
# 2009
# Electric Service
# Reliability Monitoring
# Annual Report

## CONTENTS

## Introduction

Washington state investor-owned electric companies are to provide statements describing their reliability monitoring in an annual report pursuant to WAC 480-100-393 and WAC 480-100-398.

This document reports Avista Utilities' reliability metrics for the calendar year 2009. All numbers in this document are based on system data. The Company's system includes eleven geographical divisions. Two of these divisions straddle the Washington and Idaho border and commingle jurisdictional customers. A map of Avista's operating area is included in a following section.

WAC 480-100-393 (3)(b) requires the establishment of baseline reliability statistics. The Company's baseline statistics are included in this report.

Avista continues to review its baseline reliability statistics in light of operational experience under this regulatory protocol. Avista may modify its baseline statistics as appropriate and will update the Commission accordingly.

Avista added a new section to the 2007 annual report which analyzes the areas where customers are experiencing multiple sustained outages. This new section provides analysis of a reliability indice called $CEMI_n$, which implies Customers Experiencing Multiple sustained Interruptions more than n times.

## Data Collection and Calculation Changes

WAC 480-100-398 (2) requires the Company to report changes made in data collection or calculation of reliability information after initial baselines are set. This section addresses changes that the Company has made to data collection.

### Data Collection

- Since Avista's Electric Service Reliability Monitoring and Reporting Plan was filed in 2001, there have been several improvements in the methods used to collect outage data. In late 2001, centralizing the distribution trouble dispatch and data collection function for Avista's entire service territory began. The distribution dispatch office is located in the Spokane main complex. At the end of September 2005, 100% of the Company's feeders, accounting for 100% of the customers, are served from offices that employ central dispatching.

The data collected for 2009 represents the fourth full year of outage data collected through the Outage Management Tool (OMT). For 2009, all data was collected using the "Outage Management Tool" (OMT) based on the Company's Geographic Information System (GIS). The OMT system automates the logging of restoration times and customer counts.

Avista did discover a software coding error that has been within the OMT system since 2002 that will cause a small increase in the SAIDI and CAIDI for 2008. Previous years were also evaluated to determine the overall impact to the Avista baseline statistics and at this time Avista is not proposing a change to the baseline numbers. The software error only occurred during very specific outage conditions when a group of customers with an initial outage starting time were "rolled" up into another group of customers that were determined to be part of the first group outage. The second group may have had a later outage starting time. When the first group of customer outage information was rolled up, the original outage starting time was lost and the second group outage starting time was used for both groups of customers instead of using the first outage starting time. The number of customers was counted correctly.

Even as good as the OMT system is at quantifying the number of customers and duration of the outage duration, there still are areas where the data collection is not precise. Determining the exact starting time of an outage is dependent on when a customer calls in, how well the Avista Distribution Dispatcher determines where the outage is and defines the device that has opened to remove the faulted section.

As AMR/AMI metering is implemented in the future and the customer meter provides outage information to the OMT system through an interface, the SAIDI and CAIDI numbers are expected to increase. This is similar to the above discussion.

Use of the OMT system and GIS data has improved the tracking of the numbers of customers without power, allowed for better prioritization of the restoration of service and the improved dispatching of crews.

- Avista has reported in the previous annual reports that the completion of the transition to the OMT system had caused an increase in the variability of the data collected from 2001 to 2007. This Annual Report continues to show that a gradual increase in the SAIFI and SAIDI numbers that cannot be attributed to the transition to the OMT system. Review the charts, on pages 9 and 12 that provide a trend line for SAIFI and SAIDI historical data.

Continued scrutiny will be important over the next year or so to determine if the increase in SAIFI/SAIDI continues, or can be slowed or reversed by reliability improvement programs implemented in 2009 and underway in 2010. If it cannot be slowed or reversed to examine if this is driven by other sources or conditions not recognized yet. See SAIFI Linear Trend Line Chart later in this document.

## Interruption Cause Codes

Cause code information is provided in this report to give readers a better understanding of outage sources. Further, the Company uses cause information to analyze past outages and, if possible, reduce the frequency and duration of future outages.

- The Company made several changes in the classification of outage causes for the reporting of 2005 outages and subsequent years.

## Customers Experiencing Multiple Interruptions

The IEEE Standard 1366P-2003 provides for two methods to analyze data associated with customers experiencing multiple momentary interruptions and/or sustained interruptions. Avista's Outage Management Tool (OMT) and Geographical Information System (GIS) provide the ability to geospatially associate an outage to individual customer service points. This association allows for graphically showing Customers Experiencing Multiple sustained Interruptions ($CEMI_n$) with Major Event Day data included onto GIS produced areas. Data can be exported to MS Excel to also create graphs representing different values of n. 2009 information is provided in the new section added to the 2007 report after the Areas of Concern Section to summarize the analysis Avista performed on the 2009 outage data. The calculation for $CEMI_n$ and Customers Experiencing Multiple Sustained and Momentary Interruptions $CEMSMI_n$ is provided in the Indices Section.

## Definitions

### Reliability Indices

SAIFI (System Average Interruption Frequency Indices), MAIFI (Momentary Average Interruption Frequency Indices), SAIDI (System Average Interruption Duration Indices), and CAIDI (Customer Average Interruption Duration Indices) are calculated consistent with industry standards as described below. Avista adopts these for purposes of tracking and reporting reliability performance. Further explanation and definitions are provided in the "Indices Calculation" section of this report. While these indices are determined using industry standard methods, it is important to note that differing utilities may use different time intervals for momentary and sustained outages. Avista defines momentary outages as those lasting five (5) minutes or less. Sustained outages are those lasting longer than five (5) minutes.

### Baseline Reliability Statistics

WAC 480-100-393 (3) (b) requires the establishment of baseline reliability statistics. The Company's 2003 Electric Service Reliability Monitoring and Reporting Plan initially established Avista's Baseline Reliability Statistics. At that time, the Company selected the baseline statistics as the average of the 2001 through 2003 yearly indices plus two standard deviations (to provide 95% confidence level). In 2006 the Company reviewed the calculation of the baseline statistics in light of the completion of the transition to the OMT in 2005 and the data collected in 2006. Calculating the baseline reliability statistics including the 2004 through 2006 data show an increase in the values, which the Company believes, represents better reporting using OMT. The Company proposed the latest calculated Baseline Statistic values to reflect the best available data collection. Because the Company believes that the OMT data collection has affected the SAIFI index the most it used the years 2004 to 2006 for the SAIFI Baseline Statistic and the years 2002 to 2006 for the MAIFI and SAIDI Indices.

The baseline indices have been adjusted by removing Major Event Days, MED's, as defined in the following section.

The following table summarizes the baseline statistics by indices.

| Indices | 2004-2006 Average (Excluding Major Events) | Baseline Statistic (Ave + 2 Standard Deviations) |
|---|---|---|
| SAIFI | 1.09 | 1.44 |

| Indices | 2002-2006 Average (Excluding Major Events) | Baseline Statistic (Ave + 2 Standard Deviations) |
|---|---|---|
| MAIFI | 4.52 | 5.82 |
| SAIDI | 114 | 160 |

Additional comparison of the Baseline Indices is provided in the System Indices section of this report.

Avista is anticipating using the different years in the Baseline Statistics for SAIFI for a few years until a full five years of data is gathered using the current Outage Management Tool.

## Major Events

Major Events and Major Event Days as used in this report are defined per the IEEE Guide for Electric Power Distribution Reliability Indices, IEEE P1366-2003. The following definitions are taken from this IEEE Guide.

> **Major Event** – Designates an event that exceeds reasonable design and or operation limits of the electric power system. A Major Event includes at least one Major Event Day (MED).
>
> **Major Event Day** – A day in which the daily system SAIDI exceeds a threshold value, $T_{MED}$. For the purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than $T_{MED}$ are days on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather). Activities that occur on major event days should be separately analyzed and reported.

The Company will use the process defined in IEEE P1366 to calculate the threshold value of $T_{MED}$ and to determine MED's. All indices will be reported both including and excluding MED's. The comparisons of service reliability to the baseline statistics in subsequent years will be made using the indices calculated without MED's.

The table below lists the major event days for 2009.

| Major Event Days | SAIDI (Customer-Minutes) | Cause |
|---|---|---|
| 2009 Major Event Day Threshold | 9.925 | |
| No Major Event Days | | |

Additional analysis of the 2009 Major Event Days is not provided in this Annual Report as was done in previous years starting on Page 53, section Major Event Days Causes.

### Customer Complaints

The Company tracks reliability complaints in two areas, Commission Complaints and Customer Complaints. Commission Complaints are informal complaints filed with and tracked by the Commission. Customer Complaints are recorded by our Customer Service Representatives when a customer is not satisfied with a resolution or explanation of their concern. See the Customer Complaints section on Page 36 for a summary of results for this year.

## System Indices

The charts below show indices for Avista's Washington and Idaho ("system") electric service territory by year. Breakdown by division is included later in this report.

The Company continues to use the definition of major events as described above to be consistent with IEEE Standards. Therefore, the following charts show statistics including the effect of major events per this definition.

Chart 1.1 – SAIFI - Sustained Interruptions / Customer

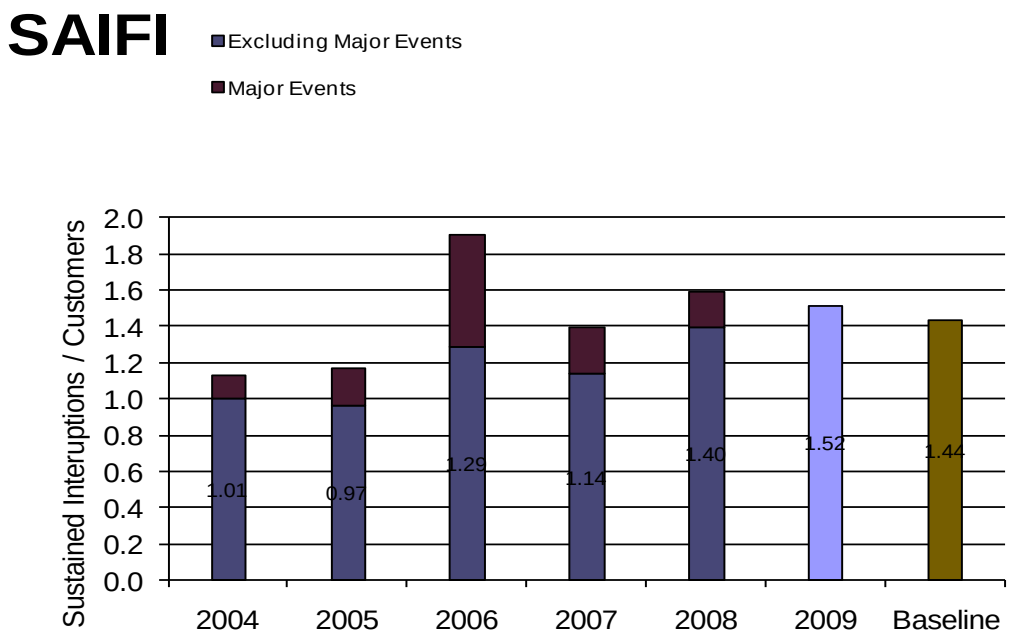
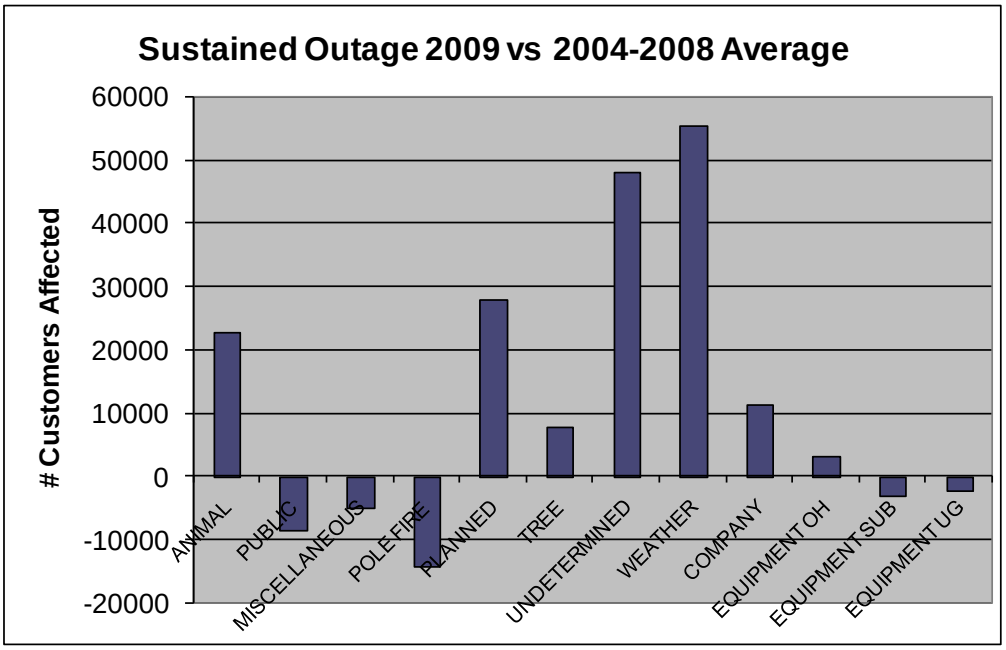



Chart 1.2 – Sustained Interruptions / Customer Historic Comparison




SAIFI for 2009 was over the existing baseline established in 2006 and represents the increasing trend. Using a simple linear regression to establish a trend line, it would look like about a 9.9% growth in number of customers affected. The $R^2$ coefficient of determination shows a much stronger correlation to the data than last year. A chart of this analysis has been provided just after this discussion. Major contributors to this higher number of customers affected were animals, planned outages, undetermined, and weather.

There were 138,951 customers affected by sustained outages caused by weather in 2009. This compares to the 2004–2008 average of 83,395 customers.

51,024 customers were affected by sustained outages associated with animal related incidents. This compares to the 2004-2008 average of 28,233 customers. The vast majority of the animal related reasons were associated with squirrel caused incidents.

Planned maintenance activities and also forced repairs affected 52,838 customers as compared to the 2004-2008 average of 24,845 customers. Continued maintenance activities associated with the Company equipment replacement program contributed to the increase in this cause and reduced the Overhead Equipment outage causes.

An increase in the number of Undetermined Causes occurred in 2009 as compared to the 2004-2008 average. 92,117 customers had undetermined causes as compared to the average of 43,835. A large number of outages were associated with transformer fuses, but there was no known reason for the fuse to operate. Additional analysis in 2009 along with discussions with local area personnel could only suspect these maybe animal caused as the common element that is suspected. No evidence can be contributed to these outages.

SAIFI Linear Trend Line Chart

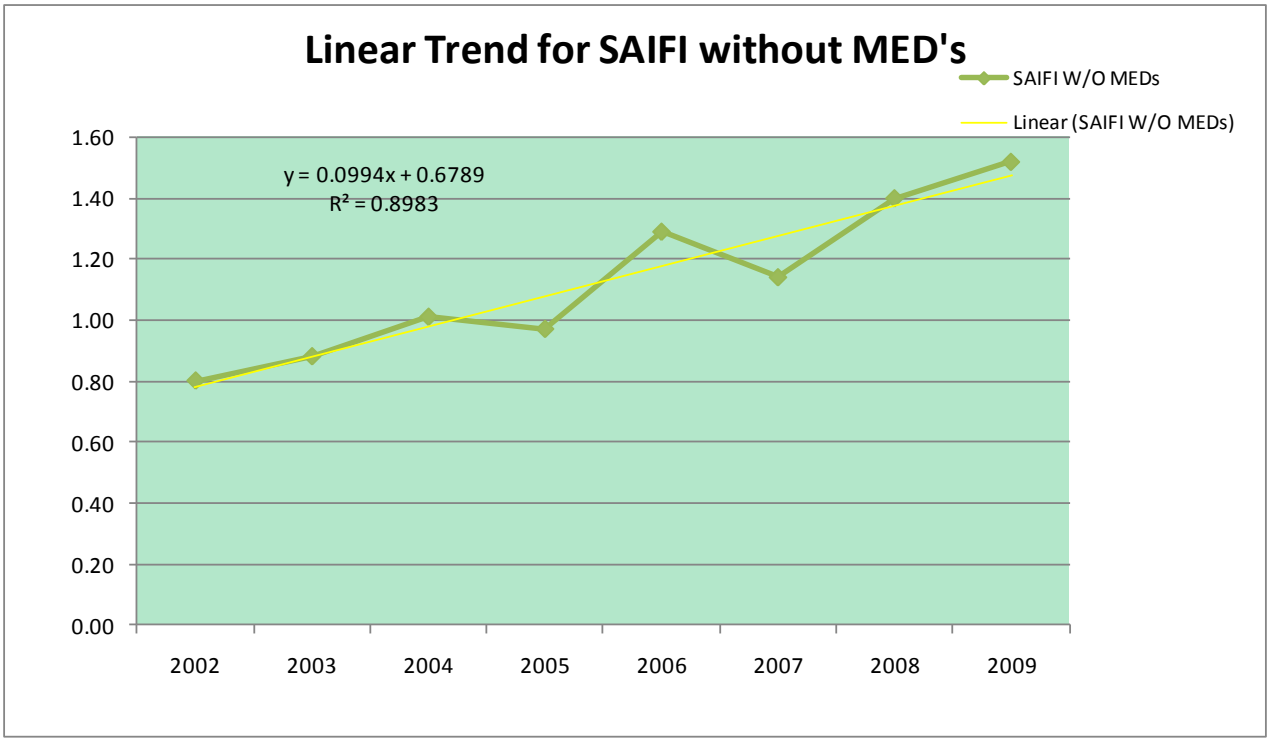


Chart 1.3 - MAIFI Momentary Interruption Events / Customer

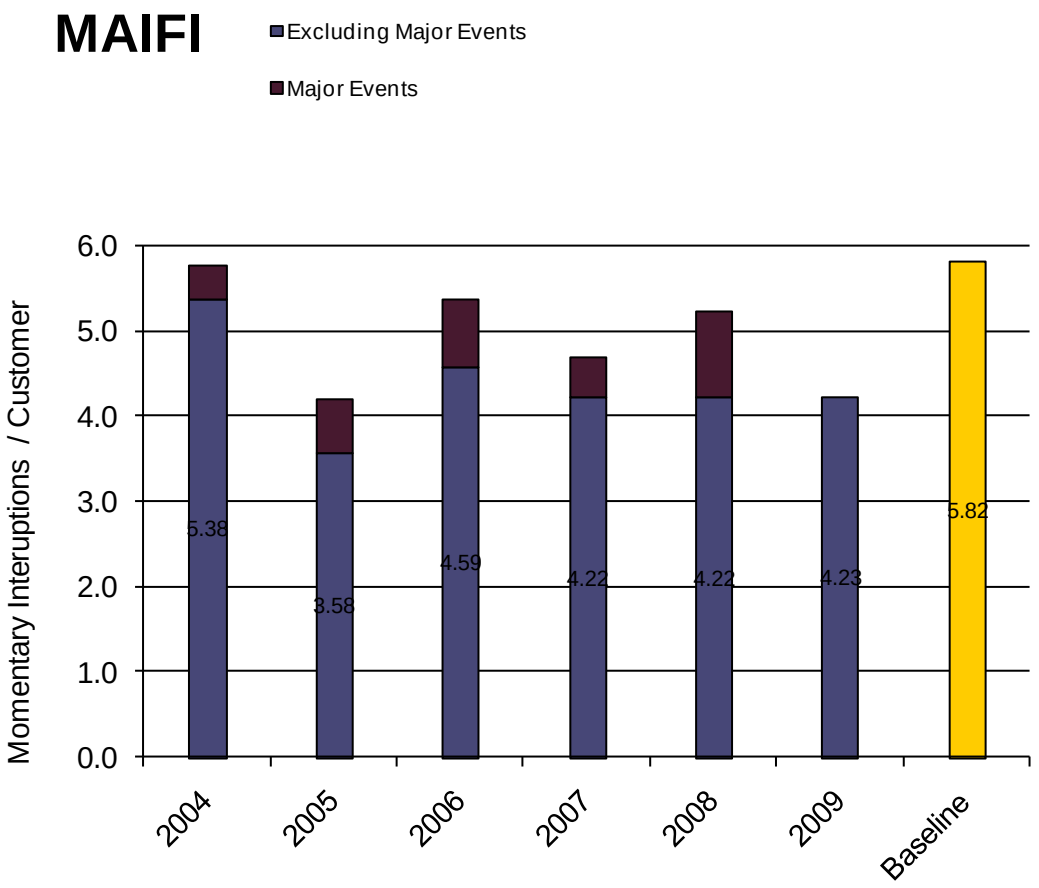
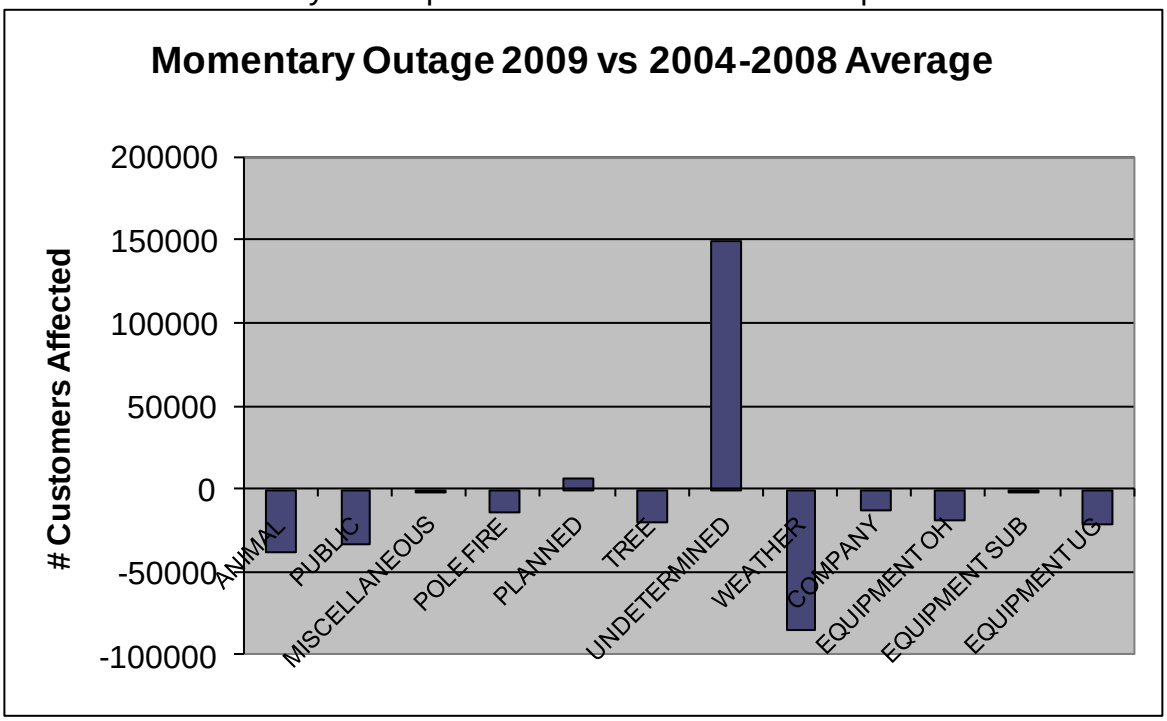


