separate registers, termed channels, to distinguish between produced and consumed energy. These values may be recorded on any meter channel, but must be submitted on the following meter channels:

- Channel 1 for consumed or exported active power
- Channel 4 for generated or imported active power

Therefore, MV-90 will need to transpose the received channels to match CAISO's required designations if they differ.

CAISO does not accept non-zero meter values on channel 4 for the load meter submission, therefore all channel 4 values for the ELAP meter should always be submitted as zero values.

CAISO does not accept non-zero meter values on channel 1 for generation meters, even if station service consumption exceeds generation production for a given interval. Therefore, channel 1 for all generation meters should always be submitted as zero values.

For intervals where station service exceeds generation, the station service load of internal generation is already metered by interchange imports and other internal generation, and thus does not need to be submitted from the generation meter read. By contrast, the station service for pseudo-tie generation should be submitted on channel 1 for the corresponding interchange metering, to include the station service as EPE BAA load. As depicted in Figure, station service for a pseudo-tie generator is measured as an import by the interchange meter at the generation site, while an internal generator only has the generation meter on therefore does not need to submit load values for its station service when it exceeds generation.

14.4.2 Key Metering Considerations

14.4.2.1 Expected Point of Measurement and Compensation Factors

CAISO expects Base Schedules, Dispatch Operating Targets (DOTs) and meter data to all correspond to the high side, transmission voltage level of a Resource ID. Furthermore, any station service load fed from a similar electrical location, such as a generator bus or high side of the same substation, may be netted from the data (as if the metering point was physically on the high side of the GSU). To the extent the point of scheduling, dispatch, generator control and metering differ from this expected point of measurement, calculations should be performed to account for these differences to prevent dispatch and settlement error.

For example, if the CTs and PTs for a generator meter are measuring output at the low voltage side of the GSU, the meter values should be adjusted to compensate for the calculated losses through the GSU, which are typically determined from GSU manufacturer data or GSU test data. Transformer losses are typically calculated as the sum of no-load losses and load-losses, expressed as:

$NLL + I^2R$

No-Load Losses + Current-squared * Resistance

No-load losses are set at a constant value of watts and load-losses as a function of resistance, a constant ohm value, multiplied by current squared. This resulting equation would be programmed in the associated meter as the compensation factor.

EPE may have generation sites meter Station Service (SS) load at the low-side of the SS transformer, with the high-side of the SS transformer connected to a generator bus. If these existing meter installations are utilized for SQMD submission, compensation factors should be applied to the metered values accounting for both the SS transformer and GSU losses. An accurate calculation would program the SS meter to add the SS transformer losses compensation, increasing the effective SS load, and subtract the SS load from GSU load-losses for the associated generator meters, since SS load nets generator production flowing through the GSU, reducing GSU load-losses. This calculation of compensation factors with interaction between multiple meters may be practicably difficult, instead requiring approximations to account for the contribution of multiple generators and SS load to GSU load-losses. The following equations are example calculations to accurately compensate for SS transformer and GSU losses utilizing a low-side SS meter and two low-side generator meters.

For unit-level Resource IDs, allocating transformer losses and SS load half-and-half to each resource[6]:

$$SS\_meter\_data\ (SS\ transformer\ compensated) = SS\_load + NLL_{SS\_transformer} + I_{SS}^2R$$

$$GSU\ current\ (I_{GSU}) = G1\_current + G2\_current - SS\_transformer\_compensated\_SS\_current$$

$$GSU\_losses = NLL_{GSU} + I_{GSU}^2R$$

$$G1\ compensated\ meter\ data = G1\_meter - GSU\_losses/2 - SS\_meter\_data/2$$

$$G2\ compensated\ meter\ data = G2\_meter - GSU\_losses/2 - SS\_meter\_data/2$$

For an aggregate Resource ID:

$$SS\_meter\_data\ (SS\ transformer\ compensated) = SS\_meter + NLL_{SS\_transformer} + I_{SS}^2R$$

$$GSU\ current\ (I_{GSU}) = G1\_current + G2\_current - SS\_transformer\_compensated\_SS\_current$$

$$GSU\_losses = NLL_{GSU} + I_{GSU}^2R$$

$$Aggregate\ Resource\ ID\ meter\ data = G1\_meter + G2\_meter - GSU\_losses - SS\_meter\_data$$

Alternatively, CTs and PTs could be installed at the high voltage side of the GSU to avoid the need for loss compensation factors. Furthermore, if station service load for the generator is fed from a separate station service transformer located at the same substation, and therefore electrically similar to the resource, the station service should be metered and netted from the generator meter value, as

[6] The allocation logic for GSU losses and SS load to unit-level Resource IDs should be more sophisticated than half-and-half to address operation with one generation online and the other offline, as a half-and-half allocation would result in half of the GSU losses and SS being unaccounted for due to allocation to an offline generator

described in section 14.4.1.9. By contrast, if the metering location reads generation net of station service, such as high side metering, then station service does not need to be metered separately.

Any compensation factors applied to EIM meter data should be documented, including the calculating device or software, source document for compensation factor, and rationale for applying the compensation. This documentation will be included in the SQMD Plan and self-audited EIM meter program. The CAISO Metering BPM Attachment B Section C describes the loss compensation methodologies.

14.4.2.2 Metering Granularity Impact

CAISO allows for NPR metering to be recorded at a 5, 15, or 60-minute granularity. However, the ELAP meter must be submitted at the least granular level of the underlying meters that sum to the load value. The majority of CAISO charge codes settle at a 5-minute granularity, so any load or NPR meters submitted at 15-minute or 60-minute granularity is distributed evenly to the corresponding 5-minute intervals for settlements, resulting in accumulation of extra revenues or deficits in CAISO neutrality accounts due to price differences between 5-minute intervals that do not tie out to corresponding changes in submitted meter values. These neutrality accounts are largely settled with the EIM Entity and therefore do not result in a material financial risk. However, load meter submission that is less granular than 5-minutes greatly complicates shadow settlement and issue spotting, as the lack of data granularity masks underlying causes of settlement or metering errors that are crucial to resolve in a timely fashion. Finally, it is relatively inexpensive to re-program or change out a meter to enable 5-minute granularity meter data. Therefore, EPE should consider submitting 5-minute granular meter data for all NPRs so it may submit 5-minute granular ELAP meter data.

14.4.2.3 Insufficient Accuracy and Correction Factors

If any meters, CTs, or PTs used for EIM metering lack a sufficient accuracy rating to meet CAISO metering requirements, the equipment will either need to be replaced with compliant equipment or a correction factor applied. A correction factor for insufficiently accurate metering equipment is effectively a penalty on metered production to account for the gap in accuracy between the installed equipment and CAISO requirements.

The CAISO Metering BPM Attachment B Sections D3-D6 describe the calculation of correction factors to adjust for deficiencies in CT and PT accuracy. Whatever the deficiency in accuracy, an accuracy rating must be determined in order to apply the appropriate correction factor and utilize the deficient equipment for EIM metering. If the accuracy or burden rating of equipment is unknown, correction factor field tests should be performed to establish the accuracy at the connected burden. Any total meter equipment error equal to or less than 0.6%, as calculated according the referenced CAISO sections, does not require a correction factor to be applied, while any calculated error greater than 0.6% must be applied as a correction factor to the recorded meter data, reducing the submitted quantities by the correction factor percentage.

The financial impact of correction factors being applied to PRs may be substantial, as this production could be exported on EIM transfers, resulting in a reduction in market revenues due to the required

penalty in submitted production compared to the scheduled exported EIM energy received by other EIM participants.

By contrast, the financial impact of correction factors applied to NPRs is small, as any MWh deficit in submitted NPR production would result in a corresponding decrease in the EPE ELAP meter. Therefore, any lost revenues on the NPR settlement would be largely regained in the load-related settlements. To the extent the NPR Locational Marginal Prices (LMPs) are lower than the ELAP LMPs due to congestion, there is some risk that a portion of the transmission congestion revenue rebates in settlement would be allocated to an EIM participant other than EPE due to EIM transfers. Collectively, these risks appear small.

14.4.2.4 Insufficient Granularity of Interchange Meters

While interchange metering is required to be recorded with 5-minute granularity, CAISO has often allowed EIM participants to exempt interchange meters from this requirement. Non-EIM participants typically record interchange metering at 60-minute granularity to align with NERC standard requirements for hourly interchange meter check-out.

In lieu of meeting this EIM requirement, the alternate approach taken by most EIM participants to submit 5-minute granular interchange metering is to calculate average 5-minute meter values in PI from the instantaneous MW telemetry reads, compare the sum of the 5-minute averages to the settlement quality hourly check-out values, and adjust the 5-minute averages as necessary to align with hourly values in the MV-90.

14.4.2.5 Metering of Jointly-Owned Generation

EPE is a joint-owner of Palo Verde generation. Existing and planned EIM participants are also joint owners in Palo Verde and should be coordinated with regarding their approach to meeting CAISO's metering requirements. In other joint-owned generator cases, the metering is not owned by any current EIM participant and the metered offtake of individual participants is not determined directly by physical meters. Rather, the metered offtake is determined by logical meters calculated by allocation computers. These allocation computers dynamically apportion the metered generation based on each participant's approved dispatch such that the physical meters are not indicative of the individual participant's generation.

The meter calculation for EPE's Palo Verde share will likely be similar to the suggested approach for interchange meters described in section 14.4.2.4. CAISO has requested single line metering diagrams for these jointly-owned generation facilities and a description of the determination and validation of the participant's metered share for existing EIM participants.

14.4.3 Metering Assessment Next Steps

While most of the generation meter equipment was inventoried during this project, much of the equipment nameplate data was insufficient. Specifically, while meter accuracy was provided, CT and PT accuracy and burden ratings where not able to be determined during this project. For the purposes of this assessment, interchange metering equipment was assumed to be sufficient, due to NERC standard

requirements for interchange metering. Meanwhile, generation metering equipment utilized for revenue billing was assumed to be sufficient, other than meter read granularity, while generation metering equipment not utilized for revenue billing was assumed to have insufficient accuracy ratings. The following table lists the inventoried meter installations, estimated probability of compliance with EIM requirements, and associated assumptions.

Metered Location	Type	Compliant Probability	Cost and Probability Assumptions
Newman 1 Gen	NPR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 1 SS	NPR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 1 RSS	NPR	100%	Backup assumed to not require compliance, pending further detail on electrical source and likelihood of usage (marked 100% probability for now)
Newman 2 Gen	NPR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.

Newman 2 SS	NPR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 2 RSS	NPR	100%	Backup assumed to not require compliance, pending further detail on electrical source and likelihood of usage (marked 100% probability for now)
Newman 3 Gen	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 3 SS	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 3 RSS	PR	100%	Backup assumed to not require compliance, pending further detail on electrical source and likelihood of usage (marked 100% probability for now)
Newman 4: GT1	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.

Newman 4: GT2	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 4: ST1	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 4 Start Up	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 4 Aux	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 5: GT3-A	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.

Newman 5: GT3-B	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Newman 5: GT3 Aux	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 5: GT4-A	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 5: GT4-B	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Newman 5: GT4 Aux	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 5: ST2-A	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement. If CT/PT accuracy deficient, a fresh install to net meter both resource and SS may be more cost effective, but unable to estimate without further detail.
Newman 5: ST2-B	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)

COPPER	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement
Montana 1 CT	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement
Montana 1 CT BACKUP	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Montana 2 CT	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement
Montana 2 CT BACKUP	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Montana 3 CT	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement
Montana 3 CT BACKUP	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Montana 4 CT	PR	50%	Existing Meter re-programmed to 5-min granularity. Accuracy of existing CTs & PTs unknown, assuming 50% probability of accuracy deficiencies and needing replacement
Montana 4 CT BACKUP	PR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Rio Grande 6 Generator	NPR	100%	Assumed Retired
Rio Grande 6 Emergency Station Service	NPR	100%	Assumed Retired
Rio Grande 6 Normal Station Service	NPR	100%	Assumed Retired

Rio Grande 7 Generator	NPR	100%	Assumed Retired
Rio Grande 7 Emergency Station Service	NPR	100%	Assumed Retired
Rio Grande 7 Normal Station Service	NPR	100%	Assumed Retired
Rio Grande 8 Generator	PR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Rio Grande 8 Emergency Station Service	PR	100%	Backup assumed to not require compliance, pending further detail on electrical source and likelihood of usage (marked 100% probability for now)
Rio Grande 8 Normal Station Service	PR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Rio Grande 9 AUX	PR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Rio Grande 9 Generator	PR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Rio Grande Plant Old Side	NPR	100%	Backup assumed to not require compliance, pending further detail on electrical source and likelihood of usage (marked 100% probability for now)
Chaparral	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor

Santa Teresa	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Patriot	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Airport-West Mesa Solar	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Holloman	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Tx Comm Solar	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Macho Springs	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Macho Springs BACKUP	NPR	100%	Backup assumed to not require compliance, pending further detail on likelihood of usage (marked 100% probability for now)
Hatch	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor

Four Peaks	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Fort Bliss	NPR	50%	Fort Bliss requires more in-depth work to determine requirements, currently assuming two re-programmed meters to 5-min granularity (optional for Non-Participating Resource = 50% probability)
UMC Co-gen	NPR	50%	Existing Meter re-programmed to 5-min granularity (optional for Non-Participating Resource = 50% probability). Existing CTs & PTs remain, accuracy deficiencies addressed thru correction factor
Palo Verde telemetered allocation	NPR	100%	Palo Verde does not require any metering work, just telemetry and ATF values, as it is a JOU resource with dynamically apportioned meter quantities
PNM-West Mesa 345	Tie	100%	Interchange meter assumed to be compliant
PNM Luna 345/115	Tie	100%	Interchange meter assumed to be compliant
PNM-Luna to Lef 345	Tie	100%	Interchange meter assumed to be compliant
PNM-Afton 345 to Afton G	Tie	100%	Interchange meter assumed to be compliant
PNM-Afton 345 to Afton S	Tie	100%	Interchange meter assumed to be compliant
PNM-Amrad 115	Tie	100%	Interchange meter assumed to be compliant
PNM-Airport 115	Tie	100%	Interchange meter assumed to be compliant
PNM-Holloman 115	Tie	100%	Interchange meter assumed to be compliant
PNM-Hidalgo 345/115	Tie	100%	Interchange meter assumed to be compliant
PNM-Picacho 115	Tie	100%	Interchange meter assumed to be compliant
TRI-Las Cruces 115	Tie	100%	Interchange meter assumed to be compliant
TRI-Oro Grande 115	Tie	100%	Interchange meter assumed to be compliant
TEP-Macho Springs 345	Tie	100%	Interchange meter assumed to be compliant
TEP-Springerville 345	Tie	100%	Interchange meter assumed to be compliant
TEP-Greenlee 345	Tie	100%	Interchange meter assumed to be compliant

SPS-Artesia 230	Tie	100%	Interchange meter assumed to be compliant
Rio Grande Co-op Dell City	Load	100%	Load meter assumed to be compliant
Rio Grande Co-op Farmer	Load	100%	Load meter assumed to be compliant
CENACE Diablo	Load	100%	Load meter assumed to be compliant
CENACE Ascarate	Load	100%	Load meter assumed to be compliant
Fort Bliss	Load	100%	Non-conforming load, assumed to be compliant

14.5 Appendix 5 – EIM Implementation Indicative Project Schedule

EIM Implementation Indicative Project Schedule, April 2023 Target Go-Live

Navigation of the Indicative EIM Implementation Project Schedule

The Indicative EIM Project Schedule was presented and walked through with the El Paso EIM Team on Wed Aug 7th, 2019. This document is provided to aid future and ongoing interpretation of the materials.

The Schedule has been created in MS Project and provided in that format along with a document displaying the information from Screen Shots, and a text-searchable PDF export (Gantt Chart Only).

14.5.1 Background

CAISO Organizational Arrangement for EIM Implementation

The CAISO organizes their internal resources around six (6) "Tracks". More can be learned about these tracks by reviewing CAISO publicly available materials referenced below.

An aspect to point out from the ISO's arrangement is that of Testing (Integration Test, Day in the Live Testing, Market Simulation, and Parallel Operations. These are further defined in the Track 4 Overview). Because the ISO is coordinating multiple participants joining for a Go Live date, these Testing aspects become a rigid timing aspect of planning that EPE will need to accommodate.

EIM / CAISO Reference Materials:

- Example of a CAISO Implementation Project Plan. This explains the Track structure and project efforts as viewed from the ISO's perspective. https://www.westerneim.com/Documents/EIMEntityImplementationProjectPlan.pdf

The following are more detailed overviews, each focusing on the ISO's perspective for performing the efforts within the individual "Tracks".

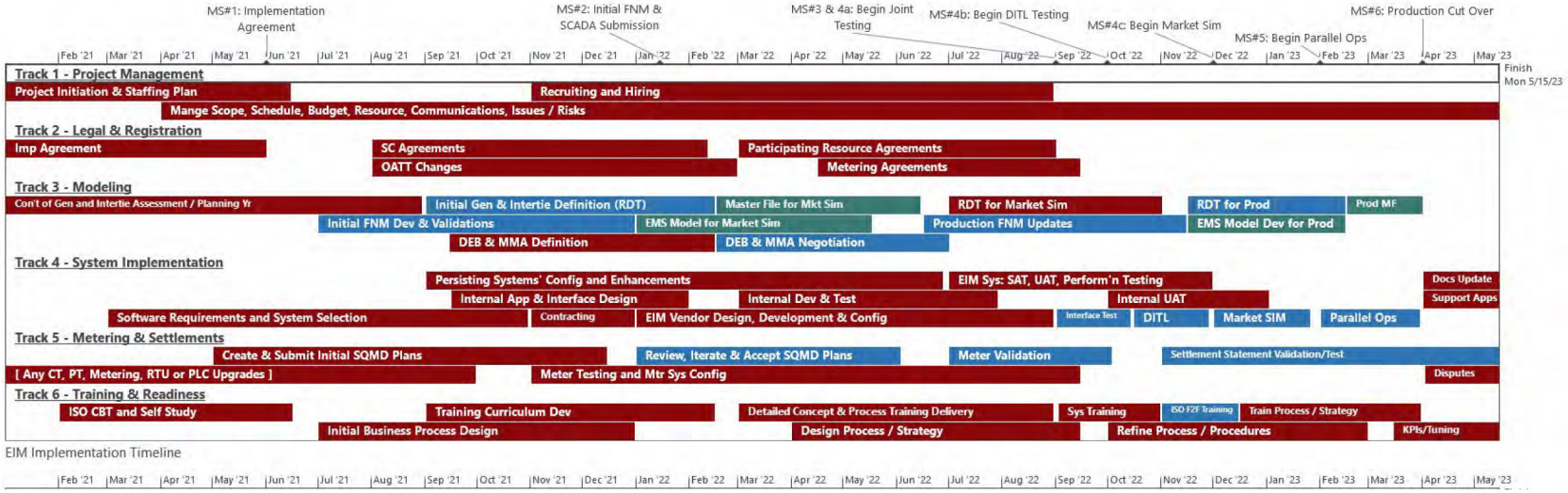
- Track 1 Overview – Project Management https://www.westerneim.com/Documents/EIMTrack1Overview-ProjectManagement_Planning.pdf
- Track 2 Overview – Agreements https://www.westerneim.com/Documents/EIMTrack2Overview-Agreements.pdf
- Track 3 Overview – FNM https://www.westerneim.com/Documents/EIMTrack3Overview-FullNetworkModel.pdf
- Track 4 Overview – Integration and Testing https://www.westerneim.com/Documents/EIMTrack4Overview-Integration_Testing.pdf
- Track 5 Overview – Metering and Settlements https://www.westerneim.com/Documents/EIMTrack5Overview-Metering.pdf
- Track 6 Overview – Training https://www.westerneim.com/Documents/EIMTrack6Overview-Training.pdf

EPE- Specific Implementation

The CAISO Implementation planning efforts do not account for all aspects of EIM Readiness that El Paso Electric will need to complete in order to be successful. There are many components of readiness that are "behind the curtain" from CAISO's perspective, and therefore not accounted for in their planning. In

the provided materials EPE's specific efforts have been identified, and to aid in communication with the ISO the efforts have been aligned with corresponding CAISO's Track aspects.

