

**EXH. SLT-8
DOCKETS UE-22___/UG-22___
2022 PSE GENERAL RATE CASE
WITNESS: SUZANNE L. TAMAYO**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

**Docket UE-22___
Docket UG-22___**

**SEVENTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

SUZANNE L. TAMAYO

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

GTZ – Implementation of IWM for Gas Operations
Corporate Spending Authorization (CSA)
Application Request

| | |
|-------------------------|---|
| Date Submitted: | 10/3/2019 |
| Officer Sponsor: | Margaret Hopkins & Booga Gilbertson |
| Completed By: | John Mannetti, Brady Kinsella, Andrew Drapp |
| Phase Gate: | Execution |

I. IWM Program Overview

The Integrated Work Management (IWM) program delivers solutions to enable PSE employees to make and meet customer commitments with confidence. The IWM sub-program under the corporate Get to Zero (GtZ) initiative has the objective to improve Puget Sound Energy’s field operations work processes and tools with a priority on work that can improve customer experience and eliminate calls into our customer call center. PSE’s customer experience is highly connected to field operations processes and personnel. Customer initiated requests drive over 200,000 service requests for PSE’s field employees each year. PSE initiated work that requires onsite customer interaction accounts for an additional 700,000 jobs annually. IWM is an enterprise approach to managing field work required to support a company’s customer service work and, the construction, operation, and maintenance of its core physical assets. It aims to provide visibility to work through its lifecycle; Initiation, Planning, Scheduling, Execution and Close.

The IWM program provides the foundation for improved management at PSE. The core IWM solution consists of four elements:

- 1. Work Management Required Finance Alignment / Changes** – Changes in SAP ECC PM, FI, and CO to enable full lifecycle financial tracking of work order / operation pairs for all IWM targeted work. This includes a move away from the use of standing orders & Internal orders for field work, the use of planned costs captured on work orders, alignment of activity types and costing sheets with Work Centers for planning & actual costing, revised Order Types, and revised WO settlement rule derivation and FERC indicator derivation for IWM related work.
- 2. SAP Work Management System (WMS)** – Changes to SAP ECC PM, and CO to enable planning, tracking of a work order / operation for all IWM targeted field work. Scope includes; a move away from use of Standing orders & Internal orders for IWM field work, the use of one order representing one unit of work, use of operations in orders as tasks required to perform that work, planned hours and costs captured on work order, full use of Work Centers to identify crews and individuals, and the movement of all IWM field work into SAP.
- 3. Workforce Scheduling** –Implementation of scheduling & dispatch processes & Click Schedule technology for IWM T&D Gas, Electric and Collections field work. This includes: the scheduling, dispatch and optimization of work order/operation work to crews or individuals, resource loaded schedules with specific dates & times, the ability to match job requirements to available crew skills, and use of priorities to ensure most important work takes precedence.

4. **Workforce Mobility** – Implementation of SAP Work Manager electronic mobile capabilities for PSE field employees to receive, status, and report on work activities. Also includes the ability to perform timesheet functionality and asset data entry.

These core elements will be deployed to customer facing business units within Operations and Customer Care including, Electric Meter Operations (MO), Meter Network Services (MNS), Gas Operation (GOps), Electric Operations (EOps) and Customer and System Projects (C&SP). The IWM platform is also scalable to other non-customer facing groups within Operations that can use it to drive operational efficiencies and transform performance management practices.

The IWM program leverages foundational work from the Financial Transparency Improvement Program (FTIP). The FTIP program made changes to financial systems to remove the need to have FERC accounting tied to work order number. This enabled IWM to design work order accounting derivations that rely on simplified work types and assets to automate the correct accounting on each work order.

IWM Program Drivers:

Work Management is an important capability of any utility. It is how a utility integrates people, processes, systems and data throughout the identification, planning, scheduling, execution and closeout of field work in an organized and efficient manner. Strong utility work management practices lead to the on-time completion of asset maintenance, customer work, compliance and emergency work with understanding that the work is being performed for the right cost.

PSE's work management practices are currently spread across numerous systems, organizations and manually driven, paper-based processes. There are three key business drivers for implementing IWM at PSE; driving operational efficiency, driving improved customer experience and addressing existing obsolescence issues.

1. **Driving Operational Efficiency:** There are several areas where improvements can be made to improve operational efficiency resulting in a lower unit cost for work or more work completed for the same cost.
 - **Financial Tracking of Work:** Currently, O&M work is executed using SAP notifications and standing internal work orders. Notifications cannot collect information for material usage, labor planning or actual cost. Standing internal work orders serve as cost collection buckets for various work types. This means that there is no way to connect the actual job performed with its actual costs and specific duration. Because of this, cost and work efficiency information is difficult to derive and mainly done at a high level. This in turn limits management's ability track work at a more granular level which is necessary to drive continual improvements to operational performance. Additionally, field workers are expected to pick from long lists of work orders containing FERC information in order to charge time to the right activity. This creates confusion in the field and inaccurate costing information.

The IWM solution resolves these issues by changing SAP so that work is performed utilizing SAP PM work orders and operations, instead of

notifications as it's done today. SAP PM work orders contain planned material information, planned labor duration and can collect the individual costs of specific jobs. In collecting this information, business units can perform plan to actual analysis of work and derive unit costs for work completion, enabling informed resourcing and performance management decisions. Additionally, IWM changes how work orders are created and how the cost settlement is derived. Instead of field workers picking from long lists of work orders, the accounting is derived when the order is created. The field worker only has to execute the order on his or her device and costs will settle to the correct order.

