depend upon accurate asset location, connectivity, and network information maintained within GIS. These geospatial capabilities, when paired with the six ERP workstreams, result in improved functionality and enhanced value through the sharing of consistent data, controls, and analytics. Consequently, GIS modernization is not a separate technology initiative but a foundational component of the broader transformation.

As discussed in more detail in Chapter 2, these six operational workstreams are:

FIGURE 1-1
OPERATIONAL WORKSTREAM SUMMARY



1) Work and Asset Management: Today, work planning, scheduling, execution, and asset health information are managed across multiple systems and disconnected tools, making it difficult to adjust quickly when conditions change in the field. With the new technology, PG&E can more efficiently plan, schedule, execute, and close maintenance and project work

in one integrated environment, while coordinating crew dispatch, outage planning, asset condition and location, maintenance history, and compliance requirements.

Why it matters: Safer and faster work execution, fewer truck rolls and customer interruptions, and improved planning and asset reliability.

2) Supply Chain: Today, system limitations often cause materials planning and logistics to lag behind changes in work plans, increasing the risk of material shortages, cost to expedite, or purchase of excess inventory. The new platform integrates forecasting, sourcing, purchasing, warehousing, staging, and delivery directly with planned and emergency work, providing clearer, earlier signals of what materials are needed and when. It also enables improved contract workforce and vendor services oversight, which is currently built around manual, paper-based processes.

Why it matters: The right materials at the right time with improved vendor oversight at lower total cost for customers.

3) Finance: Today, financial data must be assembled across multiple systems, requiring manual effort to perform analysis in support of decision making. The new platform integrates budgeting, forecasting, project accounting, cost controls, rate and recovery data, and regulatory reporting directly into day-to-day operations.

Why it matters: Improved integration of financial data enables more efficient and timely insight into costs and forecasts to allow for faster decision-making.

4) Human Resources: Today, workforce planning, time capture, and skills alignment rely on disconnected systems that can increase the time to match qualified personnel to work and slow down the hiring process. The proposed solution integrates workforce planning with scheduling, time reporting, and qualifications and skills requirements.

Why it matters: Faster hiring and onboarding and more front-line resources available mean that people with the right skills are in the right roles to help customers at the right time.

5) Integrated Planning: Today, planning across work, materials, locations, staffing, and costs happens in multiple systems and spreadsheets, often requiring manual reconciliation and rework when conditions change. Under

the proposed solution, PG&E will operate with a single, connected platform that aligns scope, resources, materials, locations, and cost across WAM, Supply Chain, Finance, and HR.

Why it matters: Less rework, fewer delays, and lower costs, which translate to a better customer experience.

6) Enterprise Health and Safety: Today, health and safety requirements are often managed alongside work, rather than fully integrated into it, relying on manual checks, or after-the-fact documentation. With the proposed technology, operational and process safety risk assessments, incident management, management of change, and regulatory reporting are directly embedded into how work is planned, performed in the field, and closed. This means requirements are applied and verified as the work happens.

Why it matters: Embedding safety controls directly into day-to-day work as it is performed supports PG&E's commitment to further strengthen its safety culture and provide safe, reliable, and affordable service for customers.

5. Benefits Will Outweigh Costs – Measurable Customer Benefits Exceed Forecast Costs

PG&E's Transformation is designed to produce measurable customer value by improving how PG&E plans, executes, and manages work across the enterprise. PG&E forecasts more than $9 billion in quantifiable benefits[10] from 2028 through 2039, substantially exceeding the approximately $2.9 billion of cost of the Transformation. The benefits are expected to be realized through improvements in the workstreams described as well as from improvements driven using modernized technology platforms. PG&E has established a value management approach to monitor the assumptions, dependencies, design decisions, and operational outcomes associated with the forecast benefits. During implementation, PG&E will assess whether key program decisions remain aligned with the future-state capabilities and process improvements underlying the benefit forecasts. Following deployment, PG&E expects to monitor actual operational performance and benefits as they emerge.

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10 Should the Commission modify or reduce the scope of the program PG&E is requesting in this application, the level of estimated benefits would also need to be reduced to reflect the ultimate scope approved.

A significant portion of the forecast benefits are expected to occur during the 2031 GRC cycle. Accordingly, PG&E intends to reflect the forecast benefits in its future revenue requirement requests based on the best available information at the time of filing. While the magnitude of any reduction reflected in PG&E's 2031 GRC forecast will depend on the scope and timing of the Commission's decision in this proceeding, as well as the volume and mix of work reflected in PG&E's 2031 GRC forecast, based on the assumptions used in PG&E's benefit analysis, including work volumes consistent with 2024 spend, PG&E currently forecasts reductions of approximately $1.6 billion in Operations and Maintenance (O&M) expense and $3.1 billion in capital expenditures over the 2031-2034 period.

While the specific reductions ultimately reflected in the 2031 GRC may be higher or lower than those presented here, PG&E is committing to incorporate its then-current forecast of customer benefits into future revenue requirements, ensuring that customers receive the benefit of forecast efficiencies through reduced revenue requirements. In addition, efficiencies that are realized will continue to lower revenue requirements in PG&E's 2035 GRC and beyond.

The ERP and GIS Transformation will also generate important qualitative benefits that are not included in the quantified benefit calculation, including improvements in coworker experience as well as enterprise agility and scalability. These benefits will further support PG&E streamlining work processes and more effectively use PG&E's technology and data. Additionally, they will improve and speed up PG&E's ability to manage related technical work in the future – upgrading and patching the systems, installing or integrating new functionality or tools, maintaining accurate data, and more. In particular, as discussed in greater detail below, the Transformation will position PG&E to better take advantage of AI going forward.

6. The Planned Transformation Improves Long-Term Affordability – Forecast Financial Benefits Exceed Forecast Costs

PG&E is mindful of customer affordability challenges and recognizes that granting this application will result in a short-term rate increase. As demonstrated more fully in Chapters 2 and 3, the long-term benefits of this investment substantially exceed its near-term costs. Accordingly, the full

transformation is critical to advancing PG&E's, the Commission's and customers' shared goal of long-term affordability.

7. Future Readiness, Technology Advancement, and AI

In the last few years, there have been significant advancements across virtually all software and technology spaces regardless of industry. One of the biggest drivers of this progress and the speed of innovation is AI. PG&E recognizes that AI is a rapidly evolving area of technology with potential applications across many enterprise software platforms, including SAP S/4HANA and Esri ArcGIS Platform. Software providers and implementation partners across the industry continue to introduce AI-enabled capabilities into their products and services, and PG&E is monitoring these developments as part of its ongoing program governance and technology evaluation activities.

Platform modernization establishes important foundational capabilities for the future adoption of AI well past the completion of this ERP and GIS Transformation. Modern cloud-based platforms, standardized SAP and Esri architecture, and clean-core designs provide a more effective environment for deploying AI-enabled capabilities than highly customized legacy environments, which would limit the scope and use cases AI would be able to support. By updating the underlying technology stack[11] and reducing the use of custom code, the Company will be better positioned to leverage emerging SAP, Esri, and third-party AI services, automate selected technical and operational activities, and accelerate future adoption of intelligent digital capabilities. The ERP and GIS Transformation would create a stronger foundation for AI than what exists today and improves the Company's ability to take advantage of rapidly evolving technologies, AI and otherwise.

At the time of this filing, the maturity, adoption, and practical application of AI-enabled capabilities within large-scale ERP and GIS Transformations remain uncertain. Accordingly, PG&E has not relied upon, assumed, or incorporated AI-related impacts in the forecast costs, customer benefits, revenue requirement request, benefit-cost ratio, or broader business case presented in this proceeding.

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11 A technology stack refers to the collection of technologies that work together to run a system, application, or business capability.

While AI-enabled capabilities may evolve over the course of the Transformation, there is currently insufficient information to reasonably estimate the magnitude, timing, or direction of any potential impacts on program implementation, operational performance, productivity, or customer benefits. PG&E therefore determined that excluding AI-related impacts from its forecasts is the most reasonable and supportable approach for the purposes of this filing. PG&E notes, however, that modernizing its ERP and GIS platforms and taking advantage of the new platforms to standardize business processes will put PG&E in a much stronger, "future-ready" position to take advantage of AI benefits for customers as they become available post implementation.

8. Summary of Request – A Disciplined Investment in PG&E's Operational Backbone

PG&E requests that the CPUC adopt its 2027-2030 O&M Expense forecast of $205 million and its 2023-2030 recorded and forecast Capital Expenditures of $2,705 million, ($2,911 million, in total) for the ERP and GIS Transformation.

The detailed cost forecasts, cost categories, and cost recovery treatment associated with this request are presented in subsequent chapters of this testimony and workpapers.[12,13]

Table 1-1, below, summarizes PG&E's 2023-2030 recorded and forecast costs for this Transformation requested in this application.

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12 The amounts shown in testimony tables may not sum due to rounding.

13 Due to the time necessary to prepare this testimony and the underlying cost and benefit forecasts and supporting analyses, PG&E's forecast capital expenditures and O&M expenses are based on information available as of August 2026. Accordingly, the reasonableness of the forecast should be assessed in light of the facts, assumptions, and information known to PG&E as of that date.

TABLE 1-1
SUMMARY OF COST BY CAPITAL AND EXPENSE
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Description	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1	Capital	$4.8	$42.0	$169.0	$451.6	$601.0	$518.4	$682.1	$236.3	$2,705.3
2	Expense	–	–	–	–	12.0	47.0	69.1	77.3	205.4
3	Total	$4.8	$42.0	$169.0	$451.6	$612.9	$565.5	$751.2	$313.7	$2,910.7

Notes: (a) As described in Chapter 5 PG&E is seeking a memorandum account to track the revenue requirement associated with these platforms, with an effective date of November 3, 2026, which coincides with the filing date of this application. As described in Chapter 4, PG&E's revenue requirement calculation presented in this testimony excludes the revenue requirements associated with operative capital prior to November 3, 2026. Table 1-1 does not reflect O&M expenses incurred prior to January 1, 2027, because those costs are not included for recovery in this application. Recorded O&M expenses incurred during 2023-2026 are presented in Chapter 3.

(b) Cost, benefit, and financial information presented herein reflect the information available to PG&E as of August 2026.

(c) Recorded capital expenditures are associated with assets that are not yet in service.

Table 1-2, below, summarizes PG&E's expected 2028-2039 benefits from the Transformation, which are further discussed in Chapter 3.

TABLE 1-2
SUMMARY OF FORECAST BENEFITS BY CAPITAL AND EXPENSE
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Description	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Capital	$1.8	$17.4	$159.8	$518.6	$811.7	$865.7	$876.0	$634.7	$545.4	$556.4	$567.7	$569.2	$6,124.4
2	Expense	2.5	25.5	101.3	275.2	417.2	455.2	466.8	330.0	286.1	292.3	301.6	291.5	3,245.1
3	Total Benefits	$4.3	$42.9	$261.1	$793.7	$1,229.0	$1,320.9	$1,342.9	$964.7	$831.5	$848.7	$869.2	$860.7	$9,369.5

9. Alignment With the Commission's and PG&E's Environmental and Social Justice Policy

The ERP and GIS Transformation supports the CPUC's and PG&E's Environmental and Social Justice (ESJ) objectives by improving the information, visibility, coordination, and operational capabilities used to plan and execute work across PG&E's service territory.

Today, limitations in legacy systems make it challenging to integrate geographic information, asset condition, risk data, work history, and cost

information when making operational decisions. The ERP and GIS Transformation will establish a more connected technology environment allowing PG&E to better understand asset locations, the customers and communities they serve, the risks present in those areas, and the resources required to address those risks.

The ArcGIS Platform provides insight into asset locations, network connectivity, and proximity to environmental, wildfire, and community risk factors. S/4HANA complements these capabilities by integrating asset condition, maintenance history, work planning, workforce management, materials and financial information. Together, these platforms support risk-informed planning, operational decision-making, and resource deployment.

By improving coordination across planning, engineering, field operations, supply chain, and asset management functions, the Transformation will help PG&E execute work more efficiently and effectively across all communities, including high-risk and disadvantaged communities. Improved access to asset, risks, work, and resource information supports informed decision-making and strengthens PG&E's ability to safely and reliably deliver service while advancing the Company's and the CPUC's shared ESJ objectives.

10. Organization of Testimony

The remainder of this testimony describes the scope of PG&E's ERP and GIS Transformation, how PG&E plans to implement the Transformation, the associated costs and customer benefits, and the proposed ratemaking treatment.

Chapter 2 defines the scope of the Transformation and the implementation approach. It describes the current systems and business processes, the limitations of the existing platforms, the capabilities PG&E proposes to implement across workstreams, and how SAP/S4 HANA and Esri ArcGIS Platform will support PG&E's future-state operations. This chapter also describes PG&E's implementation plan. It explains how the Company evaluated deployment options and selected a sequenced, release-based approach that intends to realize value early while delivering capabilities incrementally. This chapter outlines the scope and timing of each release and which SAP S/4HANA and Esri ArcGIS Platform will be deployed across the enterprise.

Chapter 3 presents the forecast costs, forecast benefits, and cost-benefit analysis for the ERP and GIS Transformation. It describes PG&E's recorded and forecast capital expenditures to implement the ERP and GIS Transformation. This chapter also describes over $9 billion in benefits expected to be realized from 2028 through 2039 and explains the methodology used to estimate those benefits and calculate the benefit-to-cost ratio.

Chapter 4 presents the Results of Operations associated with this request, including PG&E's November 3, 2026, through December 31, 2030, revenue requirement of approximately $874 million.

Chapter 5 describes PG&E's proposed approach for recovering the costs of this Transformation in customer rates.

11. Conclusion – The Prudent Path Forward

PG&E must replace its aging ERP and GIS platforms. The Company's existing systems are approaching end of useful life and sit at the center of how PG&E plans, executes, tracks, and accounts for work across its electric and gas operations. Continued reliance on these legacy platforms would expose PG&E to increasing operational, cybersecurity, compatibility, and maintenance risks while making it progressively more difficult and costly to support critical business functions. As a result, replacement of the legacy ERP and GIS platforms is not optional. The principal question before the Commission is therefore not whether these platforms should be replaced, but rather which replacement approach will best serve customers over the long-term. The Company's existing ERP and GIS platforms are more than 30 years old, will be out-of-support, and must be replaced. The Transformation represents the most prudent path forward because it addresses unavoidable technology risks while simultaneously improving how PG&E plans, executes, manages, and accounts for work across the enterprise, providing long-term customer value.

A technical upgrade would require substantial customer investment while largely preserving existing inefficiencies that can create delays, rework, and other situations that impact overall customer experience. The Transformation instead uses the required technology replacement to deliver lasting operational improvements and forecast benefits that exceed program costs. By modernizing two foundational enterprise platforms in a coordinated manner, PG&E will improve reliability, safety, operational effectiveness, data quality, financial

management, and customer affordability while positioning the Company to take advantage of future technology advancements and meet future operational and regulatory challenges.

For these reasons, PG&E submits that the ERP and GIS Transformation is a necessary, prudent, and cost-effective investment that is in the long-term interests of customers and should be approved by the Commission.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 2

PROPOSED TRANSFORMATION AND IMPLEMENTATION APPROACH

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A. Introduction

As described in Chapter 1, Pacific Gas and Electric Company (PG&E or the Company) must transition from its existing Enterprise Resource Planning (ERP) and Geographic Information System (GIS) platforms as those systems approach the end of their vendor supported lifecycles. SAP will end mainstream maintenance for PG&E's current ERP platform in 2027, and Esri will end support for utilities for ArcGIS Desktop, including ArcMap, the Geometric Network data model, and related tools PG&E currently operates, in February 2028. Given the central role these systems play in PG&E's operations, continuing to rely on aging and ultimately unsupported platforms is not a reasonable long-term option.

ERP and GIS are foundational, mission-critical systems that support PG&E's safe, reliable, and affordable utility operations. The six primary operational workstreams in scope for this Application are Work and Asset Management (WAM), Supply Chain, Finance, Human Resources (HR), Integrated Planning, and Enterprise Health and Safety (EH&S), along with the asset, geographic, and operational data that support these operational workstreams. thousands of PG&E coworkers and contractors rely on these platforms to plan and execute work, manage assets, procure materials and services, deploy the workforce, track and account for costs, and meet safety and regulatory obligations. Given their essential role, these processes and platforms must remain secure, fully supported, and capable of meeting PG&E's growing operational and regulatory requirements.

The ERP system serves as the transactional backbone of the business, supporting roughly 70 billion records in legacy SAP across an approximately 6-terabyte database that grows by about 12 percent each year. The system supports more than 50,000 total users, with approximately 30,000 unique users logged in monthly. Because SAP underpins nearly every operating process, it must be accessible with minimal downtime, and any outage would have broad operational impacts. Annual SAP transaction volumes span nearly every major

business function: WAM manages approximately 9.9 million assets, about 650,000 work orders, and roughly 420,000 new assets added annually. Supply Chain processes approximately 265,000 purchase orders and about 905,000 goods receipts annually. Finance maintains approximately 8.8 million financial documents and captures about 123 million cost objects annually. HR and EH&S maintain and process information for more than 50,000 employees and contractors, along with roughly 700,000 training records, about 100,000 incident records, and approximately 270,000 corrective actions annually.

Similarly, GIS supports critical geospatial data, field operations and risk-informed decision-making by providing location-based visibility into assets, infrastructure, and network connectivity across PG&E's service territory. The GIS platform serves as the geospatial backbone of PG&E's operations, providing the authoritative system for electric and gas network assets across the Company's service territory. PG&E manages geospatial data of 140 million geospatial assets across Electric Distribution (ED), Electric Transmission (ET), Gas Distribution (GD), Gas Transmission (GT), Landbase,[1] Fiber/Telecommunications, and Power Generation domains. Additionally, PG&E maintains approximately 110 million annual map, feature, and spatial transactions within GIS each year. Because GIS underpins critical operational functions ranging from work execution and emergency response to wildfire mitigation and regulatory compliance, PG&E must maintain high system availability, and any outage could significantly impact field operations, customer restoration efforts, and operational decision-making. GIS data, paired with specific viewer systems, provides critical geospatial visibility into outages, damaged infrastructure, crew locations, and restoration activities during major operational events (e.g., storm response, public safety power shutoff, earthquake response). ERP and GIS are also part of a large and complex enterprise technology ecosystem, currently connecting more than 650 applications, which also need to be addressed as part of the ERP and GIS Transformation (Transformation or Program).

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[1] Landbase is the enterprise-wide spatial reference layer that provides geographic context, including roads, boundaries, and terrain, upon which all asset and network data is overlaid.

The Transformation creates a significant opportunity to upgrade PG&E's business processes, not simply modernize its technology. By leveraging ERP system capabilities, the Transformation will change how employees perform day-to-day business operations in ways that are not possible with the current software. These changes will support PG&E's goals to reduce costs and improve grid resilience to wildfire ignitions, extreme weather, and other threats; and prepare the grid for distributed energy resources, electric vehicles, load growth, and California's decarbonization objectives. Transforming these business processes now provides an opportunity to deliver meaningful, incremental customer benefits beyond those available through a technical upgrade of ERP and GIS alone. PG&E further explains the substantial benefits of the Transformation in Chapter 3.

Chapter 1 explains why replacing PG&E's existing ERP and GIS is the most prudent path for customers. Chapter 2 defines the scope of the Transformation, and the approach PG&E will use to implement it. It first discusses the evolution of PG&E's current ERP and GIS environments and the operational and technical limitations that informed the proposed scope. Next, it describes the options evaluated, the transformation scope selected by PG&E, and the capabilities to be delivered. It then describes the technical investments and enabling functions required to support the Transformation, followed by PG&E's phased implementation strategy, coordinated ERP and GIS releases, implementation schedule, and delivery lifecycle applied to each release.

PG&E has organized the investment required to implement the Transformation into six cost groups: Solution, Technology Infrastructure and Software, Technology Enablement, Application Remediation, Program Management Office (PMO), and Business Enablement. These cost groups reflect how the Transformation will be planned, managed, and delivered across the enterprise. Chapter 3 presents the forecast costs and expected customer benefits associated with each cost group.

The witnesses sponsoring the sections of this chapter are identified in Table 2-1.

TABLE 2-1
CHAPTER 2 WITNESS SPONSORSHIP

Line No.	Witness	Sections Sponsored
1	Annabelle Louie, Raj Basuta, James Kim	A, C, D, I
2	Annabelle Louie and Raj Basuta	B.3, E.1, E.7, E.8
3	Annabelle Louie	B.1, E.2, E.3.a-f, E.3.h
4	Raj Basuta	B.2, E.3.i-j, H.3
5	James Kim	E.3.g, E.4, E.5, E.6, F, G, H.1, H.2, H.4, H.5

B. History and Current state of ERP and GIS

PG&E's ERP and GIS platforms have evolved significantly over the past three decades and are the product of incremental development to meet changing operational, regulatory, safety, and technology requirements. That history explains why the existing environment includes extensive customization, numerous integrations and supporting applications, substantial volumes of data, and complex processes that cannot be addressed through a technical upgrade and why this Transformation is the most prudent path forward.

1. History of ERP at PG&E

PG&E implemented SAP as its ERP system in the 1990s. At the time, PG&E used the system for financial functions and to replace multiple legacy accounting systems with a more integrated general ledger capable of supporting PG&E's growing business and regulatory reporting needs.

Over time, the ERP system evolved far beyond its original finance-focused role. Today, as mentioned above, ERP and related tools support WAM, Supply Chain, Finance, HR, Integrated Planning, and EH&S and are integral to daily utility operations across the Company. As PG&E's operational, regulatory, safety, and reporting needs grew, the Company expanded SAP functionality to meet them. Because earlier SAP versions lacked some required utility-specific capabilities, PG&E developed custom extensions, interfaces, workflows, reports, forms, and other features. While these customizations enabled the Company to meet evolving business needs, they also added complexity without broadly improving the core platform. Now totaling more than 82,000 customizations, PG&E must expend more effort to maintain integrations, test upgrades and patches, and

adopt newer capabilities. In some cases, the customizations also prevented PG&E from using new vendor-delivered functionality and introduced security risks since custom code is more challenging to review, patch, and support over time.

Examples of these customizations span the ERP and GIS operational workstreams. In WAM, PG&E added fields, tables, screens, business logic, and workflows to estimate and design electric and gas facilities, connect new customers and grid resources, and manage work orders from initiation through closure. Finance customizations support regulatory reporting, capital project accounting, cost allocation, budgeting interfaces, invoice workflows, tax logic, and settlement processes. HR-related features address union and craft workforce rules and time entry, labor costing, safety qualifications, certification tracking, and workforce scheduling integration.

ERP customizations were initially needed to address product gaps and evolving requirements. Modern SAP solutions now offer capabilities unavailable when many of these custom features were developed. Moving to S/4 High Performance Analytics Appliance (S/4HANA) creates an opportunity to adopt standard functionality, reduce customizations, and establish a cleaner core platform that is easier to maintain and upgrade.

2. History of GIS at PG&E

PG&E first adopted Esri-based GIS tools in the 1990s, initially using them primarily for mapping and visualization purposes. Early GIS deployments supplemented engineering drawings and Computer-Aided Design (CAD) tools rather than operating as a comprehensive enterprise system of record. As operational needs expanded, different portions of the organization adopted GIS to provide greater visibility into assets and utility operations. That evolution produced multiple GIS environments with differing data models, applications, and workflows.

Following the San Bruno pipeline accident in 2010, PG&E significantly expanded the use of GIS. This included support for enhanced data integrity through material traceability requirements. Gas Transmission GIS became an important platform for linking material specifications and manufacturer information to the installation location of utility infrastructure, supporting documentation and equipment-maintenance history. Gas Transmission GIS

also became an important operational tool connecting the verified geospatial locations of gas transmission assets, established through field pipeline centerline surveys, with as-built records and testing records developed through extensive maximum allowable operating pressure data validation efforts.

Between 2013 and 2015, PG&E also undertook a significant effort to establish enterprise GIS platforms for gas, electric, and landbase and transitioned many users from AutoCAD-based workflows to the Esri ArcGIS Desktop built on Esri's Geometric Network data model. The available Esri tools were general-purpose technologies rather than platforms designed around PG&E's utility requirements. PG&E therefore implemented customizations and third-party tools to support capabilities such as network tracing, outage analysis, data-quality validation, and other operational functions.

After the 2017 and 2018 Northern California wildfires, Electric GIS similarly expanded from an asset mapping system into a critical platform for wildfire mitigation and emergency operations. PG&E enhanced electric asset and network data to support risk analysis, customer-to-grid relationships, circuit-based or facility-based investment planning, undergrounding, and patrols and inspections. GIS also expanded to support Public Safety Power Shutoffs (PSPS), a critical safety measure that temporarily shuts off power during dangerous wildfire conditions to help prevent catastrophic wildfires. The enhanced GIS capabilities allow PG&E to accurately identify affected facilities, customers, and critical services and guide de-energization, notifications, and restoration activities. Since 2021, GIS has also supported Enhanced Powerline Safety Settings (EPSS) by identifying protected circuit segments and aiding outage response, patrols, and restoration.

Today, PG&E operates a large and highly integrated GIS environment, supporting tens of thousands of users, dozens of applications, and hundreds of integrations across gas and electric operations, engineering, planning, wildfire mitigation, PSPS activation, vegetation management, power generation, telecommunications, and other functions. GIS is therefore no longer simply a mapping tool. It is foundational to how PG&E understands

its asset network, plans and performs work, manages operational risks, and supports safe and reliable utility service.

The integrated use of GIS has increased the complexity of the day-to-day utility operating environment. The multiple GIS environments and data models, custom schema,[2] third-party tools, and complex integrations necessary to achieve the advanced current state also make the existing GIS landscape more difficult and costly to sustain, limit scalability, and increase the effort required to implement ongoing enhancements from Esri.

3. Current State Limitations of ERP and GIS

PG&E's existing ERP and GIS environments continue to support current operations, but several factors limit the Company's ability to sustain and modernize them efficiently. These include approaching vendor end-of-support deadlines; growing data volume and complexity; manual quality controls; slow updates across multiple systems; fragmented network models; delayed field visibility; accumulated customizations and technical debt; and increasingly complex integrations among ERP, GIS, and surrounding applications. Together, these constraints can increase costs and cause delays for customers by slowing the data updates and processing required for customer-facing operations.

a. Vendor End-of-Support

As described above, SAP mainstream maintenance concludes in 2027, extended support is available for purchase only through 2030, and Esri support for the existing ArcGIS Desktop environment ends in February 2028. These milestones make significant platform changes unavoidable. Once the relevant vendor support periods end, PG&E will no longer receive routine security patches, platform-defect remediation, compatibility updates, and other ongoing support necessary to prudently sustain mission-critical enterprise technology. While temporary mitigation measures may help manage risk during the transition period, they do not eliminate the need for the proposed platform modernization.

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[2] Custom GIS Schema refers to the user-defined blueprint that specifies the structure, fields, data types, relationships and rules for GIS datasets.

b. Customization and Technical Debt

PG&E's technology environment includes hundreds of integrations across ERP, GIS, and other enterprise applications. As additional applications, analytics tools, portals, and other digital capabilities have been introduced, the technology environment has become increasingly interconnected and complex.

This complexity contributes to technical debt, which increases the effort to maintain, upgrade and enhance systems over time. As technical debt accumulates, future changes require additional evaluation, testing, and remediation due to customizations, integrations, workarounds, and legacy dependencies. This increases ongoing support costs and can limit or delay adoption of new vendor capabilities and functionality. Similar challenges exist within the current SAP and Esri environments, where custom functionality and extensions must be reviewed and validated whenever software is updated. For example, within ERP, PG&E maintains a large and highly customized and integrated table of tasks that are applied to each work order and that must be completed by various coworkers (e.g., Estimators, Field Engineers, Mapping Technicians). Automation has been applied to enable application of specific tasks to different types of work orders where they are needed. This entire task list, the rules of how they are applied, the circumstantial exceptions to those rules, and how or whether the completion of a given task on a work order triggers the next task to become active, are all customizations. Although these customizations are highly beneficial in tracking and managing work order progress, they must be regularly tested and maintained following upgrades or system enhancements to confirm they continue to function as intended. Pivoting future state business processes to a more standard approach to tracking and progressing work orders, such as through work order operations that are available natively in SAP, will significantly reduce reliance on these customized task tables and the associated testing and maintenance requirements.

The Transformation is designed to reduce technical debt and prevent its future accumulation. PG&E will adopt an out-of-the-box

approach that prioritizes native capabilities from SAP S/4HANA and Esri ArcGIS Platform. Custom development will be limited to approved requirements that cannot be met through standard functionality or process redesign, and unnecessary third-party applications and integrations will be retired where equivalent capabilities exist within the future state platforms.

Architectural governance, standardized design principles, and disciplined change management processes – all components of the Transformation – will further enable future business needs to be addressed through configuration rather than customization whenever practical. By leveraging industry-standard capabilities and reducing system complexity, PG&E will simplify future upgrades, improve maintainability, and minimize the risk of future technical debt accumulation.

c. Broader Application and Integration Complexity

The current ERP and GIS environments do not operate in isolation. They are integrated with a broad landscape of over 650 applications supporting field work, planning, engineering, analytics, finance, workforce functions, regulatory requirements, and other utility operations. Changes to ERP and GIS will affect systems outside the core platforms. Integration logic, data mappings, transaction flows, roles, reports, and application dependencies will need to change as future state functionality is introduced. Additionally, as integrated applications continue to receive updates and change, software companies often limit the backwards compatibility[3] of their tools, and changes to schema result in broken integrations and workflows. This means they would either stop working with PG&E's ERP and GIS systems, or PG&E would have to stop updating the integrated applications, which would lead to increased operational, security, and functionality risks for those tools as well.

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3 Backwards Compatibility: The ability of software or technology to continue to work with an older legacy system.

As an example, all coworkers who use Esri ArcGIS Desktop to perform mapping tasks access it through Citrix, a tool that allows a user to access a remote desktop with the necessary applications already installed and available for use. PG&E's existing ArcGIS Desktop environment is certified for compatibility only with an older version of Citrix that is no longer supported by the vendor. PG&E therefore upgraded Citrix to maintain vendor support and security updates, despite the lack of certified compatibility with ArcGIS Desktop. Although the applications continued to operate together, this decision illustrates the growing risk of maintaining integrations between aging and supported technologies. PG&E must increasingly choose between retaining outdated software versions or accepting the compatibility risks associated with upgrading interconnected applications. Transitioning to supported ERP and GIS platforms will reduce these constraints and improve PG&E's ability to maintain and update its integrated application environment.

Therefore, PG&E evaluated the broader application landscape while defining the transformational scope, recognizing any decisions made about ERP and GIS impact their surrounding applications.

d. Data Complexity and Scalability Constraints

PG&E's operational growth, increasing regulatory requirements, and expanding asset base have significantly added to the increased volume, velocity, and complexity of data managed across ERP and GIS. While the current platforms continue to support operations, they were designed for an earlier operating environment and are increasingly challenged by today's scale and analytical requirements.

As data volumes continue to grow, PG&E experiences longer processing times for reporting, planning, and analytics activities and must rely on additional reconciliation and administrative effort to maintain consistency across systems. In addition, the current on-prem[4] infrastructure requires capacity expansion through additional hardware

[4] On-Prem (On- Premises) refers to software, servers, and IT infrastructure that are installed and operated within an organization's own facilities rather than being hosted in the cloud.

and data center resources as demand increases. This approach can increase cost, implementation timelines, and operational complexity compared with modern cloud-based platforms that provide more flexible and scalable computing resources.

C. Development and Evaluation of the Proposed Scope

Beginning in 2023, PG&E undertook a structured process to determine how to best address the approaching ERP and GIS vendor end-of-support deadlines and the broader limitations of the existing environment.

The evaluation, among other things, focused on five key questions:

- Can PG&E reasonably extend the life of its existing ERP and GIS platforms?
- Should PG&E remain with SAP and Esri or select alternative vendors?
- What applications and capabilities are needed in the future environment?
- Is a technical upgrade sufficient, or is a broader transformation required?
- What scope provides the most prudent long-term outcome for customers?

The following sections address these questions and explain the conclusions that informed PG&E's recommended approach.

1. Phase Zero and Enterprise Design Planning

PG&E began Phase Zero planning in 2023 to establish the initial direction of the ERP and GIS Transformation. Phase Zero evaluated platform options, established high-level program scope, assessed business and technical requirements, and developed an initial business case.

PG&E’s evaluation was intended not only to address vendor end-of-support deadlines but also to determine whether customers would be better served by a limited technical replacement now followed by future modernization efforts, or a single coordinated transformation designed to avoid duplicative future costs.

Through the Phase Zero evaluation effort, and as discussed in more detail below in Section C.3, PG&E decided to remain on the SAP and Esri platforms rather than transition to different technology vendors, as these technologies are already deemed industry-proven solutions. Phase Zero established that addressing vendor end-of-support alone would not resolve

the underlying process, data, customization, and technology limitations identified in PG&E's current environment.

Phase Zero established several objectives for subsequent planning, including:

- Aligned business, operational, and technical requirements across ERP and GIS;
- Defined the appropriate scope for both platforms;
- Confirmed that the target solution could deliver the capabilities necessary to operate PG&E's business;
- Established a high-level deployment plan and business case; and
- Balanced the required investment with customer and operational benefits.

Following Phase Zero, PG&E ran a competitive Request for Proposal (RFP) in 2024 to select a Systems Integrator (SI) to support the implementation of the ERP and GIS Transformation. PG&E used a disciplined, multi-phase sourcing and negotiation process to select the SI. In parallel, the ERP and GIS software negotiation process followed a similarly disciplined approach. Through structured RFP development, stakeholder and subject matter expert (SME) evaluations, proposal reviews, best-and-final-offer activities, and rigorous contract negotiations, PG&E achieved scope clarity, commercial protection, and competitive pricing throughout the procurement activities. This process resulted in contract agreements that met the needs of both PG&E and its vendors, while also being mindful of customer affordability.

PG&E then conducted an Enterprise Design phase in 2025 to validate and further develop the direction established through Phase Zero. Supported by their SI, PG&E conducted:

- Capability Fit Assessment workshops, which evaluated how PG&E's business needs align with standard SAP S/4HANA and Esri ArcGIS Platform functionality;
- Delivery and Deployment workshops, which defined how ERP and GIS capabilities would be organized and sequenced into releases;
- Enterprise Data Model workshops, which defined how data would be structured and governed across ERP and GIS; and

- Value Case workshops, which refined programmatic cost and benefit estimates.

During this time, approximately 50 key design decisions were reviewed by the program. These decisions and activities evaluated how PG&E's requirements aligned with standard SAP S/4HANA and Esri ArcGIS Platform capabilities, identified process and technology gaps, established foundational data requirements, informed the release structure described later in this chapter, and refined the program cost and benefit estimates described in Chapter 3.

2. Cross-Functional Governance and Program Structure

PG&E formed dedicated cross-functional teams to make scope decisions that addressed operational, regulatory, financial, organizational, and technology requirements. Representatives from Operations, Engineering, Finance, Supply Chain, HR, Information Technology (IT), and other affected areas contributed their expertise. Business process owners identified current state requirements, pain points, future state process needs, and operational constraints. IT and architecture teams assessed platform lifecycle, security, and technical requirements, while finance and regulatory participants evaluated costs and regulatory alignment. The teams also considered rollout and adoption needs, including workforce, training, communications, and change impacts.

3. Vendor Selection

PG&E also considered whether to transition to new technology vendors or remain on the existing SAP and Esri platforms. PG&E concluded that SAP and Esri remain the industry standard platforms for electric and gas utilities, and that transitioning to SAP S/4HANA and Esri ArcGIS Platform provides the most reliable, supportable, and adaptable foundation available. Moving to entirely new vendors would introduce unnecessary execution risk, increase costs, and require rebuilding decades of institutional knowledge without delivering commensurate customer benefit.

4. Application Inventory

Because ERP and GIS are connected to a broad set of supporting systems, PG&E conducted a comprehensive inventory of its technology

landscape affected by the Transformation. PG&E evaluated both existing and new applications based on factors including business purpose, technical health, alignment with future operational needs, security and scalability, and total cost of ownership.

Applications fall into one of four principal categories:

- New – new applications to be introduced as part of the ERP and GIS Transformation;
- Keep – applications that continue to provide required value and align with the future state architecture;
- Rearchitect – applications that remain necessary but must be modernized or re-platformed to operate effectively in the future state environment; or
- Retire – applications that may be redundant, obsolete, or no longer cost-effective because their functionality can be eliminated or replaced.

TABLE 2-2
ERP AND GIS APPLICATION INVENTORY AS OF ENTERPRISE DESIGN (NOVEMBER 2025)

Line No.	Inventory Disposition	ERP	GIS	Total
1	New	59	9	68
2	Keep	213	55	268
3	Rearchitect	85	37	122
4	Retire	251	22	273
5	Total	–	–	731

At the time of Enterprise Design Completion, PG&E had reviewed 731 applications, including 68 new applications and 663 existing applications assigned Keep, Rearchitect, or Retire dispositions. This inventory serves two purposes. First, it helps define the boundary of the future state solution by identifying what functionality PG&E will retain, replace, introduce, or retire. Second, it identifies the surrounding application work that must occur as ERP and GIS are deployed. The Application Remediation[5] cost group addresses the existing applications that require

[5] Of the 731 applications in scope, 68 new applications will be implemented as part of the Transformation and because they do not require remediation, are excluded from the Application Remediation cost forecast discussed in Chapter 3, Section B.6.d.

modification, integration, testing, transition, re-architecture, or retirement to support the future-state ERP and GIS environment. Please note the inventory and required remediation activities will continue to be refined as the Transformation progresses through its releases.

D. Options Evaluated

The options PG&E evaluated to address the impending vendor end-of-support for its ERP and GIS platforms included: (1) Do Nothing, (2) Technical Upgrade, and (3) Transformation.

PG&E compared the forecast costs, benefits, and risks associated with each option using information developed through Enterprise Design, technical assessments, implementation planning, vendor inputs, and the cost methodologies described in Chapter 3.

The evaluation also considered risks that are not fully reflected in the quantified results. For example, the Do Nothing option does not fully capture the future costs and operational risks associated with maintaining unsupported platforms. As a result, its forecast should be interpreted as the cost of temporarily sustaining the current environment, not as the full lifecycle cost of a long-term solution.

1. Do Nothing

Under the Do Nothing option, PG&E would continue operating the existing ERP and GIS environments through available extended-support arrangements, targeted remediation, and incremental fixes.

The principal limitations of this option is that it exposes PG&E to an unacceptable level of risk, it defers the necessary system upgrade and is therefore not a long-term solution, and it incurs substantial costs without creating quantified customer benefits. PG&E would continue to support aging infrastructure, custom code, specialized integrations, manual controls, fragmented applications, and existing operational workarounds while retaining current process inefficiencies and technical debt.

In addition, PG&E could face increasing costs for specialized labor, cybersecurity measures, compatibility remediation, infrastructure replacement, and emergency maintenance, as well as growing challenges by integrating and maintaining connected applications.

Accordingly, the Do Nothing option would defer, rather than avoid, the required platform transition while providing no quantified customer benefits. PG&E therefore concluded that this option is neither prudent nor viable as a long-term solution for customers.

2. Technical Upgrade

Forecast Cost: approximately $1.5 billion

Quantified Benefits: approximately $173 million

Under the Technical Upgrade option, PG&E would replace unsupported ERP and GIS technology with supported, cloud-based platforms while largely preserving existing business processes, organizational structures, applications, customizations, and operating models. This option would address vendor end-of-support concerns and modernize the underlying technology environment but would not pursue broader business transformation objectives.

Although narrower in scope than the proposed Transformation, the Technical Upgrade would still require a substantial portion of the foundational work necessary to establish modern ERP and GIS platforms. For ERP, PG&E would still need to migrate from SAP ERP Central Component (SAP ECC) to SAP S/4HANA and SAP RISE, remediate approximately 82,000 custom objects, modernize integrations, convert data, enhance cybersecurity capabilities, and complete extensive testing and deployment activities. For GIS, PG&E would still need to migrate to Esri's ArcGIS Platform and Utility Network, convert network data, modernize infrastructure, remediate applications and interfaces, and complete significant testing and deployment activities. Because ERP and GIS support hundreds of interconnected applications, integrations, reports, and business processes, substantial remediation, data conversion, testing, and deployment efforts would be required under either option.

As a result, the Technical Upgrade would still require approximately $1.5 billion of investment. Much of this cost reflects activities that are necessary regardless of whether PG&E pursues broader transformation, including platform replacement, cloud migration, cybersecurity modernization, integration remediation, application compatibility changes, data conversion, testing, deployment, and program management.

While the Technical Upgrade would restore vendor support, improve resiliency, and address technology obsolescence risks, it would largely preserve existing process variation, manual activities, organizational handoffs, application complexity, and technical debt. As a result, it would capture only a limited portion of the benefits available through broader modernization. Most of the operational benefits associated with the Transformation are driven by business process standardization, application remediation, workflow automation, improved data governance, and organizational changes that are outside the scope of the Technical Upgrade.

Accordingly, PG&E concluded that the Technical Upgrade would require customers to fund a substantial technology investment while leaving many of the underlying drivers of operational cost and complexity in place. Although it would address immediate platform-support requirements, it would likely require additional future investments to address the process, data, application, and organizational limitations that remain. PG&E therefore determined that the Technical Upgrade does not represent the most prudent long-term option for customers.[6]

3. Proposed Transformation (Selected Option)

Forecast Cost: approximately $2.9 billion

Quantified Benefits: approximately $9 billion

The proposed Transformation includes the technology modernization required under the Technical Upgrade and adds targeted improvements to business processes, data, applications, and operating models. In addition to transitioning to modern ERP and GIS platforms, PG&E would standardize and simplify selected business processes, reduce unnecessary customization and manual work, improve data quality and integration capabilities, rationalize applications, strengthen controls, and expand automation.[7]

The Transformation includes the foundational activities necessary to complete the transition from PG&E's aging ERP and GIS environments,

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6 See Chapter 3, WP 3-7 for forecast details.

7 See Chapter 3 and supporting workpapers for a detailed description of the forecast costs, quantified benefits, assumptions, methodologies, and supporting analyses underlying these estimates.

including cloud migration, cybersecurity modernization, integration remediation, data conversion, testing, deployment, and program management. It also includes the organizational, process, and data changes needed to fully utilize the capabilities of the new platforms and support long-term operational improvements.

PG&E forecasts approximately $9 billion in quantified customer benefits from the Transformation. These benefits are expected to result from improved process efficiency, greater automation, enhanced data quality and accessibility, reduced application complexity, and more effective use of modern ERP and GIS capabilities. In addition, the Transformation is expected to provide qualitative benefits such as improved data governance, stronger security and auditability, more consistent business processes, and increased organizational agility.

By combining the required technology transition with transformation activities, PG&E can address many of the operational limitations that contribute to cost and complexity today while reducing the likelihood of a separate future modernization effort. By implementing these changes as part of the required platform replacement, PG&E can avoid the need for a separate future modernization effort and reduce the likelihood of duplicative implementation costs and organizational disruption.

4. Summary of Options Analysis

PG&E evaluated a range of options, including maintaining the current environment, performing only the technology upgrades necessary to retain vendor support, and pursuing a broader transformation of business processes and technology capabilities. While each option addressed certain objectives, the Transformation provided the strongest overall balance of risk mitigation, operational improvement, and customer value.

The Transformation not only replaces aging ERP and GIS platforms but also captures the broader business benefits made possible by the modernization effort. By executing process, data, application, and organizational improvements concurrently with the required technology transition, PG&E can leverage a single implementation to address both technology obsolescence and longstanding operational inefficiencies.

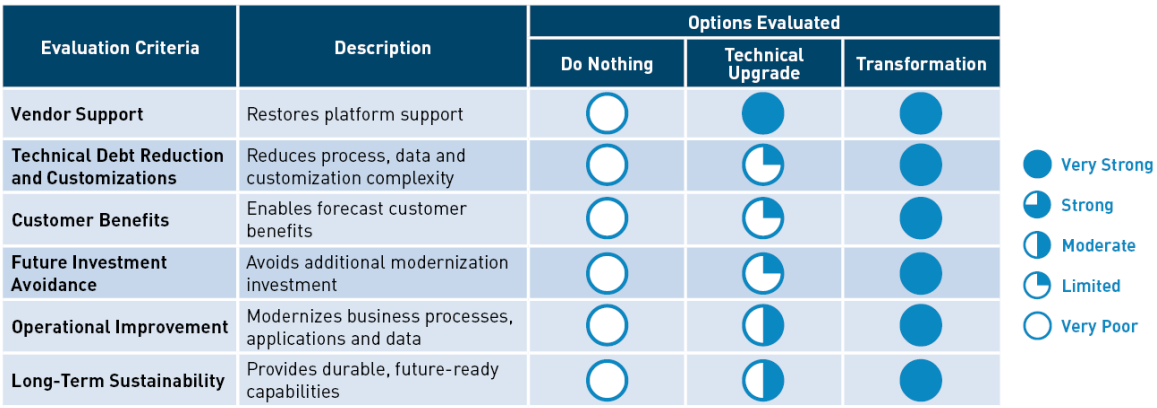
Accordingly, PG&E determined that the Transformation represents the most prudent long-term option for customers. Although it requires greater upfront investment than the other options, it is expected to deliver substantially greater customer benefits, reduce long-term operating complexity, and establish a more sustainable foundation for utility operations.

Table 2-3 summarizes the financial results, principal tradeoffs, and PG&E's determination for each option.

TABLE 2-3
SUMMARY OF OPTIONS ANALYSIS
MILLIONS OF DOLLARS; FORECAST COSTS AND BENEFITS ARE NOMINAL

Line No.	Option	Forecast Cost	Quantified Benefits	Principal Risk and Customer-Value Tradeoff	PG&E Determination
1	Do Nothing	–	–	Temporarily sustains the current environment but does not provide a long-term solution. Defers the required platform transition, and the forecast does not quantify all future costs and risks associated with declining vendor support.	Neither prudent nor viable as a long-term solution.
2	Technical Upgrade	$1,529.5	$172.9	Establishes supported platforms but largely preserves existing processes, applications, customizations, handoffs, and operating complexity. Delivers limited benefits and could require additional future investment.	Not selected because it does not provide prudent and cost-effective long-term customer value.
3	Transformation	$2,910.7	$9,369.5	Requires the largest investment and carries implementation risks, but addresses the required technology transition, drives business improvements, and enables a future-ready platform	Selected as the most prudent and cost-effective long-term option.

FIGURE 2-1
QUALITATIVE COMPARISON OF OPTIONS



E. Transformation (Scope and Future State)

1. Scope Overview and Approach

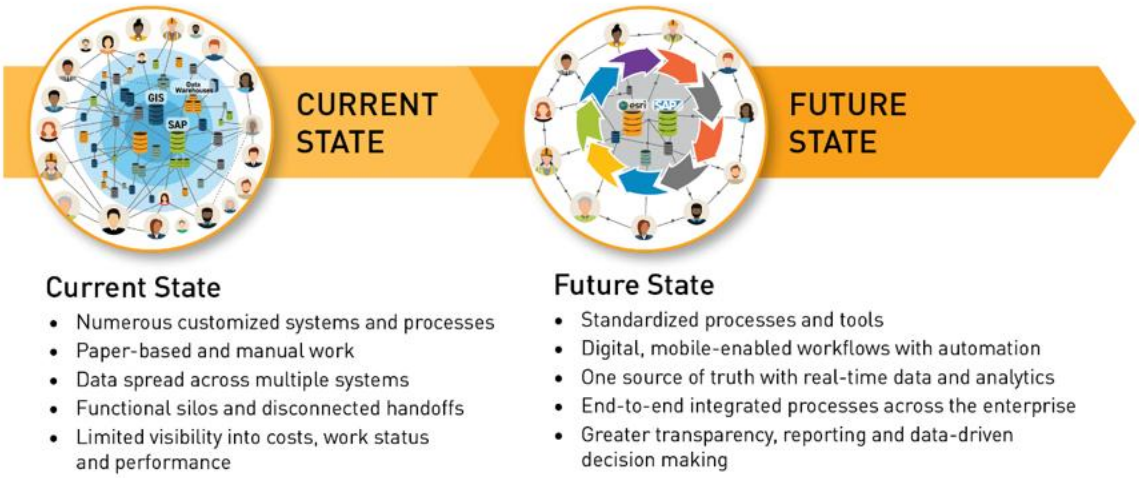
PG&E's Transformation modernizes both its ERP and GIS platforms in a coordinated effort, replacing aging technology with industry-standard, cloud-based solutions while redesigning the business processes that depend on them. The ERP Transformation transitions PG&E from SAP ECC to SAP S/4HANA, while the GIS Transformation transitions PG&E from Esri ArcGIS Desktop and the Geometric Network data model to Esri ArcGIS Platform and Utility Network data model.

The scope described in this chapter is organized around six principal cost groups: Solution, Technology Infrastructure and Software, Technology Enablement, Application Remediation, Program Management Office, and Business Enablement.

- Solution includes the business processes, functional capabilities, configuration, development, data, and integrations necessary to deliver the future state ERP and GIS environment.
- Technology Infrastructure and Software includes the software licenses, cloud subscriptions, hosting services, hardware, and supporting technology components required to implement and operate the ERP and GIS systems.
- Technology Enablement includes Platform Architecture and Security and Controls and Compliance activities required to establish the technical, security, and control environment supporting the ERP and GIS Transformation.
- Application Remediation includes the activities required to modify, re-architect, integrate, test, transition, and retire existing applications affected by the ERP and GIS Transformation
- The Program Management Office provides program coordination, controls, governance support, and value management activities required to manage the Transformation.
- Business Enablement includes the organizational-readiness and operating-model activities required to prepare coworkers and leaders for the future state and support sustained adoption of the new processes and capabilities.

Figure 2-2 below describes key changes that will result from implementing the ERP and GIS Transformation.

