Company-confidential per Protective Order in Docket UE-190882
Exhibit No. CLT-1CCTr
Docket UE-190882/UE-190458
Witness: Charles L. Tack

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Investigation of AVISTA CORPORATION d/b/a AVISTA UTILITIES, PUGET SOUND ENERGY, and PACIFIC POWER & LIGHT COMPANY, Regarding the Prudency of Outage and Replacement Power Costs	Docket UE-190882
In the Matter of PACIFIC POWER & LIGHT COMPANY, 2018 Power Cost Adjustment Mechanism	Docket UE-190458

PACIFIC POWER & LIGHT COMPANY

REDACTED – COMPANY-CONFIDENTIAL DIRECT TESTIMONY OF CHARLES L. TACK

~~**December 2019**~~**REVISED February 7, 2020**

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ATTACHED EXHIBITS

REVISED - February 7, 2020

Q. Please state your name, business address, and present position with PacifiCorp.

A. My name is Charles (Chuck) L. Tack and my business address is 1407 North Temple, Salt Lake City, Utah 84116. I am currently employed as Managing Director of Generation Support at PacifiCorp. I am testifying for PacifiCorp d/b/a Pacific Power & Light Company (Pacific Power).

QUALIFICATIONS

Q. Please describe your education and professional experience.

A. I hold a Bachelor's degree in Civil Engineering from the University of Nebraska, a Masters in Energy Business from the University of Tulsa, and am currently working towards a Masters in Finance from the University of Utah. Before joining Pacific Power, I held a Senior Reactor Operators License at Fort Calhoun Nuclear Station and a Senior Reactor Operators Certification at Cooper Nuclear Station. I joined Pacific Power in 2017 and worked in various engineering and operational (including Shared Unit Director) positions before becoming Managing Director of Generation Support in 2019.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. Through this testimony, I will provide an explanation of the events leading up to the Environmental Protection Agency (EPA) Mercury and Air Toxic Standards (MATS) Particulate Matter (PM) outage at the Colstrip generating station, Pacific Power's understanding of the actions that were taken prior to the outage, and the actions that were taken after the outage occurred.

PACIFIC POWER'S INVOLVEMENT IN THE COLSTRIP PLANT

Q. Please provide some background on the Colstrip plant.

A. The Colstrip plant is a four unit coal-fired power plant located in Montana. The plant is jointly-owned by various parties, of which Pacific Power is a 10 percent owner in Unit 3 and Unit 4. It is my understanding that only the company's ownership of Unit 4 is included in the company's Washington rates. The operator, Talen Montana (Talen), plans and carries out the daily operation of the facility.

Q. Please explain how Pacific Power participates in the on-going operations of Colstrip?

A. Pacific Power has a representative on the Ownership and Operating (O&O) Committee, through which the owners who are not involved in the day to day operation of Colstrip are kept informed on matters related to the operation and maintenance of the plant. Additionally, Pacific Power maintains on-going contact with Talen on an as-needed basis to address any issues that may arise. As the plant operator, Talen has authority to act as an agent for the owners and "[redacted]"[1]

Q. In 2018, what was your role in the on-going operations of Colstrip?

A. Throughout 2018, I was Pacific Power's representative on the O&O Committee.[2] Through that role, I attended meetings (in person or via telephone) of the O&O

[1] Exhibit CLT-2CCr at Section 3(d). This Exhibit contains selected sections from the Colstrip Ownership and Operation Agreement. I am not an attorney, however, I have quoted and provided certain sections of this agreement to support my understanding of how operations work in practice.

[2] The O&O Committee is referred to as the "Project Committee" in the Colstrip Ownership and Operation Agreement, *See* Exhibit CLT-2CCr at Section at 17.

Committee and participated in the discussions on the Colstrip MATS PM outage as Pacific Power's representative.