- **Visibility to the work:** Currently, information about what work needs to be performed is housed in numerous systems including SAP, spreadsheets and databases. This leads to missed opportunities to perform work in similar geographical locations, return visits, and sub-optimization of field resources. In some cases field personnel are split between electronic and paper processes depending on the type of work that they are doing. Because not all of the work is planned in SAP, there is no consistent view of resource loading or work backlog across operational business units. The IWM solution will resolve this by putting all work into SAP and executing that work through work orders. By doing this, all work will have due dates, statuses, locations and resources requirements in the system allowing schedules to be optimized for efficiency.
 - **Manual and Paper Based Processes:** Meter Operations, Meter Network Services and groups in gas and electric operations perform work off of paper notifications and manual scheduling. This leads to up to two hours of lost productivity each day due to work prioritization, paper printing and manual scheduling. Additionally, back office personnel are required to process the paper and close out the work. IWM eliminates paper based work by dispatching work through automation to electronic devices in the field. Field personnel then interface with specific work orders pushing relevant status, asset, customer and inspection data back to SAP in real-time where that information is stored centrally in the system. This eliminates the need to process paper on the back end and perform manual data entry during work closeout. Additionally, because of the automation and integration of our systems through this project, work that is being performed in the field will now be transparent in real-time for employees and in many instances our customers to better understand the status of work that is scheduled and other valuable data points to help resolve issues more quickly.
 - **Improved Work Scheduling:** Work is currently scheduled using manual paper-based processes or manual scheduling with electronic dispatch of work. This is a labor and time-intensive process that may not result in optimized use of resources. IWM will install a schedule optimization system called Click which accounts for geography, work priority, work duration, employee skill sets and resource availability to produce an optimized schedule for employees. Work can be scheduled daily or through a "drip feed" process where employees get their next job when the previous one is finished. This allows the schedule to be optimized throughout the day as emergencies or other priorities arise.
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- 2. Driving Improved Customer Experience:** Improving customer experience with PSE field work is an important driver of IWM. Through customer facing Get to Zero (GTZ) initiatives, PSE will create the capability to proactively communicate information to our customers. Under today's paper based processes and disintegrated systems Customer Service Representatives (CSRs) in PSE's call center have no visibility into work occurring in the field. This means that when customers call with questions related to service orders, CSRs have little information to provide regarding the status of their work. Also, customer appointment work is typically provided with an AM or PM window, with field workers often having to coordinate times directly with customers. IWM will enable more granular, two hour appointment timeslots to be provided to customers based on real-time field resource availability. Also, through improved schedule optimization, customer appointments can be reallocated to other resources if emergency work enters the schedule.

Through the Customer Interface sub-program of Get to Zero, a customer communications platform will be developed to provide proactive updates to customers regarding the status of their jobs and in time will allow customers to schedule and track work online if they so choose. The IWM program will implement backend changes to SAP to ensure consistent use of status updates on work orders so that the information is available for customer notifications.

- 3. Improved Data Governance:** Data integration and management is a core principle for IWM. Currently many digital and paper based data collection processes result in disbursed data sets not tied to customer data or PSE assets. Existing work management and data collection tools, such as SAP, PCAD, BW, and GIS, are not in sync and create bad data that later will need to be reconciled or scrubbed. IWM will govern all data collected and funnel it to and through SAP. Whenever possible that data will be tied to a meter location or a PSE asset with work order history. This approach adds work visibility to multiple teams, including the call center, which provides additional information to the agent to share with PSE's customers. It also transitions data from disbursed locations to placement within PSE's approved system architecture and then makes that information available to a wider audience.
- 4. Addressing System Obsolescence Risk:** Currently, both the Gas First Response (GFR) and Electric First Response (EFR) organizations use a system call PragmaCAD or PCAD to perform electronic dispatch and execution of field work. This system handles over 110,000 jobs per year for GFR and 55,000 jobs per year for EFR. The PCAD system has reached end-of-life and must be replaced. IWM addresses this obsolescence issue by replacing PCAD with SAP Work Manager mobility and Click Schedule scheduling and dispatch tools. Additionally, IWM will be bringing more work types into the system to better optimize resources and providing a schedule optimization capability to take the place of manual scheduling.

IWM Program Schedule:

The IWM program was planned to leverage common design for the above foundational elements across business units. IWM is currently in year four of a six year program. The project work for IWM was delivered according to the schedule below:2016:

- ✓ Assessment, Scoping and Road mapping for IWM core solutions.

2017:

- ✓ Common design for IWM core solution that can be applied to future rollouts of IWM across business units.
- ✓ Delivery and demonstration of a prototype system that incorporated 18 use cases from across Operations.
- ✓ Delivery of the GIS/CAD project
- ✓ Delivery of the Proactive Outage Communications project.

2018:

- ✓ Delivery of IWM to Meter Operations (MO) group in Electric Operations including CCS, C&SP and CCC groups.
- ✓ Design and build of IWM the Meter Network Services (MNS) group in Customer Care.

2019:

- ✓ Delivery of IWM to the Meter Network Services group in Customer Care.
- ✓ Delivery of automated new meter install functionality for back office
- ✓ Delivery of automated time sheeting for Meter Operations and Meter Network Services
- Project initiation, planning, design and execution for gas customer facing work including Gas First Response (GFR), Gas Dispatch, Corrosion Control, AMR, Industrial Meters, and affected C&SP processes.

2020:

- Delivery of IWM for gas customer facing work including Gas First Response (GFR), Gas Dispatch, Corrosion Control, AMR, Industrial Meters and affected C&SP processes.
- Project initiation, planning, design and execution for electric customer facing work including Electric First Response (EFR), System Ops and ADMS integration.

2021:

- Delivery of IWM electric customer facing work including Electric First Response (EFR), System Ops and ADMS integration.

Problem Statement:

Implementation of IWM for Gas First Response (GFR), Gas Dispatch, Corrosion Control, AMR, and Industrial Meters

Gas First Response (GFR) is the primary customer facing organization in Gas Operations responding to over 70,000 customer driven requests per year and over 150,000 total jobs. The primary function of GFR is responding to gas emergencies in the field; however they also perform maintenance, compliance and service order jobs. To do this, GFR is supported by the Gas Dispatch, Corrosion Control, Industrial Meters and AMR teams.

There are several issues and opportunities that Gas Operations currently faces which the IWM program will address:

1. Driving Operational Efficiencies:

- **Lack of visibility into available work and a workforce which is split between paper and electronic processes:** Gas Operations workers currently use the PCAD system for approximately half of their work and paper processes for the other half. This results in a lack of visibility into the complete set of employee work and prevents Gas Operations from optimizing skill sets for work completion.

Maintenance Programs manages maintenance work across multiple groups including Gas First Response, Corrosion Control, and Industrial Meters. These are paper-driven process requiring back office employees at each base to print and collect paper notifications. That work is generally located in SAP as maintenance plans for objects. Some examples of the 30,000+ objects are Hard to Reach Meters (H2RL), valves, bridge, slide and dock inspections. Today these inspections are completed by printing the SAP notifications and delivering the work to the individuals who are free to perform the work at will. Once the work is completed it is returned to office staff to hand enter penciled notes in SAP from the paper work. . This model does not easily manage employee productivity and it doesn't optimize work based on due date, location or work priority resulting in backlog of over 70,000 jobs.

PSE established a new job model for Gas Operations that allows different employees, across skill sets, to complete a wider variety of gas work and IWM is needed to implement that model. The efficiency gain is that more employees will be optimized to complete a larger span of work which should result in more work completed per day/employee. In addition to completing more work, through the IWM implementation PSE will also have the ability to prioritize work throughout the day to ensure we are completing the highest priority work given various drivers in the organization.

