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**Testimony of Garrick Jones in Pacific Gas &  
Electric's  
2015 Test Year Gas Transmission & Storage  
Rate Case**

Prepared testimony of  
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**California Public Utilities Commission  
Application A.13-12-012**

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1 **I. Introduction**

2 This testimony is presented by Garrick F. Jones, Economist with JBS Energy, Inc. on  
3 behalf of The Utility Reform Network (TURN). Mr. Jones has seven years of experience  
4 in energy issues, has provided analytical and testimony-writing support in rate cases in  
5 11 jurisdictions, and has sponsored testimony before this Commission, the Arkansas  
6 Public Service Commission, and the Nevada Public Utilities Commission. Mr. Jones’s  
7 qualifications are attached.

8 This testimony addresses several expense and capital-related issues within the  
9 Transmission Pipe asset family section and Information Technology section of PG&E’s  
10 2015 Gas Transmission and Storage (GT&S) Rate Case application.

11 This testimony recommends that the Commission:

- 12 1. Reduce the 2015 overall expense forecast by \$12 million (i.e., two thirds of the  
13 incremental \$18 million expense forecast resulting from the reclassification) to  
14 remove the possibility of double-collection for 2015 and 2016, the two  
15 overlapping years for this proceeding and the 2015 test year GRC.
- 16 2. Find that the forecasts for the In-Line Inspection (ILI) Upgrade program are  
17 unreasonably high. (TURN intends to present its recommended reduction to  
18 those forecasts in post-hearing briefing, so the recommendation might better  
19 reflect the full evidentiary record developed here.)
- 20 3. Reduce the 2015 forecast for strength testing from \$164.9 million to no more than  
21 \$142.3 million, a \$22.6 million reduction. This is based on PG&E having used the  
22 2013 forecast as a proxy for the 2015 forecast, and the 2013 recorded unit cost  
23 (\$0.84MM/mile) was lower than the 2013 forecast (\$0.97MM/mile). The  
24 Commission should consider adopting an even lower level of unit cost, based on  
25 PG&E’s statements regarding its ongoing efforts to find efficiencies.
- 26 4. Disallow the Automated Upload of Design Pipeline Features Lists Information  
27 Technology (IT) project, which indicates reductions of \$422,000 for expense  
28 (MWC JV) in 2015 and \$2,523,000 for capital (MWC 2F) in 2016.

1 **II. Reclassification of Assets**

2 PG&E has reclassified 920 miles of line pipe as transmission that in the past it had  
3 classified as distribution. The Company forecasts the incremental expense and capital  
4 expenditure for this reclassification, as follows:

- 5       • \$18 million in incremental 2015 expense.
- 6       • \$2.8 million in incremental capital expense in each of 2015 through 2017.<sup>1</sup>

7 The rates from PG&E's 2014 GRC, in which it forecasted and received funding for 920  
8 miles of gas distribution line that are now classified as transmission, will be effective for  
9 two of the three the rate-effective years covered by this GT&S proceeding. As such,  
10 absent an adjustment in one of the proceedings, PG&E will be double-collecting for at  
11 least 2015 and 2016.

12 **Recommendation**

13 The Commission should reduce the 2015 overall expense forecast by \$12 million (i.e.,  
14 two thirds of the incremental \$18 million expense forecast resulting from the  
15 reclassification) to remove the possibility of double-collection for 2015 and 2016, the two  
16 overlapping years for this proceeding and the 2015 test year GRC.

17 The Commission should reduce the 2015 capital expenditure forecast by \$2.8 million in  
18 both 2015 and 2016 also to avoid double recovery.

19 **III. Transmission Pipe Integrity and Emergency Response**  
20 **Programs (Vol. 1, Ch. 4A)**

21 ***A. Making Line Piggable (Inline Inspection Upgrade)***

22 There are two parts to PG&E's program to make its lines piggable (the Inline Inspection  
23 (ILI) Upgrade program): engineering and construction. TURN has no recommendation  
24 at this time regarding the engineering portion, but does for the construction.

---

<sup>1</sup> PG&E Testimony Vol. 1, p. 4-4 (lines 5-9).