14.5.2 Single Screen Swimlane Representation



Legend:

The Swimlane Diagram is a version of the Implementation plan intended to give a high-level visual representation, which can be displayed on a single screen. This is a MS Project File "Timeline" View, with some post-processing to add the Legend mapping the ISO/EPE division of efforts, and the EPE departments involved.

The seven (7) "MS#" at the on the top timeline are the approximate payment Milestone points with CAISO. There will be other payment milestones with Vendors and Contractors, but there is good visibility into the timing of these.

14.5.3 Gantt Chart Representation

The Gannt Chart representation are the detailed records which roll up to the level displayed in the Swim Lane Diagram. In addition to the Task Name and Dates, two addition columns have been provided to aid viewing in conjuncture with the Scope and Cost Assessment.

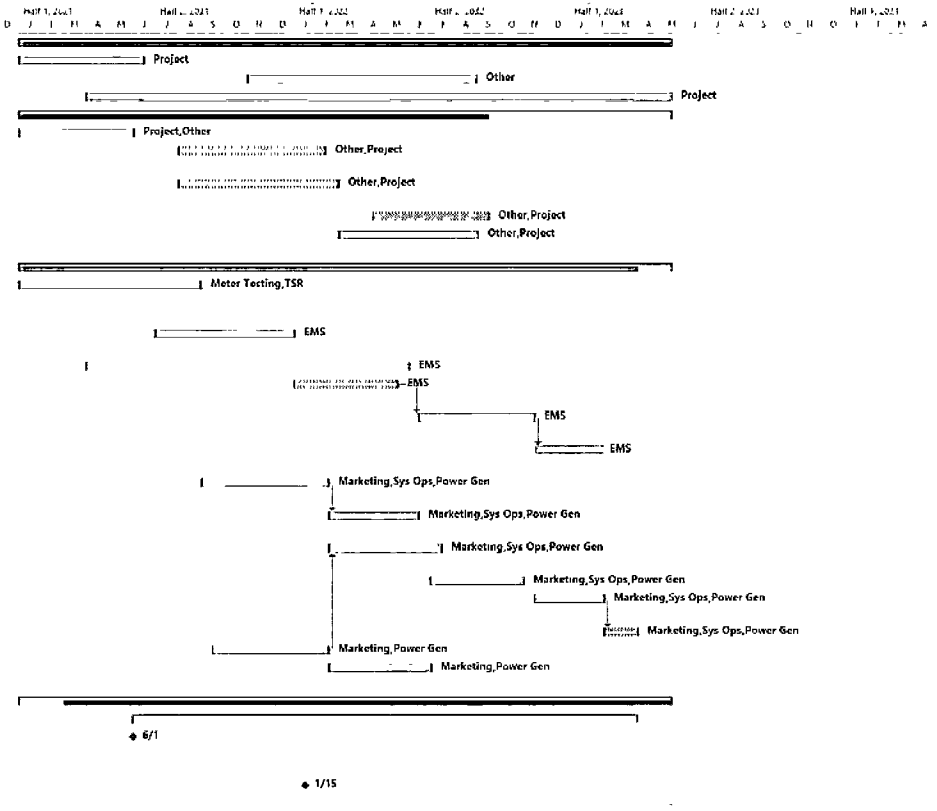
- The Resource Name are the EPE Dept(s)/Area(s) significantly contributing to the effort. Below are the designations (and "owner") discussed in the walk-through:
    - Sys Ops (Ernie)
    - Marketing (Omar)
    - EMS (Tracy)
    - IT (Lourdes/Zulma)
    - Power Gen (Kyle)
    - Project (Project Mngr)
    - TSR – Transmission Substation Relaying (TBD)
    - Meter Testing (Ray M)
    - EE Settlements (Brenda)
    - Marketing Settlements (Ana)
- The Notes column is used to identify "Categories" of Efforts that are associated with a given Gantt row.

Utilicast

El Paso Electric

EIM Gap Assessment

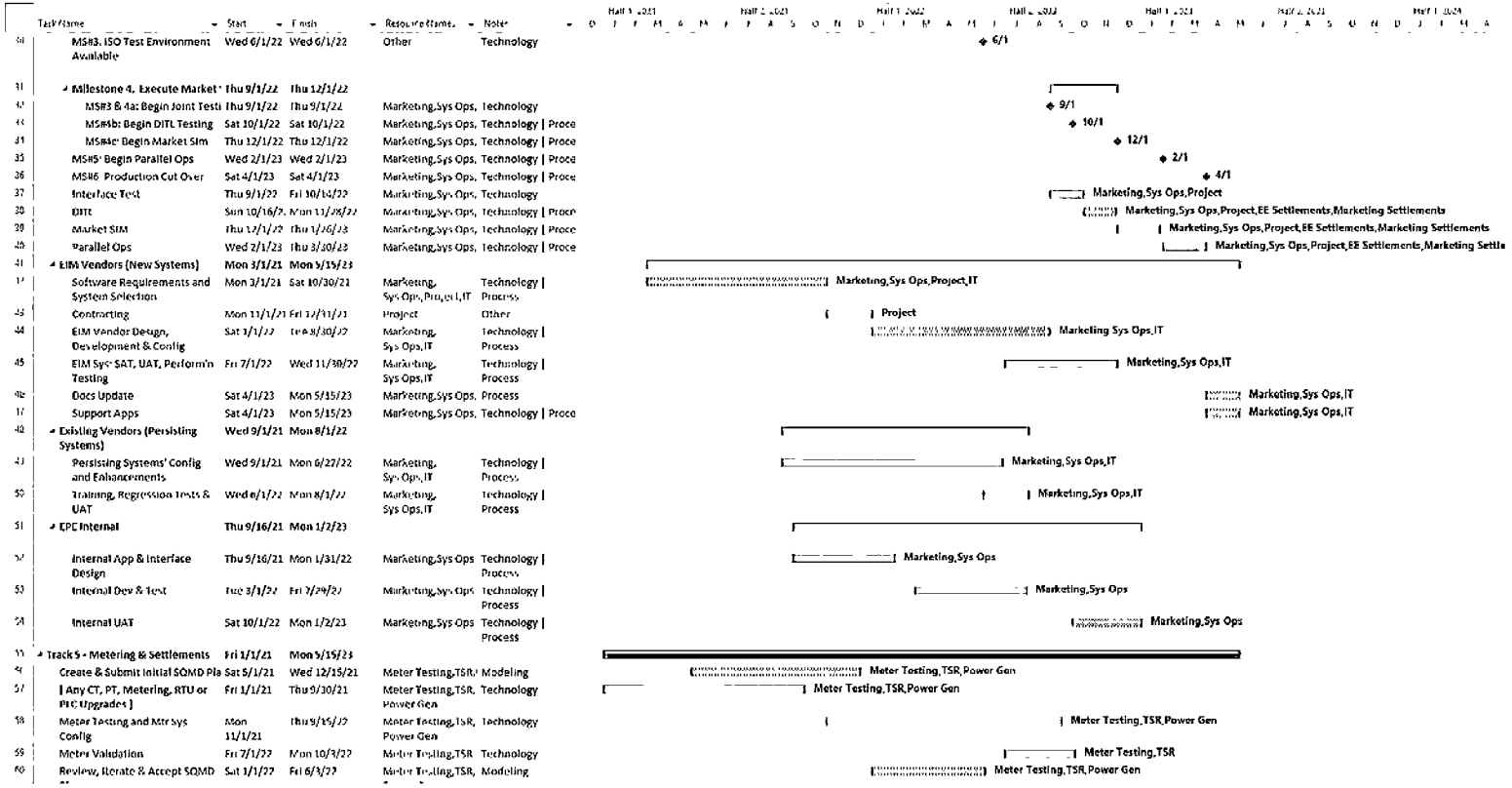
	Task Name	Start	Finish	Resource Name	Notes
1	Track 1 - Project Management	Fri 1/1/21	Mon 5/15/23		"Categories"
2	Project Initiation & Staffing Plan	Fri 1/1/21	Tue 6/15/21	Project	Other | People
3	Recruiting and Hiring	Mon 11/1/21	Tue 8/30/22	Other	People
4	Mange Scope, Schedule, Budget,	Thu 4/1/21	Mon 5/15/23	Project	Other
5	Track 2 - Legal & Registration	Fri 1/1/21	Mon 5/15/23		
6	Imp Agreement	Fri 1/1/21	Tue 6/1/21	Project,Other	Other
7	SC Agreements	Sun 8/1/21	Fri 2/11/22	Other,Project	Other
8	OATT Chaages	Sun 8/1/21	Mon 2/28/22	Other,Project	Other
9	Metering Agreements	Sat 4/16/22	Thu 9/15/22	Other,Project	Other
10	Participating Resource Agreements	Tue 3/1/22	Thu 9/1/22	Other,Project	Other
11	Track 3 - Modeling	Fri 1/1/21	Mon 5/15/23		
12	Con't of Gen and Intertie Assessment / Planning Yr	Fri 1/1/21	Mon 8/30/21	Meter Testing,TSR	Other
13	Initial ENM Dev & Validations	Thu 7/1/21	Fri 12/31/21	EMS	Modeling
14	EMS Vendor Upgrades	Thu 4/1/21	Wed 6/1/22	EMS	Technology
15	EMS Model for Market Sim	Sat 1/1/22	Tue 5/17/22	EMS	Modeling
16	Production ENM Updates	Thu 6/16/22	Tue 11/15/22	EMS	Modeling
17	EMS Model Dev for Prod	Wed 11/16/22	Wed 2/15/23	EMS	Modeling
18	Initial Gen & Intertie Definition (RDT)	Wed 9/1/21	Tue 2/15/22	Marketing, Sys Ops,Power	Modeling
19	Master File for Mkt Sim	Wed 2/16/22	Tue 6/14/22	Marketing, Sys Ops,Power	Modeling
20	Market Model Dev for Market Sim	Wed 9/16/22	Fri 7/15/22	Marketing, Sys Ops,Power	Modeling
21	RDT for Market Sim	Fri 7/1/22	Tue 11/1/22	Marketing,Sys Ops,	Modeling
22	RDT for Prod	Wed 11/16/22	Wed 2/15/23	Marketing, Sys Ops,Power	Modeling
23	Prod MF	Thu 2/16/24	Sat 4/1/23	Marketing,Sys Ops,	Modeling
24	DEB & MMA Definition	Wed 9/15/21	Tue 2/15/22	Marketing,Power G	Modeling
25	DEB & MMA Negotiation	Wed 2/16/22	Fri 7/1/22	Marketing, Power Gen	Modeling
26	Track 4 - System Implementation	Fri 1/1/21	Mon 5/15/23		
27	CAISO Testing	Tue 6/1/21	Sat 4/1/23		
28	MSP1- Implementation Agreement	Tue 6/1/21	Tue 6/1/21	Other	Other
29	MSP2- Initial ENM & SCADA Submission	Sat 1/15/22	Sat 1/15/22	EMS	Modeling



Utilicast

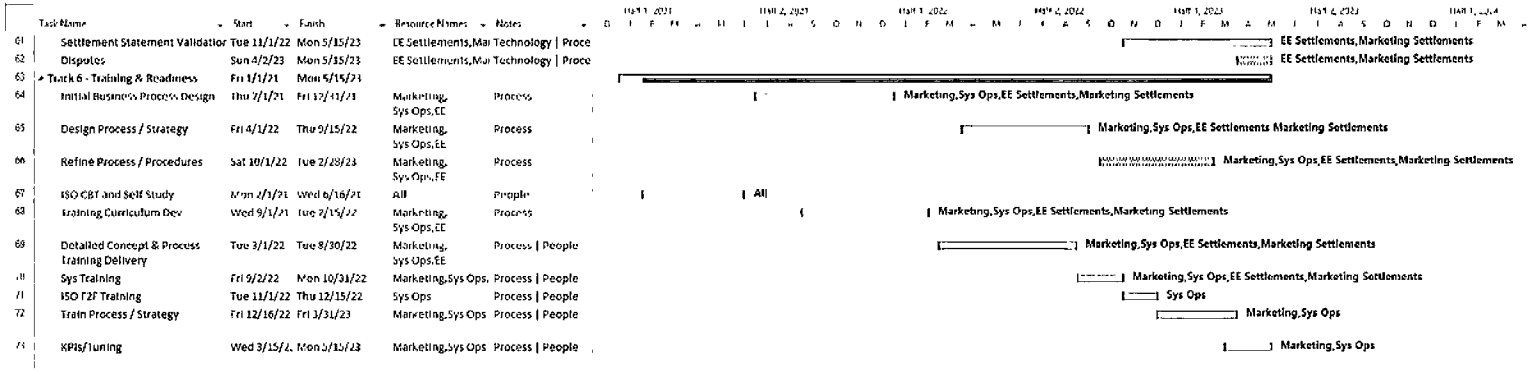
El Paso Electric

EIM Gap Assessment



	Task Name	Start	Finish	Resource Name	Notes
30	MS#3. ISO Test Environment Available	Wed 6/1/22	Wed 6/1/22	Other	Technology
31	Milestone 4. Execute Market '	Thu 9/1/22	Thu 12/1/22		
32	MS#3 & 4a: Begin Joint Testi	Thu 9/1/22	Thu 9/1/22	Marketing,Sys Ops,	Technology
33	MS#4b: Begin DITL Testing	Sat 10/1/22	Sat 10/1/22	Marketing,Sys Ops,	Technology | Proce
34	MS#4c: Begin Market Sim	Thu 12/1/22	Thu 12/1/22	Marketing,Sys Ops,	Technology | Proce
35	MS#5: Begin Parallel Ops	Wed 2/1/23	Wed 2/1/23	Marketing,Sys Ops,	Technology | Proce
36	MS#6 Production Cut Over	Sat 4/1/23	Sat 4/1/23	Marketing,Sys Ops,	Technology | Proce
37	Interface Test	Thu 9/1/22	Fri 10/14/22	Marketing,Sys Ops,	Technology
38	DITt	Sun 10/16/2.	Mon 11/28/22	Marketing,Sys Ops,	Technology | Proce
39	Market SIM	Thu 12/1/22	Thu 1/26/23	Marketing,Sys Ops,	Technology | Proce
40	Parallel Ops	Wed 2/1/23	Thu 3/30/23	Marketing,Sys Ops,	Technology | Proce
41	EIM Vendors (New Systems)	Mon 3/1/21	Mon 5/15/23		
17	Software Requirements and System Selection	Mon 3/1/21	Sat 10/30/21	Marketing, Sys Ops, Project,IT	Technology | Process
43	Contracting	Mon 11/1/21	Fri 12/31/21	Project	Other
44	EIM Vendor Design, Development & Config	Sat 1/1/22	Tue 8/30/22	Marketing, Sys Ops,IT	Technology | Process
45	EIM Sys: SAT, UAT, Perform'n Testing	Fri 7/1/22	Wed 11/30/22	Marketing, Sys Ops,IT	Technology | Process
46	Docs Update	Sat 4/1/23	Mon 5/15/23	Marketing,Sys Ops,	Process
17	Support Apps	Sat 4/1/23	Mon 5/15/23	Marketing,Sys Ops,	Technology | Proce
42	Existing Vendors (Persisting Systems)	Wed 9/1/21	Mon 8/1/22		
47	Persisting Systems' Config and Enhancements	Wed 9/1/21	Mon 6/27/22	Marketing, Sys Ops,IT	Technology | Process
50	Training, Regression Tests & UAT	Wed 6/1/22	Mon 8/1/22	Marketing, Sys Ops,IT	Technology | Process
51	EPE Internal	Thu 9/16/21	Mon 1/2/23		
52	Internal App & Interface Design	Thu 9/16/21	Mon 1/31/22	Marketing,Sys Ops	Technology | Process
53	Internal Dev & Test	Tue 3/1/22	Fri 7/29/22	Marketing,Sys Ops	Technology | Process
54	Internal UAT	Sat 10/1/22	Mon 1/2/23	Marketing,Sys Ops	Technology | Process
55	Track 5 - Metering & Settlements	Fri 1/1/21	Mon 5/15/23		
56	Create & Submit Initial SQMD Pla	Sat 5/1/21	Wed 12/15/21	Meter Testing,TSR,	Modeling
57	[Any CT, PT, Metering, RTU or PEC Upgrades]	Fri 1/1/21	Thu 9/30/21	Meter Testing,TSR, Power Gen	Technology
58	Meter Testing and Mtr Sys Config	Mon 11/1/21	Thu 9/15/22	Meter Testing,TSR, Power Gen	Technology
59	Metre Validation	Fri 7/1/22	Mon 10/3/22	Meter Testing,TSR	Technology
60	Review, Iterate & Accept SQMD	Sat 1/1/22	Fri 6/3/22	Meter Testing,TSR,	Modeling

CEP 6-17 Attachment 2



	Task Name	Start	Finish	Resource Names	Notes
61	Settlement Statement Validation	Tue 11/1/22	Mon 5/15/23	EE Settlements,Mar	Technology | Proce
62	Disputes	Sun 4/2/23	Mon 5/15/23	EE Settlements,Mar	Technology | Proce
63	Track 6 - Training & Readiness	Fri 1/1/21	Mon 5/15/23		
64	Initial Business Process Design	Thu 7/1/21	Fri 12/31/21	Marketing, Sys Ops,EE	Process
65	Design Process / Strategy	Fri 4/1/22	Thu 9/15/22	Marketing, Sys Ops,EE	Process
66	Refine Process / Procedures	Sat 10/1/22	Tue 2/28/23	Marketing, Sys Ops,EE	Process
67	ISO CBT and Self Study	Mon 2/1/21	Wed 6/16/21	All	People
68	Training Curriculum Dev	Wed 9/1/21	Tue 2/15/22	Marketing, Sys Ops,EE	Process
69	Detailed Concept & Process Training Delivery	Tue 3/1/22	Tue 8/30/22	Marketing, Sys Ops,EE	Process | People
70	Sys Training	Fri 9/2/22	Mon 10/31/22	Marketing,Sys Ops,	Process | People
71	ISO F2F Training	Tue 11/1/22	Thu 12/15/22	Sys Ops	Process | People
72	Train Process / Strategy	Fri 12/16/22	Fri 3/31/23	Marketing,Sys Ops	Process | People
73	KPIs/Tuning	Wed 3/15/2.	Mon 5/15/23	Marketing,Sys Ops	Process | People

14.5.4 Planning Year Checklist of Activities and Efforts

These Efforts will be elaborated upon father in the final report, and are prerequisite or parallel initiatives to EIM. They have been modeled to be completed (or at least significantly advanced) ahead of the Implementation Timeline.

- EIM Benefits Study
- EIM Business Case
- Capital and O&M Planning Budgets
- Organizational Structure, Staffing & OCM
- Regulatory Impacts
- Future Agreements Impacts (PPAs)
- Metering Assessment Details; Potential Metering Infrastructure Upgrades
- Navigate Merger
- No Additional Option Evaluations Anticipated (ex: RC Provider, SPP EIM)

14.6 Appendix 6 – EIM Cost Assessment

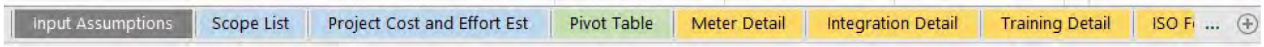
Navigation of the Scope List and Cost Assessment Excel Workbook

14.6.1 Intro

The Scope List and Cost Assessment Workbook was presented and walked through with the El Paso EIM Team on Wed Aug 7th, 2019. This document is provided to aid future and ongoing interpretation of the materials.