Q. How often did the O&O Committee meet in 2018?

A. The O&O Committee is required to meet on a quarterly basis, however, meetings occur monthly.

Q. What was generally discussed at the O&O Committee meetings?

A. Generally, all the O&O Committee meetings followed the same format. Talen would provide updates on the following areas: safety, fuels, environmental, generation/plant performance, and financial. After the updates, we would move into executive session for further discussion on more sensitive matters. For example, this could include discussion of topics between owners, direction the owners would like to see the plant go, contract challenges with vendors, staffing changes, etc. During the regular part of the O&O Committee meeting, many representatives from different Talen departments (safety, operations, fuels, etc.) attend. In the executive session, these individuals leave the meeting.

Q. How do you assess the information that Talen provides you in these meetings on plant operations?

A. I have spent a significant portion of my career in operations, first in nuclear power plants, then in support of PacifiCorp's thermal generation fleet (coal, natural gas, and geothermal). As Talen discusses plant operations, I assess the information and direction provided based on my experience. This information, which usually includes many follow up questions, provides good context for me to filter and understand the issues. Additionally (when I feel an issue warrants more attention or do not think the

direction is appropriate), I reach out to our internal experts for back-up to ensure alignment with Pacific Power's practices. It is my job as Pacific Power's representative to critically assess and challenge the information provided by Talen.

Q. How do you communicate and discuss decisions on operational issues with Pacific Power's management?

A. I am in regular contact with my boss, Dana Ralston, who is the Senior Vice President of Thermal Generation, Coal Generation, and Mining. Decisions and updates I feel are applicable were documented in the Shared Units Weekly Status Report.[3]

THE RISE IN PARTICULATE MATTER LEVELS IN EARLY 2018

Q. Please explain how Talen tests for compliance with the PM levels in order to comply with the Mercury Air Toxics Standards (MATS)?

A. To obtain a source's PM emission rate, a probe is inserted into the exhaust stack and a pump draws flue gas through a filter media. The stack testers follow a prescribed EPA test method which allows them to determine stack PM emissions on a pound-per-hour or pound-per-million British Thermal Unit (BTU) basis. Compliance with the MATS PM limit for Colstrip is demonstrated by the daily weighted site-wide rolling 30-day average PM emission rate of all four Colstrip Units as directed by the EPA.

Q. When did Talen first inform you that the rising PM levels had triggered increased monitoring?

A. During an O&O Committee meeting on February 21, 2018, Talen informed committee members that although the plant was still in compliance, there were elevated MATS PM levels in the official compliance tests that had occurred on

[3] A redacted version of this report, containing only information pertaining to Colstrip is attached as Exhibit CLT-3Cr.

February 7, 2018 and February 9, 2018 for Units 3 and 4. Talen then discussed that they were looking into the potential source of the elevated PM levels. As elevated levels were not expected, Talen's approach was to investigate what could be causing the elevated PM levels while monitoring alternate indicators. These alternate indicators are not official compliance measurements but help provide additional evidence of whether the PM was still within acceptable limits. Along with this, Talen discussed that PM levels are impacted by many variables, so the results are not linear and often increase or decrease quarterly.[4]

Q. Did you have any additional conversations with Talen regarding the elevated PM levels?

A. Yes, after being informed of the elevated PM levels, I had multiple additional conversations with Talen's representatives regarding my concerns around the elevated PM levels. I asked for more specificity regarding the actions that were being taken to find the cause of the elevated PM levels and what alternate indicators they used to help ensure compliance was maintained in the interim between official compliance tests. Additionally, attached as Exhibit CLT-5CCr is an internal email from Talen, that was provided to Pacific Power after the outage was resolved.[5] This email documents the actions that were taken in February in response to the elevated PM levels.

[4] The significant variability in PM levels through 2017 is shown in Exhibit CLT-4CCr, which was a slide developed for a workshop with UTC Staff.
[5] This was provided to Pacific Power after additional discussions with Talen in November of 2019.