- **Reliability and safety response improvements:** Gas First Response is an organization that is responsible for responding to emergencies. They are currently staffed at a level that is holding response times at an average of 32 minutes which is 3rd quartile performance benchmarked against PSE's AGA Peers. PSE's response time has increased by 2 minutes over the last three years and may continue to degrade with the increasing levels of traffic assuming existing staffing levels are maintained. Gas emergencies range from small residential odor calls to complex fires situations and on average PSE experiences roughly 60 of these types of jobs per day. The majority of the work is driven from gas odor calls, but it's a challenge to know if an odor call could escalate, so timely response is critical. Today not all GFR employees are connected on digital tools every day, because not all of their work is in the system, and therefore not visible for emergency response. IWM will bring total visibility to Gas First Response, resulting in more employees available to respond to emergencies, which will result in response time improvements. With 10% improvement and Corrosion Control Techs added to system, this could result in 22 additional employees visible for emergency response.
 - **Compliance improvement opportunities:** Gas Dispatch is responsible for managing the day to day work for the GFR personnel. Currently work is generated by multiple departments and funnels into the PCAD system. The dispatchers then assign ten jobs per day to GFR individuals that are prioritized based on a list of criteria. The challenge is GFR performs 100,000+ jobs per year in PCAD so even high priority work can get missed. The other issue is individuals are able to choose which work is completed in a given day and therefore may not choose the highest
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priority item in their queue. This can cause Gas Operations to miss a compliance deadline. An average of 56 inspection jobs were completed late for the periods of 2016-2018. Work missed results in either a self-report to PSE Compliance Department or called out on the PSE Compliance Snapshot dashboard. Depending on the significance of the late work, it may be reported to the WUTC and could have a credibility impact to PSE.

- **Data collection challenges:** Gas First Response fills out 28 electronic forms and 16 paper forms. Generally the data collected, within these forms, reside in multiple locations and data sets that are not visible or accessible to many. The governance around this data is not well managed and it can be unneeded or duplicative. It also allows for data collection errors to occur which result in significant O&M data cleanup efforts. Some of these databases are manually managed by PSE employees and can require a significant amount of time to keep them current. With IWM there is an expectation that this data will now be in SAP or transported through SAP to a central database location. This information will be visible and available to others and should reduce the employee time spent managing multiple data sets and processing paper records. Additionally, objects are not currently formatted in a way that is easily prioritized and dispatched within the IWM model. Valves for example do not have addresses in SAP, as they are not necessarily located on a parcel, or an H2RL may be located on a college campus. Most of these items are field located with a long verbal description in SAP that the Click software would not be able to Dispatch to.

2. **Driving Improved Customer Experience:**

- **Customer improvement opportunities including tariff risk for customer work:** Customer Appointments are managed with same day response during windows of an AM, PM or next AM approach. Gas Dispatch does not manage appointments that maybe preferred by the customer beyond these next day appointments and in unable to provide windows smaller than the AM/PM approach. If the customer wants an appointment at a later date that is managed at an individual field employee level. The impact is customers wait for long window appointments and/or have to work out a time for the appointment with a field employee. Customer satisfaction survey comments indicate that customers dislike the long appointment windows that PSE currently offers. With IWM there will be a significant improvement with moving towards two hour appointment windows and PSE will now be able to schedule appointments further out then our current day or next morning approach. With IWM there will no longer be the need to lean on field employees to manage appointments. The overall expectation here is the customer experience will improve as we implement the ability to work around our customers schedules, and not expect them to work around our current limited flexibility.

3. **Addressing System Obsolescence Risk:**

- **The current obsolescence and retirement of the existing dispatch and mobility tool:** The PragmaCAD or "PCAD" system is currently used by GFR to manually schedule, dispatch and execute work in the field. This system has reached the end of its life, is currently unsupported, and must be replaced. If PCAD fails, emergency response will be prioritized, with no material impact to response times. Compliance work will take a second priority, followed by customer service. The longer PCAD is
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down, missed compliance inspections are considered inevitable due to manual processes and misplaced paperwork. Customer satisfaction will be negatively impacted as service appointments are missed and equipment light-up activities after maintenance work are delayed. Customer service work (Rule 24) will be reduced anywhere between 50% and 100% depending on availability of resources. The cumulative impact is significant as PSE does not have enough Operations employees to manually manage the work and meet performance expectations.

- There are two plausible scenarios to consider when evaluating the impacts of PCAD having a system failure. For purposes of this discussion, the first scenario involves a failure that is recoverable in 30 days or less. The second scenario involves a failure that requires a complete replacement, along with all associated IT programs and infrastructure. A complete replacement is expected to take 9 to 12 months to complete.
 - In the first scenario, the direct labor costs are \$10,000 to \$12,000 per day, and GFR productivity is estimated to drop to 50% at a cost of \$40,000 per day in inefficiency.
 - In the second scenario, the direct cost while procuring a temporary administrative workforce is \$10,000 to \$12,000 per day for the first month. From month two until PCAD is operational, the direct labor cost is estimated at approximately \$30,000 per day. GFR productivity is estimated to decrease 50% for the first two months, rising to 75% of normal as the mitigation plan is stabilized. The on-going cost of inefficiency in GFR is approximately \$20,000 per day.

Future Vision:

The IWM project is designed to strengthen the ability for PSE to perform the right work, at the right time in an efficient manner through an automated, integrated mobile solution. IWM aims to provide visibility to all work through its lifecycle; Initiation, Planning, Scheduling, Execution and Close with the following capabilities delivered:

- Use of a single enterprise work management system with necessary integration to other systems
 - Ability to integrate planned and actual work with financial and supply chain functions
 - Ability to evaluate crew resource loading and availability into the weeks and months ahead
 - Scheduling solution(s) for assignment, dispatch, and tracking of field ready work packages for all work
 - Back-end interface to integrated, self-serve customer appointment and work notification system
 - Schedule discipline and compliance measures driving more work to be fully planned
 - Assets under construction or “Work in Progress” layer visible in operational GIS system – Delivered with GIS CAD project
 - Electronic mobile work packages
 - Modern and complete mobile solutions for field workers
 - Near real-time enterprise work management reporting
 - Work order accounting largely automated and invisible to field operations staff
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IWM is a foundational component in the success of Get to Zero. The enablement and rollout of a mobile solution, automated scheduling, assigning and routing of work, and work order visibility are some of the key underlying drivers of facilitating reduced call volume in PSE call centers.