FIGURE 2-2
KEY CHANGES FROM ERP AND GIS TRANSFORMATION



2. Benefits Associated with Transformation

Table 2-4 below summarizes the quantitative and qualitative benefits of the ERP and GIS Transformation. The quantitative benefits, Categories 1 through 6, are forecast to generate approximately $9.4 billion in benefits over the 2028 through 2039 forecast period. The benefit forecast and the methodology used to develop it are described in Chapter 3, Section C.

In addition to the quantified benefits presented in Table 2-4, the ERP and GIS Transformation are expected to deliver qualitative and foundational benefits that cannot be readily attributed to specific financial outcomes. These benefits result from replacing fragmented systems and manual processes with standardized, role-based workflows, a common data foundation, and modern cloud-based technologies. These improvements support more user-friendly and effective work execution, stronger security and auditability, and increase PG&E's ability to adapt to evolving business, operational, and regulatory requirements. The new digital foundation will improve agility and scalability through the use of a cloud environment. Although not independently quantified, these reinforce operational improvements reflected in the quantified benefit forecast and support the

safe, reliable, and affordable operations for PG&E's utility business. The qualitative and foundational benefits, categories 7 through 12 are described in the following table. Creating a clean core and standardizing data and processes also means that PG&E has an environment where future technological advances like Artificial Intelligence (AI) can be easily integrated to deliver more value for customers.

TABLE 2-4
BENEFIT SUMMARY

Line No.	Benefits Category	Description	Customer Impact	ERP (Millions of Dollars)	GIS (Millions of Dollars)	Total (Millions of Dollars)
Quantitative Benefits						
1	Asset Reliability and Work Execution Effectiveness	Improves how PG&E plans, designs, schedules, executes, documents, and manages utility work and assets by integrating work, resource, asset, location, network-connectivity, and geospatial information; improving access to reliable operational information; and reducing manual activities required to locate, validate, reconcile, and use that information throughout the asset lifecycle.	Safety, Reliability, Affordability	5,740.6	694.1	6,434.7
2	Supply Chain Optimization and Materials Availability	Improves how PG&E forecasts demand, procures materials and services, manages supplier relationships, administers contracts, maintains inventory, and operates warehouse facilities. ERP capabilities improve enterprise sourcing, procurement, inventory, and materials-management processes, while GIS modernization supports selected vendor and data-services efficiencies, including remote-sensing and data-storage costs.	Reliability, Affordability	2,156.2	48.0	2,204.2
3	Financial Discipline and Performance Management	Improves enterprise financial planning, forecasting, accounting, management, and reporting by providing more consistent financial information, improving visibility into costs and investments, and reducing manual analysis, reconciliation, budgeting, and reporting effort.	Affordability	41.0	–	41.0
4	Workforce Enablement and HR Process Improvement	Improves workforce planning, training and skills qualifications, attendance and time management, payroll administration, and employee administration through more standardized processes, integrated information, and reduced manual activities.	Safety, Affordability	24.8	–	24.8
5	Health, Safety and Compliance Improvement	Improves how PG&E manages safety documentation, inspections, investigations, corrective actions, and compliance records through more standardized processes, integrated information, and improved visibility and traceability.	Safety, Affordability	194.5	–	194.5
6	Overall Technology Modernization and Platform Simplification	Reduces application, infrastructure, integration, and data-management complexity and technical debt through platform modernization, application consolidation and retirement, reduced customization, modernized infrastructure, and more standardized and maintainable technology and data environments.	Reliability, Affordability	163.1	307.1	470.2
	Total Quantitative Benefits			8,320.3	1,049.2	9,369.5

TABLE 2-4
BENEFIT SUMMARY
(CONTINUED)

Line No.	Benefits Category	Description	Customer Impact	ERP (Millions of Dollars)	GIS (Millions of Dollars)	Total (Millions of Dollars)
Qualitative and Foundational Benefits						
7	User Experience	Improves user experience through more intuitive and standardized workflows and streamlined access to enterprise, asset, network, and geospatial information needed to perform work and make operational decisions.	Reliability	Benefits 7 through 12 represent qualitative and foundational benefits associated with establishing a modern, secure, and adaptable digital foundation across ERP, GIS, data, integration, and supporting technologies. These capabilities improve how employees access information, perform work, manage data and controls, and make enterprise and operational decisions, while providing greater flexibility to respond to evolving operational, regulatory, customer, and technology requirements.		
8	Enterprise Agility and Scalability	Establishes a modern, adaptable ERP, GIS, data, integration, and cloud-enabled technology foundation capable of supporting evolving operational, regulatory, security, and business requirements and future technology capabilities.	Reliability			
9	Security Controls and Auditability	Enhances security controls and auditability through modernized security capabilities, role-based access, improved transaction traceability, and more consistent controls across the modernized technology environment.	Safety			
10	Process Simplification	Simplifies business and operational processes through more consistent practices, reduced process variation and manual workarounds, and improved integration of information across business functions and technology platforms.	Reliability			
11	Improved Data Quality, Governance, and Transparency	Improves the quality, governance, consistency, and transparency of financial, operational, asset, network, and geospatial data through standardized data models and management practices, improved integration, and enhanced access to trusted information.	Reliability, Safety			
12	Integrated Enterprise Planning and Decision-Making	Improves planning and decision-making by integrating financial, work, workforce, materials, asset, network, and geospatial information to provide a more complete view of operational needs, priorities, resources, costs, and investments.	Reliability, Safety			

3. Solution

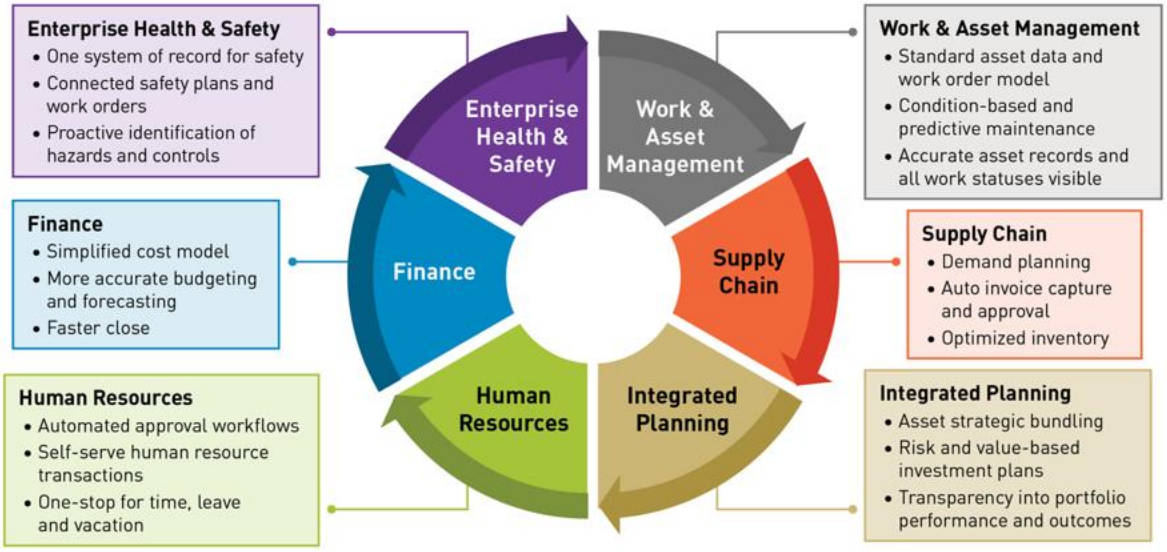
The Solution cost group includes the business process, functional, data, integration, configuration, and development scope required to implement the future state ERP and GIS capabilities described in this chapter. The Solution scope translates PG&E's business and operational requirements into configured SAP S/4HANA, and Esri ArcGIS Platform capabilities required to support day-to-day utility operations.

PG&E is applying a standard-first approach to Solution design. Where feasible, PG&E will use native SAP and Esri functionality and standard configuration, together with business process redesign, before pursuing custom development. This approach is intended to reduce customization, simplify the technology environment, and improve long-term maintainability and supportability.

The Solution group is organized around six operational workstreams (Sections a-f below): WAM, Supply Chain, Finance, HR, Integrated Planning, and EH&S, and the following technical workstreams for ERP and GIS (Sections g-j below).

The six operational workstreams are reflected in Figure 2-3 below.

FIGURE 2-3
FUTURE STATE SOLUTION OPERATIONAL WORKSTREAMS



a. Work and Asset Management

1) Current State

WAM serves as a central function for PG&E's daily operations. It encompasses activities such as asset inspection and maintenance, repair, replacement, relocation and construction of new infrastructure across electric, gas, and power generation systems. To execute WAM activities successfully, both ERP and GIS are required to work together in an integrated fashion.

Currently, WAM activities rely on legacy processes, paper workflows, and disconnected tools in both ERP and GIS. PG&E manages work and assets using SAP Plant Maintenance in ECC, which handles asset records, inspections, maintenance, work orders, and cost tracking. PG&E tracks asset location and other geospatial information in ArcGIS Desktop. Over decades, PG&E has extensively customized these systems as necessary to meet changing business and regulatory needs. As a result, the system requires manual workarounds, duplicate data entry, highly customized integrations between systems, and reconciliation when plans change. Coordinating schedules, materials, workforce, and costs often require shifting work order information between systems and spreadsheets. These solutions are operational but difficult to maintain as ECC and ArcGIS Desktop near end-of-support.

Similarly, PG&E's project management tools depend on custom setups and manual processes, requiring coordination across multiple platforms and spreadsheets. This slows updates and cost synchronization and limits real-time insight into project performance. Changes in scope, schedule, and resources can be slow to appear across systems, increasing reconciliation time.

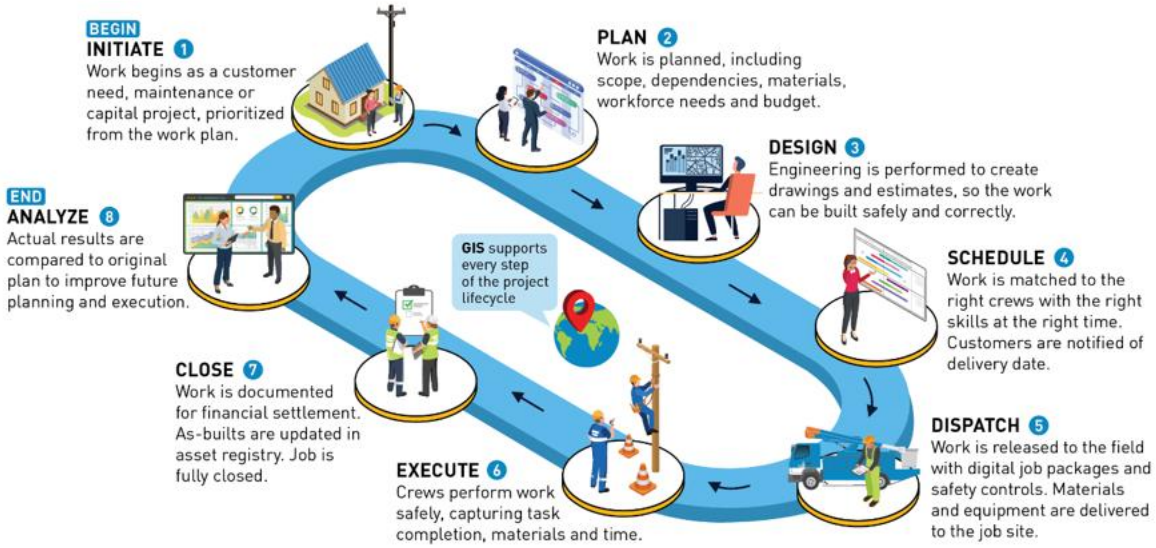
When executing work in the field, PG&E uses several scheduling and dispatch tools, including ECC, Salesforce, Ventyx Service Suite, ArcGIS Desktop and related GIS technology, Microsoft Outlook, and multiple PG&E-developed applications, depending on work type, resource type or department. Crew availability, qualifications, locations, clearances, and materials must

be coordinated across these systems, and field crews rely on paper processes to complete work documentation. Manual coordination and tracking of daily work completions limit real-time visibility into completion of customer commitments, compliance-driven deadlines, and costs, and in many cases, paperwork must first be returned from the field, reviewed, scanned and uploaded before it is visible in the systems.

2) Future State

PG&E aims to standardize and unify design, engineering, and construction processes and technologies to make it easier to build and maintain assets that function safely and effectively across the asset lifecycle. In the future environment, the information needed to perform work on utility assets, what work is needed, where assets are located, how they are connected, what materials are needed, what qualifications are required, and cost impacts, will be connected and available in one continuous workflow, supporting more efficient decision-making, improved coordination across teams, and reduced time to plan, execute, and close work.

FIGURE 2-4
END-TO-END WORK AND ASSET MANAGEMENT



Note: By connecting planning and execution into one continuous flow on integrated platforms, PG&E will deliver work faster and smarter end-to-end, providing greater value for customers.

WAM processes require both ERP and GIS to work together to optimize work and asset performance and cost effectiveness. PG&E's intention is to replace the patchwork of legacy on-prem solutions with connected, scalable, cloud-based ERP and GIS systems. WAM capabilities, together with key Finance and Supply Chain changes, span all three SAP S/4HANA releases outlined later in this chapter, enabling a comprehensive set of capabilities for users across Power Generation, Electric, and Gas Operations. Through the WAM transformation, PG&E will enable these improvements:

- **A consolidated asset registry**, enabled by SAP's Enterprise Asset Management (EAM), which provides a unified platform for managing assets, work orders, inspections, maintenance activities, and cost tracking. This supports preventative and corrective maintenance with spatial context provided through integration with Esri ArcGIS Platform capabilities, helping optimize work planning based on physical conditions, network connectivity, inspection results, and asset risk factors.

- **Standardized engineering and design tools** integrated with Esri ArcGIS Platform, described in the GIS Applications and Processes section below, that render designs to reflect field conditions, improve accuracy of materials lists and labor estimates, and reduce design work.
- **Structured portfolio and project management**, enabled by SAP's Enterprise Portfolio and Project Management (EPPM) and Project Systems (PS), integrated with EAM to manage capital projects such as infrastructure replacement, wildfire mitigation, grid hardening, and generation investments. EPPM and PS connects project structures, budgets, work orders, materials, labor, and costs, allowing PG&E to standardize project execution and reduce the need to assemble project status from multiple systems and spreadsheets.
- **Consolidated scheduling, dispatch, and mobile platform** using OverIT,[8] replacing paper-based processes. Standardizing work orders and related data in SAP allows complete work packages to be scheduled and dispatched via OverIT, with updates synchronized in near-real time. Furthermore, ArcGIS Platform enhances field service management with geospatial tools for near-real time mapping, asset tracking, and route optimization.
- **Faster work closure and updates to asset registry**, supported by the use of a mobile as-built tool. This tool will rely on GIS data to capture and update as-built asset data in near-real time, directly from project sites. A mobile as-built tool offers several key benefits for PG&E's WAM processes. By enabling the capture and update of as-built asset data directly from jobsites, it significantly reduces the risk of errors associated with manual data transfers and helps maintain current and accurate asset records. This streamlined process

[8] OverIT is a third-party software tool selected to be PG&E's enterprise platform for scheduling, dispatching, and mobile field operations.

improves communication between field and office teams, accelerates updates to PG&E's asset registry, and enhances operational efficiency, safety, and cost control. Integration with SAP and Esri further amplifies these advantages. The GIS integration provides spatial context, enabling crews to visualize asset locations and changes in near-real time. Together, the as-built data is not only accurate in SAP and Esri but also accessible for planning, maintenance, and regulatory compliance, supporting a unified source of truth for asset management.

Engineering design tools and field-based asset data capture are also part of the future state WAM workflow and depend on GIS capabilities described in the GIS Applications and Processes section below.

From a customer perspective, the combination of WAM capabilities enabled by ERP and GIS improve reliability and affordability by streamlining work execution, reducing truck rolls, and strengthening asset planning and performance. They also enhance customer safety – by combining asset condition, maintenance history, geospatial location and connectivity, environmental risk, and inspection data, PG&E can identify high-risk assets, prioritize mitigation work, target field inspections, accelerate repairs, and address emerging hazards before they lead to equipment-caused wildfires, major safety incidents, or customer service disruptions.

Support for the quantified benefit associated with these improvements are included in Chapter 3, and a benefit summary diagram provided in Appendix B.

b. Supply Chain Management

At PG&E, Supply Chain involves everything it takes to plan, source, deliver, and manage the billions of dollars in materials and services needed to operate and maintain the grid, getting equipment where it is needed, when it is needed, and making sure crew members have what they need to do their work safely and efficiently.

1) Current State

The Supply Chain tools and processes used today span multiple systems, involve significant manual effort, and due to current technology limitations, do not provide optimal visibility and coordination for PG&E's complex operations. For buying materials and services, PG&E uses custom ECC setups, interfaces, and workarounds to coordinate purchase orders, inventory levels, supplier confirmations, and payments, creating lag times in capturing materials from the work orders. If schedules shift, Supply Chain staff must manually match inventory data to guarantee materials arrive when needed. These necessary customizations have gradually made the system more complicated and harder to maintain while restricting flexibility and speed.

Material traceability standards have increased Supply Chain requirements around materials identification and management so that data involving materials can be trusted from purchase through installation; however, these processes currently include many manual steps.

Managing the contractor workforce presents similar challenges. PG&E depends on custom connections, interfaces, and manual steps to link contractor labor data with ECC work orders, projects, and financial details, and contractor time and costs are typically moved into ECC through paper processes and then manually reconciled afterwards, increasing processing costs and delaying vendor payment.

2) Future State

PG&E's Supply Chain transformation will replace its complex, customized processes and systems with an integrated platform leveraging SAP and SAP-compatible technologies, simplifying sourcing, purchasing, inventory, warehouse operations, vendor management, and payments. SAP S4/HANA will tightly connect Supply Chain processes with WAM and Finance, so that contracted services and materials go to the right jobs at the right time, at lower cost and with less manual effort and waste. Supply Chain is

implemented alongside WAM capabilities, as materials planning and inventory management are tightly integrated with work order creation and execution.

PG&E's contracting process will use Icertis, an SAP solution partner, for an integrated, end-to-end workflow from contract authoring through obligation management,[9] improving process efficiency and strengthening compliance with approved contract language. Procurement and sourcing will use SAP Ariba and S/4HANA, to streamline sourcing, purchasing, and vendor collaboration, connecting buyers and vendors on a single platform and integrating with SAP EAM and Icertis for end-to-end procurement operations. Contractor management will be supported by SAP Fieldglass, a cloud-based vendor management system used in both the Supply Chain process to assign work to external workforce, as well as in the HR process (discussed further below in this Chapter), to facilitate onboarding and offboarding of contingent labor. SAP Fieldglass connects with WAM and Finance so external workforce labor can be directly linked to work orders, schedules, and cost tracking in near-real time.

For materials management, PG&E will utilize SAP Extended Warehouse Management module to track and move inventory across its warehouses, yards, and laydown locations with near-real time visibility into stock and movements, eliminating the need for custom solutions and manual processes. As work orders are created or updated, inventory needs become visible sooner, supporting more accurate staging and timely delivery of materials to field crews. PG&E's Supply Chain transformation will enable these improvements:

- **Strategic sourcing**: Centralizes procurement data in SAP Ariba simplifies bidding and accelerates decisions.
- **Efficient external workforce management**: Systematic procurement enables more timely service planning, more

[9] Obligation management is the tracking and enforcing of all commitments in a contract.

accurate cost capture, standardization, and error reduction via tools like service entry sheets.

- **Rate compliance & contract leakage:**[10] Digitized rate cards[11] and contracts automate purchase orders, streamline rate matching, and minimize manual effort and contract leakage.
- **Self-service purchasing**: A single procurement portal with guided tools facilitates preferred supplier use and compliance.
- **Optimized materials management**: Linking purchasing and inventory to work plans improves delivery accuracy and timeliness.
- **Efficient vendor invoicing and payment**: Standardized packages simplify procurement, enhance invoice management, and strengthen financial tracking.

From a customer's perspective, these benefits are expected to improve materials availability, support timely work execution, and lower overall costs. Support for the quantified benefit associated with these improvements is included in Chapter 3, and a benefit summary diagram provided in Appendix B.

c. Finance

1) Current State

PG&E's Finance team depends on decades-old systems that were built when it was not possible to deliver real-time financial visibility across thousands of work orders, projects, and programs. PG&E uses several tools for financial planning, forecasting, and management reporting. Data is pulled from SAP ECC into various databases to track costs, and Finance teams must use custom data integrations, models, and manual reconciliation to match actuals, forecasts, and budgets.

ECC is PG&E's primary financial system for general ledger accounting, accounts payable and receivable, cost tracking, and

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10 Contract leakage occurs when the terms of an invoice are not fully enforced.

11 A digitized rate card is an electronic pricing document or schedule that sets pre-approved rates for services, roles, or resources.

regulatory reporting. While ECC serves as the official record, it has become increasingly customized and complex over time, forcing manual reconciliation across different modules. Because ECC data is often combined from multiple sources, PG&E's Finance team must double-check figures, manage multiple forecast versions, and resolve discrepancies between reports and the system of record to keep plans consistent with operational and financial outcomes.

For fixed asset accounting and tax purposes, PG&E uses PowerPlan alongside SAP ECC to address utility-specific requirements. PowerPlan manages complex functions like asset depreciation, tax calculations, retirements, and regulatory treatments that extend beyond ECC's capabilities. Since PowerPlan operates outside ECC, asset and cost information is exchanged through custom integrations and reconciliations. In practice, asset additions and other data flow from ECC projects and work orders into PowerPlan; depreciation, retirements, and tax adjustments are computed in PowerPlan and sent back to ECC for posting and reporting.

The current processes require significant manual effort, interface upkeep, and careful management of timing differences between systems to enable financial accuracy and regulatory compliance. Additionally, as PG&E faces increasing demands to maintain aging infrastructure, expand grid capacity, and respond to unexpected events, the constraints of the current financial system will not be sufficient to support the growing needs.

2) Future State

A core aspect of this Finance transformation involves simplifying the Company's cost model with the introduction of Work Breakdown Structure (WBS) for tracking costs, budgets, and progress at multiple levels. The WBS approach breaks projects into more manageable components, allowing for more accurate allocation of expenses, better alignment of costs with operational activities, and greater transparency in financial performance throughout departments and work orders. This structure promotes consistent,

transparent cost handling, simplifies reporting, and streamlines reconciliation, ultimately strengthening financial control and supporting more effective decisions.

PG&E will use SAP S/4HANA Finance alongside SAP Analytics Cloud (SAC) as the main technology modules to support Finance operations. PowerPlan remains the Company's tool for asset accounting and tax management. However, PG&E will redesign with the simpler cost model so it is more closely integrated with the asset records based on work performed. These technologies together enable real-time integration of financial data, offering immediate insight into costs, budgets, and forecasts enterprise-wide, supporting PG&E to achieve the following improvements:

- **Budgeting and forecasting accuracy**: Integrated real-time data enables more accurate and timely budget preparation, scenario analysis, and forecasting across all departments.
- **Cost management and project accounting**: Unified platforms for Finance, Operations, Supply Chain, and WAM improve cost monitoring and support data-driven decision-making.
- **Working capital management**: Real-time visibility into working capital management enables timely, data-driven decisions, while significantly reducing manual effort through standardized processes.
- **Fixed asset accounting and tax**: Redesigned and integrated SAP ERP and PowerPlan facilitates asset unitization, depreciation, retirements, and tax adjustments, ensuring auditability and consistency.
- **Financial close and reconciliation**: Automated, integrated processes accelerate month-end closing, quarter-end and year-end closing, and fortify financial controls.

Overall, the Finance transformation unifies financial, asset, and operational information, automates manual workflows, and enables faster, more dependable reporting and decision-making, positioning PG&E to meet the evolving demands of the energy sector.

From a customer's perspective, benefits are expected to improve the timeliness and quality of financial information, enabling more informed decision-making and better customer outcomes. Support for the quantified benefit associated with these improvements is included in Chapter 3, and a benefit summary diagram provided in Appendix B.

d. Human Resources

1) Current State

PG&E uses the cloud-based SAP SuccessFactors to manage Core HR[12] functions including recruiting, hiring, and performance management, but critical workforce data currently resides in the on-prem ECC system for payroll, time reporting, and compliance. This requires numerous integrations and significant manual coordination, particularly when onboarding new hires or making organizational changes around payroll deadlines.

When data between SuccessFactors and ECC is out of sync because ECC is on-prem and SuccessFactors is in the cloud, it can contribute to inefficiencies, data integrity risks, and decreased agility in HR operations, especially during payroll runs or financial closes. This leads to an increased reliance on manual updates and slows response times to business needs. Furthermore, workforce data like qualifications and schedules are distributed across multiple systems and tools, creating extra integration requirements and manual effort to align work and resource scheduling.

2) Future State

By transforming Core HR, Talent Acquisition, and Talent Development into a single integrated cloud-based SuccessFactors platform, PG&E will deliver notable improvements to its HR operations. With HR functions on a single integrated cloud-based

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12 Core HR encompasses the foundational human resources processes and data used to manage PG&E's workforce. SAP SuccessFactors will serve as the future-state system of record for employee and organizational data, supporting workforce administration and integration with other enterprise business processes and systems.

solution, PG&E can streamline workforce planning, speed up hiring, enhance labor cost transparency, and more efficiently deploy qualified coworkers for safety-critical tasks. While SuccessFactors remains PG&E's main module for HR management, it will benefit from a tighter integration with the rest of SAP. Coworker and position data will move seamlessly for payroll processing, and approved time and pay will be calculated in Employee Central Payroll. Payroll results are then posted to S/4HANA, updating the general ledger, projects, and work orders.

This SuccessFactors data replicated to S/4HANA allows workforce data, such as assignments, qualifications, and organizational structure, to flow efficiently throughout planning, labor tracking, and work execution processes. Changes in hiring or roles are consistently updated across systems, minimizing manual reconciliation and reducing errors. Finance gains timely labor cost insights, while operations have better alignment between workforce availability, skills, and scheduled activities. Automated workflows and centralized data management support adherence to labor laws and internal policies, reducing risk and administrative burden for HR teams. By decreasing reliance on manual coordination and disparate tools, PG&E will be able to refine workforce planning, support work execution and manage resources more efficiently.

In addition to the seamless integration between Core HR, payroll, time entry and operational systems, PG&E's HR transformation will improve the overall coworker experience through improved career development, job satisfaction, and retention. This includes:

- **Comprehensive talent lifecycle management**: The newer and more integrated version of SuccessFactors supports recruiting, onboarding, performance management, learning, and succession planning, providing a unified platform to attract, develop, and retain top talent.
- **Enhanced coworker experience**: With streamlined processes and self-service tools, coworkers and people leaders can easily

access talent profiles, development plans, and performance feedback.

- **Data-driven decision-making**: SuccessFactors enables HR and leadership to leverage real-time analytics and dashboards, allowing for better workforce planning, identification of skill gaps, and informed succession strategies.
- **Increased alignment of goals and performance**: The platform clearly links individual and team goals to organizational strategy, promoting accountability and continuous improvement through integrated performance and development processes.
- **Continuous learning and development**: SuccessFactors offers learning management and development planning modules to foster upskilling, compliance training, and leadership pipeline growth.

From a customer perspective, these benefits are expected to improve the speed and effectiveness of hiring and onboarding, helping match customer and operational needs with employees who have the right skills. Furthermore, the HR capabilities help improve workforce safety and workmanship by centralizing workforce training, certifications, skills, role requirements, and compliance records and aggregating that information in one place so properly trained and qualified personnel perform safety-critical work on utility equipment.

Support for the quantified benefit associated with these improvements is included in Chapter 3, and a benefit summary diagram provided in Appendix B.

e. Integrated Planning

Integrated Planning allows PG&E to prioritize, sequence, and resource work across electric, gas, and power generation operations. It connects long-term capital strategy with daily field execution and depends on accurate, timely data from ERP, GIS, and other enterprise systems.

1) Current State

Integrated Planning requires PG&E to prioritize work based on multiple considerations, including regulatory commitments, asset risk, operational needs, and opportunities to improve job planning efficiency. PG&E is facing increasing planning demands associated with electric, gas, and power generation infrastructure, while technology constraints make both long-term and short-term planning more difficult.

Important planning information currently resides across multiple systems, and in some cases, offline spreadsheets. As a result, PG&E's coworkers must spend significant time gathering and consolidating the information needed to develop work and investment plans. This makes it difficult to forecast workloads, allocate resources, coordinate materials and contractors, and prioritize projects efficiently. Planning teams also spend substantial time replanning when conditions change because of weather events, supply chain disruptions, changes in work priorities, or other operational needs.

For long-term investment planning, GIS is a critical component to help conceptualize and visualize work so it can be bundled into an effective work plan, allowing PG&E to identify opportunities based on geographic location. For example, if PG&E plans to perform work to a given circuit to increase capacity in the vicinity of work already planned within a few years to address a reliability risk on the same circuit, the Company would ideally be able to visualize the work emerging from these different risks and drivers geospatially to inform the possibility of bundling the work together for efficiency and affordability. Currently, this cannot be done easily or quickly due to the disparate tools and processes. These limitations make it more difficult for PG&E to analyze performance, understand resource requirements, evaluate competing priorities, and optimize investment decisions.

2) Future State

As PG&E's operational work portfolio grows, the Company will require Integrated Planning capabilities to support system expansion, customer load growth, wildfire mitigation, grid hardening, and infrastructure investment. The Integrated Planning transformation will standardize planning processes and bring together asset, financial, workforce, material, and geospatial information to improve coordination across business functions and support more effective long-term planning. The future state Integrated Planning capability will enable PG&E to:

- Better forecast workload, budget, labor, material, and contractor requirements using asset risk and operational data;
- Better evaluate and prioritize capital investments based on risk, value, regulatory requirements, and strategic objectives;
- Improve coordination between planning, engineering, Supply Chain, Finance, and field operations;
- Enhance planning accuracy through integrated asset, financial, workforce, and geospatial data;
- Strengthen governance and transparency for investment planning and portfolio management; and
- Support more informed decision-making through advanced analytics, forecasting, and scenario modeling.

These capabilities will be supported through a combination of SAP S/4HANA modules, SAC, SAP SuccessFactors, Copperleaf, and Esri ArcGIS Platform. Two of these modules include SAP EAM, which integrates asset management activities into the planning process, and SAP EPPM, which supports the planning, management, and tracking of projects and portfolios. SAC provides advanced forecasting, planning, and analytics capabilities to support financial decision-making. SAP SuccessFactors will support workforce administration, analytics and planning, and labor allocations.

PG&E will also use Copperleaf,[13] an SAP solution partner, to evaluate, prioritize, and support the approval process for capital investments based on risk, value, cost, and other business objectives. Copperleaf integrates with SAP EPPM and EAM to support risk-informed capital investment prioritization and portfolio optimization; once an investment is approved in Copperleaf, it is transferred to SAP, where it is managed through design, execution, and closeout. Data exchange between SAP S/4HANA and Esri ArcGIS Platform further enhances planning accuracy by incorporating asset location and connectivity data directly into the planning process.

From a customer perspective, the end result of these improvements will be experienced as strengthened reliability and improved affordability. Support for the quantified benefit associated with these improvements is included in Chapter 3, and a benefit summary diagram provided in Appendix B.

f. Enterprise Health and Safety

1) Current State

PG&E has done a lot to develop systems that support a commitment to safety. Due to previous software limitations, PG&E currently handles EH&S processes through the use of separate modules and custom capabilities within SAP ECC for incident reporting. This includes tracking safety incidents, safety observations, near misses, incident investigations and corrective actions, recording of speak-up concerns, and supporting required regulatory reporting.

The current highly-customized SAP ECC environment encompasses many manual processes and connections to different tools that make it cumbersome to fully embed all EH&S processes in one place. Safety data is not directly integrated into planning and

[13] Copperleaf was selected to provide best-in-class investment valuation and portfolio optimization capabilities. Integrated with SAP, it enables PG&E to consistently assess, prioritize, and optimize investments across the enterprise to deliver the highest-value portfolio of work.

execution of work orders. As a result, teams rely on custom-built integrations, manual data entry, and follow-up coordination to reflect safety requirements in work plans and documented after the fact. This approach increases administrative effort and makes it harder to consistently link safety to specific jobs, assets, and locations.

2) Future State

PG&E is advancing its EH&S capabilities by transitioning from a collection of aging, custom-built tools to the standard EH&S module in SAP S/4HANA. The EH&S module will act as a unified platform for incident reporting, work observations, job hazard analysis and job site safety analysis, risk assessments, process safety risk assessments,[14] and safety-related workflow execution. Consolidating safety processes into a single, integrated system (combining mobile access with data from SAP S/4HANA and Esri ArcGIS Platform) provides PG&E with a single source of consistent data to strengthen its safety culture, improve compliance, and better protect coworkers engaged in high-risk work across electric, gas, and power generation operations.

By leveraging out-of-the-box SAP functionality and minimizing manual coordination, PG&E reduces administrative burden, strengthens compliance, and supports safety as they are addressed uniformly across operations. The EH&S module provides a comprehensive platform for managing all aspects of safety at PG&E, including:

- **Incident Management**: The EH&S module offers out-of-the-box tools to record, track, and investigate workplace incidents. The platform allows users to document incidents, analyze root causes, and implement corrective actions, aiding compliance with regulatory requirements and internal policies. Additionally, SAP EH&S facilitates reporting and trend analysis,

[14] This includes process hazard analysis and pre-startup safety analysis, both of which are designed to prevent and mitigate the unintentional loss containment.

helping PG&E identify potential risks and proactively improve workplace safety. Integration with other SAP modules allows seamless communication and data sharing across departments, enhancing timely incident investigation and prevention efforts.

- **Risk Management**: The Risk Management features in the EH&S module function as part of the integrated WAM environment. Risks, controls, and mitigation actions are directly associated with work orders, assets, locations, and schedules through SAP-supported functionality, reducing reliance on manual coordination. EH&S risks are considered earlier and more consistently during work planning, and updates can be made as work conditions change. Mitigation actions and follow-up activities are easier to track through completion, with supporting documentation tightly linked to the related work and assets. This improves visibility, strengthens traceability, and reduces manual effort.
- **Management of Change (MOC)**: MOC addresses technical, operational, and procedural risks by defining a systematic process so that changes to equipment, processes, or safety systems do not introduce new or additional hazards or risks to the process. The MOC capabilities in the EH&S module are supported in a more integrated and standardized manner. PG&E will be moving from multiple systems and approaches to a single system and a standard process across the Company. This approach allows proposed changes to be evaluated earlier and more consistently. As work progresses, MOC requirements and approvals remain visible and traceable, minimizing manual follow-up and reconciliation. Supporting documentation is easier to access, and completion of MOC steps can be demonstrated.

From a customer's perspective, these benefits are expected to strengthen public and workforce safety by improving PG&E's ability to capture, track, analyze, and address hazards through centralized reporting, investigations, risk assessments, and safety observations.

The EH&S workstream will also embed safety controls in work processes, supporting the safe, reliable, and cost-effective delivery of service. Support for the quantified benefit associated with these improvement is included in Chapter 3, and a benefit summary diagram provided in Appendix B.

g. Development, Integration, and Solution Delivery (ERP)

To enable the workstream capabilities described in the above section, the following subsection describes how PG&E will bring the ERP Transformation to life by designing future state business processes and implementing technology through system configuration, development, and integration.

1) Process Design (ERP)

PG&E used a fit-to-standard approach to design future state business processes, which means the Company started with SAP standard capabilities rather than keeping its legacy custom-built processes. Business and IT teams prioritized adopting SAP's out-of-the-box recommendations based on industry best practices, maximizing the use of technology in its native form. During the process design effort, each workstream (WAM, Supply Chain, Finance, HR, Integrated Planning, and EH&S) validated industry standard process flows, aligned PG&E employees to the new roles and responsibilities, and confirmed the process handoffs across departments, systems, and data sources. This process design work is foundational because system configuration, integrations, reporting, workflows, data migration, training, and testing activities all depend on clearly defined future state processes.

2) System Configuration

Once the process designs are in place, system configuration translates approved process designs into working ERP capabilities using standard platform functionality wherever feasible. Configuration includes organizational and master data structures, business rules, workflows, approval paths, transaction types, user roles, security profiles, forms, reports, field values, validation rules,

and related settings needed to support future state operations. Unlike custom development, configuration uses vendor supported functionality and prescribed setup options rather than custom code. Configuration enables WAM, Supply Chain, Finance, HR, Integrated Planning, and EH&S processes.

A disciplined configuration approach reduces customization, improves maintainability, strengthens upgrade readiness, and establishes the baseline for testing, training, security validation, integration design, data migration, and deployment readiness.

3) Development Components

The solution scope includes development where standard configuration cannot fully meet critical operational, regulatory, integration, reporting, or user experience requirements. Under PG&E's standard-first approach, requirements are first evaluated against native platform capabilities, configuration, process redesign, and approved extension patterns before custom development is authorized.

Development is commonly organized into RICEFW (Reports, Interfaces, Conversions, Enhancements, Forms, and Workflows) categories. These components enable reporting, system-to-system data exchange, legacy data conversion, approved extensions, standardized business outputs, automated routing, approvals, notifications, exception handling, and controls.

Overall, development produces the approved components, integrations, conversion programs, workflows, reports, forms, tools, and automated processes required for ERP and GIS to operate as a complete enterprise solution.

h. Data and Analytics (ERP)

The Solution scope includes data cleansing activities required to prepare legacy ERP data for migration into the future state platforms. The data and analytics workstream also includes future state reporting and analytics capabilities, report rationalization, data governance, and

maintaining analytical models required to support operational, financial, and regulatory reporting.

PG&E's Transformation value depends on data quality. Carrying duplicates, incomplete attributes, and inconsistent classifications into future state platforms would sustain unreliable reporting, manual reconciliation, limited automation, and reduced user trust.

The data scope covers objects related to asset, work history, materials, vendor, financial, workforce, procurement, and other data supporting operations, reporting, controls, and compliance. Business SMEs familiar with future state processes determine which data to migrate, correct, consolidate, or archive. They perform activities to migrate data from the old systems to the new ones, cleaning and enriching data to meet quality standards. These activities may include correcting inaccurate or incomplete fields, removing duplicates, standardizing names, rationalizing obsolete records, and validating relationships.

Clean, standardized data enables reliable decision-making, accurate reporting, and better performance insights, while laying the foundation for advanced analytics, automation, and AI-enabled decision support.

Cleansed and standardized data supports ERP integration by improving alignment between asset, work, location, network, financial, and field execution records. In addition to data This enables more reliable automation, more accurate reporting, stronger controls, improved analytics, and a foundation for future readiness that includes advanced analytics, automation, and AI-enabled decision support.

i. Applications and Processes (GIS)

The GIS Transformation configures the Esri Utility Network for gas and electric asset network modeling, replacing the Geometric Network data model with a utility-specific platform that supports native network tracing, data quality rules, and advanced asset management capabilities. This includes development and deployment of GIS applications for field operations, network management, outage analysis, and spatial work management; integration of ArcGIS Platform with SAP S/4HANA for spatial work order management and asset data

synchronization, described further in the WAM section above; integration with OverIT for field dispatch and route optimization; and development of web and mobile GIS applications supporting field crews and operational teams.

This work also includes integrity management and engineering and design capabilities. GIS will support class location studies and tracking of dwellings in the area of gas transmission pipelines and in establishing and maintaining consequence areas. It supports standardized design templates with integration between AutoCAD, SAP EAM and GIS that allow engineers to generate construction-ready designs inclusive of complex calculations in 3D (e.g., pole loading). Mobile as-built capabilities are also supported to capture asset additions, removals or alterations beginning with work that is proposed during engineering, adjusted based upon actual construction activities in near-real time, and inclusive of integration between SAP and Esri to keep the asset registry current and reduce manual processing of paperwork.

j. Data Migration and Conversion (GIS)

This component converts gas and electric network data from the Geometric Network data model to the Utility Network data model, and includes data quality assessments, automated remediation, and validation activities to confirm migrated data meets Esri Utility Network rules and PG&E's operational requirements. This includes tuning and managing quality and completeness expectations to reduce Utility Network Dirty Areas, which are polygons that mark parts of the network where edits have occurred and where network errors exist, preventing the changes from being validated into the network topology. These Dirty Areas are important to manage actively to enable network traces to return accurate results, to prevent connectivity issues and to maintain audit information about what changed and by whom.

Data migration and conversion to Utility Network data models is expected to enforce connectivity and asset and attribute rules directly within GIS. These built-in validation rules and detection of data errors during the editing process (as opposed to after-the-fact reviews) will enable outage tracing, isolation zone tracing, and pressure zone

analysis, all of which will, from a customer's perspective, contribute to enhanced network reliability and support more accurate and timely field operations.

4. Technology Infrastructure and Software

Technology Infrastructure and Software includes the software licenses, cloud subscriptions, hardware, and related technology control required to operate the SAP S/4HANA and Esri ArcGIS Platform environments.

a. Current State

PG&E's current ERP and GIS environments operate primarily on software and hardware hosted within PG&E-operated data centers. When PG&E is responsible for maintaining an on-prem data center, it must be able to support peak demand and load at all times. Once the data center reaches capacity, PG&E will need to build an additional data center to continue supporting operations. This includes maintaining physical assets like servers, building and testing for redundancy for things like disaster recovery, providing security and maintenance for the building, providing staff and IT resources to manage all aspects of the data center and activities such as upgrades and patching, and more. In fact, if PG&E does not move GIS to the cloud, the Company will be required to build another data center due to power limitations at the existing facility.

As described earlier in this chapter, the current on-prem environment has become increasingly difficult to scale and sustain as data volumes, integrations, and operational requirements have grown. In addition, PG&E bears responsibility for managing the ongoing technology lifecycle, including addressing cybersecurity vulnerabilities, maintaining vendor supported software and database versions, executing infrastructure and application upgrades, and sustaining highly available environments. These activities require substantial operational resources and increase over time as technology ages, creating elevated cyber, reliability, compliance, and operational risks if not continuously addressed.

b. Future State

The Transformation moves PG&E from the current on-prem hosting model toward cloud-based environments for both platforms. SAP S/4HANA will operate in Amazon Web Services (AWS) and be managed by SAP's RISE hosting service, while Esri ArcGIS Platform will operate in AWS and be managed by PG&E. The Technology Infrastructure and Software scope includes enterprise software licensing, such as SAP S/4HANA and Esri ArcGIS Platform based licensing, cloud hosting and storage, and supporting technology components such as database and integration platforms required to operate the future state environments.

Moving to these cloud-based environments reduces PG&E's reliance on owned infrastructure and associated hardware-refresh cycles, provides access to current vendor supported platform technology, and allows computing capacity to scale more readily with operational requirements. Additionally, major cloud hosting providers invest more in cyber security, redundancy and align to global compliance frameworks given the services they offer and support for their customers around the world, providing PG&E with best-in-class cloud hosting capabilities to secure our own data and services.

From a customer's perspective, these improvements are expected to reduce the operational and cybersecurity risks associated with aging infrastructure and support the reliable and cost-effective operation of the future ERP and GIS platforms. For example, PG&E will host the GIS platform on AWS. PG&E will leverage, where possible, cloud native capabilities and services managed by AWS where their qualified technical specialists will be responsible, typically through automation, for the timely application of security patches and upgrade activities for underlying infrastructure (e.g., servers, database), which means these items will be up-to-date and fully supported while also freeing up PG&E resources to focus on other critical operational activities.

Support for the quantified benefit associated with these improvements is included in Chapter 3.

5. Technology Enablement

Technology Enablement includes the architecture, cybersecurity, controls, connectivity, resilience, and governance capabilities required for the future state environment to operate securely, reliably, and at enterprise scale. The transformational capabilities delivered through SAP S/4HANA and Esri ArcGIS Platform depend on more than application functionality alone. They require secure cloud platforms, robust technical architecture, effective cybersecurity controls, and a comprehensive compliance framework that collectively enables the solution to operate at enterprise scale. The Technology Enablement workstreams establish this foundation, so the ERP and GIS environments are designed, implemented, and governed in a manner that supports operational reliability, regulatory compliance, financial integrity, and long-term sustainability. These workstreams contribute to mitigation of cybersecurity and technology risks, improve operational resilience, protect customer and operational data and reduce the potential for technology disruptions, thereby enabling improved reliability for, and responsiveness to, customers. The following sections describe these workstreams and the critical role each plays in the overall success of the Transformation.

a. Platform Architecture and Security

Platform Architecture and Security establishes the technology foundation that enables applications, data, infrastructure, integrations, networks, and security services to operate together as a cohesive enterprise solution. This includes designing the target-state cloud architecture, establishing environment and landscape strategies, defining infrastructure standards, implementing security controls, enabling integrations, and ensuring operational readiness across both platforms.

Together, these architecture and security investments strengthen PG&E's defense posture against cyber threats, ransomware, unsupported legacy technology, and single points of failure. By moving to vendor supported SAP RISE and AWS-based platforms with modern security, monitoring, resilience, and recovery capabilities, PG&E

reduces exposure from aging on-prem systems and improves its ability to prevent, detect, contain, and recover from cyber events.

Key categories of work within this domain include:

- **Cloud Platform and Infrastructure Architecture**

  PG&E will design and implement the SAP RISE and AWS hosting environments and all non-SAP and non-Esri applications in scope, including network architecture, connectivity, compute, storage, and platform services. PG&E will also design production, non-production, disaster recovery, training, testing, and sandbox landscapes. Additionally, PG&E will establish environment provisioning, configuration, monitoring, and lifecycle management processes.

- **Enterprise Security Architecture**

  PG&E will define and implement the target security architecture across ERP, GIS, cloud platforms, integrations, and supporting technologies. The team will also develop security controls aligned with PG&E cybersecurity standards, utility industry requirements, and regulatory obligations. PG&E will coordinate penetration testing, security testing, remediation activities, and audit support, and embed security controls throughout the design, build, test, deployment, and stabilization phases.

- **Identity and Access Management**

  This crucial category includes activities such as designing authentication and authorization architecture across SAP, GIS, cloud, and integrated systems and defining role-based access control models, segregation of duties requirements, privileged access controls, and identity lifecycle processes. It also enables integration with enterprise identity providers, single sign-on solutions, multi-factor authentication, and directory services. Finally, this will establish the processes for user provisioning, deprovisioning, role governance, access certification, and compliance monitoring processes.

- **Integration and Connectivity Architecture**

PG&E will design the enterprise integration framework connecting ERP, GIS, legacy applications, cloud services, operational systems, and third-party platforms. The team will also establish Application Programming Interface (API), event-driven, middleware, batch, and real-time integration patterns and design high-availability connectivity between SAP RISE, AWS, PG&E data centers, control centers, field applications, and external partners. This also includes supporting end-to-end integration testing, monitoring, troubleshooting, and operational support planning.

- **Network Architecture**

  PG&E will design secure connections between SAP RISE, AWS environments, PG&E corporate networks, and external service providers. Part of that is ensuring that network architecture supports required performance, availability, disaster recovery, and cybersecurity objectives. The team will establish system performance benchmarks and operational service-level objectives and support performance engineering, load testing, stress testing, and capacity validation across ERP and GIS platforms.

- **Business Continuity and Disaster Recovery**

  To be successful, the solution must include effective disaster recovery architecture and failover capabilities across ERP, GIS, and supporting environments. PG&E will define recovery time objectives, recovery point objectives, backup architectures, and recovery procedures. The team will then coordinate disaster recovery testing, validation exercises, and mitigation activities as well as establish resilience strategies that support PG&E's operational continuity requirements and critical utility operations.

- **Environment and Release Management**

  PG&E will define environment refresh, migration, deployment, and configuration management processes. The team will establish code promotion, release deployment, transport management, and platform governance controls and support secure and automated

application delivery, infrastructure-as-code, and deployment pipeline capabilities.

- **Architecture Governance and Standards**

  PG&E will establish architecture principles, standards, design reviews, and technical decision governance processes that will allow the team to maintain target-state architecture models, system inventories, integration inventories, and technology roadmaps. Additionally, team members will review solution designs to confirm alignment with clean core principles, enterprise architecture standards, cybersecurity requirements, and long-term supportability objectives.

- **Operations Readiness and Transition**

  PG&E will define system support structures, service management processes, and operational responsibilities. The team will implement monitoring, alerting, incident management, and operational reporting capabilities and also establish support procedures, runbooks, escalation paths, and service-level management processes. They will also prioritize coordinating knowledge transfer and operational readiness activities with PG&E support organizations and managed service providers.

By delivering a secure, resilient, highly available, and integrated cloud foundation, the Platform Architecture and Security workstream enables SAP S/4HANA and ArcGIS Platform to function as a unified enterprise ecosystem. The workstream seeks to verify that all the scope and capabilities described in operational workstreams operate reliably and securely in production.

b. Controls and Compliance

The Controls and Compliance workstream is responsible for designing, implementing, and validating the controls and compliance requirements to support SAP S/4HANA across all business and technology workstreams. The team validates that transformed business processes, system configurations, integrations, security models, and reporting capabilities meet PG&E's financial, operational, cybersecurity,

and regulatory requirements while maintaining a sustainable and auditable control environment.

Key categories of work within this domain include:

- **Business Process Controls**

  PG&E will design preventive and detective controls embedded directly within ERP and GIS business processes as well as define approvals, workflow controls, validations, reconciliations, exception handling, and monitoring activities. The team will also align business processes to maintain appropriate governance, accountability, and data integrity controls.

- **Financial and Regulatory Compliance**

  PG&E will validate solution designs against Sarbanes-Oxley, Federal Energy Regulatory Commission (FERC) accounting requirements, California Public Utilities Commission (CPUC or Commission) regulations, and other applicable compliance obligations. The team will also assess impacts to financial reporting processes and incorporate key controls into future state designs and support regulatory reporting accuracy, traceability, audit readiness, and evidence retention requirements.

- **IT Controls and Security Compliance**

  PG&E will design and implement IT general controls governing user access, change management, system operations, interfaces, and technology processes. The team will validate that system designs align with PG&E cybersecurity standards and compliance requirements and that they support control testing, audit reviews, and remediation activities.