Q. What actions were being taken by Talen to find the cause of the elevated PM levels?

A. Through the additional conversations, Talen informed me that they were monitoring and evaluating the following alternative indicators for PM levels:

While the alternate indicators are not official compliance tests that are submitted to the Montana Department of Environmental Quality (MDEQ), they provide other important ways to measure PM levels that can be correlated to the official compliance test. These indicators provide real time (not official compliance) data for plant operations that help indicate whether PM levels are within the permitted limits. I have attached a narrative description of each of these items as well as results for the time period in question. Attached to this testimony is a document that shows Talen's tracking of these metrics after the February compliance test.[6]

Q. Based on your experience in plant operations, how do you respond when a single indicator is elevated, like the PM levels in early 2018?

A. It is my experience that when a single indicator like the measurement of MATS PM levels in a compliance test is elevated, you start examining and troubleshooting other indicators to correlate with and validate those results. On-going monitoring, operation evaluations, and extra attention are generally accepted operating practice in

[6] Exhibit CLT-6CCr. This Exhibit was originally developed after the outage in response to questions from UTC Staff and provided to them after a workshop between PacifiCorp and the UTC Staff on September 20, 2019.

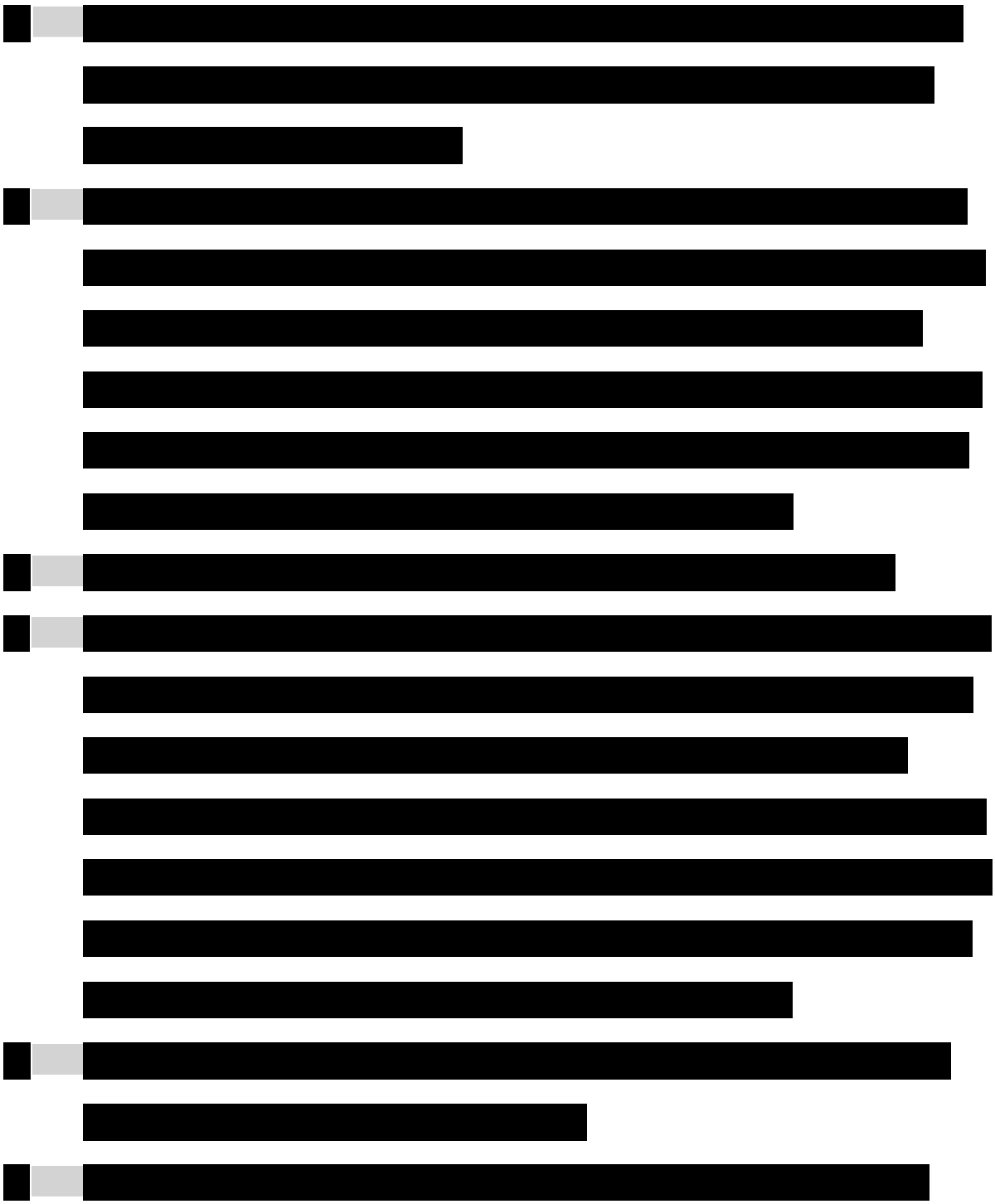
helping identify if the issue is real or a false positive. There are multiple components and parameters throughout a power plant that, over the course of the year, may have random negative anomalies or outlier results. Operators monitor multiple data points (alternate indicators) to determine trends and gather as much information as available (not just single points) to understand if a specific reading represents a real or random issue. Many times an issue (real or false) can only be identified when the unit is operating.