It is expected that a majority of stakeholder attention with these materials will reside on the "Project Cost and Effort Est" Tab. Provided below is some guidance on how the information is presenting in this and supporting tabs.

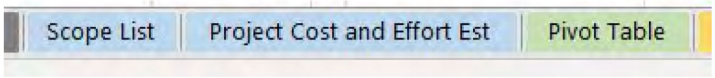
14.6.2 Tabs



The Tabs of this workbook fall into four (4) general categories.

- **Content and Reporting Tabs** (blue/green). These Tabs are the Results of the Scope and Cost effort. They represent where a majority of stakeholder attention will be focused.
- **Assumptions Tab** (dark gray). This Tab contain variables that affect the modeling used in the Scope and Cost effort.
- **Input Detail Tabs** (orange). These Tabs capture the inputs and details which populate and drive the Content tabs' results.
- **Reference Tabs** (no color). These Tabs are informational and provide context. They do not contain variables that affect the Content Tabs.

14.6.3 Content and Reporting Tabs



14.6.4 Project Cost and Effort Est

	A	B	C	D	E	F	G	H	I	K
6		Meta Data						Tasks		Resources
7		Org	Group	Function	Category	System	Cost Type	Cost Name	Cost Detail / Note	Resource
605		System Ops	Energy Mgmt	Metering	Modeling	None	Labor	Metering	SQMD Plan Creation	EPE Manager
606		System Ops	Energy Mgmt	Metering	Modeling	None	Labor	Metering	SQMD Plan Creation	Consultant SME
607		System Ops	Energy Mgmt	Metering	Modeling	None	Labor	Metering	Metering Portfolio Validation	EPE Analyst
608		System Ops	Energy Mgmt	Metering	Modeling	None	Labor	Metering	Metering Portfolio Validation	Consultant Analyst
609		System Ops	Energy Mgmt	Metering	Modeling	None	Labor	Metering	Metering Portfolio Validation	EPE Manager
610		Other	Physical Metering	Infrastructure	Modeling	None	Infrastructure	Metering	Meter and CT/PT changeout	design, materials, and
611		Other	Plants	Dispatch	Technology	GE EMS	Labor	Plant Controller	Tuning - no new infrastructure	EPE Manager
612		Other	Plants	Dispatch	Technology	GE EMS	Labor	Plant Controller	Tuning - no new infrastructure	EPE Manager
613		Other	Plants	Dispatch	Technology	GE EMS	Labor	Plant Controller	Tuning - no new infrastructure	EPE Manager
614		System Ops	System Ops	Dispatch	Other	ICCP	Infrastructure	Telecom	to CAISO	
615		System Ops	EMS & IT	Dispatch	Modeling	ICCP	Labor	Telecom		EPE Analyst
616		System Ops	EMS & IT	Dispatch	Modeling	ICCP	Labor	Telecom		EPE Analyst
617		System Ops	EMS & IT	Dispatch	Modeling	ICCP	Labor	Telecom		EPE Analyst
618		System Ops	EMS & IT	Infrastructure	Modeling	None	Labor	Telecom		EPE Manager
619		Program	Project	Membership	Other	None	Fee	Membership Fee	Milestone #1	
620		Program	Project	Membership	Other	None	Fee	Membership Fee	Milestone #2	

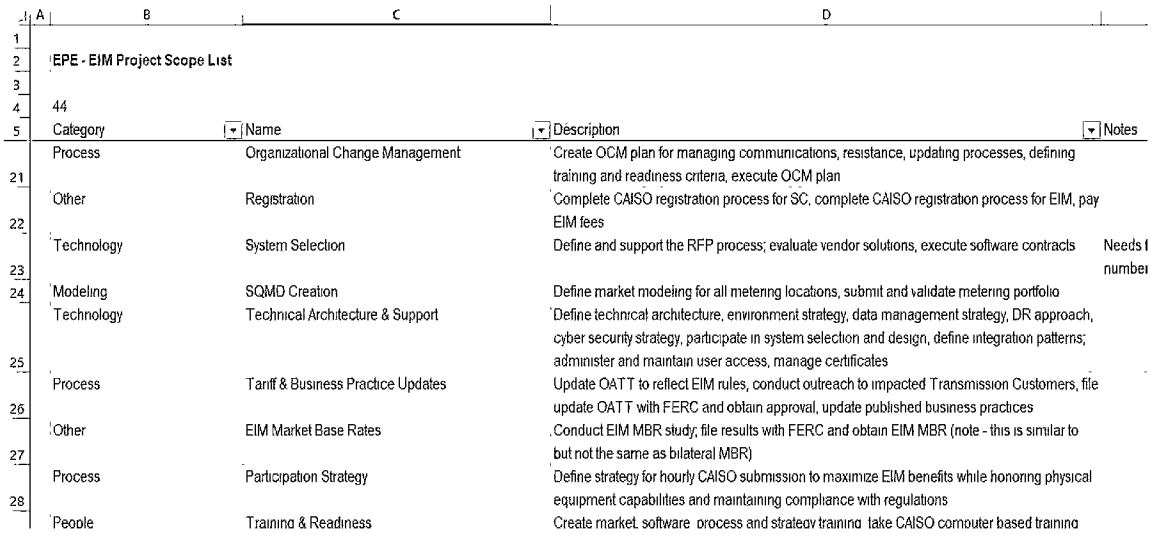
It is anticipated that this tab is where the most Stakeholder attention will reside. Represented here are rows consisting of the itemized estimated efforts (or costs) that roll up to the project cost. The column

headers can be used to filter to more finite groupings and perspectives into the effort. Some brief Column definitions are:

- *Org*: Organizational alignment categories, as defined in the "Input Assumptions" Tab.
- *Grouping*: Grouping alignment values, as defined in the "Input Assumptions" Tab.
- *Function*: Description of the associated function.
- *Category*: This field relates to the Categories identified in the Scope List.
- *System*: Identifies when there is a corresponding application or system.
- *Cost Type*: Groups the costs into: Fee, Infrastructure, Integration, Labor, License
- *Cost Name*: Cost Grouping field.
- *Cost Detail / Note*: Open text description field for providing more context.
- *Resources*: Roles (with corresponding rates, as defined in the "Input Assumptions" Tab.)
- *Costs* (*Est Wk Days, Allo, Est Effort, Rate, Calc Est Cost, Input Est Cost*): Values which are calculated using Input data, and Assumptions Tab modeling.
- *Notes:* Open Text Field to capture thoughts and discussion points.
- *Total Est Cost:* The per-row Total Cost.

The Additional Columns (past "*Total Est Cost*") are used as part of the calculations, schedule planning, and effort spreading. To not distract, these columns have been hidden, but are accessible if needed.

14.6.5 Scope List



EPE - EIM Project Scope List

44

Category	Name	Description	Notes
Process	Organizational Change Management	Create OCM plan for managing communications, resistance, updating processes, defining training and readiness criteria, execute OCM plan	
Other	Registration	Complete CAISO registration process for SC, complete CAISO registration process for EIM, pay EIM fees	
Technology	System Selection	Define and support the RFP process; evaluate vendor solutions, execute software contracts	Needs t number
Modeling	SQMD Creation	Define market modeling for all metering locations, submit and validate metering portfolio	
Technology	Technical Architecture & Support	Define technical architecture, environment strategy, data management strategy, DR approach, cyber security strategy, participate in system selection and design, define integration patterns; administer and maintain user access, manage certificates	
Process	Tariff & Business Practice Updates	Update OATT to reflect EIM rules, conduct outreach to impacted Transmission Customers, file update OATT with FERC and obtain approval, update published business practices	
Other	EIM Market Base Rates	Conduct EIM MBR study; file results with FERC and obtain EIM MBR (note - this is similar to but not the same as bilateral MBR)	
Process	Participation Strategy	Define strategy for hourly CAISO submission to maximize EIM benefits while honoring physical equipment capabilities and maintaining compliance with regulations	
People	Training & Readiness	Create market, software, process and strategy training, take CAISO computer based training	

The Scope List tab presents the areas where efforts will be applied for implementing and operating in EIM. These are a higher-level view of the effort categories compared with the itemized list contained in the "Project Cost and Effort Est" Tab.

14.6.6 Pivot Table

	A	B	C	D
1				
2		EPE - EIM Project Cost & Effort Pivot Summary		
3				
4		Row Labels	Sum of Est Effort	Sum of Tot Est Cost
5		⊟System Ops	26,496	4,477,989
6		⊞Accounting	252	24,660
7		⊞EMS & IT	6.366	748.167

The Pivot Table Tab is provided to aid in representing the cost breakdown across EPE depts/areas and other categorizations. As the name suggests, it is pivot table of the values in the "Project Cost and Effort Est" Tab.

14.6.7 Input Assumptions Tab

The values in this tab affect the model, and are used in the calculations represented in the "Project Cost and Effort Est" Tab. This tab contains the modeling assumptions for:

- Project Milestone Dates – Approximate important project dates
- Work Hours / Net Work Days – Model of assumed hours for resources
- Resources – Project Roles and associated Rates
- Interfaces – The amount of effort assumes with different classifications of interface complexity ratings:
    - Design
    - Dev (Development)
    - Test (Testing)
    - KX (Knowledge Transfer)
    - S (sequential number, ignore)
- Incremental Staff – New FTE Roles and associated Rates
- Month lookup – Used for scheduling Effort spreading (behind the scenes)
- Org Names – Organizational Alignment Categories
- Group Names – EPE Departments and Areas
- Function – Functions needed during EIM and implementation
- System / Config – List of identified applications and associated aspects
- Cost Names – Mapping between efforts and if they will be recorded at Capital, or O&M.
- Resource Names, Sort 1 & Sort 2 – Used behind the scenes, can be ignored.

14.6.8 Input Detail Tabs

Meter Detail	Integration Detail	Training Detail	ISO Fee Detail	Network Model Detail	Outreach Detail

These Input Detail Tabs are in different formats, defined by the methods in which they were collected. They document the information which was used to make decisions and interpretations affecting the Scope and Cost efforts.

14.6.9 Reference Tabs

OASIS Reports	CMRI Reports	Terms

These Tabs provide context for stakeholders. The two reports tabs are lists of CAISO provided reports, to aid in quantifying that scope. The Terms tab is a glossary of terms

The following files are not convertible:

CEP 06-17_Attachment 03.xlsx
CEP 06-20_Attachment 01_A&G Charges and Fees.xlsx
CEP 06-20_Attachment 02.xlsx

Please see the ZIP file for this Filing on the PUC Interchange in order to access these files.

Contact centralrecords@puc.texas.gov if you have any questions.

PaloVerde™ GENERATING STATION

MICHAEL MCLAUGHLIN
Vice President
Operations Support

5801 S Wintersburg Rd
Tonopah, AZ 85354

ID: 510-00390
Date: February 21, 2020

To: File
Sta. #
Ext. #

From: M. McLaughlin
Sta. # 7605
Ext. # 82-5761

Subject: **PVGS January 2020 Executive Cost Report**

Attached is the PVGS Executive Cost Report that reflects information for January 2020 for the O&M (including incentives), Capital (including incentives), and Nuclear Fuel budgets. The report compares actual costs to budget for the month, year-to-date (YTD), and presents the year-end variances as summarized below:

(Millions of Dollars)

	YTD	YTD	Year – End
Category	**Budget**	**Actual**	**Variance**
O&M	**46.20**	**44.59**	**0.00**
Capital	**14.41**	**10.09**	**0.00**
Nuclear Fuel	**13.85**	**9.52**	**(0.09)**
Total	**74.46**	**64.21**	**(0.09)**

Please call me if you have any questions or comments.

MM / SB

Attachment

cc:
J. Cadogan 7602
J. Guldner 9040
T. Horton 8201
M. Lacal 7605
M. McLaughlin 7605
B. Rash 7602
J. McGill 7990
T. Mionske 7990
E. Asturias 7990

Palo Verde Generating Station
Executive Cost Report
January 2020
Prepared by
Business Operations

Palo Verde Generating Station
Executive Cost Report

Table of Contents

All Budgets Recap 1
Operations & Maintenance Explanation..... 2
Capital Improvements Explanation..... 4
Inventory Explanation..... 6
Nuclear Fuel Explanation 7
O&M Power Block 8
Capital Improvements Variance..... 9
Nuclear Fuel 10
Inventory 11
Revenue 13
Outage (O&M) 14
Manpower / Overtime 15
Contract Labor / Contract Service 16
YTD Production Cost / O&M Cost per KWH 17
O&M Cost per KWH 18
O&M FERC Report 19
Estimated Incentives, Severances and Adjustments 20
O&M & Capital Monthly Cash Flows..... 21

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

	Current Month			Year-to-Date			Year-End Forecast		
	Budget	Actual	Var.	Budget	Actual	Var.	Budget	Forecast	Var.
O & M	46.20	44.59	(1.61)	46.20	44.59	(1.61)	582.90	582.90	0.00
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	42.70	42.70	(0.00)
Sub Total O&M	46.20	44.59	(1.61)	46.20	44.59	(1.61)	625.60	625.60	0.00
Capital	14.41	10.09	(4.32)	14.41	10.09	(4.32)	230.70	230.70	0.00
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	2.30	2.30	0.00
	14.41	10.09	(4.32)	14.41	10.09	(4.32)	233.00	233.00	0.00
Nuclear Fuel	13.85	9.52	(4.33)	13.85	9.52	(4.33)	214.69	214.60	(0.09)
Total	74.46	64.21	(10.26)	74.46	64.21	(10.26)	1,073.29	1,073.20	(0.09)
Net Inventory				173.80	185.53	11.73	170.90	179.44	8.54
Revenue	0.24	0.16	(0.08)	0.24	0.16	(0.08)	3.21	3.21	0.00

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

January 2020 MTD O&M Variance: ($1.61) Under-run

	MTD	Comments
		Budget Timing:
	$0.00	Incentives:
	($1.06)	Online: U3 RCP Seal Material (Capital move in Feb) $0.33, Relocations Costs [Potential Savings, under review] ($0.10), Site Leader Training [Feb/March] ($0.10), Insurance [Potential Savings, under review] ($0.16), Station Services [Software Maintenance Fees- under review] ($0.20), Site Support [Various Groups - 2nd Qtr] ($0.24), Sandia Labs/Policy Group [Contract Review - 1st Qtr] ($0.59)
	($0.10)	Outage: 2R22 Material [Request Timing - April] ($0.10)
		Budget Savings:
	($0.10)	Online: Engineering License - ETAP [RUC] ($0.10)
	($0.60)	Outage: Prior Year Outage Support [Final Invoicing/Material Returns] ($0.60)
		Budget Impacts:
	$0.25	Online: Water Resources Chemical Price Changes (Lime/Sulfuric Acid) $0.15, NAU Degree Program $0.10
	$0.00	Outage:
Total	**($1.61)**	

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

January 2020 YTD O&M Variance: ($1.61) Under-run

YTD	Comments
	Budget Timing:
$0.00	Incentives:
($1.06)	Online: U3 RCP Seal Material (Capital move in Feb) $0.33, Relocations Costs [Potential Savings, under review] ($0.10), Site Leader Training [Feb/March] ($0.10), Insurance [Potential Savings, under review] ($0.16), Station Services [Software Maintenance Fees- under review] ($0.20), Site Support [Various Groups - 2nd Qtr] ($0.24), Sandia Labs/Policy Group [Contract Review - 1st Qtr] ($0.59)
($0.10)	Outage: 2R22 Material [Request Timing - April] ($0.10)
	Budget Savings:
($0.10)	Online: Engineering License - ETAP (RUC) ($0.10)
($0.60)	Outage: Prior Year Outage Support [Final Invoicing/Material Returns] ($0.60)
	Budget Impacts:
$0.00	Incentives:
$0.25	Online: Water Resources Chemical Price Changes (Lime/Sulfuric Acid) $0.15, NAU Degree Program $0.10
$0.00	Outage:
Total **($1.61)**	

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

January 2020 MTD Capital Variance: ($4.32) Under-run

	MTD	Comments
	($3.92)	Budget Timing: Digital SMP Phase I U3 [Due to delays with vendor - 1st Qtr] ($0.91), Clarifiers Life Extension T3 [Due to project delays needed to support emergent projects - 1st Qtr] ($0.81), EDG Spare Generator [Due to milestone payment being deferred to March] ($0.81), Security Access Control Computer Replacement [Due to engineering delays - 2nd Qtr] ($0.76), Digital SMP Phase II [Due to delays in issuing engineering purchase order - 1st Qtr] ($0.56), Misc. ($0.07)
	($1.10)	Budget Savings: RCP Motor Repl 1R22 [2020 Milestone payment was executed in 2019] ($1.10)
	$0.70	Budget Impacts: 45 Acre Inlet Structure [Emergent project not budgeted for in 2020]
Total	**($4.32)**	

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

January 2020 YTD Capital Variance: ($4.32) Under-run

	YTD	Comments
	($3.92)	Budget Timing: Digital SMP Phase I U3 [Due to delays with vendor - 1st Qtr] ($0.91), Clarifiers Life Extension T3 [Due to project delays needed to support emergent projects - 1st Qtr] ($0.81), EDG Spare Generator [Due to milestone payment being deferred to March] ($0.81), Security Access Control Computer Replacement [Due to engineering delays - 2nd Qtr] ($0.76), Digital SMP Phase II [Due to delays in issuing engineering purchase order - 1st Qtr] ($0.56), Misc. ($0.07)
	($1.10)	Budget Savings: RCP Motor Repl 1R22 [2020 Milestone payment was executed in 2019] ($1.10)
	$0.70	Budget Impacts: 45 Acre Inlet Structure [Emergent project not budgeted for in 2020]
Total	**($4.32)**	

PVGS Executive Cost Report
All Budgets Recap
January 2020
($ Millions)

January 2020 YTD Inventory Variance: $11.73 Over-run

	YTD	Comments
	$2.53	Budget Timing: Less Receipts ($0.13); Less Issues $0.81; Greater Adjustments $2.95; Less Material Returns ($0.73); More Material Sales ($0.37)
	$0.00	Budget Savings:
	$9.20	Budget Impacts: 2019 Inventory Impacts [Less Issues / More Adjustments Partially offset by Less Receipts / Less Returns $2.70; MST / Support Ring Moved from Capital Project to Inventory $6.5M
Total	**$11.73**	

PVGS Executive Cost Report
Nuclear Fuels
January 2020
($ Millions)

	YTD	Project	Comments
		FIP:	
	($5.32)	Fabrication	Timing - U3C23 NGF Milestone payment moved to September
	$1.71	Use Tax	Timing - U2C23 Use Tax budgeted for February with partial accrual in January and February
	$0.09	Labor	Timing - Framatome Fuel Implementation project
	($0.02)	Outside Services	Timing - Framatome Fuel Implementation project
	$0.04	Other	Timing - Studsvick fees booked in January as material instead of outside services will be corrected in February
Subtotal FIP	($3.50)		
		DCS:	
	($0.27)	Labor	Timing - MAGNASTOR implementation project
	($0.18)	Materials	Timing - MAGNASTOR material milestones
	($0.37)	Outside Services	Timing - MAGNASTOR engineering services
	($0.01)	Other	Timing - MAGNASTOR rental services
Subtotal DCS	($0.83)		
Total	($4.33)		

PVGS Executive Cost Report
O&M Power Block Report
January 2020
($000)