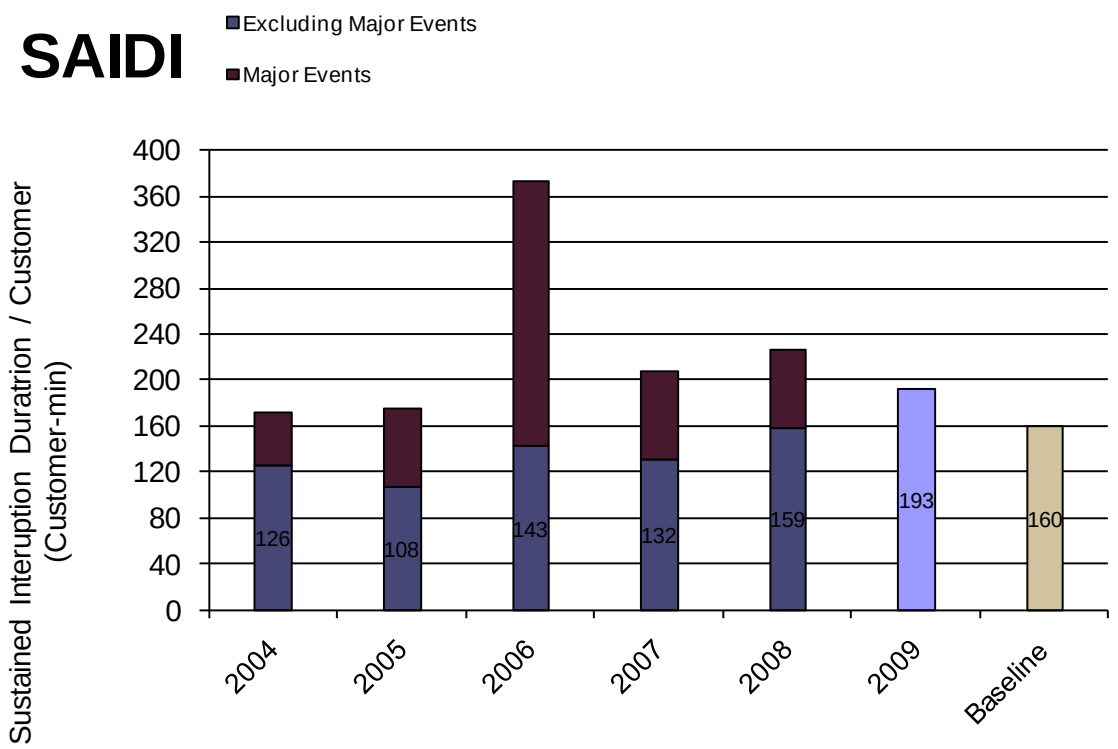

Chart 1.4 – Momentary Interruptions/ Customer Historic Comparison



The 2009 results for MAIFI show a large decrease over 2008 and about the same as 2007 levels. There was a reduction in weather related momentary outages that cannot be explained on weather conditions alone. There was a corresponding increase in the number of undetermined outages, which can reflect that weather conditions did cause outages. Distribution Dispatch continues to make improvements in correlating the momentary outages with subsequent sustained outages, which reduces the undetermined causes.

All other categories showed either a slight decrease that would be consistent with previous years.

Chart 1.5 - SAIDI – Average Outage Time / Customer




SAIDI Linear Trend Line Chart

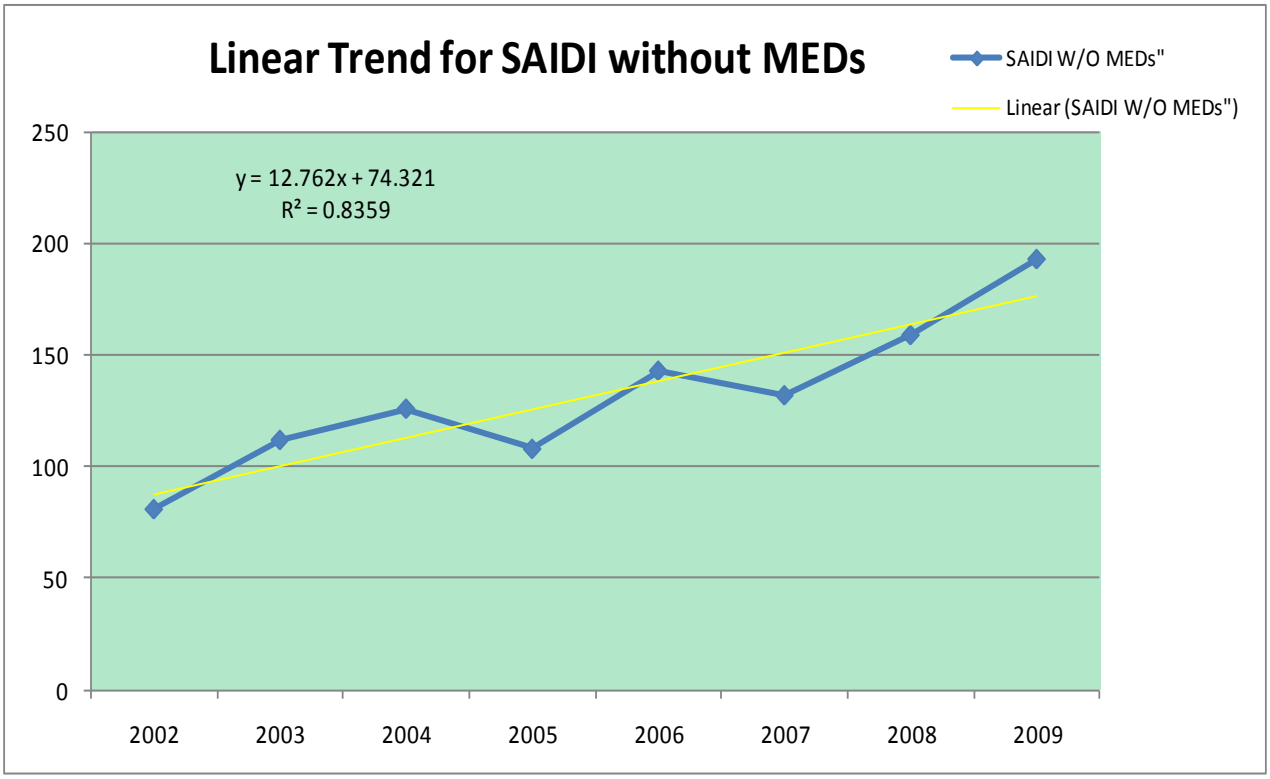
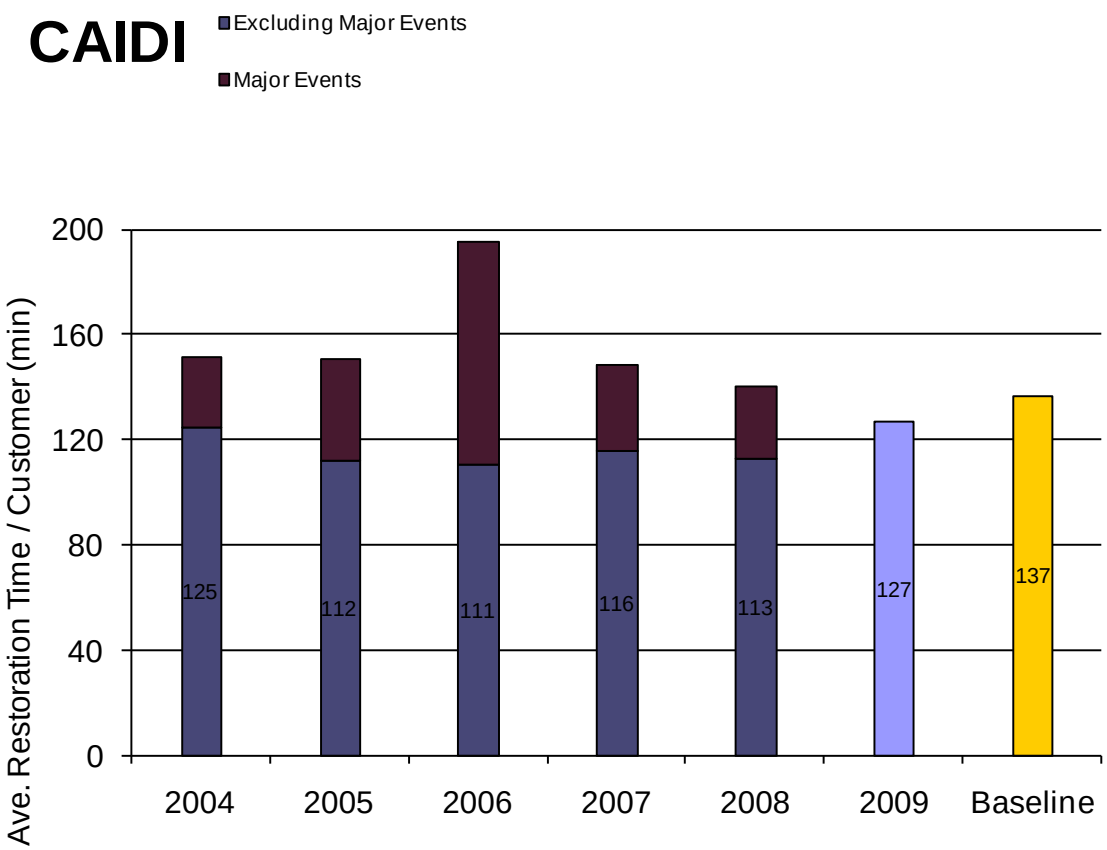


Chart 1.6 - CAIDI – Average Restoration Time



## OFFICE Indices

Chart 2.1 – SAIFI - Sustained Interruptions / Customer

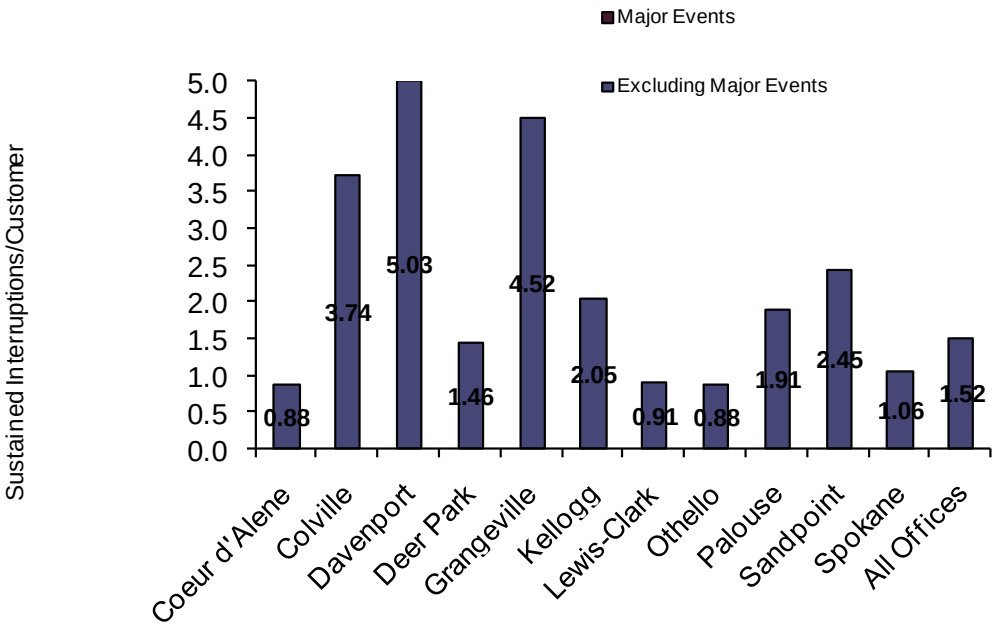



Chart 2.2 - MAIFI Momentary Interruption Events / Customer

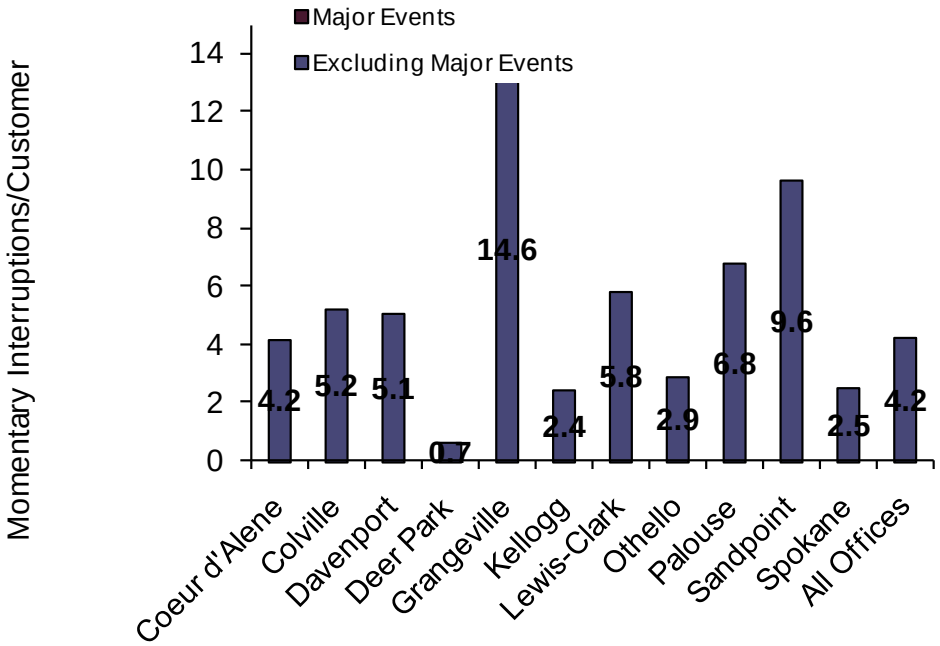


Chart 2.3 - SAIDI – Average Outage Time / Customer

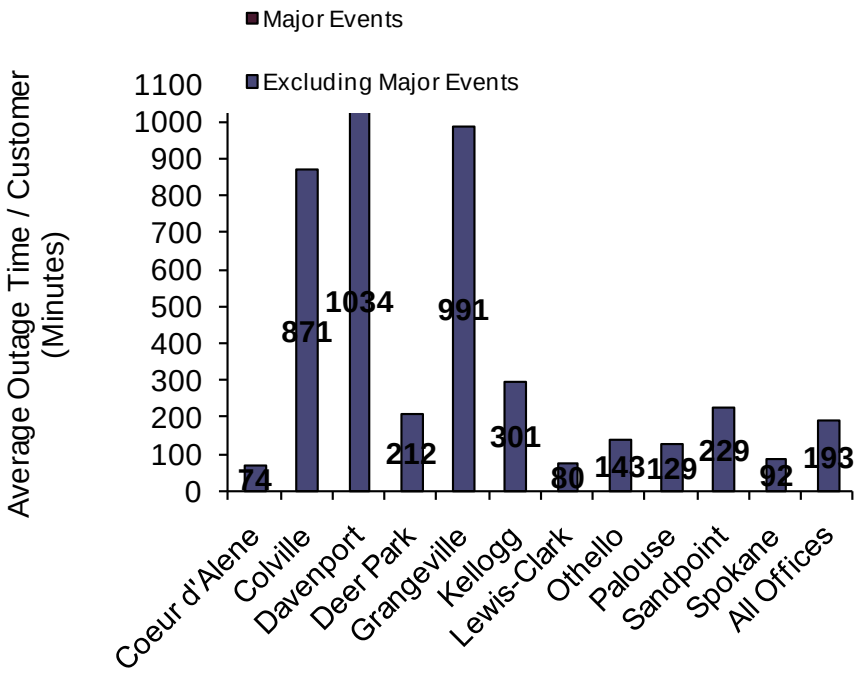
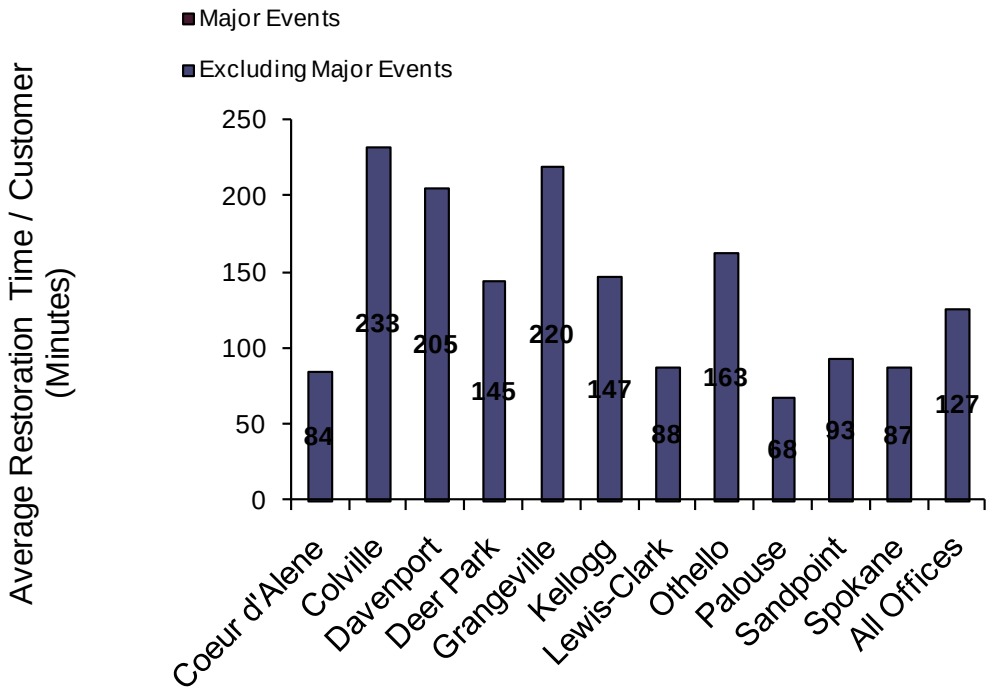



Chart 2.4 - CAIDI – Average Restoration Time



## Areas of Concern

As in previous years, Colville continues to have the lowest reliability of Washington's operating areas. However, the Colville area continues to show improvement over previous years as work plans are implemented. Colville was judged lowest based on its performance in the yearly indices for SAIFI, SAIDI, CAIDI, and MAIFI. Within the Colville area, six feeders were identified as the areas of concern for 2009. These feeders are Gifford 34F1, Gifford 34F2, Colville 34F1, Colville 12F4, Valley 12F3 and Valley 12F1. For this report, these same six feeders are identified as the areas of concern for 2009.