If the Operator immediately shuts down every time there is a concern of an elevated parameter, the unit would cycle significantly more, placing large amounts of stress on staff and existing equipment as well as negatively impacting any troubleshooting efforts. Information gained through troubleshooting is vital to operations, planned decisions can be made about taking a unit offline, maintenance needed, risk, valid / invalid results, and/or continuing to build a trend based on existing operations.

Q. Was there any follow-up on this issue in the O&O Committee meeting that occurred on March 21, 2019?

A. Yes. At the meeting, Talen discussed that they had not identified any items causing the elevated PM levels and that the alternate indicators they were monitoring and evaluating indicated PM levels should be within compliance limits. Talen was not concerned about an exceedance and discussed that they would continue to look for what caused the elevated PM in the February tests as well as continue monitoring alternate indicators of current PM levels. Exhibit CLT-7CCr is a spreadsheet that was used by Talen to track plant parameters (unofficial MATS PM results) while

evaluating the impacts from troubleshooting efforts during this time period. This spreadsheet was provided to PacifiCorp after the outage occurred in response to UTC staff questions.



[redacted]

Q. Through the discovery process, some parties have raised questions about the functionality of the coal conveyor or the coal sampler. Did the functionality of these pieces of equipment have any effect on the outage?

A. No. From my understanding of the causes of the outage and the rise in PM levels, any issues with the coal sampler and the coal conveyor had minimal to no effect on the cause of the outage. As I stated above, the coal that was delivered met the contractual specifications.

THE COLSTRIP OUTAGE

Q. When did Talen inform Pacific Power that there would be an outage at Colstrip?

A. On June 27, 2018, Talen contacted all co-owners for an emergency meeting. At this meeting, the owners were informed that Unit 3 and Unit 4 had failed the official second quarter MATS PM compliance tests and the units would be coming offline expeditiously to address the issue.

Q. Market prices were lower from February through May, should Talen have taken steps for a planned outage in the early part of the year, and would that have prevented a forced outage later in the year?

A. As discussed above, in the first quarter of 2018, we were informed by Talen that official MATS PM compliance was met but with elevated levels. At that time the elevated PM level was a single data point and unexpected. Talen was confident they would maintain compliance based on the alternate indicators they were monitoring as well as plant parameters they were evaluating. From my discussions with Talen, they did not believe they would fail the second quarter official PM test. If Talen would have provided any hint that they believed the units would fail official testing, Pacific Power would have told them our standard position is to immediately shut down the units and address the concern. Pacific Power's priority is to ensure that Colstrip meets safety, environmental and compliance requirements.

Q. What steps were taken after Units 3 and 4 were taken offline?

A. Talen continued testing, cleaning, analysis, and evaluations of individual variables to determine if they could find the source of the elevated PM levels. Along with this, Talen continued to use in-house experts and got outside experts involved to help investigate the cause of the elevated PM levels. Each week there was a plan to investigate new variables. Unit 3 was the lead with Unit 4 following—they would address items on the Unit, then bring the Unit up to power and perform an unofficial MATS PM test to determine if they were passing or if the items addressed had any impact.