	Current Month				Year-to-Date				Total	Remaining
	Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
UNIT - 1	12,999	12,725	(274)	-2%	12,999	12,725	(274)	-2%	188,140	175,415
UNIT - 2	13,347	12,869	(478)	-4%	13,347	12,869	(478)	-4%	192,593	179,724
UNIT - 3	12,766	11,312	(1,454)	-11%	12,766	11,312	(1,454)	-11%	157,116	145,804
COMMON	1,082	1,707	625	58%	1,082	1,707	625	58%	14,134	12,427
PVUNALL	(0)	(0)	(0)	0%	(0)	(0)	(0)	0%	(0)	0
WRF	6,004	5,980	(24)	0%	6,004	5,980	(24)	0%	73,617	67,637
GENERAL	0	(0)	(0)	0%	0	(0)	(0)	0%	(0)	0
TOTAL PV	**46,199**	**44,594**	**(1,605)**	**-3%**	**46,199**	**44,594**	**(1,605)**	**-3%**	**625,600**	**581,006**
PAYROLL	20,270	20,218	(51)	0%	20,270	20,218	(51)	0%	271,559	251,341
CONTRACT LABOR	2,415	2,479	64	3%	2,415	2,479	64	3%	44,158	41,679
MATL / SUPPLIES	4,547	5,024	477	10%	4,547	5,024	477	10%	63,834	58,810
OUTSIDE SERVICES	3,644	1,740	(1,904)	-52%	3,644	1,740	(1,904)	-52%	58,557	56,817
OTHER	15,323	15,133	(191)	-1%	15,323	15,133	(191)	-1%	187,492	172,360
TOTAL PV	**46,199**	**44,594**	**(1,605)**	**-3%**	**46,199**	**44,594**	**(1,605)**	**-3%**	**625,600**	**581,006**

PVGS Executive Cost Report
Capital Improvements Variance Summary
January 2020
($000)

		<--------- Current Month ---------->				<---------- Year-to-Date ---------->				
	Budget Category	**Budget**	**Actual**	**Variance**	**Percent**	**Budget**	**Actual**	**Variance**	**Percent**	**Annual Budget**
1	**Plant Modifications**	3,964	1,592	(2,372)	-60%	3,964	1,592	(2,372)	-60%	46,395
2	**Equipment & Replacements**	4,310	3,149	(1,161)	-27%	4,310	3,149	(1,161)	-27%	94,740
3	**Buildings**	520	9	(511)	-98%	520	9	(511)	-98%	8,995
4	**General Plant**	430	856	427	99%	430	856	427	99%	8,059
5	**Computers**	382	264	(117)	-31%	382	264	(117)	-31%	18,406
6	**Water Rec Facility**	3,300	3,136	(164)	-5%	3,300	3,136	(164)	-5%	35,162
7	**Overheads**	1,502	1,083	(419)	-28%	1,502	1,083	(419)	-28%	18,677
8	**Emergent Work Fund**	0	0	0	0%	0	0	0	0%	2,566
9	**Fukushima**	0	0	0	0%	0	0	0	0%	0
11	**Capitalized Incentives**	0	0	0	0%	0	0	0	0%	0
	Totals	**14,408**	**10,089**	**(4,319)**	**-30%**	**14,408**	**10,089**	**(4,319)**	**-30%**	**233,000**

PVGS Executive Cost Report
Nuclear Fuel Report
January 2020
($000)

	Current Month			Year-To-Date			Year-End		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Forecast	Variance
Fuel In Process	12,933	9,442	(3,491)	12,933	9,442	(3,491)	215,000	214,318	(682)
Fuel In Stock	-	-	-	-	-	-	-	-	-
Spent Fuel Disposal	-	-	-	-	-	-	-	-	-
Dry Cask Storage	917	81	(836)	917	81	(836)	(309)	281	590
TOTAL NUCLEAR FUEL	**13,850**	**9,523**	**(4,327)**	**13,850**	**9,523**	**(4,327)**	**214,691**	**214,599**	**(92)**

PVGS Executive Cost Report
Inventory Balance Sheet
January 2020

December 2019 Ending Inventory Balance less Amortization			$186,174,542
Increases:			
	Receipts		$2,969,742
	Returns		$7,971,228
	Inventory Adjustments		($124,949)
	Intercompany Balance		$0
	Accounting Adjustments		($6,484,363)
	Misc JVs (Repair Accrual)		$0
	Misc JV (SOX Accrual)		$0
		Subtotal	$4,331,658
Decreases:			
	Issues		($4,556,259)
		Net Change	($224,601)
Amortization Transactions:			
	Monthly Amortization Cost	($200,000)	
	Write Offs & Sales	($222,475)	
			($422,475)
January 2020 Ending Inventory Balance less Amortization			$185,527,466

Notes:
- Sales to outside utilities for the month was $423,197 that was written off at original cost.
- The above sales were invoiced for a total of $534,349 (net 30 days)
- Current month revenue received for sales to outside utilities totaled ($111,152)
- To Date Amortization Balance = ($40,882,301)
- Capitalized Spare Account Balance Original Cost = $32,538,003

PVGS Executive Cost Report
Major Inventory Transactions (Over $25K)
January 2020

INVENTORY

		Qty	$ Value			Qty	$ Value
Issue:	DIAGNOSTIC SYSTEM	3	$55,860	**Restock:**	VALVE PRZ SAFETY 6 IN	1	$101,217
	3000 AMP BREAKER WRF	2	$25,000		VALVE PRZ SAFETY 6 IN	1	$101,217
	ACTUATOR, AIR CYLINDER	1	$29,010		VALVE PRZ SAFETY 6 IN	1	$101,217
	GEARBOX, 2070Y1-B	1	$33,715		VALVE PRZ SAFETY 6 IN	1	$101,217
	SOURCE(N-16) AM-214/C-13	1	$70,935		PUMP REP KIT, EXCL. SOFT	1	$37,904
	VALVE ASSEMBLY, MSV 2	1	$196,011		PUMP REP KIT, EXCL. SOFT	1	$37,904
	BREAKER, CIRCUIT	1	$190,000		BREAKER, CIRCUIT K2000S	1	$26,130
	TRANSDUCER, EP, 4-20MA	4	$102,671		BREAKER, CIRCUIT	1	$190,000
	VALVE, DIAPHRAGM, 3 IN	1	$56,311		MAIN STM CIV-IV	1	$66,885
	MODULE, CEDMCS OPERATOR	1	$68,356		CIV-SV ACTUATOR	1	$78,128
	VALVE, GLOBE,REG, 4"	1	$99,886		MULTI-STUD TENSIONER	1	$6,520,000
	VALVE, SOLENOID 2"	1	$41,525				
Received:	COUPLING, OVERSPEED	2	$88,126				
	CKTBRK, 3000A, SS4	1	$44,971				
	MOTOR, 19.7HP,256TY	1	$120,894				
	3000 AMP BREAKER WRF	2	$50,000				
	DIAGNOSTIC SYSTEM	3	$155,310				
	VLV ACTUATOR SMB-3W/H6BC	2	$159,954				
	OPERATOR, VALVE	1	$67,175				
	VALVE, DIAPHRAGM, 3 IN	1	$56,311				
	VALVE, CHECK, 24IN	1	$38,460				
	ACTUATOR, BETTIS	1	$43,776				

Revenue, Budget, Actuals, Forecast Variance By Month
January 2020

Description		Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Quantity (acre-feet):														
T&T Units 1 & 2	Budget	**3,674**	274	193	206	94	547	382	454	433	424	98	365	204
	Act/F'cast	**3,576**	176	193	206	94	547	382	454	433	424	98	365	204
	Var	**(98)**	(98)	-	-	-	-	-	-	-	-	-	-	-
Unit Rate ($/acre-foot):														
Transportation & Treatment		**$843**												
Revenue ($ 000):														
	Budget	**3,099**	231	163	174	79	461	322	383	365	358	83	308	172
T&T Units 1 & 2	Act/F'cast	**3,017**	149	163	174	79	461	322	383	365	358	83	308	172
Adjustments*	Act/F'cast	**80**	-	80	-	-	-	-	-	-	-	-	-	-
	Var	**(2)**	(82)	80	-	-	-	-	-	-	-	-	-	-
Initial Reserve Fee &	Budget	**38**	4	4	4	5	1	2	2	2	2	5	3	4
Credits - U1 & U2	Act/F'cast	**38**	4	4	4	5	1	2	2	2	2	5	3	4
	Var	**-**	-	-	-	-	-	-	-	-	-	-	-	-
Add'l Reserve Fee &	Budget	**75**	6	6	6	6	6	6	6	6	6	6	6	6
Credits - U3 & U4	Act/F'cast	**75**	6	6	6	6	6	6	6	6	6	6	6	6
	Var	**-**	-	-	-	-	-	-	-	-	-	-	-	-
2019 Transportation	Budget	-	-	-	-	-	-	-	-	-	-	-	-	-
and Treatment	Act/F'cast	-	-	-	-	-	-	-	-	-	-	-	-	-
True-Ups	Var	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	Budget	**3,212**	241	173	184	91	469	330	391	373	366	94	317	182
	Act/F'cast	**3,212**	**160**	**254**	**184**	**91**	**469**	**330**	**391**	**373**	**366**	**94**	**317**	**182**
	Var	**0**	(82)	81	(0)	0	0	(0)	0	(0)	0	0	0	(0)

PVGS Executive Cost Report
Total Outage (O&M)
January 2020
($ Millions)

	Current Month			Year-To-Date			Year-End		
2020 Outages	**Budget**	**Actual**	**Var.**	**Budget**	**Actual**	**Var.**	**Budget**	**Forecast**	**Var.**
Unit - 2	0.44	0.32	(0.12)	0.44	0.32	(0.12)	34.23	34.23	-
Unit - 1	-	-	-	-	-	-	28.96	28.96	-
Sub-Total 2020 Outages	**0.44**	**0.32**	**(0.12)**	**0.45**	**0.32**	**(0.12)**	**63.19**	**63.19**	**-**
2019 Outage Expenses									
Unit - 1	-	0.12	0.12	-	0.12	0.12	-	0.12	0.12
Unit - 3	-	(0.61)	(0.61)	-	(0.61)	(0.61)	-	(0.61)	(0.61)
Sub-Total 2019 Outages	**-**	**(0.49)**	**(0.49)**	**-**	**(0.49)**	**(0.49)**	**-**	**(0.49)**	**(0.49)**
Total	**0.44**	**(0.17)**	**(0.60)**	**0.45**	**(0.17)**	**(0.61)**	**63.19**	**62.70**	**(0.49)**

PVGS Executive Cost Report
APS Employees & Overtime
Contract Labor Overtime
January 2020

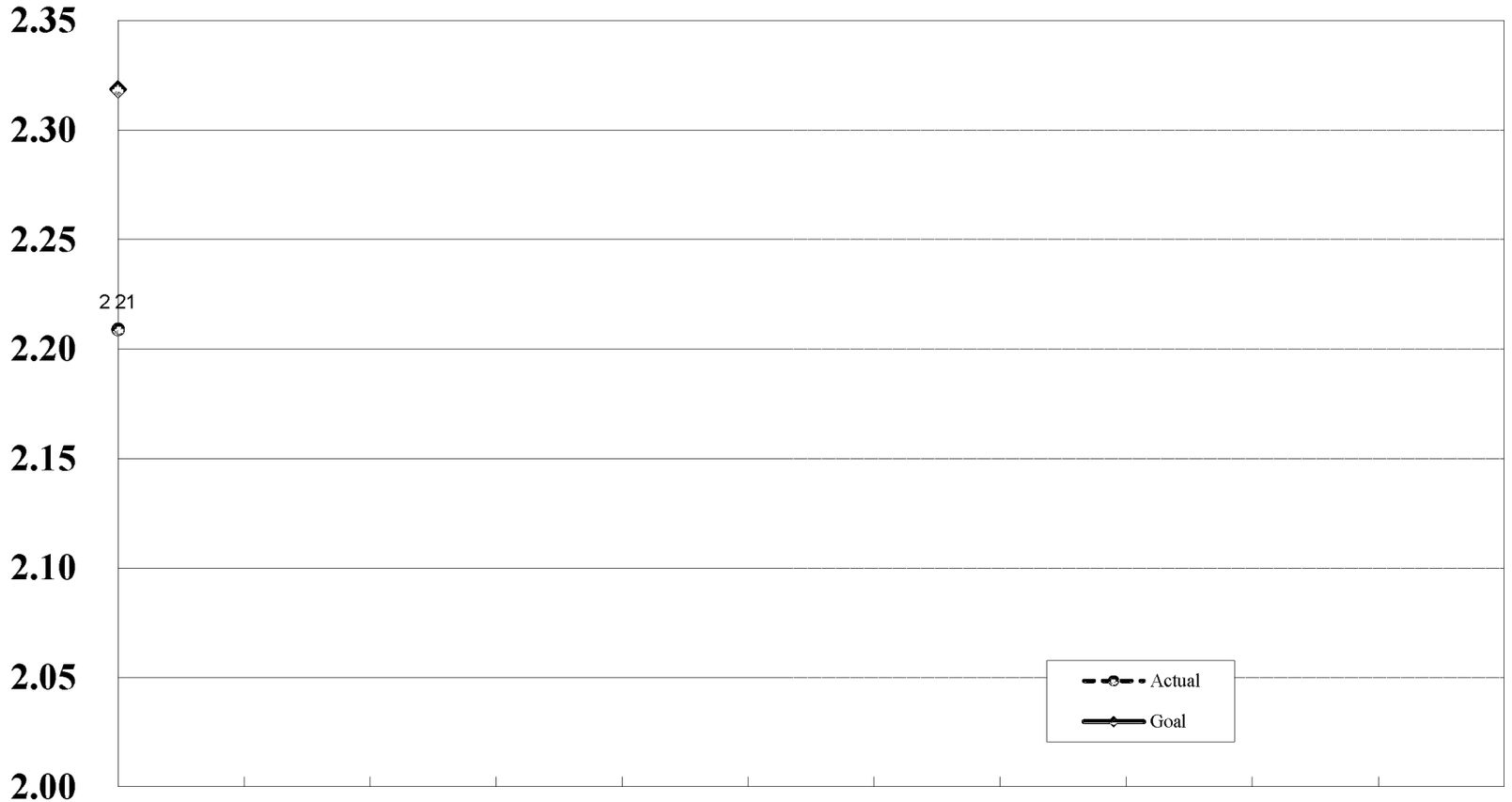
		APS Employees			APS Overtime %		Contract Labor Overtime %	
	Organization	Budget	Actual	Var	Budget	Actual	Budget	Actual
82PP	Nuclear Operations	1,177	1,178	1	8%	8%	1%	2%
97PP	Nuclear Engineering	338	329	(9)	1%	1%	0%	3%
96PP	Emergency Services & Support	434	441	7	18%	19%	1%	0%
83PP	Station Support Organizations	59	52	(7)	0%	0%	0%	0%
	Total	**2,008**	**2,000**	**(8)**	**9%**	**9%**	**1%**	**1%**
	Year-To-Date Average	**2,008**	**2,000**	**(8)**	**9%**	**9%**	**1%**	**1%**
	Equivalent "Borrowed" Employees							
	Current Month	**56**	**58**	**2**				
	Year-To-Date	**56**	**58**	**2**				

Note: All budgets and actual include O&M, Capital and Fuel values.

PVGS Executive Cost Report
Contract Labor and Outside Service Report
January 2020
($000)

ORGANIZATION	Non-Outage O&M						Outage O&M					
	Contract Labor			Outside Services			Contract Labor			Outside Services		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance
82PP Total Nuc Operations												
Current Month	$1,397	$1,522	$125	$951	$626	($326)	$0	$52	$52	$0	($121)	($121)
YTD Closed	$1,397	$1,522	$125	$951	$626	($326)	$0	$52	$52	$0	($121)	($121)
97PP Tot Nuclear Eng & Support												
Current Month	$193	$130	($63)	$516	$283	($233)	$0	$0	$0	$0	($249)	($249)
YTD Closed	$193	$130	($63)	$516	$283	($233)	$0	$0	$0	$0	($249)	($249)
95PP Tot Reg Affairs/Plt Improv												
Current Month	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
YTD Closed	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
96PP Total Operations Support												
Current Month	$821	$770	($51)	$559	$412	($147)	$0	$0	$0	$0	($33)	($33)
YTD Closed	$821	$770	($51)	$559	$412	($147)	$0	$0	$0	$0	($33)	($33)
83PP Total Station Support												
Current Month	$4	$5	$1	$1,618	$822	($803)	$0	$0	$0	$0	$0	$0
YTD Closed	$4	$5	$1	$1,618	$822	($803)	$0	$0	$0	$0	$0	$0
Total												
Current Month	$2,415	$2,427	$12	$3,644	$2,143	($1,508)	$0	$52	$52	$0	($403)	($403)
YTD Closed	$2,415	$2,427	$12	$3,644	$2,143	**($1,508)**	$0	$52	$52	$0	($403)	($403)

PVGS Executive Cost Report
2020 YTD Production Costs



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goal	2.32											
Actual	2.21											

PVGS Executive Cost Report

O&M Cost per Kilowatt Hour

January 2020

A.	O&M Costs ($000):		44,594
	Amortization/Redhawk Tertiary		(344)
	Incentives		0
		Net O&M:	44,250
B.	Net Generation (MWh):	Unit 1	995,024
		Unit 2	997,550
		Unit 3	983,420
		Total	**2,975,994**
C.	Net O&M Cost per kWh:		1.487 *Cents per KWhr (1 & 3)*
D.	Nuclear Fuel Expense:		0.722 *Cents per KWhr (2)*
E.	Total O&M Cost per kWh (W/Fuel)		**2.209** *Cents per KWhr (1, 2, & 3)*

I.	2019 Actual:	2.67 *Cents per KWhr (1, 2, & 3)*
II.	2018 Actual Revised:	2.69 *Cents per KWhr (1, 2, & 3)*
III.	2017 Actual Revised:	2.78 *Cents per KWhr (1 & 2)*
IV.	2016 Actual Revised:	2.81 *Cents per KWhr (1 & 2)*
V.	2015 Actual Revised:	2.78 *Cents per KWhr (1 & 2)*
VI.	2014 Actual Revised:	2.87 *Cents per KWhr (1 & 2)*
VII.	2013 Actual Revised:	2.93 *Cents per KWhr (1 & 2)*
VIII	2012 Actual Revised:	2.92 *Cents per KWhr (1 & 2)*
IX.	2011 Actual Revised:	2.90 *Cents per KWhr (1 & 2)*
X.	2010 Actual Revised:	2.83 *Cents per KWhr (1 & 2)*

Note: Revision of the Production Cost Calculation

(1) O&M is calculated as O&M costs including incentives, less amortization

(2) Fuel Expense: YTD = $21.5 M. The fixed and variable costs related to nuclear spent fuel rod storage are not included in the unit costs.