- **Segregation of Duties and Access Governance**

  The Program team will define segregation of duties requirements and identify incompatible access combinations that could create financial or operational risk. From there, PG&E will establish role design standards, critical access controls, privileged access management, and mitigation procedures and then implement ongoing monitoring and review processes for sensitive and privileged access.

- **Controls Testing and Operational Compliance**

  PG&E will perform controls design reviews, operating effectiveness testing, and compliance validation throughout the Program lifecycle. The team will support integration testing, user acceptance testing, and production readiness assessments from a controls perspective as well as define ongoing monitoring, certification, and governance activities required to sustain compliance after go-live.

  By embedding controls and compliance requirements into business processes, technology design, security architecture, and operational procedures, the Controls and Compliance workstream helps facilitate financial integrity, regulatory compliance, audit readiness, and operational accountability. The workstream enables SAP S/4HANA and ArcGIS Platform to operate within a secure, controlled, and sustainable governance framework while reducing risk across the Transformation.

6. Application Remediation

Application Remediation covers the work required to support PG&E's broader application landscape affected by the transition, including integration changes, re-architecture, and application retirement, to operate reliably as the target state end-to-end solution is implemented, while also executing the application retirement decisions identified through the inventory process described previously. Because SAP and Esri are deeply connected to surrounding PG&E systems, changes to processes, data structures, interfaces, security roles, reports, and transaction flows will affect applications outside the target state solution.

7. Program Management Office

The Program Management Office (PMO) provides centralized governance, coordination, oversight, and program controls necessary to plan and execute the ERP and GIS Transformation. The Transformation represents a large-scale, multi-year business and technology modernization effort involving SAP, Esri, multiple implementation partners, numerous integrated applications, extensive business process redesign, data

migration, system integration, testing, organizational change management, and deployment activities across multiple releases. The PMO serves as the central coordinating function responsible for bringing these diverse activities together into a single, integrated program and ensuring that execution remains aligned with the Transformation's objectives.

The PMO establishes and maintains the governance and management framework used to oversee program execution. This includes program planning, schedule management, scope management, budget oversight, dependency management, risk and issue management, performance reporting, milestone tracking, vendor coordination, and executive governance support. Through these activities, the PMO provides leadership with visibility into program progress, emerging risks, resource needs, and key decisions required to maintain program momentum and achieve targeted outcomes.

Effective PMO oversight is particularly important because the ERP and GIS Transformation consists of numerous interdependent activities occurring simultaneously across business and technology organizations. Work performed by one team often serves as a prerequisite for activities being performed by other teams. For example, business process design influences system configuration; system configuration affects data conversion, integrations, testing, and training activities; and readiness across all of these areas is required before a release can be successfully deployed. Delays, scope changes, quality issues, or resource constraints within any one area can have cascading impacts throughout the broader program. The PMO helps manage these interdependencies by maintaining integrated program plans, coordinating activities across workstreams, monitoring critical-path deliverables, facilitating decision-making, and resolving issues before they materially affect program objectives.

The PMO also helps mitigate implementation risk and protect program value by providing consistent governance and program controls across all workstreams. Standardized processes for risk assessment, issue escalation, milestone monitoring, change control, vendor management, and performance reporting enable timely identification and resolution of potential challenges. These activities support informed decision-making, clear

accountability, and disciplined execution while reducing the likelihood of avoidable delays, rework, duplicate effort, resource inefficiencies, or misalignment among participating organizations.

In addition, the PMO provides the structure necessary to coordinate multiple implementation partners and internal organizations working toward common objectives. Given the number of business functions, technology teams, and third-party vendors involved in the Transformation, centralized coordination is necessary to maintain alignment regarding priorities, schedules, resource requirements, dependencies, and expected outcomes. Without a centralized PMO function, the risk of fragmented execution, unmanaged dependencies, inconsistent governance, vendor misalignment, schedule slippage, and cost escalation would increase significantly.

Ultimately, realization of the Transformation's benefits depends not only on the successful delivery of individual project components, but also on the coordinated execution of the program as a whole. By providing integrated oversight, governance, planning, coordination, and control, the PMO supports the disciplined and cost-effective delivery of the ERP and GIS Transformation, reduces implementation risk, promotes accountability and transparency, and helps PG&E to realize the operational, financial, and customer benefits associated with the investment. Accordingly, PMO activities are a foundational and necessary component of the Transformation and are critical to the successful delivery of program capabilities and the realization of long-term business value.

The Value Management Function is included within the PMO cost group. This function was established to help PG&E govern and manage the expected value of the ERP and GIS Transformation. The function was created because the success of a transformation of this scale cannot be measured solely by deployment of new technology. Rather, the forecast benefits described in Chapter 3 depend on successful implementation of redesigned business processes, adoption of new capabilities, improvements in data quality, and effective integration across ERP, GIS, and other interconnected systems. The Value Management function helps align the forecast costs, benefits, and expected business outcomes underlying

PG&E's proposed investment remain with program execution throughout implementation and following deployment.

During implementation, the Value Management function is responsible for maintaining traceability between the forecast costs and benefits presented in Chapter 3, program execution, business process design, deployment planning, and key program decisions. The function maintains the Program business case, manages the assumptions, dependencies, and value drivers underlying the forecast, evaluates the potential impact of scope changes, design decisions, deployment strategies, and implementation assumptions, and supports actions intended to preserve forecast value throughout implementation. Through these activities, the function helps maintain alignment between program execution and the customer, operational, and financial benefits reflected in the business case.

The Value Management function also supports development and execution of PG&E's value realization framework following deployment. This framework is designed to maintain a clear connection between deployment of new capabilities, adoption of redesigned business processes, operational performance improvements, and realization of expected business outcomes. To support this approach, the function helps establish value creation, value capture, and value realization performance measures; supports benefit tracking and monitoring activities; and provides leadership with information necessary to evaluate tradeoffs involving scope, schedule, cost, and priorities.

The Value Management function is a critical component of program governance because it provides a structured and disciplined approach for preserving forecast value during implementation and evaluating realized outcomes following deployment. By maintaining visibility into how benefits are created, captured, and ultimately realized, the function strengthens governance, supports informed decision-making, promotes accountability for expected outcomes, and helps assure that the significant investment proposed in this Application remains focused on delivering the customer and operational benefits described in Chapter 3.

8. Business Enablement

PG&E established dedicated business enablement workstreams, Operating Model and Organizational Readiness, to support disciplined execution of the ERP and GIS Transformation. These workstreams provide the cross-cutting structure needed to prepare the organization for change, support adoption of the future state solution, and maintain accountability for the business outcomes the Transformation is intended to deliver.

a. Operating Model

The Operating Model team defines the future-state roles, responsibilities, and ways of working needed to sustain the Transformation over time. New processes and technology can change how work is performed, and existing roles, responsibilities, or organizational structures may need to evolve to support the future state. Where there are meaningful impacts, the Operating Model team defines the changes needed across roles, decision rights, process ownership, organizational alignment, and service delivery so business functions can effectively operate and sustain new ways of working. The team reduces implementation and sustainment risk by clarifying how work, accountability, and handoffs will operate across business units and shared services after go-live. This is especially important where the future state changes how work flows across planning, WAM, Supply Chain, Finance, HR, and other enterprise functions. A clear operating model helps prevent fragmented ownership, unclear accountability, inconsistent execution, and erosion of the standardized ways of working established through the proposed Transformation.

In addition, the Operating Model team improves PG&E's ability to sustain the Transformation by implementing operating model changes before each release to prepare the business for future-state ways of working at go-live. This includes embedding new roles, responsibilities, accountabilities, process ownership, governance, and management practices into normal operations. Implementing these changes as part of release readiness reinforces adoption and helps ensure the business is prepared to operate effectively from day one and sustain the new ways of working over time. In this way, the Operating Model team helps

reduce sustainment risk and enables the long-term realization of Transformation benefits.

b. Organizational Readiness

Organizational Readiness (OR) is the people-focused component of the Transformation. Its purpose is to prepare coworkers and the business to adopt future-state processes, systems, roles and ways of working so that the technology implementation can translate into effective business operations. The goal of OR is user adoption to fully achieve the intended Transformation value. OR consists of the following activities: Communications & Engagement, Training, Change Readiness, and Business & Site Readiness.

Within OR, communications and engagement activities are designed to progressively build awareness, understanding and readiness rather than relying on training alone to introduce a new system or process. This includes targeted communications based on stakeholder needs, a Change Agent network, open houses, system demonstrations, business-specific engagements and feedback mechanisms. The operating approach is intentionally two-way: engagement channels are used both to explain what is changing and to collect feedback that can inform subsequent communications and readiness actions.

Training is structured to give affected coworkers the knowledge and skills necessary to perform their roles in the future-state environment. The OR approach includes role-based learning, progressive or "drip-feed" learning, formal training delivery (web-based or instructor-led), preparation of trainers, curricula and knowledge checks. This progression provides stakeholders with time to build understanding on a journey from awareness to adoption and ultimately delivering training focused on what coworkers need to know and do to operate confidently in the new way of working. This sequencing is deliberate: coworkers should have a foundational understanding of their future-state experience before they enter formal training, allowing training itself to concentrate more directly on building functional skills.

Change readiness provides a structured mechanism for identifying impacts (what exactly is changing and for who) and monitoring whether

the organization is prepared to adopt the change. Change-impact work identifies which coworkers are affected, when they are affected and the nature of those impacts, with that information feeding communications, engagement and training. Readiness measurement then provides indicators of where further intervention may be needed. The change readiness approach incorporates aspects of the Prosci methodology and ADKAR framework including measurement which spans awareness, desire, knowledge, ability and reinforcement.

Business and Site Readiness (B&SR) extends this work from individual coworker readiness to operational readiness for deployment and day-one operations. B&SR is a structured and disciplined approach for transitioning capabilities across the enterprise, providing visibility into risks and issues and supporting business-led assessment of readiness to go live. The objective is for affected business organizations to operate effectively and confidently in the new system environments from day one, with readiness considered not only from a technical perspective but also from operational and behavioral perspectives. B&SR includes considerations such as whether physical locations are prepared for the new technology and the post-go-live/hypercare period, while the broader readiness process uses defined measures, governance and reporting to provide visibility into progress into go-live readiness.

Taken together, these activities create an integrated readiness framework that connects the technical implementation of the program with the people and operational capabilities required to use it effectively. Rather than treating change management as a discrete communication or training activity at the end of implementation, Organizational Readiness begins with stakeholder and change-impact understanding, uses those insights to tailor communications and engagement, develops role-relevant training, measures readiness, and supports business and site preparation for deployment and sustained adoption.

F. Implementation Scope and Approach

As discussed above, the scope of the ERP and GIS Transformation encompasses a broad set of business and technology capabilities necessary to

modernize PG&E's core enterprise platforms and to use that modernization to standardize and improve business processes. However, the prudence of the Transformation lies not only in what will be delivered, but also in how it will be executed. To effectively manage program complexity, mitigate implementation risk, and enable continuity of essential utility operations, PG&E will follow a phased deployment strategy that provides a disciplined framework for delivering capabilities incrementally, validating outcomes at each stage, and incorporating operational and stakeholder feedback before proceeding to subsequent releases.

For clarity, PG&E uses the following terms:

- Implementation: The overall execution of the ERP and GIS Transformation;
- Deployment Strategy: The approach used to introduce the new systems into operations, including whether deployment occurs through a single enterprise-wide cutover or by phases;
- Release: A defined unit of phased deployment that introduces a specific set of business or technology capabilities; and
- Delivery Lifecycle: The sequence of detailed design, build, test, deploy, and stabilize activities performed for each release.

G. Deployment Strategies Evaluated

Implementing this broad and interconnected scope will require a deliberate approach that accounts for dependencies across business functions, systems, data, and the broader application landscape while maintaining continuity of critical utility operations. PG&E evaluated implementation and deployment considerations during Phase Zero and Enterprise Design. As part of that work, PG&E also evaluated alternative approaches for introducing the future state ERP and GIS capabilities into operations. The SI supported PG&E's evaluation by providing insight into implementation experience for other projects and utilities, sequencing methods, and risk considerations from comparable large-scale transformation programs.

PG&E evaluated alternative deployment strategies to determine the most appropriate approach for the ERP and GIS Transformation. These strategies were assessed based on implementation impact to people, solution complexity, time to value, delivery risk and complexity, business risk and compliance.

PG&E considered two primary deployment strategies: a phased deployment in which capabilities are deployed incrementally through a series of releases, and a single “big bang” deployment in which all ERP and GIS functionality is deployed simultaneously across the enterprise. PG&E selected a phased deployment approach because it represents a lower-risk implementation path and delivers value sooner. The two strategies are described in more detail below.

FIGURE 2-5
IMPLEMENTATION OPTIONS EVALUATION SUMMARY

Evaluation Criteria	Description	Implementation Options	
		Phased	Big Bang
Degree of People Change	Impacts on users and nature of changes	●	○
Solution Complexity	Minimizes scope size, complexity, architecture and rework	◑	◕
Time-to-Value	Provides earlier value and maximum value delivery	●	◑
Delivery Risk & Complexity	Considers Transformation duration and effects on organization	◕	◑
Business Risk & Compliance	Avoids operational, customer, financial and compliance disruptions	◕	◑

● Very Strong
◕ Strong
◑ Moderate
◔ Limited
○ Very Poor

1. Phased Deployment (Selected Approach)

Under a phased deployment approach, ERP and GIS capabilities are deployed incrementally through a series of releases, each aligned to specific business areas, system dependencies, and groups of users. Each release includes a complete delivery lifecycle consisting of design, build, test, deploy, and stabilize activities executed within a defined schedule.

PG&E selected this approach because it represents the more prudent and lower-risk implementation path for a transformation of this scale. A phased deployment allows PG&E to manage organizational change in stages, introduce capabilities in a controlled manner, and begin realizing benefits earlier in the Program rather than waiting until all functionality is complete. It also helps maintain operational continuity by reducing the amount of functionality, data, and business change that is introduced at one time. If issues arise during deployment or stabilization, they can be isolated

to a narrower set of capabilities, systems, or user groups, which reduces the complexity of remediation and supports a faster return to stable operations.

Although a phased deployment carries less risk than a big bang deployment (discussed in the following section), it still creates technical and business challenges that must be managed. During a phased deployment, PG&E will temporarily operate both the current ERP and GIS systems and the new ERP and GIS systems at the same time. Running dual systems may create risks such as data becoming inconsistent between systems or employees having to perform the same transaction in two different systems. However, operating dual systems during a phased deployment is a common practice, and the SI will use its experience to design processes and system connections that help keep the systems aligned and reduce these risks. The Program will also implement temporary processes, interfaces, and reporting solutions, as needed, to maintain data consistency and provide consolidated reporting across both environments.

2. Single "Big Bang" Deployment (Not Selected)

A "big bang" deployment would involve a single cutover in which all major ERP and GIS capabilities, user groups, and integrations are transitioned at the same time. While adopting this approach would result in a reduced implementation timeline overall, PG&E elected not to pursue this due to the high-risk profile of such an approach. PG&E determined that a big bang deployment would concentrate too much operational and implementation risk into a single event. Because ERP and GIS support critical business processes and capabilities across electric, gas, and power generation operations, deploying all functionality at once would require a simultaneous transition of business processes, system integrations, data structures, and user activities across the enterprise. This would significantly increase the potential for operational disruption for new service, change in service, and maintenance or repair of assets; extend the time required to stabilize the new environment; and reduce PG&E's ability to isolate and resolve issues efficiently if problems arise following cutover. Additionally, there are many cyclical constraints for large releases such as wildfire season, peak field workload periods, and more, so a window for such a big disruption would be difficult to find.

A big bang deployment would also require PG&E to complete design, build, test, deploy, stabilize, and organizational readiness activities for all functional areas on the same timeline. Given the scale and complexity of the Transformation, this would lead to an extended technology system outage and impact a significant portion of the work at the Company. PG&E concluded that this approach would present a higher-risk and less prudent implementation path than a phased deployment.

H. Phased Implementation Through Coordinated Releases

1. Overview of the Releases

As described in Section G, implementing a transformation of this scope across a single, integrated enterprise should not be accomplished all at once, and requires that capabilities be delivered in a defined, coordinated sequence of releases. Releases do not correspond to a single business theme, department, or function. Because ERP and GIS are highly interconnected across the enterprise, most releases include capabilities that touch multiple parts of the business, and no single release is fully self-contained. The sequencing of releases was designed to deliver significant benefits earlier in the Program versus at the end. The releases were also scoped for WAM to align with different areas of the energy delivery business so not all of the energy delivery users and processes were impacted in a single release. The releases follow a structured delivery plan designed to manage implementation risk, coordinate changes to processes, systems, data, integrations, and support organizational readiness and coworker adoption.

Each ERP and GIS release will progress through a structured software delivery lifecycle consisting of Design, Build, Test, Deploy, and Stabilize. This provides the execution framework through which the Solution scope is converted into production-ready capabilities by configuring and extending standard software, integrating related applications, preparing data, validating end-to-end business processes, and transitioning new capabilities into production in a controlled manner.

FIGURE 2-6
DELIVERY LIFECYCLE



The release structure was developed with support from the SI, who helped PG&E organize capabilities into executable releases, identify cross-release dependencies, and align implementation sequencing with value, operational readiness and technical delivery considerations.

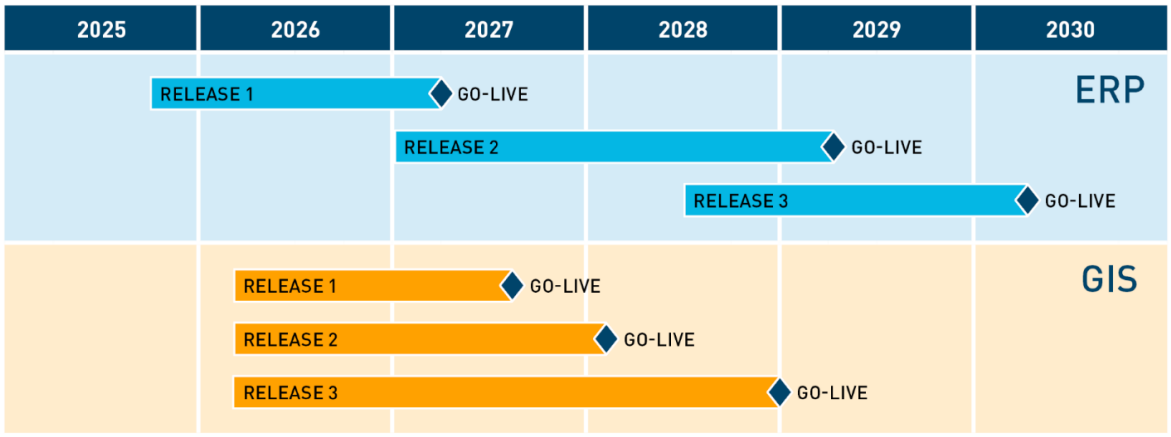
ERP and GIS capabilities will be deployed through separate but coordinated release tracks. As shown in Figure 2-7, the ERP Transformation will be implemented in three sequential releases with Release 1 currently targeted for go-live in Q2/2027, Release 2 in Q2/2029, and Release 3 in Q2/2030. The GIS Transformation will be implemented in three overlapping releases, with Release 1 targeted for Q3/2027, Release 2 in Q1/2028, and Release 3 in Q1/2029. Following deployment, each release timeframe concludes with a period of stabilization. As described further in the chapter, detailed cutover dates may be refined through release-specific planning to address operational, regulatory, and technical considerations while maintaining the overall sequencing and dependencies reflected in the implementation plan.

Although ERP and GIS follow separate release tracks, they are sequenced and governed as one integrated program. GIS capabilities for most business areas are established in advance of the corresponding ERP functionality, providing the spatial and asset data foundation required to support ERP-enabled business processes.

Each release is anchored in a defined set of business outcomes and value aligned to the operational workstreams described previously, including WAM, Supply Chain, Finance, HR, Integrated Planning, and EH&S. Within this framework, SAP S/4HANA enables the enterprise processes and controls required to execute those business capabilities, while Esri ArcGIS

Platform provides the geospatial foundation necessary to support work planning, work execution, and asset management across the enterprise.

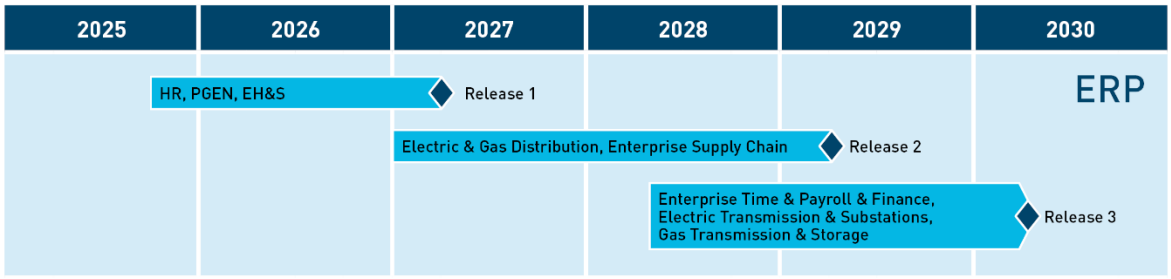
FIGURE 2-7
ERP AND GIS RELEASE SCHEDULE



2. ERP – S/4HANA: Three Sequential Releases

S/4HANA capabilities will be deployed through three sequential releases, each aligned to a defined set of business areas and operational capabilities. The release sequence is designed to deliver benefits early, reduce implementation risk, support organizational readiness, and enable the progressive realization of customer and operational benefits. Release 1 establishes foundational enterprise capabilities and transitions Power Generation, HR, and EH&S to the new ERP platform. Release 2 expands the transformation to Electric and Gas Distribution and Enterprise Supply Chain. Release 3 completes the transformation by transitioning Enterprise Finance, Payroll, Electric Transmission (ET) and Substations, Gas Transmission and Storage (GT&S), and Corporate and Shared Services to the new ERP platform. This phased approach allows PG&E to introduce business change in a deliberate and manageable manner while progressively delivering the benefits described in Chapters 1, 2, and 3.

FIGURE 2-8
ERP RELEASE SCHEDULE



a. ERP Release 1 – HR, Power Generation, and EH&S Capabilities

Release 1 focuses on foundational enterprise functions and transitions Enterprise Human Resources, Power Generation, and EH&S to the new ERP platform. This release includes the associated WAM, Supply Chain and Finance processes necessary to support Power Generation, and modernizes HR and EHS capabilities enterprise-wide. As the first production deployment, Release 1 provides an opportunity to validate enterprise-wide business processes, governance structures, integration frameworks, and operating models before broader deployment to additional business organizations. Successful delivery of Release 1 establishes the foundation upon which subsequent releases will build.

Beyond establishing the foundational capabilities of the transformed ERP environment, Release 1 begins delivering the first measurable increment of customer and operational value. For Power Generation, PG&E will introduce integrated WAM, Supply Chain, and Finance capabilities that provide a single source of truth for asset information, standardized engineering and design processes, enhanced portfolio and project management, improved scheduling and field execution, and more timely updates to asset records. Release 1 also modernizes Supply Chain operations through improved strategic sourcing, contractor and external workforce management, materials management, purchasing, vendor invoicing, and payment processes. In Finance, enhanced budgeting, forecasting, cost management, and project

accounting capabilities will improve visibility into operational and capital expenditures and support more informed decision-making.

Release 1 also transforms HR by enabling comprehensive talent lifecycle management, enhanced coworker experiences, improved workforce planning and analytics, stronger alignment between goals and performance, and expanded learning and development capabilities. These capabilities will improve the speed, quality, and effectiveness of hiring, onboarding, and workforce management, helping PG&E attract, develop, and retain the skilled workforce necessary to safely deliver reliable service to customers.

New EH&S capabilities will include improved incident management, risk management, and management of change. All these capabilities will support the strengthening of PG&E's safety culture by embedding safety controls into day-to-day work processes.

Collectively, these capabilities establish the initial operational foundation for the broader transformation, providing standardized business processes, improved controls, and an integrated data environment that supports additional value realization in subsequent releases. Release 1 begins delivering customer benefits by improving safety controls, strengthening asset and workforce management within the Power Generation organization, increasing operational efficiency, and enhancing cost visibility and decision-making. These capabilities support safer and more reliable generation operations while improving PG&E's ability to manage resources, plan work, and control costs. As a result, PG&E is better positioned to provide reliable and affordable service to customers.

In addition to delivering near-term operational improvements, Release 1 establishes foundational capabilities that will be extended to Electric and Gas Transmission and Distribution organizations through future releases. By implementing common processes, standardized data structures, and integrated technology platforms early in the Program, PG&E creates a scalable foundation that enables broader enterprise benefits, supports improved operational performance across

business functions, and positions the Company to deliver increasing value to customers as the Transformation progresses.

b. ERP Release 2 – Electric and Gas Distribution and Enterprise Supply Chain

Release 2 is a major expansion of the Transformation, extending the modernized ERP environment to PG&E's largest operational organizations and enabling enterprise-wide Supply Chain capabilities. Building on the foundation established in Release 1, this release scales standardized business processes, integrated data, and modern technology platforms across Electric and Gas Distribution operations, significantly increasing the breadth of operational activities supported by the transformed environment.

Release 2 drives significant customer and operational benefits. For Electric and Gas Distribution, PG&E will introduce integrated WAM, Supply Chain, and Finance capabilities that provide a single source of truth for asset information, standardized engineering and design processes, enhanced portfolio and project management, improved scheduling and field execution, and more timely updates to asset records. In Release 2, Supply Chain capabilities will be extended enterprise-wide, including improved strategic sourcing, contractor and external workforce management, materials management, purchasing, vendor invoicing, and payment processes. In Finance, enhanced budgeting, forecasting, cost management, and project accounting capabilities will improve visibility into operational expenses and capital expenditures and support more informed decision-making.

Collectively, these capabilities expand the Transformation's benefits across a substantial portion of PG&E's operations, improving asset management, work execution, financial visibility, and supply chain performance. By extending common processes, standardized data structures, and integrated technology platforms across Electric and Gas Distribution operations, Release 2 accelerates value realization, supports improved operational performance, and strengthens PG&E's ability to provide safe, reliable, and affordable service to customers.

c. ERP Release 3 – Enterprise Finance, Payroll, and Transmission

Release 3 completes the enterprise transformation by transitioning the rest of the planned business organizations and corporate functions to the new ERP platform. Scope includes Enterprise Time Reporting and Payroll, Enterprise Finance, Electric Transmission and Substations, GT, and Station & Storage operations. Enterprise Time Reporting and Payroll was included in the last release due to the complexity of time and pay rules which will require more time to simplify and test. Upon completion of Release 3, PG&E will have transitioned all in-scope processes to operate on a single, integrated enterprise platform that supports WAM, Supply Chain and Finance across the Company.

For Enterprise Finance, PG&E will improve working capital management, fixed asset accounting and tax, and financial close and reconciliation. This is in addition to enhanced budgeting, forecasting, cost management, and project accounting capabilities that will improve visibility into operational and capital expenditures and support more informed decision-making for Electric Transmission and Substations and GT&S. Electric Transmission and Substations and GT&S will also benefit from improved integrated WAM, Supply Chain, and Finance capabilities that provide a single source of truth for asset information, standardized engineering and design processes, enhanced portfolio and project management, improved scheduling and field execution, and more timely updates to asset records.

Establishing a common platform and consistent asset data supports customer benefits through improved planning, scheduling, field execution, asset management, and financial visibility. These capabilities help PG&E make better-informed investment decisions, manage costs more effectively, maintain critical infrastructure, improve operational reliability, reduce service disruptions, and respond to customer needs more efficiently.

Release 3 also completes the core modernization activities associated with the Transformation, resulting in a more maintainable technology environment with reduced technical debt, fewer customizations, and more standardized data and business processes.

Together, these improvements establish a modern, adaptable digital foundation that enhances operational efficiency today while providing greater flexibility to adopt future technologies and capabilities as business needs evolve.

PG&E evaluated both the Diablo Canyon Power Plant (DCPP) and Vegetation Management organizations for inclusion in the ERP and GIS Transformation and concluded that neither should be included in the proposed scope. DCPP currently operates on a specialized SAP environment that is tailored to its unique nuclear business and regulatory requirements. Rather than requiring a comprehensive business transformation, DCPP primarily requires integration of its existing SAP environment with the future enterprise platform. In addition, because continued operation of DCPP beyond its current license term remains subject to regulatory approvals, the benefits associated with including DCPP in this Transformation are uncertain.

PG&E also evaluated inclusion of Vegetation Management but determined that doing so should only occur after the transformation of the Power Generation, Electric and Gas businesses, which puts the likely timing beyond 2030. PG&E recently implemented a dedicated Vegetation Management platform to support wildfire mitigation operations, and that system is currently delivering the intended operational capabilities. Therefore, like DCPP, PG&E concluded that excluding Vegetation Management from the proposed scope is the more cost-effective and prudent approach.

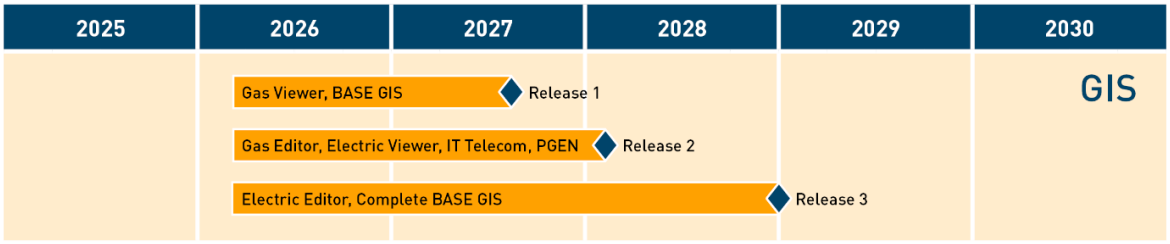
d. Summary of SAP Sequential Releases

Together, these three releases provide a deliberate and sequenced deployment strategy that balances implementation risk, organizational readiness, and business value delivery. By progressively transitioning business organizations to a common enterprise platform, PG&E can achieve the benefits of an integrated ERP environment while maintaining safe and reliable utility operations throughout the transformation period.

3. GIS – Esri ArcGIS Platform: Three Releases

To reduce implementation risk of a big bang implementation with all foundational GIS systems undergoing a release at the same time, maintain operational continuity, and align GIS deployment with ERP readiness, PG&E will implement ArcGIS Platform capabilities across three releases. The releases progressively transition Gas, Electric, Power Generation, IT Telecom, and BASE[15] capabilities to the modern ArcGIS Platform. Each release builds upon the spatial data foundation, system integrations, and readiness of the business to receive changes that were established in the preceding release.

FIGURE 2-9
GIS RELEASE SCHEDULE



To keep gas and electric data consistent and up-to-date across the legacy GIS environment and the new ArcGIS Platform, PG&E will utilize a phased migration approach supported by a temporary process to check for data changes and then push updates to the new system. Throughout migration, the legacy GIS environment will remain the authoritative system of record until each domain is fully transitioned, facilitating a single source of truth for operational data. This approach reduces operational risk by ensuring data model changes do not impact current business processes until they have been proven stable in the GIS viewer systems. It provides application owners sufficient time to prepare for any required remediation

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15 BASE GIS Coverage refers to the authoritative, enterprise-level spatial foundation that supports all GIS-enabled systems across the organization. It consists of non-asset data layers that are standardized, centrally governed, and shared across platforms. These layers, such as boundaries, basemaps, and other common geographic reference datasets, provide consistent spatial context and alignment for asset systems, operational applications, and analytics tools.

activities and enables PG&E to incorporate lessons learned from each release into subsequent deployments. All three releases are planned for completion by Q1 2029, excluding stabilization, reflecting data maturity, operational dependencies, and the need to retire legacy systems in anticipation of the Esri end-of-support milestone.

a. GIS Release 1 – Gas and BASE Foundation

Release 1 establishes the foundational spatial infrastructure of the future GIS environment. This release deploys gas assets, initial gas network capabilities, and foundational BASE datasets, including landbase layers that provide the geographic framework upon which asset and network information is maintained and visualized. Release 1 also establishes the Utility Network data model, core integrations, and initial GIS applications required to support gas operations.

By delivering gas GIS capabilities and foundational BASE datasets first, Release 1 establishes the spatial data foundation needed to support the subsequent transition of gas WAM processes to S/4HANA. Release 1 also provides an opportunity to validate data migration methods, synchronization processes, integrations, applications requiring remediation, and operational workflows before broader deployment. The lessons learned through Release 1 will reduce implementation risk and improve the efficiency and quality of future releases.

b. GIS Release 2 – Gas Completion and Electric Introduction

Release 2 completes the migration of gas GIS capabilities and transitions Power Generation and IT Telecom assets and operations to the ArcGIS Platform. This release includes deployment of the full portfolio of applications, integrations, and editing capabilities for Gas, Power Generation, and IT Telecom. Release 2 also introduces electric GIS capabilities by deploying the initial electric Utility Network, published datasets, supporting integrations, and selected electric applications.

Release 2 significantly expands the ArcGIS Platform's role as the authoritative source of geospatial and asset information. New utility network capabilities enable more advanced tracing and network analysis, improving operational visibility and supporting faster issue

identification and resolution. Release 2 also introduces enhanced data governance and validation capabilities that improve data quality by enforcing business rules directly within GIS (for example, preventing the join of dissimilar assets (e.g., size, material) to one another without an appropriate fitting), creating a more accurate and reliable source of asset and network information.

From a customer's perspective, these improvements are expected to strengthen gas and telecommunications network reliability and support more efficient field operations. Coupled with the SAP releases, new combined capabilities provide a unified platform for managing assets, work orders, inspections, maintenance activities, and cost tracking. This supports preventative and corrective maintenance with spatial context helping optimize work planning based on physical conditions, network connectivity inspection results, and asset risk factors.

c. GIS Release 3 – Electric Completion and Enterprise GIS Foundation

Release 3 completes the migration of electric GIS capabilities and deploys the remaining BASE datasets required to support enterprise-wide spatial operations. This release includes the full portfolio of electric applications, integrations, and editing capabilities, ultimately establishing the ArcGIS Platform as PG&E's enterprise system of record for geospatial and network information.

Building upon the capabilities introduced in earlier releases, Release 3 extends advanced tracing, subnetwork management, and data validation capabilities across the electric system. The release also provides the spatial foundation needed to support future substation asset registry capabilities and other advanced operational use cases. Upon completion, PG&E will have a modern, integrated GIS platform capable of supporting EAM, operational planning, regulatory compliance, and future technology innovation.

From a customer's perspective, these improvements are expected to strengthen Electric network reliability and support more efficient field operations. Coupled with the SAP releases, new combined capabilities

provide a unified platform for managing assets, work orders, inspections, maintenance activities, and cost tracking. This supports preventative and corrective maintenance with spatial context helping optimize work planning based on physical conditions, network connectivity, inspection results, and asset risk factors.

d. Summary of GIS Releases

Together, these three releases provide a deliberate and sequenced approach to modernizing PG&E's geospatial capabilities while maintaining safe and reliable utility operations. By progressively establishing foundational spatial data, utility network functionality, and enterprise integrations, the GIS Transformation creates the geospatial and asset-data foundation required to support the ERP Transformation and deliver the long-term operational, reliability, and customer benefits described throughout this testimony.

4. Coordination of ERP and GIS Releases

The ERP and GIS release schedules are coordinated to align system dependencies and support the phased deployment of integrated business capabilities. For most operational domains, ERP-enabled processes are deployed only after the corresponding GIS capabilities and supporting data foundations are established, so that work execution, asset management, and related business processes operate using complete and accurate spatial, asset, and network data.

This dependency is embedded in the Program’s target state architecture. In order to implement SAP S/4HANA and Esri ArcGIS Platform, PG&E must also take into account the holistic end-to-end solution that includes the broader set of applications, integrations, and data flows required to support planning, Work and Asset Management, Supply Chain, Finance, HR, and related functions. Because these capabilities operate across multiple systems, they must be deployed in a coordinated sequence that reflects their technical and operational interdependencies. Each release therefore builds on a shared enterprise architecture together with release-specific solution design, data structures, interfaces, and integration

patterns that govern how systems interact and how business processes are executed during that phase of the Transformation.

This coordinated sequencing supports the business outcomes described in Chapter 1 by allowing PG&E to deploy complete business capabilities over time, rather than introducing disconnected technology components. It also reduces implementation risk by ensuring that dependencies are established before downstream capabilities are activated. Because the architecture is tightly integrated and sequenced, material changes to the order, scope, or timing of releases would require substantial reconfiguration of integrations, data flows, solution designs, and operational processes. Such changes would result in corresponding impacts to program cost, schedule, and implementation risk. The SI supports this coordination by helping maintain an integrated view of release scope, dependencies, solution design, data readiness, and deployment sequencing across ERP, GIS, and related applications.

The ERP and GIS Transformation will also be delivered over multiple years designed to maintain operational continuity, establish foundational capabilities before dependent functionality is deployed, and manage implementation risk. Sequencing releases over multiple years allows PG&E to coordinate ERP and GIS interdependencies, prepare coworkers for adoption of new tools and processes, validate capabilities incrementally, and incorporate lessons learned into subsequent releases.

5. Multi-year Program Schedule

The ERP and GIS Transformation will be delivered over multiple years through a phased implementation approach designed to manage risk, maintain operational continuity, and establish foundational capabilities before dependent functionality is deployed. The release schedule reflects three primary considerations, listed in order of importance:

- **Maintain operational continuity and organizational readiness** by sequencing releases to introduce change in a controlled manner, prepare coworkers for adoption, and minimize disruption to critical business operations;

- **Establish foundational capabilities** early in the program, including core data structures, system configurations, integrations, and platform components that enable subsequent business functionality; and
- **Manage ERP and GIS interdependencies** so integrated business processes are deployed in the appropriate sequence and supported by the required spatial, asset, and enterprise capabilities.

The resulting multi-year ERP and GIS implementation schedule is designed to address enterprise-wide operational constraints and implementation dependencies. Key constraints include recurring business and operational cycles, such as DCPP refueling outages, wildfire and storm season activities, peak field-work periods, and financial close processes. These constraints limit the periods during which major system changes can be deployed and require releases to be sequenced carefully across the program.

Accordingly, PG&E has adopted a phased deployment approach that aligns implementation activities with operational availability, establishes prerequisite capabilities before dependent functionality is deployed, and coordinates ERP and GIS releases across affected business processes. This approach enables PG&E to maintain operational continuity, validate system performance incrementally, reduce deployment risk, and incorporate lessons learned from each release into subsequent releases.

Figure 2-7 above reflects the target implementation schedule underlying PG&E's forecast, including the planned sequencing, duration, and coordination of ERP and GIS releases. Detailed cutover dates may be refined through release-specific planning to address operational, regulatory, and technical considerations while maintaining the overall sequencing and dependencies reflected in the implementation plan.

PG&E will actively manage the program schedule through established PMO governance, oversight, and control processes, as described in this Chapter. This governance framework will allow the program to respond to changing business requirements and implementation conditions while maintaining overall schedule discipline, transparency, and accountability.

I. Conclusion

PG&E's ERP and GIS Transformation represents the prudent and reasonable approach to addressing the impending vendor end-of-support of the Company's current platforms while maintaining safe, reliable, and affordable utility operations. The proposed scope focuses on six mission-critical business functions that are fundamental to planning and executing work, managing utility assets, deploying resources, maintaining financial and regulatory compliance, and supporting employee and public safety.

The proposed implementation strategy balances operational risk, cost, and customer impact through three sequential and coordinated releases across both the ERP and GIS environments. By deploying capabilities incrementally rather than through a single enterprise-wide cutover, PG&E can reduce implementation risk, maintain operational continuity, validate business outcomes at each stage, and apply lessons learned to subsequent releases. This phased approach provides a disciplined path for modernizing two of PG&E's most critical enterprise platforms while ensuring continued support for essential utility operations.

The Transformation is designed not only to replace aging technology nearing the vendor end-of-support, but also to establish a modern, secure, and scalable operational foundation capable of supporting PG&E's evolving regulatory obligations, wildfire mitigation and resilience objectives, grid modernization initiatives, and California's clean energy goals. Accordingly, PG&E respectfully requests that the Commission approve PG&E's Transformation, and the phased three-release implementation strategy for both platforms.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 3

COST AND BENEFIT FORECAST ANALYSIS

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 3
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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 3
COST AND BENEFIT FORECAST ANALYSIS

A. Introduction

This chapter presents Pacific Gas and Electric Company's (PG&E or the Company) forecast costs and expected financial benefits associated with the proposed Enterprise Resource Planning (ERP) and Geographic Information System (GIS) Transformation (ERP and GIS Transformation, Transformation, or Program), including implementation of SAP S/4HANA ERP and Esri ArcGIS Platform. As described in Chapter 2, the Transformation is an integrated enterprise effort that will modernize PG&E's ERP and GIS systems while standardizing and streamlining the business processes and workflows these systems support. The scope and complexity of this program, spanning two platforms, six cost groups, three ERP releases and three coordinated GIS releases, and enterprise-wide process and organizational change, are described in detail in Chapter 2 and inform the cost and benefit forecasts presented in this chapter. The Transformation is expected to generate substantial benefits for customers, as described in Section C.

PG&E estimates total program costs of approximately $2,911 million for 2023 through 2030,[1] as shown in Table 3-1. PG&E forecasts approximately $2,705 million in capital expenditures for 2023 through 2030 and $205 million in operations and maintenance (O&M) expenses for 2027 through 2030.[2]

The cost forecast reflects the integrated scope of the ERP and GIS Transformation. The Program's operational, technical, data, application, deployment, and organizational activities were designed and estimated together and have significant dependencies. Accordingly, individual cost components should not be viewed as independent or interchangeable line items. Changing or removing an individual component could require redesign of dependent activities, changes to release sequencing, increased implementation risk, or

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1 Of the $2,911 million, $216 million reflect recorded costs during the period 2023 through 2025.

2 PG&E is not seeking recovery in this Application of any recorded O&M expenses incurred through December 31, 2026.

reductions in the benefits the Program is expected to deliver. The forecast costs and benefits presented in this chapter therefore reflect the ERP and GIS Transformation as proposed.[3]

The following table presents the forecast costs by platform and year:

TABLE 3-1
SUMMARY OF FORECAST CAPITAL AND EXPENSE BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

		Recorded				Forecast					
Line No.	Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	ERP	$ -	$ 4.8	$ 38.1	$ 138.0	$ 316.8	$ 407.6	$ 331.6	$ 570.5	$ 236.3	$ 2,043.8
2	GIS	-	-	4.0	31.0	134.7	193.3	186.9	111.6	-	661.5
3	**Capital Total**	**$ -**	**$ 4.8**	**$ 42.0**	**$ 169.0**	**$ 451.6**	**$ 601.0**	**$ 518.4**	**$ 682.1**	**$ 236.3**	**$ 2,705.3**
4	ERP	$ 0.5	$ 4.6	$ 12.7	$ 32.2	$ 50.6	$ 3.6	$ 10.2	$ 19.4	$ 30.7	$ 164.4
5	GIS	-	-	1.6	7.8	21.5	8.4	$ 36.9	49.7	46.6	172.5
6	**Expense Subtotal**	**$ 0.5**	**$ 4.6**	**$ 14.3**	**$ 40.0**	**$ 72.1**	**$ 12.0**	**$ 47.0**	**$ 69.1**	**$ 77.3**	**$ 336.9**
7	Adjustment (a)	(0.5)	(4.6)	(14.3)	(40.0)	(72.1)	-	-	-	-	(131.5)
8	**Expense Total**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 12.0**	**$ 47.0**	**$ 69.1**	**$ 77.3**	**$ 205.4**
9	ERP	$ -	$ 4.8	$ 38.1	$ 138.0	$ 316.8	$ 411.2	$ 341.7	$ 589.9	$ 267.0	$ 2,107.5
10	GIS	-	-	4.0	31.0	134.7	201.7	223.7	161.3	46.6	803.2
11	**Total**	**$ -**	**$ 4.8**	**$ 42.0**	**$ 169.0**	**$ 451.6**	**$ 612.9**	**$ 565.5**	**$ 751.2**	**$ 313.7**	**$ 2,910.7**

(a) PG&E is not seeking recovery in this Application of any recorded O&M expenses incurred through December 31, 2026.

Note:

i. As described in Chapter 5, PG&E is seeking a memorandum account to track the revenue requirements associated with these platforms, with an effective date of November 3, 2026, which coincides with the filing date of this proceeding. As described in Chapter 4, PG&E's revenue requirement calculation presented in this proceeding excludes the revenue requirements associated with operative capital through November 3, 2026.

ii. Recorded capital expenditures are associated with assets that are not yet in service.

iii. The amounts shown in testimony tables may not sum due to rounding.

The ERP and GIS Transformation is expected to generate substantial customer benefits by improving the efficiency, effectiveness, and consistency of how PG&E plans, schedules, performs, records, and manages work across the enterprise. For customers, these improvements are expected to reduce the future capital and O&M costs PG&E otherwise would incur to perform the same work. PG&E will reflect its forecast for these savings in future General Rate Case revenue requirements, as described in Section C of this chapter. Customers therefore are expected to benefit through lower future cost-of-service

[3] Due to the time necessary to prepare this testimony and the underlying cost and benefit forecasts and supporting analyses, PG&E's forecast capital expenditures reflect information available as of August 2026. Accordingly, the reasonableness of the forecast should be assessed in light of the facts, assumptions, and information known to PG&E as of that date.

and revenue requirements than would otherwise be necessary absent this Transformation.

The Transformation is also expected to reduce manual activities, improve the quality and accessibility of information, strengthen coordination across functions, and support more standardized business processes. These improvements are expected to help employees spend less time navigating systems, reconciling information, and performing administrative activities and more time supporting activities that advance PG&E's operational, safety, and customer service objectives.

Using PG&E's 2024 portfolio of work as the baseline, PG&E forecasts total benefits of more than $9 billion from 2028 through 2039, including approximately $6 billion in capital benefits and approximately $3 billion in expense benefits, as shown in Table 3-2. PG&E selected 2024 as the baseline year because it was the most recent complete year of recorded spending available when the benefit analysis was developed. The benefit forecast reflects expected improvements in work execution, asset management, supply chain operations, planning, financial management, workforce enablement, health and safety processes, and technology modernization across the enterprise.

The following table presents the forecast financial benefits by platform and year:

TABLE 3-2
SUMMARY OF FORECAST CAPITAL AND EXPENSE BENEFITS BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Benefit Category	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	ERP	$ 1.8	$ 16.9	$ 135.3	$ 481.2	$ 765.9	$ 818.5	$ 827.9	$ 584.6	$ 508.1	$ 518.3	$ 528.8	$ 539.5	$ 5,726.8
2	GIS	-	0.5	24.5	37.3	45.8	47.2	48.2	50.1	37.3	38.1	38.8	29.7	397.6
3	**Capital Total**	**$ 1.8**	**$ 17.4**	**$ 159.8**	**$ 518.6**	**$ 811.7**	**$ 865.7**	**$ 876.0**	**$ 634.7**	**$ 545.4**	**$ 556.4**	**$ 567.7**	**$ 569.2**	**$ 6,124.4**
4	ERP	2.5	11.8	71.7	219.3	353.0	388.6	398.3	259.5	213.6	217.8	225.0	232.4	$ 2,593.5
5	GIS	-	13.7	29.6	55.9	64.2	66.6	68.5	70.5	72.5	74.5	76.6	59.1	651.7
6	**Expense Total**	**$ 2.5**	**$ 25.5**	**$ 101.3**	**$ 275.2**	**$ 417.2**	**$ 455.2**	**$ 466.8**	**$ 330.0**	**$ 286.1**	**$ 292.3**	**$ 301.6**	**$ 291.5**	**$ 3,245.1**
7	ERP	$ 4.3	$ 28.7	$ 207.0	$ 700.5	$ 1,118.9	$ 1,207.1	$ 1,226.2	$ 844.2	$ 721.7	$ 736.1	$ 753.8	$ 771.9	$ 8,320.3
8	GIS	-	14.1	54.0	93.2	110.1	113.8	116.7	120.5	109.8	112.6	115.5	88.8	1,049.2
9	**Total**	**$ 4.3**	**$ 42.9**	**$ 261.1**	**$ 793.7**	**$ 1,229.0**	**$ 1,320.9**	**$ 1,342.9**	**$ 964.7**	**$ 831.5**	**$ 848.7**	**$ 869.2**	**$ 860.7**	**$ 9,369.5**

Note: The amounts shown in testimony tables may not sum due to rounding.

The remainder of this chapter is organized as follows. Section B describes the development of the cost forecast and presents the recorded and forecast capital expenditures and O&M expenses by cost group and workstream, including contingency and incrementality. Section C describes the expected financial benefits of the ERP and GIS Transformation, including the benefit methodology, forecast benefits, value realization framework, and proposed treatment of customer benefits. Section D presents the benefit-cost analysis, and Section E provides the chapter's conclusion.

Figures 1 and 2 in Appendix B provide visual summaries of the Program cost and benefit forecasts.

B. ERP and GIS Transformation Cost Forecast

This section describes the methodology used to develop the forecast costs for the ERP and GIS Transformation, including the scope of work evaluated, the principal cost drivers, and the estimating approaches used to develop the forecast. The methodologies described below provide a reasonable basis for the cost forecast.

1. Development of Cost Forecast

The ERP and GIS Transformation encompasses a broad range of activities, technologies, products, services, and delivery approaches. Because the nature of the underlying scope varies across these components, no single estimating methodology is appropriate for the entire Program. PG&E therefore used the methodology or combination of methodologies best suited to each cost component.

PG&E developed cost forecasts using the following estimating methodologies:

a. Contract and Market-Based Estimating Methodologies

- Fixed-Price Contract: Fixed-Price Contract estimates are based on pricing obtained through executed or near-final contracts in which a vendor has committed to deliver a defined scope of work at a stated price. Where PG&E has entered into a Fixed-Price Contract, the applicable contract price forms the basis for the corresponding cost forecast, subject to the scope, assumptions, dependencies, exclusions, and timing reflected in the agreement.