### Cause Information:

Generally rural areas have a greater number of outages per customer. Colville is a predominately rural and forested area. There are approximately 2342 miles of distribution line exposed to weather, underground cable failures and tree problems. Unlike most of the Company's system, lines in this area are built on the narrow, cross-country rights-of-way, typical of PUD construction practices prior to Avista acquiring the system. These conditions make patrolling, tree trimming, right of way clearing and other maintenance difficult. When cost effective, Avista moves sections of these overhead lines to road rights of way and/or converts them to underground.

Further, when outages occur in rural areas, the time required to repair damage is longer. More time is required for first responders to arrive and assess the damage and more time is required for the crew to reach the site. Often the damage is off road and additional time is required to transport materials and equipment to the site.

Listed below is a summary of the specific cause data for each feeder. This is a compilation of data from the Avista Outage Management Tool and the reporting from our local servicemen to Distribution Dispatch. Data from the reporting system is shown as a percentage of total customer-outages, (SAIFI) for that feeder.

Snow loading on green healthy trees growing beyond the rights-of-way often causes them to bend or break and contact distribution lines. These trees are not cut as part of our vegetation management program because they are outside our right of way and are considered healthy marketable timber.

#### Gifford 34F1

- 19.1% Weather: snow, wind and lightning storms
- 9.5% Equipment
- 0.0% Pole fires
- 2.4% Trees
- 19.1% Planned outages

**Colville 34F1**

- 35.7% Weather; snow, wind and lightning storms
- 11.4% Equipment
- 2.0% Pole fires
- 14.3% Trees
- 9.1% Planned outages

**Chewelah 12F3**

- 33.6% Weather: snow, wind and lightning storms
- 5.2% Equipment
- 3.5% Trees
- 15.5% Planned outages
- 7.8% Animal: birds or squirrels

**Gifford 34F2**

- 19.7% Weather: Wind, snow, and lightning storms
- 9.2% Equipment
- 1.3% Pole Fires
- 10.5% Trees
- 11.8% Planned outages
- 14.5% Animal: birds or squirrels

**Valley 12F1**

- 25.8% Weather: snow, wind and lightning storms
- 10.3% Equipment
- 11.3% Trees
- 7.2% Public
- 7.2% Planned outages
- 4.1% Animal: birds or squirrels

**Valley 12F3**

- 17.7% Weather: wind and lightning storms
- 5.9% Equipment
- 5.9% Trees
- 23.5% Public
- 23.5% Planned outages
- 0.0% Animal: birds or squirrels

## Colville Area Work Plans:

The improvement work that has been accomplished or planned for each feeder is listed below. The Company's reliability working group is continuing to study these feeders to develop additional work plans. Each of the identified feeders also had planned outages that correspond to the maintenance and replacement activities in the area.

Gifford 34F1

- 10,300' of URD cable was replaced in 2009, and 12,850' of URD cable is planned for replacement in 2010.
- A reliability improvement project is scheduled for 2010 in the Pleasant Valley area of this feeder to replace (42) 1940 class poles with new poles and replace approximately 2.2 miles of 1-phase #6A, #6CW, and #9 1/2D wire (all in poor shape) with 2-phases of #2ACSR wire.
- Vegetation Management completed tree trimming of 698 trims and 522 tree removals in 2009. No work planned for 2010.

Colville 34F1

- 12,350 of URD cable was replaced in 2009. None is scheduled to be replaced on this feeder in 2010
- A capital improvement project was completed in 2009 to replace 2.2 miles of 3-phase #6 Crapo wire in poor condition in a difficult access area with 3-phases or URD cable.
- A reliability improvement project is planned for 2010 to perform an RF survey of the trunk of this feeder and perform follow-up work to address issues that are found.
- Vegetation Management completed 6 tree trims and 713 tree removals in 2009. No work planned for 2010.

Chewelah 12F3

- 7700' of URD cable was replaced in 2009, and 5200' of URD cable is planned for replacement in 2010.
- A reliability improvement project was completed in 2009 to split the Chewelah 12F3 into two feeders (Chewelah 12F3 and Chewelah 12F4). Also, another reliability project was completed to convert 2 miles of 1-phase overhead line with bad access with 2-phases of URD.
- Late December 2009 saw the completion of the new Chewelah 12F4 feeder, which split the existing 12F3 into two parts. The original 12F3 feeder was almost 66 miles in circuit miles and is now about 26 circuit miles. 12F4 will be about 40 circuit miles.

Gifford 34F2

- 2775' of URD cable was replaced in 2009, and 8510' of URD cable is planned for replacement in 2010.
- A reliability improvement project is planned for 2010 to convert 3.5 miles of 3-phase overhead line to URD in the Twin Lakes area near Inchelium.

Valley 12F1

- No URD cable was replaced in 2009, but 300' of URD cable is planned for replacement in 2010.

- A reliability improvement project was completed in 2009 to convert 1.9 miles of 1-phase overhead line to URD in the Hesseltine Rd. area.
- Another reliability improvement project is planned for 2010 to convert 3.2 miles of 2-phase overhead line to 1-phase URD in the Jepsen Rd area.

Valley 12F3

- 1300' of URD cable was replaced in 2009, and 700' of URD cable is planned for replacement in 2010.
- Vegetation Management completed 749 tree trims and 293 tree removals in 2009. A small amount of work is planned for 2010.

Avista typically uses several different protective devices on its feeders to isolate faulted or overloaded sections and also continue to serve the remaining customers. Generally, two different protection schemes are used to either "save" the lateral fuse or "blow" the lateral fuse by using or not using the instantaneous over current trip. Depending on the feeder, number of customers, types of faults, (temporary or permanent), customer type, time of year, etc. both of these schemes may be used on an individual feeder at different times at the discretion of the field personnel. With the better data and cause code collection that OMT provides and the customer growth on some of the Colville feeders, changes to the type of scheme used has been reviewed. Listed below are major reliability projects specifically identified by feeder. Three of these are in the State of Idaho.

| Feeder | Decisions/ basis | 2010 | 2011 and beyond |
|---|---|---|---|
| Gifford 34F1 | Reliability improvements | Budgeted | Planned |
| Gifford 34F2 | Reliability improvements | Budgeted | Planned |
| Colville 34F1 | Reliability improvements | Budgeted | Planned |
| Valley 12F1 | This feeder was first identified in mid 2006 as having areas that would be of concern. Capital dollars have been budgeted in 2010 to identify and implement some reliability improvement. | Budgeted | Planned |
| Valley 12F3 | Fusing protection was revised and updated. Additional reliability improvements maybe budgeted in future years. | | Planned |
| Wallace 542 New* | Reliability Improvement | Budgeted | |
| Grangeville 1273* | Engineering is on going along with Wood Pole Management related work to identify reliability improvements for this feeder. | Budgeted | Planned |
| Saint Maries 633* | Reliability Improvement | Budgeted | Planned |

* Not included as an area of concern in this report.

## Avista System Wide Work Plans:

Avista develops a detailed annual budget for various improvements to the facilities it owns and operates. For 2009, three reliability feeder projects (one has been deferred to 2010) were completed and described above. The reliability improvement should show up over the next couple of years. Additionally Asset Management has developed some specific projects that are expected to improve reliability on several feeders system wide. These projects are summarized in the table below.

Porcelain cutout replacements were completed at the end of 2009.

During 2009, Avista looked at the possibility of performing extensive construction and rehabilitation of the Ninth and Central 12F4 feeder in Spokane. This included reconductoring specific sections of line for loss improvement, changing transformers that were older than 1983, replacing many long secondary districts, and replacing many wood poles. Reliability in 2009 was degraded due to the many planned outages, however only two non planned outages have been reported in early 2010. Additional review will be done for the year end 2010.

Material records show that some wildlife guards were installed on new distribution transformers installations starting in the mid 1980's. With the recognition of increases in animal caused outages, new materials and improvements have been made in the construction standards for new distribution transformer installations to reduce these types of outages. Initial indications show that the outage reduction on a feeder after wildlife guards are installed is significant.

2009 was the start of the multiyear wildlife guard installation program to reduce the squirrel and bird related outages on approximately sixty feeders in Washington and Idaho. Most of the wildlife guards were installed with a hot stick on existing transformers that do not have an existing wildlife guard.

Avista installed a total of 4534 wildlife guards on 20 feeders in 2009. There were 2130 wildlife guards installed in Idaho on 9 feeders and 2404 wildlife guards installed in Washington on 11 feeders. One feeder (Orin 12F3) in the Colville area had wildlife guards installed last year.

Avista deferred plans to install wildlife guards on additional feeders in Washington for 2010 due to unfavorable pro-forma rate treatment of the program. Avista will continue with plans to install wildlife guards in the State of Idaho. 9 feeders are planned to have wildlife guards installed.

Asset Management in conjunction with the Wood Pole Management Program stubbed or replaced numerous poles and additionally replaced numerous pole top transformers and associated cutouts/arresters.

## Avista System Wide Vegetation Management Plan:

Avista has an annual vegetation management plan and budget to accomplish the plan. The budget is allocated into distribution, transmission, administration, and gas line reclearing.

Distribution

Our current plan for Avista's distribution system is managed by Asplundh Tree Expert Co. Every distribution circuit is scheduled to be line clearance pruned on a regular maintenance cycle of four year urban and seven years rural. Other distribution vegetation management activities include hazard tree patrol and herbicide application.

Transmission

The transmission system is managed by Avista's forester. All 230 kV lines are patrolled annually for hazard trees and other issues, and mitigation is done in that same year. Approximately one third of 115 kV transmission system is patrolled annually for hazard tree identification, and assessment of right of way clearing needs. Right of way clearing maintenance is scheduled and performed approximately every ten to fifteen years (for each line). Interim spot work is done as identified and needed. Engineering specifications for various voltages, line configurations are followed when clearing the right of way. Currently, the work is bid to a variety of contractors.

## Customers Experiencing Multiple Interruptions

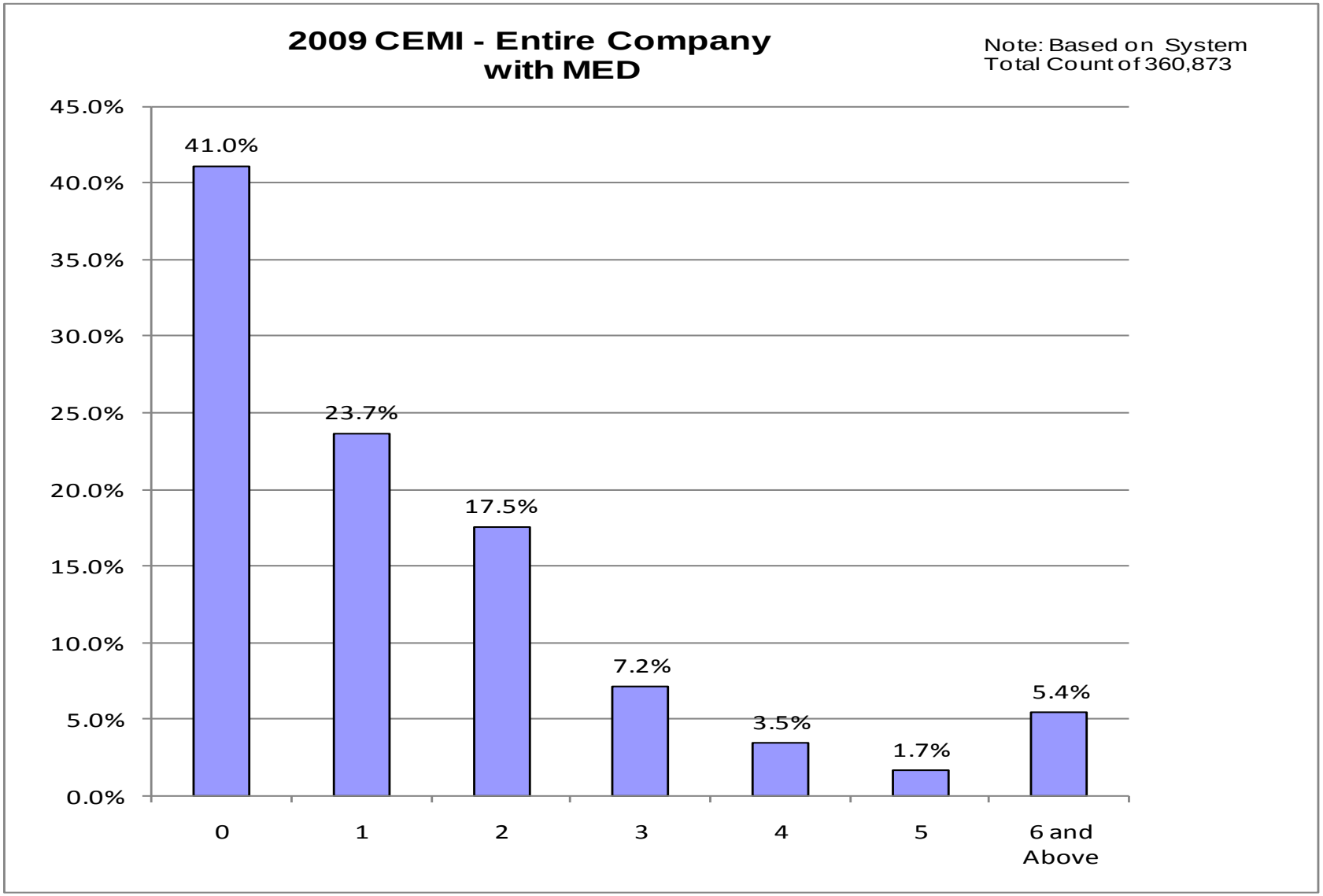
Avista has used the data from the OMT system integrated with the GIS system to geospatially display reliability data for specific conditions. The specific conditions imply looking at the number of sustained interruptions for each service point (meter point). This would be similar to the SAIFI indice, but would be related to a certain number of sustained interruptions. Avista includes all sustained interruptions including those classified under Major Event Days. This provides a view of what each customer on a specific feeder experiences on an annual basis. Momentary Interruptions are not included in the $CEMI_n$ indice, because of the lack of indication on many of the rural feeder reclosers.

The first chart below provides a view of the percentage of customers served from the Avista system that have sustained interruptions. 65 % of Avista customers had 1 or fewer sustained interruptions and 5.4% of Avista customers had 6 or more sustained interruptions during 2009.

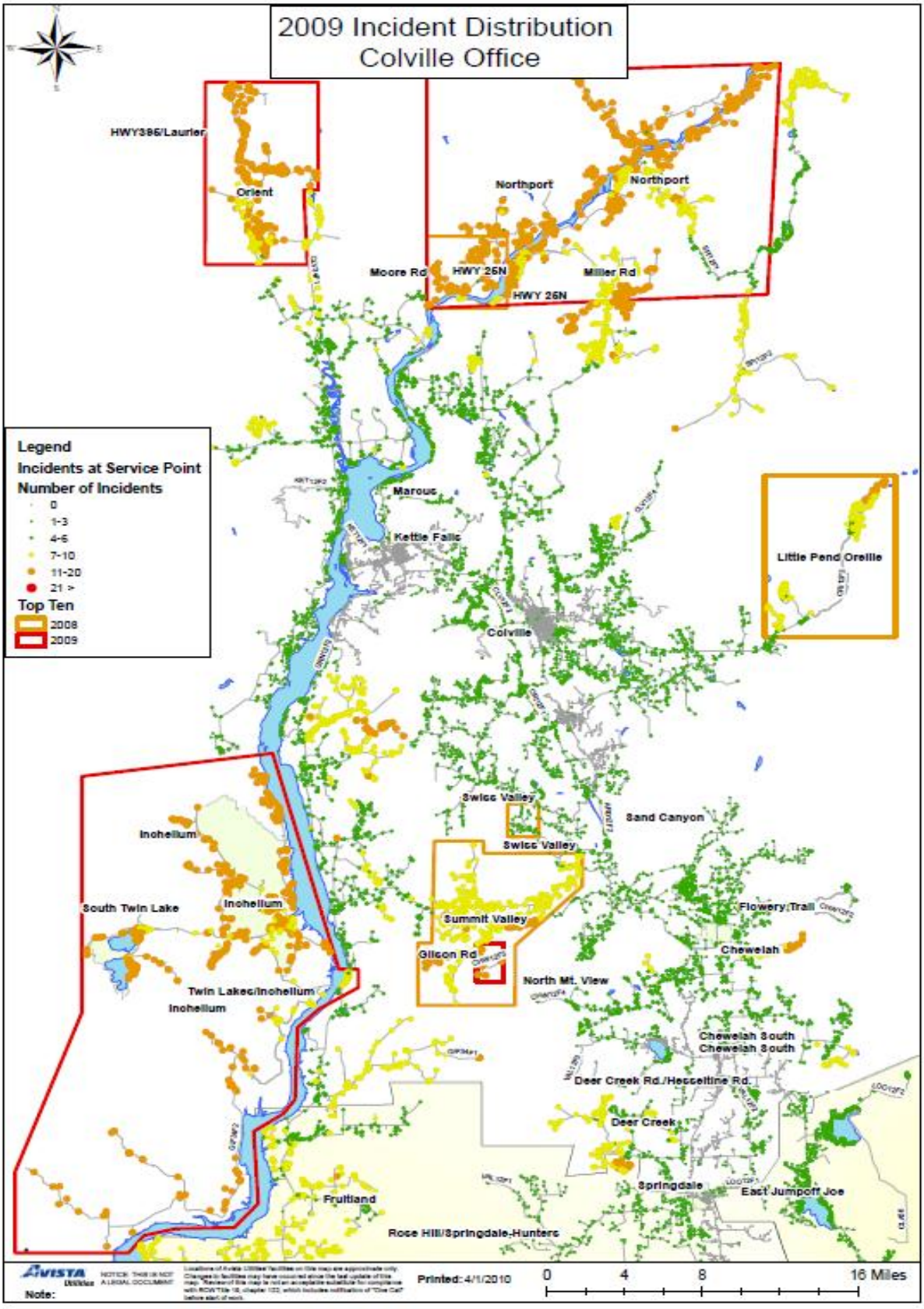
The remaining geographic plots show the sustained interruptions by color designation according to the legend on each plot for each office area. Note the office area is designated as the area in white for each plot and that there is overlap between adjacent office area plots. The adjacent office areas are shown in light yellow.

The plots provide a quick visual indication of varying sustained interruptions, but significant additional analysis is required to determine underlying cause(s) of the interruptions and potential mitigation.