(3) O&M is calculated to exclude Redhawk Tertiary

PVGS Executive Cost Report
FERC Cost Report
January 2020
($ 000)

			Current Month				Year to Date				Total	Remaining
			Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
	Production Operations											
5170000	517	Ops Supv & Eng	7,095	5,403	(1,692)	-24%	7,095	5,403	(1,692)	-24%	75,018	69,616
5190000	519	Coolants and Water	4,006	3,764	(242)	-6%	4,006	3,764	(242)	-6%	50,241	46,477
5200000	520	Steam Expenses	2,304	1,840	(464)	-20%	2,304	1,840	(464)	-20%	33,114	31,274
5230000	523	Electric Expenses	3,948	2,805	(1,143)	-29%	3,948	2,805	(1,143)	-29%	41,238	38,432
5240000	524	Misc Nuc Power Exp	10,216	12,483	2,268	22%	10,216	12,483	2,268	22%	141,452	128,969
5250000	525	Nuc Power Rents	-	-	-	0%	-	-	-	0%	-	-
		Total Production Operations	**27,569**	**26,296**	**(1,273)**	**-5%**	**27,569**	**26,296**	**(1,273)**	**-5%**	**341,063**	**314,768**
	Production Maintenance											
5280000	528	Supv & Eng	631	203	(428)	-68%	631	203	(428)	-68%	18,991	18,788
5290000	529	Maint of Structure	(122)	438	560	-458%	(122)	438	560	-458%	6,129	5,691
5300000	530	Maint of Reactor Plant Equip	2,893	1,973	(920)	-32%	2,893	1,973	(920)	-32%	62,498	60,525
5310000	531	Maint of Electric Plant	1,332	1,788	456	34%	1,332	1,788	456	34%	22,839	21,051
5320000	532	Maint of Misc Nuc Plant	440	545	105	24%	440	545	105	24%	6,249	5,704
		Total Production Maintenance	**5,173**	**4,947**	**(226)**	**-4%**	**5,173**	**4,947**	**(226)**	**-4%**	**116,706**	**111,759**
	Transmission											
5560000	556	Sys Cntl/Load Dispatch	590	533	(57)	-10%	590	533	(57)	-10%	7,229	6,696
		Total Transmissions	**590**	**533**	**(57)**	**-10%**	**590**	**533**	**(57)**	**-10%**	**7,229**	**6,696**
	Other											
4081001	408	Payroll Taxes	1,419	1,415	(4)	0%	1,419	1,415	(4)	0%	19,009	17,594
4082001	408	Other Taxes	-	-	-	0%	-	-	-	0%	-	-
4261000	426	Donations/Penalties	10	114	104	1040%	10	114	104	1040%	112	(2)
4264000	426	Civic Political	-	2	2	0%	-	2	2	0%	-	(2)
4265000	426	Other Deductions/Exp	-	-	-	0%	-	-	-	0%	-	-
9240000	924	Property Insurance	566	543	(23)	-4%	566	543	(23)	-4%	6,786	6,243
9250000	925	Injuries & Damages	444	303	(141)	-32%	444	303	(141)	-32%	3,971	3,668
9250001	925	Injuries & Damages - Benefits	177	176	(1)	0%	177	176	(1)	0%	1,941	1,765
9260001	926	Pensions & Benefits	3,443	3,427	(16)	0%	3,443	3,427	(16)	0%	37,841	34,414
9280000	928	Reg Commission Exp	1,335	1,308	(27)	-2%	1,335	1,308	(27)	-2%	17,621	16,313
9302000	930	Admin & General Exp	5,473	5,529	56	1%	5,473	5,529	56	1%	73,321	67,792
		Total Other	**12,866**	**12,817**	**(49)**	**0%**	**12,866**	**12,817**	**(49)**	**0%**	**160,601**	**147,784**
		Total	**46,199**	**44,594**	**(1,605)**	**-3%**	**46,199**	**44,594**	**(1,605)**	**-3%**	**625,600**	**581,006**

PVGS Executive Cost Report

2020 Total (O&M and Capital) Actual Incentives with Loads

January 2020

$	33,582	Est.	Total Year End Incentive
	-	Est.	Total Unit-3 Outage Incentive (100 day run)
	33,582		**Subtotal Estimate Incentives for 2020**
$	11,418	Est.	Total Loads For Year-End Incentive
	-	Est.	Total Unit-3 Outage Incentive (100 day run)
	11,418		**Subtotal Estimate Incentive Load for 2020**
$	-	Est.	2019 EIP True Up
	-	Est.	2019 EIP Incentive Payroll
	-	Est.	2019 EIP Incentive Loads
	0		**Subtotal Incentives - Prior Year Adjustments**

$	**45,000**	**Total (O&M and Capital) Actual Incentives and Loads for 2020**

PVGS Executive Cost Report
Year End Forecast
January 2020
($ Millions)

	YTD Actuals	Actuals Jan	Forecast Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year End Variance
O & M	44.59	44.59	41.98	50.13	72.11	44.78	44.01	43.43	42.94	45.87	64.94	43.83	44.29	-
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	-	-	-	-	-	-	42.70	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total O&M	44.59	44.59	41.98	50.13	72.11	44.78	44.01	43.43	42.94	45.87	64.94	43.83	86.99	-

	YTD Actuals	Actuals Jan	Forecast Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year End Variance
Capital	10.09	10.09	13.85	19.29	34.56	14.73	15.74	8.35	11.47	27.85	35.04	21.06	18.67	-
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	-	-	-	-	-	-	2.30	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total Capital	10.09	10.09	13.85	19.29	34.56	14.73	15.74	8.35	11.47	27.85	35.04	21.06	20.97	-

(1) Exclusions include: Mid- Year True-Ups (A&G/PRD, Load Dispatch - Exhibit 1 A&G) and any Mid -Year Rate Changes.

PaloVerde™
GENERATING STATION

MICHAEL MCLAUGHLIN
Vice President
Operations Support

5801 S Wintersburg Rd
Tonopah, AZ 85354

ID: 510-00392
Date: March 25, 2020

To: File
Sta. #
Ext. #

From: M. McLaughlin M.E.M.
Sta. # 7605
Ext. # 82-5761

Subject: **PVGS February 2020 Executive Cost Report**

Attached is the PVGS Executive Cost Report that reflects information for February 2020 for the O&M (including incentives), Capital (including incentives), and Nuclear Fuel budgets. The report compares actual costs to budget for the month, year-to-date (YTD), and presents the year-end variances as summarized below:

(Millions of Dollars)

Category	YTD Budget	YTD Actual	Year – End Variance
O&M	**89.59**	**87.52**	**0.00**
Capital	**25.35**	**22.16**	**0.00**
Nuclear Fuel	**67.47**	**62.11**	**(0.31)**
Total	**182.41**	**171.79**	**(0.31)**

Please call me if you have any questions or comments.

MM / SB

Attachment

cc:

J. Cadogan	7602		J. McGill	7990
J. Guldner	9040		T. Mionske	7990
T. Horton	8201		E. Asturias	7990
M. Lacal	7605			
M. McLaughlin	7605			
B. Rash	7602			

Palo Verde Generating Station
Executive Cost Report
February 2020
Prepared by
Business Operations

Palo Verde Generating Station
Executive Cost Report

Table of Contents

All Budgets Recap 1
Operations & Maintenance Explanation..... 2
Capital Improvements Explanation..... 4
Inventory Explanation..... 6
Nuclear Fuel Explanation 7
O&M Power Block 8
Capital Improvements Variance..... 9
Nuclear Fuel 10
Inventory 11
Revenue 13
Outage (O&M) 14
Manpower / Overtime 15
Contract Labor / Contract Service 16
YTD Production Cost / O&M Cost per KWH 17
O&M Cost per KWH 18
O&M FERC Report 19
Estimated Incentives, Severances and Adjustments 20
O&M & Capital Monthly Cash Flows..... 21

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

	Current Month			Year-to-Date			Year-End Forecast		
	Budget	Actual	Var.	Budget	Actual	Var.	Budget	Forecast	Var.
O & M	42.79	42.93	0.13	88.98	87.52	(1.47)	582.90	582.90	0.00
Incentives (w/ Loads & Adj)	0.61	-	(0.61)	0.61	-	(0.61)	42.70	42.70	(0.00)
Sub Total O&M	43.39	42.93	(0.48)	89.59	87.52	(2.08)	625.60	625.60	0.00
Capital	10.94	12.07	1.13	25.35	22.16	(3.20)	230.70	230.70	0.00
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	2.30	2.30	0.00
	10.94	12.07	1.13	25.35	22.16	(3.20)	233.00	233.00	0.00
Nuclear Fuel	53.62	52.59	(1.03)	67.47	62.11	(5.36)	214.69	214.38	(0.31)
Total	107.95	107.58	(0.38)	182.41	171.79	(10.64)	1,073.29	1,072.98	(0.31)
Net Inventory				171.90	183.78	11.88	170.90	179.44	8.54
Revenue	0.17	0.33	0.15	0.41	0.49	0.08	3.21	3.21	0.00

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

February 2020 MTD O&M Variance: ($0.48) Under-run

MTD	Comments
	Budget Timing:
$0.00	Incentives:
$0.77	Online: Site Support (Various Groups - 2nd Qtr) $0.38, Payroll Overtime Accrual Reversal (March) $0.36, Site Chemicals (Powerblock) $0.03
($0.38)	Outage: 2R22 Material [Request Timing - April] $0.39, Contract Labor (April) $0.17, Engineering Services [Purchase Request Timing- March] ($0.94)
	Budget Savings:
($0.61)	Incentives: U3R21 100 Day Run
($0.18)	Online: Insurance (Allocation Adjustment) ($0.18)
($0.84)	Outage: Prior Year Outage Support [Final Invoicing/Material Returns] ($0.84)
	Budget Impacts:
$0.76	Online: U3 RCP 1B SNO (APS Overtime, Labor OT, Materials) $0.52, Material Average Unit Cost Adjustments $0.14, DOE (Insurance) $0.10
$0.00	Outage:
Total **($0.48)**	

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

February 2020 YTD O&M Variance: ($2.08) Under-run

YTD	Comments
	Budget Timing:
($0.29)	Online: Site Support (Various Groups - 2nd Qtr) $0.38, Payroll Overtime Accrual Reversal (March) $0.36, Site Chemicals (Powerblock) $0.32, Station Services [Software Maintenance Fees- under review] ($0.18), Relocations Costs [Potential Savings, under review] ($0.26), Site Payroll/Loads [3rd/4th Qtr] ($0.43), Sandia Labs/Policy Group [Contract Review - 1st Qtr] ($0.48)
($0.47)	Outage: 2R22: Material (Request Timing - April) $0.30, Contract Labor (April) $0.17, Engineering Services [Purchase Request Timing- March] ($0.94)
	Budget Savings:
($0.61)	Incentives: U3R21 100 Day Run
($0.28)	Online: Insurance [Allocation Adjustment] ($0.18), Engineering License - ETAP [RUC] ($0.10)
($1.44)	Outage: 3R21: Prior Year Outage Support [Final Invoicing/Material Returns] ($1.44)
	Budget Impacts:
$0.00	Incentives:
$1.01	Online: U3 RCP 1B SNO (APS Overtime, Labor OT, Materials) $0.52, Water Resources Chemical Price Changes (Lime/Sulfuric Acid) $0.15, Material Average Unit Cost Adjustments $0.14, NAU Degree Program $0.10, DOE (Insurance) $0.10
$0.00	Outage:
Total **($2.08)**	

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

February 2020 MTD Capital Variance: $1.13 Over-run

MTD	Comments
($1.82)	Budget Timing: Landfill Expansion [Due to the timing of actuals posting in January] ($0.21), Life Cycle Computer Replacement [Timing due to materials now expected in May] ($0.22), Digital SMP Phase I U3 [Timing due to missed engineering milestone, now expected in March] ($0.32), Digital SMP Phase II [Timing due to delays in issuing engineering purchase order] ($0.34), SP Chemical Addition Upgrade U1 [Timing of milestone payment pushed out] ($0.35), CTLE U2 [Timing due to most work happening during the outage] ($0.38)
($0.14)	Budget Savings: Diesel Crane Pendant U2 [Savings for 2020, project has been moved to 2021] ($0.14)
$3.09	Budget Impacts: Magnastor Dry Cask Storage [Impact due to project carry over from 2019, should see credit for DOE reimbursement at end of Q2] $1.27, RCP Seal Replacement U3B [Impact due to emergent SNO work] $0.92, Normal Chiller Replacement [Impact due to project no being budget as this is a carry over from 2019] $0.33, Valve Repls U3 2020 [Impact due to emergent work] $0.31, 45 Acre Inlet Structure [Impact due to emergent work identified in 2019 and completing this year] $0.26
Total **$1.13**	

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

February 2020 YTD Capital Variance: ($3.20) Under-run

	YTD	Comments
	($4.03)	Budget Timing: Digital SMP Phase I U3 [Due to delays with vendor - 1st Qtr.] ($1.23), Digital SMP Phase II [Due to delays in issuing engineering purchase order - 1st Qtr.] ($0.90), Clarifiers Life Extension T3 [Due to project delays needed to support emergent projects - July] ($0.88), EDG Spare Generator [Due to milestone payment being deferred to March] ($0.81), Security Access Control Computer Replacement [Due to engineering delays - 2nd Qtr.] ($0.71), C&MS Full Replacement [Due to implementation delays - May] ($0.55), RCP Seal Replacement U2 [Materials pulled from warehouse sooner than budgeted - April] $0.26, Valve Replacements U3 [Due to emergent work] $0.31, Valve Replacements U2 [Materials pulled from warehouse sooner than budgeted - April] $0.34 , Misc. $0.14
	($1.06)	Budget Savings: RCP Motor Repl 1R22 [2020 Milestone payment was executed in 2019] ($1.06)
	$1.89	Budget Impacts: RCP Seal Replacement U3 1B [Emergent SNO] $0.92, 45 Acre Inlet Structure [Emergent project not budgeted for in 2020] $0.97
Total	**($3.20)**	

PVGS Executive Cost Report
All Budgets Recap
February 2020
($ Millions)

February 2020 YTD Inventory Variance: $11.88 Over-run

	YTD	Comments
	$0.95	Budget Timing: Less Receipts ($0.82); Less Issues $0.18; Greater Adjustments $1.19; Greater Material Returns $0.05; Material Sales/Write-Offs $0.35
	$0.00	Budget Savings:
	$10.93	Budget Impacts: 2019 Inventory Impacts [Less Issues / More Adjustments Partially offset by Less Receipts / Less Returns $2.67; More Material Write-Offs $1.74; MST / Support Ring Moved from Capital Project to Inventory $6.52M
Total	**$11.88**	

PVGS Executive Cost Report
Nuclear Fuels
February 2020
($ Millions)

YTD	Project	Comments
	FIP:	
$4.16	**Uranium**	Timing - EUP (U3O8 component) delivery budgeted in October moved to February
$1.45	**Conversion**	Timing - EUP (Conversion component) delivery budgeted in October moved to February
$1.38	**Enrichment**	Timing - EUP (SWU component) delivery budgeted in October moved to February
($5.47)	**Fabrication**	Timing - U3C23 NGF Milestone payment moved to September
($2.82)	**Use Tax**	Timing - U1C23 Use Tax budgeted for February moved to March
$0.21	**Labor**	Impact - Framatome Fuel implementation project
($2.52)	**Outside Services**	Timing - Procurement of Casmo/Simulate computer codes moved to April
($0.11)	**Other**	Savings - NRC Fees associated with Framatome Fuel Implementation project less than budgeted
Subtotal FIP	**($3.72)**	
	DCS:	
($0.50)	**Labor**	Timing - MAGNASTOR implementation project
($0.52)	**Materials**	Timing - MAGNASTOR material milestones
($0.64)	**Outside Services**	Timing - MAGNASTOR engineering services
($0.01)	**Other**	Timing - MAGNASTOR rental services
$0.03	**DOE Settlement**	Impact - DOE credit accrual true-up
Subtotal DCS	**($1.64)**	
Total	**($5.36)**	

PVGS Executive Cost Report
O&M Power Block Report
February 2020
($000)

	Current Month				Year-to-Date				Total	Remaining
	Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
UNIT - 1	11,364	11,604	240	2%	24,363	24,329	(34)	0%	188,140	163,810
UNIT - 2	13,810	13,064	(747)	-5%	27,157	25,932	(1,225)	-5%	192,593	166,661
UNIT - 3	11,775	11,538	(237)	-2%	24,542	22,850	(1,691)	-7%	157,116	134,265
COMMON	1,038	1,563	525	51%	2,120	3,270	1,150	54%	14,134	10,864
PVUNALL	(0)	0	0	0%	(0)	(0)	(0)	0%	(0)	0
WRF	5,404	5,157	(247)	-5%	11,408	11,137	(271)	-2%	73,617	62,480
GENERAL	0	0	0	0%	0	(0)	(0)	0%	(0)	0
TOTAL PV	**43,391**	**42,926**	**(466)**	**-1%**	**89,590**	**87,519**	**(2,071)**	**-2%**	**625,600**	**538,080**
PAYROLL	17,160	17,259	98	1%	37,430	37,477	47	0%	271,559	234,082
CONTRACT LABOR	2,444	2,479	35	1%	4,859	4,958	99	2%	44,158	39,200
MATL / SUPPLIES	5,259	5,705	446	8%	9,806	10,729	923	9%	63,834	53,105
OUTSIDE SERVICES	4,897	3,699	(1,198)	-24%	8,542	5,439	(3,102)	-36%	58,557	53,118
OTHER	13,631	13,784	153	1%	28,954	28,917	(37)	0%	187,492	158,576

PVGS Executive Cost Report
Capital Improvements Variance Summary
February 2020
($000)

		<--------- Current Month ---------->				<---------- Year-to-Date ---------->				
	Budget Category	**Budget**	**Actual**	**Variance**	**Percent**	**Budget**	**Actual**	**Variance**	**Percent**	**Annual Budget**
1	**Plant Modifications**	3,568	2,246	(1,321)	-37%	7,532	3,838	(3,694)	-49%	46,395
2	**Equipment & Replacements**	1,560	5,851	4,292	275%	5,869	9,000	3,130	53%	94,740
3	**Buildings**	620	203	(416)	-67%	1,140	212	(928)	-81%	8,995
4	**General Plant**	414	-332	(746)	-180%	843	524	(319)	-38%	8,059
5	**Computers**	728	319	(409)	-56%	1,109	583	(526)	-47%	18,406
6	**Water Rec Facility**	2,801	2,608	(193)	-7%	6,101	5,745	(356)	-6%	35,162
7	**Overheads**	1,256	1,173	(83)	-7%	2,758	2,256	(502)	-18%	18,677
8	**Emergent Work Fund**	0	0	0	0%	0	0	0	0%	2,566
9	**Fukushima**	0	0	0	0%	0	0	0	0%	0
11	**Capitalized Incentives**	0	0	0	0%	0	0	0	0%	0
	Totals	**10,945**	**12,068**	**1,124**	**10%**	**25,352**	**22,157**	**(3,195)**	**-13%**	**233,000**

PVGS Executive Cost Report
Nuclear Fuel Report
February 2020
($000)

	Current Month			Year-To-Date			Year-End		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Forecast	Variance
Fuel In Process	52,449	52,222	(227)	65,382	61,664	(3,718)	215,000	214,039	(961)
Fuel In Stock	-	-	-	-	-	-	-	-	-
Spent Fuel Disposal	-	-	-	-	-	-	-	-	-
Dry Cask Storage	1,170	363	(807)	2,088	445	(1,643)	(310)	338	648
TOTAL NUCLEAR FUEL	**53,619**	**52,585**	**(1,034)**	**67,470**	**62,109**	**(5,361)**	**214,690**	**214,377**	**(313)**

PVGS Executive Cost Report
Inventory Balance Sheet
February 2020

January 2020 Ending Inventory Balance less Amortization			$185,527,466
Increases:			
	Receipts		$3,133,739
	Returns		$978,727
	Inventory Adjustments		($233,157)
	Intercompany Balance		$0
	Accounting Adjustments		$277,249
	Misc JVs (Repair Accrual)		$0
	Misc JV (SOX Accrual)		$0
		Subtotal	$4,156,558
Decreases:			
	Issues		($6,207,462)
		Net Change	($2,050,904)
Amortization Transactions:			
	Monthly Amortization Cost	($200,000)	
	Write Offs & Sales	$500,075	
			$300,075
February 2020 Ending Inventory Balance less Amortization			$183,776,636

Notes:
- Sales to outside utilities for the month was $64,641 that was written off at original cost.
- The above sales were invoiced for a total of $80,538 (net 30 days)
- Current month revenue received for sales to outside utilities totaled ($15,896)
- To Date Amortization Balance = ($40,582,226)
- Capitalized Spare Account Balance Original Cost = $32,538,003

PVGS Executive Cost Report
Major Inventory Transactions (Over $25K)
February 2020