**Proposed
Solution:**

IWM's proposed solution is comprised of four key components:

1. **SAP Work Mgmt. Systems (WMS)** – Will provide visibility through the cost and lifecycle of the work. It will enable planning, tracking of a work order / operation for all IWM targeted field work. Scope includes; a move away from use of Standing orders & Internal orders for IWM field work, the use of one order representing one unit of work, use of operations in orders as tasks required to perform that work, planned hours and costs captured on work order, full use of Work Centers to identify crews and individuals, and the movement of all IWM field work into SAP.

This solution addresses operational efficiency and work visibility issues by putting all work in SAP and implementing standard use of SAP work orders. By having all work in the system, work can be assigned with the right priority and work backlogs can be correlated with resource availability. System visibility to the work also reduces risk of missed compliance deadlines.

2. **Workforce Scheduling (Click)** – Will be a common build of scheduling, dispatch and process and technology for all gas & electric field work. This includes the schedule and dispatch of work order operations to crews or individuals utilizing resource loaded schedules. PSE will have specific dates & times and the ability to match job requirements to available crew skills. The benefit is schedule optimization will prioritize emergencies, customer appointments and compliance work. All individuals will now be visible and schedules will be centralized for optimization. There will also be an improved customer experience with the implementation of two hour window customer appointments.
 3. **Workforce Mobility-** Will provide field crews electronic mobile capabilities to receive status and report on work activities. Field crews will have electronic mobile capabilities to receive, status, and report on work activities. It will also include the ability to field validate and update asset attributes and provision of active crew locations. This enables field employees to document their work digitally within Work Manager and reduce the need for back office entry of the work resulting in FTE reductions. Another benefit is this sets the platform for customer communications about job progression.
 4. **Cost Management** – Build upon what was implemented as part of the Financial Transparency Improvement Project (FTIP). Changes in SAP ECC PM, FI, CO, PS, enabled full lifecycle financial tracking of a PM work order operation for all IWM targeted work. This moves PSE away from the use of standing orders for field work and the use of planned costs captured on work orders. Alignment of these activity types and costing sheets with Work Centers for planning & actual costing. It also revisits and revises the WO settlement
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rule derivation and FERC indicator derivation for IWM related work and moves away from FERC order types.

Implementing the IWM solution for the Gas Operations organization will extend these foundational systems developed in the 2018 implementations of Meter Operations and Meter Network Services into Gas Operations.

Please refer to the Project Description section further in this document for additional details pertaining to the Gas Operations release of IWM.

Alternatives
Evaluated:

N/A

Primary ISP
Alignment:

Processes & Tools

Type of
Project:

Cost Benefit

OCM
Considerations:

Impacted Users (Internal):

< 100 < 500 > 500

Impacted Customers (External):

None < 100K Electric or < 1K Gas > 100K Electric or >1K Gas

Internal Organizational Impact:

1 Dept or less 2-5 Dept > 5 Dept / Business Platform / Enterprise

Project
Complexity &
Duration:

Straightforward, well understood < 6 months

Complex and well understood < 12 months

Complex and not well articulated > 12 months

II. Phase Gate Change Summary

Description of changes, including reasons and justification since the last submission / Phase Gate.

October 2019 Update – Design to Execution

Scope: No changes to scope

Budget: **Project Capital:** The total capital budget for the project will be reduced by \$900,000 to \$25,236,509 from \$26,136,509 due to releasing \$900,000 of unused contingency. The revised projected capital spend is:

| | 2019 | 2020 | Total |
|------------------|--------------|-------------|--------------|
| July 2019 Update | \$16,529,809 | \$9,606,700 | \$26,136,509 |
| Oct 2019 Update | \$15,629,809 | \$9,606,700 | \$25,236,509 |
| Change | \$(900,000) | \$0 | \$(900,000) |

Project O&M: the project O&M budget was reduced by \$496,516 to \$215,698 from \$712,214. \$700,000 of project O&M was reserved for manual data cleansing activities. The majority of data cleansing will be automated and thus that much O&M funding was not needed.

Ongoing O&M: Ongoing O&M was added to cover Agency, Click, and SAP support totaling over 5 years \$1,293,250. This will fund one additional FTE and a scalable managed service with average of 3 resources.

The need for this additional support is driven by three key factors:

- Better information on what it takes to support previous releases (for Meter Operations and Meter Network Services) and future releases (Gas Operations and Electric Operations). No additional resources will be needed to support the anticipated release of IWM to Electric Operations.
- The number of users will more than double resulting in additional support and enhancement requests.
- The code base and complexity is significantly expanding over previous releases requiring additional and more technical support.

Schedule: No Change.

Risk Profile: Completion of design documents decreased the overall project risk resulting in lowering the contingency amount by \$900,000 (shown in Budget above).

July 2019 Update – Planning to Design

Scope: SAP Work Manager application upgrade from version 6.4.1 to version 6.5 was included in scope. Support for Work Manager 6.4.1 from SAP will end in September, 2020. Support for version 6.5 will be provided through 2022. In order to reduce the costs and efforts associated with merging code developed as part of this project onto the new application and regression testing the changes, the scope document was updated to include the upgrade as part of this project.

This scope change is not expected to impact the budget or schedule, although it does add some risk of a delay later in the project.

Budget: The total capital budget for the project will be reduced by \$1,432,773 to \$26,136,509 from \$27,569,282. The revised projected capital spend is:

| | 2019 | 2020 | Total |
|------------------|---------------|-------------|---------------|
| March 2019 CSA | \$20,636,680 | \$6,932,602 | \$27,569,282 |
| July 2019 Update | \$16,529,809 | \$9,606,700 | \$26,136,509 |
| Change | \$(4,106,871) | \$2,674,098 | \$(1,432,773) |

There are factors driving the change and reduction in budget:

1. Project dates shifted between 2019 and 2020. The project had a slower ramp up in 2019 and will be extended in 2020. This reduced the forecasted spend in 2019 and increased the forecasted spend in 2020.
2. User devices were partially paid for by another project. A portion of the devices needed for this project were paid for as part of a separate planned Windows 10 upgrade program. This reduced the forecasted spend in 2019.
3. A smaller team will be used. In order to run as efficiently as possible, the overall planned team size was reduced. Additionally, where possible, project team roles were filled by PSE employees instead of contractors. This reduced the forecasted spend in 2019 and reduced the amount of increase in 2020.

Schedule: The project initiation had a delayed start and ramp up due to project team members working on the previous release for Integrated Work Management for Meter Network Services. With the delayed start, the expected in-service was shifted from February 28, 2020 to March 30, 2020.

Risk Profile: Completion of Scope Statement, requirements documentation, and validation of RICEFW objects reduces the overall project risk.