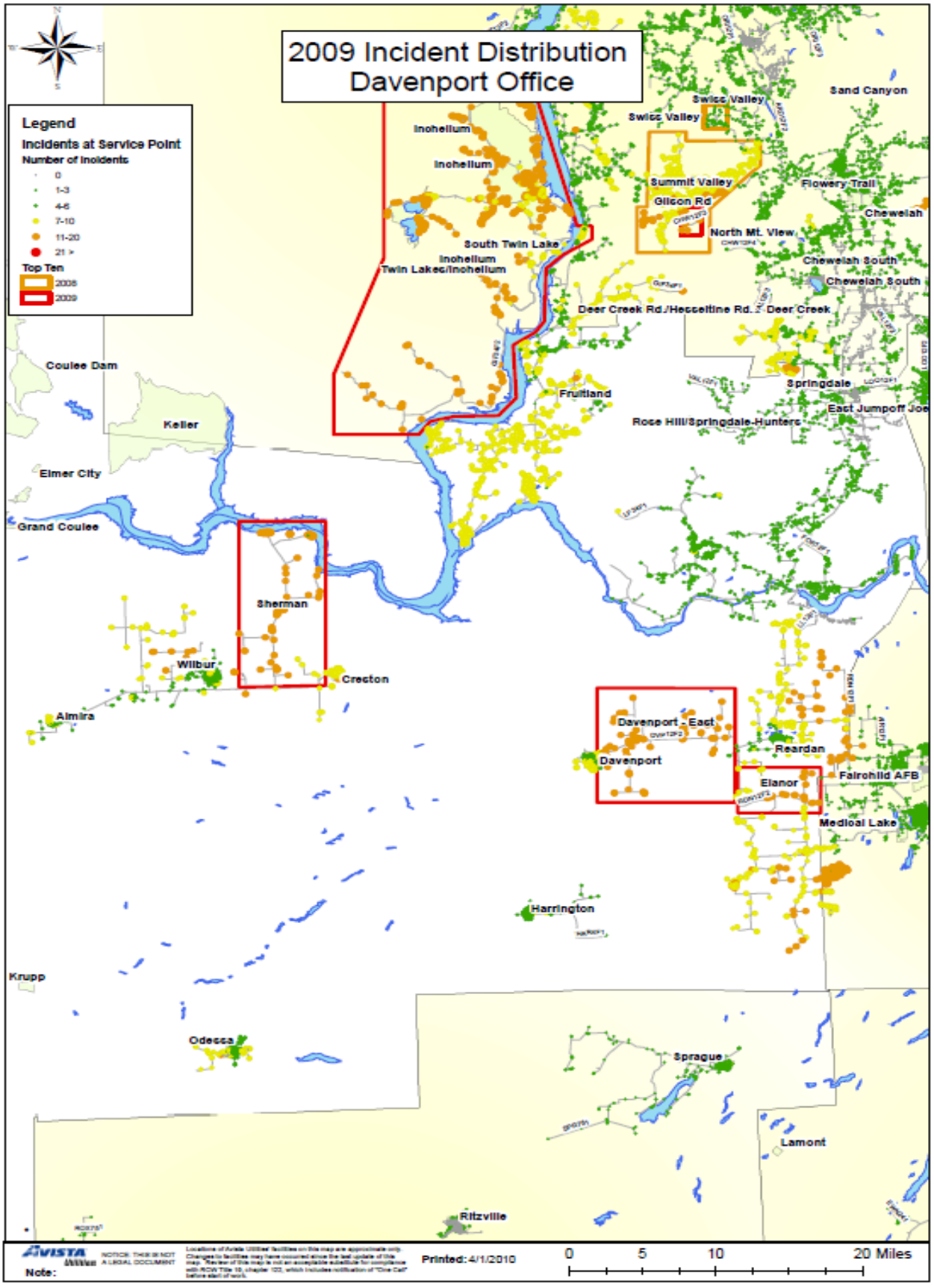
Avista Service Territory CEMI$_n$ Chart



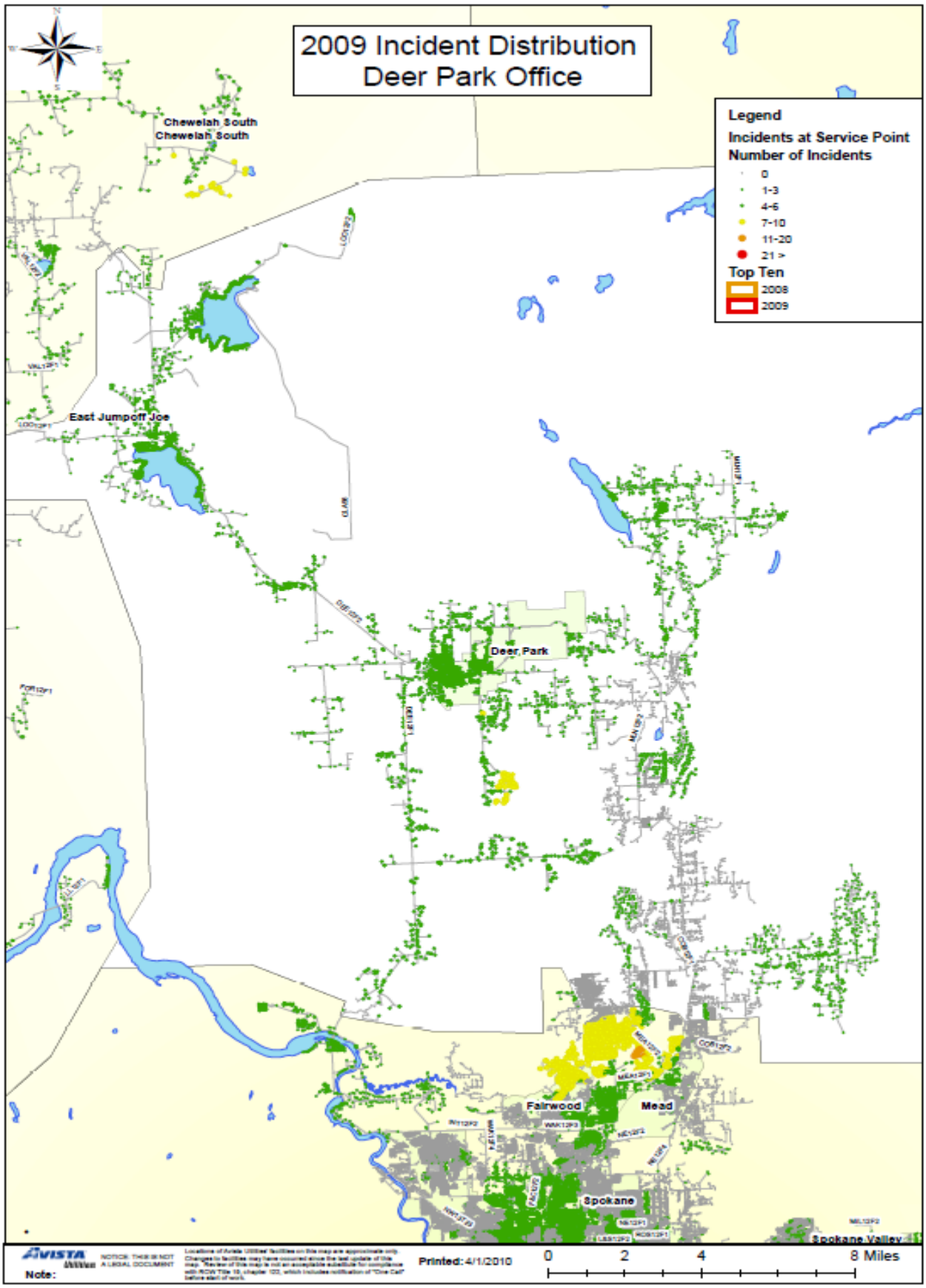
Colville Office - $CEMI_n$



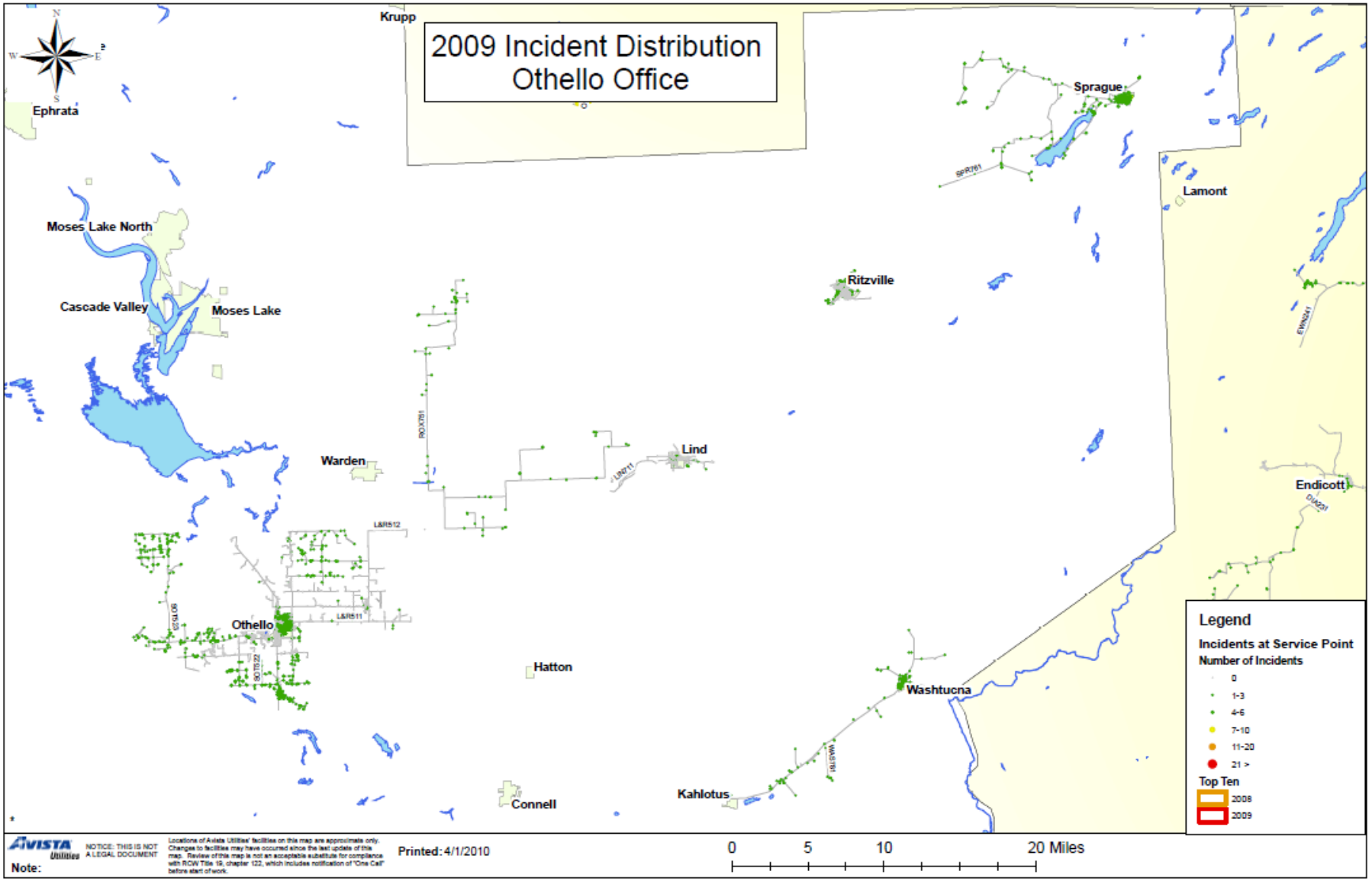
Davenport Office - CEMI$_n$



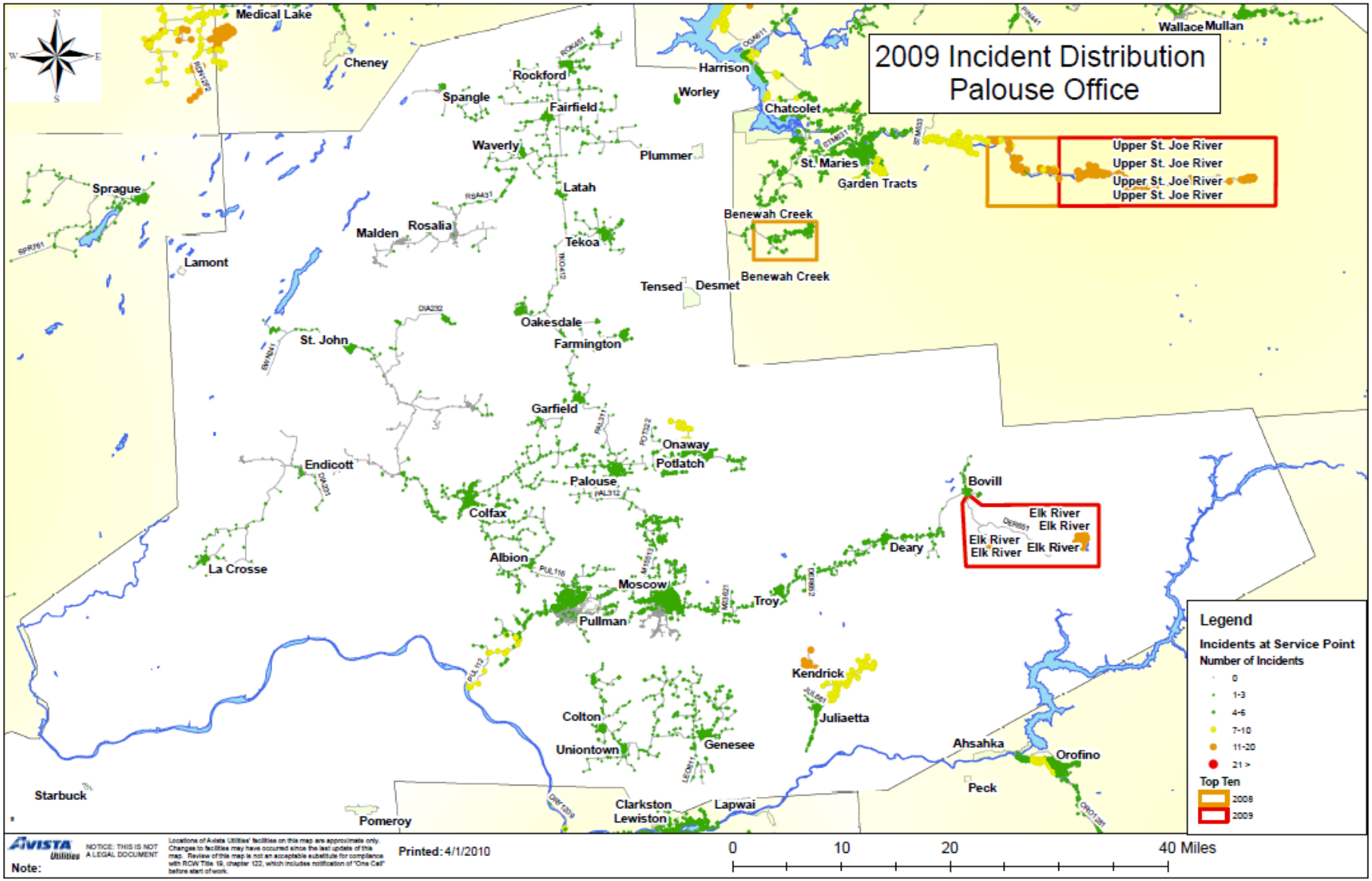
Deer Park Office - CEMI$_n$



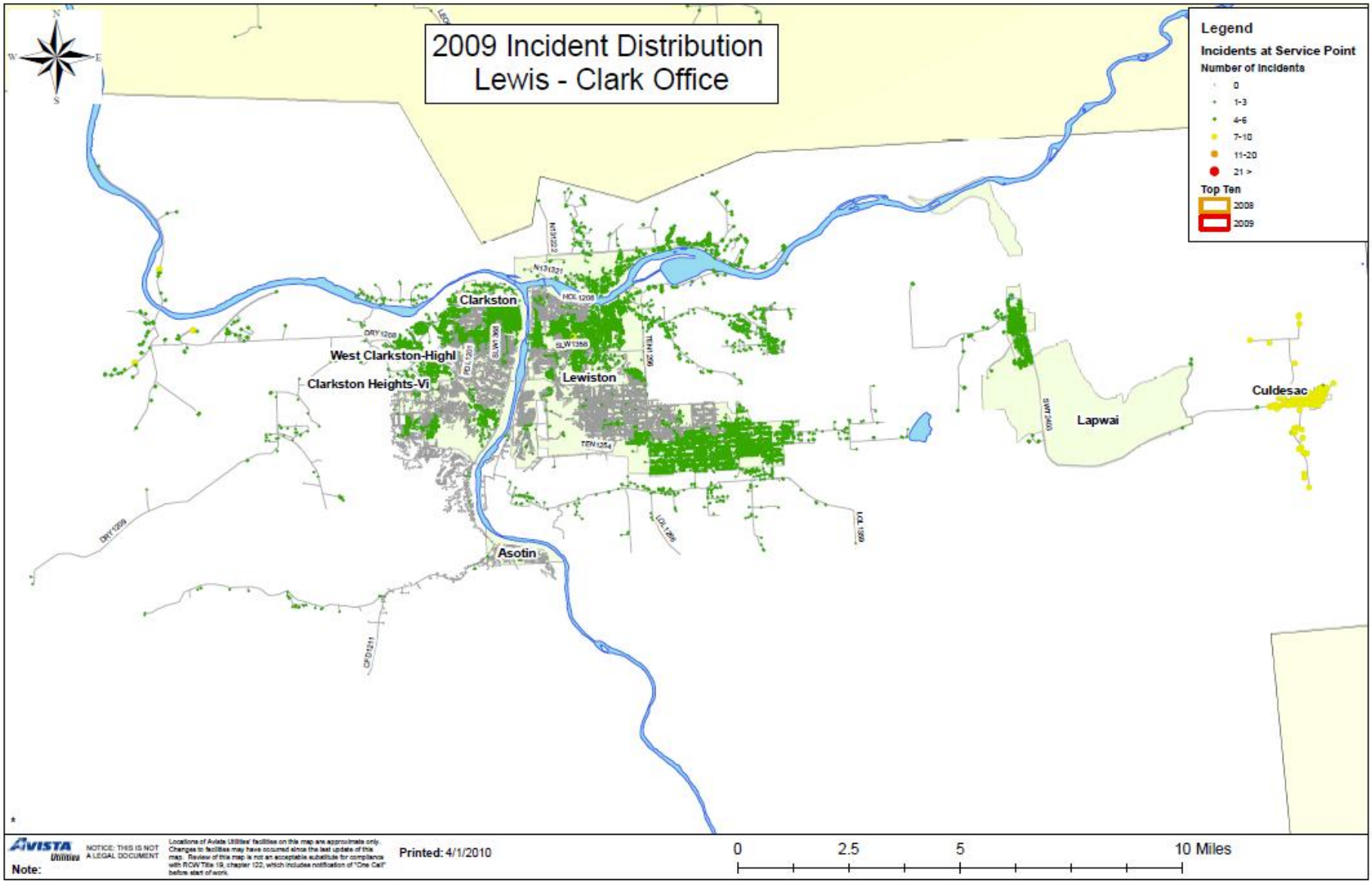
Othello Office - $CEMI_n$



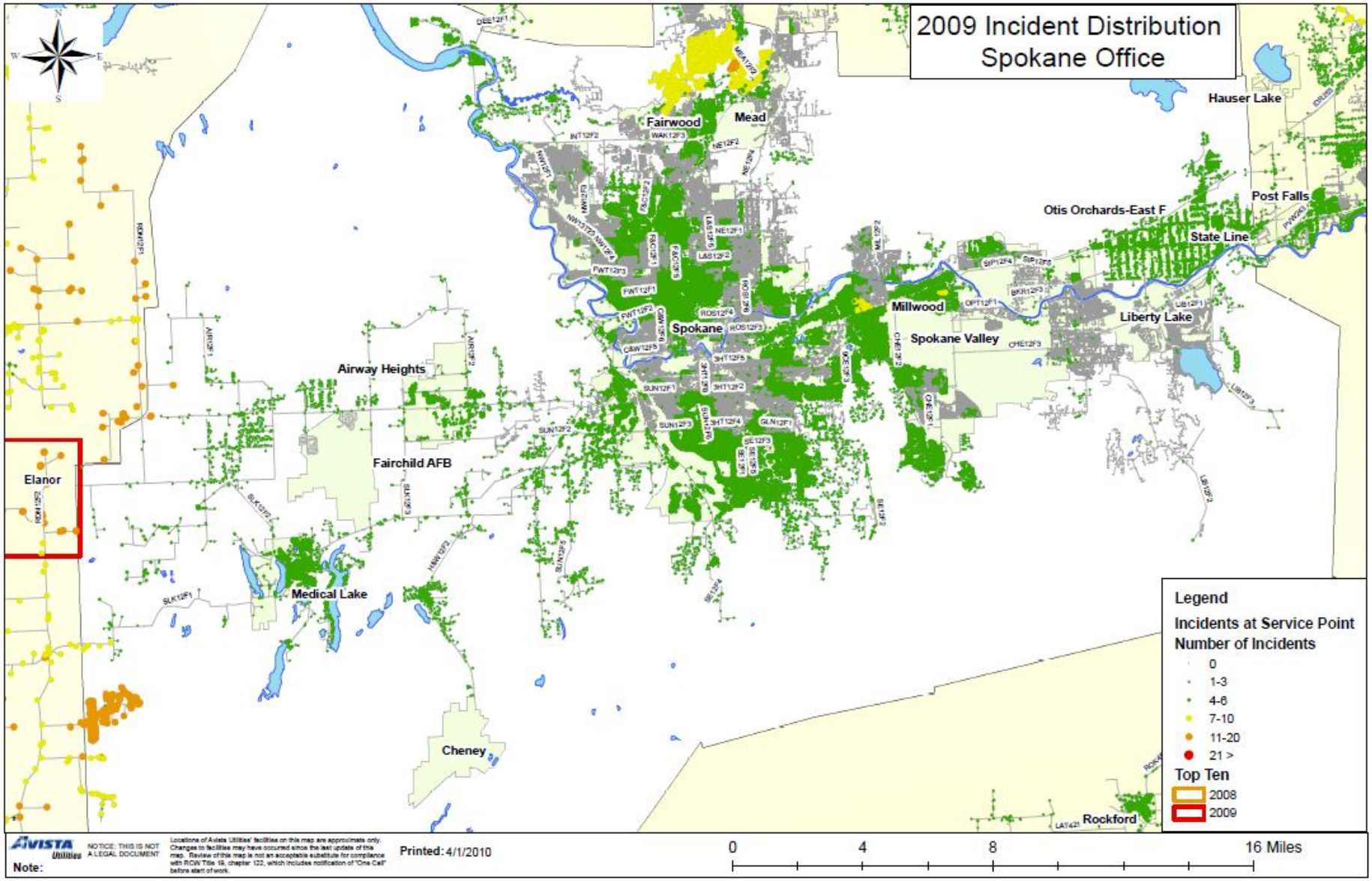
Palouse Office - CEMI$_n$



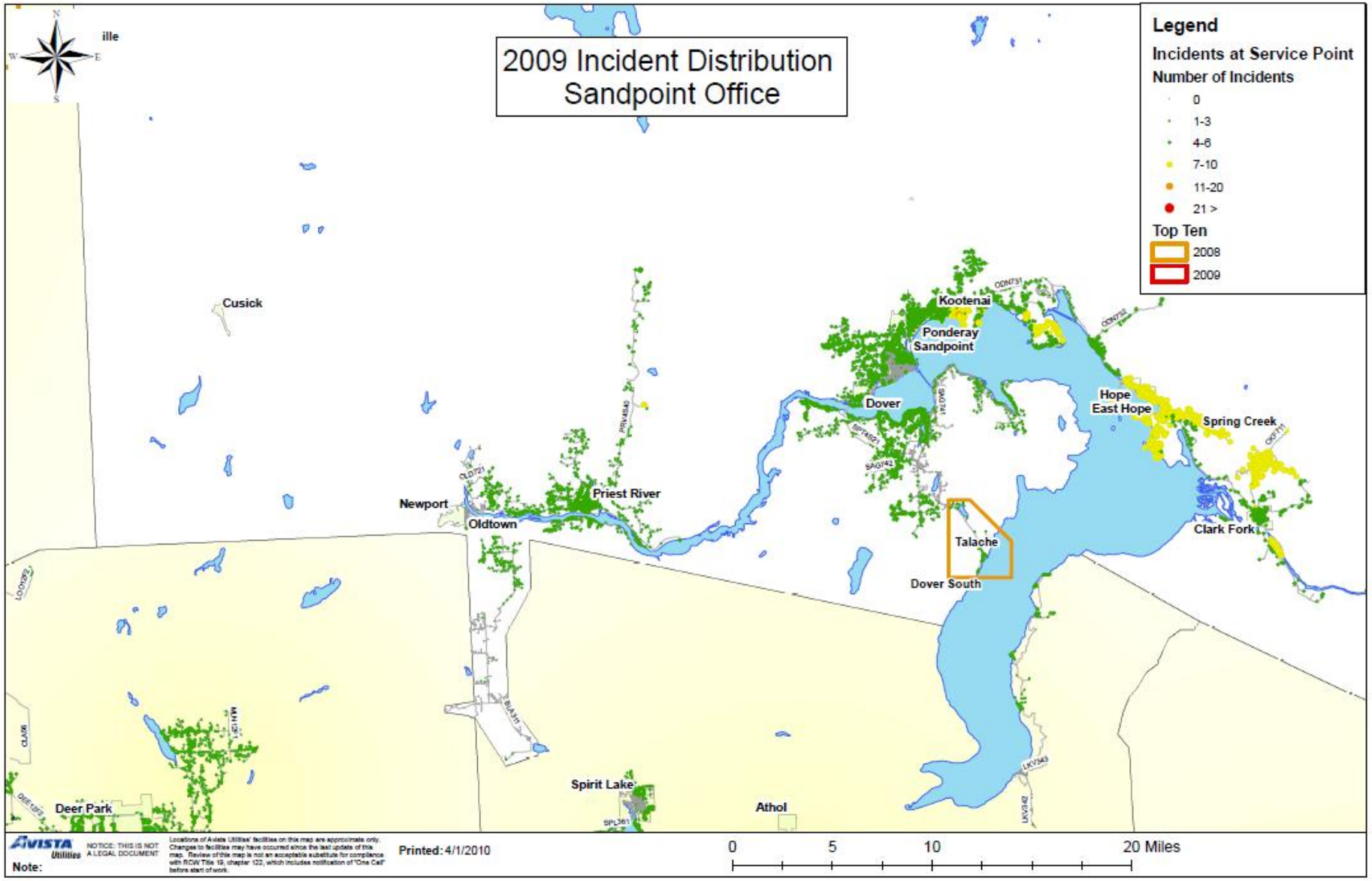
Lewis-Clark Office - $CEMI_n$



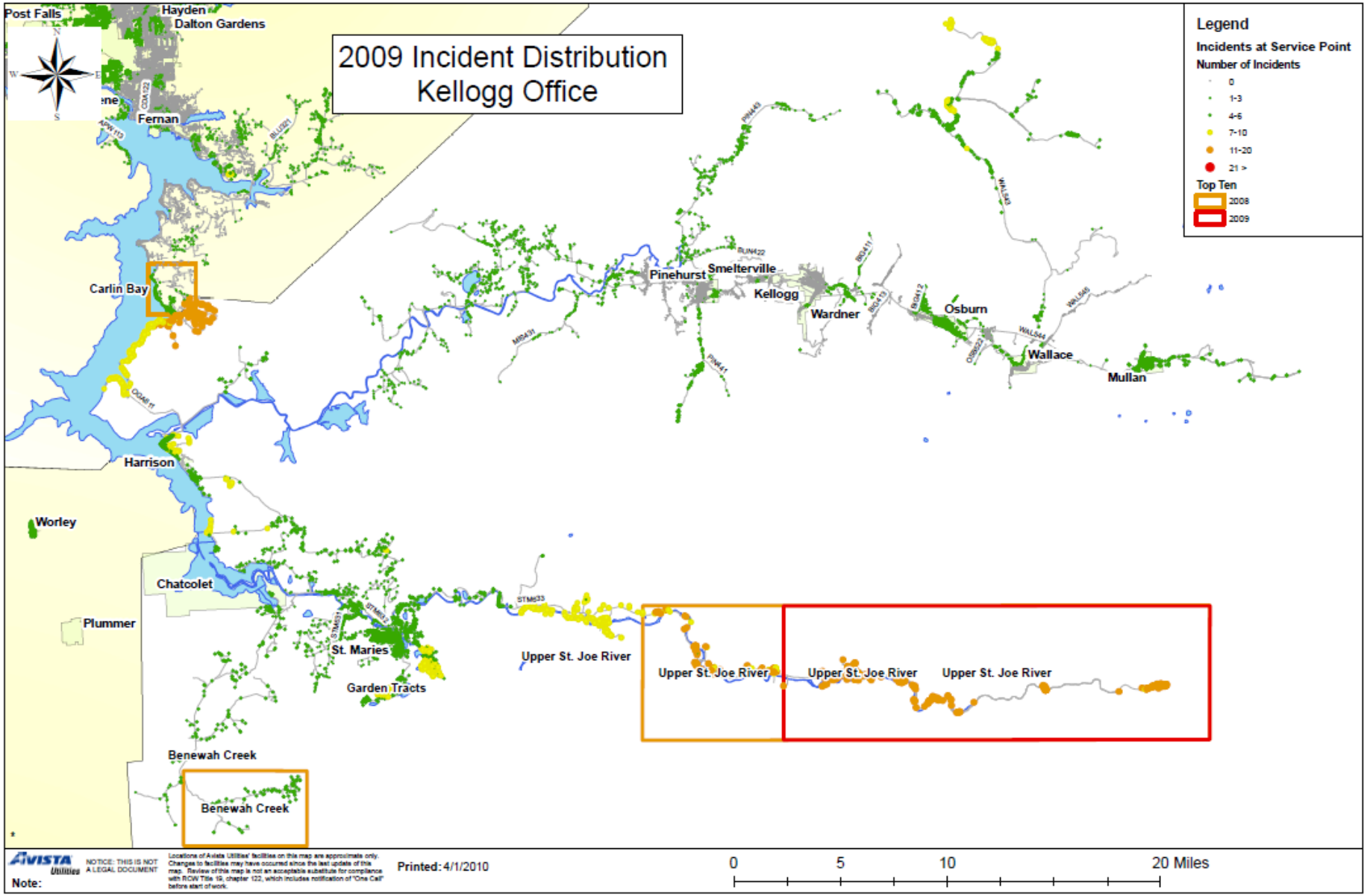
Spokane Office - $CEMI_n$