Q. Did Talen reach out to industry experts for assistance?

A. Yes. Talen reached out to Architect Engineering Consulting Operations Maintenance (AECOM) and Air Control Techniques (ACT) to consult and help address the PM levels. AECOM are experts in coal fired pollution control equipment. ACT are specialists in stack gas testing & analysis.

Q. Did Talen keep the owners informed of their actions?

A. Yes. Talen continued to keep the owners informed of the actions they were taking throughout the outage. A couple weeks into the outage, daily phone calls were had with the owners to discuss findings and direction.

Q. Did Pacific Power provide any assistance to Talen as the outage progressed?

A. Yes. A few weeks into the outage as the issues continued to be a challenge, Pacific Power offered to send our experienced engineers to provide assistance to Talen. Talen accepted, and two of Pacific Power's engineers traveled to Talen to support. Along with this, when Pacific Power was notified of the official compliance test failure in late June, internally multiple environmental engineers and generation support engineers were brought into discuss what we felt was the best approach forward. From there we monitored Colstrip's approach and provided informal feedback on ideas that might help.

Q. How long did the outage last?

A. In September of 2018, Units 3 and 4 passed the official MATS PM compliance test and were brought back online. Exhibit CLT-9CCr provides a timeline detailing the events that led up to and during the outage.

Q. In your opinion, were the actions taken by Talen before and after the outage consistent with prudent utility practice?

A. Yes. Consistent with prudent utility practice, Talen recognized that although the facility was in compliance during the February testing, they still required increased attention and evaluation of the PM emissions. Talen monitored numerous alternate indicators and conducted trouble-shooting to evaluate whether the higher PM levels represented a trend or were an anomaly. These alternate indicators and evaluations indicated a likelihood that the limits for the second quarter compliance test would not be exceeded. However, when the official compliance test results failed (and did not align with the alternate indicators), Talen expeditiously shut-down the units and brought in outside experts to help find and address the cause of the higher PM levels. It took several months of the combined efforts of Talen's staff and outside experts, including staff from PacifiCorp, to find and address the causes of the higher PM levels, indicating the complexity of the problem.

ROOT CAUSE ANALYSIS FOR THE COLSTRIP OUTAGE

Q. Did the owners hire an independent firm to conduct a root cause analysis (RCA) to determine the cause of the outage?

A. Yes. Sologic was contracted to conduct an RCA to determine the cause of the elevated PM levels and determine appropriate corrective steps.

Q. What did Sologic determine in their RCA?

A. Through their analysis, Sologic determined that the elevated PM levels were due to a combination of factors including:

[redacted]

[redacted]

Each of these elements is explained in detail in the RCA which is attached to this testimony as Exhibit CLT-10CCr. The RCA goes on to conclude, "[redacted]

[redacted]

[redacted]"[10]

Q. Please summarize the preventive/corrective action items described in the RCA and indicated whether they have been implemented?

A. The following actions are Recommended Solutions which have been implemented or are in progress:

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

- [redacted]

[redacted]

[10] Exhibit CLT-10CCr at 4.
[11] Exhibit CLT-10CCr at 5.
[12] Exhibit CLT-10CCr at 5.
[13] Exhibit CLT-10CCr at 5.

[redacted][14]

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY CONSENT DECREE

Q. Was the MDEQ informed of the failure of the PM test in late June of 2018?

A. Yes. The MDEQ was promptly informed after the failure of the PM test in June of 2018.

Q. Did the MDEQ conduct an investigation of the violation of the MATS PM levels at Colstrip?

A. Yes. MDEQ conducted an investigation, and Talen has worked cooperatively with

[14] Exhibit CLT-10CCr at 5.

MDEQ through the investigation which resulted in a penalty assessment and a consent decree which was filed in Montana district court on November 25, 2019. The consent decree and penalty assessment are attached as Exhibit CLT-11 and Exhibit CLT-12.