1 The construction forecast for ILI Upgrade program appears to be as follows:

2 **Table 1: PG&E's Piggability Activity Forecast<sup>2</sup>**

3

2014	2015	2016	2017
-	39,340	69,108	72,557

4 PG&E consultant, Willbros Engineers, provided the forecast that appears in PG&E's  
5 Piggability Study, published on May 8, 2013. Willbros states the following regarding the  
6 development of the unit costs for the piggability project:

7 Unit cost sheets were developed based on input from vendor quotes and  
8 PG&E past projects. Willbros then applied these unit costs to the scopes  
9 identified for each piggable section to determine a cost per project in 2013  
10 dollars.<sup>3</sup>

11 Willbros, however, indicates that it sees "[s]everal items to be addressed in the future of  
12 the program," and then lists several items, three of which expressly relate to cost  
13 reduction possibilities.

14 Willbros issued the Piggability Study on May 8, 2013. Ten months later, when PG&E  
15 provided its response to a TURN data request seeking information regarding any such  
16 cost-saving activities or investigations, the utility identified no specific examples.<sup>4</sup> PG&E  
17 still had not quantified any expected costs as of July 25.<sup>5</sup>

18 The three cost reduction items Willbros noted in the Piggability Study, and PG&E's  
19 response thereto, follow:

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<sup>2</sup> PG&E's Volume 1 workpapers, p. WP 4A-16. PG&E says on p. 4A-448 of the Volume 1 workpapers that further refinements were made to the Willbros forecast, but these were all on the basis of removing projects that were already completed or in the vicinity of the GT&S ILI Capital upgrade projects. In any case, PG&E added a net positive adjustment of just \$495,400, which is immaterial to the amounts shown in the table.

<sup>3</sup> Id., p. WP 4A-153.

<sup>4</sup> TURN DR 6-6. The response was provided on March 3, 2014.

<sup>5</sup> TURN DR 29-11. Here, PG&E states, "...PG&E has not conducted a comprehensive quantitative analysis tying the amounts [saved through the cost-saving activities it identifies in its response to TURN DR 6-6] to the expected costs shown in the second table on p. WP 4A-162," which is the table containing PG&E's forecast for making line piggable.

- 1           • **Willbros Note g:** Methods to lower material costs should be fully explored,  
2 including partnering with valve and fitting manufacturers or developing  
3 highly discounted pricing plans based on 10 year quantity purchases based  
4 on this study.
- 5                 ○ **PG&E:** Yes, PG&E has begun to pursue methods to lower material  
6 costs related to Note g. PG&E currently has a pipeline material  
7 distributor to ensure we have the lowest prices available for valves  
8 and fittings. The PG&E Gas Engineering Team looks across all lines of  
9 the gas transmission business, not just ILI, to estimate material needs  
10 and purchase major materials in bulk as our warehouse stock  
11 declines. Ordering material in advance for more than a couple of  
12 years out is not practical due to storage limitations, high overhead  
13 costs to carry the material several years in advance of construction,  
14 potential material specification changes, and design scope changes.
- 15           • **Willbros Note h:** Methods to lower fabrication costs for launchers and  
16 receivers should be fully explored, including development of a 10 year bid  
17 package for achievement of fully locked in pricing for fabrication of  
18 launchers and receivers.
- 19                 ○ **PG&E:** With reference to the recommendation above, PG&E has  
20 limited sites where permanent launchers and receivers were installed  
21 as part of the ILI upgrade projects. Thus, PG&E has limited  
22 experience on which to base potential cost savings from having  
23 permanent launchers and receivers fabricated off-site in a shop  
24 environment, though discussions with other operators and  
25 consultants indicate that this is common practice. PG&E has begun  
26 exploring long term contracts utilizing a universal design with a  
27 dedicated fabrication shop or shops to achieve consistent quality, just  
28 in time availability and possible cost savings.
- 29           • **Willbros Note i:** Methods to lower construction costs by engaging in  
30 development for a bid package to secure several dedicated construction  
31 crews relative to performing the work during the project extents. This may  
32 include alternate stand-by crews.

1           ○ **PG&E:** Yes, PG&E has begun to pursue methods to lower fabrication  
2 costs related to Note g. The ILI upgrade project work is not  
3 significantly different from the pipe replacement project work  
4 regularly performed by PG&E gas construction crews, both  
5 employees and contractors. Having dedicated ILI upgrade  
6 construction crews would be difficult to manage and would result in  
7 increased travel expenses when local crews may be available. PG&E  
8 currently has four construction firms under an Alliance contract that  
9 provide savings to the company and cover specific geographic  
10 territories. The use of these Alliance contractors is being evaluated  
11 based on the scope of each project, resource availability, and labor  
12 costs of external versus internal resources.