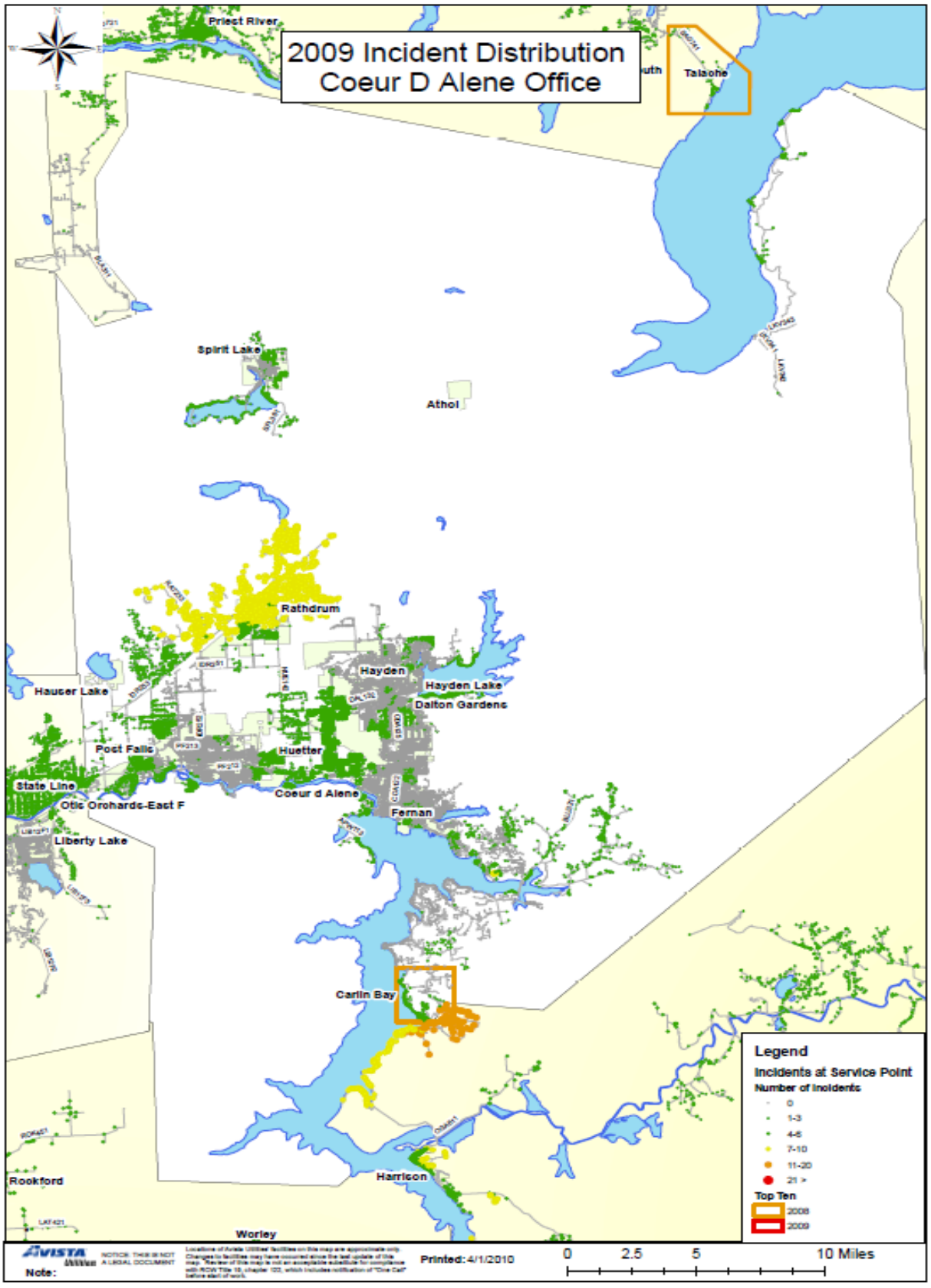
Sandpoint Office - $CEMI_n$



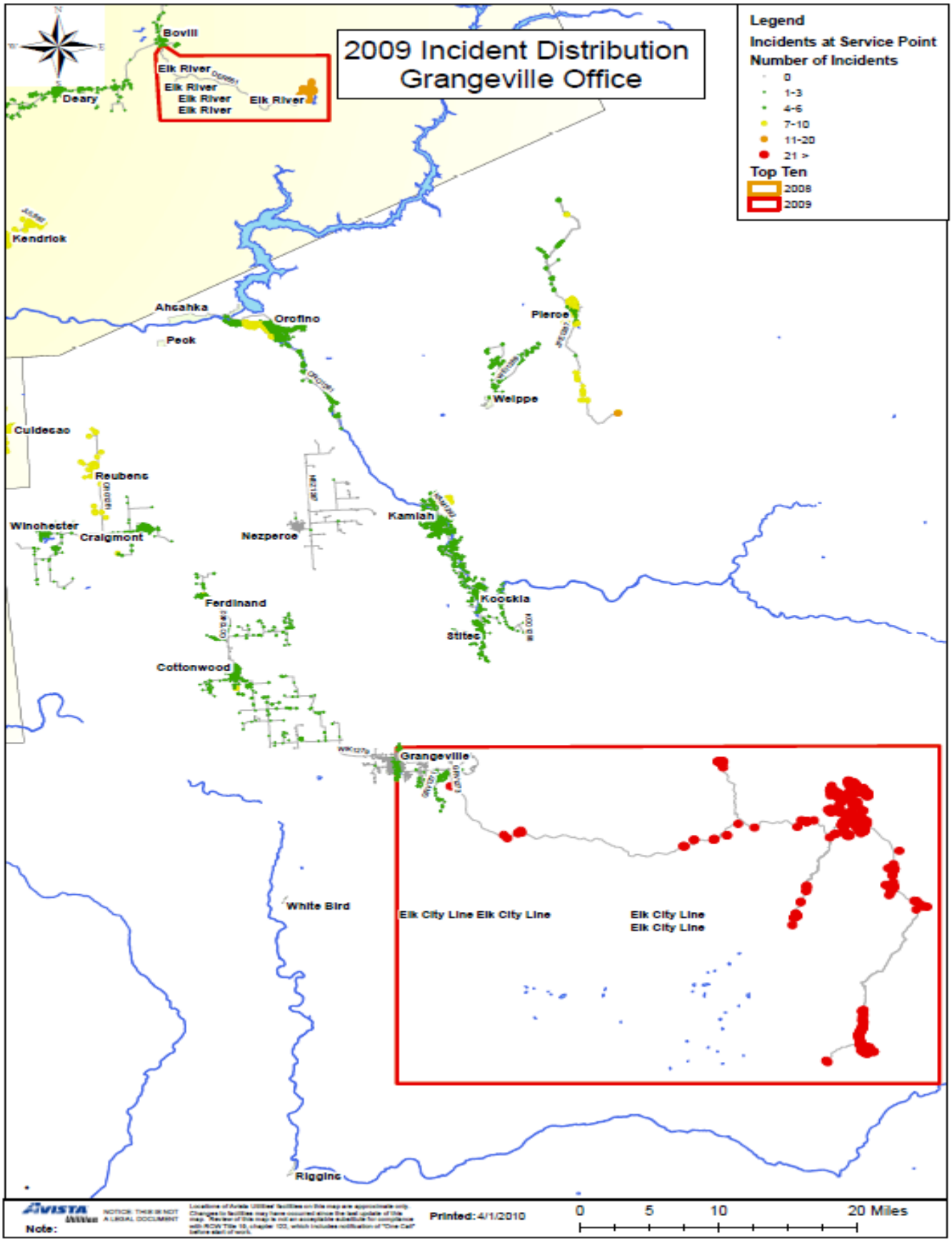
Kellogg Office - $CEMI_n$



Coeur d'Alene - $CEMI_n$



Grangeville Office - $CEMI_n$



## Monthly Indices

Each of the following indices, reported by month, shows the variations from month to month. These variations are partially due to inclement weather and, in some cases, reflect incidents of winter snowstorms, seasonal windstorms, and in mid- and late summer lightning storms. They also reflect varying degrees of animal activity causing disruptions in different months of the year.