Q. What was the penalty assessed by MDEQ?

A. Talen has agreed to a penalty of $450,000 for air quality emissions and reporting violations at the Colstrip generating station.[15] The penalty amount includes a payment of $112,500 to MDEQ as well as funding two supplemental environmental projects to benefit local communities.

Q. Did the Penalty Assessment include an evaluation of the events leading up to the outage?

A. Yes. The MDEQ determined that Talen took extensive measures to investigate elevated PM levels after February 2018 testing and that those investigations indicated the units were in compliance:

> While the individual unit emission rates have experienced increases and decreases over the years, the weighted average PM emission rate had a slight upward trend, indicating a shrinking compliance margin over time. The PM test from the first quarter 2018 showed a decrease in PM emissions for Unit 1; however, Units 2, 3 and 4 all showed increases in PM emissions to their highest reported weighted average since MATS took effect in 2016. The results yielded a weighted average emission rate equal to the permit limit of 0.030 lb/MMBtu,[16] prompting Talen to investigate possible reasons for the elevated PM emissions. Talen reviewed indicators in the CAM plan,[17] reviewed operations and maintenance, scrubber plumb bob delta P,[18] opacity and PM CEMS[19] data and found no indicators of abnormal operations and no causes of higher PM emissions.[20]

[15] Exhibit CLT-13, MDEQ Press Release on Consent Decree.
[16] Pounds per million BTU.
[17] Continuous Assurance Monitoring Plan.
[18] The scrubber delta p investigations looked at how adjusting a "bob" to control turbulence at an inlet impacted PM levels.
[19] Continuous Emissions Monitoring System.
[20] Exhibit CLT-12, page 2.

The consent decree and penalty calculation do not make any finding that Talen failed to take any operational measures that would have prevented the elevated PM levels.

Q. Can you provide an explanation of the reporting violations that were assessed by MDEQ?

A. MDEQ assessed an administrative reporting violation against Talen for an inaccurate compliance certification. Talen submitted a required semi-annual compliance certification after the June compliance testing that inaccurately stated the units had been in continual compliance. Talen had submitted a report that included documentation and disclosure of the noncompliance, and had also reported it verbally to MDEQ. However, the compliance certification was not accurate as submitted due to an administrative error. After MDEQ notified Talen of the improper certification, Talen submitted a corrected compliance certificate.[21]

Q. Did the MDEQ identify any corrective actions that should be taken?

A. Yes. However, no new or different operating requirements were identified. Instead, MDEQ required some additional reporting and monitoring to confirm on-going compliance. As part of MDEQ Enforcement Action requirements, MDEQ requires Talen to conduct additional monthly monitoring to ensure PM levels remained below the limits. MDEQ also required updates to Talen's testing protocols to ensure accurate testing. MDEQ also required Talen to submit a report to confirm that scrubbers on the units were operating as required by the permit.[22]

Q. Has Talen implemented these corrective actions?

A. Yes. Talen is conducting the additional monthly testing. Talen acted proactively in

[21] *See* Exhibit CLT-12.
[22] Exhibit CLT-13.

December of 2018 (after discussions with MDEQ), and started monthly testing of MATS PM levels. The other actions will be performed as required per the official MDEQ Enforcement Action.

CONCLUSION

Q. Please summarize your testimony.

A. Beginning in February of 2018, Talen saw elevated MATS PM levels. As a result, Talen began taking actions (generally accepted operation practices) to determine the cause of the elevated MATS PM levels by tracking alternate indicators that would correlate to the MATS PM levels. These alternate indicators supported the conclusion that MATS PM levels would pass the next official test. However, the PM levels did not pass the next official test. This caused Units 3 and 4 to enter into a forced outage. Through the outage, Talen took numerous actions that individually decreased the MATS PM results until official compliance was met. After consulting numerous engineers, consultants, including Pacific Power's experts, a single root cause was not found. The RCA stated that there were four causes that likely in combination caused the event. These four causes have driven numerous corrective actions to ensure that this sort of outage does not occur again.

Q. Does this conclude your direct testimony?

A. Yes.