INVENTORY

		Qty	$ Value			Qty	$ Value
Issue:	SOLENOID ELECT. ASM	1	$38,979	**Received:**	SEAL, MECHANICAL	1	$50,163
	LITHIUM HYDROXIDE	1	$42,161		PUMP DISCHARGE HEAD	1	$29,297
	PLATE THRUST/SEQ NO 0608	1	$39,894		VLV ACTUATOR SMB-3W/H6BC	5	$399,885
	VALVE ASMY 3/8IN SOV	1	$34,303		VALVE BUTTERFLY 24"	1	$104,500
	MANIFOLD, EXHAUST; 20 CYL	1	$401,151		CIRC WATER PUMP SHAFT	1	$48,470
	VALVE BUTTERFLY 24"	1	$104,500		ACCUMULATOR, HYDRAULIC	2	$141,238
	VALVE, SOLENOID	1	$22,858		ENRICHED BORIC ACID	2	$138,400
	DISC STACK TYPE 410 CRES	1	$62,598		AOV TESTING ACCESSORY KIT	3	$78,528
	VALVE ASMY 3/8IN SOV	1	$34,303		VALVE, BUTTERFLY, 20 IN	1	$125,500
	TRANSMITTER, DIFF. PRESS.	1	$41,134		ROTOR, POWER, MSOP	1	$36,588
	DISC STACK TYPE 410 CRES	1	$62,598		GEARBOX, ASSEMBLY	1	$36,892
	SBCV PLUG ASSEMBLY	1	$56,443		VALVE, SOLENOID	2	$59,403
	CIRC WATER PUMP SHAFT	1	$48,470				
	PUMP MAIN EHC "B" TRAIN	1	$59,103	**Restock:**	VALVE BUTTERFLY 24"	1	$104,500
	BALL VALVE	6	$151,818		VALVE, FOUR WAY HYD.	1	$107,822
	CONDITIONING SKID (FTLO)	1	$45,944				
	CONDITIONING SKID (MTLO)	1	$63,635				
	GEARBOX, ASSEMBLY	1	$39,806				
	MOTOR ELECTRIC 3500 HP	1	$112,630				
	O-RING SET, RV HEAD	1	$72,400				
	VLV ACTUATOR SMB-3W/H6BC	1	$79,977				
	AOV TESTING ACCESSORY KIT	3	$28,244				
	VALVE, CHECK, LUBE OIL	2	$58,509				
	VALVE, RELIEF, 3/4 IN	1	$42,472				
	COUNTER PROPORTIONAL ASSY	1	$103,653				
	CYLINDER, HYDRAULIC	3	$29,942				
	VALVE, RELIEF, 1 1/2 IN	1	$28,234				
	CABLE, OVERSPEED SHUTDOWN	1	$30,138				
	CABLE, OVERSPEED SHUTDOWN	1	$35,556				
	COUPLING, OVERSPEED	1	$39,214				
	TRANSDUCER, EP, 4-20MA	1	$25,668				
	PREAMP/FILTER ASM.	1	$54,378				
	ROTOR, POWER, MSOP	1	$39,478				
	ENRICHED BORIC ACID	2	$73,075				
	TRANSDUCER, EP, 4-20MA	1	$25,668				

Revenue, Budget, Actuals, Forecast Variance By Month
February 2020

Description		Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Quantity (acre-feet):														
T&T Units 1 & 2	Budget	**3,674**	274	193	206	94	547	382	454	433	424	98	365	204
	Act/F'cast	**3,762**	176	379	206	94	547	382	454	433	424	98	365	204
	Var	**88**	(98)	186	-	-	-	-	-	-	-	-	-	-
Unit Rate ($/acre-foot):														
Transportation & Treatment		**$843**												
Revenue ($ 000):														
	Budget	**3,099**	231	163	174	79	461	322	383	365	358	83	308	172
T&T Units 1 & 2	Act/F'cast	**3,174**	149	320	174	79	461	322	383	365	358	83	308	172
Adjustments*	Act/F'cast	**(74)**	-	-	(74)	-	-	-	-	-	-	-	-	-
	Var	**1**	(82)	157	(74)	-	-	-	-	-	-	-	-	-
Initial Reserve Fee &	Budget	**38**	4	4	4	5	1	2	2	2	2	5	3	4
Credits - U1 & U2	Act/F'cast	**35**	4	1	4	5	1	2	2	2	2	5	3	4
	Var	**(3)**	-	(3)	-	-	-	-	-	-	-	-	-	-
Add'l Reserve Fee &	Budget	**75**	6	6	6	6	6	6	6	6	6	6	6	6
Credits - U3 & U4	Act/F'cast	**75**	6	6	6	6	6	6	6	6	6	6	6	6
	Var	**-**	-	-	-	-	-	-	-	-	-	-	-	-
2019 Transportation	Budget	-	-	-	-	-	-	-	-	-	-	-	-	-
and Treatment	Act/F'cast	-	-	-	-	-	-	-	-	-	-	-	-	-
True-Ups	Var	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	Budget	**3,212**	241	173	184	91	469	330	391	373	366	94	317	182
	Act/F'cast	**3,212**	**160**	**328**	**110**	**91**	**469**	**330**	**391**	**373**	**366**	**94**	**317**	**182**
	Var	**0**	(82)	155	(74)	0	0	(0)	0	(0)	0	0	0	(0)

PVGS Executive Cost Report
Total Outage (O&M)
February 2020
($ Millions)

	Current Month			Year-To-Date			Year-End		
2020 Outages	**Budget**	**Actual**	**Var.**	**Budget**	**Actual**	**Var.**	**Budget**	**Forecast**	**Var.**
Unit - 2	2.50	2.24	(0.27)	2.94	2.56	(0.38)	34.23	34.23	-
Unit - 1	-	(0.14)	(0.14)	-	(0.02)	(0.02)	28.96	28.96	-
Sub-Total 2020 Outages	**2.50**	**2.10**	**(0.40)**	**2.95**	**2.54**	**(0.40)**	**63.19**	**63.19**	**-**
2019 Outage Expenses									
Unit - 3	-	(0.82)	(0.82)	-	(1.43)	(1.43)	-	(1.43)	(1.43)
Sub-Total 2019 Outages	**-**	**(0.82)**	**(0.82)**	**-**	**(1.43)**	**(1.43)**	**-**	**(1.43)**	**(1.43)**
Total	**2.50**	**1.28**	**(1.22)**	**2.95**	**1.11**	**(1.83)**	**63.19**	**61.76**	**(1.43)**

PVGS Executive Cost Report
APS Employees & Overtime
Contract Labor Overtime
February 2020

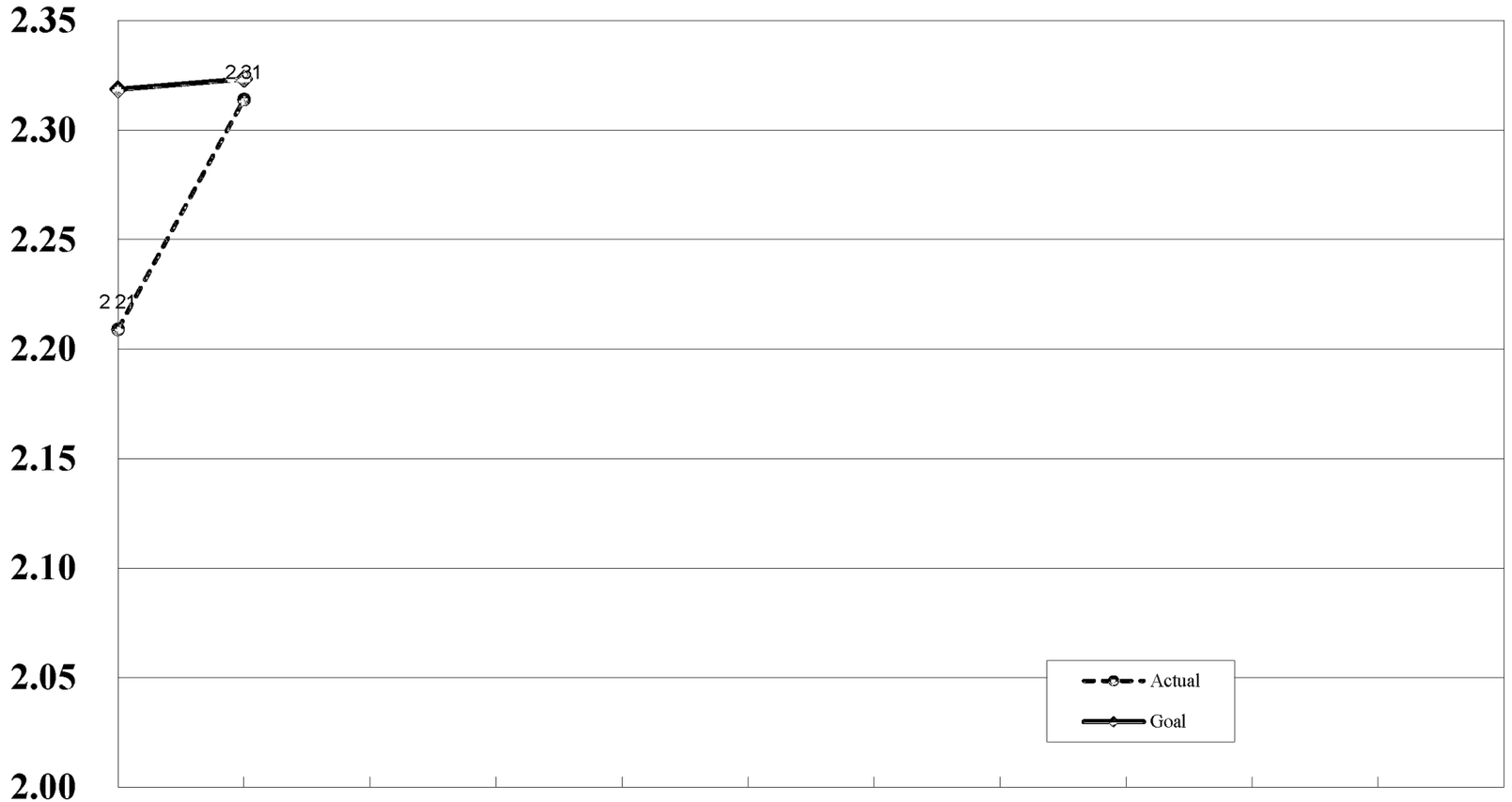
		APS Employees			APS Overtime %		Contract Labor Overtime %	
	Organization	Budget	Actual	Var	Budget	Actual	Budget	Actual
82PP	Nuclear Operations	1,165	1,166	1	5%	11%	3%	8%
97PP	Nuclear Engineering	338	322	(16)	1%	2%	0%	4%
96PP	Emergency Services & Support	434	434	0	9%	17%	2%	2%
83PP	Station Support Organizations	61	52	(9)	0%	1%	0%	14%
	Total	**1,998**	**1,974**	**(24)**	**5%**	**9%**	**2%**	**6%**
	Year-To-Date Average	**2,003**	**1,987**	**(16)**	**7%**	**9%**	**2%**	**4%**
	Equivalent "Borrowed" Employees							
	Current Month	**56**	**58**	**2**				
	Year-To-Date	**56**	**58**	**2**				

Note: All budgets and actual include O&M, Capital and Fuel values.

PVGS Executive Cost Report
Contract Labor and Outside Service Report
February 2020
($000)

ORGANIZATION	Non-Outage O&M						Outage O&M					
	Contract Labor			Outside Services			Contract Labor			Outside Services		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance
82PP Total Nuc Operations												
Current Month	$1,313	$1,380	$67	$1,287	$2,019	$732	$232	$203	($29)	$500	($145)	($645)
YTD Closed	$2,710	$2,902	$192	$2,238	$2,644	$406	$232	$255	$23	$500	($266)	($766)
97PP Tot Nuclear Eng & Support												
Current Month	$175	$138	($37)	$663	$269	($394)	$0	$2	$2	$947	($39)	($986)
YTD Closed	$368	$269	($99)	$1,179	$552	($626)	$0	$2	$2	$947	($288)	($1,235)
96PP Total Operations Support												
Current Month	$719	$668	($51)	$507	$622	$115	$0	$1	$1	$0	($3)	($3)
YTD Closed	$1,540	$1,438	($101)	$1,066	$1,034	($32)	$0	$1	$1	$0	($36)	($36)
83PP Total Station Support												
Current Month	$5	$83	$78	$994	$978	($16)	$0	$4	$4	$0	$0	$0
YTD Closed	$9	$88	$79	$2,612	$1,800	($812)	$0	$4	$4	$0	$0	$0
Total												
Current Month	$2,212	$2,269	$57	$3,450	$3,887	$437	$232	$210	($22)	$1,447	($188)	($1,635)
YTD Closed	$4,627	$4,696	$70	$7,095	$6,030	($1,064)	$232	$261	$29	$1,447	($591)	($2,038)

PVGS Executive Cost Report
2020 YTD Production Costs



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goal	2.32	2.32										
Actual	2.21	2.31										

PVGS Executive Cost Report

O&M Cost per Kilowatt Hour

February 2020

A.	O&M Costs ($000):		87,519
	Amortization/Redhawk Tertiary		(688)
	Incentives		0
		Net O&M:	86,831
B.	Net Generation (MWh):	Unit 1	1,923,016
		Unit 2	1,929,569
		Unit 3	1,615,022
		Total	**5,467,607**
C.	Net O&M Cost per kWh:		1.588 *Cents per KWhr (1 & 3)*
D.	Nuclear Fuel Expense:		0.726 *Cents per KWhr (2)*
E.	Total O&M Cost per kWh (W/Fuel)		**2.314** *Cents per KWhr (1, 2, & 3)*

I.	2019 Actual:	2.67 *Cents per KWhr (1, 2, & 3)*
II.	2018 Actual Revised:	2.69 *Cents per KWhr (1, 2, & 3)*
III.	2017 Actual Revised:	2.78 *Cents per KWhr (1 & 2)*
IV.	2016 Actual Revised:	2.81 *Cents per KWhr (1 & 2)*
V.	2015 Actual Revised:	2.78 *Cents per KWhr (1 & 2)*
VI.	2014 Actual Revised:	2.87 *Cents per KWhr (1 & 2)*
VII.	2013 Actual Revised:	2.93 *Cents per KWhr (1 & 2)*
VIII	2012 Actual Revised:	2.92 *Cents per KWhr (1 & 2)*
IX.	2011 Actual Revised:	2.90 *Cents per KWhr (1 & 2)*
X.	2010 Actual Revised:	2.83 *Cents per KWhr (1 & 2)*

Note: Revision of the Production Cost Calculation

(1) O&M is calculated as O&M costs including incentives, less amortization

(2) Fuel Expense: YTD = $39.7 M. The fixed and variable costs related to nuclear spent fuel rod storage are not included in the unit costs.

(3) O&M is calculated to exclude Redhawk Tertiary

PVGS Executive Cost Report
FERC Cost Report
February 2020
($ 000)

		Current Month				Year to Date				Total	Remaining
		Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
	Production Operations										
5170000	517 Ops Supv & Eng	6,134	5,947	(188)	-3%	13,229	11,349	(1,880)	-14%	75,018	63,669
5190000	519 Coolants and Water	3,701	3,622	(79)	-2%	7,707	7,386	(321)	-4%	50,241	42,855
5200000	520 Steam Expenses	1,835	2,831	996	54%	4,139	4,672	533	13%	33,114	28,443
5230000	523 Electric Expenses	3,060	2,992	(69)	-2%	7,009	5,797	(1,212)	-17%	41,238	35,441
5240000	524 Misc Nuc Power Exp	8,937	8,017	(920)	-10%	19,152	20,500	1,348	7%	141,452	120,952
5250000	525 Nuc Power Rents	-	-	-	0%	-	-	-	0%	-	-
	Total Production Operations	**23,667**	**23,408**	**(259)**	**-1%**	**51,236**	**49,704**	**(1,532)**	**-3%**	**341,063**	**291,359**
	Production Maintenance										
5280000	528 Supv & Eng	1,487	528	(959)	-65%	2,117	731	(1,387)	-65%	18,991	18,260
5290000	529 Maint of Structure	253	469	216	86%	131	907	777	594%	6,129	5,221
5300000	530 Maint of Reactor Plant Equip	4,365	2,722	(1,644)	-38%	7,258	4,695	(2,563)	-35%	62,498	57,803
5310000	531 Maint of Electric Plant	1,514	3,081	1,567	104%	2,846	4,869	2,023	71%	22,839	17,970
5320000	532 Maint of Misc Nuc Plant	419	838	419	100%	859	1,382	524	61%	6,249	4,867
	Total Production Maintenance	**8,037**	**7,637**	**(400)**	**-5%**	**13,211**	**12,584**	**(626)**	**-5%**	**116,706**	**104,122**
	Transmission										
5560000	556 Sys Cntl/Load Dispatch	602	512	(90)	-15%	1,192	1,045	(147)	-12%	7,229	6,184
	Total Transmissions	**602**	**512**	**(90)**	**-15%**	**1,192**	**1,045**	**(147)**	**-12%**	**7,229**	**6,184**
	Other										
4081001	408 Payroll Taxes	1,201	1,208	7	1%	2,620	2,623	3	0%	19,009	16,386
4082001	408 Other Taxes	-	-	-	0%	-	-	-	0%	-	-
4261000	426 Donations/Penalties	5	-	79	1570%	15	114	183	1217%	112	(2)
4264000	426 Civic Political	-	2	2	0%	-	5	5	0%	-	(5)
4265000	426 Other Deductions/Exp	-	84	84	0%	-	84	84	0%	-	(84)
9240000	924 Property Insurance	565	638	73	13%	1,131	1,181	50	4%	6,786	5,605
9250000	925 Injuries & Damages	290	298	8	3%	734	601	(133)	-18%	3,971	3,370
9250001	925 Injuries & Damages - Benefits	149	147	(2)	-1%	326	323	(3)	-1%	1,941	1,618
9260001	926 Pensions & Benefits	2,906	2,871	(35)	-1%	6,349	6,298	(52)	-1%	37,841	31,543
9280000	928 Reg Commission Exp	1,335	1,387	52	4%	2,670	2,695	25	1%	17,621	14,926
9302000	930 Admin & General Exp	4,633	4,734	101	2%	10,106	10,263	157	2%	73,321	63,058
	Total Other	**11,085**	**11,369**	**284**	**3%**	**23,951**	**24,186**	**235**	**1%**	**160,601**	**136,415**
	Total	**43,391**	**42,926**	**(465)**	**-1%**	**89,590**	**87,520**	**(2,070)**	**-2%**	**625,600**	**538,080**

PVGS Executive Cost Report

2020 Total (O&M and Capital) Actual Incentives with Loads

February 2020

$	33,582	Est.	Total Year End Incentive
	-	Act	Total Unit-3 Outage Incentive (100 day run)
	33,582		**Subtotal Estimate Incentives for 2020**
$	11,418	Est.	Total Loads For Year-End Incentive
	-	Act	Total Unit-3 Outage Incentive (100 day run)
	11,418		**Subtotal Estimate Incentive Load for 2020**
$	-	Est.	2019 EIP True Up
	-	Est.	2019 EIP Incentive Payroll
	-	Est.	2019 EIP Incentive Loads
	0		**Subtotal Incentives - Prior Year Adjustments**

$	**45,000**	**Total (O&M and Capital) Actual Incentives and Loads for 2020**

PVGS Executive Cost Report
Year End Forecast
February 2020
($ Millions)

	YTD	Actuals		Forecast										Year End
	Actuals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Variance
O & M	87.52	44.59	42.93	47.84	71.88	44.52	43.61	43.63	42.78	45.25	64.60	43.61	47.66	-
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	-	-	-	-	-	-	42.70	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total O&M	87.52	44.59	42.93	47.84	71.88	44.52	43.61	43.63	42.78	45.25	64.60	43.61	90.36	-

	YTD	Actuals		Forecast										Year End
	Actuals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Variance
Capital	22.16	10.09	12.07	20.94	35.67	16.63	15.41	10.05	12.28	28.63	37.98	21.82	9.13	-
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	-	-	-	-	-	-	2.30	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total Capital	22.16	10.09	12.07	20.94	35.67	16.63	15.41	10.05	12.28	28.63	37.98	21.82	11.43	-

(1) Exclusions include: Mid- Year True-Ups (A&G/PRD, Load Dispatch - Exhibit 1 A&G) and any Mid -Year Rate Changes.