Chart 3.1 – SAIFI - Sustained Interruptions / Customer

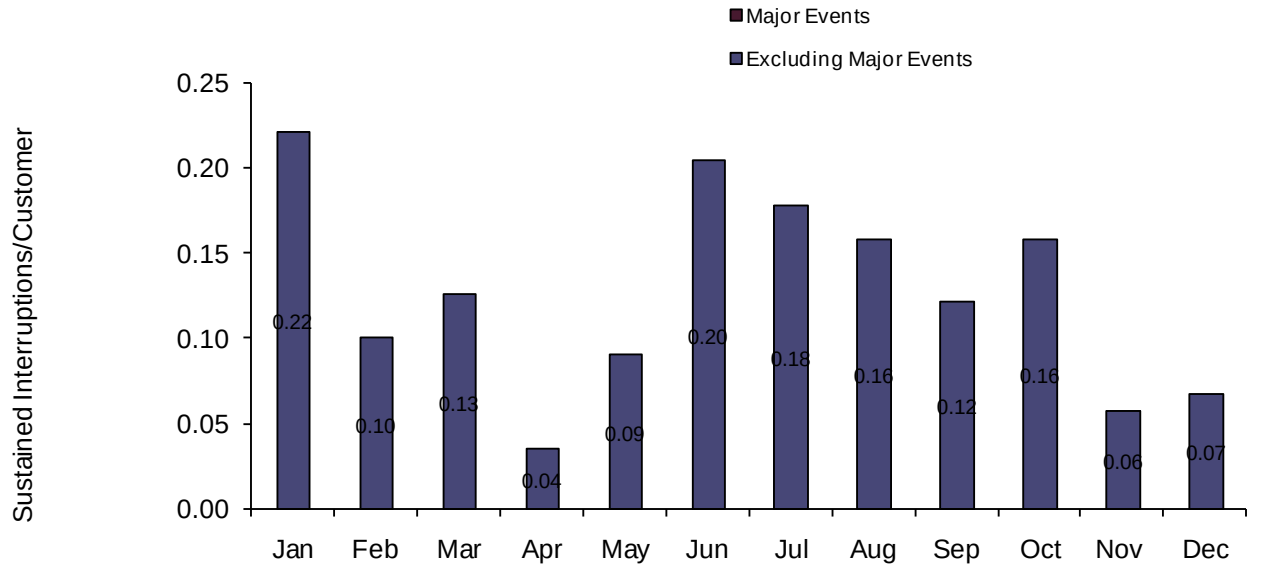



Chart 3.2 - MAIFI Momentary Interruption Events / Customer

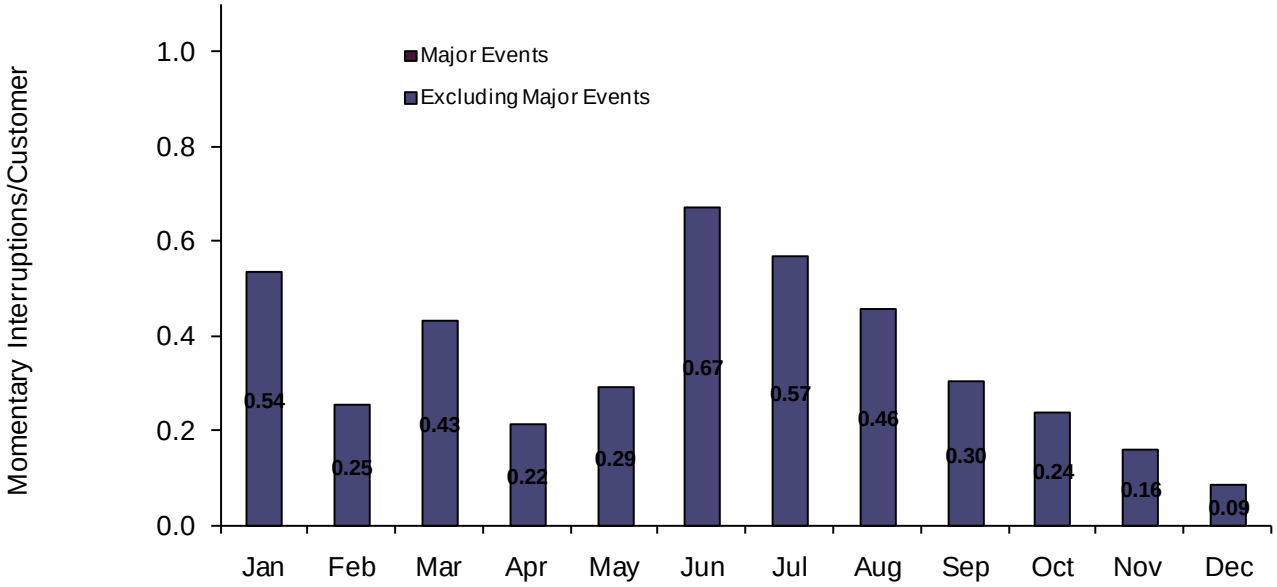


Chart 3.3 - SAIDI – Average Outage Time / Customer

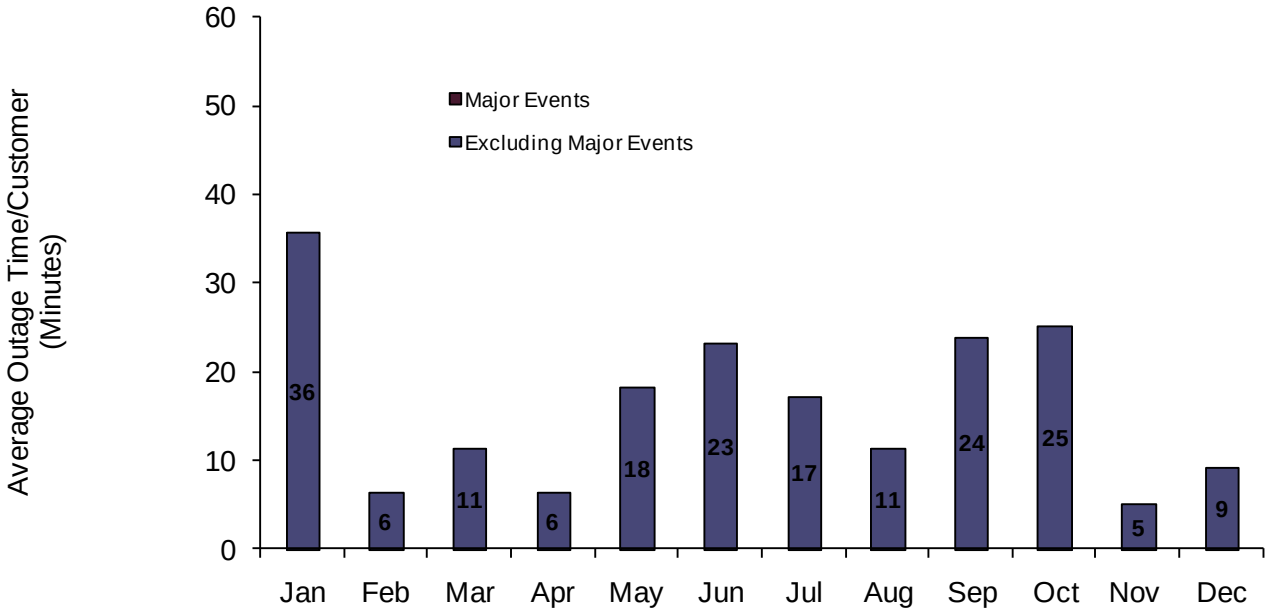
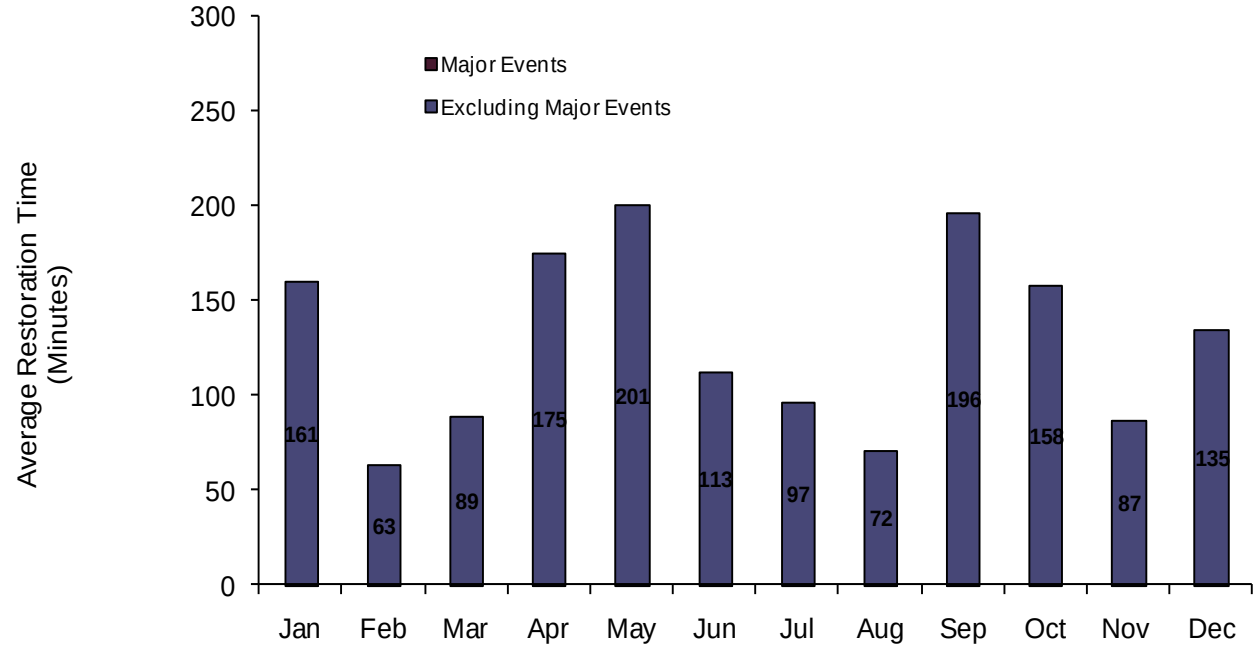



Chart 3.4 - CAIDI – Average Restoration Time



## Customer Complaints

### Commission Complaints

The following is a list of Complaints made to the Commission during this year.

| Customer Address | Complaint | Resolution |
|---|---|---|
| Elk City ID<br>Grangeville 1273 | The power was to be off all week 9 to 3, which is fine. We had almost 4 feet of snow this week and it was taking the power out in the mornings and they still left it off. Thursday it went off at 6:30AM and was not restored until 7:30PM, we froze. We live in a very remote area if they would have turn it on so we could get our homes warm it would have been ok. Too cold for power to be out that long on purpose. | Avista responded to service complaint 4/9/2009. No resolution documented |
| Kettle Falls, WA<br>Spirit 12F1 | Since August 2008, customer has had 9-10 outages, one of which may have surged his TV. Many of the outages were not weather related and he wants to know what Avista is doing to ensure reliable service. One of the reps told him to buy a generator. Please supply information on circuit, outage causes, number of customers affected, SAIDI/SAIFI, Condition of circuit, any improvement projects, repair history. | Complaint Closed 1/13/2009 Company Upheld. |
| Springdale, WA<br>Valley 12F1 | Customer has had several power surges, brown outs, low voltage, trips and resets in his area and has been trying to get the company to fix the problem since about August 2009. She calls repair and the company asks if she has power and when she says yes, they say they will look into it. However, the company has not fixed the problem, nor have they told her when the problem will be fixed. | Avista responded to customer 11/2/2009 Construction office is investigating and will put repairs in place – is to be scheduled. |

## Customer Complaints

The following is a list of complaints made to our Customer Service Representatives.

| Customer / Feeder | Complaint | Resolution |
|---|---|---|
| Spokane, WA<br>Francis & Cedar 12F4 | Customer is concerned about the frequent short power outages over the past. Says it is impacting his electronic equipment. Like to know if there is something that can be done. | No Resolution Documented. |
| Lewiston, ID<br>Tenth & Stewart 1254 | Lost Equipment Due to Outage | Claim Filed 6/22/09. Claim rejected, repairs made to service. |
| Spokane Valley, WA<br>Beacon 12F1 | Customer called to complain about recent outages, feels like she lives in 3rd world country and higher the rates go the worse the service. Wanted to file a formal complaint and believes we need to do something about this. Last week out for 5 hours and then off and on for next few days. | Customer did not want call back just wanted to have complaint on file. 7/9/2009 |
| No Location Given | Customer feels should not be out for this long of time since went to underground. No one else on street is out. | No Resolution Documented. |
| Rathdrum, ID<br>Rathdrum 231 | Customer very unhappy power keeps going out in Rathdrum Area. Says she wants to take money off on what she pays due to lack of quality of service. | No Resolution Documented. |
| Harrison, ID<br>Ogara 611 | Customer called for estimated restoration on outage, thought was planned outage we decided to do early. Advised customer outage was unplanned and gave estimated restoration time. Customer said that we should not go ahead with planned outage since has been out of power since 1:30AM. Advised customer outage was not reported until 7:15AM. Believes Avista should have equipment that tells us of power outages. | Supervisor notified of comment. No action or callback required. 9/03/2009 |
| Cataldo, ID<br>Mission 431 | Customer wasn't told about planned outage. Suggests notifying customers for planned outages. | No Resolution Documented. |

| | | |
|---|---|---|
| Lincoln County WA<br>Unknown Feeder | Customer was part of extended outages. Believes if Avista would have performed maintenance during summer that outages would not have occurred. Says maintenance should be priority over mgmt compensation. | No Resolution Documented. |
| No Location Information | Customer would like rebate on all the times service has been disrupted | No Resolution Documented. |
| Spokane Valley, WA<br>Liberty Lake 12F2 | Customer Complaint about rates, executive pay and repeated Power Outages. | No Resolution Documented. |
| Liberty Lake, WA<br>Liberty Lake 12F3 | Customer wanted us to change scheduled outage because of holiday and everyone home. Noted that next time to schedule for non-holiday and wanted frustrations noted. | Advised customer could not change outage time.<br>No Resolution Documented. |
| Edwall, WA<br>Reardan 12F2 | Customer upset about scheduled outage and not personally notified. | Area Manager contacted customer 6/25/2009. No Resolution Documented. |
| Spokane, WA<br>Millwood 12F2 | Customer wants to know why clocks were flashing last night. Says this happens frequently | No outage reported in his area on 10/6/2009. Suggested to customer probably limbs on line, small animal etc. Customer not completely satisfied. No Resolution Documented. |
| Wilbur, WA<br>Wilbur 12F2 | 1/15/09Customer not happy with the service. Power keeps going on and off steadily for the last 12 hours.<br>1/16/09 Customer upset he keeps getting same update when the service should be back up(1/17/09). States Avista should hire more crews to help in this outage. | No Resolution Documented. |
| Edwall, WA<br>Reardan 12F2 | Customer upset not notified about power outage. | No Resolution Documented. |
| Kettle Falls, WA<br>Greenwood 12F1 | Customer notified us that we shut off power to the trailer park while we changed transformer. Upset we did not notify them. | No Resolution Documented. |
| Kettle Falls, WA<br>Spirit 12F1 | Customer upset about planned outage. Knew about outage but Avista is late for turning power back on. Stated we need to work at night because of huge inconvenience. | No Resolution Documented. |

## Sustained Interruption Causes

Table 4.1 - % SAIFI per Cause by Office

The following table lists the percentage SAIFI contribution by causes for outages excluding major event days.

| Reason | CDC | COC | DAC | GRC | KEC | LCC | OTC | PAC | SAC | SPC | DPC | All Offices |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 13.8% | 2.2% | 1.9% | 2.5% | 3.7% | 4.6% | 2.1% | 2.1% | 3.0% | 21.1% | 4.3% | 9.3% |
| MISCELLANEOUS | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% |
| POLE FIRE | 9.8% | 5.1% | 0.6% | 7.4% | 7.1% | 4.5% | 10.0% | 0.0% | 0.9% | 2.9% | 0.8% | 3.8% |
| WEATHER | 3.4% | 20.9% | 80.6% | 29.3% | 26.6% | 14.5% | 31.4% | 28.6% | 22.2% | 21.5% | 22.0% | 25.4% |
| UNDETERMINED | 29.5% | 9.5% | 2.6% | 18.9% | 4.0% | 25.2% | 5.4% | 29.5% | 31.8% | 10.5% | 29.5% | 16.8% |
| TREE | 5.4% | 11.4% | 2.3% | 7.8% | 31.8% | 11.4% | 1.0% | 12.4% | 16.7% | 7.1% | 14.6% | 10.2% |
| PUBLIC | 17.9% | 1.6% | 0.4% | 1.0% | 0.2% | 1.0% | 1.7% | 5.2% | 6.2% | 10.5% | 14.1% | 6.6% |
| COMPANY | 0.0% | 6.3% | 0.0% | 0.0% | 5.2% | 13.5% | 0.0% | 4.8% | 7.4% | 5.4% | 0.0% | 4.5% |
| EQUIPMENT OH | 18.7% | 5.8% | 6.0% | 4.9% | 12.7% | 23.1% | 41.3% | 6.6% | 7.6% | 9.3% | 8.1% | 9.7% |
| EQUIPMENT UG | 0.4% | 0.8% | 0.2% | 2.5% | 0.3% | 0.6% | 0.1% | 1.1% | 1.0% | 0.9% | 1.8% | 0.9% |
| EQUIPMENT SUB | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.8% | 0.0% | 2.9% |
| PLANNED | 0.9% | 36.0% | 5.3% | 23.9% | 8.4% | 1.5% | 7.0% | 9.5% | 3.0% | 2.1% | 4.8% | 9.7% |

| | | | |
|---|---|---|---|
| CDC | Coeur d'Alene | LCC | Lewiston-Clarkston |
| COC | Colville | OTC | Othello |
| DAC | Davenport | PAC | Palouse |
| DPC | Deer Park | SAC | Sandpoint |
| GRC | Grangeville | SPC | Spokane |
| KEC | Kellogg/ St. Maries | | |

Chart 4.1 – % SAIFI per Cause by Office

The following chart shows the percentage SAIFI contribution by causes for outages excluding major event days.

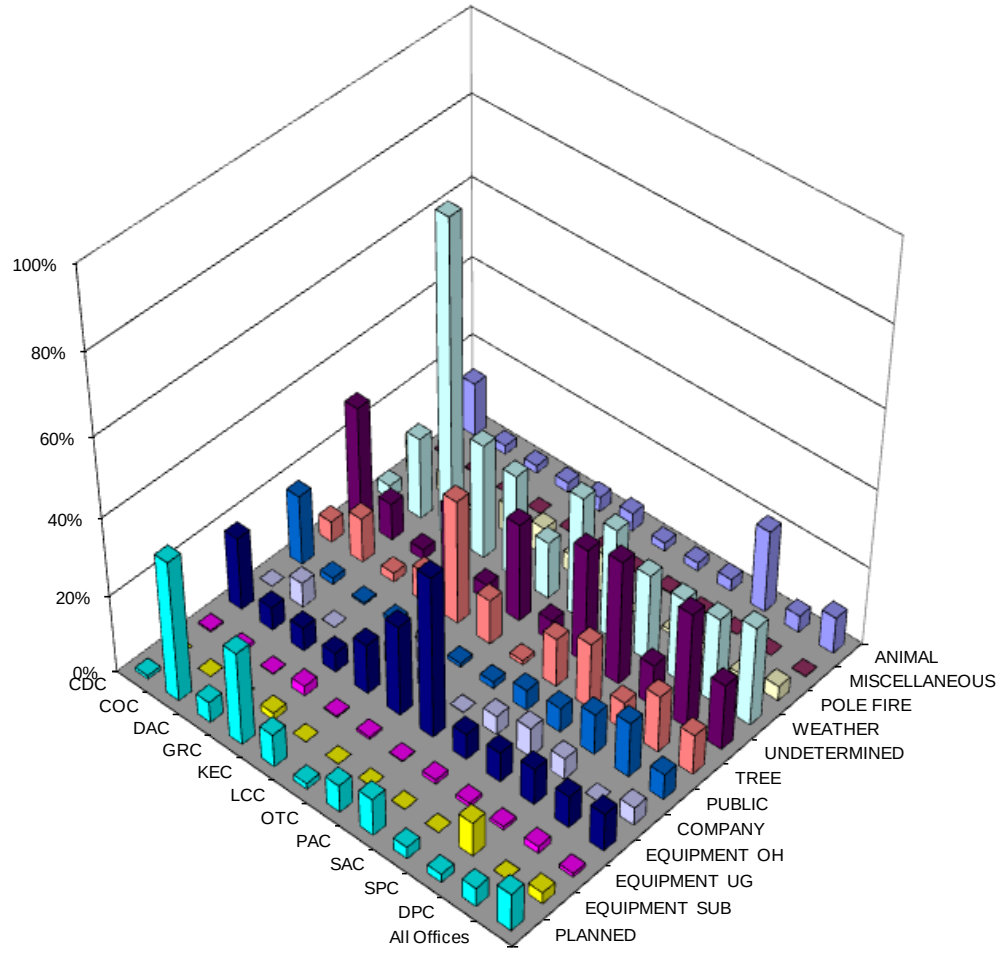


Table 4.2 - % SAIDI per Cause by Office

The following table lists the percentage SAIDI contribution by causes for outages excluding major event days.

| Reason | CDC | COC | DAC | GRC | KEC | LCC | OTC | PAC | SAC | SPC | DPC | All Offices |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 6.8% | 1.1% | 3.2% | 2.2% | 4.9% | 5.2% | 2.8% | 2.8% | 5.8% | 17.5% | 3.8% | 6.1% |
| MISCELLANEOUS | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% |
| POLE FIRE | 23.2% | 6.1% | 0.5% | 8.6% | 4.4% | 4.9% | 14.9% | 0.0% | 1.2% | 3.7% | 0.8% | 5.4% |
| WEATHER | 2.5% | 19.8% | 79.1% | 46.2% | 13.8% | 29.0% | 21.9% | 33.5% | 40.9% | 26.7% | 24.9% | 32.4% |
| UNDETERMINED | 17.8% | 3.7% | 1.8% | 6.5% | 2.6% | 24.5% | 7.7% | 15.4% | 10.1% | 6.2% | 22.8% | 7.6% |
| TREE | 12.3% | 19.1% | 3.7% | 6.0% | 55.2% | 8.4% | 1.1% | 18.2% | 21.2% | 7.7% | 15.7% | 14.4% |
| PUBLIC | 16.4% | 1.7% | 0.3% | 0.3% | 0.2% | 1.8% | 1.6% | 6.3% | 6.1% | 10.7% | 18.4% | 5.0% |
| COMPANY | 0.0% | 0.5% | 0.0% | 0.0% | 0.3% | 1.0% | 0.0% | 1.6% | 2.4% | 1.3% | 0.0% | 0.7% |
| EQUIPMENT OH | 19.2% | 3.6% | 3.5% | 2.7% | 10.5% | 21.4% | 45.7% | 10.4% | 7.1% | 12.3% | 9.1% | 8.6% |
| EQUIPMENT UG | 1.2% | 1.1% | 0.5% | 1.3% | 0.5% | 2.3% | 0.5% | 3.8% | 3.0% | 2.2% | 3.2% | 1.7% |
| EQUIPMENT SUB | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 0.0% | 2.7% |
| PLANNED | 0.4% | 43.1% | 7.4% | 22.6% | 7.6% | 1.5% | 3.7% | 7.7% | 2.2% | 1.6% | 1.3% | 15.4% |

| | | | |
|---|---|---|---|
| CDC | Coeur d'Alene | LCC | Lewiston-Clarkston |
| COC | Colville | OTC | Othello |
| DAC | Davenport | PAC | Palouse |
| DPC | Deer Park | SAC | Sandpoint |
| GRC | Grangeville | SPC | Spokane |
| KEC | Kellogg/ St. Maries | | |

Chart 4.2 – % SAIDI per Cause by Office

The following chart shows the percentage SAIDI contribution by causes for outages excluding major event days.