- Vendor Request for Proposal (RFP) and Competitive Solicitation: Estimates developed through formal sourcing, procurement, and contract negotiation activities reflect market-based pricing for defined program scope. Forecast inputs are informed by vendor proposals, competitive solicitations, negotiated pricing, contractual agreements, vendor quotations, and other commercially established pricing information available at the time the estimate is developed. This methodology is applied where procurement activities provide direct pricing inputs for labor, software, cloud services, infrastructure, equipment, or other products and services required by the Program.

PG&E selected its Systems Integrator[4] (SI) through a structured competitive solicitation process designed to promote transparent and objective evaluation. The process included detailed scoping, defined evaluation criteria, competitive bidding, proposal review, reference checks, Best and Final Offer negotiations, and contract negotiations. This process enabled PG&E to select the implementation partner based on qualifications, delivery approach, and competitive cost.

b. Scope and Resource-Based Estimating Methodologies

- Unit-based: Unit-based estimates rely on discrete, quantifiable units of work or deliverables multiplied by an applicable cost or effort assumption. Units may include the number of applications, interfaces, data objects, reports, conversion objects, system components, environments, licenses, users, or other identifiable Program elements. PG&E used this approach where the scope could be expressed in discrete units and supported by applicable unit cost assumptions, benchmarks, or vendor pricing.
- Resource-based: Resource-based estimates reflect the staffing and labor capacity required to execute defined program activities. PG&E

[4] Systems Integrator refers to the third-party implementation partner responsible for supporting the design, configuration, integration, testing, data conversion, deployment, and stabilization of the ERP and GIS Transformation solutions and associated business processes.

developed these estimates by identifying the roles, skill levels, duration, and effort required for each activity and applying the appropriate internal or external labor rates. PG&E used this approach where labor effort is the primary cost driver, including work performed by PG&E employees, SI, and other external labor providers.

- Bottom-Up: Bottom-up cost estimates were developed by identifying individual activities, deliverables, resources, or units of work and aggregating those estimates to produce an overall cost forecast.

  Bottom-up estimates may incorporate Unit-Based or Resource-Based calculations. For example, an estimate may begin with a defined number of applications, interfaces, or data objects; assign an estimated level of effort to each unit based on its complexity; translate that effort into labor hours or resources; and apply the appropriate labor rates.

c. Experience and Reference-Based Estimating Methodologies

- Historical Cost Basis: Historical cost estimates used only for certain O&M support forecasts rely on actual costs incurred by PG&E for comparable activities, services, or technologies. Where PG&E has prior experience with similar scope, historical cost data may inform future projections or be considered alongside estimates developed through other approaches.
- Subject Matter Expert (SME) Judgment: SME judgment uses the experience and expertise of individuals with direct knowledge of the relevant business processes, technology solutions, operational requirements, delivery approaches, or Program scope. PG&E used such judgment to inform estimating inputs and assumptions, including for components where discrete cost inputs were not available. SME judgment was also considered in conjunction with contract pricing, Unit-Based estimates, resource requirements, historical costs, benchmark information, and other forecast inputs, as applicable.

- Benchmark-Informed: Benchmark-Informed estimates use cost, effort, or staffing information from comparable large-scale technology transformation programs as an input to the forecast or to assess forecast assumptions.

  PG&E evaluated benchmark information in the context of the Program's scope, organizational scale, technical architecture, implementation duration, release strategy, security and compliance requirements, and other Program-specific characteristics.

d. Application of Estimating Methodologies by Cost Group

PG&E applied the cost estimating methodologies described above to the major program cost groups based on the work included within each group and the information available to support the estimate. The resulting cost forecasts are organized around major cost groups that collectively represent the activities and resources required to implement and sustain the ERP and GIS Transformation:

- Solution;
- Technology Enablement;
- Application Remediation;
- Technology Infrastructure and Software;
- Program Management Office (PMO); and
- Business Enablement.

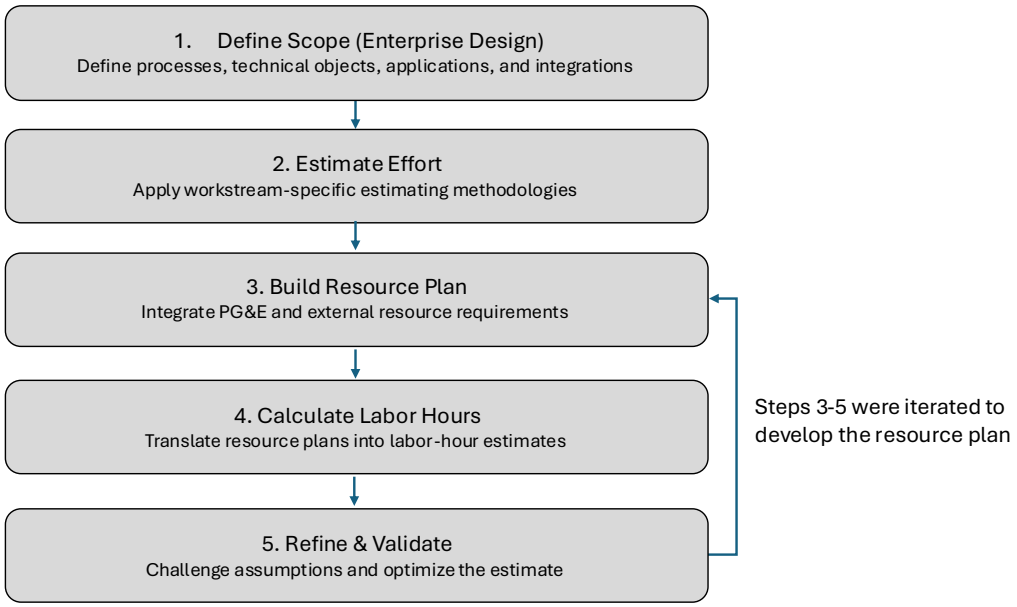
Certain cost groups are further divided into operational or technical workstreams. For example, the Solution cost group includes 10 operational and technical workstreams. Forecast costs across these cost groups include a combination of PG&E labor, external labor provided by SIs and other contractors, and non-labor expenditures such as software, cloud services, infrastructure, and technology licensing. For purposes of this chapter, references to external labor include labor provided by the SI and other third-party implementation support resources. Consistent with the underlying workpapers and supporting schedules, these resources may be collectively referred to as SI labor or external labor.

The detailed application of these methodologies, including the work to be performed, forecast amounts, principal cost drivers, assumptions, and supporting workpapers, is described in Section B.6.

2. Development of the Labor Forecast

PG&E developed the ERP and GIS Transformation cost forecast through a 5-step process that began with the scope and delivery requirements established through Enterprise Design. PG&E applied the forecast methodologies described in Section B.1 to develop the associated cost and resource requirements, developed a resource plan, translated that resource plan into annual labor hours, and refined and validated the resulting estimate. Figure 3-1 summarizes this process.

FIGURE 3-1
DEVELOPMENT AND REFINEMENT
OF THE TRANSFORMATION PROGRAM LABOR ESTIMATE



Step 1: Define Scope

The estimating process began after most Enterprise Design workshops concluded, when the program had sufficient definition to translate design outputs into delivery requirements. Capability assessments, process-design workshops, solution confirmation, and application, data, and integration planning identified the work to be performed. These scope inputs were developed through the Enterprise Design activities described in Chapter 2,

Section C.1, including Capability Fit Assessment, Delivery and Deployment, Enterprise Data Model, and Value Case workshops.

For ERP, Enterprise Design established the business processes, capabilities, integrations, data requirements, and technical development activities required across the six cost groups. These scope inputs, together with approximately 3,200 to 3,900 technical objects,[5] including reports, interfaces, conversions, enhancements, forms, and workflows, informed the estimate of the effort required to implement the ERP solution. Technical objects were evaluated based on their type and complexity, whether new development or modification was required, and opportunities for reuse. The range reflects the scope considered during estimating rather than a final count of technical objects to be delivered.

For GIS, estimating inputs included application configuration, integrations, data conversion and remediation, testing, deployment, and associated process and organizational changes. Scope inputs included approximately 280 to 300 integration inventory entries, approximately 110 to 120 directly affected applications, and approximately 20 to 30 downstream applications. The estimate did not assume that each application or integration inventory entry required a new build. GIS estimating inputs also reflect data design, cleansing, conversion, and validation activities across Gas, Electric, Information Technology (IT)/Telecom, Power Generation, and enterprise GIS.

Step 2: Estimate Costs and Effort

PG&E applied the estimating methodologies described in Section B.1 based on the nature of the work and the information available for each cost component. SI proposals, competitive solicitations, contracting information, unit- and resource-based estimates, and other applicable estimating inputs informed the associated cost and effort estimates. As shown in Table 3-3 below, the estimating basis varied by cost group to reflect the nature of the work. Technology Infrastructure and Software consists of software,

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5 A Technical Object is a system component that requires configuration, development, integration, conversion, reporting, workflow, or other technical work to support business processes and system functionality.

subscriptions, cloud hosting, and infrastructure, and is not included in the labor hour estimate.

TABLE 3-3
APPLICATION OF COST FORECAST METHODOLOGIES TO LABOR EFFORT

Line No.	Cost Group	Cost Forecast Methodologies	Application to Labor Effort	Reference
1	Solution	• Vendor RFP & Competitive Solicitation • Resource-Based • Unit-Based • SME Judgment • Fixed Price Contract	ERP labor effort reflected operational scope across six workstreams and between 3,200 and 3,900 technical objects by type, complexity, and reuse. GIS labor effort reflected resource plans for applications, integrations, data migration, testing, and deployment, with a staffing allowance for business enhancements. SI solicitation and contracting informed both.	B.6.a
2	Technology Infrastructure and Software	• Vendor RFP & Competitive Solicitation • Unit-Based	Consists of software, subscriptions, cloud hosting, and infrastructure, and is not included in the labor hour estimate.	B.6.b
3	Technology Enablement	• Resource-Based • Benchmark-Informed • SME Judgment	Roles and duration of support for environments, architecture, security, and controls, informed by benchmarks and staffing references from comparable utility programs.	B.6.c
4	Application Remediation	• Bottom-Up • Unit-Based • SME Judgment	Estimated application by application based on required disposition, including modification, integration, testing, replacement, and retirement.	B.6.d
5	Program Management Office	• Resource-Based • Benchmark-Informed • SME Judgment	Program and value management coverage over the implementation period, adjusted for delivery complexity, governance, portfolio coordination, and duration.	B.6.e
6	Business Enablement	• Resource-Based • Benchmark-Informed • SME Judgment	Organizational Readiness and Operating Model effort based on affected roles, training requirements, and transition timing.	B.6.f

Step 3: Build the Resource Plan

PG&E combined the estimated external effort with the PG&E business and IT participation necessary for requirements, design validation, data preparation, testing, and deployment. Technology Enablement, Program Management Office, and Business Enablement resources supplied technical architecture, security and controls, program governance, organizational readiness, operating model development, and training. Application

Remediation labor was estimated separately based on the work required for affected applications and their planned dispositions and was not translated into a separate FTE resource plan.

For the other labor-based cost groups, the resulting resource plans specified the roles, skills, staffing levels, and periods of participation required to design, build, test, deploy, stabilize, and govern the planned ERP and GIS releases.

Step 4: Calculate Labor Hours

PG&E translated the roles, skills, staffing levels, and periods of participation into annual labor hour requirements. Process and technical-object counts informed the estimate but did not, by themselves, represent the full labor requirement. The labor estimate also reflected dedicated PG&E business and IT participation, testing, deployment, stabilization, governance, organizational readiness, operating-model, training, and other enabling activities required to implement the planned releases.

Step 5: Refine and Validate

As scope and implementation planning progressed, PG&E evaluated whether work could be avoided, consolidated, deferred, or sequenced differently and whether staffing should change as a result. Resulting changes were incorporated into revised delivery and resource plans and reviewed with workstream leads, program leadership, and applicable governance forums. This process provided a check that changes made for affordability, sequencing, or delivery efficiency remained consistent with the retained scope, and that staffing remained aligned with the selected implementation baseline.

3. Capitalization Treatment

The cost forecast presented in this chapter is consistent with the proposed accounting treatment for IT capital project expenses described in PG&E's pending 2027 General Rate Case (GRC) Application (A.) (A.25-05-009). Accordingly, the forecast allocation of costs between

capital and O&M expense remains subject to the Commission's final determination regarding those policies.[6]

4. Integrated ERP and GIS Transformation Approach

The ERP and GIS Transformation has been planned, designed, and estimated as an integrated enterprise program. ERP and GIS are being implemented together because the business processes, asset and geospatial data, applications, integrations, and operational workflows supported by the two platforms are closely connected. Many of the future-state ERP capabilities depend on accurate and accessible GIS asset, location, and network information, while GIS capabilities depend on integration with ERP work and asset management processes. Coordinating the two transformations therefore allows PG&E to design, integrate, test, deploy, and transition these capabilities together rather than treating ERP and GIS as separate technology implementations.

The scope and cost components within the Transformation are also interdependent. The Transformation includes not only the business capabilities being implemented, but also the technical, data, application, program management, and business activities necessary to develop, deploy, and adopt those capabilities. These components were planned and estimated together based on the scope, release sequence, dependencies, and implementation requirements of the Transformation. As a result, changing or removing one component can affect the scope, effort, timing, or benefits associated with other components.

Accordingly, individual cost groups, workstreams, or other scope components should not be evaluated as though they can be removed while leaving the remainder of the proposed implementation, cost forecast, and expected benefits unchanged. Any change to the proposed scope would need to be evaluated together with its effects on related scope, costs, schedule, and expected benefits across the broader Program. The forecast

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6 The cost forecast presented in this chapter reflects the proposed accounting treatment for IT capital project expenses described in PG&E's pending 2027 GRC Application, A.25-05-009. Under that proposed treatment, eligible implementation costs are forecast as capital, while costs that do not qualify for capitalization are forecast as O&M expense. The allocation between capital and O&M remains subject to the Commission's final determination regarding the proposed accounting treatment.

costs and benefits presented in this chapter reflect the integrated ERP and GIS Transformation as proposed.

5. Cost Escalation and Forecast Cost Components

Unless otherwise noted, cost figures presented in this chapter are stated in nominal dollars, reflecting the year in which each cost is forecast to be incurred. Nominal-dollar figures were developed by escalating cost estimates from their base year (2025) using escalation rates appropriate to each cost category (e.g., PG&E labor, external labor). Since escalation rates may differ by cost category, year-over-year changes in the forecast reflect a combination of escalation and changes in the scope, timing, and pace of program activities. Please see the Escalation workpaper 3-9.

In addition to escalation, the cost forecasts include applicable labor overheads, contingency, Allowance for Funds Used During Construction (AFUDC), and other program-related costs. PG&E labor rates incorporate applicable employee benefits and overhead costs, while additional costs, including travel and meals for PG&E and SI personnel, are included where applicable. Contingency is also included to account for remaining implementation uncertainty, as described in Section B.9. AFUDC reflects the financing costs incurred during the development and implementation of capital assets before they are placed into service and is routinely included in utility capital project cost forecasts.

Accordingly, the cost tables presented throughout this chapter reflect the applicable escalation, labor overheads, contingency, and other program-related costs described above. The forecast cost workpapers identify contingency, travel, meals, and other direct program costs reflected in the forecast. Certain labor-related costs, including applicable employee benefits and overhead costs, are incorporated into PG&E labor rates and therefore are reflected within the labor cost estimates, rather than presented as separate forecast components.

6. Capital Expenditure Forecast

The capital expenditure forecast represents the investment required to design, configure, integrate, test, deploy, and stabilize the ERP and GIS Transformation and redesign related business processes to establish the

resulting platforms and capabilities for operational use. The forecast includes the Solution, Technology Infrastructure and Software, Technology Enablement, Application Remediation, Program Management Office, and Business Enablement cost groups.

The forecast reflects the scope and implementation approach described in Chapter 2. Supporting workpapers provide annual forecast cost detail by cost group and workstream, including labor and non-labor costs.

For labor-based estimates, the workpapers provide supporting detail regarding applicable roles, forecast hours or staffing, labor rates, and forecast costs. For non-labor estimates, the workpapers provide forecast cost detail and identify the types of software, technology products, and services included in the forecast, as applicable.

Table 3-4 summarizes the recorded and forecast capital expenditures for both platforms in total by cost group for the period 2023 through 2030. The discussion below focuses on forecast expenditures, while Section B.7 describes the recorded costs incurred during Phase Zero and Enterprise Design and the methodology used to allocate shared costs among workstreams.[7]

TABLE 3-4
SUMMARY OF CAPITAL EXPENDITURES BY COST GROUP
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Cost Group	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	Solution	$ 3.2	$ 15.7	$ 98.9	$ 277.9	$ 335.8	$ 280.7	$ 425.0	$ 136.6	$ 1,573.8
2	Technology Enablement	0.4	2.0	12.9	46.9	50.3	43.0	43.8	15.4	214.9
3	Application Remediation	0.5	2.4	15.6	39.8	55.5	54.6	69.0	14.2	251.6
4	Technology Infrastructure and Software	-	18.2	18.4	41.5	56.9	57.0	53.7	48.0	293.6
5	Program Management Office	0.4	2.1	13.0	21.4	55.8	50.6	54.1	13.0	210.4
6	Business Enablement	0.3	1.6	10.2	24.1	46.6	32.6	36.4	9.2	161.1
7	**Total**	**$ 4.8**	**$ 42.0**	**$ 169.0**	**$ 451.6**	**$ 601.0**	**$ 518.4**	**$ 682.1**	**$ 236.3**	**$ 2,705.3**

Note: The amounts shown in testimony tables may not sum due to rounding.

[7] Although Phase Zero and Enterprise Design activities were substantially completed during the recorded period (2023-2025), some closeout and transition activities continued into 2026. Consistent with the forecast period presented in this testimony, all 2026 expenditures, including these remaining activities, are reflected as forecast capital expenditures.

Table 3-5 summarizes the recorded[8] and forecast capital expenditures by platform and cost group for the period 2023 through 2030.

TABLE 3-5
SUMMARY OF CAPITAL EXPENDITURES BY PLATFORM AND COST GROUP
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Cost Group	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	Solution	$ 3.2	$ 13.3	$ 81.3	$ 199.4	$ 231.5	$ 191.6	$ 353.5	$ 136.6	$ 1,210.4
2	Technology Enablement	0.4	1.5	9.1	26.4	26.9	18.7	37.2	15.4	135.6
3	Application Remediation	0.5	2.0	12.1	25.5	43.8	33.1	49.2	14.2	180.4
4	Technology Infrastructure and Software	-	18.2	16.7	33.0	34.6	38.0	49.4	48.0	237.9
5	Program Management Office	0.4	1.7	10.2	12.8	35.7	29.8	48.3	13.0	151.8
6	Business Enablement	0.3	1.4	8.6	19.7	35.1	20.4	32.9	9.2	127.6
7	**ERP Total**	**$ 4.8**	**$ 38.1**	**$ 138.0**	**$ 316.8**	**$ 407.6**	**$ 331.6**	**$ 570.5**	**$ 236.3**	**$ 2,043.8**
8	Solution	$ -	$ 2.4	$ 17.6	$ 78.5	$ 104.3	$ 89.1	$ 71.5	$ -	$ 363.4
9	Technology Enablement	-	0.5	3.8	20.5	23.4	24.4	6.6	-	79.3
10	Application Remediation	-	0.5	3.4	14.3	11.7	21.4	19.8	-	71.1
11	Technology Infrastructure and Software	-	-	1.7	8.5	22.3	19.0	4.3	-	55.7
12	Program Management Office	-	0.4	2.8	8.6	20.1	20.8	5.8	-	58.5
13	Business Enablement	-	0.2	1.6	4.4	11.5	12.2	3.5	-	33.4
14	**GIS Total**	**$ -**	**$ 4.0**	**$ 31.0**	**$ 134.7**	**$ 193.3**	**$ 186.9**	**$ 111.6**	**$ -**	**$ 661.5**
15	**Total**	**$ 4.8**	**$ 42.0**	**$ 169.0**	**$ 451.6**	**$ 601.0**	**$ 518.4**	**$ 682.1**	**$ 236.3**	**$ 2,705.3**

Note: The amounts shown in testimony tables may not sum due to rounding.

a. Solution

Solution Cost Group Description

The Solution cost group is the largest component of the ERP and GIS Transformation capital expenditure forecast. It includes the operational and technical activities required to design, build, test, deploy, and stabilize the future ERP and GIS business processes and technology capabilities. It includes both the operational workstreams that define how PG&E will perform work in the future and the cross-functional technical work required to deliver those capabilities as an integrated enterprise solution, as described in Chapter 2.

[8] The recorded costs reflect activities during Enterprise Design and Phase Zero that supported multiple program workstreams and could not always be directly attributed to a single workstream. To allocate these shared costs, PG&E applied a proportional allocation methodology that assigned Enterprise Design and Phase Zero costs across workstreams based on each workstream's relative share of the forecast capital ERP and GIS costs.

The objective of the Solution work is to establish more standardized and integrated processes, reduce unnecessary customization and technical complexity, improve the quality and accessibility of information, and deliver capabilities that support PG&E's operational, financial, workforce, planning, supply chain, and safety responsibilities.

The Solution cost group includes six ERP operational workstreams, two ERP technical workstreams, and two GIS technical workstreams. The ERP operational workstreams are Work and Asset Management (WAM), Supply Chain, Finance, Human Resources (HR), Integrated Planning, and Enterprise Health and Safety (EH&S). The ERP technical workstreams are Development, Integration, and Solution Delivery and Data and Analytics. The GIS technical workstreams are Applications and Processes and Data Migration and Conversion. The supporting Solution workpaper separately presents annual staffing and nominal costs for each operational and technical workstream and incorporates applicable forecast adjustments in developing the cost forecast. Operational workstreams support the implementation of business processes and capabilities within specific operational areas, while technical workstreams provide the development, integration, data, and GIS capabilities needed to support the Transformation.

Table 3-6 presents recorded and forecast capital expenditures for the Solution cost group by platform and workstream for 2023 through 2030.

TABLE 3-6
SOLUTION COST GROUP – CAPITAL EXPENDITURES BY PLATFORM AND WORKSTREAM
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Cost Type	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	Work and Asset Management	$ 1.0	$ 4.0	$ 24.7	$ 42.3	$ 67.5	$ 75.2	$ 122.1	$ 30.7	$ 367.4
2	Supply Chain	0.4	1.8	11.1	22.1	31.2	31.7	52.8	14.7	165.9
3	Finance	0.4	1.7	10.4	25.4	23.7	19.2	45.0	29.4	155.2
4	Human Resources	0.3	1.0	6.4	23.4	16.5	5.9	20.7	21.0	95.2
5	Integrated Planning	0.1	0.3	2.1	10.6	7.5	3.9	5.6	1.4	31.6
6	Enterprise Health and Safety	0.0	0.2	1.1	9.8	5.0	-	-	-	16.2
7	Dev, Int, Sol Deliv	0.7	3.0	18.1	44.9	61.8	39.8	76.1	25.6	270.0
8	Data and Analytics	0.3	1.2	7.3	20.9	18.3	16.0	31.0	13.9	109.0
9	**ERP Total**	**$ 3.2**	**$ 13.3**	**$ 81.3**	**$ 199.4**	**$ 231.5**	**$ 191.6**	**$ 353.5**	**$ 136.6**	**$ 1,210.4**
10	Applications and Processes	$ -	$ 2.0	$ 14.9	$ 64.8	$ 84.7	$ 73.5	$ 67.5	$ -	$ 307.4
11	Data Migration and Conversion	$ -	$ 0.4	$ 2.7	$ 13.7	$ 19.7	$ 15.6	$ 4.0	$ -	$ 56.0
12	**GIS Total**	**$ -**	**$ 2.4**	**$ 17.6**	**$ 78.5**	**$ 104.3**	**$ 89.1**	**$ 71.5**	**$ -**	**$ 363.4**
13	**Total**	**$ 3.2**	**$ 15.7**	**$ 98.9**	**$ 277.9**	**$ 335.8**	**$ 280.7**	**$ 425.0**	**$ 136.6**	**$ 1,573.8**

Note: The amounts shown in testimony tables may not sum due to rounding.

Solution Cost Group Forecast Methodology

The Solution forecast was developed using a combination of *Vendor RFP and Competitive Solicitation, Fixed Price Contract, Resource-based, Unit-based, and SME Judgment* forecast methodologies, as described in Section B.1. The methodologies were applied based on the nature of the work and the information available, using the implementation scope, release sequencing, and requirements established in Phase Zero and Enterprise Design as the foundation for the estimate.

External labor costs were informed *by Vendor RFP and Competitive Solicitation* activities, including vendor proposals, negotiated pricing, and contractual information where available. PG&E labor requirements were largely developed using *Resource-Based* estimates reflecting the roles, skills, level of effort, and timing required to support design, validation testing, deployment, stabilization, and other implementation activities. *Unit-Based* estimates were used where effort could be developed from defined quantities of work, such as applications, interfaces, data or conversion objects, reports, or other identifiable Solution components. *SME Judgment* was used to develop, assess, and refine estimating inputs where appropriate and to confirm that resource requirements remained aligned with the implementation scope and planned releases.

Fixed Price Contract pricing was used where the scope was covered by an executed or near-final fixed-price agreement, including the applicable Phase Zero and Enterprise Design phases specifically.

The resulting estimates were incorporated into workstream resource plans and sequenced across the planned ERP and GIS releases consistent with the implementation approach described in Chapter 2**.**

1) Work and Asset Management

a) Description

The WAM workstream is the largest operational workstream within the Solution cost group. WAM plays a central role in how PG&E plans, executes, and manages field work and physical assets across its electric, gas, and power generation operations.

The workstream encompasses work management processes from work initiation and engineering design through scheduling, dispatch, execution, and work closing, as well as asset-lifecycle activities from acquisition and capitalization through maintenance, modification, and retirement. As described in Chapter 2, Section E.3.a, WAM transitions capabilities currently supported by SAP Plant Maintenance in ECC and multiple scheduling and dispatch tools to an integrated future state supported by SAP Enterprise Asset Management, SAP Enterprise Portfolio and Project Management, OverIT, and Esri ArcGIS Platform capabilities.

WAM scope and implementation complexity reflect both the scale of operations it must support and the breadth of its dependencies across the Program. The system will manage approximately 9.9 million assets and approximately 650,000 work orders annually, with approximately 420,000 new assets added each year across business units with materially different work management processes and requirements. WAM capabilities support the modernization of processes for Power Generation, Electric, and Gas Operations, and are closely integrated with Finance and Supply Chain capabilities.

Please see Chapter 2, Section E.3.a, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-7 below presents WAM workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-7
WAM WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded 2023	2024	2025	Forecast 2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.5	$ 2.0	$ 12.3	$ 23.8	$ 35.7	$ 35.8	$ 58.1	$ 14.5	$ 182.7
2	External	0.5	2.0	12.4	18.5	31.8	39.4	64.0	16.2	184.7
3	**Total**	**$ 1.0**	**$ 4.0**	**$ 24.7**	**$ 42.3**	**$ 67.5**	**$ 75.2**	**$ 122.1**	**$ 30.7**	**$ 367.4**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $337.7 million in Solution capital costs for the WAM workstream, reflecting approximately $167.9 million of PG&E labor and approximately $169.8 million in external labor required to design, build, test, deploy, and stabilize the WAM capabilities described above.

The principal cost drivers of the WAM workstream are the breadth of asset and work management capabilities being implemented; the volume and diversity of assets and work supported by those capabilities; implementation across Electric, Gas, and Power Generation operations; and the interfaces between WAM and GIS. The forecast also reflects the resources required for data conversion and validation, integration development and testing, business process validation, user acceptance testing, deployment, and post-deployment stabilization for each release.

Annual forecast staffing requirements correspond to the scope and timing of the three planned ERP releases. WAM staffing increases from approximately 83 FTEs in 2026 to 134 FTEs in 2027 as implementation activities support

Power Generation operations under Release 1. Staffing continues to grow to approximately 145 FTEs in 2028 and reaches a peak of approximately 234 FTEs in 2029 as WAM capabilities are deployed across Electric and Gas Distribution under Release 2 and implementation activities begin for Release 3. Staffing declines to approximately 59 FTEs in 2030 as implementation activities are completed for Electric Transmission and Substations and Gas Transmission and Storage, concluding the enterprise rollout of WAM capabilities. Forecast costs similarly peak at approximately $122.1 million in 2029 before declining as implementation activities are completed.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

2) Supply Chain

a) Description

The Supply Chain workstream is part of the Solution cost group supporting the acquisition and management of materials, equipment, and services required for PG&E's electric, gas, and power generation operations. The workstream encompasses sourcing, contracting, procurement, inventory and warehouse management, supplier and contractor management, and the movement of materials to support field work.

As described in Chapter 2, Section E.3.b, Supply Chain replaces customized SAP ECC processes and supporting tools with integrated capabilities built on SAP S/4HANA and related applications. SAP Ariba will support cloud-based procurement,

competitive sourcing, and supplier collaboration; SAP Extended Warehouse Management (EWM) will support inventory tracking and materials movement; SAP Fieldglass will support contractor workforce management; and Icertis will support contract management. The workstream also includes integration of SAP Ariba with SAP S/4HANA to support end-to-end procurement and payment processes, and migration of materials, supplier, purchasing, and inventory data from legacy systems.

Implementation requires coordination with WAM and Finance to align procurement, inventory management, and contractor services with work execution and financial processing. These dependencies and the transition of enterprise Supply Chain capabilities across planned ERP releases contribute to the scope and complexity of the workstream.

Please see Chapter 2, Section E.3.b, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-8 below presents the Supply Chain workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-8
SUPPLY CHAIN WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.2	$ 0.9	$ 5.4	$ 10.2	$ 14.5	$ 15.6	$ 26.0	$ 7.2	$ 79.9
2	External	0.2	0.9	5.8	11.9	16.7	16.1	26.8	7.5	86.0
3	**Total**	**$ 0.4**	**$ 1.8**	**$ 11.1**	**$ 22.1**	**$ 31.2**	**$ 31.7**	**$ 52.8**	**$ 14.7**	**$ 165.9**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $152.5 million in Solution capital costs for the Supply Chain workstream, consisting of approximately $73.5 million in PG&E labor and approximately $79.0 million in external labor required to design, build, test, deploy, and stabilize the Supply Chain capabilities described above.

The principal cost drivers for the Supply Chain workstream include the configuration and integration of SAP S/4HANA, SAP Ariba, SAP EWM, SAP Fieldglass, and Icertis; the transition of procurement, inventory, warehouse, and contractor management processes from legacy systems; and the integration of Supply Chain capabilities with WAM and Finance. Additional implementation effort is required to support materials and supplier data migration, end-to-end process testing, and deployment across PG&E's operating organizations.

Annual forecast staffing requirements correspond to the scope and timing of the three planned ERP releases. Supply Chain staffing increases from approximately 53 FTEs in 2026 to 71 FTEs in 2027 as implementation activities support Power Generation operations under Release 1. Staffing remains elevated at approximately 67 FTEs in 2028 as implementation activities expand under Release 2 to support Electric and Gas Distribution and enterprise-wide Supply Chain capabilities. Staffing reaches a peak of approximately 111 FTEs in 2029 as Release 2 activities continue and overlap with Release 3 integration, dual-system processes, and transition activities. Staffing then declines to approximately 31 FTEs in 2030 as

remaining transition and integration activities are completed in support of the broader ERP deployment. Forecast costs similarly peak at approximately $52.8 million in 2029 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

3) Finance

a) Description

The Finance workstream is part of the Solution cost group, supporting the financial planning, accounting, cost management, and reporting activities required for PG&E's operations. The workstream encompasses financial planning and forecasting, project and cost accounting, financial close, tax, and regulatory reporting.

As described in Chapter 2, Section E.3.c, Finance replaces customized SAP ECC processes and supporting tools with integrated capabilities built on SAP S/4HANA Finance and SAP Analytics Cloud (SAC). A significant component of the Finance implementation is the redesign of PG&E's cost model, including the introduction of Work Breakdown Structure (WBS), to improve the tracking and allocation of costs across projects and operational activities. SAP S/4HANA will support core financial accounting and cost management while SAC will support financial planning, forecasting, and reporting. The future state also includes integration with retained finance applications, including PowerPlan for asset accounting and tax functions.

Implementation also requires coordination with WAM and Supply Chain to align financial processes with work execution, procurement, and asset management, while maintaining the financial controls and regulatory accounting requirements necessary for PG&E's operations.

Please see Chapter 2, Section E.3.c, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-9 below presents the Finance workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-9
FINANCE WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.2	$ 0.7	$ 4.5	$ 10.1	$ 8.9	$ 8.7	$ 20.4	$ 13.4	$ 67.0
2	External	0.2	1.0	5.9	15.3	14.8	10.5	24.6	16.0	88.2
3	**Total**	**$ 0.4**	**$ 1.7**	**$ 10.4**	**$ 25.4**	**$ 23.7**	**$ 19.2**	**$ 45.0**	**$ 29.4**	**$ 155.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $142.6 million in Solution capital costs for the Finance workstream, consisting of approximately $61.6 million in PG&E labor and approximately $81.0 million in external labor required to design, build, test, deploy, and stabilize the Finance capabilities described above.

The principal cost drivers for the Finance workstream include configuration and integration of SAP S/4HANA Finance and SAC, implementation of the future state cost model and project accounting structures developed during Enterprise Design, and integration with software such as PowerPlan. Additional implementation effort is required to migrate financial data, develop financial and regulatory reporting capabilities, and validate financial controls and end-to-end processes across Finance, WAM, and Supply Chain. The forecast also reflects the effort required to maintain financial accuracy and meet regulatory reporting requirements during the transition from legacy systems.

Annual forecast staffing requirements correspond to the scope and timing of the three planned ERP releases. Finance staffing is approximately 55 FTEs in 2026 and 49 FTEs in 2027 as implementation activities support Power Generation operations under Release 1. Staffing is approximately 36 FTEs in 2028 as Finance capabilities continue to be implemented under Release 2 in support of Electric and Gas Distribution operations. Finance staffing reaches a peak of approximately 83 FTEs in 2029 as Release 2 activities continue and overlap with Release 3 implementation activities supporting the transition to enterprise Finance capabilities. Staffing declines to approximately 54 FTEs in 2030 as remaining Release 3 implementation activities are completed, concluding the enterprise rollout of Finance capabilities. Forecast costs similarly peak at approximately $45.0 million in 2029 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

4) Human Resources

a) Description

The HR workstream is part of the Solution cost group and supports workforce management and employee lifecycle processes across PG&E. The workstream encompasses workforce planning, employee administration, recruiting, onboarding, talent development, time reporting, payroll, and workforce qualifications management.

As described in Chapter 2, Section E.3.d, the HR workstream expands PG&E's existing SAP SuccessFactors capabilities and replaces legacy SAP ECC payroll and workforce management processes with integrated cloud-based solutions. SAP SuccessFactors Employee Central will support core HR and organizational data, while SAP SuccessFactors Employee Central Payroll will replace the existing on-prem payroll system. The workstream also includes implementation of additional SuccessFactors capabilities for learning, onboarding, and career development.

Implementation requires migration of employee master data, payroll data, position structures, and organizational hierarchies from legacy systems, as well as coordination with Finance and WAM to align workforce information, time reporting, payroll, and labor costs with operational activities. The complexity of payroll processing, including time and pay rules, and the need to maintain accurate and timely employee compensation contribute significantly to the scope of the implementation effort.

Please see Chapter 2, Section E.3.d, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-10 below presents the HR workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-10
HUMAN RESOURCES WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.1	$ 0.4	$ 2.7	$ 10.2	$ 7.2	$ 2.4	$ 8.6	$ 8.7	$ 40.3
2	External	0.1	0.6	3.7	13.2	9.3	3.5	12.2	12.3	54.9
3	**Total**	**$ 0.3**	**$ 1.0**	**$ 6.4**	**$ 23.4**	**$ 16.5**	**$ 5.9**	**$ 20.7**	**$ 21.0**	**$ 95.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $87.5 million in Solution capital costs for the HR workstream, consisting of approximately $37.0 million in PG&E labor and approximately $50.5 million in external labor required to design, build, test, deploy, and stabilize the HR capabilities described above.

The principal cost drivers for the HR workstream include implementation and integration of SAP SuccessFactors Employee Central, Employee Central Payroll, and related talent management capabilities; migration of payroll, employee, position, and organizational data from legacy systems; and integration of workforce management processes with SAP S/4HANA and operational applications.

Additional implementation effort is required to configure and validate payroll and time reporting processes, address time and pay rules and applicable compliance requirements, and test end-to-end workforce and payroll processes. The forecast also reflects the effort required to maintain accurate payroll processing and employee records during the transition from legacy systems.

Annual forecast staffing requirements correspond to the scope and timing of the three planned ERP releases. HR staffing is approximately 54 FTEs in 2026 and 35 FTEs in 2027 as implementation activities support deployment of enterprise HR capabilities, including employee records, organizational management, and related workforce processes. Staffing declines to approximately 12 FTEs in 2028 following deployment of the enterprise HR capabilities included in Release 1. Staffing then increases to approximately 40 FTEs in 2029 and 41 FTEs in 2030 as implementation activities supporting enterprise time reporting, payroll, and related workforce management capabilities continue through Release 3. The staffing profile reflects the sequencing of HR capabilities across the ERP program and the additional effort required to support time reporting and payroll implementation, validation, and stabilization through deployment completion. Forecast costs peak at approximately $23.4 million in 2026 before declining as implementation activities progress through subsequent releases.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

5) Integrated Planning

a) Description

The Integrated Planning workstream is part of the Solution cost group and supports the planning, prioritization, sequencing, and coordination of investments and operational work across PG&E's electric, gas, and power generation operations. It connects long-term capital strategy and portfolio planning with project execution, financial planning, and resource requirements.

As described in Chapter 2, Section E.3.e, the Integrated Planning workstream expands PG&E's capabilities to plan, prioritize, sequence, and resource capital investments and operational work across electric, gas, and power generation operations. This workstream includes configuration and integration of SAP Enterprise Portfolio and Project Management (EPPM), SAC, and Copperleaf to support investment evaluation and prioritization, portfolio management, forecasting, and scenario analysis. These applications will integrate with SAP Enterprise Asset Management (EAM), SAP SuccessFactors, Esri ArcGIS Platform, and other enterprise systems to incorporate asset, financial, workforce, geospatial, and operational information into planning processes.

Implementation requires establishing common planning processes, portfolio structures, investment evaluation criteria, and data integrations across multiple business functions. Integrated Planning activities are coordinated with the planned ERP releases so that planning capabilities, data integrations, and related business-process changes are deployed in

alignment with the operational and technical capabilities they support.

Please see Chapter 2, Section E.3.e, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-11 below presents the Integrated Planning workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-11
INTEGRATED PLANNING WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.0	$ 0.1	$ 0.8	$ 3.1	$ 2.9	$ 1.9	$ 2.8	$ 0.7	$ 12.5
2	External	0.1	0.2	1.3	7.5	4.6	1.9	2.8	0.7	19.1
3	**Total**	**$ 0.1**	**$ 0.3**	**$ 2.1**	**$ 10.6**	**$ 7.5**	**$ 3.9**	**$ 5.6**	**$ 1.4**	**$ 31.6**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $29.0 million in Solution capital costs for the Integrated Planning workstream, consisting of approximately $11.5 million in PG&E labor and approximately $17.6 million in external labor required to design, build, test, deploy, and stabilize the Integrated Planning capabilities described above.

The principal cost drivers for the Integrated Planning workstream include configuration and integration of Copperleaf, SAP EPPM, and SAC; development of investment prioritization and portfolio management processes; and integration of asset, financial, workforce, material, and operational data to support planning and investment decisions. The forecast also reflects the effort required to establish common planning assumptions, scenarios, governance processes, and interfaces across Finance, Supply Chain, WAM, HR, and other business functions, as well as testing and deployment of these capabilities across the planned ERP releases.

Annual forecast staffing requirements correspond to the scope and timing of the three planned ERP releases. Integrated Planning staffing is approximately 18 FTEs in 2026 and 12 FTEs in 2027 as implementation activities support the initial deployment of Integrated Planning capabilities. Staffing declines to approximately 6 FTEs in 2028 as initial implementation activities are completed and planning processes are integrated with related ERP functions. Staffing increases modestly to approximately 9 FTEs in 2029 as additional deployment, integration, and transition activities are completed in support of subsequent ERP releases. Staffing declines to approximately 2 FTEs in 2030 as remaining implementation and stabilization activities are completed. Forecast costs similarly peak at approximately $10.6 million in 2026 before declining as implementation activities are completed.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

6) Enterprise Health and Safety

a) Description

The EH&S workstream is part of the Solution cost group, supporting the management of safety incidents, operational risks, and regulatory compliance across PG&E's operations. The workstream encompasses activities to design, build, test, and deploy integrated safety management capabilities.

As described in Chapter 2, Section E.3.f, these capabilities expand PG&E's ability to manage safety incidents, assess operational risks, and incorporate safety requirements into work planning and execution. The workstream includes implementation of the SAP S/4HANA EH&S module to support incident reporting and investigations, safety observations, risk assessments, corrective actions, and management of change processes. The solution also integrates EH&S with WAM and related enterprise systems to associate safety risks, controls, and mitigation activities with specific work orders, assets, and locations so that safety requirements can be verified as work is planned and performed rather than reviewed after the fact. The workstream supports PG&E's operational safety, compliance, documentation, and reporting requirements.

Implementation requires standardizing safety management processes, configuring compliance and reporting requirements, and integrating EH&S capabilities with operational work execution processes. The transition from customized SAP ECC functionality and separate tools to an integrated EH&S solution requires coordination across safety and operational functions. EH&S capabilities are planned for deployment in Release 1.

Please see Chapter 2, Section E.3.f, for additional detail on current state, future state, and customer benefits.

b) Capital Expenditures

Table 3-12 below presents the EH&S workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-12
ENTERPRISE HEALTH & SAFETY WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.0	$ 0.1	$ 0.6	$ 4.7	$ 3.0	$ -	$ -	$ -	$ 8.4
2	External	0.0	0.1	0.5	5.1	2.1	-	-	-	7.8
3	**Total**	**$ 0.0**	**$ 0.2**	**$ 1.1**	**$ 9.8**	**$ 5.0**	**$ -**	**$ -**	**$ -**	**$ 16.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $14.9 million in Solution capital costs for the EH&S workstream, consisting of approximately $7.7 million in PG&E labor and approximately $7.2 million in external labor required to design, build, test, deploy, and stabilize the EH&S capabilities described above.

The principal cost drivers for the EH&S workstream include configuration of the SAP S/4HANA EH&S module to support incident management, risk assessments, corrective actions, and management of change processes; integration

with WAM to associate safety requirements and controls with work orders, assets, and locations; and configuration of compliance reporting and related safety management workflows. The forecast also reflects the effort required to test, validate, deploy, and stabilize these capabilities across safety and operational functions.

Annual forecast staffing requirements correspond to the scope and timing of the planned ERP implementation. EH&S staffing is approximately 21 FTEs in 2026 and 9 FTEs in 2027 as implementation activities support the configuration, integration, testing, deployment, and stabilization of EH&S capabilities. No additional EH&S staffing is forecast after 2027, reflecting completion of the EH&S implementation as part of Release 1. Staffing peaks at approximately 21 FTEs in 2026, corresponding to the highest annual forecast expenditure of approximately $9.8 million.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

7) Development, Integration, and Solution Delivery

a) Description

The Development, Integration, and Solution Delivery workstream is the first of the technical workstreams within the Solution cost group, supporting the technical development, system integration, and coordinated delivery activities required to implement SAP S/4HANA across PG&E's operations. The workstream encompasses activities to design, build, test,

deploy, and stabilize technical solution components and integrations across the ERP operational workstreams.

As described in Chapter 2, Section E.3.g, these activities support the implementation of an integrated enterprise solution using standard SAP functionality wherever feasible. The workstream includes development of approved Reports, Interfaces, Conversions, Enhancements, Forms, and Workflows (RICEFW) where standard SAP functionality cannot fully meet PG&E's business requirements. It also includes the integration activities necessary to support end-to-end business processes and reliable data exchange across the solution landscape. Consistent with PG&E's standard-first approach, development activities prioritize standard configuration and limit custom development to approved requirements that cannot be addressed through standard functionality.

Implementation requires coordination of operational and technical designs, development standards, interfaces, testing, and deployment activities across multiple workstreams and releases. Solution Delivery activities include managing technical dependencies, maintaining traceability between requirements and delivered functionality, and coordinating design decisions and solution readiness across operational and technical teams. The volume and complexity of development objects and system interfaces, together with the need to coordinate delivery across three ERP releases, contribute to the scope and implementation effort of this workstream.

b) Capital Expenditures

Table 3-13 below presents the Development, Integration, and Solution Delivery workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-13
DEVELOPMENT, INTEGRATION, AND SOLUTION DELIVERY WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1	PG&E	$ 0.3	$ 1.2	$ 7.1	$ 23.0	$ 25.5	$ 13.9	$ 26.1	$ 8.7	$ 105.8
2	External	0.4	1.8	11.0	21.9	36.3	25.9	50.0	16.8	164.3
3	**Total**	**$ 0.7**	**$ 3.0**	**$ 18.1**	**$ 44.9**	**$ 61.8**	**$ 39.8**	**$ 76.1**	**$ 25.6**	**$ 270.0**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $248.2 million in Solution capital costs for the Development, Integration, and Solution Delivery workstream, consisting of approximately $97.2 million in PG&E labor and approximately $151.0 million in external labor required to design, build, test, deploy, and stabilize the technical solution components and integrations described above.

The principal cost drivers for the Development, Integration, and Solution Delivery workstream include the volume and complexity of approved RICEFW development; the number and complexity of required interfaces; and cross-workstream coordination associated with solution design, development, integration, and deployment. The forecast also reflects the effort required to apply development standards, manage technical dependencies, resolve integration issues, and conduct end-to-end testing and validation across multiple applications and releases.

Annual forecast staffing requirements are driven by the volume of development, integration, testing, and solution

delivery activities required across multiple operational workstreams and overlapping ERP releases. Staffing increases from approximately 107 FTEs in 2026 to 180 FTEs in 2027 as implementation activities expand across Releases 1 and 2 and support solution development, systems integration, testing, and deployment activities. Staffing is approximately 114 FTEs in 2028 as Release 2 implementation activities continue across multiple workstreams. Staffing then increases to a peak of approximately 221 FTEs in 2029 as Release 2 activities overlap with Release 3 implementation activities, requiring concurrent development, integration, testing, and solution delivery efforts across multiple applications, interfaces, and business processes. Staffing declines to approximately 73 FTEs in 2030 as technical implementation, deployment, and stabilization activities are completed for the remaining business functions. This staffing profile reflects the need to coordinate technical dependencies across operational workstreams and successive ERP releases while supporting enterprise-wide deployment activities. Forecast costs similarly peak at approximately $76.1 million in 2029 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

8) Data and Analytics

a) Description

The Data and Analytics workstream is part of the Solution cost group, supporting data migration, data quality, governance, and analytics capabilities across the ERP operational workstreams. The workstream encompasses activities to design, build, test, deploy, and stabilize data migration, governance, reporting, and analytics capabilities required for the transition from SAP ECC to SAP S/4HANA.

As described in Chapter 2, Section E.3.h, these activities expand PG&E's ability to maintain consistent, reliable enterprise data and support operational, financial, and regulatory reporting. The workstream includes extraction, profiling, cleansing, transformation, migration, and validation of legacy ERP data, as well as configuration of SAC and related reporting capabilities. The legacy data environment includes approximately 6 terabytes of data, representing 70 billion records, requiring evaluation, preparation, and disposition as part of the migration to SAP S/4HANA. Activities also include data modeling, master-data governance, retention and archiving requirements, report rationalization, and development, maintenance, and validation of analytical models, dashboards, and reporting outputs.

Implementation requires coordinating data preparation, remediation, conversion, and validation activities across multiple ERP operational workstreams and releases. The volume and variety of legacy data, dependencies across operational workstreams, and need for separate migration and validation cycles for each release contribute to the implementation effort. Data and Analytics activities extend across all three ERP releases, with data migration and reporting capabilities deployed in coordination with the operational workstreams supported by each release.

b) Capital Expenditures

Table 3-14 below presents the Data and Analytics workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-14
DATA AND ANALYTICS WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.1	$ 0.3	$ 1.8	$ 7.0	$ 5.8	$ 3.2	$ 6.1	$ 2.7	$ 27.0
2	External	0.2	0.9	5.5	13.9	12.5	12.8	24.9	11.2	82.0
3	**Total**	**$ 0.3**	**$ 1.2**	**$ 7.3**	**$ 20.9**	**$ 18.3**	**$ 16.0**	**$ 31.0**	**$ 13.9**	**$ 109.0**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $100.2 million in Solution capital costs for the Data and Analytics workstream, consisting of approximately $24.8 million in PG&E labor and approximately $75.4 million in external labor required to design, build, test, deploy, and stabilize the data migration, governance, reporting, and analytics capabilities described above.

The principal cost drivers for the Data and Analytics workstream include preparation and conversion of legacy ERP data, development of data mappings and transformation rules, data cleansing and validation, and execution of mock conversions and production migration activities. Additional effort is required to establish future

state data governance and master-data structures, configure reporting and analytics capabilities, rationalize and migrate existing reports, and develop and validate analytical models and dashboards. Since each ERP release introduces additional functional capabilities, data migration, reconciliation, and reporting activities must be performed in coordination with the scope and deployment schedule of each release.