III. Key Schedule and Financial Information

| | |
|---------------------------|--|
| Proposed Budget Year(s): | 2019-2020 |
| Expected In-Service Date: | 3/30/2020 |
| Initial Estimate: | Capital: \$27,569,805 O&M: \$713,124* |

Cost Estimate Maturity Score:

Score: **Class 3 - Baseline Budget Ready**

Cost Estimation Classification Document: [Project Cost Estimate Classifications - IWM GFR Planning](#)

Updated Estimate for Total Project Cost:

| Phase Name: | Execution | Contingency % | 10% | |
|---|----------------------|----------------------|-------------------|----------------------|
| Cost Type | Capital | Project O&M | OMRC (T & D Only) | Total |
| Cost (without contingency) | \$ 23,632,951 | \$ 196,000 | \$ - | \$ 23,828,951 |
| Contingency (auto-calculated) | \$ 1,603,558 | \$ 19,698 | \$ - | \$ 1,623,256 |
| Total (auto-calculated) | \$ 25,236,509 | \$ 215,698 | \$ - | \$ 25,452,207 |
| TOTAL ANNUAL CASH BENEFITS | \$ 900,000 | IF APPLICABLE | | |
| PAYBACK IN YEARS (auto-calculated) | 28.0 | IF APPLICABLE | | |

Please note that contingency % was set at less than 25%

*O&M is forecasted for overall GTZ program

Estimated Five Year Allocation:

| Category: | Year 1 (2019) | Year 2 (2020) | Year 3 (2021) | Year 4 (2021) | Year 5 (2022) | 5 YEAR TOTAL |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|----------------|
| Capital (incl. contingency) | \$ 15,629,809 | \$ 9,606,700 | \$ - | \$ - | \$ - | \$ 25,236,509 |
| Project O&M | \$ 162,874 | \$ 52,824 | \$ - | \$ - | \$ - | \$ 215,698 |
| OMRC (T&D only) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| Ongoing O&M | \$ - | \$ 286,061 | \$ 315,775 | \$ 343,167 | \$ 348,248 | \$ 1,293,250 |
| Cash O&M Benefits | \$ - | \$ (450,000) | \$ (900,000) | \$ (900,000) | \$ (900,000) | \$ (3,150,000) |

Cash Benefits by Department:

| Department Name | Year 1 (2019) | Year 2 (2020) | Year 3 (2021) | Year 4 (2022) | Year 5 (2023) | 5 YEAR TOTAL |
|--------------------------------|---------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| Gas Operations - Harry Shapiro | \$ - | \$ 450,000 | \$ 900,000 | \$ 900,000 | \$ 900,000 | \$ 3,150,000 |
| TOTAL CASH BENEFITS | \$ - | \$ 450,000 | \$ 900,000 | \$ 900,000 | \$ 900,000 | \$ 3,150,000 |

Ongoing Annual O&M by Department: (e.g., maintenance, FTEs, cloud storage, etc.)

| Category | Year 1 (2019) | Year 2 (2020) | Year 3 (2021) | Year 4 (2022) | Year 5 (2023) | 5 YEAR TOTAL |
|---------------------------------------|---------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| IT Click/Agentry Managed Service | \$ - | \$ 186,282.00 | \$ 186,282.00 | \$ 173,799.00 | \$ 173,799.00 | \$ 720,162 |
| IT SAP (1 FTE partially on capital) | \$ - | \$ 59,392.00 | \$ 77,078.94 | \$ 100,814.36 | \$ 103,838.79 | \$ 341,124 |
| FTE Overhead (at 68%) | \$ - | \$ 40,386.56 | \$ 52,413.68 | \$ 68,553.76 | \$ 70,610.38 | \$ 231,964 |
| TOTAL O&M LABOR - INTERNAL | \$ - | \$ 286,061 | \$ 315,775 | \$ 343,167 | \$ 348,248 | \$ 1,293,250 |

*Other ongoing O&M costs for software and support (approx. \$736K/yr.) were accounted for in IWM Releases 1 and 2 to Meter Network Services and Meter Operations.

**Non-Cash
Benefits /
Future
Cost
Avoidance:**

| Benefit description | Baseline | Value | Assumptions |
|---|---|-----------------------|---|
| Improvement of work efficiency <i>Reduced number of visits to same location, being able to complete more work. Cost per job decreases.</i> | Assumes 10% more efficient resulting in .7 hours of additional work per person for 121 servicemen-\$68.36 loaded per hour wage Yearly Operating cost = $(0.8 * 121 * 228 * 70.88)$ working days per year | \$1,497,686 | Based on previous release of IWM seeing 9.5% more work completed per day per person ****Additional work described in the following table |
| Improvement of work efficiency and accuracy: <i>Faster data entry</i> | Estimated 15-20 minutes (1/3 of hour) of field worker reporting/admin associated with each job. | \$113,933 | Assumes 15-20 minutes (1/3 of hour) of field worker reporting/admin associated with each job. Estimated 20,000 average GFR job completions per year \$68.36 - fully loaded rate (Customer Field Service Tech) Assumes 25% reduction in time spent on data entry. (Targets from Steve, Tania) |
| Improvement of work efficiency and accuracy: <i>Timecards will be automated, so reduction in time for timecard entry</i> | 15-20 minutes per day | \$639,460 | Time spent entering timecard information * \$\$ labor cost Field: each person spend 15-20 minutes per day (1/4 to 1/3 hour). 121 people. \$68.36 labor. 228 days per year (PTO, holidays, weekends) Oss back office: 8.5 ftes*1.5 hours per day*5 days a week *50 weeks a year *\$52.70 labor (OSS) Assumes 15 min reduction |
| Improvement of work efficiency and accuracy | GFR often arrives onsite to perform a customer task and have to CGI the location with results in a follow-up trip and the field employee managing the customer appointment/return visit | \$245,002 | Assume each visit takes 1 hour with drive time. Labor is \$70.88 loaded cost. $(14,336 * 25% * \$68.36)$. |
| Customer Experience improvements | Current appointment windows are limited and only offer AM and PM options. | Customer Satisfaction | IWM will allow scheduling and tracking of two-hour appointment windows based on real-time resource availability and KPIs to track appointment adherence. |
| Future cost avoidance: <i>Avoided cost of replacing outdated Toughbooks</i> | 100 currently in use today, \$2,000 in cost difference to replace each Toughbook with a tablet. | \$200,000 | Outdated laptops will be replaced with new mobile tools, avoiding the cost of replacing existing tools. |