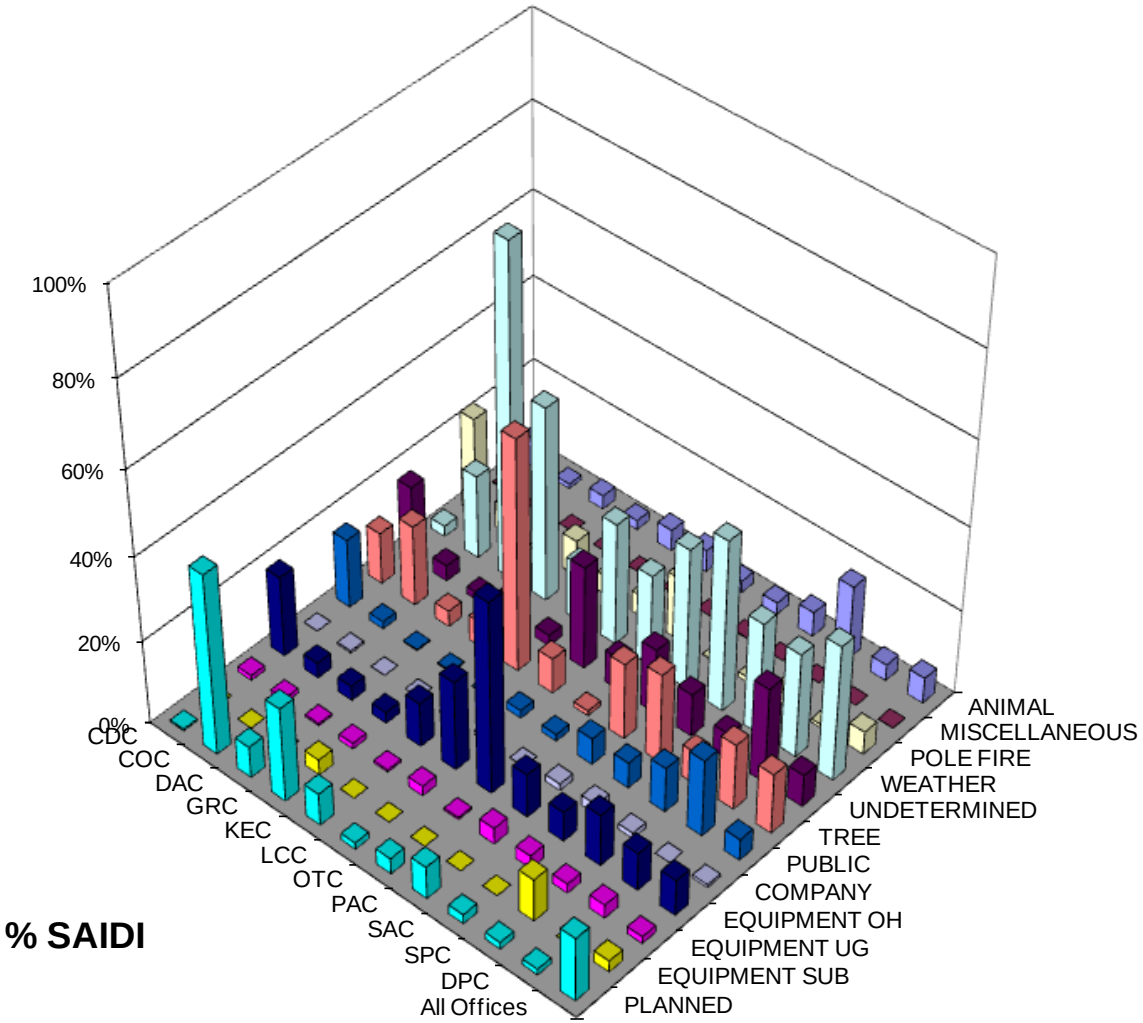


Table 4.3 - % SAIFI per Cause by Month

The following table lists the percentage SAIFI contribution by causes for all outages, excluding major event days.

| Reason | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Yearly |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 0.5% | 1.5% | 0.4% | 5.7% | 4.5% | 19.9% | 11.3% | 31.1% | 12.1% | 3.0% | 4.7% | 0.5% | 9.3% |
| MISCELLANEOUS | 0.0% | 0.1% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.7% | 0.1% |
| POLE FIRE | 2.4% | 0.3% | 0.7% | 5.6% | 8.6% | 0.3% | 7.7% | 5.1% | 2.2% | 1.4% | 0.7% | 19.2% | 3.8% |
| WEATHER | 63.4% | 50.7% | 36.9% | 15.7% | 8.2% | 18.2% | 11.1% | 10.8% | 12.7% | 24.2% | 7.4% | 5.2% | 25.4% |
| UNDETERMINED | 13.0% | 14.1% | 25.3% | 6.2% | 15.6% | 2.3% | 34.0% | 21.1% | 24.5% | 13.4% | 13.6% | 11.2% | 16.8% |
| TREE | 10.2% | 3.1% | 13.1% | 6.0% | 13.1% | 6.8% | 8.3% | 5.0% | 5.3% | 25.3% | 14.8% | 11.7% | 10.2% |
| PUBLIC | 0.4% | 9.1% | 5.9% | 30.9% | 14.5% | 10.3% | 4.2% | 9.1% | 3.6% | 2.2% | 9.3% | 3.2% | 6.6% |
| COMPANY | 0.7% | 0.0% | 0.3% | 0.0% | 6.0% | 3.1% | 11.0% | 7.6% | 0.9% | 4.6% | 23.0% | 3.2% | 4.5% |
| EQUIPMENT OH | 6.4% | 17.8% | 9.0% | 14.6% | 3.8% | 10.3% | 6.9% | 4.3% | 12.2% | 9.5% | 8.1% | 31.8% | 9.7% |
| EQUIPMENT UG | 0.6% | 0.7% | 0.8% | 1.6% | 1.1% | 0.6% | 0.9% | 1.6% | 2.5% | 0.2% | 0.8% | 0.3% | 0.9% |
| EQUIPMENT SUB | 0.0% | 0.0% | 0.3% | 0.0% | 2.1% | 15.8% | 0.0% | 0.0% | 6.2% | 1.2% | 0.0% | 0.0% | 2.9% |
| PLANNED | 2.5% | 2.5% | 7.3% | 13.7% | 22.0% | 12.5% | 4.6% | 4.3% | 17.6% | 15.1% | 17.7% | 13.0% | 9.7% |

Chart 4.3 – % SAIFI per Cause by Month

The following chart shows the percentage SAIFI contribution by causes for all outages, excluding major event days.

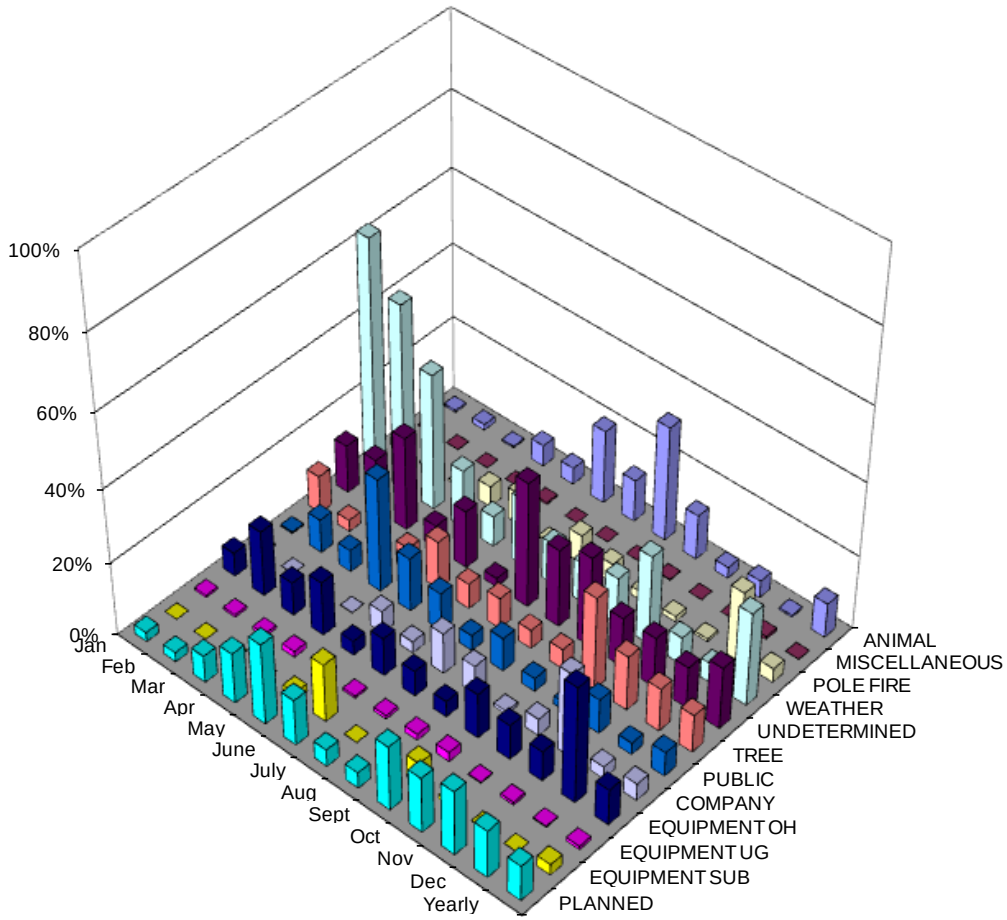


Table 4.4 - % SAIDI per Cause by Month

The following table lists the percentage SAIDI contribution by causes for outages excluding major event days.

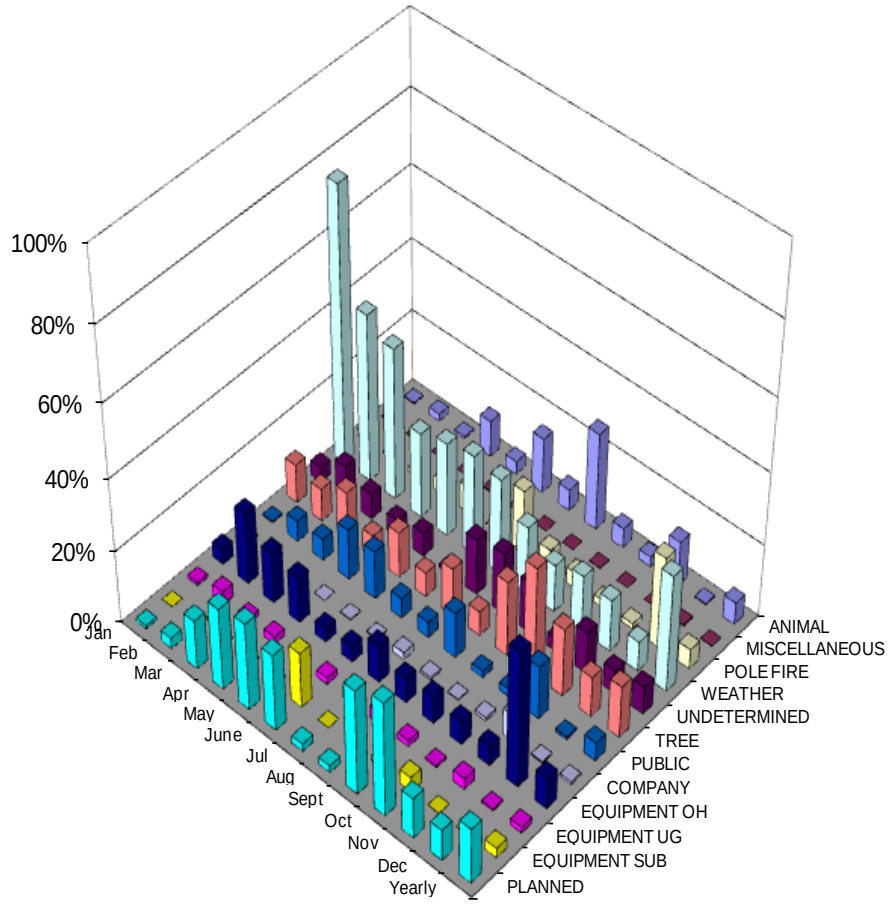
| REASON | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec | Yearly |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 0.3% | 2.0% | 0.6% | 10.0% | 3.6% | 15.2% | 5.8% | 26.9% | 5.5% | 2.7% | 12.4% | 0.3% | 6.1% |
| MISCELLANEOUS | 0.0% | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.5% | 0.1% |
| POLE FIRE | 2.4% | 0.7% | 1.4% | 4.1% | 7.4% | 0.8% | 17.2% | 5.8% | 4.4% | 2.0% | 1.4% | 25.6% | 5.4% |
| WEATHER | 76.0% | 46.2% | 41.9% | 23.5% | 25.8% | 27.6% | 26.3% | 18.3% | 13.1% | 15.5% | 14.3% | 8.2% | 32.4% |
| UNDETERMINED | 4.2% | 9.6% | 7.0% | 4.8% | 6.5% | 1.2% | 15.5% | 17.0% | 14.0% | 3.7% | 11.5% | 6.4% | 7.6% |
| TREE | 10.7% | 9.0% | 13.3% | 6.3% | 12.6% | 6.7% | 13.3% | 6.7% | 20.7% | 30.2% | 18.8% | 11.1% | 14.4% |
| PUBLIC | 0.3% | 5.8% | 5.9% | 14.0% | 13.3% | 5.5% | 4.4% | 12.6% | 1.8% | 2.3% | 14.8% | 0.7% | 5.0% |
| COMPANY | 0.1% | 0.0% | 0.5% | 0.0% | 0.2% | 0.3% | 2.0% | 0.7% | 0.2% | 0.9% | 7.2% | 0.3% | 0.7% |
| EQUIPMENT OH | 4.3% | 19.8% | 14.1% | 12.7% | 3.8% | 4.5% | 10.3% | 6.8% | 7.4% | 6.4% | 5.4% | 37.7% | 8.6% |
| EQUIPMENT UG | 0.8% | 3.7% | 1.6% | 2.0% | 1.5% | 1.8% | 3.2% | 3.3% | 1.6% | 0.6% | 3.0% | 0.5% | 1.7% |
| EQUIPMENT SUB | 0.0% | 0.0% | 0.1% | 0.0% | 0.9% | 15.3% | 0.0% | 0.0% | 2.1% | 4.0% | 0.0% | 0.0% | 2.7% |
| PLANNED | 0.9% | 2.9% | 13.6% | 22.6% | 24.2% | 21.2% | 2.0% | 1.9% | 29.1% | 31.7% | 11.2% | 8.6% | 15.4% |

Table 4.4.1 Ave Outage Time (HH:MM)

| Reason | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Yearly |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 1:32 | 1:22 | 2:05 | 5:08 | 2:40 | 1:26 | 0:49 | 1:01 | 1:28 | 2:23 | 3:50 | 1:18 | 1:22 |
| COMPANY | 0:29 | 1:50 | 2:18 | 1:51 | 0:06 | 0:12 | 0:17 | 0:06 | 0:46 | 0:30 | 0:27 | 0:12 | 0:18 |
| EQUIPMENT OH | 1:46 | 1:10 | 2:19 | 2:32 | 3:19 | 0:49 | 2:24 | 1:54 | 1:59 | 1:47 | 0:57 | 2:39 | 1:51 |
| EQUIPMENT SUB | 1:52 | 0:00 | 0:21 | 0:00 | 1:24 | 1:49 | 0:00 | 0:00 | 1:06 | 8:41 | 0:00 | 0:00 | 1:58 |
| EQUIPMENT UG | 3:57 | 5:57 | 2:57 | 3:43 | 4:32 | 5:45 | 5:28 | 2:25 | 2:05 | 6:49 | 5:48 | 4:04 | 3:46 |
| MISCELLANEOUS | 1:29 | 1:52 | 2:23 | 0:13 | 1:46 | 0:00 | 0:00 | 0:00 | 1:38 | 3:41 | 0:00 | 1:32 | 1:40 |
| PLANNED | 0:55 | 1:12 | 2:47 | 4:48 | 3:40 | 3:12 | 0:42 | 0:31 | 5:24 | 5:32 | 0:55 | 1:29 | 3:21 |
| POLE FIRE | 2:37 | 2:29 | 3:09 | 2:08 | 2:53 | 4:12 | 3:37 | 1:21 | 6:27 | 3:44 | 2:47 | 2:59 | 3:02 |
| PUBLIC | 2:18 | 0:39 | 1:29 | 1:19 | 3:03 | 1:00 | 1:41 | 1:39 | 1:39 | 2:46 | 2:17 | 0:30 | 1:37 |
| TREE | 2:48 | 3:03 | 1:31 | 3:04 | 3:12 | 1:51 | 2:35 | 1:35 | 12:44 | 3:09 | 1:50 | 2:07 | 2:57 |
| UNDETERMINED | 0:51 | 0:43 | 0:24 | 2:16 | 1:23 | 0:56 | 0:44 | 0:57 | 1:52 | 0:43 | 1:13 | 1:17 | 0:57 |
| WEATHER | 3:12 | 0:57 | 1:41 | 4:21 | 10:28 | 2:51 | 3:48 | 2:01 | 3:22 | 1:41 | 2:48 | 3:34 | 2:41 |

Chart 4.4 – % SAIDI per Cause by Month

The following chart shows the percentage SAIFI contribution by causes for outages excluding major event days.



## Momentary Interruption Causes

The cause for many momentary interruptions is unknown. Because faults are temporary, the cause goes unnoticed even after the line is patrolled. Momentary outages are recorded using our SCADA system (System Control and Data Acquisition). On average, about 88% of Avista's customers are served from SCADA controlled stations.

Table 5.1 - % MAIFI per Cause by Office

The following table lists the percentage MAIFI contribution by causes for outages excluding major event days.

| REASON | CDC | COC | DAC | GRC | KEC | LCC | OTC | PAC | SAC | SPC | DPC | All Offices |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.1% | 1.8% | 3.1% | 0.0% | 1.2% |
| POLE FIRE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 0.0% | 0.0% | 0.9% | 0.0% | 0.3% |
| WEATHER | 13.5% | 3.4% | 7.8% | 35.1% | 21.4% | 9.6% | 5.9% | 11.7% | 16.9% | 19.9% | 0.0% | 15.9% |
| TREE | 0.0% | 0.0% | 1.3% | 0.5% | 0.0% | 0.0% | 6.9% | 0.0% | 1.1% | 0.0% | 0.0% | 0.3% |
| PUBLIC | 1.7% | 2.6% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.6% | 1.2% | 0.6% | 0.0% | 0.9% |
| COMPANY | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.5% |
| WEATHER | 1.2% | 1.8% | 0.0% | 4.5% | 3.0% | 1.1% | 0.0% | 0.0% | 1.2% | 1.1% | 0.0% | 1.3% |
| UNDETERMINED | 79.8% | 81.0% | 90.8% | 56.6% | 75.6% | 82.9% | 74.2% | 84.7% | 75.3% | 64.6% | 0.0% | 75.0% |
| EQUIPMENT UG | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.3% |
| EQUIPMENT OH | 1.0% | 3.4% | 0.0% | 0.0% | 0.0% | 1.1% | 6.9% | 2.5% | 0.9% | 5.5% | 0.0% | 2.5% |
| PLANNED | 0.0% | 7.8% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.4% | 0.9% | 2.0% | 0.0% | 1.3% |
| EQUIPMENT SUB | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.4% |

| | | | |
|---|---|---|---|
| CDC | Coeur d'Alene | LCC | Lewiston-Clarkston |
| COC | Colville | OTC | Othello |
| DAC | Davenport | PAC | Palouse |
| DPC | Deer Park | SAC | Sandpoint |
| GRC | Grangeville | SPC | Spokane |
| KEC | Kellogg/ St. Maries | | |

Table 5.1.1 - % MAIFI per Cause by Office (Washington only)

The following table lists the percentage MAIFI contribution by causes for outages excluding major event days.

| REASON | COC | DAC | OTC | SPC | DPC | PAC-WA | LCC-WA | All WA Offices |
|---|---|---|---|---|---|---|---|---|
| ANIMAL | 2.25% | 1.92% | 2.05% | 21.07% | 4.30% | 1.34% | 11.31% | 11.85% |
| COMPANY | 6.27% | 0.00% | 0.02% | 5.42% | 0.00% | 0.00% | 0.00% | 3.97% |
| MISCELLANEOUS | 0.33% | 0.00% | 0.00% | 0.01% | 0.00% | 0.00% | 0.00% | 0.07% |
| POLE FIRE | 5.10% | 0.64% | 10.04% | 2.89% | 0.80% | 0.00% | 12.78% | 2.97% |
| PUBLIC | 1.60% | 0.43% | 1.69% | 10.46% | 14.10% | 2.21% | 0.13% | 6.56% |
| TREE | 11.42% | 2.32% | 1.04% | 7.09% | 14.55% | 5.68% | 34.65% | 8.02% |
| UNDETERMINED | 9.48% | 2.61% | 5.42% | 10.53% | 29.51% | 40.85% | 9.31% | 13.80% |
| WEATHER | 20.92% | 80.59% | 31.37% | 21.47% | 22.03% | 36.90% | 3.90% | 29.06% |
| EQUIPMENT OH | 5.84% | 6.04% | 41.25% | 9.30% | 8.12% | 6.37% | 24.59% | 8.71% |
| EQUIPMENT UG | 0.77% | 0.18% | 0.14% | 0.86% | 1.81% | 1.04% | 0.37% | 0.82% |
| EQUIPMENT SUB | 0.00% | 0.00% | 0.00% | 8.76% | 0.00% | 0.01% | 0.00% | 4.42% |
| PLANNED | 36.03% | 5.27% | 6.98% | 2.13% | 4.79% | 5.59% | 2.96% | 9.76% |

| | | | |
|---|---|---|---|
| COC | Colville | OTC | Othello |
| DAC | Davenport | PAC-WA | Palouse Washington |
| DPC | Deer Park | SPC | Spokane |
| LCC-WA | Lewiston-Clarkston Washington | | |

Chart 5.1 – % MAIFI per Cause by Office

The following chart shows the percentage MAIFI contribution by causes for outages excluding major event days.