13 As a general matter, PG&E's says in response to TURN DR 6-6d:

14           PG&E has incorporated the overarching efficiencies referenced [in the  
15 bullet points above] and continues to optimize this work through bulk  
16 material purchases where possible, leveraging of both alliance contractors  
17 and regional contractors, and effective network planning. Because this is  
18 a system wide approach to optimization, PG&E does not have a specific  
19 break out of cost savings pertaining to making the system piggable.

20 There are several factors that should cause the Commission to have serious concern that  
21 PG&E's forecasts as prepared by Willbros do not reflect the savings PG&E says it is  
22 achieving and continues to strive to achieve. Willbros based its estimates on historical  
23 costs. The study was performed between October 2012 and May 2013, so any cost  
24 savings measures implemented since that time is not reflected in the forecasts. PG&E  
25 has been asked to provide quantitative estimates of the savings it expects to achieve, but  
26 has not been able to provide such estimates.<sup>6</sup> It is hard to find comfort in the utility's  
27 assurance that its forecasts reflect cost savings when the utility cannot point to those cost  
28 savings. And it is reasonable to assume that the forecasts do not reflect PG&E having  
29 made progress on the cost-saving practices that Willbros identified as opportunities the

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<sup>6</sup> TURN DR 6-6d and TURN DR 29-11.

1 utility could pursue, given that the identification was made concurrent with the  
2 forecasts.

### 3 **Contingency**

4 The Willbros Piggability Study states,

5 ...budgetary costs [for the “Traditional ILI” sections were] determined  
6 with a margin of error of +/- 20% using the unit cost sheets.<sup>7</sup>

7 TURN asked PG&E, based on this statement, to identify and justify which point estimate  
8 within the margin of error it used to make the forecast (e.g., -20%, midpoint, 20%, etc.).

9 PG&E stated the following in response:

10 PG&E’s final forecast for its Traditional ILI program were not done in this  
11 manner. Instead the Willbros work was further evaluated using the study  
12 shown in workpapers on pages WP 4A-444 through WP 4A-454 and  
13 associated individual project adjustments were made and shown in the  
14 results of this study.<sup>8</sup>

15 In other words, PG&E claims to have refined the forecast from the one that was within  
16 “+/- 20%”. However, the “further evaluation” was “limited to a review [of] the initial  
17 cost estimate prepared by Willbros Engineering and the identification of work that has  
18 been completed or I planned in the vicinity of the GT&S ILI Capital upgrade projects.”<sup>9</sup>

19 In other words, PG&E does NOT point to any modification to the actual cost estimate  
20 that Willbros provided. Therefore, the Commission should conclude that PG&E’s  
21 estimate is based on work whose accuracy is +/- 20%.

### 22 **Recommendation**

23 There are clearly reasons to be convinced that PG&E’s forecasts are too high. TURN  
24 intends to present its recommended reduction to those forecasts in post-hearing briefing,  
25 so the recommendation might better reflect the full evidentiary record developed here.

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<sup>7</sup> PG&E Workpapers Volume 1, p. WP 4A-161,

<sup>8</sup> TURN DR 29-8b.

<sup>9</sup> Id., p. 4A-448.



1 **IV. Transmission Pipe Integrity and Emergency Response**  
2 **Programs (Vol. 1, Ch. 4A)**

3 **A. Hydrostatic Testing**

4 **1. Strength Testing Expense**

5 PG&E is forecasting expenses of \$164.9 million for the strength testing portion of the  
6 Hydrostatic Testing program in 2015. This is based on a unit cost of \$0.97MM/mile  
7 tested, which is PG&E's forecasted per-mile cost for 2013. However, PG&E's recorded  
8 unit cost for 2013 was \$0.84MM/mile tested.<sup>10</sup> This lower unit cost, applied to the  
9 forecasted 2015 unit count, would equate to a forecast of \$142.3 million in the test year, a  
10 \$22.6 million reduction.