******Description of additional work described in Improvement of Work Efficiency Benefit.**

Implementing IWM for Gas Operations should create additional capacity for work through better visibility and routing of work, and more efficient reporting processes. The additional labor availability is estimated at 7,000 jobs per year, and will be used for the following work streams:

| Work Stream | Job | Benefit |
|-------------------|--|---|
| System Integrity | Buried meters | Faster remediation of the buried meter backlog. |
| System Integrity | Map corrections | <ul style="list-style-type: none"> - Reduces compliance risk of missed leak surveys due to inaccurate maps - Supports damage prevention efforts - Increased confidence in map accuracy during emergency response - Reduces future occurrences of “Skip” leak surveys through permanent resolution |
| Valve Maintenance | Inspect IP valves | <ul style="list-style-type: none"> - Increase reliability of valves during emergency response by verifying operability and open / close position - More reliable system modeling |
| System Integrity | Encroachments | Investigate and remediate potential safety issues faster and resolve backlog of reported conditions |
| Meter Maintenance | Above ground C leak remediation | Reduce emergency calls by proactively repairing meter odors |
| Customer Service | Appliance repair | Increased customer satisfaction due to availability of resources to accommodate customer requested repairs |
| Customer Billing | Replace modules / meter investigations | <ul style="list-style-type: none"> - More efficient implementation of the module conversion program - Respond faster to billing issues and resolution of EMMA cases |

The additional work would be prioritized in accordance with business rules established for all work streams in Gas Operations. The dollar benefit of the additional work is approximately \$875,000 per year. The non-dollar benefits include reduced system risk, enhanced compliance reporting and accuracy, and increased customer satisfaction.

**Non-Cash Benefits /
Risk Reduction:**

| | | | |
|---|---|------------------------|--|
| Obsolescence Risk Reduction | Project Costs associated with PCAD replacement | Range of \$8M to \$11M | System Integrator is estimated from \$4.5-7.5M |
| Corporate Risk: <i>Employee safety enhancement due to improved safety note functionality</i> | Current safety notes are in SAP and not regularly updated or kept current. Not easily editable by the field | \$90,000 | Employee Safety Risk Calculation: Magnitude of occurrence * Probability of employee injury (\$3M*.3%). Rated magnitude at Moderate and the probability at 3% or less |

| | | | |
|--|---|------------------|---|
| <p>Corporate Risk:</p> <p><i>Maintain existing emergency response times</i></p> | <p>Response time for emergencies is increasing due to traffic congestion. Also not all GFR employees are visibly available for emergencies at all times on PCAD</p> | <p>\$300,000</p> | <p>Public Safety Risk Calculation: Magnitude of occurrence * Probability of incident (\$10M*3%). Rated magnitude at Major and the probability at 3% or less</p> |
| <p>Corporate Risk:</p> <p><i>Meet Compliance Work Due Dates</i></p> | <p>A portion of compliance work is not completed by its due date.</p> | <p>\$300,000</p> | <p>Compliance Risk Calculation: Magnitude of occurrence * Probability of incident (\$10M*3%). Rated magnitude at Major and the probability at 3% or less</p> |

Project
Description and
Objectives

The IWM release for the Gas Operations (GOps) business at PSE is a part of the overall roadmap to deliver IWM in a rolling fashion, and will be the 3rd IWM deployment (following Meter Operations and Meter Network Services, respectively.) With IWM having launched to Meter Operations, much of the foundation of IWM has been built. For every subsequent rollout, additional functionality and specific business requirements will be met for the particular needs of the target business group.

Please see the table below for the portfolio of work streams that comprise an IWM-Gas Operations rollout:

| Cap or O&M | Name | Description |
|-----------------------|--|---|
| Cap | Gas Operations Plan/Process | All of the relevant labor and hardware/software costs that will go into the planning and designing of the IWM-Gas Operations launch. The work includes requirements gathering, documenting functional designs and building of to-be processes related to launching IWM to Gas Operations. |
| Cap/O&M | GFR PCAD Conversion | Execution to take all existing work in PCAD and convert to Click/Work Manager. The work includes the development, building, testing, cutover and OCM and training related to launching IWM to Gas Operations. |
| Cap | Gas Operations Mobile Tools | Strategy, planning and execution to rollout mobile devices and associated accessories such as vehicle mounts, fuse blocks, etc. to Gas workers. |
| Cap | CC/UW Mobile Tools | Rollout of mobile devices to Corrosion Control and Utility Workers (~20 FTEs) |
| Cap | GFR Maintenance Programs Work | Planning, designing and executing the conversion of all GFR work that is <u>not</u> in PCAD to Click and Work Manager |
| Cap | XY SAP Objects | Objects with maintenance cannot be navigated to because they do not have an address. Collection of XY coordinates for 2500 valve locations and a small volume of other locations. Allows Click to send individuals to the correct location for PSE assets that do not have an address. |
| Cap/O&M | Add SAP Meter Locations to H2RL (Hard to reach Location) | Attach SAP meter locations to H2RLs in order to real-time manage meter changes and minimize individual address management. Utilizes the work done associated with the GIS meter location sync. Cleansing of Device Locations. |
| Cap | Corrosion Control & Utility Worker Maintenance tasks | Add forms to work manager for the tasks associated with test site inspections and the changing of paper charts |
| Cap | SAP Mobility Platform (SMP) Upgrade | Upgrade the SAP Mobility Platform to its latest version |
| Cap | Collect data currently on paper forms within a database | Current paper form data collected by Gas Operations is digitized and placed in an integrated database outside of SAP |

| | | |
|-----|--|---|
| Cap | Add AMR module replacement tasks to Work Manager | Convert the meter module replacement form to Work Manager |
|-----|--|---|

ISP Alignment:

| ISP Objectives, Mandatory and/or Corporate Risk | Strategy <i>Abbreviated ISP strategy descriptions</i> | Benefit Description <i>Benefit, measurement and/or scorecard affected</i> |
|--|--|---|
| Financial | <input type="checkbox"/> Five-Year Strategic Plan <input checked="" type="checkbox"/> Maximize long-term value <input type="checkbox"/> Grow core business <input type="checkbox"/> Grow new business | <ul style="list-style-type: none"> • Reduced miles driven, fuel, maintenance, wear and tear costs. • Greater ability to complete routine work within normal hours due to optimized planning and routing. • Reduced overtime for field workers. |
| Customer | <input checked="" type="checkbox"/> Execute the Customer Experience Intent Statement <input type="checkbox"/> Recognition of PSE role in community <input type="checkbox"/> Customer preparedness & safety <input type="checkbox"/> Ideal customer behaviors <input type="checkbox"/> Listen & dialogue with customers | <ul style="list-style-type: none"> • Build to allow for customer appointments to be managed within the system and held to two hour windows. |
| Process and Tools | <input checked="" type="checkbox"/> Streamline processes to drive effectiveness and efficiency <input checked="" type="checkbox"/> System reliability and integrity <input checked="" type="checkbox"/> Safety and security of systems, information and assets <input checked="" type="checkbox"/> Extract and leverage value from existing technology and assets <input type="checkbox"/> Optimize product/service portfolio consistent with long-term strategy | <ul style="list-style-type: none"> • Larger volume of jobs per day completed per field worker, along with reduced number of visits to same location, which reduces the cost per job, • Reduced volume of administrative tasks completed in office • Reduced down time from IT issues • Increased automation, more efficient systems, less processing demands for PCAD replacement. • Improved tracking and performance associated to compliance work. • Improved emergency response time as more employees are available and visible • Replaces outdated field Toughbooks, which are up for replacement with more capable equipment • Timecard automation allowing employees to no longer decipher between O&M and Capital work |
| People | <input type="checkbox"/> Develop/Retain best employees <input checked="" type="checkbox"/> Ownership, innovation and continuous improvement | <ul style="list-style-type: none"> • Changing maintenance work into a digitized option from a current paper process. (Maintenance program work) |
| Safety | <input type="checkbox"/> Educate and train employees on effective safety and wellness strategies | <ul style="list-style-type: none"> • . |

Project Objectives and Deliverables:

| Objective | Outcomes / Deliverables | KPIs – Describe; Indicated Leading/Lagging | KPI Data Sources |
|---|--|--|--|
| Implement IWM with the identified scope | Go-Live by Q1 2020 to Gas Operations. | <ul style="list-style-type: none"> • Project budget • Project schedule • Project scope | <ul style="list-style-type: none"> • BPC/SAP • Project plan • Agreed upon SOW with systems integrator |
| Replace/provide mobile tools to GFR, Corrosion Control, Industrial Meters, and AMR Implement new job model | Replace dated mobile tools for GFR Enable CC to respond to emergencies helping to reduce response times Allow GFR and CC perform test site inspections digitally. Allow GFR and AMR to replace modules digitally. Allow GFR and Utility Workers to replace charts digitally. | <ul style="list-style-type: none"> • Jobs completed per day • Emergency response times | BPC/SAP |
| Digitize maintenance work performed by GFR | Reduce response times as more individuals will be logged into system and available. Centralize all work to one system which allows for improved work management resulting in increased productivity. Increase the number of jobs completed per day. | <ul style="list-style-type: none"> • Jobs per day • Employee connectivity | BPC/SAP |
| GFR PCAD work converted to Work Manager | Allow for the retirement of the existing work management system that is more than 10 years old and has stability/platform issues. | <ul style="list-style-type: none"> • Data quality measurement | BPC/SAP |
| Timesheet Enhancements | Implement specific Gas Operations pay criteria within the tool | <ul style="list-style-type: none"> • Employee satisfaction | HR Surveys |
| Mobility Platform Upgrade | Address key defects with the Mobility Platform as identified during the SAP Max Attention professional service. | <ul style="list-style-type: none"> • Reduction in defects with the Mobility Platform. | Max Attention report. |
| Transition from customer windows to enabling 2 hour appointments | Improve customer experience and satisfaction | <ul style="list-style-type: none"> • JD Power Customer Satisfaction • Customer appointments met | BPC/SAP JD Power Surveys |
| Automate dispatched work to Gas Operations | Prioritize work based on objectives that improve the customer experience, efficiency and compliance | <ul style="list-style-type: none"> • Jobs per day • Late compliance work • JD Power Customer Satisfaction | BPC/SAP JD Power Surveys |
| Digitize paper forms & collect data in central location | Organize data outputs of the program and makes accessible to others. | <ul style="list-style-type: none"> • Employee satisfaction | HR Surveys (Great Places to Work) |
| Sync meter locations in SAP and GIS | Address issue of SAP and GE Smallworld (GIS) does not having meters in Sync which causes issues with data conflicts | <ul style="list-style-type: none"> • Exception reporting | GIS/SAP |

| Objective | Outcomes / Deliverables | KPIs – Describe; Indicated Leading/Lagging | KPI Data Sources |
|---|--|---|---|
| Drip feed work | Reduce drive time and increases the amount of priority work completed | <ul style="list-style-type: none"> Jobs per day Time enroute Customer appointments met | BPC/SAP |
| Develop and implement a training plan to ensure users are trained | Develop training material of future state solution and train PSE staff (end users, technical team, support, hardware techs) | <ul style="list-style-type: none"> Training satisfaction Completeness of training | Surveys |
| Change Management | <ul style="list-style-type: none"> Perform OCM risk/issue assessment Develop stakeholder engagement and communication plans Perform impact assessments Build training schedule, materials and plans and classroom execution Develop Knowledge Transfer materials | <ul style="list-style-type: none"> Level of stakeholder engagement | <ul style="list-style-type: none"> Stakeholder interviews Surveys Communication plan |

Project Alternatives Assessment: *Add/remove rows, as needed.*

| Alternative | Pros | Cons | Cost | Duration |
|------------------------------------|--|--|-------------|------------|
| Upgrade PCAD to its latest version | <ul style="list-style-type: none"> Minimizes the scope of the project | <ul style="list-style-type: none"> Doesn't centralize all the work and therefore benefits are not realized Employees under Operations would be working in separate systems | \$8M-\$11 M | >16 months |
| Keep Status Quo -- Do Nothing | <ul style="list-style-type: none"> Does not interrupt current as-is state as it relates to technology, people and process | <ul style="list-style-type: none"> The PCAD system is currently unsupported 50% of gas work is still paper-based, which means lack of visibility into the complete set of employee work and prevents Gas Operations from optimizing skill work completion. Not keeping pace with the customer experience that we want to deliver with Get to Zero | >\$3 M | As-Is |