Forecast staffing reflects these activities across all three ERP releases. Release 1 activities require approximately 62 FTEs in 2026 to support initial data preparation, conversion, and analytics implementation. Staffing subsequently increases as the later releases require additional migration, validation, and reporting activities, reaching approximately 91 combined FTEs in 2029. This peak reflects concurrent work associated with Releases 2 and 3, including preparation and validation of data for the functional capabilities being deployed, development of associated reporting solutions, and coordination of data dependencies across workstreams. Forecast costs similarly peak in 2029 at approximately $31.0 million before declining as implementation activities conclude in 2030.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

9) Applications and Processes (GIS)

a) Description

Applications and Processes is the largest GIS technical workstream within the Solution cost group. The workstream includes the GIS application configurations, business-process deployments, and system integrations required to transition PG&E from Esri ArcGIS Desktop and the Esri Geometric Network to the Esri ArcGIS Platform and Utility Network across three coordinated GIS releases. As described in Chapter 2, Section E.3.i, this work includes configuration and deployment of GIS applications supporting field operations, network management, outage analysis, asset management, and spatial work management, as well as integrations with SAP S/4HANA, OverIT, and other enterprise systems.

Applications and Processes scope and implementation complexity reflect the breadth of GIS capabilities being implemented across Gas, Electric, and Landbase environments and the dependencies between GIS and other enterprise systems, particularly Work and Asset Management. The component includes the configuration of Utility Network capabilities, development and testing of GIS applications and integrations, and deployment of related business processes.

b) Capital Expenditures

Table 3-15 below presents the Applications and Processes workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-15
APPLICATIONS AND PROCESSES WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ -	$ 0.9	$ 6.6	$ 29.4	$ 43.6	$ 35.0	$ 20.3	$ -	$ 135.8
2	External	-	1.1	8.3	35.4	41.1	38.5	47.2	-	171.6
3	**Total**	**$ -**	**$ 2.0**	**$ 14.9**	**$ 64.8**	**$ 84.7**	**$ 73.5**	**$ 67.5**	**$ -**	**$ 307.4**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $290.5 million in Solution capital costs for the Applications and Processes workstream, reflecting $128.3 million of PG&E labor and $162.2 million in external labor required to design, build, test, deploy, and stabilize the GIS applications, business processes, and integrations described above.

The principal cost drivers for the Applications and Processes workstream are the breadth of GIS applications and business processes being implemented; the complexity of transitioning from the legacy Geometric Network to Esri Utility Network; implementation across Gas, Electric, and Landbase environments; and the integrations between GIS and SAP S/4HANA, OverIT, and other enterprise systems. The forecast also reflects the resources required for application configuration, integration development and testing, business process validation, user acceptance testing, deployment, and post-deployment stabilization across the three GIS releases.

Annual forecast staffing requirements reflect the scope and timing of GIS implementation activities. Staffing increases from approximately 126 FTEs in 2026 to a peak of approximately 187 FTEs in 2027 as implementation activities support application configuration, integration, testing, and deployment across Gas, Electric, and Landbase environments. Staffing remains elevated at approximately 147 FTEs in 2028 as deployment and stabilization activities continue, before declining to approximately 32 FTEs in 2029 as remaining implementation and transition activities are completed. Forecast costs similarly peak at approximately $84.7 million in 2027 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

10) Data Migration and Conversion (GIS)

a) Description

The Data Migration and Conversion workstream delivers the GIS data preparation, conversion, remediation, and validation activities required to transition PG&E's geospatial asset and network data from the legacy Esri Geometric Network to the Esri Utility Network data model. As described in Chapter 2, Section E.3.j, this work supports the migration of Gas, Electric, and Landbase data required for network tracing, connectivity analysis, spatial work management, and other operational capabilities enabled by the GIS Transformation.

A substantial volume of geospatial asset, attribute, and network data must be converted from the legacy Geometric Network data model to the Utility Network data model. The Data component provides the foundational asset data required to make the GIS application capabilities operational.

Data Migration and Conversion scope and implementation complexity reflect the volume of geospatial asset and attribute data being migrated, the conversion of legacy network models to Utility Network requirements, and the data quality and validation requirements associated with the transition. Activities include data assessment and cleansing, schema mapping, network data conversion, remediation of data quality issues, and repeated conversion and validation cycles across the three GIS releases. These activities are necessary to establish accurate asset, attribute, and network connectivity data before the corresponding GIS capabilities are deployed.

b) Capital Expenditures

Table 3-16 below presents the Data Migration and Conversion workstream capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E labor and external labor. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-16
DATA MIGRATION AND CONVERSION WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ -	$ 0.1	$ 0.7	$ 3.5	$ 4.4	$ 3.9	$ 1.1	$ -	$ 13.6
2	External	-	0.3	2.1	10.2	15.2	11.7	2.9	-	42.4
3	**Total**	**$ -**	**$ 0.4**	**$ 2.7**	**$ 13.7**	**$ 19.7**	**$ 15.6**	**$ 4.0**	**$ -**	**$ 56.0**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $52.9 million in Solution capital costs for the Data Migration and Conversion workstream, reflecting $12.9 million of PG&E labor and $40.0 million in external labor required to prepare, convert, remediate, migrate, and validate the GIS data described above.

The principal cost drivers for the Data Migration and Conversion workstream are the volume and complexity of gas and electric network data being converted; the remediation required to meet Esri Utility Network data quality and connectivity requirements; and the repeated conversion and validation cycles necessary across the three GIS releases. The forecast reflects the resources required to map legacy data structures to the Utility Network model, correct identified data quality issues, execute data conversions, validate migrated assets and network connectivity, and confirm data readiness for each release. Conversion and remediation effort was informed by the number and complexity of identified data objects and remediation requirements, which were translated into resource requirements.

Annual forecast staffing requirements reflect the scope and timing of GIS data conversion, remediation, migration, and validation activities. Staffing increases from approximately 39 FTEs in 2026 to a peak of approximately 60 FTEs in 2027 as implementation activities support data remediation, conversion, validation, and migration of Gas and Electric network data to the Esri Utility Network model. Staffing remains elevated at approximately 42 FTEs in 2028

as conversion and validation activities continue in support of subsequent deployments, before declining to approximately 9 FTEs in 2029 as remaining migration and data readiness activities are completed. Forecast costs similarly peak at approximately $19.7 million in 2027 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

iii) Forecast Methodology

For a discussion of cost forecast methodology used to develop the Solution cost group forecast, please see Section B.6.a.

b. Technology Infrastructure and Software

1) Description

The Technology Infrastructure and Software cost group includes the software licenses, cloud subscriptions, hosting services, hardware, and supporting technology components required to implement and operate the ERP and GIS systems.

As described in Chapter 2, Section E.4, these investments support PG&E's transition from primarily on-prem infrastructure to cloud-based environments for SAP S/4HANA and the Esri ArcGIS Platform. For ERP, this cost group includes SAP S/4HANA and associated enterprise software, database technologies, cloud hosting, and supporting infrastructure required for the functional capabilities described in the Solution cost group. SAP S/4HANA will operate in Amazon Web Services (AWS) and be managed by SAP's RISE hosting service. For GIS, the cost group includes Esri ArcGIS Platform software, cloud services, storage, and supporting infrastructure required to operate the future state GIS environment, which will be hosted in AWS and managed by PG&E.

These technology products and services support the development, testing, training, production, and other environments required throughout implementation and subsequent operations. The timing and cost of these expenditures depend on software licensing and subscription requirements, infrastructure capacity, deployment configurations, and the availability of environments needed to support the planned ERP and GIS releases. Architecture, security, controls, and governance activities associated with these environments are addressed separately in the Technology Enablement cost group.

Please see Chapter 2, Section E.4, for additional detail on current state, future state, and customer benefits.

2) Capital Expenditures

Table 3-17 below presents the Technology Infrastructure and Software cost group capital expenditures by year for the recorded (2023-2025) and forecast (2026-2030) periods. The recorded and forecast cost discussions that follow reference this table.

TABLE 3-17
TECHNOLOGY INFRASTRUCTURE AND SOFTWARE COST GROUP – CAPITAL EXPENDITURES BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Platform	Recorded			Forecast					
		2023	2024	2025	2026	2027	2028	2029	2030	Total
1	ERP	$ -	$ 18.2	$ 16.7	$ 33.0	$ 34.6	$ 38.0	$ 49.4	$ 48.0	$ 237.9
2	GIS	-	-	1.7	8.5	22.3	19.0	4.3	-	55.7
3	**Total**	**$ -**	**$ 18.2**	**$ 18.4**	**$ 41.5**	**$ 56.9**	**$ 57.0**	**$ 53.7**	**$ 48.0**	**$ 293.6**

Note: The amounts shown in testimony tables may not sum due to rounding.

a) Recorded Costs

For a discussion of recorded capital expenditures, please see Section B.7.

b) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $257.0 million in Technology Infrastructure and Software capital

costs, consisting of approximately $203.0 million for ERP and approximately $54.0 million for GIS environments.

The principal cost drivers for Technology Infrastructure and Software include enterprise software licensing and subscription requirements, cloud hosting and storage, database technologies, infrastructure capacity, and the technology environments required to support development, testing, training, and production operations. For ERP, the forecast reflects the software and technology requirements associated with SAP S/4HANA and its supporting applications, including the SAP RISE hosting arrangement. For GIS, the forecast reflects Esri ArcGIS Platform licensing and the cloud infrastructure and services required for PG&E's AWS-hosted environment.

Forecast expenditures are phased to align with software licensing, cloud hosting, infrastructure deployment, and environment requirements throughout the ERP and GIS implementation lifecycle. Annual costs increase from approximately $41.5 million in 2026 to a peak of approximately $57.0 million in 2028, reflecting the period when development, testing, training, and production environments are concurrently supporting multiple implementation activities across the Transformation. Costs subsequently decline to approximately $48.0 million in 2030 as implementation activities are completed and demand for project-related technology products and services decreases.

Detailed support for software, cloud, hosting, infrastructure, subscription, and deployment assumptions is provided in Chapter 3 Workpaper 3-2, Tabs 3-2A through 3-2C.

c) Forecast Methodology

PG&E developed the Technology Infrastructure and Software forecast using a combination of the *Vendor RFP / Competitive Solicitation* and *Unit-Based* estimating methodologies described in Section B.1. PG&E reviewed existing ERP and GIS software entitlements, contractual

arrangements, and future state technology requirements established during Phase Zero and Enterprise Design to identify the software, cloud services, hosting, and infrastructure components required for the Transformation. With support from a sourcing consulting firm, PG&E developed commercial strategies and software term sheets addressing licensing, pricing, support, and other contractual requirements. Vendor engagement, proposal evaluations, negotiations, and existing commercial agreements informed the pricing assumptions used in the forecast.

Forecast costs were developed using contractual pricing, vendor proposals, negotiated contract terms, and technology planning assumptions. These pricing inputs were applied to the anticipated software licensing quantities, user populations, cloud hosting and storage requirements, deployment environments, and supporting infrastructure needs for the ERP and GIS Transformation. The resulting estimates reflect the planned technology configurations and timing of deployment requirements across the Transformation. Detailed supporting estimates and cost calculations are provided in Chapter 3 Workpaper 3-2, Tabs 3-2A through 3-2C.

c. Technology Enablement

The Technology Enablement cost group includes Platform Architecture and Security and Controls and Compliance activities required to establish the technical, cybersecurity, and control environment supporting the ERP and GIS Transformation. Platform Architecture and Security supports the development and operation of SAP S/4HANA and Esri ArcGIS Platform environments, while Controls and Compliance establishes the business process and IT controls required to support regulatory compliance and operational requirements. As described in Chapter 2, Section E.5, these workstreams provide the technical and governance foundation required to deploy and operate the future state ERP and GIS environment.

Table 3-18 presents recorded and forecast capital expenditures for the Technology Enablement cost group by platform and workstream for 2023 through 2030.

TABLE 3-18
TECHNOLOGY ENABLEMENT COST GROUP – CAPITAL EXPENDITURES
BY PLATFORM AND WORKSTREAM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Workstream	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1	Platform Arch and Security	$ 0.3	$ 1.1	$ 6.8	$ 18.8	$ 19.6	$ 14.4	$ 28.6	$ 11.8	$ 101.4
2	Controls and Compliance	0.1	0.4	2.3	7.6	7.3	4.3	8.6	3.6	34.2
3	**ERP Total**	**$ 0.4**	**$ 1.5**	**$ 9.1**	**$ 26.4**	**$ 26.9**	**$ 18.7**	**$ 37.2**	**$ 15.4**	**$ 135.6**
4	Platform Arch and Security	-	0.5	3.8	20.5	23.4	24.4	6.6	-	79.3
5	**GIS Total**	**$ -**	**$ 0.5**	**$ 3.8**	**$ 20.5**	**$ 23.4**	**$ 24.4**	**$ 6.6**	**$ -**	**$ 79.3**
6	**Total**	**$ 0.4**	**$ 2.0**	**$ 12.9**	**$ 46.9**	**$ 50.3**	**$ 43.0**	**$ 43.8**	**$ 15.4**	**$ 214.9**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Platform Architecture and Security

a) Description

The Platform Architecture and Security workstream establishes the technical environment, architecture, and security capabilities required to implement and operate SAP S/4HANA and Esri ArcGIS Platform across the ERP and GIS Transformation. As described in Chapter 2, Section E.5.a, this work includes cloud environment architecture, environment configuration, cybersecurity, identity and access management, integration and network connectivity, environment management, and technical readiness activities required to support the future state platforms.

Platform Architecture and Security scope and implementation complexity reflect the distinct technical environments required for ERP and GIS, the number of integrated applications and systems, the cybersecurity and availability requirements associated with PG&E's operations, and the technical support required across multiple releases. For

ERP, activities include establishing and managing SAP RISE environments, technical administration and services, and security architecture. For GIS, activities include configuring the AWS-hosted ArcGIS Platform environment, managing infrastructure and network services, implementing cybersecurity requirements, and establishing capabilities to support secure, automated, and consistent software deployment across the GIS releases. The workstream also supports technical integration, performance, resiliency, and deployment readiness across both platforms.

Please see Chapter 2, Section E.5.a, for additional detail on Platform Architecture and Security scope and future state capabilities.

b) Capital Expenditures

Tables 3-19 and 3-20 present Platform Architecture and Security workstream capital expenditures by platform and cost group for the recorded (2023-2025) and forecast (2026-2030) periods. The discussion below references these tables in describing recorded and forecast costs.

TABLE 3-19
PLATFORM ARCHITECTURE AND SECURITY WORKSTREAM – CAPITAL EXPENDITURES BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Platform	2023	2024	2025	2026	2027	2028	2029	2030	Total
1										
2	ERP	$ 0.3	$ 1.1	$ 6.8	$ 18.8	$ 19.6	$ 14.4	$ 28.6	$ 11.8	$ 101.4
3	GIS	-	0.5	3.8	20.5	23.4	24.4	6.6	-	79.3
4	**Total**	**$ 0.3**	**$ 1.6**	**$ 10.6**	**$ 39.3**	**$ 43.1**	**$ 38.8**	**$ 35.2**	**$ 11.8**	**$ 180.7**

Note: The amounts shown in testimony tables may not sum due to rounding.

TABLE 3-20
PLATFORM ARCHITECTURE AND SECURITY WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Labor Category	2023	2024	2025	2026	2027	2028	2029	2030	Total
1										
2	PG&E	$ 0.1	$ 0.8	$ 5.1	$ 19.4	$ 23.5	$ 20.0	$ 15.4	$ 4.8	$ 89.1
3	External	0.2	0.9	5.5	19.9	19.6	18.8	19.8	7.0	91.6
4	**Total**	**$ 0.3**	**$ 1.6**	**$ 10.6**	**$ 39.3**	**$ 43.1**	**$ 38.8**	**$ 35.2**	**$ 11.8**	**$ 180.7**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $168.2 million in Technology Enablement capital costs for the Platform Architecture and Security workstream, consisting of $93.2 million for ERP and $74.9 million for GIS. The forecast reflects approximately $83.1 million of PG&E labor and $85.1 million in external labor required to establish, configure, secure, test, deploy, and support the technical environments for the ERP and GIS Transformation.

The principal cost drivers for the Platform Architecture and Security workstream are the scale and complexity of the SAP S/4HANA and Esri ArcGIS Platform environments; the architecture, cybersecurity, and access security requirements of PG&E's enterprise systems; the number and complexity of integrations and network connections; and the technical environment and deployment requirements across the ERP and GIS releases. The forecast also reflects the resources required for SAP

technical administration, cloud environment configuration, security implementation, performance and capacity management, deployment automation, disaster recovery planning, and technical support through implementation and stabilization.

Annual forecast staffing requirements reflect the scope and timing of ERP and GIS platform architecture, environment management, cybersecurity, and technical deployment activities. Staffing increases from approximately 77 FTEs in 2026 to a peak of approximately 91 FTEs in 2027 as ERP and GIS implementation activities require concurrent support for architecture design, cloud environment configuration, system security, access controls, technical integration, and deployment planning. Staffing remains elevated at approximately 80 FTEs in 2028 as implementation activities continue across both programs and is approximately 70 FTEs in 2029 as ERP deployment activities continue and GIS implementation activities transition toward completion. Staffing declines to approximately 23 FTEs in 2030 as implementation and stabilization activities are completed and responsibility shifts to ongoing operations. Forecast costs similarly peak at approximately $43.1 million in 2027 before declining as implementation activities conclude.

Detailed support for forecast costs and staffing, including PG&E and external labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-3, Tabs 3-3A through 3-3G.

iii) Forecast Methodology

PG&E developed the Platform Architecture and Security cost forecast using *the Resource-Based, Benchmark-Informed*, and *SME Judgment* estimating methodologies described in Section B.1. Staffing requirements were developed based on the roles, level of

effort, and duration of technical support required across the ERP and GIS releases, informed by staffing models and experience from comparable utility and enterprise technology transformation programs. The estimates considered the scale and complexity of the ERP and GIS technical environments, cybersecurity and access security requirements, environment management needs, and implementation schedules. The resulting resource plans were sequenced to reflect the technical activities required for each ERP and GIS release.

2) Controls and Compliance

a) Description

The Controls and Compliance workstream establishes the business process and IT controls required to support the ERP and GIS Transformation and maintain compliance with PG&E's financial, operational, cybersecurity, and regulatory requirements. As described in Chapter 2, Section E.5.b, this work includes identifying control objectives and requirements, designing preventive and detective controls, supporting compliance with Sarbanes-Oxley, FERC, and CPUC requirements, and validating controls throughout implementation.

Controls and Compliance scope and implementation complexity reflect the breadth of business processes affected by the Transformation, the number and complexity of applicable control requirements, and the coordination required across operational workstreams and technology teams. Activities include defining approval, reconciliation, and validation controls; evaluating segregation-of-duties and access requirements; conducting controls testing; and preparing for audit and operational compliance. Controls and Compliance costs are separately forecast for ERP, while GIS-related activities are

included within the GIS Platform Architecture and Security component.

Please see Chapter 2, Section E.5.b, for additional detail on Controls and Compliance scope and future state requirements.

b) Capital Expenditures

Tables 3-21 and 3-22 present Controls and Compliance workstream capital expenditures by platform and cost group for the recorded (2023-2025) and forecast (2026-2030) periods. The discussion below references these tables in describing recorded and forecast costs.

TABLE 3-21
CONTROLS AND COMPLIANCE WORKSTREAM – CAPITAL EXPENDITURES
BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Platform	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1										
2	ERP	$ 0.1	$ 0.4	$ 2.3	$ 7.6	$ 7.3	$ 4.3	$ 8.6	$ 3.6	$ 34.2
3	GIS	-	-	-	-	-	-	-	-	-
4	**Total**	**$ 0.1**	**$ 0.4**	**$ 2.3**	**$ 7.6**	**$ 7.3**	**$ 4.3**	**$ 8.6**	**$ 3.6**	**$ 34.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

TABLE 3-22
CONTROLS AND COMPLIANCE WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1										
2	PG&E	$ 0.0	$ 0.2	$ 1.1	$ 3.5	$ 4.2	$ 1.7	$ 3.5	$ 1.5	$ 15.7
3	External	0.0	0.2	1.2	4.1	3.0	2.5	5.1	2.2	18.4
4	**Total**	**$ 0.1**	**$ 0.4**	**$ 2.3**	**$ 7.6**	**$ 7.3**	**$ 4.3**	**$ 8.6**	**$ 3.6**	**$ 34.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts $31.4 million in Technology Enablement capital costs for the Controls and Compliance workstream, reflecting approximately $14.5 million of PG&E labor and $16.9 million in external labor required to design, implement, test, and validate business process and IT controls supporting the ERP Transformation.

The principal cost drivers of the Controls and Compliance workstream include the number and complexity of business process and IT controls; the financial, operational, cybersecurity, and regulatory requirements applicable to the future state ERP environment; and the testing and validation required across the planned implementation releases. The forecast also reflects the resources required to assess segregation-of-duties requirements, validate control designs, support audit readiness, and address controls issues identified during implementation and testing.

Annual forecast staffing requirements reflect the scope and timing of controls design, implementation, testing, and validation activities supporting the ERP Transformation. Staffing is approximately 13 FTEs in 2026 and 12 FTEs in 2027 as resources support control design, segregation-of-duties assessments, and implementation of business process and IT controls. Staffing declines to approximately 7 FTEs in 2028 as initial controls implementation activities progress, before increasing to approximately 14 FTEs in 2029 as control testing, validation, audit readiness activities, and deployment

support overlap across ERP implementation activities. Staffing declines to approximately 6 FTEs in 2030 as remaining implementation and controls validation activities are completed. Forecast costs similarly peak at approximately $8.6 million in 2029 before declining as implementation activities are completed.

Detailed support for forecast costs and staffing, including PG&E and external labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-3, Tabs 3-3A through 3-3G.

iii) Forecast Methodology

PG&E developed the Controls and Compliance forecast using *Resource-Based* and *Benchmark-Informed* estimating methodologies described in Section B.1. Staffing requirements were developed based on the roles and duration of support required for control design, implementation, testing, and compliance validation, informed by staffing models and experience from comparable utility transformation programs. The estimates considered the number and complexity of controls, regulatory and audit requirements, and the timing of ERP implementation releases.

d. Application Remediation

1) Description

The Application Remediation cost group includes the activities required to rearchitect, integrate, test, transition, and retire existing applications affected by the ERP and GIS Transformation. As described in Chapter 2, Section C.4, Enterprise Design identified 731 applications within the scope of or affected by the ERP and GIS Transformation, including 68 new applications and 663 existing applications assigned Keep, Rearchitect, or Retire dispositions. Application Remediation addresses the subset of existing

applications requiring modification, integration, transition, or retirement to support the future state ERP and GIS environment.

This scope includes assessing upstream and downstream application impacts; refactoring integrations that connect retained systems to the new ERP and GIS platforms; modifying application logic, data mappings, workflows, or dependencies in affected systems where required; validating end-to-end process continuity through integration, regression, user acceptance, cutover, and stabilization testing; and retiring applications that will no longer be needed because their functions are replaced by future state ERP or GIS capabilities. The purpose of this work is to reduce operational disruption during implementation, make retained PG&E systems compatible with the future state architecture, and lower long-term technical debt by decommissioning redundant or no longer required applications and interfaces.

Application Remediation scope and implementation complexity reflect the number and diversity of affected applications, the extent of modifications required for each application, and their dependencies on the existing ERP and GIS platforms and other enterprise systems. Applications designated to remain in service may require changes to interfaces, data structures, and integrations; applications requiring re-architecture may require more extensive changes to functionality or underlying technology; and applications designated for retirement require coordination of dependencies, data retention, and decommissioning. These activities must be coordinated with the ERP and GIS releases to maintain continuity of existing operations during the transition.

Please see Chapter 2, Section E.6, for additional detail on Application Remediation.

2) Capital Expenditures

Tables 3-23 and 3-24 below present Application Remediation capital expenditures for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting costs by ERP and GIS platform and by PG&E labor and external labor category, respectively. The

recorded and forecast cost discussions that follow reference these tables.

TABLE 3-23
APPLICATION REMEDIATION COST GROUP – CAPITAL EXPENDITURES
BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Platform	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	ERP	$ 0.5	$ 2.0	$ 12.1	$ 25.5	$ 43.8	$ 33.1	$ 49.2	$ 14.2	$ 180.4
2	GIS	-	0.5	3.4	14.3	11.7	21.4	19.8	-	71.1
3	**Total**	**$ 0.5**	**$ 2.4**	**$ 15.6**	**$ 39.8**	**$ 55.5**	**$ 54.6**	**$ 69.0**	**$ 14.2**	**$ 251.6**

Note: The amounts shown in testimony tables may not sum due to rounding.

TABLE 3-24
APPLICATION REMEDIATION COST GROUP – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Labor Category	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.1	$ 0.5	$ 3.4	$ 9.2	$ 12.0	$ 13.2	$ 15.5	$ 2.7	$ 56.5
2	External	0.4	1.9	12.2	30.7	43.5	41.4	53.5	11.5	195.1
3	**Total**	**$ 0.5**	**$ 2.4**	**$ 15.6**	**$ 39.8**	**$ 55.5**	**$ 54.6**	**$ 69.0**	**$ 14.2**	**$ 251.6**

Note: The amounts shown in testimony tables may not sum due to rounding.

a) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

b) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $233.1 million in Application Remediation capital costs, consisting of approximately $165.9 million for ERP and $67.2 million for GIS. The forecast reflects approximately $52.5 million of PG&E labor and $180.6 million in external labor required to modify, rearchitect, integrate, test, deploy, or retire existing applications affected by the ERP and GIS Transformation.

The principal cost drivers for Application Remediation include the number of applications requiring remediation; the complexity of modifications and integration changes necessary to support SAP S/4HANA and Esri ArcGIS Platform; and the testing, transition, and retirement activities associated with each application's disposition. The forecast also reflects the resources required to address dependencies across affected applications, validate end-to-end business processes, support deployment and cutover activities, and decommission applications no longer required in the future state environment.

Annual forecast expenditures reflect the scope and timing of application remediation activities required to support the ERP and GIS Transformation. Costs increase from approximately $39.8 million in 2026 to $55.5 million in 2027 and remain elevated at approximately $54.6 million in 2028 as applications are modified, integrated, tested, and prepared to support new ERP and GIS capabilities. Costs peak at approximately $69.0 million in 2029, reflecting the concurrent remediation, testing, deployment, transition, and retirement activities associated with multiple affected applications and their dependencies across enterprise systems. Costs decline to approximately $14.2 million in 2030 as remaining implementation activities are completed and affected applications are transitioned or retired.

c) Forecast Methodology

PG&E developed the Application Remediation forecast using the *Bottom-Up, Unit-Based,* and *SME Judgment* estimating methodologies described in Section B.1. PG&E's portfolio architecture organization developed application-specific estimates based on the application inventory and disposition assessments completed during Enterprise Design. Bottom-Up and Unit-Based estimating were used to quantify the remediation activities required for individual applications, while SME Judgment informed the assessment of the scope and

complexity of those activities. The estimates considered the modifications, integrations, testing, transition, and retirement activities required for each affected application. The resulting application-level estimates were aggregated and sequenced based on the planned ERP and GIS releases to develop the annual cost forecast.

e. Program Management Office

1) Description

The Program Management Office (PMO) cost group provides centralized program management and value management capabilities across the ERP and GIS Transformation. As described in Chapter 2, Section E.7, the PMO supports coordinated execution across multiple workstreams, implementation partners, business functions, and deployment releases. The cost group includes both Program Management and Value Management activities required to oversee program delivery and maintain alignment between program execution, costs, and expected benefits.

Program Management activities include development and maintenance of integrated schedules and delivery plans, financial and resource management, risk and issue management, dependency tracking, vendor coordination, quality management, and executive reporting. The PMO also administers program governance and decision-making processes, monitors milestones and deliverables, and coordinates activities across operational and technical workstreams to support execution of the planned ERP and GIS releases.

The Value Management function maintains the integrated program business case and supports management of the costs, benefits, assumptions, and dependencies underlying the Transformation. Activities include evaluating the cost and benefit implications of scope and design decisions, establishing benefit measurement and reporting requirements, defining performance indicators and accountability for value realization, and monitoring

progress against the business case. The function also supports regulatory reporting and updates to cost and benefit forecasts, as appropriate, throughout implementation.

The scope and complexity of PMO activities reflect the duration of the Transformation, the number of concurrent implementation releases, and the coordination required across ERP and GIS workstreams, PG&E business functions, and implementation partners. Program Management and Value Management resources support the Transformation throughout implementation, with staffing requirements varying based on the number of active releases, delivery milestones, program governance requirements, and transition to operations.

Please see Chapter 2, Section E.7, for additional detail on PMO activities.

2) Capital Expenditures

Tables 3-25 and 3-26 below present PMO capital expenditures by platform and by cost group for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting costs by ERP and GIS platform and by PG&E labor and external labor categories, respectively. The recorded and forecast cost discussions that follow reference these tables.

TABLE 3-25
PROGRAM MANAGEMENT OFFICE COST GROUP – CAPITAL EXPENDITURES BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Platform	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	ERP	$ 0.4	$ 1.7	$ 10.2	$ 12.8	$ 35.7	$ 29.8	$ 48.3	$ 13.0	$ 151.8
2	GIS	-	0.4	2.8	8.6	20.1	20.8	5.8	-	58.5
3	**Total**	**$ 0.4**	**$ 2.1**	**$ 13.0**	**$ 21.4**	**$ 55.8**	**$ 50.6**	**$ 54.1**	**$ 13.0**	**$ 210.4**

Note: The amounts shown in testimony tables may not sum due to rounding.

TABLE 3-26
PROGRAM MANAGEMENT OFFICE COST GROUP – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Labor Category	Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1	PG&E	$ 0.2	$ 0.9	$ 5.5	$ 7.8	$ 24.9	$ 21.9	$ 22.5	$ 5.3	$ 88.9
2	External	0.2	1.2	7.6	13.6	30.9	28.7	31.6	7.7	121.5
3	**Total**	**$ 0.4**	**$ 2.1**	**$ 13.0**	**$ 21.4**	**$ 55.8**	**$ 50.6**	**$ 54.1**	**$ 13.0**	**$ 210.4**

Note: The amounts shown in testimony tables may not sum due to rounding.

a) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

b) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $194.9 million in PMO capital costs, consisting of $139.6 million for ERP and $55.3 million for GIS. The forecast includes $82.4 million in PG&E labor and $112.5 million in external labor required to manage, coordinate, oversee, and support delivery of the ERP and GIS Transformation.

The principal cost drivers are the duration and complexity of the Transformation, the number and timing of concurrent workstreams and implementation releases, and the coordination required across PG&E business functions, implementation partners, and vendors. The forecast also reflects the resources required to maintain integrated delivery plans and schedules, manage program risks and dependencies, monitor costs and performance, coordinate governance and decision-making, and maintain the program business case and value realization framework throughout implementation.

Annual forecast costs reflect the scope and timing of program management, governance, coordination, and oversight activities supporting the ERP and GIS Transformation.

Combined PMO resources increase from approximately 72 FTEs in 2026 to a peak of approximately 93 FTEs in 2027 as implementation activities expand across multiple workstreams and releases. Staffing declines to approximately 77 FTEs in 2028 as initial implementation activities are completed, before increasing modestly to approximately 79 FTEs in 2029 as Release 2 activities overlap with Release 3 implementation activities and require continued program coordination, governance, risk management, and delivery oversight. Staffing declines to approximately 19 FTEs in 2030 as remaining implementation activities are completed and the Transformation shifts to ongoing operations. Forecast costs similarly peak at approximately $55.8 million in 2027 before declining as implementation activities are completed.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-5, Tabs 3-5A through 3-5G.

c) Forecast Methodology

PG&E developed the PMO cost forecast using *Resource-Based, Benchmark-Informed,* and *SME Judgment* estimating methodologies described in Section B.1. Staffing requirements were developed by identifying the program management, governance, coordination, and value management roles and associated level of effort required throughout implementation, informed by experience with comparable utility transformation programs. Resource requirements reflect the scope and complexity of the ERP and GIS Transformation, the duration and sequencing of implementation releases, the number of concurrent workstreams, and the coordination required across PG&E, implementation partners, and vendors.

f. Business Enablement

Table 3-27 presents recorded and forecast capital expenditures for the Business Enablement cost group by platform and workstream for 2023 through 2030.

TABLE 3-27
BUSINESS ENABLEMENT COST GROUP – CAPITAL EXPENDITURES
BY PLATFORM AND WORKSTREAM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Workstream		Recorded 2023	Recorded 2024	Recorded 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Total
1	Organizational Readiness										
2		ERP	$ 0.3	$ 1.1	$ 6.6	$ 15.2	$ 28.9	$ 13.7	$ 25.5	$ 7.4	$ 98.7
3		GIS	-	0.2	1.5	4.0	10.6	11.3	3.3	-	30.8
4	**Subtotal**		**$ 0.3**	**$ 1.3**	**$ 8.1**	**$ 19.2**	**$ 39.5**	**$ 24.9**	**$ 28.8**	**$ 7.4**	**$ 129.5**
5	Operating Model										
6		ERP	$ 0.1	$ 0.3	$ 1.9	$ 4.5	$ 6.2	$ 6.7	$ 7.4	$ 1.8	$ 28.9
7		GIS	-	0.0	0.1	0.4	0.9	0.9	0.3	-	2.6
	Subtotal		**$ 0.1**	**$ 0.3**	**$ 2.1**	**$ 4.9**	**$ 7.1**	**$ 7.6**	**$ 7.6**	**$ 1.8**	**$ 31.6**
9	**Total**		**$ 0.3**	**$ 1.6**	**$ 10.2**	**$ 24.1**	**$ 46.6**	**$ 32.6**	**$ 36.4**	**$ 9.2**	**$ 161.1**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Organizational Readiness

a) Description

The Organizational Readiness workstream prepares PG&E employees and contractors to transition to and adopt the new technologies, business processes, and ways of working introduced through the ERP and GIS Transformation. As described in Chapter 2, Section E.8.b, Organizational Readiness includes change readiness, stakeholder engagement, communications, training, site readiness, and adoption activities required to prepare employees, supervisors, and leaders for the implementation of the new ERP and GIS capabilities.

Organizational Readiness scope and implementation complexity reflect the number of employees and contractors who use PG&E's ERP and GIS systems annually; the number and diversity of business functions affected by the Transformation; and the training, communications, and

readiness activities required across multiple implementation releases. These activities include role-based training, preparation of operational sites and workstations, readiness assessments, and support for employees during deployment and transition to the future state environment.

Please see Chapter 2, Section E.8.b, for additional detail on Organizational Readiness activities and their role in supporting adoption of the ERP and GIS Transformation.

b) Capital Expenditures

Table 3-28 below presents Business Enablement capital expenditures for the Organizational Readiness workstream by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E and external labor costs. The recorded and forecast cost discussions that follow reference these tables.

TABLE 3-28
ORGANIZATIONAL READINESS WORKSTREAM – CAPITAL EXPENDITURES
BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Labor Category	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E	$ 0.1	$ 0.7	$ 4.1	$ 10.2	$ 23.8	$ 9.8	$ 12.0	$ 3.1	$ 63.7
2	External	0.1	0.6	4.1	9.1	15.7	15.2	16.8	4.3	$ 65.8
3	**Total**	**$ 0.3**	**$ 1.3**	**$ 8.1**	**$ 19.2**	**$ 39.5**	**$ 24.9**	**$ 28.8**	**$ 7.4**	**$ 129.5**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $119.9 million in Business Enablement capital costs for the Organizational Readiness workstream, reflecting $58.9 million of PG&E labor and $61.0 million in

external labor required to prepare employees and organizations for the adoption of the ERP and GIS capabilities described above.

The principal cost drivers for the Organizational Readiness workstream include the size and diversity of the impacted workforce; the extent of changes to business processes, systems, and employee responsibilities; and the training, communications, and deployment readiness requirements associated with each ERP and GIS release. The forecast also reflects the resources required to develop and deliver role-based training, prepare operational sites for deployment, conduct readiness assessments, and support employees and business organizations during the transition to the future state environment.

Annual forecast staffing requirements reflect the scope and timing of training, communications, deployment readiness, and organizational adoption activities supporting the ERP and GIS Transformation. Staffing increases from approximately 56 FTEs in 2026 to a peak of approximately 72 FTEs in 2027 as organizational readiness activities expand across multiple business functions and operating areas and support employee training, change readiness, and deployment preparation. Staffing declines to approximately 44 FTEs in 2028 as certain initial deployment activities are completed, before increasing modestly to approximately 49 FTEs in 2029 to support readiness, training, and adoption activities associated with subsequent implementations. Staffing declines to approximately 13 FTEs in 2030 as remaining implementation activities are completed and organizations transition to the future-state operating environment. Forecast costs similarly peak at approximately $39.5 million in 2027 before declining as implementation activities are completed.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-6, Tabs 3-6A through 3-6G.

iii) Forecast Methodology

Organizational Readiness costs were estimated using a combination of *Resource-Based, Benchmark-Informed, and SME Judgment* estimating methodologies described in Section B.1. Estimates reflect roles, level of effort, and duration of support required throughout implementation, informed by experience and staffing benchmarks from comparable transformation programs. The estimates considered the size of the impacted workforce, training and stakeholder engagement requirements, organizational change complexity, the timing of ERP and GIS releases, and the level of support required to facilitate adoption of new technologies and business processes. Detailed supporting estimates and cost calculations are provided in Chapter 3 Workpaper 3-6, Tabs 3-6A through 3-6G.

2) Operating Model

a) Description

The Operating Model workstream defines and implements the organization structures, roles, responsibilities, and operating practices required to support the future state ERP and GIS environment. As described in Chapter 2, Section E.8.a, the workstream establishes how business functions will operate using the new capabilities, including process ownership, decision rights, organizational alignment, and coordination across business and support functions.

Operating Model scope and implementation complexity reflect the breadth of business functions affected by the Transformation, the changes to roles and responsibilities resulting from the redesigned business processes, and the

coordination required across operating organizations and shared services. Activities include defining future state organizational responsibilities, governance and decision rights, process ownership, and operating procedures necessary to support sustained operation of the new ERP and GIS capabilities.

Please see Chapter 2, Section E.8.a, for additional detail on Operating Model activities and its role in supporting the future state ERP and GIS Transformation.

b) Capital Expenditures

Table 3-29 below presents Business Enablement capital expenditures for the Operating Model workstream by year for the recorded (2023-2025) and forecast (2026-2030) periods, reflecting PG&E and external labor costs. The recorded and forecast cost discussions that follow reference these tables.

TABLE 3-29
OPERATING MODEL WORKSTREAM – CAPITAL EXPENDITURES BY LABOR CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

		Recorded			Forecast					
Line No.	Labor Category	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	PG&E Labor	$ 0.0	$ 0.1	$ 0.8	$ 1.2	$ 3.4	$ 2.8	$ 3.1	$ 0.8	$ 12.2
2	External Labor	0.0	0.2	1.2	3.6	3.7	4.8	4.5	1.1	19.3
3	**Total**	**$ 0.1**	**$ 0.3**	**$ 2.1**	**$ 4.9**	**$ 7.1**	**$ 7.6**	**$ 7.6**	**$ 1.8**	**$ 31.6**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Recorded Costs

For a discussion of recorded capital expenditures and the methodology used to allocate those costs among workstreams, please see Section B.7.

ii) Forecast Costs

From 2026 through 2030, PG&E forecasts approximately $29.1 million in Business Enablement capital costs for the Operating Model workstream, reflecting $11.2 million of PG&E labor and $17.8 million in external

labor required to develop and implement the organizational and operating changes described above.

The principal cost drivers for the Operating Model workstream include the breadth of organizational and business process changes; the number and diversity of business functions affected; and the effort required to establish future state governance, roles, responsibilities, and operating practices. The forecast also reflects the resources required to define process ownership, establish decision rights and accountability structures, align responsibilities across business functions and shared services, and implement the operating model changes associated with the planned ERP and GIS releases.

Annual forecast staffing requirements reflect the scope and timing of operating model design and implementation activities supporting the ERP and GIS Transformation. Staffing is approximately 14 FTEs in 2026, 12 FTEs in 2027, 12 FTEs in 2028, and 12 FTEs in 2029 as resources support the definition and implementation of future-state governance structures, roles and responsibilities, process ownership, decision-making frameworks, and operating practices across affected business functions. Staffing declines to approximately 3 FTEs in 2030 as remaining implementation activities are completed and organizations transition to the future-state operating environment. Forecast costs peak at approximately $7.6 million in 2028 and remain relatively stable through 2029, reflecting the sustained effort required to support organizational and operating model changes throughout the Transformation.

Detailed support for forecast costs and staffing, including PG&E and SI labor hours, labor rates, roles, and forecast dollars by year, is provided in Chapter 3 Workpaper 3-6, Tabs 3-6A through 3-6G.

iii) Forecast Methodology

PG&E developed the Operating Model forecast using the *Resource-Based and Benchmark-Informed* estimating methodologies described in Section B.1. Staffing requirements were developed based on the roles, level of effort, and duration required for organizational design, governance development, workforce planning, role redesign, operating model implementation, and future state operating procedures. Resource requirements were adjusted based on the breadth of organizational change, workforce impacts, and the scale of business process changes associated with the future state environment.

7. Recorded Capital Expenditures

a. Description

From 2023 through 2025, PG&E recorded capital expenditures associated with Phase Zero and Enterprise Design activities and technology infrastructure and software required for the ERP and GIS Transformation.[9] The recorded capital expenditures presented here are associated with assets that are not yet in service. These expenditures supported development of the Program scope, future state business and technical requirements, implementation approach, technology readiness, and cost estimates that form the basis for the forecasts presented in Section B.6.

b. Recorded Capital Expenditure Detail

Table 3-30 presents recorded capital expenditures from 2023 through 2025 by cost group, reflecting the allocation of shared Phase Zero and Enterprise Design costs. Detailed recorded expenditures by workstream, including PG&E and external labor and applicable

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9 Although Phase Zero and Enterprise Design activities were substantially completed during the recorded period (2023-2025), certain closeout and transition activities continued into 2026. Consistent with the forecast period presented in this testimony, all 2026 expenditures, including these remaining activities, are reflected as forecast capital expenditures.

non-labor hardware and software related costs, are presented in the cost tables in Section B.6 and in supporting workpapers.

Detailed support for recorded capital expenditures and the allocation methodology is provided in Chapter 3 Workpaper 3-7.

TABLE 3-30
RECORDED CAPITAL EXPENDITURES
(MILLIONS OF NOMINAL DOLLARS)

	External / SI			PG&E			Non Labor			Total			
Cost Group	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**Total**
Solution	1.8	7.5	46.1	1.4	5.8	35.2				3.2	13.3	81.3	97.8
Technology Infrastructure and Software[1]	-	-	-	-	-	-		18.2	16.7	-	18.2	16.7	34.9
Technology Enablement	0.2	0.8	5.1	0.2	0.7	4.0				0.4	1.5	9.1	11.0
Application Remediation	0.4	1.6	9.8	0.1	0.4	2.3				0.5	2.0	12.1	14.6
Program Management Office	0.2	1.0	6.1	0.2	0.7	4.1				0.4	1.7	10.2	12.3
Business Enablement	0.2	0.7	4.2	0.2	0.7	4.3				0.3	1.4	8.6	10.3
ERP Total	**2.8**	**11.7**	**71.3**	**2.0**	**8.2**	**50.0**	**-**	**18.2**	**16.7**	**4.8**	**38.1**	**138.0**	**180.9**
Solution		1.4	10.4		1.0	7.2				-	2.4	17.6	20.0
Technology Infrastructure and Software[1]		-	-		-	-			1.7	-	-	1.7	1.7
Technology Enablement		0.2	1.7		0.3	2.2				-	0.5	3.8	4.4
Application Remediation		0.3	2.4		0.1	1.1				-	0.5	3.4	3.9
Program Management Office		0.2	1.5		0.2	1.3				-	0.4	2.8	3.2
Business Enablement		0.1	1.1		0.1	0.5				-	0.2	1.6	1.8
GIS Total	**-**	**2.3**	**17.0**	**-**	**1.7**	**12.3**	**-**	**-**	**1.7**	**-**	**4.0**	**31.0**	**35.0**
Total	**2.8**	**14.0**	**88.3**	**2.0**	**9.8**	**62.3**	**-**	**18.2**	**18.4**	**4.8**	**42.0**	**169.0**	**215.9**

1) Technology Infrastructure and Software costs are directly assigned rather than allocated like the other cost groups.

Note: The amounts shown in testimony tables may not sum due to rounding.

c. Recorded Cost Methodology

During Phase Zero and Enterprise Design, PG&E performed the planning, assessment, and design activities necessary to develop a prudent and executable ERP and GIS Transformation program. These activities included evaluating existing business processes, applications, data, and technology environments; defining future-state business processes and technical architectures; assessing standard SAP S/4HANA and Esri ArcGIS Platform capabilities against PG&E's business requirements; developing implementation scope, sequencing, and release plans; establishing program governance and operating model requirements; evaluating implementation alternatives; and refining program cost, schedule, and benefit estimates.

In addition, PG&E acquired and configured foundational technology infrastructure, software, licenses, hardware, and related services required to establish development and implementation environments and support solution design, testing, integration, and deployment

planning activities. These investments were necessary to validate technical approaches, support solution design decisions, establish the technology foundation required for program execution, and prepare the environments necessary to implement the ERP and GIS Transformation.

Collectively, these activities informed the implementation approach, scope, resource requirements, technical architecture, schedule, and cost estimates underlying the ERP and GIS Transformation forecasts presented in Section B.6. The resulting work products form the basis of the proposed program.

As mentioned earlier, although these costs have been incurred and recorded as capital expenditures, the associated ERP and GIS assets have not yet been placed into service. Rather, the expenditures supported Phase Zero, Enterprise Design, and technology-readiness activities necessary to develop the future-state ERP and GIS capabilities for implementation.

Recorded capital expenditures primarily consist of PG&E labor and external labor associated with these planning, design, and technology-readiness activities. Certain Phase Zero and Enterprise Design activities produced outputs that benefited multiple ERP and GIS workstreams and therefore could not be reasonably attributed to a single workstream. Examples include enterprise architecture, program management, solution design, data strategy, governance development, organizational readiness planning, integrated implementation planning, and enterprise-wide design activities.

To assign these shared costs, PG&E applied a proportional allocation methodology based on each workstream's relative share of forecast ERP and GIS capital expenditures. This approach allocated shared planning and design expenditures to the workstreams that benefit from those activities and provided a reasonable and systematic method for reflecting the distribution of program-wide efforts across individual workstreams.

The allocation methodology was limited to shared Phase Zero and Enterprise Design labor and related planning costs. Technology Infrastructure and Software expenditures were directly attributable to the

ERP and GIS Transformation and therefore were directly assigned without allocation to individual workstreams. Detailed support for recorded capital expenditures and the allocation methodology is provided in Chapter 3 Workpaper 3-7.

8. Operations and Maintenance Expense Forecast

The O&M expense forecast presented in this section reflects costs expected to be incurred from 2027 through 2030 that are not capitalized under PG&E's proposed accounting treatment. Since the ERP and GIS Transformation will be deployed through a series of releases, certain capabilities will be placed into service before overall program completion. As those capabilities enter production, PG&E will incur ongoing expenses necessary to operate, maintain, secure, host, and support the deployed systems.

Accordingly, the forecast includes O&M expenses for software subscriptions and licenses, cloud and hosting services, platform operations, application support, vendor maintenance, and other technology support services required to sustain ERP and GIS capabilities during the implementation period. These expenses are associated with the Solution and Technology Infrastructure and Software cost groups.

The benefit-cost ratio analysis separately reflects ongoing O&M expenses expected after implementation is complete through 2039. While those post-implementation expenses are included in the economic evaluation of the ERP and GIS Transformation, they are not requested for recovery in this Application.

These O&M expenses are necessary to support the operation, adoption, and sustainment of the capabilities described in Chapter 2 and the realization of the benefits discussed in Section C of this chapter.

a. O&M Expense Forecast

Table 3-31 presents the forecast O&M expense for 2027 through 2030 by platform and cost group.

TABLE 3-31
SUMMARY OF O&M EXPENSE BY PLATFORM AND COST GROUP
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Workstream	2027	2028	2029	2030	Total
1	Technology Infrastructure and Software	$ 3.6	$ 10.2	$ 19.4	$ 30.7	$ 63.8
2	**ERP Total**	**$ 3.6**	**$ 10.2**	**$ 19.4**	**$ 30.7**	**$ 63.8**
3	Solution	$ 3.9	$ 5.5	$ 5.2	$ 4.9	$ 19.6
4	Technology Infrastructure and Software	$ 4.5	$ 31.4	$ 44.5	$ 41.7	$ 122.1
5	**GIS Total**	**$ 8.4**	**$ 36.9**	**$ 49.7**	**$ 46.6**	**$ 141.6**
6	**Total**	**$ 12.0**	**$ 47.0**	**$ 69.1**	**$ 77.3**	**$ 205.4**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Technology Infrastructure and Software

a) Description

The Technology Infrastructure and Software O&M forecast reflects the ongoing costs required to operate, maintain, and support the future-state SAP S/4HANA and Esri ArcGIS Platform environments as they are deployed into production. These expenses include software subscriptions and licenses, cloud infrastructure and hosting services, platform operations, storage and computing resources, vendor maintenance, cybersecurity services, and other technology support activities that support the secure and reliable operation of the ERP and GIS capabilities.

b) O&M Expenses

Table 3-32 presents the Technology Infrastructure and Software O&M expense forecast for 2027 through 2030 by platform.

TABLE 3-32
TECHNOLOGY INFRASTRUCTURE AND SOFTWARE COST GROUP – O&M EXPENSE
BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Platform	2027	2028	2029	2030	Total
1	ERP	$ 3.6	$ 10.2	$ 19.4	$ 30.7	$ 63.8
2	GIS	4.5	31.4	44.5	41.7	$ 122.1
3	**Total**	**$ 8.0**	**$ 41.5**	**$ 63.9**	**$ 72.4**	**$ 185.8**

Note: The amounts shown in testimony tables may not sum due to rounding.

i) Forecast Costs

From 2027 through 2030, PG&E forecasts approximately $185.8 million in Technology Infrastructure and Software O&M expenses, consisting of $63.8 million for ERP and $122.0 million for GIS. These costs increase over the forecast period as additional capabilities are deployed, user populations transition to the new environments, and operational requirements for software licensing, cloud services, hosting, security, and platform support expand.