11 **Table 2: Strength Testing Unit Costs<sup>11</sup>**

Year	Cost per mile (\$MM)
2011R	1.41
2012R	1.02
2013R	0.84
2013F	0.97
2014F	1.10
2015F	0.97

12  
13 Table 2 shows that PG&E's unit costs have fallen in every recorded year since 2011. It  
14 also shows that its 2013 recorded cost was substantially less than its forecasted cost.  
15 While PG&E does not appear to provide the exact basis for its 2013 unit cost forecast,<sup>12</sup> it  
16 does indicate that the reduction between 2012 and 2013 results from an "increase in

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<sup>10</sup> Recorded, 2013 expenses totaled \$165.7 million (TURN DR 29-5a) on the basis of 198 test miles (TURN DR 29-5c), which equates to a per-mile cost of \$0.84MM.

<sup>11</sup> WP 4A-51 (tables 2 and 3) of Volume 1 and calculated from TURN DR 29-5a and -5d. It is not clear from the information presented in the workpapers whether the costs in tables 2 and 3 are nominal or constant.

<sup>12</sup> See, e.g., p. WP 4A-51 of Volume 1 workpapers, which provides a forecast without a supporting explanation.

1 average miles tested per test,” better work planning (i.e., scoping 2013 work in 2012),  
2 and efficiencies developed by PG&E’s Program Management Office (PMO).<sup>13</sup>

3 It is reasonable to apply PG&E’s recorded unit costs from 2013 to its forecasted unit  
4 count in 2015 to obtain the upper end of a reasonable cost forecast range for 2015  
5 because the Company believes that the work it will do in 2015, 2016, and 2017 will be of  
6 the same nature as the work it did in 2013. In particular, PG&E states:

7 PG&E forecasts vary based on the best project information available at  
8 the time. For PG&E’s 2015 through 2017 forecasts, PG&E assumed the  
9 2013 portfolio was the best representation of test considering the mileage  
10 completed a mix of pipe. For 2014, PG&E is conducting approximately 70  
11 tests, which is similar in number of tests to the 2013 portfolio. However,  
12 these 2014 tests are shorter in nature leading to an increased unit cost.<sup>14</sup>

13 **The plan or scope of work for 2015 is approximate to the 2013 scope**  
14 **with similar mileage and the same approximate number of tests so that**  
15 **the average miles tested per test is similar.**<sup>15</sup>

16 PG&E is not anticipating a further reduction in hydrotest costs from the  
17 level achieved in 2013. Costs have been driven down significantly on a  
18 unit cost basis since 2011. Considering the type of work to be completed  
19 through 2017 is similar in nature to work planned in 2013, any small  
20 efficiencies gained will most likely be offset by rising labor, construction,  
21 and material costs.<sup>16</sup>

22 The use of 2013 recorded unit costs to forecast the upper end of a 2015 cost range is  
23 reasonable, then, given the foregoing data request response and considering the fact  
24 that, while PG&E forecasted 195 miles in its 2013 per-unit forecast calculation, the  
25 Company ultimately recorded 198 miles. In other words, the 2013 program that was to  
26 test at the rate of 2.5 miles per test and that PG&E thought would cost it \$0.97MM/mile  
27 to execute, ultimately cost it \$0.84MM/mile on the basis of operational efficiencies, not a  
28 change to the number of miles tested or tests executed.

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<sup>13</sup> PG&E cites to these efficiencies in its response to TURN DR 29-5c. Chapter 9 (p. 9-13 and -14) of the testimony enumerates them, identifying four examples of improvements that reduced costs in 2013.

<sup>14</sup> TURN DR 29-5e.

<sup>15</sup> TURN DR 29-5f. Emphasis added.

<sup>16</sup> TURN DR 29-5g.

1 A lower forecast than the one produced by using PG&E's 2013 recorded costs could also  
2 be reasonable, however. As PG&E freely admits, "PG&E was in a state of ramping up  
3 this program in 2011 and significant costs were incurred to staff the program and train  
4 staff to use PG&E testing protocols. Also, PG&E spent significant dollars in 2011 to  
5 scope initial work and find and verify test records." The Company adds, "PG&E's  
6 efforts to implement the PSEP scope is one of the largest gas transmission implement  
7 projects in the country."<sup>17</sup>