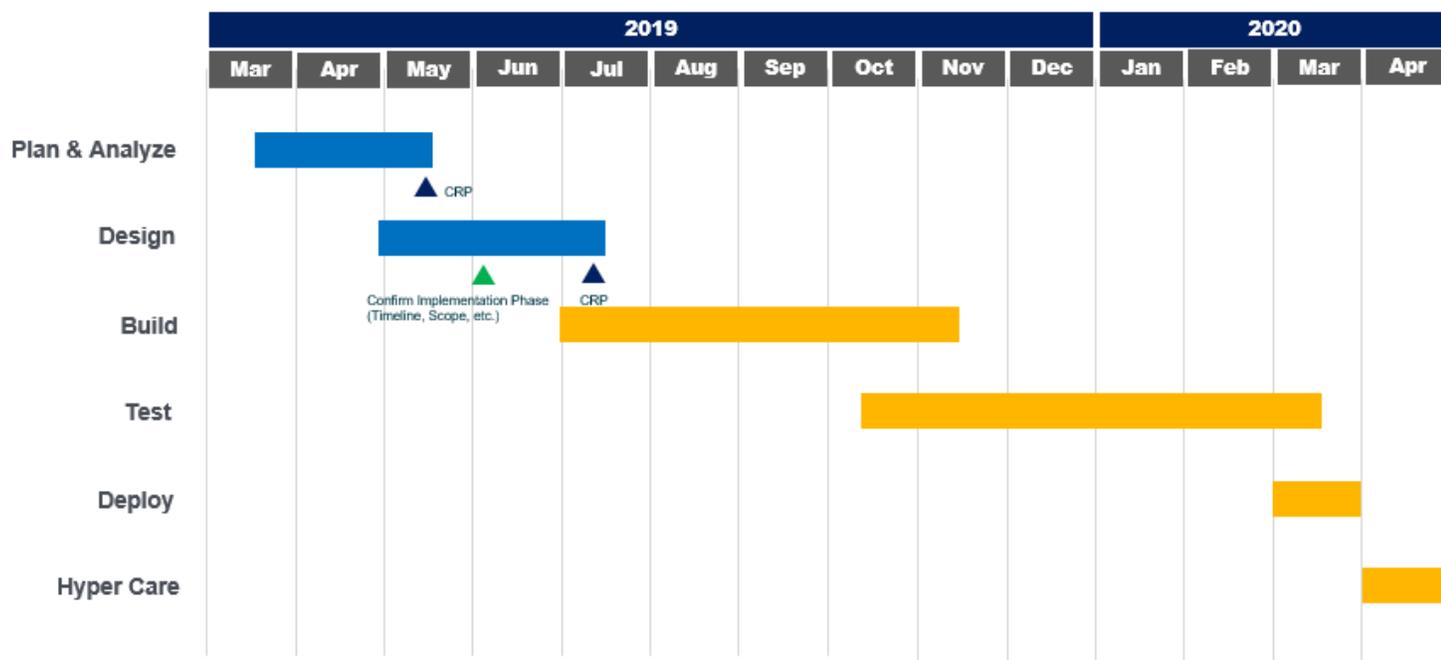
IV. Risk Management

| Risk | Likelihood | Impact of Occurrence | How Monitored | Mitigation |
|---|-------------------|-----------------------------|--|--|
| Gas Operations business units does not fully buy-in to IWM | Medium | High | Gauge the engagement (activity, feedback, participation) of Gas Operations employees | <ul style="list-style-type: none"> • Develop OCM & Training plan • Deliver IWM on-time • Deliver the requirements and features that are promised |
| Project falls behind in regards to either scope, schedule or cost | Medium | High | <ul style="list-style-type: none"> • Compare progress to project plan • Review financial forecasts | <ul style="list-style-type: none"> • Report weekly statuses • Manage resource hours and costs • Have tradeoff conversations to see where any compromises can be made. |
| Benefits not achieved | Medium | Medium | Measured weekly with Business by IWM KPIs | Develop dashboard of KPIs |

Risk Register: [IWM Risk Log](#)

V. High Level Schedule

High Level Program Timeline



VI. Supporting Documentation

Cost Estimating and Budget: [CSA Estimation Workbook - IWM GFR](#)

Benefits Realization Plan: [Benefits Realization Plan - IWM GFR](#)

OCM Sizing Worksheet: [OCM Sizing Worksheet - IWM GFR](#)

IT Project Tiering: [IT Project Tiering Template - IWM GFR](#)

VII. Original CSA Approvals: *Add/remove rows as applicable.*

| I. Prepared By | Title | Role | Date | Signature |
|-----------------------|------------------------|-------------|-------------|------------------|
| Brady Kinsella | IWM BDM | Contributor | | |
| Andrew Drapp | IWM Program Manager | Contributor | | |
| Kiran Lekkala | IWM Project Manager | Contributor | | |
| Loic Roger | IT BTS BA | Contributor | | |
| Dave Trimble | IWM Solution Architect | Contributor | | |
| Kelley Downs | IWM OCM Lead | Contributor | | |
| Kishan Mistry | IWM Benefits Lead | Contributor | | |

Initiation to Planning:

| Approved By | Title | Role | Date | Signature |
|--------------------|--------------------------------|------------------|-------------|---|
| John Mannetti | IWM Sponsor | Director Sponsor | 5/2/2019 | CSA - Initiation CSA Approved |
| Josh Jacobs | GTZ Sponsor | Director Sponsor | 5/2/2019 | CSA - Initiation CSA Approved |
| GtZ Steering Co. | Initial Approval of Project | | 5/2/2019 | CSA - Initiation CSA Approved |
| Margaret Hopkins | VP & Chief Information Officer | Officer | 5/7/2019 | CSA - Initiation CSA Approved |
| Booga Gilbertson | Sr VP Operations | Officer | 5/7/2019 | CSA - Initiation CSA Approved |

Planning to Design:

| Approved By | Title | Role | Date | Signature |
|--------------------|--------------------------------|------------------|-------------|---|
| John Mannetti | IWM Sponsor | Director Sponsor | | CSA – Planning to Design Approved |
| Josh Jacobs | GTZ Sponsor | Director Sponsor | | CSA – Planning to Design Approved |
| GtZ Steering Co. | Initial Approval of Project | | | CSA – Planning to Design Approved |
| Margaret Hopkins | VP & Chief Information Officer | Officer | | CSA – Planning to Design Approved |
| Booga Gilbertson | Sr VP Operations | Officer | | CSA – Planning to Design Approved |

Design to Execution:

| Approved By | Title | Role | Date | Signature |
|------------------|--------------------------------|------------------|------|-----------|
| John Mannetti | IWM Sponsor | Director Sponsor | | |
| Josh Jacobs | GTZ Sponsor | Director Sponsor | | |
| GtZ Steering Co. | Initial Approval of Project | | | |
| Margaret Hopkins | VP & Chief Information Officer | Officer | | |
| Booga Gilbertson | Sr VP Operations | Officer | | |

| Acknowledgements | Title | Role | Date | Signature |
|------------------|--------------------|----------------|-----------|----------------------------------|
| Harry Shapiro | Dir Gas Operations | Benefit Owner* | 10/1/2019 | Benefit Approval |
| | | IT | | |

*Benefit Owners must be added to the Approved By section during Execution Phase/Gate.