Detailed support for Technology Infrastructure and Software O&M expenses is provided in Chapter 3 Workpaper 3-2, Tabs 3-2A through 3-2G.

ii) Forecast Methodology

The Technology Infrastructure and Software O&M forecast was developed using the *Unit-Based* estimating methodology described in Section B.1. PG&E identified the software, cloud services, hosting environments, and supporting infrastructure required for the future-state ERP and GIS platforms based on Phase Zero and Enterprise Design outputs, current contractual arrangements, vendor proposals, and anticipated operating requirements.

Forecast costs were developed by applying contractual pricing, negotiated commercial terms, vendor pricing information, and technology planning assumptions to

anticipated quantities, including user populations, software subscriptions, cloud hosting requirements, storage and compute capacity, deployment environments, and other infrastructure components. The resulting forecast reflects the expected timing of deployments and the corresponding growth in operational support requirements throughout the implementation period.

2) Solution

a) Description

The Solution O&M forecast reflects the ongoing costs required to support GIS application capabilities after they are deployed and placed into service. These expenses provide for the operation, maintenance, and sustainment of deployed GIS functionality during the implementation period and support the continued delivery of business capabilities enabled by the GIS Transformation.

b) O&M Expenses

Table 3-33 presents the Solution O&M expense forecast for 2027 through 2030 by platform.

TABLE 3-33
SOLUTION COST GROUP – O&M EXPENSE BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Description	2027	2028	2029	2030	Total
1	GIS - Solution	$ 3.9	$ 5.5	$ 5.2	$ 4.9	$ 19.6

i) Forecast Costs

From 2027 through 2030, PG&E forecasts approximately $19.6 million in Solution O&M expenses associated with the GIS Transformation.

These expenses reflect the ongoing support requirements of GIS capabilities as they are deployed and transitioned into production operations. The forecast includes application operations, production support, incident

resolution, minor enhancements, system maintenance, and user support activities that support deployed GIS functionality and the realization of expected benefits.

Detailed support for Solution O&M expenses is provided in Chapter 3 Workpaper 3-1, Tabs 3-1A through 3-1G.

ii) Forecast Methodology

The Solution O&M forecast was developed using a combination of the *Historical Cost* and *Bottom-Up* estimating methodologies described in Section B.1.

Historical costs for comparable application support activities were used to inform the forecast, together with bottom-up estimates of support requirements associated with the future-state GIS environment. The forecast reflects the planned deployment schedule for GIS capabilities, with costs beginning as capabilities are placed into service and continuing as additional functionality becomes operational.

The forecast includes application support for system performance, reliability, security, and user adoption following deployment to sustain the operational capabilities and benefits associated with the GIS Transformation.

9. Contingency

The Commission has recognized that project cost estimates may include a contingency or "risk assessment" component following a recommended practice from the Association for the Advancement of Cost Engineering (AACE). In Decision (D.) 19-09-051, the Commission stated, "This recommended practice is based on the premise that unforeseeable events that occur lead to additional costs, and project managers have a tendency to underestimate the cost of project. This contingency factor is reflected as a percentage of the forecasted cost of a project. The appropriate level or amount is determined by subject matter experts who examine and weigh the risks and contingencies surrounding each specific project."[10]

[10] p. 204.

Industry research supports the need to account for unforeseen costs when forecasting large technology programs. Research conducted by McKinsey & Company in collaboration with the University of Oxford found that large IT projects, defined as those with initial budgets exceeding $15 million, run 45 percent over budget on average and that longer planned durations were associated with increased cost-overrun risk.[11] Separate Oxford research based on more than 16,000 large projects across multiple sectors also found that large-scale technology programs are particularly susceptible to material cost overruns.[12] These findings reinforce the importance of accounting for implementation uncertainty when developing a reasonable forecast for a large-scale, multi-year technology transformation.

The appropriate contingency allowance is project-specific and depends on factors including project scope, complexity, the level of planning and estimate refinement completed, implementation duration, and the nature of the risks and uncertainties remaining when the forecast is developed. For the ERP and GIS Transformation, the principal sources of implementation risk include:

- Integration among ERP, GIS, and connected applications;
- The volume, condition, and complexity of data requiring conversion and remediation;
- Refinement of detailed solution designs within the defined scope;
- Coordination and sequencing of interdependent releases;
- Testing, defect remediation, cutover, stabilization, and transition activities;
- Dependencies across technology platforms, software providers, implementation partners, and other vendors;
- Evolving software, hosting, licensing, and technology costs; and

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11 McKinsey & Company and University of Oxford, Delivering large-scale IT projects on time, on budget, and on value (Oct. 1, 2012), available at: <https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/delivering-large-scale-it-projects-on-time-on-budget-and-on-value> (accessed Oct. 19, 2026).

12 Bent Flyvbjerg et al., The Empirical Reality of IT Project Cost Overruns: Discovering a Power-Law Distribution, Journal of Management Information Systems, Vol. 39, Issue No. 3 (2022), available at: <https://www.tandfonline.com/doi/full/10.1080/07421222.2022.2096544#abstract> (accessed Oct. 19, 2026).

- Schedule and resource variability over the multi-year implementation period.

As these risks materialize, they will require additional in-scope configuration, integration, testing, defect remediation, data cleansing or conversion cycles, transition support, labor, or vendor effort. Although PG&E defined the project scope and developed its forecast based on available procurement information, vendor estimates, and detailed implementation planning, unforeseen events will occur and the actual effort and resources required to implement the defined scope will increase relative to current estimates as implementation progresses.

Based on the complexity and duration of the ERP and GIS Transformation, the substantial planning and estimate refinement completed to date, the remaining risks associated with executing the defined scope, and the experience of the SI with other large technology projects, PG&E determined that 20 percent is reasonable. PG&E expects unforeseen events associated with the risks described above to increase overall project costs by approximately 20 percent relative to the current estimate. These costs are expected to include additional labor associated with implementation activities, as well as technology-related costs, including software licensing and subscriptions, cloud and hosting costs, implementation partner pricing, and other vendor costs. Applying a consistent 20 percent contingency across applicable labor and non-labor categories reflects the expected aggregate cost effects of these implementation and market risks.

PG&E concluded that 20 percent appropriately balances the remaining implementation risks with the substantial planning and estimate refinement already completed. Through Enterprise Design, procurement activities, scope development, release planning, and business and technical planning, PG&E has significantly refined the implementation approach, future state processes, application dependencies, deployment strategy, underlying cost estimates, and execution plans. These activities have reduced uncertainty relative to earlier stages of program development, but they do not eliminate the additional costs expected from implementing a large-scale, multi-year

transformation across two foundational enterprise platforms and numerous interconnected systems.

The contingency is limited to the expected cost consequences of unforeseen events associated with completing the defined scope of the ERP and GIS Transformation. It does not expand the proposed scope, fund discretionary enhancements, or provide funding for work outside the Transformation. Instead, it reflects PG&E's expectation that implementation of the defined scope will require additional effort and cost beyond what can be specifically identified within the base estimate at this stage of program development. Including the 20 percent contingency therefore provides a more complete forecast of the expected cost to deliver the defined scope of the ERP and GIS Transformation. Excluding contingency would understate that expected cost.

10. Incrementality

PG&E assessed whether the ERP and GIS Transformation costs included in this request are incremental using its activity-based forecasting methodology, which the Commission has accepted in prior PG&E cost recovery proceedings. Under this approach, costs are treated as incremental if they support work that has not been funded through a GRC or another cost recovery mechanism and are not included in existing base rates.

Although the Commission adopted a forecast in the 2023 GRC for baseline enterprise system and Next Gen GIS activities, that forecast did not include the discrete work activities required to implement the ERP and GIS Transformation forecast in this Application. Incrementality therefore depends on whether funding for the specific activities and costs for which PG&E seeks recovery in this Application was previously authorized for recovery through base rates or another cost recovery mechanism. This approach aligns with PG&E’s activity-based forecasting methodology, which assesses incrementality by examining the underlying work activities and whether an existing cost recovery mechanism funded them.

The work forecast here is distinct from the baseline activities reflected in the 2023 GRC. The Transformation replaces SAP ERP Central Component with SAP S/4HANA and replaces Esri ArcGIS Desktop with the Esri ArcGIS

Platform, including the Utility Network data model. The implementation-specific activities associated with that transformation include system development and integration, business process redesign, organizational readiness, and application remediation. These activities were outside the scope of the 2023 GRC forecast.

PG&E also took affirmative steps to eliminate potential overlap with amounts reflected in the 2023 GRC. PG&E excluded O&M expenses associated with the 2023 GRC forecast period from the costs requested in this Application so that the requested revenue requirement reflects only incremental program costs. This exclusion provides an additional safeguard against duplicate recovery by separating the costs requested here from costs attributable to work funded during the 2023 GRC period.

The Commission separately authorized PG&E to seek recovery of certain ERP O&M expense costs in 2025 and 2026 through the Volumetric Performance Fees (VPF),[13] which applies an incrementality framework to program activities. Consistent with that approval, PG&E has excluded from this application all costs that are being recovered through VPF. The costs included in this request therefore reflect a distinct and non-overlapping set of activities associated with the transition from program planning and mobilization to full-scale implementation of the ERP and GIS Transformation described in Chapter 2.

The ERP and GIS Transformation work and related costs for 2027-2030 presented in this Application were not forecast or included in the revenue requirement request in PG&E's 2027 GRC. The exclusion of these costs from the 2027 GRC is consistent with the timing of the Program development. When the 2027 GRC forecast was prepared, the transformation's scope, technology design, delivery approach, release sequence, resource requirements, contracting strategy, and cost estimates had not been sufficiently defined to support a forecast request. These elements were developed and validated after the GRC forecast-development cutoff. Accordingly, the work described in this

[13] The Commission approved the VPF for 2025 in D.24-12-033 and for 2026 in D.25-12-007.

Application represents additional, specifically identified transformation work rather than continued performance of activities forecasted through the 2027 GRC.

PG&E's 2027 GRC rate base included $2.6 million in Program capital expenditures placed in service in 2024. PG&E excluded this amount from the Application to avoid duplicate recovery.

PG&E will use separate project and accounting structures, including applicable major work categories or WBS elements and dedicated program orders, to identify costs attributable to the ERP and GIS Transformation. PG&E also applies established accounting practices, including program-level cost tracking and time-charging requirements. Together with the activity-based forecasting methodology and the exclusions described above, these practices support the identification and tracking of costs associated with the incremental Transformation activities for which PG&E seeks recovery in this Application.

C. ERP and GIS Transformation Benefit Forecast

As discussed in the preceding Chapters, the ERP and GIS Transformation will enable PG&E to standardize, streamline, and improve business processes that support millions of inspections, maintenance activities, repairs, capital projects, and other operational work each year. By standardizing and streamlining processes across finance, supply chain, human resources, asset management, work execution, and geospatial operations, the Transformation is expected to reduce process complexity, improve data quality and accessibility, increase workflow standardization and automation, reduce manual activities, and enable more effective use of employee time across the enterprise.

Based on the methodology described below, PG&E forecasts that the ERP and GIS Transformation will generate approximately $9.4 billion in cumulative benefits through 2039. The forecast uses PG&E's 2024 operating environment as the baseline and incorporates Enterprise Design activities, business process analysis, historical operating data, industry benchmarks, and subject matter expert input. The resulting estimates incorporate adjustments for expected benefit realization, attribution, adoption, and potential benefit erosion over time. Table 3-34 summarizes forecast ERP and GIS benefits by platform and benefit category.

TABLE 3-34
SUMMARY OF FORECAST BENEFITS BY PLATFORM
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Benefit Category	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	ERP	$ 1.8	$ 16.9	$ 135.3	$ 481.2	$ 765.9	$ 818.5	$ 827.9	$ 584.6	$ 508.1	$ 518.3	$ 528.8	$ 539.5	$ 5,726.8
2	GIS	-	0.5	24.5	37.3	45.8	47.2	48.2	50.1	37.3	38.1	38.8	29.7	397.6
3	**Capital Total**	**$ 1.8**	**$ 17.4**	**$ 159.8**	**$ 518.6**	**$ 811.7**	**$ 865.7**	**$ 876.0**	**$ 634.7**	**$ 545.4**	**$ 556.4**	**$ 567.7**	**$ 569.2**	**$ 6,124.4**
4	ERP	2.5	11.8	71.7	219.3	353.0	388.6	398.3	259.5	213.6	217.8	225.0	232.4	$ 2,593.5
5	GIS	-	13.7	29.6	55.9	64.2	66.6	68.5	70.5	72.5	74.5	76.6	59.1	651.7
6	**Expense Total**	**$ 2.5**	**$ 25.5**	**$ 101.3**	**$ 275.2**	**$ 417.2**	**$ 455.2**	**$ 466.8**	**$ 330.0**	**$ 286.1**	**$ 292.3**	**$ 301.6**	**$ 291.5**	**$ 3,245.1**
7	ERP	$ 4.3	$ 28.7	$ 207.0	$ 700.5	$ 1,118.9	$ 1,207.1	$ 1,226.2	$ 844.2	$ 721.7	$ 736.1	$ 753.8	$ 771.9	$ 8,320.3
8	GIS	-	14.1	54.0	93.2	110.1	113.8	116.7	120.5	109.8	112.6	115.5	88.8	1,049.2
9	**Total**	**$ 4.3**	**$ 42.9**	**$ 261.1**	**$ 793.7**	**$ 1,229.0**	**$ 1,320.9**	**$ 1,342.9**	**$ 964.7**	**$ 831.5**	**$ 848.7**	**$ 869.2**	**$ 860.7**	**$ 9,369.5**

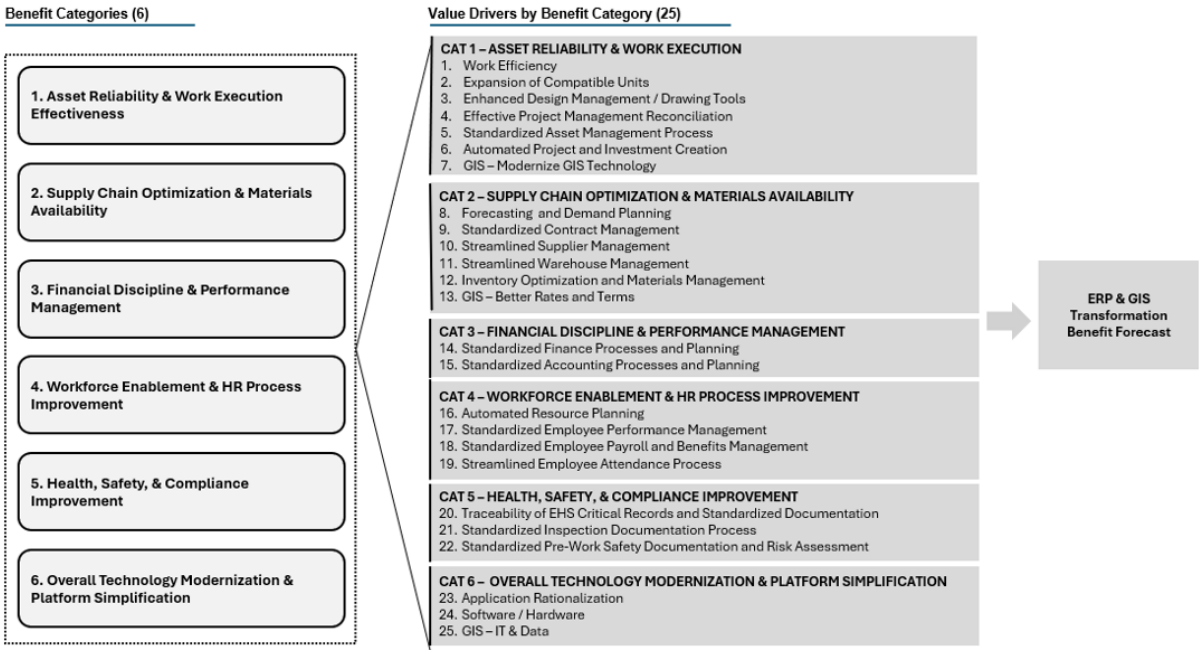
Note: The amounts shown in testimony tables may not sum due to rounding.

1. Development of Benefit Forecast

a. Benefit Categories and Value Drivers

Figure 3-2 illustrates the framework PG&E developed to organize and quantify the benefits of the ERP and GIS Transformation. The framework consists of 25 value drivers grouped into six benefit categories representing the primary areas in which PG&E expects to realize value. Benefit categories describe the outcome PG&E expects to achieve; value drivers describe the underlying process changes that create that outcome. For example, the *Asset Reliability and Work Execution Effectiveness* benefit category includes the *Work Efficiency* value driver, which reflects improvements in work planning, scheduling, and execution. This framework links Transformation capabilities to measurable business process improvements and was used to calculate the forecast financial benefits.

FIGURE 3-2
ERP AND GIS TRANSFORMATION – BENEFIT CATEGORIES AND RELATED VALUE DRIVERS



b. Benefit Development Activities

Following development of the benefit framework, PG&E performed five activities to quantify each value driver and support the benefit forecast. These activities informed the baseline assumptions, improvement ranges, realization rates, exclusivity assumptions, and erosion adjustments used throughout the forecast. Table 3-35 below describes the five benefit development activities.

TABLE 3-35
BENEFIT DEVELOPMENT ACTIVITIES

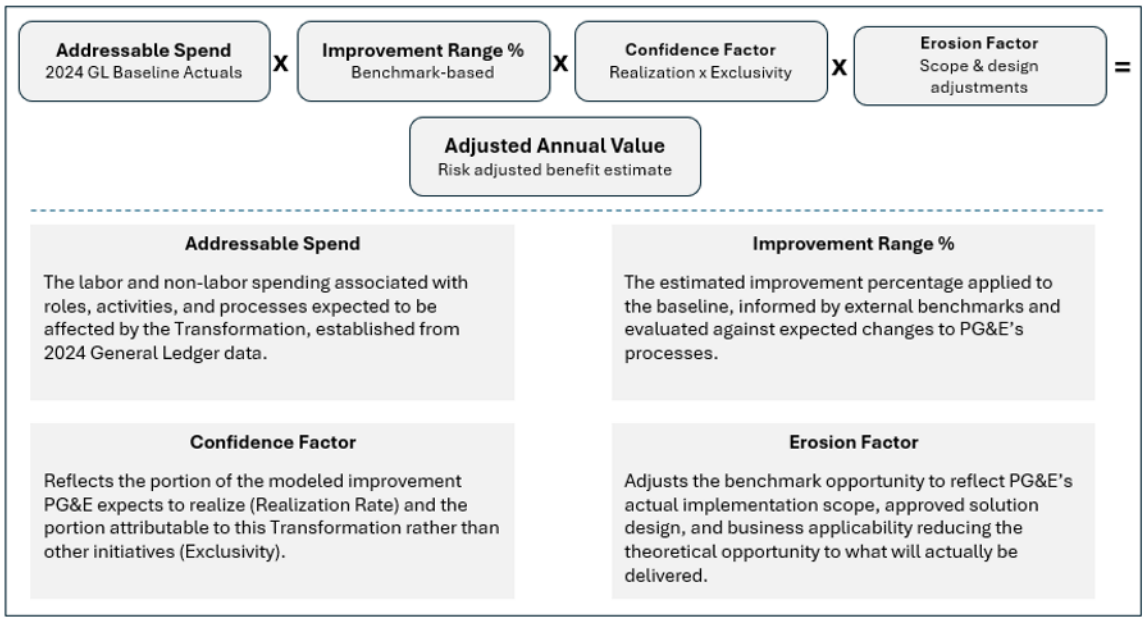
#	Activity	What PG&E Did	How It Informed the Forecast
1	**50+ Working Sessions**	Conducted working sessions with subject matter experts across functional areas (November 2024 – mid-2026). Developed a value-driver-to-process mapping covering nearly 450 business processes, linking value drivers to relevant processes and solution capabilities.	Consolidated initial value drivers by eliminating overlap and combining related benefit opportunities. Refined role mappings, organizational scope, value-driver applicability, and benefit forecast inputs for each value driver.
2	**1,000+ Enterprise Design Workshops**	Conducted Fit-to-Standard and Enterprise Data Model workshops across all in-scope business process areas. Documented observations on process changes, organizational impacts, and expected operational improvements.	Provided evidence of how the future state solution would operate in practice. Identified process changes, adoption considerations, and design decisions that informed realization-rate and erosion adjustments.
3	**140+ Maturity Impact Assessments**	Assessed current and future state process characteristics across more than 140 business processes and nearly 100 roles, covering role impacts, process complexity, technology enablement, and performance visibility.	Informed value-driver applicability, expected improvement opportunities, and realization considerations. Identified where organizational, process, technology, or implementation factors could influence benefit realization.
4	**~50 Key Design Decision Reviews**	Evaluated key design decisions as they moved through the program's governance process, assessing their effect on benefit applicability, timing, and magnitude.	Decisions that deferred functionality, retained manual processes, or limited automation were reflected in erosion adjustments, aligning forecast benefits with the approved solution design and planned deployment approach.
5	**✓ Leadership & Business Review**	Socialized the benefit methodology and value case with PG&E senior management and operational leaders. Budget owners and business leaders reviewed selected forecast inputs, baselines, and realization considerations.	Feedback was incorporated into the refinement process and used to evaluate the forecast's applicability to PG&E's operating environment, organizational structure, and planned implementation approach.

c. Benefit Forecast Methodology

The benefit forecast was developed through a structured analysis conducted with PG&E subject matter experts (SMEs). Each benefit estimate was calculated by applying a consistent four-factor formula to each value driver.

The benefit forecast methodology is summarized in Figure 3-3 below.

FIGURE 3-3
BENEFIT FORECAST METHODOLOGY



The formula was applied to the majority of the 25 value drivers. Specific inputs vary by value driver based on the relevant spending baseline, affected processes and user groups, expected operational improvement, solution-design decisions, implementation timing, and realization considerations. Section C.1 describes the development of each factor in detail.

For purposes of this Application and testimony, Addressable Spend is based on PG&E's 2024 recorded spending. Actual benefits will vary based on actual work plans, implementation outcomes, and operating conditions. For future rate cases, including PG&E's 2031 GRC, Addressable Spend may be updated to reflect the applicable forecast work plan.

d. Baseline and Improvements

Baselines were established using PG&E's 2024 General Ledger data from PG&E's SAP financial system to identify labor and non-labor spending associated with roles, activities, and processes expected to be affected by the ERP and GIS Transformation. This spending, referred to as Addressable Spend, represents a portion of PG&E's current cost structure associated with those roles, activities, and processes.

Once baselines were established, PG&E identified specific operational improvements by analyzing how the new system capabilities described in Chapter 2 would change the underlying activities or costs driving each metric. Initial improvement ranges were informed by external benchmarks and evaluated against expected changes to PG&E's processes.

1) Internal Labor

- Baseline: Addressable Spend was developed using a role-based methodology that identified roles expected to be affected by the Transformation and mapped those roles to associated labor and overhead spending recorded in PG&E's General Ledger. Addressable Spend includes direct labor costs, including straight-time, overtime, and double-time labor after applicable exclusions, plus applicable management and employee benefit overheads to reflect fully loaded labor costs.
- Improvement Sizing: Improvement rates were applied at the job role level and reflect the expected productivity improvements enabled by process standardization, automation, improved data availability, and workflow simplification. Role-based improvement rates varied by role, functional area, and scope of change.

2) External Labor

- Baseline: Addressable Spend was developed by mapping contractor commodity codes[14] and associated General Ledger recorded costs to the PG&E roles whose work the contractor activity most closely supports. Where a contractor cost category supported multiple roles, costs were proportionally allocated across the relevant roles before applying benefit rates.
- Improvement Sizing: External labor was assigned improvement assumptions consistent with the corresponding internal roles, reflecting the expectation that contractors performing similar

[14] Third-party spend code that identifies what was purchased.

work benefit from similar process, technology, and workflow improvements.

3) Non-Labor

- Baseline: Addressable Spend was developed using General Ledger recorded costs for materials and services associated with impacted business processes. Because General Ledger data is often available at the material-group level rather than the commodity-code level, expenditures were proportionally allocated using purchase-order data to estimate spending associated with specific commodity categories.
- Improvement Sizing: Improvement rates were developed using a commodity-based segmentation of spending categories, reflecting the extent to which ERP and GIS Transformation capabilities improve demand planning, inventory management, sourcing, procurement, and materials management. Commodity codes were classified according to expected improvement opportunity, with separate rates for services and material spending categories.

4) GIS Enabled Categories

For GIS-enabled benefit categories, the baseline was supplemented with operational and geospatial information reflecting existing workflows that depend on ArcGIS Desktop and other GIS capabilities. These inputs included asset, network, application, workflow, and operational performance information used to evaluate existing processes, data management activities, and GIS-enabled work practices. This information informed the GIS-related benefit assumptions and reflects existing conditions such as manual workarounds, process fragmentation, data limitations, and system constraints described in Chapter 2.

e. Applying Adjustment Factors

The following adjustment factors were applied across the majority of value drivers and benefit categories.

- Confidence Factor: Each benefit estimate is multiplied by a confidence factor that reflects both modeled improvement PG&E expects to realize and the portion of the resulting benefit that can reasonably be attributed to the ERP and GIS Transformation.

Confidence Factor = Realization Rate x Exclusivity

- Realization Rate: Reflects the portion of the benchmark opportunity expected to be achieved after implementation. It was informed by Enterprise Design activities, process and role assessments, working sessions with subject matter experts, and stakeholder reviews. Realization rates vary by benefit category because different benefit types are observed and measured differently.
  - Internal labor applies separate realization assumptions to direct labor and loaded overhead costs.
  - External labor reflects the degree to which contractor efficiencies are expected to be captured through contract structures and utilization practices.
  - Non-labor uses separate assumptions based on the measurability of avoided spending and operational efficiencies.
  - Realization rates reflect uncertainty associated with benefit capture, adoption, and operational efficiencies.
- Exclusivity: Reflects the portion of the benefit attributable to the ERP and GIS Transformation rather than other PG&E improvement initiatives and is applied to avoid double counting.
- Erosion Factor: Each benefit estimate is multiplied by one or more erosion factors that adjust the modeled improvement opportunity to reflect PG&E's actual implementation scope, business applicability, and solution design. Erosion factors were informed by Enterprise Design workshops, Key Design Decision reviews, process mapping activities, and business validation sessions. Depending on the value driver, erosion adjustments may reflect scope exclusions, deferred or phased functionality, retained manual processes, differences in applicability across organizations or spending categories, and other business-specific considerations identified

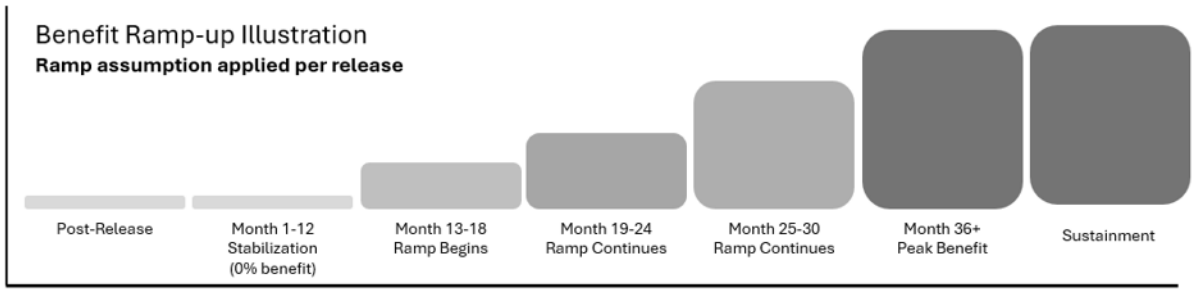
through the benefit-development process. Erosion factors align the benefit forecast with the capabilities, organizations, and spending categories included within the proposed ERP and GIS Transformation.

- Benefit Ramp-Up: Most benefits are not forecast during the 12-month stabilization period.[15] Benefits then ramp linearly over the subsequent 24 months to peak benefit levels. For capabilities and affected populations deployed through multiple releases, the stabilization and ramp assumptions are applied based on the timing of the applicable release. This approach reflects the time required to stabilize deployed capabilities, complete the transition to redesigned processes, build user proficiency, and embed the resulting operational improvements in normal business operations. Peak benefits are sustained following the ramp period, except for sourcing-related value drivers in the Supply Chain Optimization benefit category.

  For purposes of the value driver discussions below, "peak benefit year" refers to the year in which a value driver completes its applicable stabilization and ramp-up period and reaches its full modeled benefit level. Since forecast benefits are stated in nominal dollars, escalation may cause the reported dollar amount to increase in subsequent years even though the value driver has already reached its full modeled benefit level.

[15] Certain value drivers (e.g., application rationalization) use a different set of ramp assumptions, as outlined in the workpapers.

FIGURE 3-4
BENEFIT RAMP-UP ILLUSTRATION



2. Benefit Forecast

Table 3-36 presents the 2028-2039 ERP and GIS forecast benefits by platform and benefit category.

TABLE 3-36
SUMMARY OF FORECAST BENEFITS BY PLATFORM AND BENEFIT CATEGORY
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Benefit Category	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Asset Reliability and Work Execution Effectiveness	$ 1.6	$ 15.3	$ 98.3	$ 332.4	$ 555.6	$ 626.5	$ 645.9	$ 661.0	$ 676.6	$ 692.6	$ 709.0	$ 725.8	$ 5,740.6
2	Supply Chain Optimization and Materials Availability	1.1	10.7	96.3	340.2	519.6	526.0	522.7	134.3	1.3	1.3	1.3	1.4	2,156.2
3	Financial Discipline and Performance Management	-	-	-	0.4	2.6	4.7	5.0	5.2	5.4	5.6	5.8	6.1	41.0
4	Workforce Enablement and HR Process Improvement	0.0	0.3	0.6	0.8	1.8	2.7	2.8	2.9	3.0	3.2	3.3	3.4	24.8
5	Health, Safety and Compliance Improvement	0.1	1.0	2.0	4.1	13.5	22.2	23.5	24.2	24.9	25.6	26.3	27.1	194.5
6	Overall Technology Modernization and Platform Simplification	1.4	1.4	9.9	22.5	25.7	25.1	26.2	16.4	10.5	7.8	8.0	8.2	163.1
7	**ERP Total**	**$ 4.3**	**$ 28.7**	**$ 207.0**	**$ 700.5**	**$ 1,118.9**	**$ 1,207.1**	**$ 1,226.2**	**$ 844.2**	**$ 721.7**	**$ 736.1**	**$ 753.8**	**$ 771.9**	**$ 8,320.3**
8	Asset Reliability and Work Execution Effectiveness	$ -	$ 1.2	$ 19.2	$ 59.7	$ 71.6	$ 74.3	$ 76.3	$ 78.4	$ 80.5	$ 82.7	$ 84.9	$ 65.4	$ 694.1
9	Supply Chain Optimization and Materials Availability	-	-	1.7	7.2	11.6	12.1	12.3	3.1	-	-	-	-	48.0
10	Overall Technology Modernization and Platform Simplification	-	12.9	33.2	26.3	26.9	27.5	28.1	39.0	29.3	29.9	30.6	23.4	307.1
11	**GIS Total**	**$ -**	**$ 14.1**	**$ 54.0**	**$ 93.2**	**$ 110.1**	**$ 113.8**	**$ 116.7**	**$ 120.5**	**$ 109.8**	**$ 112.6**	**$ 115.5**	**$ 88.8**	**$ 1,049.2**
12	**Total**	**$ 4.3**	**$ 42.9**	**$ 261.1**	**$ 793.7**	**$ 1,229.0**	**$ 1,320.9**	**$ 1,342.9**	**$ 964.7**	**$ 831.5**	**$ 848.7**	**$ 869.2**	**$ 860.7**	**$ 9,369.5**

Note: The amounts shown in testimony tables may not sum due to rounding.

a. Asset Reliability and Work Execution Effectiveness

Asset Reliability and Work Execution Effectiveness reflects improvements in how PG&E plans, designs, schedules, executes, documents, and manages utility work throughout the asset lifecycle. The value drivers within this category support a broad set of operational activities performed by field personnel, inspectors, engineers, project managers, planners, and asset management teams responsible for maintaining and improving utility infrastructure. These capabilities help reduce administrative complexity, improve information availability, and increase the efficiency and effectiveness of work execution processes

across the enterprise. The capabilities enabling these benefits are described in Chapter 2, principally in Sections E.3.a, E.3.e, E.3.i, and E.3.j.

The cumulative forecast benefits associated with this category are approximately $6.4 billion between 2028 and 2039, making it the largest benefit category within the business case. Table 3-37 presents the 2028-2039 forecast benefits for the Asset Reliability and Work Execution Effectiveness benefit category by value driver.

TABLE 3-37
ASSET RELIABILITY AND WORK EXECUTION EFFECTIVENESS BENEFIT CATEGORY BY PLATFORM AND VALUE DRIVER (MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Work Efficiency	$ 1.4	$ 13.4	$ 88.5	$ 299.4	$ 490.7	$ 544.0	$ 560.0	$ 573.1	$ 586.5	$ 600.3	$ 614.4	$ 628.9	$ 5,000.5
2	Expansion of Compatible Units	0.1	1.3	3.7	9.2	18.6	24.8	26.0	26.7	27.4	28.1	28.9	29.7	224.5
3	Enhanced Design Management / Drawing Tools	0.0	0.0	2.9	13.0	23.4	27.3	28.1	28.7	29.4	30.0	30.6	31.3	244.8
4	Effective Project Management Reconciliation	0.0	0.4	1.4	4.1	9.6	13.6	14.2	14.5	14.8	15.2	15.5	15.9	119.3
5	Standardized Asset Management Process	0.0	0.2	1.7	6.6	12.7	15.7	16.4	16.8	17.2	17.7	18.1	18.6	141.6
6	Automated Project and Investment Creation	-	-	-	0.1	0.7	1.2	1.2	1.3	1.3	1.3	1.4	1.4	9.9
7	**ERP Total**	**$ 1.6**	**$ 15.3**	**$ 98.3**	**$ 332.4**	**$ 555.6**	**$ 626.5**	**$ 645.9**	**$ 661.0**	**$ 676.6**	**$ 692.6**	**$ 709.0**	**$ 725.8**	**$ 5,740.6**
8	Modernize GIS Technology	$ -	$ 1.2	$ 19.2	$ 59.7	$ 71.6	$ 74.3	$ 76.3	$ 78.4	$ 80.5	$ 82.7	$ 84.9	$ 65.4	$ 694.1
9	**GIS Total**	**$ -**	**$ 1.2**	**$ 19.2**	**$ 59.7**	**$ 71.6**	**$ 74.3**	**$ 76.3**	**$ 78.4**	**$ 80.5**	**$ 82.7**	**$ 84.9**	**$ 65.4**	**$ 694.1**
10	**Total**	**$ 1.6**	**$ 16.6**	**$ 117.5**	**$ 392.1**	**$ 627.2**	**$ 700.8**	**$ 722.2**	**$ 739.4**	**$ 757.1**	**$ 775.3**	**$ 793.9**	**$ 791.2**	**$ 6,434.7**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Work Efficiency

The Work Efficiency value driver reflects improvements in how PG&E plans, schedules, dispatches, executes, documents, and completes operational work. Today, field personnel rely on multiple applications and manual processes to support scheduling, dispatch, mobile work execution, time reporting, inspections, and work completion activities. Work is also classified using more than 1,500 Maintenance Activity Type (MAT) codes and approximately 120 order types, creating administrative complexity and limiting consistency across work management processes.

In the future state, the OverIT enterprise scheduling, dispatch, and mobile execution platform supports a more integrated work management process across operations, while a simplified work model will reduce and standardize work classifications. Field crews,

inspectors, and supervisors will be able to capture time, work results, inspection information, and other completion data through mobile tools at the point of execution, reducing paper-based documentation, movement between systems, and subsequent data entry. Improved work bundling will reduce unnecessary mobilization and help crews arrive with the materials and information needed to perform planned work. Greater visibility into work status and requirements will also support pre-work activities such as staging materials, confirming readiness, and coordinating clearances. These improvements primarily reduce time spent on planning, coordination, administrative, and documentation activities rather than assuming that the physical work itself is performed faster.

Reflecting the scale of these operational improvements, forecast benefits associated with Work Efficiency total approximately $5.0 billion between 2028 and 2039. The peak benefit year is 2034, when annual benefits are forecast to reach approximately $560.0 million.

2) Expansion of Compatible Units

The Expansion of Compatible Units value driver reflects the expanded use of standardized engineering and construction templates for recurring work activities. Today, engineers and estimators may need to manually develop work packages, construction task lists, material requirements, labor estimates, and cost estimates. This can require similar work requirements to be entered or developed repeatedly across engineering, estimating, and work-management processes, even where portions of the underlying work are recurring.

In the future state, expanded use of Compatible Units, reusable task lists, and standardized engineering and design capabilities will allow recurring work to be developed using predefined information for materials, labor, activities, and costs. Rather than developing each recurring work package entirely from the beginning, engineering and estimating personnel will be able to use standardized work requirements and construction documentation as

the starting point for applicable work. Greater use of these templates is expected to reduce the effort required to develop recurring work packages, improve the consistency of material and labor estimates, and support more efficient engineering and estimating activities. Together, these capabilities will allow engineering resources to spend more time on design and planning activities.

Reflecting the scale of these operational improvements, forecast benefits associated with Expansion of Compatible Units total approximately $224.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $26.0 million.

3) Enhanced Design Management/Drawing Tools

The Enhanced Design Management/Drawing Tools value driver reflects improvements in how engineering designs, estimates, and project plans are developed and transferred into work execution. Today, designers and estimators use multiple drawing platforms and estimating tools, often requiring manual transfer of information between design, estimating, planning, and work management processes. Design information, material requirements, construction activities, and estimates may need to be manually developed, transferred, or reentered as work moves from engineering design into downstream planning and execution.

In the future state, standardized design tools and expanded GWD capabilities will support the generation of construction task lists, material requirements, estimates, and planning information directly from engineering designs. For example, a gas designer preparing a main extension project can automatically generate construction task lists and material requirements from the design rather than manually entering the same information into downstream systems. Standardized design templates and integration among design, asset management, and GIS capabilities will support the development of construction-ready designs and reduce the need to manually recreate information across systems. Integration with

estimating and work-management processes will also allow applicable design, material, labor, and cost information to move more consistently from engineering into work planning and execution. Together, these capabilities are expected to reduce manual data entry, improve consistency, and support more efficient design and estimating activities.

Reflecting the scale of these operational improvements, forecast benefits associated with Enhanced Design Management/Drawing Tools total approximately $244.8 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $28.1 million.

4) Effective Project Management Reconciliation

The Effective Project Management Reconciliation value driver reflects improvements in project management and performance visibility throughout the project lifecycle. Today, project managers often reconcile estimates, forecasts, actual costs, schedules, budgets, and approvals across multiple systems and spreadsheets, requiring significant effort to develop a complete view of project performance. Changes in scope, schedule, resources, or costs may not be reflected consistently across those systems, requiring project personnel to assemble and validate information to understand overall project status and performance.

In the future state, integrated project management capabilities will connect planning, estimating, budgeting, forecasting, governance, and reporting processes. A common project structure will connect project budgets, work orders, materials, labor, costs, and related project information, reducing the need to assemble and reconcile project status across disconnected systems. More consistent project structures and integrated cost and performance information will improve the connection among what was planned, approved, spent, and forecast. These capabilities will reduce manual reconciliation effort and provide project managers with more timely and consistent information regarding project scope, schedule,

cost, and performance, supporting more effective project management.

Reflecting the scale of these operational improvements, forecast benefits associated with Effective Project Management Reconciliation total approximately $119.3 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $14.2 million.

5) Standardized Asset Management Process

The Standardized Asset Management Process value driver reflects improvements in the quality, accessibility, and consistency of asset information used to support maintenance, operational, and investment decisions. Today, asset information is maintained across ERP, GIS, spreadsheets, and other repositories. Asset managers may need to gather and reconcile information regarding asset condition, risk, work history, performance, location, and related costs before that information can be used for maintenance or investment planning. Differences in how asset information is structured and updated across systems add to this effort.

In the future state, a more standardized enterprise asset model and improved integration between ERP and GIS will reduce manual reconciliation and provide more consistent access to asset, work, condition, location, and performance information. More integrated asset information will connect asset records with work orders, inspections, maintenance activities, costs, and spatial information, while standardized data-governance processes will support more accurate and consistent records as asset information is created or updated. These improvements are expected to reduce administrative effort and support more informed maintenance and investment decisions.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Asset Management Process total approximately $141.6 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $16.4 million.

6) Automated Project and Investment Creation

The Automated Project and Investment Creation value driver reflects improvements in how approved investments transition from portfolio planning into project execution. Today, project setup can require information regarding project structure, budgets, and governance requirements to be established or translated across planning and execution processes. This creates administrative effort after an investment is approved and can result in differences between the information used to evaluate an investment and the project information subsequently used to manage its execution.

In the future state, integrated investment-planning and project-management capabilities will provide a more standardized transition from investment approval into project execution. Approved investment information will transfer from the portfolio-planning process into the project-management environment, where common project structures and governance processes will support the project through design, execution, and closeout. This integration will reduce the manual setup and translation of information between portfolio planning and project execution and improve consistency among investment information, project structures, budgets, and governance requirements.

Reflecting the scale of these operational improvements, forecast benefits associated with Automated Project and Investment Creation total approximately $9.9 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $1.2 million.

7) Modernized GIS Technology

The Modernized GIS Technology value driver captures productivity and work-execution improvements enabled by the modernized GIS platform. Today, employees and contractors rely on aging GIS technologies, applications, integrations, and data structures to access, maintain, and use asset, geographic, and network information. Multiple GIS environments and data models, custom tools, and complex integrations can require additional effort

to locate and validate information, reconcile information among systems, and support engineering, planning, field operations, and work execution.

In the future state, the Esri ArcGIS Platform and Utility Network data model will provide a more standardized and integrated environment for maintaining and using asset location, attributes, and network-connectivity information. The future platform improves access to geospatial information and strengthens the connection between GIS data and the work and asset-management processes that depend upon it. Mobile capabilities will also support more timely capture of as-built asset information and updates to the asset registry. These improvements are expected to reduce manual data handling and reconciliation and support improved productivity for affected PG&E employees and contracted labor who rely on GIS information to plan, execute, document, and complete work.

Reflecting the scale of these operational improvements, forecast benefits associated with Modernized GIS Technology total approximately $694.1 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $76.3 million.

b. Supply Chain Optimization and Materials Availability

Supply Chain Optimization and Materials Availability reflects improvements in how PG&E forecasts demand, procures materials and services, manages supplier relationships, administers contracts, maintains inventory, and operates warehouse facilities. These capabilities support operational, maintenance, and capital work activities by helping make materials, equipment, and services available when needed. The capabilities enabling these benefits are described in Chapter 2, principally in Section E.3.b and the related WAM integration described in Section E.3.a.

The cumulative forecast benefits associated with this category are approximately $2.2 billion between 2028 and 2039. Table 3-38 presents the 2028-2039 forecast benefits for the Supply Chain Optimization and Materials Availability benefit category by platform and value driver.

TABLE 3-38
SUPPLY CHAIN OPTIMIZATION AND MATERIALS AVAILABILITY BENEFIT CATEGORY
BY PLATFORM AND VALUE DRIVER
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Forecasting and Demand Planning	$ 0.6	$ 5.8	$47.4	$ 164.1	$ 249.6	$ 251.7	$ 249.1	$ 63.6	$ -	$ -	$ -	$-	$ 1,031.9
2	Standardized Contract Management	0.3	3.2	30.2	107.6	164.4	166.4	165.6	42.3	-	-	-	-	680.1
3	Streamlined Supplier Management	0.2	1.5	16.5	60.0	91.9	93.4	93.3	23.8	-	-	-	-	380.5
4	Streamlined Warehouse Management	-	-	-	0.1	0.6	1.1	1.2	1.2	1.3	1.3	1.3	1.4	9.6
5	Inventory Optimization and Materials Mgmt	0.0	0.1	2.2	8.4	13.0	13.3	13.5	3.4	-	-	-	-	54.0
6	**ERP Total**	**$ 1.1**	**$10.7**	**$96.3**	**$ 340.2**	**$ 519.6**	**$ 526.0**	**$ 522.7**	**$ 134.3**	**$ 1.3**	**$ 1.3**	**$ 1.3**	**$1.4**	**$ 2,156.2**
7	Better Rates and Terms	$ -	$ -	$ 1.7	$ 7.2	$ 11.6	$ 12.1	$ 12.3	$ 3.1	$ -	$ -	$ -	$-	$ 48.0
8	**GIS Total**	**$ -**	**$ -**	**$ 1.7**	**$ 7.2**	**$ 11.6**	**$ 12.1**	**$ 12.3**	**$ 3.1**	**$ -**	**$ -**	**$ -**	**$-**	**$ 48.0**
9	**Total**	**$ 1.1**	**$10.7**	**$98.0**	**$ 347.4**	**$ 531.2**	**$ 538.0**	**$ 535.0**	**$ 137.5**	**$ 1.3**	**$ 1.3**	**$ 1.3**	**$1.4**	**$ 2,204.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Forecasting and Demand Planning

The Forecasting and Demand Planning value driver reflects improvements in material forecasting, inventory planning, and procurement decision-making across the supply chain. Today, materials planning relies on multiple systems and manual processes, and changes to work schedules can require Supply Chain personnel to manually align inventory information with updated material requirements. Limited integration among work planning, purchasing, and inventory information can make it more difficult to identify future material demand early enough to support proactive sourcing and purchasing decisions.

In the future state, more integrated planning, purchasing, inventory, and work-order information will improve visibility into expected material requirements. As work orders are created or updated, material needs will become visible earlier, allowing procurement and inventory activities to be better aligned with planned work and supporting more accurate staging and timely delivery of materials to field crews. Improved demand forecasting will allow procurement to purchase further ahead of need rather than reacting to shortages. These improvements are expected to support more favorable purchasing conditions and reduce expedited

purchases, premium pricing, and shipping costs associated with short-notice material needs.

Reflecting the importance of these activities across the supply chain, forecast benefits associated with Forecasting and Demand Planning total approximately $1.0 billion between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2032 at approximately $249.6 million.

2) Standardized Contract Management

The Standardized Contract Management value driver reflects improvements in how contracts, negotiated pricing, and commercial terms are managed across the enterprise. Today, contract information is maintained across multiple systems and processes, increasing the effort required to locate and administer contract information and validate compliance with negotiated terms.

In the future state, integrated contract-management capabilities will support a more consistent process from contract authoring through obligation management. Standardized contract documentation, pricing terms, general terms and conditions, and digitally maintained rates will make negotiated contract information more accessible and support its use in downstream purchasing and invoice-management processes. These capabilities will support more consistent application of negotiated pricing and contract terms and provide more consistent information to support contract administration, sourcing decisions, and future negotiations.

Reflecting the operational improvements associated with contract administration and management activities, forecast benefits associated with Standardized Contract Management total approximately $680.1 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2032 at approximately $164.4 million.

3) Streamlined Supplier Management

The Streamlined Supplier Management value driver reflects improvements in how PG&E manages supplier relationships,

collaboration, and performance. Today, supplier communications and procurement information are managed through multiple systems and processes, limiting consistent visibility into supplier status, delivery commitments, and performance. This can make it more difficult to identify and address supplier issues before they affect material availability, procurement outcomes, or planned work.

In the future state, more standardized supplier-management and collaboration processes will improve access to supplier and procurement information. A more integrated procurement environment will connect buyers and suppliers through common processes and provide improved visibility into applicable purchasing and delivery information. More consistent supplier-performance information will support monitoring of supplier commitments, service and delivery performance, and other agreed requirements. Improved access to this information will help PG&E identify underperformance earlier, engage suppliers on corrective actions, and hold suppliers more accountable for agreed-upon performance. These improvements are expected to support better delivery outcomes and avoided costs associated with supplier underperformance.

Reflecting the operational improvements associated with supplier collaboration and supplier performance management activities, forecast benefits associated with Streamlined Supplier Management total approximately $380.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2032 at approximately $91.9 million.

4) Streamlined Warehouse Management

The Streamlined Warehouse Management value driver reflects improvements in warehouse operations through standardized processes, automated workflows, enhanced inventory controls, and improved material traceability. Today, warehouse operations vary across locations and often rely on manual processes for receiving, storage, replenishment, inventory tracking, and physical-inventory activities. These operational differences can increase administrative

effort and limit consistency in inventory-management practices across the enterprise.

In the future state, standardized warehouse management capabilities establish common warehouse processes, storage structures, and inventory controls across locations. Automated receiving and put-away capabilities will support system-directed placement of incoming materials into appropriate storage locations, reducing manual warehouse activities and improving inventory accuracy. Automated replenishment processes will support inventory availability by initiating stock movements based on predefined inventory levels. Enhanced material traceability, including standardized serial-number and batch tracking, will improve accountability for inventory receipts, movements, staging, and issuance. Common inventory-management processes will also improve consistency in physical-inventory activities and warehouse operations across locations. Together, these capabilities are expected to reduce manual warehouse activities, improve inventory visibility, accuracy, and accountability, and increase overall warehouse productivity.

Reflecting the operational improvements associated with warehouse operations and materials handling activities, forecast benefits associated with Streamlined Warehouse Management total approximately $9.6 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $1.2 million.

5) Inventory Optimization and Materials Management

The Inventory Optimization and Materials Management value driver reflects improvements in how inventory is classified, planned, monitored, and aligned with operational demand. Today, materials and inventory information is managed through customized systems and manual processes that can make it more difficult to align purchasing and inventory levels with changing work requirements. Limited integration between work demand and inventory information can require additional manual planning and make it more difficult to

balance material availability with the amount of inventory PG&E maintains.

In the future state, more standardized material information and integrated purchasing, inventory, and work-planning processes will improve visibility into material demand and inventory availability. Standardized material classifications will support more consistent treatment of materials for inspection, stocking, handling, and planning. More consistent inventory processes, improved demand visibility, and system-supported cycle counting and inventory monitoring will help PG&E make more informed replenishment and inventory-planning decisions. These improvements are expected to reduce manual inventory-management effort, support the availability of materials needed for planned work, and reduce excess inventory and associated carrying costs.