8 PG&E's program ramped up quickly and has been massive, in other words. But since  
9 the ramp-up that began in 2011, PG&E appears to still be implementing efficiency-  
10 inducing measures; it certainly was in 2013 (as noted above). The entire effect of the  
11 efficiencies developed and implemented during the course of 2013, however, is not  
12 embedded in the 2013 recorded costs, given that the 2013 efficiency programs were not  
13 fully up and running on January 1, 2013. Moreover, it is reasonable to expect that PG&E  
14 is still working successfully to find further efficiencies in 2014, given that it still runs the  
15 PMO and forecasts funding it in 2015 and beyond on the basis of the efficiencies the  
16 utility achieves through it,<sup>18</sup> and PG&E's self-proclaimed "incentive to be efficient and  
17 reduce the cost of strength testing to the lowest cost possible, due to non-  
18 recoverability."<sup>19</sup>

## 19 **Nitrogen Testing**

20 PG&E appears to have discovered a cost-reducing efficiency in 2014, as reported in its  
21 most recent Compliance Filing for PSEP:

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<sup>17</sup> PG&E Testimony Volume 1, Ch. 9, p. 9-13.

<sup>18</sup> While PG&E's forecast for the PMO includes funding for new programs, in addition to the hydrotesting program, the Company also states, "The PMO has the ability to see opportunities that would benefit multiple projects and has the capability to implement improvements and controls that augment and strengthen the focus on the day-to-day execution required for individual projects."

<sup>19</sup> WP 4A-51 of Volume 1. PG&E claims in its response to TURN DR 29-4 that this statement regarding non-recoverability "intended to convey that there has been a strong incentive for [the program managers of] hydrotesting, as a new program that ramped up very quickly impacting early costs, to reduce its costs by improving the hydrotest processes and efficiencies."

1 Nitrogen Strength Test: Strength testing using nitrogen – as opposed to  
 2 water – is an approved testing medium and can be particularly cost  
 3 effective due to location, length of test, or pipe characteristics. Nitrogen  
 4 testing was conducted on six strength test projects and avoided costs of  
 5 approximately \$3.8 million which would otherwise have been spent on  
 6 water tank staging, cleaning and filling procedures, water filtration and  
 7 disposal, as well as additional traffic control and construction measures.<sup>20</sup>

8 It reasonable to assume that PG&E would be able to use nitrogen in a similar way to  
 9 obtain savings in its strength tests going forward.

10 A forecast of these savings based on the information currently available and assuming  
 11 that PG&E could use nitrogen at the same rate going forward as it did in Q2 of 2014<sup>21</sup> is  
 12 \$24.5 million. The calculation of this amount is shown in **Table 3**:

13 **Table 3: Illustrative Capital Reduction for Nitrogen-Based Testing**

Category	2014F	2014R	2015F
Overall test count	72.00	12.4	80.00
Tests with nitrogen	NA	6.0	38.67
Cost savings	NA	3.8	24.49

Note: I applied a simple ratio of the number of tests done with nitrogen in 2014 to the overall test count (i.e., 48.3%) to the overall number of tests PG&E expects to execute in 2015 to get the number of tests expected using nitrogen in 2015. To obtain the associated costs savings, I applied the ratio of 2014 recorded nitrogen tests to the recorded cost savings to the number of tests implied for the 2015 forecast.

14  
 15 TURN has asked PG&E for an estimate of the number of tests it expects to execute in  
 16 2015 using nitrogen. Information from this request could be used to make a  
 17 recommended an additional expense reduction.

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<sup>20</sup> Pacific Gas And Electric Company’s Pipeline Safety Enhancement Plan (PSEP) Compliance Report, July 30, 2014, p. 39. Submitted in R.11-02-019. Available: [www.pge.com/regulation/GasPipelineSafetyOIR/Reports/PGE/2014/GasPipelineSafetyOIR\\_Report\\_PGE\\_20140730\\_309909.pdf](http://www.pge.com/regulation/GasPipelineSafetyOIR/Reports/PGE/2014/GasPipelineSafetyOIR_Report_PGE_20140730_309909.pdf). PG&E used also used nitrogen in one of its tests during the first quarter of 2014. It does not mention nitrogen testing as savings or in its “Lessons Learned” section of its 2013 compliance filings, so it is reasonable to assume that the Company did not use it during 2013 or used it only on a very limited basis.

<sup>21</sup> The Q2 Compliance Filing that highlighted the savings available from nitrogen-based strength testing became available on July 30, 2014.