PaloVerde™
GENERATING STATION

MICHAEL MCLAUGHLIN
Vice President
Site Services

5801 S Wintersburg Rd
Tonopah, AZ 85354

ID: 510-00394
Date: April 10, 2020

To: File
Sta. #
Ext. #

From: M. McLaughlin
Sta. # 7605
Ext. # 82-5761

Subject: **PVGS March 2020 Executive Cost Report**

Attached is the PVGS Executive Cost Report that reflects information for March 2020 for the O&M (including incentives), Capital (including incentives), and Nuclear Fuel budgets. The report compares actual costs to budget for the month, year-to-date (YTD), and presents the year-end variances as summarized below:

(Millions of Dollars)

Category	YTD Budget	YTD Actual	Year – End Variance
O&M	**142.59**	**135.49**	**(2.00)**
Capital	**55.53**	**38.66**	**0.00**
Nuclear Fuel	**76.54**	**74.43**	**(0.54)**
Total	**274.66**	**248.58**	**(2.54)**

Please call me if you have any questions or comments.

MM / SB
Attachment

cc:				
	J. Cadogan	7602	J. McGill	7990
	J. Guldner	9040	T. Mionske	7990
	T. Horton	8201	E. Asturias	7990
	M. Lacal	7605		
	M. McLaughlin	7605		
	B. Rash	7602		

Palo Verde Generating Station
Executive Cost Report
March 2020
Prepared by
Business Operations

Palo Verde Generating Station
Executive Cost Report

Table of Contents

All Budgets Recap 1
Operations & Maintenance Explanation..... 2
Capital Improvements Explanation..... 4
Inventory Explanation..... 6
Nuclear Fuel Explanation 7
O&M Power Block 8
Capital Improvements Variance..... 9
Nuclear Fuel 10
Inventory 11
Revenue 13
Outage (O&M) 14
Manpower / Overtime 15
Contract Labor / Contract Service 16
YTD Production Cost / O&M Cost per KWH 17
O&M Cost per KWH 18
O&M FERC Report 19
Estimated Incentives, Severances and Adjustments 20
O&M & Capital Monthly Cash Flows..... 21

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

	Current Month			Year-to-Date			Year-End Forecast		
	Budget	Actual	Var.	Budget	Actual	Var.	Budget	Forecast	Var.
O & M	53.00	47.53	(5.47)	141.98	135.05	(6.93)	582.90	580.90	(2.00)
Incentives (w/ Loads & Adj)	-	0.44	0.44	0.61	0.44	(0.17)	42.70	42.70	(0.00)
Sub Total O&M	53.00	47.97	(5.03)	142.59	135.49	(7.10)	625.60	623.60	(2.00)
Capital	30.18	16.50	(13.68)	55.53	38.66	(16.87)	230.70	230.70	0.00
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	2.30	2.30	0.00
	30.18	16.50	(13.68)	55.53	38.66	(16.87)	233.00	233.00	0.00
Nuclear Fuel	9.07	12.32	3.25	76.54	74.43	(2.11)	214.69	214.15	(0.54)
Total	92.25	76.79	(15.46)	274.66	248.58	(26.08)	1,073.29	1,070.75	(2.54)
Net Inventory				176.10	187.37	11.27	170.90	179.44	8.54
Revenue	0.18	(0.09)	(0.28)	0.60	0.40	(0.20)	3.21	3.21	0.00

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

March 2020 MTD O&M Variance: ($5.03) Under-run

MTD	Comments
	Budget Timing:
$0.00	Incentives:
($1.38)	Online: Station Services (Fees/Dues) ($0.24), SCORE/MLISS Replacement (Amortization for 2020) ($0.56), Site Support (Various Groups - Services/Fees- 2nd Qtr) ($0.58)
$1.94	Outage: 2R22: Engineering Services (Milestone Payments- April) $1.11, Contract Labor/Misc (April) $0.82, 1R22: Engineering Services (Mischarge- April) $0.01
	Budget Savings:
$0.00	Incentives:
($6.36)	Online: HR Relocation ($0.19), Site Emergent Work Fund ($0.25), SCORE/MLIS Replacement ($1.21), Insurance (Allocation Adjustment, NEIL Reimbursement) ($4.71)
($0.43)	Outage: 3R21: Prior Year Outage Support [Final Invoicing/Material Returns] ($0.43)
	Budget Impacts:
$0.43	Incentives: 2019 True-Up/EIP Update $0.43
$0.77	Online: COVID19 Support $0.61, U2 Main Feedwater Loss SNO (APS Overtime) $0.09, U3 RCP 1B SNO (APS Overtime, Labor OT, Materials) $0.07
$0.00	Outage:
Total **($5.03)**	

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

March 2020 YTD O&M Variance: ($7.10) Under-run

YTD	Comments
	Budget Timing:
($1.70)	Online: Site Chemicals (Powerblock) $0.25, Station Services (Fees/Dues) ($0.18), Sandia Labs/Policy Group (Contract Review - 1st Qtr) ($0.44), SCORE/MLISS Replacement (Amortization for 2020) ($0.56), Site Support (Various Groups - Services/Fees- 2nd Qtr) ($0.77)
$1.51	Outage: 2R22: Contract Labor/Misc (April) $0.72, Engineering Services (Milestone Payments- April) $0.78, 1R22: Engineering Services (Mischarge April) $0.01
	Budget Savings:
($0.61)	Incentives: U3R21 100 Day Run
($6.64)	Online: Engineering License - ETAP (RUC) ($0.10), Site Travel ($0.11), Site Emergent Work Fund ($0.25), HR Relocation ($0.26), SCORE/MLIS Replacement ($1.21), Insurance (Allocation Adjustment, NEIL Reimbursement) ($4.71)
($1.87)	Outage: 3R21: Prior Year Outage Support (Final Invoicing/Material Returns) ($1.87)
	Budget Impacts:
$0.43	Incentives: 2019 True-Up/EIP Update $0.43
$1.78	Online: U3 RCP 1B SNO (APS Overtime, Labor OT, Materials) $0.74, COVID19 Support $0.61, U2 Main Feedwater Loss SNO (APS Overtime) $0.09, Material Average Unit Cost Adjustments $0.14, NAU Degree Program $0.10, DOE (Insurance) $0.10
$0.00	Outage:
Total **($7.10)**	

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

March 2020 MTD Capital Variance: ($13.68) Under-run

MTD	Comments
($10.35)	Budget Timing: S.C.O.R.E Supply Chain Optimization [Originally budgeted $7.6M payment in March, however, will now be allocated quarterly] ($6.74), CTLE 2R22 [Most expenses will be executed during the Spring outage] ($1.28M), Valve Replacements U2 2020 [Less material pulled in preparation of 2R22] ($1.08), I&C and Electrical 1R22 [Less material pulled in preparation of 1R22] ($0.30) I&C and Electrical 2R22 [Less material pulled in preparation of 2R22] ($0.28), LV 22(Blowdown M/U) U2 [Field work moved to Q4] ($0.28), Warehouse 'A' LED Lighting [Implementation delays associated with emergent work and Covid-19] ($0.27), Concrete and Paving 2020 [Timing do to delays in starting work] ($0.25), Pump Replacements U2 2020 [Timing of materials pulled from warehouse] ($0.22), Piping-CW Pipeline Repl. 2020 [Timing due to mob/demob activities happening in March] $0.35
($3.86)	Budget Savings: LP Feedwater Heater Repl. U2R22 [Scope has been removed from 2R22 due to COVID-19] ($2.65), ESF Transformer Repl X03 [Scope has been removed from 2R22 due to COVID-19] ($0.71), Oracle Platform Hardware SWMS P6 [Project on hold] ($0.50)
$0.53	Budget Impacts: Fixed In-Core Detectors U2 2020 [Material costs were more than budgeted] $0.28, Normal Chiller Replacement [Impact due to project no being budget as this is a carry over from 2019] $0.25
Total **($13.68)**	

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

March 2020 YTD Capital Variance: ($16.87) Under-run

YTD	Comments
($14.26)	Budget Timing: S.C.O.R.E Supply Chain Optimization [Originally budgeted $7.6M payment in March, however, will now be allocated quarterly] ($6.74), CTLE 2R22 [Most expenses will be executed during the Spring outage] ($1.66M), Clarifiers Life Extension T3 [Project being delayed to support other emergent WRF projects Q4] ($1.09), Digital SMP Phase II [Due to delays in issuing engineering purchase order - Q2] ($1.01), Digital SMP Phase I U3 [Due to delays with vendor Q2] ($0.89), EDG Spare Generator [Due to milestone payment being deferred to May] ($0.81), Valve Replacements U2 2020 [Less material pulled in preparation of 2R22] ($0.74), Security Access Control Computer Repl. [Due to engineering delays Q2] ($0.69), Pump Replacements U2 2020 [Less material pulled in preparation of 2R22] ($0.36), I&C and Electrical 2R22 [Less material pulled in preparation of 2R22] ($0.34), Misc. $0.07
($4.59)	Budget Savings: LPFW Heater Repl. 2R22 [Scope has been removed from 2R22 due to COVID-19] ($2.83), RCP Motor Repl 1R22 [2020 Milestone payment was executed in 2019] ($1.05), ESF Xmfr NBNX03 [Scope has been removed from 2R22 due to COVID-19] ($0.71)
$1.98	Budget Impacts: RCP Seal Replacement U3 1B [Emergent SNO] $0.95, 45 Acre Inlet Structure [Emergent project not budgeted for in 2020] $1.03
Total **($16.87)**	

PVGS Executive Cost Report
All Budgets Recap
March 2020
($ Millions)

March 2020 YTD Inventory Variance: $11.27 Over-run

	YTD	Comments
	$0.98	Budget Timing: Greater Receipts $1.10; Less Issues $0.04; Less Adjustments ($0.32); Less Material Returns ($0.09); Material Sales/Write-Offs $0.25
	$0.00	Budget Savings:
	$10.29	Budget Impacts: 2019 Inventory Impacts [Less Issues / More Adjustments Partially offset by Less Receipts / Less Returns $3.28; More 2019 Material Write-Offs $0.49; MST / Support Ring Moved from Capital Project to Inventory $6.52M
Total	**$11.27**	

PVGS Executive Cost Report
Nuclear Fuels
March 2020
($ Millions)

YTD	Project	Comments
	FIP:	
$1.70	**Uranium**	Timing - EUP (U3O8 component) delivery budgeted in October moved to February
$1.45	**Conversion**	Timing - EUP (Conversion component) delivery budgeted in October moved to February
$1.38	**Enrichment**	Timing - EUP (SWU component) delivery budgeted in October moved to February
($5.47)	**Fabrication**	Timing - U3C23 NGF Milestone payment moved to September
$0.02	**Use Tax**	Impact - Actual Use Tax for U2C23 higher than budgeted
$0.35	**Labor**	Impact - Framatome Fuel implementation project
($2.50)	**Outside Services**	Timing - Procurement of Casmo/Simulate computer codes moved to April
($0.10)	**Other**	Savings - NRC Fees associated with Framatome Fuel implementation project less than budgeted
Subtotal FIP **($3.17)**		
	DCS:	
($0.54)	**Labor**	Timing - MAGNASTOR implementation project
($0.58)	**Materials**	Timing - MAGNASTOR material milestones
($0.61)	**Outside Services**	Timing - MAGNASTOR engineering services
($0.02)	**Other**	Timing - MAGNASTOR rental services
$2.81	**DOE Settlement**	Timing - DOE credit accrual pending contract reinstatement
Subtotal DCS **$1.06**		
Total **($2.11)**		

PVGS Executive Cost Report
O&M Power Block Report
March 2020
($000)

	Current Month				Year-to-Date				Total	Remaining
	Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
UNIT - 1	14,958	13,196	(1,762)	-12%	39,322	37,525	(1,796)	-5%	188,140	150,614
UNIT - 2	15,626	16,158	532	3%	42,783	42,090	(693)	-2%	192,593	150,503
UNIT - 3	14,733	11,388	(3,344)	-23%	39,274	34,238	(5,036)	-13%	157,116	122,877
COMMON	1,220	1,500	280	23%	3,340	4,770	1,430	43%	14,134	9,364
PVUNALL	0	(0)	(0)	0%	(0)	(0)	(0)	0%	(0)	0
WRF	6,462	5,628	(834)	-13%	17,870	16,765	(1,105)	-6%	73,617	56,852
GENERAL	(0)	101	101	0%	(0)	101	101	0%	(0)	(101)
TOTAL PV	**52,999**	**47,970**	**(5,029)**	**-9%**	**142,589**	**135,490**	**(7,099)**	**-5%**	**625,600**	**490,110**
PAYROLL	23,011	23,793	781	3%	60,441	61,269	828	1%	271,559	210,289
CONTRACT LABOR	3,061	3,409	348	11%	7,919	8,367	447	6%	44,158	35,791
MATL / SUPPLIES	4,324	3,667	(657)	-15%	14,130	14,396	266	2%	63,834	49,438
OUTSIDE SERVICES	7,069	6,288	(782)	-11%	15,611	11,727	(3,884)	-25%	58,557	46,830
OTHER	15,534	10,814	(4,719)	-30%	44,488	39,731	(4,757)	-11%	187,492	147,761

PVGS Executive Cost Report
Capital Improvements Variance Summary
March 2020
($000)

		<--------- Current Month ---------->				<---------- Year-to-Date ---------->				
	Budget Category	**Budget**	**Actual**	**Variance**	**Percent**	**Budget**	**Actual**	**Variance**	**Percent**	**Annual Budget**
1	**Plant Modifications**	3,997	3,692	(305)	-8%	11,528	7,530	(3,999)	-35%	46,395
2	**Equipment & Replacements**	10,849	5,591	(5,258)	-48%	16,718	14,591	(2,127)	-13%	94,740
3	**Buildings**	1,272	577	(696)	-55%	2,412	789	(1,623)	-67%	8,995
4	**General Plant**	593	839	247	42%	1,436	1,363	(73)	-5%	8,059
5	**Computers**	8,746	1,361	(7,385)	-84%	9,855	1,944	(7,911)	-80%	18,406
6	**Water Rec Facility**	3,321	3,117	(204)	-6%	9,422	8,862	(560)	-6%	35,162
7	**Overheads**	1,400	1,322	(78)	-6%	4,159	3,578	(581)	-14%	18,677
8	**Emergent Work Fund**	0	0	0	0%	0	0	0	0%	2,566
9	**Fukushima**	0	0	0	0%	0	0	0	0%	0
11	**Capitalized Incentives**	0	0	0	0%	0	0	0	0%	0
	Totals	**30,178**	**16,499**	**(13,679)**	**-45%**	**55,530**	**38,656**	**(16,875)**	**-30%**	**233,000**

PVGS Executive Cost Report
Nuclear Fuel Report
March 2020
($000)

	Current Month			Year-To-Date			Year-End		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Forecast	Variance
Fuel In Process	11,137	11,687	550	76,520	73,351	(3,169)	214,999	213,879	(1,120)
Fuel In Stock	-	-	-	-	-	-	-	-	-
Spent Fuel Disposal	-	-	-	-	-	-	-	-	-
Dry Cask Storage	(2,067)	629	2,696	20	1,074	1,054	(309)	268	577
TOTAL NUCLEAR FUEL	**9,070**	**12,316**	**3,246**	**76,540**	**74,425**	**(2,115)**	**214,690**	**214,147**	**(543)**

PVGS Executive Cost Report
Inventory Balance Sheet
March 2020

February 2020 Ending Inventory Balance less Amortization			$183,776,636
Increases:			
	Receipts		$4,432,933
	Returns		$1,868,061
	Inventory Adjustments		($55,823)
	Intercompany Balance		$0
	Accounting Adjustments		$3,524,482
	Misc JVs (Repair Accrual)		$0
	Misc JV (SOX Accrual)		$0
		Subtotal	$9,769,653
Decreases:			
	Issues		($6,861,022)
		Net Change	$2,908,631
Amortization Transactions:			
	Monthly Amortization Cost	($200,000)	
	Write Offs & Sales	$885,120	
			$685,120
March 2020 Ending Inventory Balance less Amortization			$187,370,388

Notes:
- Sales to outside utilities for the month was $3,746 that was written off at original cost.
- The above sales were invoiced for a total of $25,480 (net 30 days)
- Current month revenue received for sales to outside utilities totaled ($21,734)
- To Date Amortization Balance = ($39,897,106)
- Capitalized Spare Account Balance Original Cost = $32,538,003

PVGS Executive Cost Report
Major Inventory Transactions (Over $25K)
March 2020

INVENTORY

		Qty	$ Value
Issue:	CABLE, OVERSPEED SHUTDOWN	1	$30,138
	CABLE, OVERSPEED SHUTDOWN	1	$35,556
	CIRC WATER SUCTION BELL	1	$37,400
	CIRC WATER PUMP DIFFUSER	1	$184,000
	COUPLING, OVERSPEED	1	$39,214
	VALVE, FOUR WAY HYD.	1	$107,822
	BONNET & ARM & DISC ASM	2	$239,099
	VALVE, FOUR WAY HYD.	3	$323,465
	6 INCH BALL VALVE	1	$28,204
	BALL VALVE	3	$75,909
	TRANSMITTER, PRESSURE	1	$35,021
	BREAKER CIRCUIT VACUUM	1	$311,375
	BUSHING, FRONT	1	$29,700
	BALL VALVE	1	$25,303
	ACTUATOR, BETTIS	1	$43,776
	BREAKER, CIRCUIT K2000S	1	$26,130
	O-RING SET, RV HEAD	1	$72,400
	VALVE PRZ SAFETY 6 IN	4	$404,868
	O-RING SET, RV HEAD	1	$72,400
	PSV, AUX STEAM 8X10	1	$28,586
	VALVE ASSEMBLY, FPT HPSV	1	$39,002
	VALVE ASSEMBLY, LPSV	1	$91,005
	BREAKER, CIRCUIT	1	$190,000
	O-RING SET, RV HEAD	1	$72,400

		Qty	$ Value
Received:	OPERATOR, VALVE	1	$65,815
	DAMPER, 30" X 54"	2	$47,032
	CIRC WATER SUCTION BELL	1	$37,400
	CIRC WATER PUMP DIFFUSER	1	$184,000
	PSV, AUX STEAM 8X10	2	$57,172
	MOTOR, 800 HP, 1179 RPM	1	$564,000
	TRANSFORMER, NS	2	$1,196,000
	ACTUATOR, BETTIS	1	$43,776
	VALVE PRZ SAFETY 6 IN	4	$404,868
	LITHIUM HYDROXIDE	1	$36,625
	ROD, POWER PISTON	3	$806,457
	INSTRUMENT LVL BRIDLE LP1	1	$39,537
	PUMP, ROTARY, ESOP	1	$29,270
Restock:	CYLINDER, HYDRAULIC	2	$59,884
	ROTOR, POWER, MSOP	1	$39,478
	BONNET & ARM & DISC ASM	1	$119,549
	BONNET & ARM & DISC ASM	1	$119,549
	ACTUATOR, AIR CYLINDER	1	$29,010
	TRANSDUCER, EP, 4-20MA	1	$25,668
	TRANSDUCER, EP, 4-20MA	1	$25,668
	TRANSDUCER, EP, 4-20MA	1	$25,668
	TRANSDUCER, EP, 4-20MA	1	$25,668
	TRANSDUCER, EP, 4-20MA	1	$25,668
	TRANSDUCER, EP, 4-20MA	1	$25,668
	O-RING SET, RV HEAD	1	$72,400
	O-RING SET, RV HEAD	1	$72,400
	BREAKER CIRCUIT VACUUM	1	$311,375