Reflecting the operational improvements associated with inventory planning and materials management activities, forecast benefits associated with Inventory Optimization and Materials Management total approximately $54.0 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2033 at approximately $13.3 million.

6) Better Rates and Terms

The Better Rates and Terms value driver captures savings associated with consolidating and optimizing selected GIS-related vendor services, including remote-sensing services and associated data-storage requirements. Today, these services and associated data requirements are sourced and managed as part of PG&E's existing GIS technology environment and contribute to its ongoing operating costs.

In the future state, the GIS Transformation will provide an opportunity to consolidate applicable purchasing requirements and better align vendor services and data-storage requirements with the future-state GIS environment. Consolidated sourcing of applicable remote-sensing services and improved visibility into future service and storage requirements are expected to support more favorable

commercial terms and reduce applicable vendor and data-storage costs.

These savings are distinct from the labor-productivity benefits captured under Modernized GIS Technology because they reflect reductions in vendor and related costs rather than improvements in employee or contractor productivity.

Reflecting the sourcing and procurement improvements associated with this value driver, forecast benefits associated with Better Rates and Terms total approximately $48.0 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2033 at approximately $12.1 million.

c. Financial Discipline and Performance Management

Financial Discipline and Performance Management reflects improvements in how PG&E plans, forecasts, manages, and reports financial performance across the enterprise. By establishing a more integrated financial planning and accounting environment, ERP improves access to consistent financial information and reduces manual effort associated with financial analysis, reconciliation, budgeting, forecasting, and reporting activities. The capabilities enabling these benefits are described in Chapter 2, principally in Section E.3.c.

The cumulative forecast benefits associated with this category are approximately $41.0 million between 2028 and 2039. Table 3-39 presents the 2028-2039 forecast benefits for the Financial Discipline and Performance Management benefit category by value driver.

TABLE 3-39
FINANCIAL DISCIPLINE AND PERFORMANCE MANAGEMENT BENEFIT CATEGORY BY PLATFORM AND VALUE DRIVER (MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Standardized Finance Processes and Planning	$ -	$ -	$ -	$ 0.3	$ 2.0	$ 3.6	$ 3.9	$ 4.0	$ 4.2	$ 4.3	$ 4.5	$ 4.7	$ 31.5
2	Standardized Accounting Processes and Planning	-	-	-	0.1	0.6	1.1	1.2	1.2	1.3	1.3	1.4	1.4	9.5
3	**ERP Total**	**$ -**	**$ -**	**$ -**	**$ 0.4**	**$ 2.6**	**$ 4.7**	**$ 5.0**	**$ 5.2**	**$ 5.4**	**$ 5.6**	**$ 5.8**	**$ 6.1**	**$ 41.0**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Standardized Finance Processes and Planning

The Standardized Finance Processes and Planning value driver reflects improvements in the efficiency and consistency of financial planning, budgeting, forecasting, reporting, and related Finance activities. Today, these activities are performed across multiple tools and processes, requiring Finance personnel to compile information from different sources, perform manual reconciliations, manage multiple forecast versions, and align financial information before it can be used for planning, forecasting, and reporting.

In the future state, more integrated financial information and standardized planning and forecasting processes will reduce manual compilation and reconciliation and support more timely budgeting, forecasting, scenario analysis, and reporting. More standardized planning assumptions and levels of planning detail will provide a more consistent basis for developing and updating forecasts, while streamlined allocation processes will reduce effort associated with recurring financial planning activities. Finance personnel will also be able to compare actual and forecast information more consistently and update forecasts as business conditions change. Together, these capabilities are expected to reduce administrative effort and accelerate periodic reporting, revenue and income-statement planning, and longer-term forecasting, allowing Finance personnel to spend more time on analysis and decision support.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Finance Processes and Planning total approximately $31.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $3.9 million.

2) Standardized Accounting Processes and Planning

The Standardized Accounting Processes and Planning value driver reflects improvements in the efficiency and consistency of recurring accounting and financial-reporting activities. Today, employees collect information from multiple systems, reconcile data manually, and use spreadsheet-based processes to support

accounting, reporting, and financial analysis. Differences among systems and data sources can require additional effort to validate financial information before it is used in accounting, reconciliation, and reporting processes.

In the future state, financial planning, reporting, and accounting activities are supported through a common enterprise platform that consolidates financial information and reduces the need for manual data collection and reconciliation. Standardized information and more integrated accounting processes will support recurring reconciliations, financial reporting, and analysis using a more consistent source of financial data. This will reduce the need to recreate or reconcile information across financial processes. These improvements are expected to reduce administrative effort and improve the consistency and timeliness of financial information used for accounting and reporting.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Accounting Processes and Planning total approximately $9.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $1.2 million.

d. Workforce Enablement and HR Process Improvement

Workforce Enablement and HR Process Improvement reflects improvements in workforce planning, payroll administration, attendance management, employee administration, and performance management activities. The value drivers within this category focus on reducing administrative effort, improving data quality, and providing better visibility into workforce information.

The cumulative forecast benefits associated with this category are approximately $24.8 million between 2028 and 2039. Table 3-40 presents the 2029-2039 forecast benefits for the Workforce Enablement and HR Process Improvement benefit category by platform and value driver.

TABLE 3-40
WORKFORCE ENABLEMENT AND HR PROCESS IMPROVEMENT BENEFIT CATEGORY
BY PLATFORM AND VALUE DRIVER
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Automated Resource Planning	$ 0.0	$ 0.3	$ 0.6	$ 0.7	$ 0.7	$ 0.7	$ 0.7	$ 0.8	$ 0.8	$ 0.8	$ 0.9	$ 0.9	$ 7.8
2	Standardized Employee Payroll and Benefits Management	-	-	-	0.1	0.4	0.6	0.7	0.7	0.7	0.8	0.8	0.8	5.5
3	Standardized Employee Performance Management	-	-	-	0.1	0.4	0.7	0.7	0.8	0.8	0.8	0.9	0.9	6.0
4	Streamlined Employee Attendance Processes	-	-	-	0.1	0.4	0.6	0.7	0.7	0.7	0.8	0.8	0.8	5.5
5	**ERP Total**	**$ 0.0**	**$ 0.3**	**$ 0.6**	**$ 0.8**	**$ 1.8**	**$ 2.7**	**$ 2.8**	**$ 2.9**	**$ 3.0**	**$ 3.2**	**$ 3.3**	**$ 3.4**	**$ 24.8**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Automated Resource Planning

The Automated Resource Planning value driver reflects improvements in how PG&E evaluates workforce availability and resource needs. Today, Human Resources personnel often spend significant time validating employee information, reconciling workforce data across multiple systems, and manually supporting workforce planning activities. Capacity planning also relies on spreadsheets and disconnected information sources, making it more difficult to efficiently align workforce availability with project and operational demand.

In the future state, resource-planning capabilities will bring together workforce availability and project and operational demand, providing improved visibility into current and future resource needs. Using more consistent employee and resource information, workforce planners will be able to evaluate workforce capacity and resource needs with less manual data collection, validation, reconciliation, and follow-up. Capacity forecasting will also provide greater visibility into how available workforce capacity aligns with expected business demand. Together, these improvements will support more proactive workforce-planning and resource-allocation decisions.

Reflecting the scale of these operational improvements, forecast benefits associated with Automated Resource Planning total approximately $7.8 million between 2028 and 2039. Annual benefits

associated with this value driver are forecast to peak in 2031 at approximately $0.7 million.

2) Standardized Employee Payroll and Benefits Management

The Standardized Employee Payroll and Benefits Management value driver reflects improvements in the efficiency, consistency, and accuracy of payroll and benefits administration. Today, payroll and related workforce processes require coordination across multiple systems and can involve manual processing, review, and reconciliation of employee time, pay, and related information. Payroll personnel also manage complex compensation rules, premium-pay calculations, and other payroll-related requirements, increasing administrative effort and the need for manual review and validation.

In the future state, standardized and integrated payroll capabilities will automate portions of payroll processing, validation, and reconciliation activities. Standardized compensation information and payroll rules will reduce manual intervention in calculating applicable pay components, including wage-incentive and premium-pay amounts, while standardized payroll structures will support more consistent processing. More integrated payroll and financial information will also improve the alignment of payroll costs with applicable financial reporting and accounting structures. Together, these improvements are expected to reduce administrative effort while supporting timely and accurate payroll and benefits administration.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Employee Payroll and Benefits Management total approximately $5.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $0.7 million.

3) Standardized Employee Performance Management

The Standardized Employee Performance Management value driver reflects improvements in the efficiency and consistency of

employee performance and talent management activities. Today, performance reviews and talent management activities often require manual templates, spreadsheets, and significant data gathering to support performance cycles, talent reviews, and succession planning. Talent information often resides across multiple sources, increasing administrative effort and making it more difficult to efficiently identify and evaluate employee capabilities and development opportunities.

In the future state, standardized and centralized performance management capabilities will automate portions of performance review and talent management processes while providing a more integrated view of workforce talent information. Standardized templates and performance processes will reduce the effort required to prepare and administer recurring performance-review and talent-review activities. Centralized employee and talent information will also provide managers and Human Resources personnel with more consistent information to support employee development, talent planning, and succession decisions. These capabilities reduce administrative effort associated with performance management activities and allow HR personnel and managers to spend more time supporting employee development and talent planning.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Employee Performance Management total approximately $6.0 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $0.7 million.

4) Streamlined Employee Attendance Processes

The Streamlined Employee Attendance Processes value driver reflects improvements in how employee time and attendance information is recorded, reviewed, corrected, and processed. Today, time and attendance information is managed across multiple systems and processes, requiring additional manual entry, review,

coordination, and reconciliation before information can be used for payroll and labor reporting.

In the future state, standardized and integrated time and attendance capabilities will provide a more consistent and efficient approach to workforce time management. Time information captured through operational work processes will be more directly connected with downstream timekeeping and payroll processes, reducing duplicate entry and the need to correct inconsistent information between systems. More centralized attendance information and validation will also help identify incomplete or inconsistent information earlier, reducing downstream correction and follow-up activities. These capabilities reduce administrative effort, improve data quality, and provide more timely and reliable workforce information.

Reflecting the scale of these operational improvements, forecast benefits associated with Streamlined Employee Attendance Processes total approximately $5.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $0.7 million.

e. Health, Safety and Compliance Improvement

Health, Safety and Compliance Improvement reflects improvements in how PG&E manages safety documentation, inspections, investigations, corrective actions, and compliance records. The value drivers within this category focus on improving traceability, documentation quality, and consistency across safety and compliance processes. The capabilities enabling these benefits are described in Chapter 2, principally in Section E.3.f.

The cumulative forecast benefits associated with this category are approximately $194.5 million between 2028 and 2039. Table 3-41 presents the 2028-2039 forecast benefits for the Health, Safety and Compliance Improvement benefit category by value driver.

TABLE 3-41
HEALTH, SAFETY AND COMPLIANCE IMPROVEMENT BENEFITS
FOR ERP PLATFORM BY VALUE DRIVER
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Traceability of EHS Critical Records and Standardized Documentation	$ -	$ -	$ -	$ 1.9	$ 11.2	$ 19.8	$ 21.1	$ 21.7	$ 22.3	$ 22.9	$ 23.5	$ 24.1	$ 168.5
2	Standardized Inspection Documentation Process	0.1	0.5	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	13.0
3	Standardized Pre-Work Safety Documentation and Risk Assessment	0.1	0.5	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	13.0
4	**ERP Total**	**$ 0.1**	**$ 1.0**	**$ 2.0**	**$ 4.1**	**$ 13.5**	**$ 22.2**	**$ 23.5**	**$ 24.2**	**$ 24.9**	**$ 25.6**	**$ 26.3**	**$ 27.1**	**$ 194.5**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Traceability of EHS Critical Records and Standardized Documentation

The Traceability of EHS Critical Records and Standardized Documentation value driver reflects improvements in how PG&E records, maintains, and tracks safety and compliance information. Today, incident records, investigations, observations, corrective actions, qualifications, management-of-change information, and other compliance documentation may be maintained across multiple systems and processes. This can make it difficult to trace information consistently from an initial event or observation through investigation, corrective action, and closure, requiring additional effort to collect, reconcile, and validate information.

In the future state, integrated EH&S capabilities will support standardized processes and records for incident reporting, observations, investigations, corrective actions, risk assessments, management of change, and related safety documentation. Standardized forms and records will reduce the need to maintain or reconcile related information across separate tools and documentation processes. Integrating these processes with common work, asset, and location information will allow related safety records to remain connected as an issue progresses from an initial event or observation through investigation, corrective action, and closure. This improved traceability is expected to reduce the effort required to locate and reconcile related records and provide more consistent access to safety and compliance information.

Reflecting the scale of these operational improvements, forecast benefits associated with Traceability of EHS Critical Records and Standardized Documentation total approximately $168.5 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2034 at approximately $21.1 million.

2) Standardized Inspection Documentation Process

The Standardized Inspection Documentation Process value driver reflects improvements in EH&S efficiency through more standardized documentation, oversight, and reporting. Today, safety inspection activities, such as assessments and observations, can rely on manual or disconnected processes, requiring additional effort to document results, track inspection activities, and access information for review and follow-up.

In the future state, standardized forms and checklists will enable safety inspection information to be captured consistently and reviewed, tracked, and acted upon in one place. Dashboards will provide EH&S with greater visibility into safety activities, while self-service reporting capabilities will allow users to search, save, and schedule queries and reports. Together, these capabilities are expected to reduce the effort required to document, track, review, and report on safety inspection activities while providing greater visibility into inspection information.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Inspection Documentation Process total approximately $13.0 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2031 at approximately $1.1 million.

3) Standardized Pre-Work Safety Documentation and Risk Assessment

The Standardized Pre-Work Safety Documentation and Risk Assessment value driver reflects improvements in the preparation, review, and documentation of information required to support safe work execution. Today, pre-work safety documentation, job hazard

analyses, risk assessments, and related safety information can be maintained on paper or in disconnected tools. Safety records may also be stored in multiple locations, increasing the effort required to identify applicable hazards and controls, prepare safety documentation, and connect that information with the work being planned.

In the future state, integrated safety and work management capabilities will support more standardized pre-work safety documentation and risk-assessment processes. Job hazard analyses, risk assessments, identified hazards and controls, and related safety information will be captured through more standardized processes and associated more directly with applicable work, assets, and locations. A more consistent location structure will also improve the ability to associate safety information with the locations where work is planned or performed. Keeping this information connected with work-management processes will reduce the need to gather or recreate safety information from separate sources. Together, these capabilities are expected to reduce manual preparation and reconciliation of safety documentation while improving access to relevant risk and safety information during work preparation and execution.

Reflecting the scale of these operational improvements, forecast benefits associated with Standardized Pre-Work Safety Documentation and Risk Assessment total approximately $13.0 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2031 at approximately $1.1 million.

f. Overall Technology Modernization and Platform Simplification

Overall Technology Modernization and Platform Simplification reflects benefits associated with reducing application complexity and establishing a more efficient and maintainable technology environment. The category includes benefits from retiring, consolidating, or replacing applications as equivalent functionality becomes available through the future state platforms, as well as avoided software, hardware,

infrastructure, hosting, and support costs associated with transitioning from legacy technology environments. The capabilities enabling these benefits are described in Chapter 2, principally in Sections E.4 and E.6.

The cumulative forecast benefits associated with this category are approximately $470.2 million between 2028 and 2039. Table 3-42 presents the 2028-2039 forecast benefits for the Overall Technology Modernization and Platform Simplification benefit category by value driver.

TABLE 3-42
OVERALL TECHNOLOGY MODERNIZATION AND PLATFORM SIMPLIFICATION BENEFIT CATEGORY BY PLATFORM AND VALUE DRIVER (MILLIONS OF NOMINAL DOLLARS)

Line No.	Value Driver	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	Application Rationalization	$ 1.4	$ 1.4	$ 9.9	$ 15.5	$ 18.6	$ 17.8	$ 18.8	$ 8.9	$ 2.8	$ -	$ -	$ -	$ 95.2
2	Software/Hardware	-	-	-	7.0	7.1	7.2	7.4	7.5	7.7	7.8	8.0	8.2	67.9
3	**ERP Total**	**$ 1.4**	**$ 1.4**	**$ 9.9**	**$ 22.5**	**$ 25.7**	**$ 25.1**	**$ 26.2**	**$ 16.4**	**$ 10.5**	**$ 7.8**	**$ 8.0**	**$ 8.2**	**$ 163.1**
4	IT & Data	$ -	$ 12.9	$ 33.2	$ 26.3	$ 26.9	$ 27.5	$ 28.1	$ 39.0	$ 29.3	$ 29.9	$ 30.6	$ 23.4	$ 307.1
5	**GIS Total**	**$ -**	**$ 12.9**	**$ 33.2**	**$ 26.3**	**$ 26.9**	**$ 27.5**	**$ 28.1**	**$ 39.0**	**$ 29.3**	**$ 29.9**	**$ 30.6**	**$ 23.4**	**$ 307.1**
6	**Total**	**$ 1.4**	**$ 14.4**	**$ 43.1**	**$ 48.8**	**$ 52.6**	**$ 52.6**	**$ 54.2**	**$ 55.5**	**$ 39.8**	**$ 37.8**	**$ 38.6**	**$ 31.6**	**$ 470.2**

Note: The amounts shown in testimony tables may not sum due to rounding.

1) Application Rationalization

The Application Rationalization value driver captures avoided ongoing technology costs associated with retiring, consolidating, or replacing selected applications as future-state capabilities are implemented. It is distinct from the Application Remediation cost group described in this chapter. Application Remediation reflects the implementation work required to modify, integrate, transition, rearchitect, or retire applications affected by the Transformation, while Application Rationalization reflects the avoided ongoing costs associated with applications that are ultimately retired, consolidated, or replaced.

Today, PG&E maintains a large application landscape supporting business processes across the enterprise. These applications can require ongoing licensing, maintenance, integration, security, administration, infrastructure, and user-support

activities. In some cases, existing applications provide functionality that will be delivered through future-state ERP or GIS capabilities.

In the future state, selected applications whose functionality is no longer needed or is replaced by future-state capabilities can be retired or consolidated. The associated benefit reflects avoided licensing and maintenance costs for applications expected to be retired. Since these avoided costs vary by application, the benefit forecast is developed using the applicable licensing and maintenance costs associated with applications expected to be retired rather than by applying a common improvement rate across the application inventory. Application retirement and consolidation will also reduce the complexity of PG&E's application environment.

Reflecting the scale of these operational improvements, forecast benefits associated with Application Rationalization total approximately $95.2 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2032 at approximately $18.6 million.

2) Software/Hardware

The Software and Hardware value driver captures avoided technology costs associated with transitioning ERP capabilities from legacy on-premises environments to the future state cloud platform. Today, PG&E incurs costs to maintain and support the hardware and software required to operate its legacy ERP environment, including periodic hardware investments and SAP version upgrades and fixes.

In the future state, as ERP capabilities transition to the cloud platform and the associated legacy infrastructure is no longer required, PG&E can avoid certain costs that otherwise would be necessary to continue operating the existing environment. In particular, the quantified benefit reflects avoided future hardware purchases required to sustain the legacy ERP environment and avoided costs for SAP version upgrades and fixes that are no longer expected after the transition to the cloud platform. These changes

reduce the costs associated with operating and supporting PG&E's ERP technology environment.

Reflecting the scale of these operational improvements, forecast benefits associated with Software/Hardware total approximately $67.9 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2031 at approximately $7.0 million.

3) IT & Data

The IT & Data value driver captures technology and data-management savings associated with simplifying and modernizing PG&E's legacy GIS environment. Today, GIS relies on aging infrastructure, applications, integrations, and supporting technologies that require ongoing licensing, maintenance, administration, infrastructure, and technical support. Operating multiple technology components and applications also creates ongoing costs associated with maintaining, integrating, patching, and supporting the existing environment.

In the future state, the transition to the cloud-based ArcGIS Platform will reduce reliance on on-premises infrastructure and associated hardware-refresh requirements while allowing selected legacy applications and supporting technology components to be retired or consolidated as equivalent future-state capabilities are implemented. A more consolidated GIS environment is also expected to reduce technology complexity and the number of separate components PG&E must operate and support.

The quantified benefit reflects avoided costs associated with on-premises infrastructure and hardware refreshes, together with savings from the retirement or consolidation of selected GIS applications. These direct technology and application cost savings are separate from the labor-productivity improvements captured under the Modernized GIS Technology value driver and also reduce the long-term cost and complexity of maintaining PG&E's GIS technology environment.

Reflecting the scale of these operational improvements, forecast benefits associated with IT & Data total approximately $307.1 million between 2028 and 2039. Annual benefits associated with this value driver are forecast to peak in 2035 at approximately $39.0 million.

g. GIS Enablement Across Benefit Categories

The direct GIS benefits described in this chapter demonstrate how the GIS Transformation creates customer value through both operational improvement and technology modernization. *Modernized GIS Technology* improves productivity and work execution by making reliable geospatial and network information more accessible and easier to use across affected operational processes. *Better Rates and Terms* reduces selected externally purchased service and data-storage costs. *IT & Data* reduces the cost and complexity of maintaining PG&E's GIS technology environment through infrastructure modernization, application consolidation, and retirement of legacy capabilities.

While these value drivers account for approximately $1.0 billion in direct GIS benefits, they do not represent the full extent of GIS's contribution to customer value. As described earlier in this chapter, GIS platform capabilities also serve as a foundational enabler of benefits realized through several ERP value drivers. Many of the operational improvements reflected in the ERP benefit forecast depend on accurate and accessible asset location, network connectivity, and geospatial information. As a result, GIS capabilities support the realization of a substantial portion of the forecast ERP benefits.

To avoid double counting, benefits enabled by GIS and quantified within ERP value drivers are included only in the ERP benefit forecast and are not included in the approximately $1.0 billion of direct GIS benefits described above. The analysis presented in this section is intended to illustrate the extent to which realization of forecast ERP benefits depends on GIS platform capabilities and does not increase the total quantified benefit forecast.

For illustrative purposes, PG&E separately presents the Asset Reliability and Work Execution Effectiveness benefit category because it contains the largest concentration of GIS-enabled benefits.

Approximately $5.2 billion, representing about 91 percent of the ERP Asset Reliability and Work Execution Effectiveness benefit forecast, is enabled by GIS platform capabilities. These amounts are included within the ERP benefit forecast and are not incremental to the total quantified benefit forecast.

GIS-enabled benefits within this category are primarily associated with the Standardized Asset Management Process, Work Efficiency, Effective Project Management Reconciliation, and Expansion of Compatible Units value drivers. These value drivers rely on integrated and accessible geospatial and asset information to support asset planning, field execution, project delivery, and engineering processes.

Table 3-43 presents the 2028-2039 forecast benefits for the Asset Reliability and Work Execution Effectiveness benefit category that are enabled by GIS.

TABLE 3-43
ASSET RELIABILITY AND WORK EXECUTION EFFECTIVENESS BENEFITS ENABLED BY GIS
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Description	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Total
1	GIS Enabled	$1.5	$14.6	$91.5	$306.9	$509.3	$571.5	$589.0	$602.8	$617.0	$631.5	$646.5	$661.8	$5,244.0
2	Non-GIS Enabled	0.1	0.8	6.8	25.5	46.3	54.9	56.9	58.2	59.6	61.0	62.5	64.0	496.6
3	**ERP Total**	**$1.6**	**$15.3**	**$98.3**	**$332.4**	**$555.6**	**$626.5**	**$645.9**	**$661.0**	**$676.6**	**$692.6**	**$709.0**	**$725.8**	**$5,740.6**
4	*Percent Enabled by GIS*	*95%*	*95%*	*93%*	*92%*	*92%*	*91%*	*91%*	*91%*	*91%*	*91%*	*91%*	*91%*	*91%*

Note: The amounts shown in testimony tables may not sum due to rounding.

3. Value Realization and Monitoring

PG&E has developed a value realization framework to maintain alignment between forecast benefits and program execution during implementation and to evaluate realized outcomes following deployment of the ERP and GIS Transformation. The framework encompasses governance and accountability, benefit traceability, operational performance monitoring, and integration of updated benefit information into ongoing planning, budgeting, forecasting, and financial management processes.

Certain KPI definitions, reporting structures, baseline calculations, data sources, and ownership arrangements will continue to be refined as implementation progresses, design decisions are finalized, and reporting capabilities are deployed. Accordingly, individual performance measures will be further defined and refined through implementation rather than fixed in advance.

As described in Chapter 2, Section E.7, PG&E has established a Value Management function within the program governance structure to maintain traceability between forecast benefits and program execution. During implementation, the Value Management function will evaluate potential impacts to forecast benefits arising from scope changes, business process and design decisions, deployment strategies, implementation assumptions, and support actions intended to preserve expected program value and maintain alignment with the benefit forecast.

Following deployment, PG&E expects to transition from value preservation to value realization monitoring. The value realization framework is intended to monitor the relationship between deployed capabilities, adoption of redesigned processes, changes in operational performance, and expected business outcomes to evaluate whether anticipated improvements are being achieved and sustained over time. This approach enables PG&E to evaluate value realization based not only on aggregate benefit estimates, but also on the operational performance changes underlying those benefits.

To support this evaluation, PG&E is developing a structured set of value creation, value capture, and value realization Key Performance Indicators (KPI) aligned with the benefit categories, value drivers, and operational

processes described in this chapter. These categories are intended to provide a consistent measurement structure across the ERP and GIS Transformation:

- Value Creation KPIs measure the deployment and availability of enabling capabilities, technologies, tools, and system functionality. Representative examples include application response time, system availability, and application support incidents per 1,000 active users.
- Value Capture KPIs measure adoption of redesigned business processes and resulting changes in operational performance. Representative examples include work order closure time for Work and Asset Management, planned versus actual work variance for Integrated Planning, payroll accuracy for Human Resources, supplier performance ratings for Supply Chain, and incident record completeness for Enterprise Health and Safety.
- Value Realization KPIs measure the extent to which operational improvements contribute to expected business outcomes, including productivity improvements, cycle-time reductions, unit-cost reductions, throughput improvements, and other value-driver-specific outcomes. Representative examples include financial close cycle time for Finance, time to hire for Human Resources, maintenance order completion productivity for Work and Asset Management, and unit price reduction for Supply Chain.

Value realization monitoring is expected to be integrated into existing enterprise governance, operational, planning, budgeting, forecasting, and financial management processes rather than operate as a separate, stand-alone program activity. Through these processes, realized operational improvements and updated benefit forecasts may inform future budget development, operational planning, and General Rate Case forecasts. As discussed later in this chapter, future General Rate Case forecasts are expected to reflect PG&E's then-current assessment of Transformation benefits based on implementation progress, operational performance, and available information.

Consistent with the forecast methodology described in this chapter, realization of benefits depends on successful deployment of enabling

functionality and adoption of redesigned business processes. Benefit realization will therefore be evaluated using observable operational performance measures while maintaining a connection to the forecast assumptions and benefit estimates described in this chapter.

4. Treatment of Customer Benefits

The benefits described in this chapter represent PG&E's current forecast of the operational savings and efficiencies expected to result from the ERP and GIS Transformation. PG&E forecasts over $9 billion of capital and O&M benefits from 2028 through 2039. As described below, PG&E's proposed treatment of those benefits in future revenue requirement forecasts varies based on the timing of deployment, realization, and the applicable GRC cycle.

PG&E expects to update its forecast of Transformation benefits in connection with future GRC revenue requirement forecasts, using then-current information regarding implementation and expected benefit realization. PG&E is committed to reflecting the financial benefits associated with the ERP and GIS Transformation in future revenue requirement forecasts. PG&E expects forecast benefits to be reflected in future revenue requirement forecasts, resulting in lower revenue requirements and associated cost of service than would otherwise be required absent the Transformation.

The treatment of these benefits in future revenue requirement forecasts will depend on the timing of benefit realization and the applicable GRC cycle, as described below:

- 2028-2030: PG&E's current benefit forecast includes approximately $308 million of forecast operational and financial benefits during 2028 through 2030. These amounts reflect the benefit-realization methodology described above, including the assumed 12-month stabilization period following each applicable go-live and the subsequent 24-month linear ramp to peak benefit levels.

  The 2028 through 2030 period also coincides with implementation, deployment, and stabilization of successive ERP and GIS releases. During this period, employees across the Company will participate in activities necessary to establish and adopt the future-state capabilities

that enable the forecast benefits, including testing, training, business and site readiness, process transition, deployment, and post-deployment stabilization, while continuing to perform their existing responsibilities. Employees will also need time to develop proficiency in redesigned processes, systems, and tools. Because capabilities will be deployed through successive releases, portions of the organization may operate across legacy and future-state processes and systems during the transition, requiring additional coordination and reconciliation and temporarily increasing the effort required to perform certain activities.

PG&E is not proposing in this proceeding to reflect these early forecast benefits as separate reductions to customer revenue requirements through 2030. During this period, forecast benefits are expected to occur alongside temporary implementation, adoption, transition, and stabilization costs and operational impacts as successive releases are deployed. PG&E did not request separate recovery in its 2027 GRC for these temporary costs and operational impacts. Accordingly, PG&E does not propose separate revenue requirement reductions for the early forecast benefits during 2028 through 2030.

During this period, PG&E will monitor implementation progress, process adoption, operational performance, and benefit realization. In preparing its 2031 GRC revenue requirement request, PG&E will use then-current information to update the benefit forecast applicable to that proceeding. Consistent with the proposed rate treatment, PG&E excludes forecast benefits for 2028 through 2030 from the Benefit Cost Ratio (BCR) analysis described in Section D. This exclusion does not indicate that PG&E expects no operational or financial benefits during this period; rather, it aligns the BCR with PG&E's proposed treatment of those benefits for revenue requirement purposes.

- 2031-2034: A substantial portion of forecast benefits is expected to materialize during 2031 through 2034. Because these benefits will not be fully reflected in the historical recorded costs used to develop the 2031 GRC forecast, PG&E will incorporate its then-current forecast of the financial benefits associated with the authorized ERP and GIS Transformation into its 2031 GRC revenue requirement request.

In preparing its 2031 GRC revenue requirement request, PG&E will update the benefit forecast to reflect information regarding authorized Program scope, deployment timing, applicable work plans, implementation progress, operational performance, and expected benefit realization. Where that updated analysis indicates benefits are expected to be higher or lower than currently forecast, PG&E will reflect the updated forecast in its 2031 GRC submission.

Based on current assumptions, PG&E forecasts approximately $1.61 billion of O&M benefits and approximately $3.1 billion of capital benefits during 2031 through 2034. These figures illustrate the magnitude of benefits currently expected during that period. The amounts ultimately incorporated into the 2031 GRC will be based on the then-current forecast developed for that proceeding.[16]

- 2035-2038: By the time PG&E files its 2035 GRC, a greater portion of the Transformation's operational and financial effects is expected to be reflected in recorded costs and operational performance. Normal GRC forecasting methodologies will thus incorporate those recorded results into the 2035-2038 forecast.

  To the extent PG&E's then-current forecast indicates that going-forward Transformation benefits will exceed the amount reflected through recorded results and ordinary forecasting methodologies, PG&E will incorporate an appropriate adjustment into its 2035 GRC forecast. That assessment will consider:

  - The scope and mix of work included in the applicable GRC forecast;
  - Actual and forecast Program deployment timing;
  - The Program scope authorized by the Commission;
  - Implementation progress and observed operational performance;
  - Updated information affecting benefit timing or magnitude; and
  - The extent to which forecast benefits are reflected in recorded costs or through ordinary forecasting methodologies.

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16 The benefit forecast presented herein reflects total Company benefits and has been escalated based on PG&E's 2024 spending baseline. The portion of forecast benefits reflected in future GRC revenue requirement forecasts will be limited to benefits attributable to GRC-forecasted work.

This approach will allow PG&E to use current and supportable information in future GRC filings while maintaining traceability to the benefit categories, value drivers, and operational improvements described in this chapter.

- 2039 and Thereafter: By the time PG&E files its 2039 GRC, the operational and financial effects of the Transformation are expected to be increasingly reflected in recorded costs and therefore incorporated into future revenue requirements through standard GRC forecasting methodologies.

Although inflation and other factors may keep a future GRC revenue requirement from declining in absolute terms relative to prior periods, PG&E expects Transformation benefits to reduce future revenue requirement forecasts relative to the amounts that otherwise would be required absent the Transformation.

D. Benefit Cost Ratio

1. Purpose and Methodology

This section presents the Benefit Cost Ratio (BCR) for the ERP and GIS Transformation. The BCR evaluates the relationship between forecast customer benefits and forecast customer costs associated with the Transformation on a present-value revenue requirement basis. It provides a summary measure of whether quantified customer benefits are expected to exceed customer costs over the evaluation period.

The BCR is calculated as follows:

Benefit Cost Ratio = Present Value Revenue Requirement of Customer Benefits ÷ Present Value Revenue Requirement of Customer Costs

A BCR greater than 1.00 indicates that forecast customer benefits exceed forecast customer costs on a present-value basis. A BCR of 1.00 indicates that benefits and costs are equal. A BCR below 1.00 indicates that quantified benefits are less than quantified costs over the period evaluated.

Because the Transformation's costs and benefits occur over multiple years, PG&E calculates the BCR using a present-value of revenue requirements (PVRR) methodology. PVRR converts the annual revenue

requirement effects of forecast costs and benefits to a common base year so that amounts occurring in different years can be compared on a consistent basis. PG&E uses 2026 as the base year and a discount rate of 7.00 percent, consistent with PG&E's currently authorized rate of return.[17]

The customer-cost component reflects the revenue requirements associated with the Transformation over the 17-year evaluation period. It includes the revenue requirement effects of capital investments and implementation-period expenses, as well as forecast ongoing O&M costs associated with operating and supporting the ERP and GIS environments following deployment through 2039. These ongoing O&M costs are incremental to the implementation-period expenses for which PG&E seeks recovery in this Application. Accordingly, the customer costs included in the BCR extend beyond the implementation costs for which PG&E seeks recovery in this Application. The supporting workpaper separately includes capital revenue requirement, expense revenue requirement, and long-term O&M revenue requirement in total program costs.

The customer-benefit component reflects the quantified capital and expense efficiencies forecast to reduce PG&E's future cost of service, as described in Section C of this chapter. These benefits include forecast labor productivity improvements, non-labor efficiencies, cost avoidance, technology simplification, and other quantified operational improvements attributable to the Transformation. The BCR includes only quantified financial benefits and does not assign monetary value to the qualitative and foundational benefits described in Chapter 2, Section E.2, including user experience, enterprise agility and scalability, security controls and auditability, process simplification, improved data quality, governance and transparency, and integrated enterprise planning and decision-making.

Although PG&E expects the Transformation to begin producing operational and financial benefits during the 2028 through 2030 implementation and deployment period, PG&E is not proposing to reflect those forecast benefits directly as reductions to customer revenue requirements during that period. Consistent with this proposed rate

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17 See D.25-12-043, p. 71, Ordering Paragraph 1.

treatment, the BCR excludes forecast benefits for 2028 through 2030 and begins including customer benefits in 2031, when PG&E expects those benefits to begin to be reflected in a GRC revenue requirement forecast. This treatment does not indicate that PG&E expects no benefits during 2028 through 2030; rather, it excludes those early forecast benefits from the BCR because they are not proposed to be reflected directly in customer revenue requirements during that period.

2. Evaluation Period

The BCR is evaluated over a 17-year period from 2026 through 2042. The evaluation period was selected to capture substantially all of the revenue requirement associated with the Transformation's capital investment, including the revenue requirement effects that continue after implementation as capital investments are recovered over time. Evaluating costs and benefits over this period allows their respective revenue requirement effects to be compared on a consistent present-value basis.

PG&E's quantified benefit forecast extends through 2039. Expense benefits are reflected through 2039, while capital efficiencies forecast through 2039 continue to affect revenue requirements through 2042. These post-2039 amounts reflect the continuing revenue requirement effects of capital efficiencies already included in the benefit forecast, rather than additional benefits forecast after 2039.

This treatment is conservative in that PG&E does not assume additional benefits beyond those quantified in the benefit forecast through 2039. Although the Transformation's capabilities are expected to remain in service beyond the evaluation period, the BCR does not assign value to additional operational efficiencies or other benefits that may continue to be realized after 2039. Accordingly, PG&E does not rely on those additional future benefits to demonstrate that forecast quantified customer benefits exceed forecast customer costs.

3. Benefit Cost Ratio for the Transformation

Table 3-44 presents the PVRR of the customer costs and customer benefits included in PG&E's analysis and the resulting BCR for the Transformation.

TABLE 3-44
BENEFIT COST RATIO
(MILLIONS OF 2026 PRESENT-VALUE REVENUE REQUIREMENT DOLLARS)

Line No.	Description	PVRR[a]	2026[b]	2027	2028	2029	2030	2031[c]	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
1	Capital Revenue Requirement	$2,079.4	$1.3	$39.2	$126.5	$193.6	$328.7	$364.6	$348.8	$346.1	$317.5	$282.6	$263.8	$250.0	$236.0	$208.4	$147.4	$102.0	$26.3
2	Expense Revenue Requirement	145.7	0.0	10.8	42.3	62.1	69.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Long-term O&M Revenue Requirement	523.8	0.0	0.0	0.0	0.0	0.0	100.4	102.7	105.0	107.5	109.9	112.5	115.1	117.7	120.4	0.0	0.0	0.0
4	**Total Program Costs Revenue Requirement[d]**	**$2,748.9**	**$1.3**	**$50.0**	**$168.8**	**$255.7**	**$398.3**	**$465.0**	**$451.5**	**$451.2**	**$425.0**	**$392.5**	**$376.3**	**$365.1**	**$353.7**	**$328.8**	**$147.4**	**$102.0**	**$26.3**
5	Capital Benefits Revenue Requirement	1,809.1	0.0	0.0	–	–	–	(20.6)	30.2	122.3	221.3	328.9	395.1	443.4	489.3	533.6	602.8	578.0	556.4
6	Expense Benefits Revenue Requirement	1,454.7	0.0	0.0	–	–	–	235.5	356.4	389.0	398.5	285.2	249.2	254.7	262.8	254.6	–	–	–
7	**Total Program Benefits Revenue Requirement[e]**	**$3,263.7**	**$0.0**	**$0.0**	**–**	**–**	**–**	**$214.8**	**$386.6**	**$511.3**	**$619.8**	**$614.2**	**$644.3**	**$698.1**	**$752.1**	**$788.2**	**$602.8**	**$578.0**	**$556.4**
8	**Benefit/Cost Ratio[f]**	**1.19**																	

(a) The amounts shown represent PVRR and therefore should not be compared directly with the nominal program costs or nominal benefit totals presented elsewhere in this chapter.

(b) The analysis uses a 2026 base year, a 7.00 percent discount rate, and a 17-year evaluation period.

(c) Revenue requirement amounts shown for 2031 and later years are included for purposes of the BCR analysis; recovery and benefit treatment for those periods will be addressed, as applicable, through future GRC proceedings.

(d) Program costs include the revenue requirement effects of capital investment, implementation-period O&M expenses, and forecast ongoing O&M costs through 2039 following deployment. These ongoing O&M costs are not requested in this application and are incremental to the implementation-period O&M expenses.

(e) Program benefits include the quantified capital and expense efficiencies described in Section C beginning in 2031 through 2039. Consistent with PG&E's proposed rate treatment, forecast benefits for 2028 through 2030 are excluded because PG&E is not proposing to reflect those benefits directly as customer revenue requirement reductions during that period.

(f) The Benefit Cost Ratio equals the PVRR of Customer Benefits divided by the PVRR of Customer Costs.

Note: The amounts shown in testimony tables may not sum due to rounding.

As shown in Table 3-44, the Transformation is forecast to produce a BCR of approximately 1.19. The 1.19 ratio reflects quantified benefits only and does not assign value to qualitative benefits or benefits beyond the forecast period.

The BCR should also be understood in the context of the underlying investment need. PG&E must address the approaching end of vendor support for its ERP and GIS platforms. The Transformation includes the technology modernization required to establish supported platforms, together with the process, data, application, and organizational changes expected to produce the quantified operational benefits described in this chapter. Even after accounting for the customer costs of implementing and operating the transformed platforms, PG&E forecasts that quantified customer benefits will exceed customer costs on a present-value basis.

E. Conclusion

PG&E developed the cost and benefit forecasts presented in this chapter using structured methodologies designed to reflect the expected costs, implementation approach, and operational outcomes of the ERP and GIS Transformation. The cost forecast reflects the scope of activities required to implement, deploy, and sustain the proposed capabilities, while the benefit forecast is organized around defined benefit categories and value drivers that link capabilities to expected operational improvements. The benefit forecast further incorporates PG&E-specific spending baselines, operational inputs, realization assumptions, erosion adjustments, and deployment timing considerations intended to reflect the proposed scope and implementation approach.

The resulting analysis reflects approximately $2.9 billion in recorded and forecast implementation costs and approximately $9.4 billion in forecast operational and financial benefits through 2039. On a present-value revenue requirement basis, the Transformation produces a BCR of approximately 1.19, even though the analysis excludes forecast benefits before 2031, benefits after 2039, and qualitative benefits that have not been monetized.

Consistent with Commission-accepted activity-based forecasting principles, PG&E has identified the proposed costs as incremental to amounts recovered through base rates and other authorized mechanisms and will use dedicated

accounting structures and established cost-tracking practices to identify and track costs attributable to the ERP and GIS Transformation.

Taken together, the cost forecast, benefit forecast, customer-benefit treatment, BCR analysis, and incrementality analysis demonstrate that the ERP and GIS Transformation investment is reasonable and expected to deliver long-term customer value.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 3

ATTACHMENT A

ILLUSTRATIVE EXAMPLE: FIELD TECHNICIAN WORK EFFICIENCY BENEFITS

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CHAPTER 3
ATTACHMENT A
ILLUSTRATIVE EXAMPLE: FIELD TECHNICIAN WORK EFFICIENCY BENEFITS

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CHAPTER 3
ATTACHMENT A
ILLUSTRATIVE EXAMPLE: FIELD TECHNICIAN WORK EFFICIENCY BENEFITS

A. Introduction

To illustrate how the Benefit Forecast Methodology described in Chapter 3, Section C.1 is applied, this attachment demonstrates the calculation of the forecast Work Efficiency benefit for the Field Technician role.

As described in Chapters 2 and 3, the Enterprise Resource Planning (ERP) and Geographic Information System (GIS) Transformation is expected to change how field work is scheduled, dispatched, executed, documented, and closed. Chapter 2 describes the capabilities supporting these changes, including scheduling and dispatch, mobile work execution, standardized work information, mapping and routing, and the capture of field and asset information. Chapter 3 describes how these capabilities are expected to reduce manual coordination, documentation, and other administrative activities associated with field work.

B. Step 1: Establish Addressable Spend

The Field Technician role was identified as a role materially affected by the Work Efficiency value driver because field activities are expected to be affected by improvements in work scheduling, dispatch, routing, mobile execution, time capture, and field documentation.

Consistent with the methodology described in Chapter 3, the Field Technician baseline is developed using 2024 actual General Ledger data. Addressable spend includes applicable direct labor costs, including straight time, overtime, and double time after applicable exclusions, together with applicable management and employee benefit overheads.

Only spending associated with Field Technician roles expected to be affected by the Work Efficiency value driver is included. Total Field Technician Addressable Spend is approximately $1.58 billion.

C. Step 2: Apply the Improvement Range

An initial Improvement Range is applied to Addressable Spend to estimate the potential improvement opportunity. Consistent with Chapter 3, the

Improvement Range assumption for Field Technicians is informed by external reference information developed by the SI and subsequently refined through Pacific Gas and Electric Company (PG&E)-specific realization and adjustment factors.

The individual rates within the Improvement Range vary by operating area to reflect differences in the processes and activities performed by Field Technicians. Based on the distribution of Addressable Spend across those operating areas, the resulting weighted-average improvement rate is approximately 27.4 percent.

The weighted-average improvement rate represents the gross productivity opportunity before application of the Confidence Factor and Erosion Factor.

D. Step 3: Apply the Confidence Factor

The Confidence Factor adjusts the gross productivity opportunity to reflect the portion of the modeled improvement PG&E expects to realize and the portion attributable to the ERP and GIS Transformation.

$$\textit{Confidence Factor} = \textit{Realization Rate} \times \textit{Exclusivity Factor}$$

The Realization Rate reflects the portion of the initial improvement opportunity PG&E expects to achieve following implementation. The Realization Rate is informed by Enterprise Design activities, process and role assessments, working sessions with subject matter experts, stakeholder reviews, and other benefit-development activities described in Chapter 3. These activities consider factors such as process maturity, organizational readiness, adoption complexity, solution design, and implementation requirements.

The Exclusivity Factor reflects the portion of the benefit attributable to the ERP and GIS Transformation rather than other PG&E initiatives and is applied to avoid double counting benefits.

Different realization assumptions are applied to direct labor and applicable loaded overhead costs. When the applicable realization and exclusivity assumptions are weighted across the Field Technician addressable-spend categories, the resulting weighted-average Confidence Factor is approximately 35.7 percent.

E. Step 4: Apply the Erosion Factor

The Erosion Factor further adjusts the benefit opportunity to reflect the capabilities, organizations, processes, and spending included within the ERP and GIS Transformation scope and solution design.

As described in Chapter 3, these adjustments may reflect scope exclusions, deferred or phased functionality, retained manual processes, applicability limitations, Key Design Decisions, and other business-specific considerations identified through Enterprise Design and related benefit-development activities.

For the Field Technician role, the benefit-development activities did not identify scope or functionality limitations expected to materially reduce the forecast benefit. Based on the applicable scope, functionality, and business-specific considerations, the forecast applies an Erosion Factor of approximately 99.9 percent.

F. Step 5: Calculate the Adjusted Annual Value

After applying the Improvement Range, Confidence Factor, and Erosion Factor to Addressable Spend, Adjusted Annual Value is calculated as follows:

Addressable Spend × *Improvement Range* × *Confidence Factor* × *Erosion Factor* = *Adjusted Annual Value*

For the Field Technician role:

$1.58 billion × 27.4% × 35.7% × 99.9% = approximately $154.2 million

The resulting Adjusted Annual Value of approximately $154.2 million represents the forecast peak annual Work Efficiency benefit associated with the Field Technician role after application of the methodology and adjustment factors described above. This amount reflects the peak annual benefit before escalation. The amounts and percentages shown in this illustrative calculation are rounded for presentation and, as a result, may differ slightly from calculations using the underlying unrounded inputs. The underlying assumptions and calculation are provided in Workpaper 3-21.

G. Realization Timing

The $154.2 million represents the un-escalated peak annual Work Efficiency benefit associated with the Field Technician role, rather than the benefit forecast immediately upon deployment. Consistent with Chapter 3, the forecast applies a 12-month stabilization period during which benefits are not forecast, followed by a 24-month linear ramp to peak benefit levels.

Since the capabilities associated with the Field Technician Work Efficiency benefit are deployed through multiple applicable releases, the stabilization and ramp assumptions are applied based on the deployment timing of those capabilities and the corresponding Field Technician populations. The forecast therefore does not assume that all Field Technician benefits begin or reach peak levels at the same time.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 4

RESULTS OF OPERATIONS

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CHAPTER 4
RESULTS OF OPERATIONS

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 4
RESULTS OF OPERATIONS

This chapter presents the revenue requirement request for costs associated with replacing Pacific Gas and Electric Company's (PG&E or the Company) integrated Enterprise Resource Planning (ERP) and Geographic Information System (GIS) platforms. The revenue requirements were calculated using methods approved by the California Public Utilities Commission (CPUC or Commission) and should be adopted.

A. Summary of Request

PG&E calculated the revenue requirements using the Results of Operations (RO) model. The RO model compiles capital expenditures and operations and maintenance (O&M) expenses as presented in Chapter 3 to calculate the revenue requirements that PG&E needs to recover associated with the cost to perform the work presented in this Application. The elements of revenue requirement are further described in Sections B and C of this testimony.

The total revenue requirement request for the ERP and GIS Transformation presented in this Application is $874.1 million from November 3, 2026 (the date of this Application filing) through December 31, 2030, excluding Revenue Fees and Uncollectibles (RF&U) and Interest. The request was calculated based on PG&E's cost forecast of $2,705.3 million in capital expenditures and $205.4 million in O&M expenses, as presented in Chapter 3. Section E of this testimony provides additional details on recovery of the $874.1 million revenue requirement.

Table 4-1 presents the revenue requirement by ERP and GIS Transformation by expense and capital, and Table 4-2 presents revenue requirement by PG&E Functional Area, specifically Electric Distribution, Electric Generation (EG), Gas Distribution, and Gas Transmission and Storage (GT&S).

TABLE 4-1
REVENUE REQUIREMENT REQUEST EXCLUDING RF&U AND INTEREST
(MILLIONS OF DOLLARS)

Line No.	Description	ERP	GIS	Total
1	Capital Revenue Requirement	$516.5	$172.9	$689.4
2	Expense Revenue Requirement	57.3	127.4	184.7
3	Total Revenue Requirement	$573.8	$300.3	$874.1

TABLE 4-2
REVENUE REQUIREMENT BY FUNCTIONAL AREA – SUMMATION OF ALL YEARS – NOVEMBER 3, 2026 TO DECEMBER 31, 2030
(MILLIONS OF DOLLARS)

Line No.	Program	Electric Distribution			Electric Generation			Gas Distribution			Gas Transmission & Storage			Total Functional Areas		
		Expense	Capital	Total	Expense	Capital	Total	Expense	Capital	Total	Expense	Capital	Total	Expense	Capital	Total
1	ERP Transformation	33.5	330.6	364.1	8.5	34.2	42.7	10.6	105.1	115.7	4.7	46.5	51.2	57.3	516.5	573.8
2	GIS Transformation	74.4	110.8	185.2	18.9	11.4	30.3	23.6	35.2	58.8	10.5	15.6	26.0	127.4	172.9	300.3
3	Grand Total	**107.9**	**441.4**	**549.3**	**27.4**	**45.7**	**73.0**	**34.3**	**140.3**	**174.5**	**15.2**	**62.1**	**77.2**	**184.7**	**689.4**	**874.1**

B. Elements of the RO calculation

1. Expenses

In this Application, PG&E seeks to recover a total expense revenue requirement of $184.7 million excluding RF&U and Interest, associated with the $205.4 million in O&M costs forecast of the ERP and GIS Transformation presented in Chapter 3. The O&M forecast includes implementation period costs required to support day-to-day operations and the continued reliability and effectiveness of the platforms. Please refer to Chapter 3 for a detailed description of program costs. The $184.7 million represents the CPUC jurisdictional expense revenue requirement request, excluding Electric Transmission (ET) under the Federal Energy Regulatory Commission (FERC) jurisdiction. See Section D for more details regarding Common Cost Allocation between the CPUC and FERC jurisdictions.