1 **Recommendation**

2 I recommend that the Commission reduce the 2015 forecast for strength testing from  
3 \$164.9 million to \$142.3 million, a \$22.6 million reduction. This is based on using the  
4 2013 recorded unit cost (\$0.84MM/mile) rather than PG&E's unit cost forecast for 2015—  
5 which as explained above is the same forecast as PG&E used for 2013, when its recorded  
6 unit costs were much lower than the levels forecasted.<sup>22</sup>

7 The Commission should consider adopting an even lower level of unit costs, based on  
8 the PG&E statements regarding its ongoing efforts to find efficiencies beyond those  
9 reflected in the 2013 recorded costs. For example, further reduction of \$24.5 million per  
10 year could be warranted related to the more recent moves toward use of nitrogen testing  
11 in place of water, if it were applied in 2015 at the same rate as it was in limited  
12 experience in 2014. There are likely other examples of such opportunities for lower costs  
13 than those reflected in 2013 recorded costs, as the discussion above illustrates, that could  
14 well provide further reason for adopting a lower unit cost regardless of its treatment of  
15 the savings from nitrogen testing.

16 **V. Information Technology**

17 ***A. Automated Upload of Design Pipeline Features Lists***

18 PG&E requests \$2,523,000 in capital in 2016, plus \$422,000 in expense in 2015, to create  
19 the Automated Upload of Design Pipeline Features Lists project.<sup>23</sup> The Automated  
20 Upload of Design Pipeline Features Lists project would replace a manual process that  
21 transfers data from the design software package into the gas transmission GIS system.  
22 This project is intended to improve PG&E's analytical capabilities, and improve the  
23 accuracy of information in the Maximum Allowable Operating Pressure calculations.

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<sup>22</sup> Consistent with PG&E's application of forecasted 2013 costs to 2015 without escalation, these figures reflect application of recorded 2013 dollars to 2015 without escalation.

<sup>23</sup> PG&E Testimony Volume 2, Chapter 11, pp. 36-37.

1 This project should be disallowed, as PG&E has not shown sufficient benefits above  
2 existing technologies to justify the costs involved.

3 PG&E states, "PG&E's Gas Mapping Department has two employees responsible for  
4 creating Design Pipeline Feature Lists (PFLs). These employees spend approximately 5  
5 to 10 hours per week on Design PFLs."<sup>24</sup> As stated, these employees create PFLs, and  
6 then must manually enter them into the gas transmission GIS as part of the process. The  
7 maximum annual savings from eliminating this step is "10 hours/week X 52 weeks X  
8 \$139/hour = \$72,280".<sup>25</sup> With a project capital cost of \$2,523,000 this project will require  
9 more than 20 years to pay for itself, which far exceeds the normal useful life of  
10 software.<sup>26</sup> Even if the Commission looked only at the \$422,000 of 2015 expense  
11 associated with the project, it would take five years to pay back a single year's expense.<sup>27</sup>  
12 Finally, it is not clear that even the small amount of savings will be achieved, according  
13 to PG&E: "These software modifications will integrate the two systems without  
14 changing the underlying work processes."<sup>28</sup>

15 TURN's analysis shows that the Automated Upload of Design Pipeline Feature Lists  
16 project would not be cost-effective and that the manual process it intends to replace is  
17 adequate. The low criticality level of "Significant" assigned to this project further  
18 illustrates its lack of necessity.<sup>29</sup>

## 19 **Recommendation**

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<sup>24</sup> TURN DR 25-Q5a.

<sup>25</sup> TURN DR 25-Q5b.

<sup>26</sup> These are back-of-the-envelope calculations, which do not precisely account for the time-value of money, but are for exposition, still illustrate the disparity between costs and savings benefits. Simply dividing the capital investment by the savings yields a payback period of 34 years (i.e., \$2.523 million / \$72,280).

<sup>27</sup> This only considers the test year expenses. Under test year ratemaking, the \$422,000 expense in 2015 would remain in rates in the following years until the next GT&S rate case or other rate review.

<sup>28</sup> PG&E-11-36, lines 12-14.

<sup>29</sup> PG&E WP 11-115.

- 1 TURN recommends disallowance of the project, which indicates reductions of \$422,000
- 2 for expense (MWC JV) in 2015 and \$2,523,000 for capital (MWC 2F) in 2016.