Revenue, Budget, Actuals, Forecast Variance By Month
March 2020

Description		Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Quantity (acre-feet):														
T&T Units 1 & 2	Budget	**3,674**	274	193	206	94	547	382	454	433	424	98	365	204
	Act/F'cast	**3,742**	176	379	186	94	547	382	454	433	424	98	365	204
	Var	**68**	(98)	186	(20)	-	-	-	-	-	-	-	-	-
Unit Rate ($/acre-foot):														
Transportation & Treatment		**$843**												
Revenue ($ 000):														
	Budget	**3,099**	231	163	174	79	461	322	383	365	358	83	308	172
T&T Units 1 & 2	Act/F'cast	**3,157**	149	320	157	79	461	322	383	365	358	83	308	172
Adjustments*	Act/F'cast	**202**	-	-	-	-	-	-	122	80	-	-	-	-
	Var	**260**	(82)	157	(17)	-	-	-	122	80	-	-	-	-
Initial Reserve Fee &	Budget	**38**	4	4	4	5	1	2	2	2	2	5	3	4
Credits - U1 & U2	Act/F'cast	**35**	4	1	4	5	1	2	2	2	2	5	3	4
	Var	**(3)**	-	(3)	-	-	-	-	-	-	-	-	-	-
Add'l Reserve Fee &	Budget	**75**	6	6	6	6	6	6	6	6	6	6	6	6
Credits - U3 & U4	Act/F'cast	**75**	6	6	6	6	6	6	6	6	6	6	6	6
	Var	**-**	-	-	-	-	-	-	-	-	-	-	-	-
2019 Transportation	Budget	-	-	-	-	-	-	-	-	-	-	-	-	-
and Treatment	Act/F'cast	-	-	-	(260)	-	-	-	-	-	-	-	-	-
True-Ups	Var	-	-	-	(260)	-	-	-	-	-	-	-	-	-
Total Revenue	Budget	**3,212**	241	173	184	91	469	330	391	373	366	94	317	182
	Act/F'cast	**3,212**	**160**	**328**	**(92)**	**91**	**469**	**330**	**513**	**453**	**366**	**94**	**317**	**182**
	Var	**0**	(82)	155	(276)	0	0	(0)	122	80	0	0	0	(0)

PVGS Executive Cost Report
Total Outage (O&M)
March 2020
($ Millions)

	Current Month			Year-To-Date			Year-End		
2020 Outages	**Budget**	**Actual**	**Var.**	**Budget**	**Actual**	**Var.**	**Budget**	**Forecast**	**Var.**
Unit - 2	0.78	2.57	1.80	3.72	5.13	1.42	34.23	32.70	(1.52)
Unit - 1	-	0.12	0.12	-	0.10	0.10	28.96	28.96	-
Sub-Total 2020 Outages	**0.78**	**2.69**	**1.92**	**3.73**	**5.23**	**1.52**	**63.19**	**61.66**	**(1.52)**
2019 Outage Expenses									
Unit - 3	-	(0.45)	(0.45)	-	(1.87)	(1.87)	-	(1.87)	(1.87)
Sub-Total 2019 Outages	**-**	**(0.45)**	**(0.45)**	**-**	**(1.87)**	**(1.87)**	**-**	**(1.87)**	**(1.87)**
Total	**0.78**	**2.24**	**1.47**	**3.73**	**3.36**	**(0.35)**	**63.19**	**59.79**	**(3.39)**

PVGS Executive Cost Report
APS Employees & Overtime
Contract Labor Overtime
March 2020

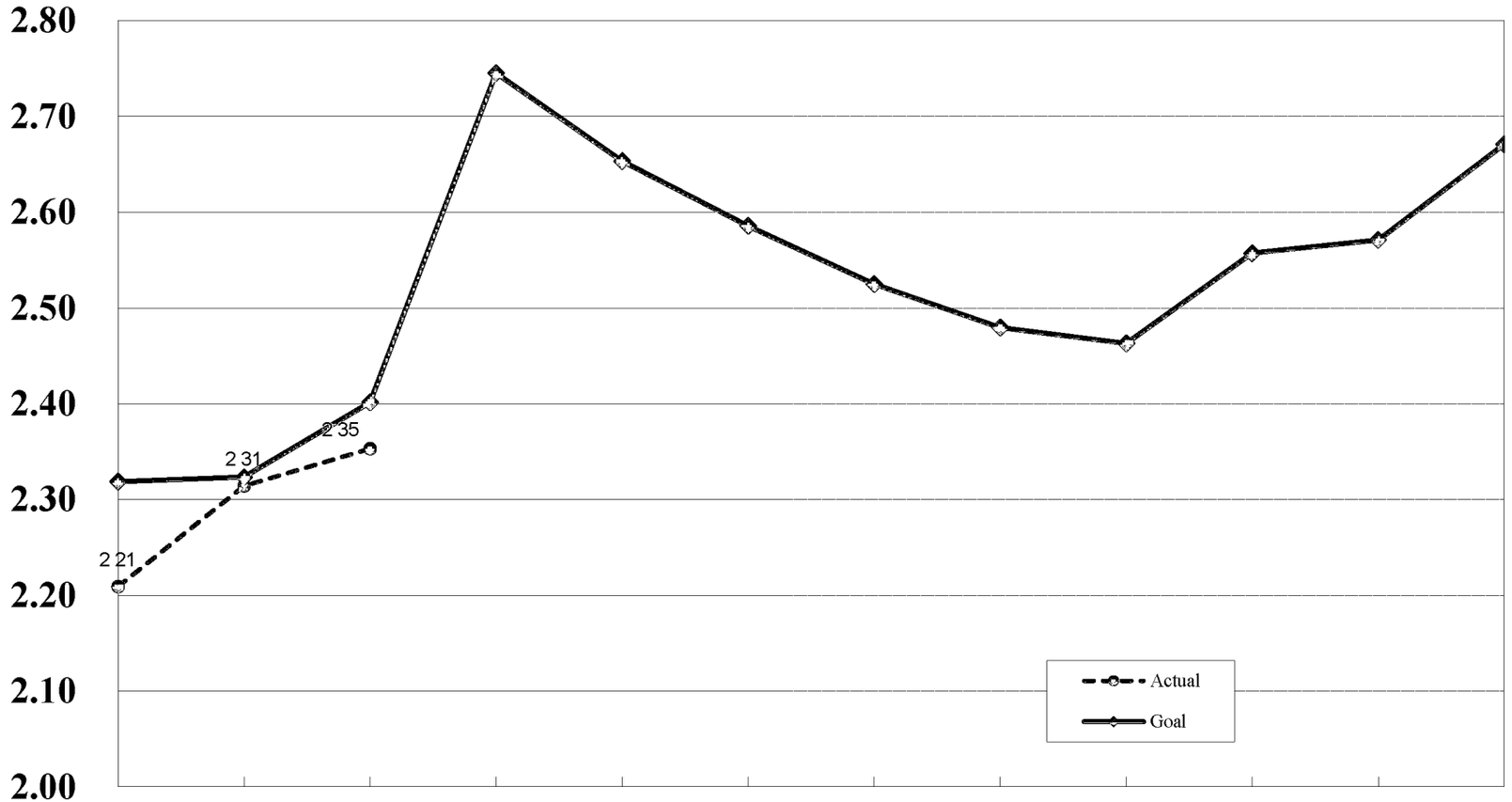
		APS Employees			APS Overtime %		Contract Labor Overtime %	
	Organization	Budget	Actual	Var	Budget	Actual	Budget	Actual
82PP	Nuclear Operations	1,172	1,150	(22)	6%	11%	5%	8%
97PP	Nuclear Engineering	315	315	0	2%	3%	0%	4%
96PP	Emergency Services & Support	434	438	4	8%	19%	3%	2%
83PP	Station Support Organizations	61	51	(10)	0%	0%	0%	14%
	Total	**1,982**	**1,954**	**(28)**	**6%**	**9%**	**4%**	**6%**
	Year-To-Date Average	**1,996**	**1,976**	**(20)**	**6%**	**9%**	**3%**	**4%**
	Equivalent "Borrowed" Employees							
	Current Month	**56**	**57**	**1**				
	Year-To-Date	**56**	**58**	**2**				

Note: All budgets and actual include O&M, Capital and Fuel values.

PVGS Executive Cost Report
Contract Labor and Outside Service Report
March 2020
($000)

ORGANIZATION	Non-Outage O&M						Outage O&M					
	Contract Labor			Outside Services			Contract Labor			Outside Services		
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance
82PP Total Nuc Operations												
Current Month	$1,545	$1,538	($7)	$1,534	$1,304	($230)	$514	$890	$376	$232	$189	($43)
YTD Closed	$4,255	$4,439	$184	$3,772	$3,948	$176	$746	$1,145	$399	$732	($77)	($809)
97PP Tot Nuclear Eng & Support												
Current Month	$177	$169	($8)	$728	$728	$0	$15	$2	($13)	$1,057	$2,579	$1,522
YTD Closed	$545	$437	($108)	$1,906	$1,280	($626)	$15	$4	($11)	$2,004	$2,291	$287
96PP Total Operations Support												
Current Month	$784	$808	$24	$674	$896	$222	$7	$1	($6)	$65	$65	$0
YTD Closed	$2,324	$2,247	($77)	$1,740	$1,930	$190	$7	$1	($5)	$65	$29	($36)
83PP Total Station Support												
Current Month	$19	$2	($17)	$2,780	$526	($2,254)	$0	$0	$0	$0	$0	$0
YTD Closed	$28	$90	$62	$5,392	$2,327	($3,065)	$0	$4	$4	$0	$0	$0
Total												
Current Month	$2,525	$2,517	($8)	$5,715	$3,454	($2,261)	$536	$893	$357	$1,354	$2,833	$1,479
YTD Closed	$7,151	$7,213	$61	$12,810	$9,485	($3,325)	$768	$1,154	$386	$2,801	$2,242	($559)

PVGS Executive Cost Report
2020 YTD Production Costs



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goal	2.32	2.32	2.40	2.75	2.65	2.59	2.52	2.48	2.46	2.56	2.57	2.67
Actual	2.21	2.31	2.35									

PVGS Executive Cost Report

O&M Cost per Kilowatt Hour

March 2020

A.	O&M Costs ($000):		135,052	
	Amortization/Redhawk Tertiary		(1,032)	
	Incentives		437	
		Net O&M:	134,457	
B.	Net Generation (MWh):	Unit 1	2,914,366	
		Unit 2	2,753,814	
		Unit 3	2,595,611	
		Total	**8,263,791**	
C.	Net O&M Cost per kWh:		1.627	*Cents per KWhr (1 & 3)*
D.	Nuclear Fuel Expense:		0.726	*Cents per KWhr (2)*
E.	Total O&M Cost per kWh (W/Fuel)		**2.353**	*Cents per KWhr (1, 2, & 3)*

I. 2019 Actual:	2.67	*Cents per KWhr (1, 2, & 3)*
II. 2018 Actual Revised:	2.69	*Cents per KWhr (1, 2, & 3)*
III. 2017 Actual Revised:	2.78	*Cents per KWhr (1 & 2)*
IV. 2016 Actual Revised:	2.81	*Cents per KWhr (1 & 2)*
V. 2015 Actual Revised:	2.78	*Cents per KWhr (1 & 2)*
VI. 2014 Actual Revised:	2.87	*Cents per KWhr (1 & 2)*
VII. 2013 Actual Revised:	2.93	*Cents per KWhr (1 & 2)*
VIII 2012 Actual Revised:	2.92	*Cents per KWhr (1 & 2)*
IX. 2011 Actual Revised:	2.90	*Cents per KWhr (1 & 2)*
X. 2010 Actual Revised:	2.83	*Cents per KWhr (1 & 2)*

Note: Revision of the Production Cost Calculation

(1) O&M is calculated as O&M costs including incentives, less amortization

(2) Fuel Expense: YTD = $60.0 M. The fixed and variable costs related to nuclear spent fuel rod storage are not included in the unit costs.

(3) O&M is calculated to exclude Redhawk Tertiary

PVGS Executive Cost Report
FERC Cost Report
March 2020
($ 000)

			Current Month				Year to Date				Total	Remaining
			Budget	Actual	Variance	% Var	Budget	Actual	Variance	% Var	Budget	Budget
	Production Operations											
5170000	517	Ops Supv & Eng	7,206	7,396	191	3%	20,435	18,746	(1,690)	-8%	75,018	56,273
5190000	519	Coolants and Water	4,090	3,987	(103)	-3%	11,797	11,373	(424)	-4%	50,241	38,868
5200000	520	Steam Expenses	3,621	2,896	(725)	-20%	7,760	7,567	(193)	-2%	33,114	25,547
5230000	523	Electric Expenses	3,317	4,035	718	22%	10,326	9,832	(494)	-5%	41,238	31,406
5240000	524	Misc Nuc Power Exp	13,757	12,160	(1,598)	-12%	32,909	32,660	(250)	-1%	141,452	108,792
5250000	525	Nuc Power Rents	-	-	-	0%	-	-	-	0%	-	-
		Total Production Operations	**31,991**	**30,473**	**(1,517)**	**-5%**	**83,227**	**80,177**	**(3,050)**	**-4%**	**341,063**	**260,886**
	Production Maintenance											
5280000	528	Supv & Eng	2,006	3,228	1,222	61%	4,123	3,958	(165)	-4%	18,991	15,033
5290000	529	Maint of Structure	1,112	440	(673)	-60%	1,243	1,347	104	8%	6,129	4,782
5300000	530	Maint of Reactor Plant Equip	78	1,315	1,237	1589%	7,336	6,010	(1,326)	-18%	62,498	56,488
5310000	531	Maint of Electric Plant	2,838	2,565	(273)	-10%	5,684	7,434	1,750	31%	22,839	15,405
5320000	532	Maint of Misc Nuc Plant	370	768	398	107%	1,229	2,150	922	75%	6,249	4,099
		Total Production Maintenance	**6,404**	**8,315**	**1,912**	**30%**	**19,614**	**20,899**	**1,285**	**7%**	**116,706**	**95,807**
	Transmission											
5560000	556	Sys Cntl/Load Dispatch	602	501	(101)	-17%	1,794	1,546	(248)	-14%	7,229	5,683
		Total Transmissions	**602**	**501**	**(101)**	**-17%**	**1,794**	**1,546**	**(248)**	**-14%**	**7,229**	**5,683**
	Other											
4081001	408	Payroll Taxes	1,611	1,659	48	3%	4,231	4,283	52	1%	19,009	14,726
4082001	408	Other Taxes	-	6	6	0%	-	6	6	0%	-	(6)
4261000	426	Donations/Penalties	5	5	-	0%	20	119	278	1388%	112	(7)
4264000	426	Civic Political	-	2	2	0%	-	7	7	0%	-	(7)
4265000	426	Other Deductions/Exp	-	95	95	0%	-	179	179	0%	-	(179)
9240000	924	Property Insurance	566	(4,837)	(5,403)	-955%	1,697	(3,656)	(5,353)	-315%	6,786	10,442
9250000	925	Injuries & Damages	321	293	(28)	-9%	1,055	894	(161)	-15%	3,971	3,077
9250001	925	Injuries & Damages - Benefits	166	170	4	2%	492	493	1	0%	1,941	1,448
9260001	926	Pensions & Benefits	3,241	3,309	68	2%	9,590	9,607	17	0%	37,841	28,234
9280000	928	Reg Commission Exp	1,880	1,499	(381)	-20%	4,550	4,194	(356)	-8%	17,621	13,427
9302000	930	Admin & General Exp	6,213	6,479	266	4%	16,319	16,742	423	3%	73,321	56,579
		Total Other	**14,003**	**8,681**	**(5,322)**	**-38%**	**37,954**	**32,867**	**(5,087)**	**-13%**	**160,601**	**127,734**
		Total	**52,999**	**47,970**	**(5,029)**	**-9%**	**142,589**	**135,490**	**(7,099)**	**-5%**	**625,600**	**490,110**

PVGS Executive Cost Report

2020 Total (O&M and Capital) Actual Incentives with Loads

March 2020

$	33,256	Est.	Total Year End Incentive
	-	Act	Total Unit-3 Outage Incentive (100 day run)
	33,256		**Subtotal Estimate Incentives for 2020**
$	11,307	Est.	Total Loads For Year-End Incentive
	-	Act	Total Unit-3 Outage Incentive (100 day run)
	11,307		**Subtotal Estimate Incentive Load for 2020**
$	326	Est.	2019 EIP True Up
	-	Est.	2019 EIP Incentive Payroll
	111	Est.	2019 EIP Incentive Loads
	437		**Subtotal Incentives - Prior Year Adjustments**

$	**45,000**	**Total (O&M and Capital) Actual Incentives and Loads for 2020**

PVGS Executive Cost Report
Year End Forecast
March 2020
($ Millions)

	YTD	Actuals			Forecast									Year End
	Actuals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Variance
O & M	135.05	44.59	42.93	46.92	68.04	43.87	43.51	44.26	43.20	45.88	64.43	44.39	44.54	(6.33)
COVID-19 Support	0.61	-	-	0.61	2.40	1.32	-	-	-	-	-	-	-	4.33
Incentives (w/ Loads & Adj)	0.44	-	-	0.44	-	-	-	-	-	-	-	-	42.26	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total O&M	135.49	44.59	42.93	47.97	70.44	45.19	43.51	44.26	43.20	45.88	64.43	44.39	86.80	(2.00)

	YTD	Actuals			Forecast									Year End
	Actuals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Variance
Capital	38.66	10.09	12.07	16.50	28.08	16.56	16.10	10.65	13.12	30.54	42.08	22.71	12.20	-
Incentives (w/ Loads & Adj)	-	-	-	-	-	-	-	-	-	-	-	-	2.30	-
Exclusions (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Total Capital	38.66	10.09	12.07	16.50	28.08	16.56	16.10	10.65	13.12	30.54	42.08	22.71	14.50	-

(1) Exclusions include: Mid- Year True-Ups (A&G/PRD, Load Dispatch - Exhibit 1 A&G) and any Mid -Year Rate Changes.

PaloVerde™ GENERATING STATION

MICHAEL MCLAUGHLIN
Vice President
Site Services

5801 S Wintersburg Rd
Tonopah, AZ 85354

M E. McLaughlin

ID: 517-00001
Date: May 22, 2020

To: File
Sta. #
Ext. #

From: M. McLaughlin
Sta. # 7605
Ext. # 82-5761

Subject: **PVGS April 2020 Executive Cost Report**

Attached is the PVGS Executive Cost Report that reflects information for April 2020 for the O&M (including incentives), Capital (including incentives), and Nuclear Fuel budgets. The report compares actual costs to budget for the month, year-to-date (YTD), and presents the year-end variances as summarized below:

(Millions of Dollars)

Category	YTD Budget	YTD Actual	Year – End Variance
O&M	**211.72**	**201.63**	**(4.00)**
Capital	**86.55**	**63.15**	**0.00**
Nuclear Fuel	**112.61**	**111.95**	**(0.52)**
Total	**410.88**	**376.73**	**(4.52)**

Please call me if you have any questions or comments.

MM / SB

Attachment

cc:

J. Cadogan	7602		J. McGill	7990
J. Guldner	9040		T. Mionske	7990
T. Horton	8201		E. Asturias	7990
M. Lacal	7605			
M. McLaughlin	7605			
B. Rash	7602			

Palo Verde Generating Station
Executive Cost Report
April 2020
Prepared by
Business Operations