2. Capital Related Inputs

a. Capital Expenditures

Capital expenditures are incurred when PG&E invests in capital projects to install new utility plant or replace its existing utility plant assets. This Application includes $2,705.3 million in capital expenditures associated with ERP and GIS Transformation. Detailed descriptions of this Transformation and the related capital investments are provided in Chapter 3.

b. Capital Additions

As capital work is performed, the capital expenditures, net of any removal costs, are accumulated and recorded to Construction Work in Progress (CWIP) until the project is operational and providing utility service. While in CWIP, projects that last over 30 days accrue an Allowance for Funds Used During Construction (AFUDC). Projects that last less than 30 days do not accrue AFUDC and are treated as “operative as installed.” When a specific capital project becomes operational, the CWIP balance is transferred to plant-in-service, and the capital expenditures and associated AFUDC become part of capital additions. Once a project is transferred to plant-in-service, its capital

additions are included in rate base, and the associated capital related revenue requirement is calculated and included in customer rates.

The ERP and GIS Transformation has multiple forecast operative dates corresponding to three releases when each Information Technology (IT) implementation is placed in service, thus beginning the capital recovery through the revenue requirements. Table 4-3 below provides the forecast operative dates for each ERP and GIS Transformation release.

TABLE 4-3
ERP AND GIS TRANSFORMATION FORECAST OPERATIVE DATES

Line No.	Program	Forecast Operative Date[(a)] Release 1	Release 2	Release 3
1	ERP	6/30/2027	6/30/2029	6/30/2030
2	GIS	10/1/2027	4/1/2028	4/1/2029

(a) Multiple operative dates for a program indicate separate discrete scopes of work with unique schedules and releases.

PG&E seeks recovery of the capital revenue requirement from November 3, 2026 through December 31, 2030. Consistent with past practice, PG&E proposes to seek future recovery of recorded capital additions and plant associated with the capital expenditures presented in this Application in future General Rate Cases (GRC) beginning with the 2031 GRC.

c. Cost of Removal and Gross Salvage

The portion of capital expenditures associated with the retirement of existing assets, known as removal cost, is recorded in Accumulated Depreciation (AD), which decreases the amount of AD in rate base. Gross salvage generally refers to any value received for retired plant and increases the amount of AD in rate base. In this Application there is approximately $0.1 million cost of removal.

C. Capital Revenue Requirement Components

CPUC Resolution (Res.) E-3238 provides that "[i]n addition to direct expenses, utilities could also book capital-related costs such as depreciation and return on capitalized additions."[1] Consistent with this resolution, PG&E's capital-related revenue requirement includes depreciation expense, a return on rate base, related federal and state income taxes, and property taxes. The various capital-related components of the RO calculation are discussed below.

1. Depreciation

Depreciation is included in the revenue requirement calculation, as both depreciation expense and through AD, a component of rate base. Depreciation expense forecast is calculated per the straight-line, remaining life method (in accordance with the Commission's Standard Practice U-4, Determination of Straight-Line Remaining Life Depreciation Accruals)[2] using Commission approved rates from depreciation accrual rate schedules effective during the period for which the revenue requirement calculations are made. Depreciation expense forecast is calculated by multiplying the forecast end of month plant in service balance by the corresponding book depreciation rates.

In this Application, for the book depreciation and capital-related revenue requirement calculation for the year 2026, PG&E uses the depreciation rates adopted in the 2023 GRC. For the years 2027 through 2030, PG&E uses the depreciation rates proposed in its 2027 GRC Application (A.25-05-009). Table 4-4 below presents the applicable depreciation rates by each Asset Class, including adopted 2023 GRC[3] depreciation rates and the proposed depreciation rates from the 2027 GRC Application.[4]

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1 Res.E-3238, p. 2, available at: https://files.cpuc.ca.gov/gopher-data/energy_division/res-e707-e3638/E-3238.pdf (accessed Oct. 21, 2026).

2 Commission Standard Practice U-4: Determination of Straight-Line Remaining Life Depreciation Accruals (Rev. Jan. 3, 1961), p. 11.

3 D.23-11-069.

4 A.25-05-009, PG&E Ex-10, Chapter 8 – Depreciation Reserve and Expense Workpaper Table 8-13.

TABLE 4-4
DEPRECIATION RATE BY ASSET TYPE

Line No.	Asset	Asset Class	Asset Life (Years)	2023 GRC Adopted Depreciation Rate (2026)	2027 GRC Proposed Depreciation Rate (2027-2030)
1	Software Licenses	CMP30302	5	17.19%	20.57%
2	Software Computer Information System	CMP30304	13	10.05%	8.12%
3	Other Machines and Computer Equipment	CMP39101	5	24.87%	19.49%
4	Communications Equipment – Non-Computer	CMP39701	7	14.04%	14.52%

PG&E will update the 2027-2030 book depreciation rates and book depreciation expense calculation in this Application if the Commission adopts different depreciation rates in the 2027 GRC Final Decision.

2. Rate of Return on Rate Base

The forecast rate base is calculated using utility plant less adjustments for deferred income taxes (Accumulated Deferred Income Taxes (ADIT)), depreciation reserve, and other rate base components. Utility plant consists of the forecast cost of investment in plant and equipment for rendering utility services. In developing the forecast rate base associated with utility plant for purposes of this filing, certain deductions are made. A deduction is made for the ADIT associated with these assets. These ADIT primarily result from the Modified Accelerated Cost Recovery System (MACRS) tax depreciation method. Rate base is also reduced by the amount of depreciation reserve (i.e., the AD already taken in prior years).

PG&E multiplied the currently adopted composite Rate of Return (ROR) by the weighted average rate base forecast for each year to calculate the Net for Return. The 2026 through 2030 Net for Return calculation in this Application uses the ROR of 7.61 percent and capital structure adopted in PG&E's most recent 2026 Cost of Capital (COC) decision.[5] If the Commission authorizes a new ROR in a future COC proceeding or other CPUC docket, PG&E will update the return on rate base to reflect the authorized ROR either through this proceeding or a Tier 1 advice letter filing. Table 4-5 provides a summary of ROR attributes.

[5] D.25-12-043, p. 2.

TABLE 4-5
2026 ADOPTED COST OF CAPITAL SUMMARY

Line No.	Year	Weighted Avg. Cost of Capital	Cost of Common Equity	Cost of Debt	CPUC Decision Reference
1	2026 and beyond	7.61%	9.98%	5.04%	Decision (D.) 25-12-043

3. Income Taxes

This section describes the assumptions and calculations used in the revenue requirement calculation for forecast Federal Income Tax (FIT), the associated deferred FIT, and California Corporation Franchise Taxes (CCFT or state income tax) expenses.

PG&E estimates current FIT and CCFT on net operating income before income taxes. FIT expense forecast is the product of the currently effective corporate income tax rate (21 percent) and forecast federal taxable income. Likewise, state income tax expense is the product of the statutory rate (8.84 percent) and the forecast state taxable income. Additionally, a deduction for prior year CCFT[6] is also factored into the FIT calculation and given flow-through treatment.

a. FIT and CCFT Tax Depreciation Adjustments

PG&E follows MACRS and Asset Depreciation Range (ADR)[7] guidelines for classifying capital additions and calculating federal and state tax depreciation, respectively. Federal MACRS tax deductions are computed on a normalized basis. This allows PG&E to recognize the timing differences between book and tax for these federal tax deductions. This difference multiplied by the federal tax rate is called deferred FITs and is generally included as an adjustment to current federal tax expense and a credit to rate base. State income taxes are generally calculated using flow-through treatment, whereby customers receive an immediate benefit from the use of accelerated state tax

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6 Section 801 of the Tax Reform Act (TRA) of 1986 requires taxpayers such as PG&E to deduct CCFT on a privilege year basis—i.e., prior year CCFT becomes deductible on the first day of each new year, when PG&E exercises its franchise privilege to do business in California. For example, CCFT estimated for 2022 (income year) would be deductible for FIT purposes on January 1, 2023 (privilege year).

7 Uses Sum of Years Digits method.

deductions, such as state depreciation calculated under ADR. For flow-through treatment, there is no deferred state taxes and therefore no associated deduction to rate base.

b. FIT and CCFT Capitalized Software Adjustments

Internal Revenue Code (IRC) § 167(f) generally requires taxpayers to capitalize and depreciate purchased software over three-years.

For software development costs paid or incurred in tax years prior to January 1, 2022, IRC § 174 and Internal Revenue Service (IRS) Revenue Procedure 2000-50[8] provided that a certain portion of the costs of qualifying self-developed software may be deducted currently. On December 22, 2017, the 2017 Tax Cuts and Jobs Act (TCJA)[9] changed the federal rules and required that qualifying self-developed software costs be instead capitalized and amortized over five-years for federal tax purposes, for such costs paid or incurred beginning after December 31, 2021.[10] However, on July 4, 2025, the federal government enacted federal IRC § 174A,[11] which allows taxpayers to again immediately deduct qualifying self-developed software costs[12] or instead elect to capitalize and amortize these costs over five-years beginning on or after December 31, 2024 for federal tax purposes.

For federal tax modeling purposes, PG&E will continue to apply normalization tax accounting treatment for eligible software development costs prior to January 1, 2027, which are capitalized and amortized over five-years under IRC § 174A(c). Beginning on January 1, 2027, PG&E will apply flow-through tax accounting treatment and deduct the federal

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8 IRS Rev. Proc. 2000-2, C.B. 601, as modified by IRS Rev. Proc. 2007-16, 2007-1 C.B. 358.

9 IRC § 174, as revised by the 2017 TCJA Public Law No. 115-97 Section 13206(a).

10 Qualifying domestic software development costs are capitalized and amortized over 5-years, whereas foreign software development costs are capitalized and amortized over 15-years.

11 IRC § 174A as enacted by the “One Big Beautiful Bill Act” (OBBBA) Public Law No. 119-21.

12 The self-developed software tax treatment enacted under the OBBBA IRC § 174A essentially reverts to the pre-2017 TCJA treatment of these costs, unless an election is made to capitalize and amortize these costs.

internal software development costs, as permitted under IRC § 174A. For financial reporting purposes, software costs are generally capitalized and depreciated over the software's book life, resulting in a tax and book timing difference to the extent the book and tax lives differ. This book-tax difference is reversed over time through book depreciation of the capitalized software.

For state tax modeling purposes, California did not conform to the IRC § 174 changes from the 2017 TCJA and therefore, such self-developed software costs continue to be deductible for state tax purposes. Consistent with its practice in previous rate cases, PG&E will use the flow-through tax accounting treatment for these eligible costs. As mentioned above, to the extent that software development costs are capitalized differently for book purposes, a book/tax timing difference is created. This book/tax timing difference is reversed over time through book depreciation of the capitalized software.

4. Property Taxes

Property tax expense is calculated by multiplying forecast taxable Plant Less Depreciation (Net Plant) by the composite property tax factor derived from PG&E's 2027 GRC (A.25-05-009). The property tax factor is comprised of the adjusted base year market-to-cost ratio multiplied by the composite tax rate. The adjusted market-to-cost ratio is the relationship between the most current assessment (adjusted) and the taxable Net Plant. Generally, property taxes are only assessed on tangible personal property, which includes computer hardware related asset classes such as CMP39101 and CMP39701. Property taxes are not calculated on intangible property, such as the software-related assets included in CMP30302 and CMP30304.

D. Common Cost Allocation

In this Application, PG&E proposes using labor allocation factors to allocate the revenue requirement for expense and capital costs across PG&E functional areas including electric distribution, gas distribution, EG, GT&S, and ET. This approach reflects that the costs to implement ERP and GIS Transformation are

common costs, and that the programs will benefit and serve all PG&E customers and functional areas.

The revenue requirement requested in this Application excludes the amount allocated to ET, which falls under the FERC jurisdiction. Accordingly, the revenue requirement presented in this chapter for the period November 3, 2026 through December 31, 2030 reflects the allocation of the revenue requirement to the applicable CPUC-jurisdictional functional areas of electric distribution, gas distribution, EG and GT&S.

For the revenue requirement from November 3, 2026, through December 31, 2026, consistent with the methodology adopted in the 2023 GRC, PG&E uses allocation factors adopted in D.23-11-069 to allocate the revenue requirement to all functions.

For the expense revenue requirement from January 1, 2027 through December 31, 2030, PG&E uses the 2027 GRC[13] proposed O&M Expense Labor and Capital Labor Allocation Factors to allocate expense related revenue requirement across all functions. Capital costs included in this Application are classified as Common, General and Intangible (CGI) plant and allocated across all functions using the 2027 GRC proposed CGI Plant Allocation Factors. This approach is consistent with the methodology proposed in the 2027 GRC, and maintains continuity in the treatment of common costs across rate case cycles.

E. Cost Recovery

PG&E seeks recovery of a total revenue requirement of $874.1 million (excluding RF&U and Interest) for the ERP and GIS Transformation costs presented in Chapter 3. The requested revenue requirement covers cost recovery from November 3, 2026 through December 31, 2030. PG&E proposes to recover post-2030 revenue requirements, including the recorded and forecast capital additions and the associated undepreciated plant, in its future GRCs beginning with the 2031 GRC Application.

The $874.1 million total revenue requirement requested in this Application excludes capital related revenue requirement incurred before November 3, 2026 for capital projects already in service. This treatment is consistent with PG&E's cost recovery proposal, discussed in Chapter 5, to establish the ERP and GIS

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13 A.25-05-009, PG&E Ex-10, Chapter 2, Section B.4.

Transformation Memorandum Accounts effective November 3, 2026, the date this Application was filed. PG&E also excludes from its requested revenue requirement the amount associated with approximately $2.6 million of capital costs that were already in service and included in the 2024 recorded GRC rate base when PG&E filed the 2027 GRC. In addition, the revenue requirement request excludes the expense incurred prior to December 31, 2026.

The revenue requirement calculation in this filing excludes RF&U. PG&E proposes to recover the forecast revenue requirement described herein upon receipt of a final CPUC decision. Pending that final decision, PG&E proposes to record actual revenue requirement beginning November 3, 2026 in the proposed ERP and GIS Transformation Memorandum Accounts (i.e., actual expenses plus the capital revenue requirement based on actual capital costs), as discussed in Chapter 5.

PG&E's final revenue requirement will include interest expense based on the applicable interest rates, the timing of the final decision and the approved cost recovery. PG&E will accrue interest associated with the authorized revenue requirement based on the latest available interest rates and Commission approved interest rate calculation for unrecovered revenue balances.[14]

Additional details on cost recovery are provided in Chapter 5, "Cost Recovery."

F. Revenue Requirement Request without Proposed Capitalization

As discussed in Chapter 3, the forecast of $2,705.3 million in capital expenditures and $205.4 million in O&M expenses reflects PG&E's proposed capitalization policies[15] in its pending 2027 GRC Application. The requested $874.1 million revenue requirement is calculated based on the above cost forecast that assumes the capitalization policies proposed in the 2027 GRC. If the Commission rejects PG&E's proposed capitalization policies in its 2027 GRC, some forecast capital expenditures would instead be treated as O&M expenses. In that event, PG&E respectfully requests a revenue requirement request without proposed capitalization of $1,020.9 million, which is calculated

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14 D.25-12-043 and AL 5169-G/7818-E.

15 Capitalization of one-time O&M expenses necessary for the development and implementation of IT capital projects, see A.25-05-009, PG&E Ex-10, p. 7-22, lines 2-4.

using a revised cost forecast that assumes the proposed capitalization policies are rejected by the Commission. See Table 4-6 for the revenue requirement request without capitalization by the ERP and GIS Transformation, by expense and capital.

TABLE 4-6
REVENUE REQUIREMENTS REQUEST WITHOUT PROPOSED CAPITALIZATION POLICIES
EXCLUDING RF&U AND INTEREST
(MILLIONS OF DOLLARS)

Line No.	Description	ERP	GIS	Total
1	Capital Revenue Requirement	$475.5	$157.0	$632.5
2	Expense Revenue Requirement	211.3	177.1	388.4
3	Total Revenue Requirement	$686.8	$334.1	$1,020.9

Table 4-7 below shows how the capitalization policy affects capital and expense revenue requirement requests.

TABLE 4-7
REVENUE REQUIREMENT REQUEST WITH AND WITHOUT PROPOSED ELECTRIC DISTRIBUTION CAPITALIZATION EXCLUDING RF&U AND INTEREST
(MILLIONS OF DOLLARS)

Ln No.		With Proposed Capital Policies	Without Proposed Capital Policies
	$ millions		
	ERP Transformation		
1	Expense Cost Forecast	$63.8	$234.9
2	Expense Revenue Requirement	$57.3	$211.2
3	Capital Cost Forecast		
4	5-Year Software	$215.3	$215.2
5	13-Year Software	$1,797.8	$1,573.1
6	Hardware	$30.6	$30.6
7	Capital Revenue Requirement	$516.5	$475.5
8	Subtotal, ERP Transformation Revenue Requirement (Ln 2 + Ln 7)	$573.8	$686.8
	GIS Transformation		
9	Expense Cost Forecast	$141.7	$197.0
10	Expense Revenue Requirement	$127.4	$177.1
11	Capital Cost Forecast		
12	5-Year Software	$45.8	$45.9
13	13-Year Software	$615.8	$545.9
14	Hardware	$0.0	$0.0
15	Capital Revenue Requirement	$172.9	$157.0
16	Subtotal, GIS Transformation Revenue Requirement (Ln 10 + Ln 15)	$300.3	$334.1
17	**Total ERP & GIS Transformation Program Revenue Requirement (Ln 8 + Ln 16)**	**$874.1**	**$1,020.9**

G. Revenue Requirement Estimation for Benefit Forecast

PG&E estimated the benefits related revenue requirement associated with approximately $9 billion of benefits forecast (approximately $8 billion from ERP Transformation and approximately $1 billion from GIS Transformation) as presented in Chapter 3 to support the calculation of CPUC jurisdictional benefit to cost ratio. The detailed forecast of benefits attributable to the ERP and GIS Transformation is further described in Chapter 3.

PG&E uses a systematic approach leveraging established managerial accounting conventions to allocate ERP and GIS Transformation forecast

benefits to its functional areas. The approximate $9 billion benefits forecast is broken out by expense and capital by benefit category based on the segmentation underlying PG&E's GRC. Specifically, Budget Org Level (BOL) identifiers used to identify costs within PG&E's accounting system of record were used as indicators for assigning benefits to PG&E's functional areas, and incorporating the appropriate capital ratemaking attributes for each benefit category.

PG&E utilized BOL identifiers and the 2025-2030 capital expenditure forecast in the 2027 GRC to allocate the capital-related benefits forecast to the associated Asset Functional Groups[16] based on each group's share of total average 2025-2030 capital expenditures. Similar to the capital-related cost revenue requirement, the capital-related benefit revenue requirement is calculated at the Asset Functional Group level with the appropriate cost of service ratemaking attributes and parameters (2023 GRC adopted composite book depreciation rates by each Asset Functional Group, authorized cost of capital, Income and Property Tax factors, etc.).

For the expense-related benefits forecast, PG&E utilized BOL identifiers and the 2027 O&M costs forecast in the 2027 GRC to allocate the expense related benefits based on each group's share of total 2027 O&M forecast amount across PG&E's functional areas within CPUC and FERC jurisdictions.

H. Conclusion

PG&E respectfully requests that the Commission adopt a total revenue requirement of $874.1 million (excluding RF&U and Interest) that assumes the capitalization policies proposed in the 2027 GRC. The revenue requirement set forth in this Application was calculated using the RO Model for separately funded rate case applications and is based on the costs presented in Chapter 3.

The detailed revenue requirement calculation is provided in the workpapers supporting this chapter.

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16 Asset Functional Groups refers to a grouping of asset classes under the same utility function (e.g. Electric Distribution Plant such as street light lamps and electric meters).

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 5

COST RECOVERY

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 5
COST RECOVERY

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 5
COST RECOVERY

A. Introduction

This chapter presents Pacific Gas and Electric Company's (PG&E) proposal for tracking, recording, and recovering the costs to transform its integrated Enterprise Resource Planning (ERP) and Geographic Information System (GIS) platforms presented in this proceeding.

PG&E's revenue requirement forecast associated with the ERP and GIS Transformation is included in Chapter 4. Adoption of PG&E's cost recovery proposal presented in this chapter will ensure timely recovery of the reasonable costs included in this proceeding.

In summary, PG&E respectfully requests that the California Public Utilities Commission (Commission):

- Approve PG&E's Motion,[1] which PG&E plans to file promptly after an Application number is assigned by the Commission, to establish two memorandum accounts, one for electric and one for gas, collectively referred to as the ERP and GIS Transformation Memorandum Accounts (TMA)[2] and authorize PG&E to track and record its actual revenue requirements for costs incurred from the filing date of this Application through the effective date of the final decision on this Application;
- Authorize PG&E to recover all amounts recorded to the ERP/GIS TMAs through the next available rate change or the next Annual Electric True-up (AET) and Annual Gas True-Up (AGT) following the Commission's decision on this Application; and
- Authorize PG&E to recover through rates on a forecast basis the adopted revenue requirements from the effective date of the final decision of this Application through 2030.

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1 A Commission decision on PG&E's motion is requested during the pendency of the proceeding.

2 PG&E proposes to establish two accounts, ERP/GIS TMA-G for gas and ERP/GIS TMA-E for electric, together referred to as the ERP/GIS TMAs.

B. Cost Recovery

1. Summary of Costs

As discussed in Chapter 4, PG&E requests authorization to recover $874.1 million in total revenue requirements,[3] of which $184.7 million is expense revenue requirement and $689.4 million is capital revenue requirement.[4]

2. Memorandum Accounts

Contemporaneously with this Application, PG&E is filing a *Motion to Establish ERP/GIS Transformation Memorandum Accounts* (gas and electric), to request that the Commission authorize PG&E to track and record its actual revenue requirements for costs incurred associated with the ERP and GIS Transformation beginning on the filing date of this Application through the effective date of the final decision on this Application. Upon approval of this Motion, PG&E will file a Tier 1 advice letter to establish the ERP/GIS TMAs, effective as of the Application's filing date, and track the ERP and GIS Transformation costs in these accounts through the effective date of a final decision on this Application.

PG&E proposes, upon a final decision on this Application, to transfer the balance of the ERP/GIS TMAs to the applicable revenue adjustment mechanisms for recovery from customers in rates[5] through the next available rate change or the next AET and AGT. Actual revenue requirements recorded to the ERP/GIS TMAs up to the adopted forecast amounts in this Application shall be recoverable from customers since the Commission has approved the adopted amounts. Therefore, PG&E seeks cost recovery of the balances in the ERP/GIS TMAs through this Application. All actual revenue requirements recorded to the ERP/GIS

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3 Upon approval by the Commission, PG&E would record and recover its actual revenue requirement from the filing date of the Application through the final decision effective date in the ERP/GIS TMAs and then recover its forecast revenue requirement from the final decision effective date through 2030.

4 Chapter 4, Section F also describes a different revenue requirement request amount in the event that the Commission rejects PG&E's proposed capitalization policies in its pending 2027 GRC Application.

5 The related revenue adjustment mechanisms and rate components are identified and discussed in Section 3 below.

TMAs and recovered through rates would be subject to the Commission's final decision on this Application authorizing revenue requirements to be recovered in rates.

3. Recovery of Functional Revenue Requirements

PG&E proposes to recover through rates the following: (1) the balance in the ERP/GIS TMAs for the period beginning on the filing date of the Application through the effective date of a final decision; and (2) the forecast revenue requirement for the period from the effective date of a final decision through 2030.

As described in the “Common Cost Allocation” section of Chapter 4, the ERP and GIS Transformation costs are treated as common costs because they benefit all PG&E functional areas, and therefore the recovery of these costs is allocated across all functional areas.[6] Specifically, PG&E proposes to use its existing revenue adjustment mechanisms to recover the ERP and GIS Transformation adopted revenue requirements through the related rate components/revenue adjustment mechanisms over which common costs are allocated. PG&E will utilize the existing accounting procedures used to record and recover the adopted GRC revenue requirements to similarly record and recover the adopted ERP and GIS revenue requirements. The tables below indicate the accounts where the adopted functional revenue requirements will be recorded.

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6 As described in Chapter 4, the Federal Energy Regulatory Commission (FERC) jurisdictional portion of the allocated revenue requirements is not included in this Application. PG&E recovers FERC-jurisdictional electric transmission cost of service through a formula rate included in PG&E’s Transmission Owner Tariff.

TABLE 5-1
ELECTRIC REVENUE ADJUSTMENT MECHANISMS FOR RECOVERY BY COMPONENT

Line No.	Component	Revenue Adjustment Mechanisms for Recovery	Preliminary Statement
1	Electric Distribution	Distribution Revenue Adjustment Mechanism	ELEC PRELIM CZ
2	Electric Generation	Energy Resource Recovery Account	ELEC PRELIM CP
3		New System Generation Balancing Account	ELEC PRELIM FS
4		Portfolio Allocation Balancing Account	ELEC PRELIM HS

TABLE 5-2
GAS REVENUE ADJUSTMENT MECHANISMS FOR RECOVERY BY COMPONENT AND CUSTOMER CLASS

Line No.	Component	Revenue Adjustment Mechanisms for Recovery	Preliminary Statement
1	Gas Distribution	Core Fixed Cost Account (CFCA), Distribution Subaccount	GAS PRELIM F
2		Noncore Customer Class Charge Account (NCA), Distribution Subaccount	GAS PRELIM J
3	Gas Transmission and Storage	CFCA, Core Cost Subaccount	GAS PRELIM F
4		NCA, Noncore Subaccount	GAS PRELIM J
5	Gas Local Transmission	CFCA, Core Cost Subaccount	GAS PRELIM F
6		NCA, Local Transmission Subaccount	GAS PRELIM J

C. Conclusion

PG&E respectfully requests that the Commission approve the cost recovery proposal described in this chapter for the reasons described above.

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX A

STATEMENT(S) OF QUALIFICATIONS

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF RAJ BASUTA

Q 1 Please state your name and business address.

A 1 My name is Raj Basuta, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am the Senior Director of Enterprise Geographic Information System (GIS) Delivery. I oversee PG&E's geographic information system modernization as the solution lead with responsibility over Gas, Electric, Power Generation, and Telecommunications.

Q 3 Please summarize your educational and professional background.

A 3 I have a Bachelor of Science degree in Mechanical Engineering and a Master of Business Administration degree, both from the California State University, Sacramento. Since joining PG&E in 2011, I have held positions of increasing responsibility across gas operations, gas engineering, and enterprise transformation. These positions include Supervisor of Gas Maintenance and Construction; Supervisor of Gas Construction; Supervisor of Gas Design Drafting; Manager of Gas Transmission Mapping and Pipeline Features List Services; Director of Gas Asset Knowledge Management; Director and Asset Management Solution Lead; and my current role as Senior Director of Enterprise GIS Delivery. I am a member of the American Gas Association GIS and Asset Records Management Committee.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 2, "Proposed Transformation and Implementation Approach":
  - Sections A, B.2, B.3, C, D, E.1, E.3.i, E.3.j, E.7, E.8, H.3, and I.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JENN CONWAY

Q 1 Please state your name and business address.

A 1 My name is Jenn Conway, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am the Director of PG&E's Value Management Office for the transformation of PG&E's Enterprise Resource Planning and Geographic Information System platforms. In this role, I oversee the development and governance of the program's business case, including forecast costs, customer benefits, benefit-cost analysis, and value realization planning. I also coordinate the financial and regulatory analysis supporting the proposed investment.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in Business Administration, with an honors concentration in Financial Services and a minor in Accounting, from Saint Mary's College of California in 2010. I joined PG&E in 2010 and have held positions of increasing responsibility in operations, financial planning and analysis, business finance, and executive support.

Before assuming my current role, I served as Chief of Staff for PG&E's Finance organization, supporting the Chief Financial Officer and Finance leadership on strategic planning, business performance, executive and Board materials, and cross-functional initiatives. Earlier in my career, I held several positions in Business Finance, where my responsibilities included budgeting, forecasting, financial analysis, and regulatory support. My regulatory experience includes supporting financial forecasts, workpapers, testimony development, and data request responses for PG&E's 2017, 2020, and 2023 General Rate Cases.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony and workpapers in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 3, "Cost and Benefit Forecast Analysis";

- Workpapers supporting Chapter 3; and
- Appendix B, “Summary of Cost and Benefit Information.”

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF CHRISTINE COWSERT

Q 1 Please state your name and business address.

A 1 My name is Christine Cowsert, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am the Senior Vice President (VP) of Enterprise Business and Technology Modernization. I oversee the organizations responsible for leading PG&E's enterprise-wide business and technology modernization, including the enterprise resource planning transformation and the geographic information system modernization.

Q 3 Please summarize your educational and professional background.

A 3 I have a Bachelor of Science degree in Mechanical Engineering and a Master of Business Administration degree, both from the University of California, Berkeley. Since joining PG&E in 2001, I have held positions of increasing responsibility across engineering, human resources, gas operations, electric engineering, asset and risk management, regulatory strategy, and enterprise transformation. These positions include Director of Gas Distribution Integrity Management; Director of Gas Transmission Integrity Management; Senior Director of Gas Asset Knowledge and Integrity Management; Senior Director and VP of Gas Asset Management and System Operations; VP, Co-Lead of Gas Operations; VP of Electric Engineering, Asset and Regulatory; Senior VP of Gas Engineering and Service Planning and Design; and my current role as Senior VP of Enterprise Business and Technology Modernization. I am a licensed Professional Engineer in the State of California and have held leadership and advisory roles with energy industry organizations, including the American Gas Association, Operations Technology Development, and NYSEARCH.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony and workpapers in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 1, "Executive Summary"; and
- Workpapers supporting Chapter 1.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MARQUES A. CRUZ

Q 1 Please state your name and business address.

A 1 My name is Marques A. Cruz, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am Results of Operations Senior Manager in PG&E's Revenue Requirement and Cost Recovery Department, responsible for developing analyses and testimony to support recovery of utility investments.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in Civil and Environmental Engineering from University of Michigan, Ann Arbor and a Master of Business Administration degree in Finance and Corporate Strategy from Ross School of Business at the University of Michigan, Ann Arbor.

In 2013, I joined PG&E as a Project Management Engineer in Gas Operations, supporting project management and strategic planning for pipeline safety and enhancement projects. In 2015, I accepted a rotational assignment performing financial management and economic analysis of pilot projects for PG&E's Smart Grid Technology Program. In 2016, I joined the Economic Analysis department at PG&E, where I worked for approximately seven years before assuming my current position in 2023.

My regulatory experience includes serving as a witness on financial matters related to PG&E's cost recovery. Within the California Public Utilities Commission jurisdiction for example, I have submitted testimony on behalf of PG&E's General Rate Case, wildfire and disaster-related cost recovery applications, and cost of capital applications.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony and associated workpapers in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 4, "Results of Operations"; and
- Workpapers supporting Chapter 4.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JAMES KIM

Q 1 Please state your name and business address.

A 1 My name is James Kim, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am the Vice President of Energy Systems & Solutions. I am responsible for PG&E's business systems used by Energy Delivery, Supply Chain, Finance, and Human Resources. I am responsible for delivering projects to improve systems, as well as, day-to-day running and support of the systems.

Q 3 Please summarize your educational and professional background.

A 3 I have a Bachelor of Science in Business from University of Illinois, Urbana-Champaign. I am a technology executive with 28 years of experience: 13 years as an officer and Information Technology leader at a $24 billion revenue FT200 public company; five years as a private equity operator and senior management team member at portfolio companies; 10 years as an Enterprise Resource Planning implementation consultant and delivery leader. I have a history of success leveraging technology to drive transformational business outcomes including new revenue, cost out, step change in D2C and B2B software product experience and operational efficiencies in supply chain and work and asset management. Board experience reporting transformation program progress and outcomes at large public company and private equity owned portfolio companies.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 2, "Proposed Transformation and Implementation Approach":
  - Sections A, C, D, E.3.g, E.4, E.5, E.6, F, G, H.1, H.2, H.4, H.5, and I.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF ANNABELLE LOUIE

Q 1 Please state your name and business address.

A 1 My name is Annabelle Louie, and my business address is Pacific Gas and Electric Company (PG&E or the Company), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am the Vice President (VP) of Enterprise Business Processes at PG&E. In this role, I lead a cross-functional business team responsible for designing and implementing standardized business processes enabled by new cloud-based Enterprise Resource Planning (ERP) technology.

Q 3 Please summarize your educational and professional background.

A 3 I hold Bachelor of Science, Bachelor of Arts and Master of Business Administration degrees from UC Berkeley. Before assuming my current role, I served as VP, Operations Support, where I led Electric and Gas business functions to support regional service delivery and strengthen the customer experience across PG&E's service territory. I oversee PG&E's Training Academy, which supports enterprise-wide training needs. I also led enterprise initiatives to improve end-to-end work management, workforce development, financial performance, and people, process and technology capabilities.

I have served at PG&E for 18 years. Since joining the Company in 2008, my work has centered on safety, electric system reliability, and meeting customer commitments. I have held roles of increasing responsibility across back-office and frontline operations, advancing from frontline supervisor to senior field leader. My prior roles include Senior Director, Electric Distribution Field Operations in the Bay and Central Region; Director, Construction Resource Management; Superintendent for the South Bay divisions; and Engineering Manager in Asset Management. Prior to PG&E, I worked in consulting, education, communications and legal industries.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 2, "Proposed Transformation and Implementation Approach":
  - Sections A, B.1, B.3, C, D, E.1, E.2, E.3.a, E.3.b, E.3.c, E.3.d, E.3.e, E.3.f, E.3.h, E.7, E.8, and I.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF REBECCA MADSEN

Q 1 Please state your name and business address.

A 1 My name is Rebecca Madsen, and my business address is Pacific Gas and Electric Company (PG&E), 300 Lakeside Drive, Oakland, California.

Q 2 Briefly describe your responsibilities at PG&E.

A 2 I am an Expert Regulatory Analysis and Forecasting Analyst in PG&E's Revenue Requirements Department, within the Controller's Organization. I am responsible for advising on emerging regulatory issues and implementing cost recovery requirements in California Public Utilities Commission decisions. My regulatory experience includes supporting testimony development, acting as the witness for cost recovery proposals, and responding to data requests for several of PG&E's recent applications, including the 2027 General Rate Case.

Q 3 Please summarize your educational and professional background.

A 3 I earned a Bachelor of Arts degree in Archaeology from the George Washington University and an Associate in Science degree in Accounting from Skyline College. I have been a registered Certified Public Accountant in California (License 118069) since 2013.

I have had the opportunity and privilege to serve our customers across the service territory at PG&E since 2015 in the Controller's Organization.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's Application for Authorization to Recover Costs Related to Its Enterprise Resource Planning and Geographic Information Systems:

- Chapter 5, "Cost Recovery."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX B

SUMMARY OF COST AND BENEFIT INFORMATION

FIGURE 1
SUMMARY OF CAPITAL AND EXPENSE BY PLATFORM, COST GROUP, AND WORKSTREAM
(MILLIONS OF NOMINAL DOLLARS)

COST GROUP →	Solution		Technology Enablement		Application Remediation		Technology Infrastructure and Software		Program Management Office		Business Enablement	
PLATFORM	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense
	1,573.8	19.6	214.9	-	251.6	-	293.6	185.8	210.4	-	161.1	-
	WORKSTREAMS											
ERP	Work and Asset Management		Supply Chain		Finance		Platform Architecture and Security		Application Remediation		Technology Infrastructure and Software		Program Management Office		Organization Readiness	
	367.4	-	165.9	-	155.2	-	101.4	-	180.4	-	237.9	63.8	151.8	-	98.7	-
	Human Resources		Integrated Planning		Enterprise Health and Safety		Controls and Compilance								Operating Model	
	95.2	-	31.6	-	16.2	-	34.2	-							28.9	-
	Development, Integration, and Solution Delivery		Data and Analytics													
	270.0	-	109.0	-												
Capital 2,043.8	Expense 63.8															
GIS	Applications and Processes		Data Migration and Conversion				Platform Architecture and Security		Application Remediation		Technology Infrastructure and Software		Program Management Office		Organization Readiness	
	307.4	-	56.0	-			79.3	-	71.1	-	55.7	122.1	58.5	-	30.8	-
	Solution														Operating Model	
	-	19.6													2.6	-
Capital 661.5	Expense 141.6															

FIGURE 2
SUMMARY OF FORECAST CAPITAL AND EXPENSE BENEFITS
BY PLATFORM, BENEFIT CATEGORY, AND VALUE DRIVER
(MILLIONS OF NOMINAL DOLLARS)

BENEFIT CATEGORIES →	Asset Reliability and Work Execution Effectiveness		Supply Chain Optimization and Materials Availability		Financial Discipline and Performance Management		Workforce Enablement and HR Process Improvement		Health, Safety and Compliance Improvement		Overall Technology Modernization and Platform Simplification	
PLATFORM	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense
	4,398.9	2,035.8	1,460.5	743.7	-	41.0	-	24.8	97.8	96.8	167.2	303.0
	VALUE DRIVERS											
ERP	Work Efficiency		Expansion of Compatible Units		Forecasting and Demand Planning		Standardized Contract Management		Standardized Accounting Processes and Planning		Standardized Finance Processes and Planning	
	3,618.2	1,382.3	127.1	97.3	723.0	308.9	440.0	240.1	-	9.5	-	31.5
	Automated Resource Planning		Standardized Employee Payroll and Benefits Management		Traceability of EHS Critical Records and Standardized Documentation		Standardized Inspection Documentation Process		Application Rationalization		Software/Hardware	
	-	7.8	-	5.5	97.8	70.7	0.0	13.0	-	95.2	62.2	5.8
	Enhanced Design Management / Drawing Tools		Effective Project Management Reconciliation		Streamlined Supplier Management		Streamlined Warehouse Management					
	213.9	30.9	102.3	17.0	193.7	186.9	5.9	3.7				
	Standardized Employee Performance Management		Streamlined Employee Attendance Processes		Standardized Pre-Work Safety Documentation and Risk Assessment							
	-	6.0	-	5.5	0.0	13.0						
	Standardized Asset Management Process		Automated Project and Investment Creation		Inventory Optimization and Materials Management							
	84.5	57.2	8.3	1.6	49.8	4.1						
Capital 5,726.8 Expense 2,593.5												
GIS	Modernize GIS Technology				Better Rates and Terms						IT & Data	
	244.5	449.6			48.0	-					105.1	202.0
Capital 397.6 Expense 651.7												

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX C

GLOSSARY OF KEY TERMS

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX C
GLOSSARY OF KEY TERMS

Acronym/Term	Definition
Allowance for Funds Used During Construction (AFUDC)	The financing cost associated with capital investments during construction before the asset is placed into service. AFUDC reflects the cost of funds used to finance capital projects during the construction period
Asset Lifecycle	The stages through which a utility asset is planned, designed, constructed, operated, maintained, and retired
Artificial Intelligence (AI)	Technology that enables computers to perform tasks that normally require human intelligence
As-Built	The verified record of an asset's final physical and functional configuration after asset installation, replacement, relocation, or removal. As-built information is used to maintain accurate engineering, GIS, and asset management records.
Automation	The use of technology to perform tasks with minimal human intervention; aims to streamline processes, enhance efficiency, and reduce human error
Benefit-Cost Ratio (BCR)	A financial metric that compares the present value of expected benefits to the present value of expected costs for a project or investment.
Benefit Categories	Primary groupings used to organize the Transformation's forecast benefits and link solution capabilities and value drivers to operational improvements and estimated financial outcomes.
Benefits Overhead (OH)	Employee benefit costs (e.g., health, pension) recorded in the General Ledger (GL) and allocated to roles charging direct time within the same budget organization and cost category.
Business Capabilities	The core functions an organization performs to deliver business outcomes, such as work and asset management, supply chain management, finance, human resources, etc.
Business Processes	A group or series of activities by which inputs are turned to outputs that provide a benefit.
California Public Utilities Commission (CPUC)	The California state agency that regulates investor-owned utilities, including electric, natural gas, telecommunications, and water utilities, and oversees utility rates, safety, and reliability.
Capital Share	The proportion of a department's net benefit that falls to capital rather than expense.
Change Management	Structured approach to transitioning individuals and organizations to new systems
Clean Core Design	Principle which promotes a minimization of customizations to SAP S/4HANA products
Cloud	Technology hosted on remote servers rather than local infrastructure
Cloud First	Design principle which promotes hosting software applications on cloud servers, rather than on-prem

Acronym/Term	Definition
Code Promotion	The process of moving software code, configuration, integrations, or other technical changes from one environment to another as they progress through testing and approval stages
Commodity Code	The spend cost code that identifies what was purchased. Codes are also used to map spend to external labor roles.
Confidence Factor	Realization Rate multiplied by Exclusivity. Applied to gross benefit to calculate net benefit.
Contract Leakage	When the terms of an invoice are not fully enforced
Core HR	The foundational human resources processes and data used to manage PG&E's workforce. SAP SuccessFactors will serve as the future-state system of record for employee and organizational data, supporting workforce administration and integration with other enterprise business processes and systems
Cost Type	Identifies the spend layer represented by the row: Direct time, Management OH or Benefits OH.
Customization	The process of modifying software applications or building custom code to fit business requirements beyond standard configurations
Cyber Attack	Attempt to compromise or gain unauthorized access to systems
Data Migration	Process of transferring data between systems
Dataset	A collection of related data that can be organized and managed as a single unit.
Decommission	The process of dismantling and removing software or physical technology infrastructure to be taken out of service
Delivery Lifecycle	The sequence of activities used to implement a release, including design, build, test, deploy, stabilize
Department GL Spend	All General Ledger spend recorded against the department, before any narrowing.
Deployment	The approach used to introduce the new systems into operations.
Design Principles	A set of fundamental guidelines which were used to guide technical decisions as part of the SAP and GIS transformation.
Digitized Rate Card	An electronic pricing document or schedule that sets pre-approved rates for services, roles, or resources.
Direct Time	Standard time, overtime and double time for in-scope job titles, after applicable exclusions.
Distributed Energy Resource (DER)	An energy resource connected to the electric distribution system, such as solar panels, batteries, electric vehicles, or demand response resources.
Elevate	PG&E’s internal reference to the GIS Transformation
Enterprise Resource Planning Central Component (ECC)	SAP on-prem business suite
Enterprise Design (ED)	The phase of the ERP and GIS Transformation in which PG&E developed and validated the future-state operating model, business processes, applications, data structures, and deployment strategy required to achieve the program's objectives and guide implementation.
Edge Systems	External applications to the centralized ERP platform

Acronym/Term	Definition
Enterprise Resource Planning (ERP)	The platform for a business to integrate internal and external business and management information across an entire organization with an integrated software system. SAP ECC is an ERP system
Erosion	Adjustment applied to remove benefits associated with out-of-scope activities.
Exclusivity	Percentage of the benefit attributable to the program, excluding benefits associated with other initiatives.
Esri	A software company that leverages Geographic Information System (GIS) technology to enable spatial and mapping capabilities.
Esri Native	Refers to software or data built specifically for Esri tools and systems.
Fit-to-Standard Design (FTS)	The adoption of industry-leading practices aligned cross-functionally, leveraging standard technology for in-scope business processes.
Geometric Network (GN)	A legacy GIS model used to represent the connectivity and flow of utility assets such as electric and gas networks
Geographic Information System (GIS)	The technology for capturing, storing, analyzing and managing spatial and geographic data.
General Rate Case (GRC)	A regulatory process in which a utility requests approval from a public utility commission (such as the CPUC) to adjust its rates to cover operating expenses and infrastructure investments
Gross Benefit	Total Addressable Spend multiplied by the applicable improvement rate, before applying the confidence factor.
Implementation	The overall execution of the ERP and GIS Transformation
Improvement Range Percentage	Percentage of Total Addressable Spend expected to be reduced through the improvement. Set by role and Operating Area.
Infrastructure as Code	The practice of defining, provisioning, and managing infrastructure using code and automated scripts rather than manual configuration
Integration	The coordination of separate systems or processes to work together as one
Internal Labor Percentage	Internal Labor Spend divided by Department GL Spend.
Internal Labor Spend	The portion of department spend that is internal labor.
Lifecycle Management	The process of managing utility assets throughout their lifecycle, including planning, installation, operation, maintenance, and retirement.
Like-for-Like Replacement	Replacing an existing system or asset with a new one that performs the same function.
Load Growth	An increase in the demand for electricity, driven by factors such as population, electrification, or economic development
Management Overhead (OH)	Indirect labor costs associated with manager overheads recorded in the General Ledger (GL) and allocated to roles charging direct time within the same budget organization and cost category (capital or expense).
Material Group	A purchasing category used to record third-party spend in the General Ledger; it may include multiple commodity codes.
Material or Services	Identifies whether the commodity code represents goods or services. External labor benefits apply to services.
Months Realized	The number of full-rate months of benefit earned in a year. A month that is still ramping counts as a fraction.

Acronym/Term	Definition
Non-Earnings Expense (NEE)	Expense that does not flow through earnings. Reported with expense as "Expense incl. NEE."
Obligation Management	The tracking and enforcing of all commitments in a contract
On-Premises (On-Prem)	Software or infrastructure hosted within an organization's own data centers rather than in a cloud environment
Operation and Maintenance (O&M)	Costs treated as expenses for accounting and ratemaking purposes, including applicable implementation-period and ongoing costs to operate, support, maintain, and sustain utility assets, technology systems, and business processes
Out-of-the-box	Software that is ready to use immediately without requiring any additional assembly, installation, or modification
Peak Annual Benefit	The full annual benefit once every benefit category has reached its run rate.
Process Scope Percentage	The share of the department's internal labor that the process touches.
Phase Zero	The initial planning and evaluation stage of ERP and GIS Transformation used to establish strategic direction, confirm scope and requirements, evaluate solution options, and develop the business case and governance framework for implementation
Present Value of Revenue Requirements (PVRR)	A financial measure that converts future utility revenue requirements into present-value dollars to facilitate comparison of costs and benefits occurring at different points in time
Propel	PG&E's internal reference to the ERP Transformation
PG&E	Pacific Gas and Electric Company
Project Management Office (PMO)	The team that provides governance, coordination, planning, and oversight for a program or project.
Quantitative Benefits	Financially measurable benefits forecast from the Transformation, including labor productivity improvements, nonlabor efficiencies, avoided costs, technology simplification, and other operational improvements.
Qualitative and Foundational Benefits	Benefits that support operational effectiveness, security, scalability, user experience, process simplification, data quality, governance, and integrated planning but are not assigned a monetary value in the benefit forecast.
Realization Rate	The portion of the benchmark opportunity expected to be achieved after implementation.
Release	A defined unit of phased deployment that introduces a specific set of business or technology capabilities
Revenue Requirement (RRQ)	A utility's cost of service, which is the sum total of all of the utility's operating expenses plus a reasonable return on its investment; the following formula expresses this revenue requirement: Revenue Requirement = Operation and Maintenance (O&M) expense + Depreciation expense + Tax expense + Return on Investment.
RICEFW	Categories of technical development components consisting of Reports, Interfaces, Conversions, Enhancements, Forms, and Workflows that are developed when approved requirements cannot be met through standard system functionality or configuration

Acronym/Term	Definition
Run Rate	The full annual benefit of the benefit category once it has finished ramping.
Systems Applications and Products (SAP)	A global organization that provides enterprise software applications and support
SAP S/4HANA	SAP's High-Performance Analytic Appliance which is SAP's modern enterprise resource planning platform that will replace SAP ECC
Sarbanes-Oxley (SOX)	A U.S. law that requires public companies to maintain effective internal controls and accurate financial reporting
Spend Cube	PG&E third-party spend by commodity code. Used to allocate each GL line across the commodities purchased.
Subject Matter Expert (SME)	An individual with specialized knowledge or expertise in a specific business, technical, or functional area
System of Record	The authoritative system used to maintain and manage the official version of specified businesses or operational information
Systems Integrator (SI)	A third-party implementation partner responsible for supporting the design, configuration, integration, testing, data conversion, deployment, and stabilization of the ERP and GIS Transformation solutions and associated business processes.
Technical Debt	The accumulated complexity created by customizations, integrations, workarounds, and legacy system dependencies that increases the effort, cost, and risk associated with maintaining, upgrading, and enhancing technology over time.
Technical Object	A system component that requires configuration, development, integration, conversion, reporting, workflow, or other technical work to support business processes and system functionality
Technology Stack	The collection of technologies that work together to run a system, application, or business capability.
Total Addressable Spend	Direct time plus management overhead plus benefits overhead. The fully burdened cost of the worker, and the base the Improvement Range % is applied to.
Traceability	All external labor benefits trace to an identifiable commodity code and role. This describes how precisely the spend can be traced, not overhead loading; internal labor includes management overhead and benefits overhead in its spend base; external labor does not.
Transformation	A comprehensive shift in processes, technologies, or strategies to improve efficiency, productivity, and growth.
Utility Network (UN)	A modern GIS model specifically created to manage utility assets and network connectivity.
Value Driver	A specific process, operational, or technology improvement within a benefit category that is expected to generate measurable benefits from the Transformation.
Value Management	The structured process used to monitor whether program assumptions, design decisions, dependencies, and operational outcomes remain aligned with forecast benefits.
Work Breakdown Structure (WBS)	A hierarchical breakdown of project work used for planning, budgeting, and tracking.