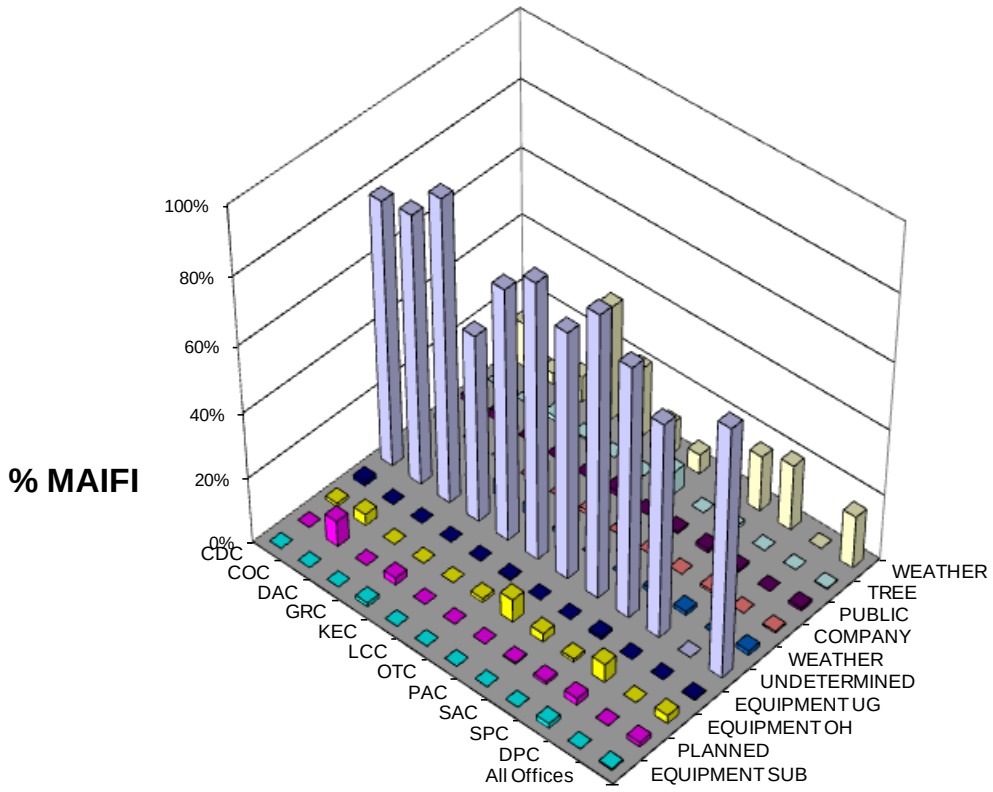


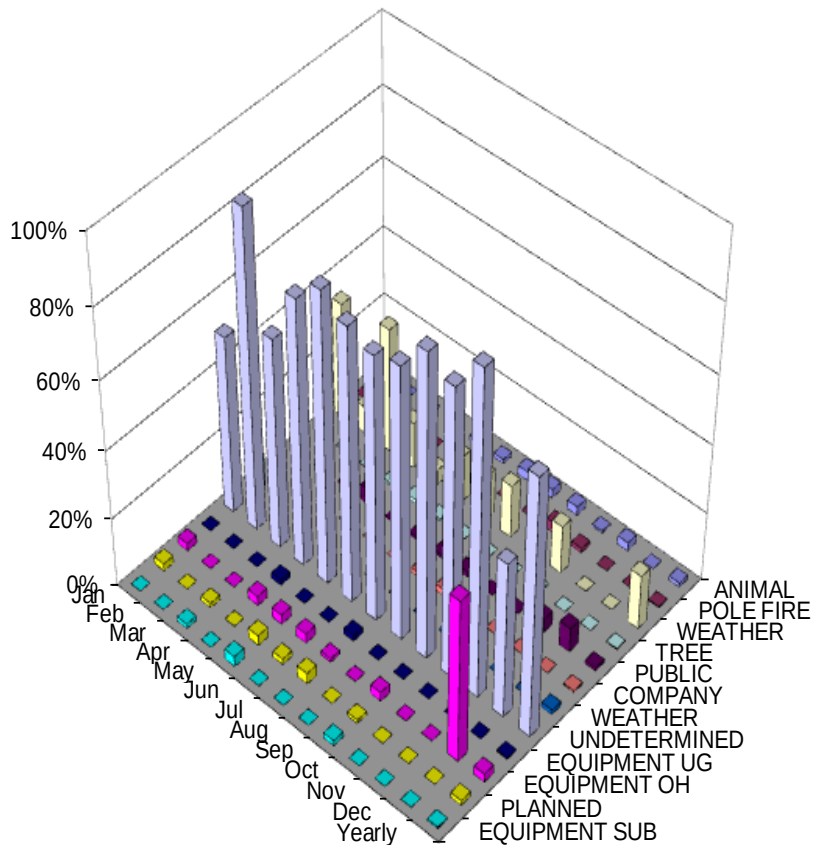
Table 5.2 - % MAIFI per Cause by Month

The following table lists the percentage MAIFI contribution by causes for outages excluding major event days.

| REASON | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec | Yearly |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANIMAL | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 1.2% | 2.6% | 2.5% | 2.6% | 0.6% | 2.5% | 0.0% | 1.2% |
| POLE FIRE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.1% | 1.3% | 0.0% | 0.0% | 0.3% |
| WEATHER | 34.3% | 7.9% | 36.5% | 13.6% | 4.4% | 13.6% | 13.0% | 15.5% | 0.0% | 14.1% | 0.0% | 0.0% | 15.9% |
| TREE | 0.0% | 0.0% | 0.0% | 0.6% | 1.1% | 0.7% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.3% |
| PUBLIC | 0.0% | 0.0% | 0.0% | 4.5% | 0.0% | 0.7% | 0.8% | 1.5% | 0.0% | 0.0% | 4.2% | 7.1% | 0.9% |
| COMPANY | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 1.9% | 1.9% | 0.0% | 0.0% | 0.0% | 0.5% |
| WEATHER | 9.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% |
| UNDETERMINED | 51.6% | 92.1% | 61.0% | 77.0% | 84.2% | 79.4% | 76.4% | 78.6% | 87.4% | 83.2% | 93.3% | 45.3% | 75.0% |
| EQUIPMENT UG | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% |
| EQUIPMENT OH | 2.2% | 0.0% | 0.0% | 2.8% | 2.8% | 2.8% | 1.0% | 0.0% | 2.6% | 0.0% | 0.0% | 47.6% | 2.5% |
| PLANNED | 2.1% | 0.0% | 1.3% | 0.0% | 2.9% | 1.6% | 3.1% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 1.3% |
| EQUIPMENT SUB | 0.0% | 0.0% | 1.3% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.4% |

Chart 5.2 – % MAIFI per Cause by Month

The following chart shows the percentage MAIFI contribution by causes for outages excluding major event days.



## Major Event Day Causes

Chart 6.1 – % SAIFI by Cause Code for the Major Event Days

The following chart shows the percentage SAIFI contribution by causes for outages during major event days

No Major events in 2009

Table 6.1 – % SAIFI by Sub Cause Code for the Major Event Days

The following table shows the SAIFI contribution and Customer hours by sub causes code for the three main outage causes during major event days.

| Cause Code | Sub reason | Sum of Ni | Sum of ri x Ni (hours) |
|---|---|---|---|
| POLE FIRE | Pole Fire | | |
| Total | | | |
| | | No MED in 2009 | |
| TREE | Tree Fell | | |
| | Weather | | |
| Total | | | |
| WEATHER | Snow/Ice | | |
| | Lightning | | |
| | Wind | | |
| Total | | | |

Table 6.2 – Yearly Summary of the Major Event Days

Table 6.2 is provided as an initial review of Major Event Day information. The main premise of the IEEE Major Event Day calculation is that using the 2.5bmethod should classify 2.3 days each year as MED's.
The following table shows the previous major event days, the daily SAIDI value and the relationship of the yearly $T_{MED}$.

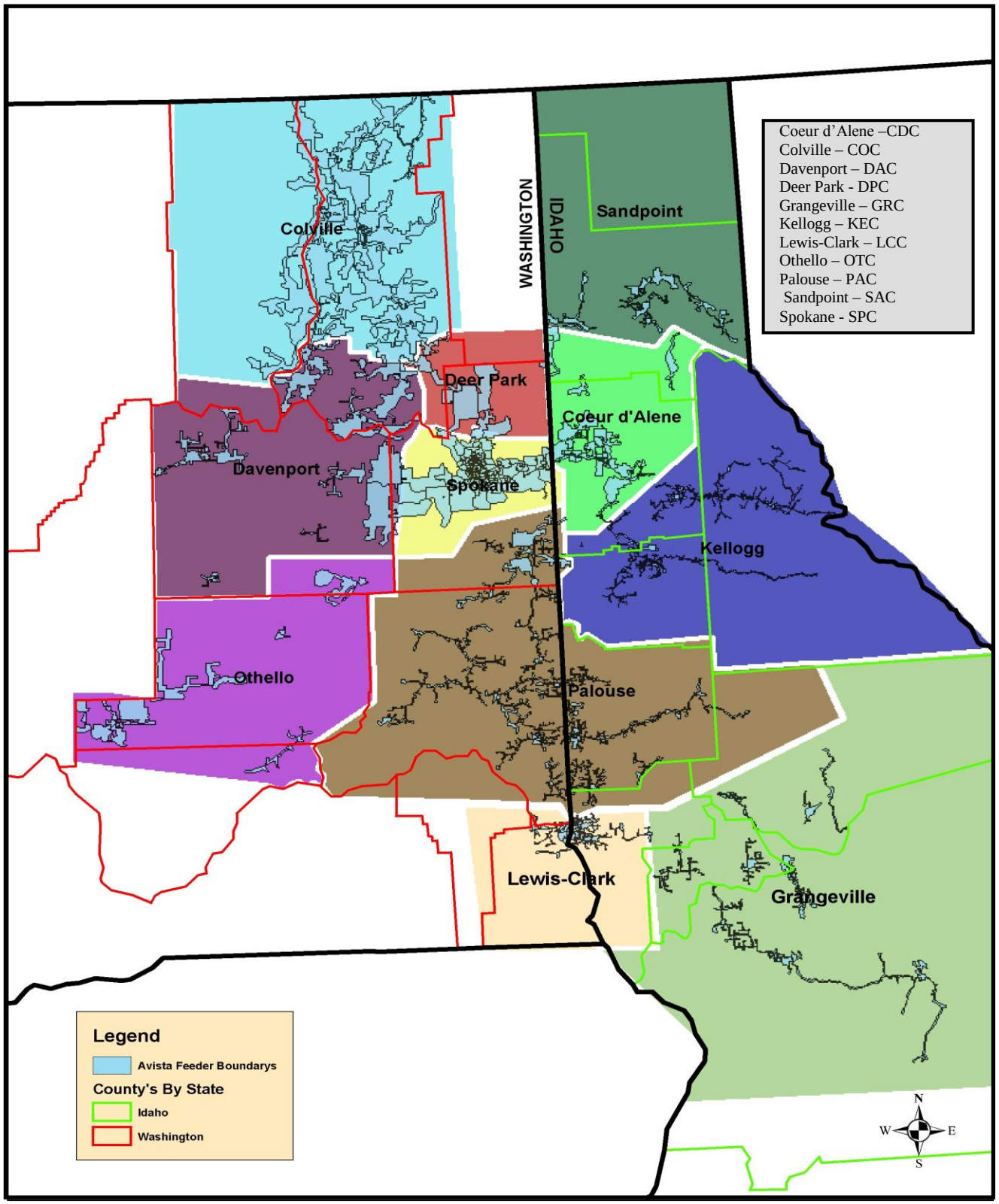
| Year | Date | SAIDI | $T_{MED}$ |
|---|---|---|---|
| 2003 | 01-03-2003 | 5.38 | 4.96 |
| | 05-24-2003 | 5.11 | |
| | 09-08-2003 | 5.47 | |
| | 10-16-2003 | 6.62 | |
| | 10-28-2003 | 9.25 | |
| | 11-19-2003 | 57.06 | |
| 2004 | 05-21-2004 | 7.11 | 6.35 |
| | 08-02-2004 | 7.36 | |
| | 12-08-2004 | 31.00 | |
| 2005 | 06-21-2005 | 39.53 | 4.916 |
| | 06-22-2005 | 9.03 | |
| | 08-12-2005 | 19.60 | |
| 2006 | 01-11-2006 | 12.10 | 7.058 |
| | 03-09-2006 | 8.58 | |
| | 11-13-2006 | 30.79 | |
| | 12-14-2006 | 29.26 | |
| | 12-15-2006 | 158.31 | |
| 2007 | 01-06-2007 | 9.98 | 8.017 |
| | 06-29-2007 | 32.64 | |
| | 07-13-2007 | 12.79 | |
| | 08-31-2007 | 21.30 | |
| 2008 | 01-27-2008 | 17.57 | 9.224 |
| | 07-10-2008 | 36.74 | |
| | 08-18-2008 | 9.49 | |
| 2009 | None | | 9.925 |
| 2010 | | | 11.110 |

## Interruption Cause Codes

| MAIN CATEGORY Proposed (Changes Only) | SUB CATEGORY Proposed (Changes Only) | Definition |
|---|---|---|
| ANIMAL | Bird | Outages caused by animal contacts. Specific animal called out in sub category. |
| | Protected | |
| | Squirrel | |
| | Underground | |
| | Other | |
| PUBLIC | Car Hit Pad | Underground outage due to car, truck, construction equipment etc. contact with pad transformer, junction enclosure etc.. |
| | Car Hit Pole | Overhead outage due to car, truck, construction equipment etc. contact with pole, guy, neutral etc. |
| | Dig In | Dig in by a customer, a customer's contractor, or another utility. |
| | Fire | Outages caused by or required for a house/structure or field/forest fire. |
| | Tree | Homeowner, tree service, logger etc. fells a tree into the line. |
| | Other | Other public caused outages |
| COMPANY | Dig in | Dig in by company or contract crew. |
| | Other | Other company caused outages |
| EQUIPMENT OH | Arrestors | Outages caused by equipment failure. Specific equipment called out in sub category. |
| | Capacitor | |
| | Conductor - Pri | |
| | Conductor - Sec | |
| | Connector - Pri | |
| | Connector - Sec | |
| | Crossarm- rotten | |
| | Cutout / Fuse | |
| | Insulator | |
| | Insulator Pin | |
| | Other | |
| | Pole - Rotten | |
| | Recloser | |
| | Regulator | |
| | Switch / Disconnect | |
| | Transformer - OH | |
| | Wildlife Guard | Wildlife guard failed or caused an outage |
| EQUIPMENT UG | URD Cable - Pri | Outages caused by equipment failure. Specific equipment called out in sub category. |
| | URD Cable- Sec | |
| | Connector - Sec | |
| | Elbow | |
| | Junctions | |
| | Primary Splice | |
| | Termination | |
| | Transformer - UG | |
| | Other | |

| **MAIN CATEGORY** **Proposed** (Changes Only) | **SUB CATEGORY** **Proposed** (Changes Only) | **Definition** |
|---|---|---|
| EQUIPMENT SUB | High side fuse<br>Bus Insulator<br>High side PCB<br>High side Swt / Disc<br>Low side OCB/Recloser<br>Low side Swt / Disc<br>Relay Misoperation<br>Regulator<br>Transformer<br>Other | |
| MISCELLANEOUS | SEE REMARKS | For causes not specifically listed elsewhere |
| NOT OUR PROBLEM (*Outages in this category are not included in reported statistics*) | Customer Equipment<br>SEE REMARKS<br>Other Utility | Customer equipment causing an outage to their service. If a customer causes an outage to another customer this is covered under Public.<br>Outages when another utility's facilities cause an outage on our system. |
| POLE FIRE | | Used when water and contamination causes insulator leakage current and fire. If insulator is leaking due to material failure list under equipment failure. If cracked due to gunfire use customer caused other. |
| PLANNED | Maintenance / Upgrade<br>Forced | Outage, normally prearranged, needed for normal construction work<br>Outage scheduled to repair outage damage |
| TREE | Tree fell<br>Tree growth<br>Service<br>Weather | For outages when a tree falls into distribution primary/secondary or transmission during normal weather<br>Tree growth causes a tree to contact distribution primary/secondary or transmission during normal weather.<br>For outages when a tree falls or grows into a service.<br>When snow and wind storms causes a tree or branch to fall into, or contact the line. Includes snow loading and unloading. |
| UNDETERMINED | | Use when the cause cannot be determined |
| WEATHER | Snow / Ice<br>Lightning<br>Wind | Outages caused by snow or ice loading or unloading on a structure or conductor. Use weather tree for snow and ice loading on a tree.<br>Lightning flashovers without equipment damage. Equipment failures reported under the equipment type.<br>Outages when wind causes conductors to blow into each other, another structure, building etc. (WEATHER/TREE) used for tree contacts. |
| | | |

## Office Areas



## Indices Calculations

### Sustained Interruption

- An interruption lasting longer than 5 minutes.

### Momentary Interruption Event

- An interruption lasting 5 minutes or less. The event includes all momentary interruptions occurring within 5 minutes of the first interruption. For example, when an interrupting device operates two, three, or four times and then holds, it is considered a single event.

### SAIFI – System Average Interruption Frequency Index

- The average number of sustained interruptions per customer
- = The number of customers which had ***sustained interruptions*** / Total number of customers served
- = $\frac{\sum N_i}{N_T}$

### $MAIFI_E$ – Momentary Average Interruption Event Frequency Index

- The average number of momentary interruption events per customer
- = The number of customers which had ***momentary interruption events*** / Total number of customers served
- = $\frac{\sum ID_E N_i}{N_T}$
- MAIFI can be calculated by one of two methods. Using the number of momentary interruptions or the number momentary events. This report calculates $MAIFI_E$ using momentary events. The event includes all momentary interruptions occurring within 5 minutes of the first interruption. For example, when an automatic interrupting device opens and then recloses two, or three times before it remains closed, it is considered a single event.

### SAIDI – System Average Interruption Duration Index

- Average sustained outage time per customer
- = Outage duration multiplied by the customers effected for all ***sustained interruptions*** / Total number of customers served
- = $\frac{\sum r_i N_i}{N_T}$

CAIDI – Customer Average Interruption Duration Index

- Average restoration time
- = Outage duration multiplied by the customers effected for all ***sustained interruptions*** / The number of customers which had ***sustained interruptions***
- = $\frac{\sum r_i N_i}{\sum N_i}$

Quantities
*i = An interruption event;*
$r_i$ *= Restoration time for each interruption event;*
*T = Total;*
$ID_E$ *= Number of interrupting device events;*
$N_i$ *= Number of interrupted customers for each interruption event during the reporting period;*
$N_T$ *= Total number of customers served for the area being indexed;*

$CEMI_n$ – Customers Experiencing Multiple Sustained Interruptions more than n.

- $CEMI_n$
- = Total Number of Customers that experience more than *n* **sustained interruptions** / Total Number of Customers Served
- = $\frac{CN_{(k>n)}}{N_T}$

$CEMSMI_n$ – Customers experiencing multiple sustained interruption and momentary interruption events.

- CEMSMIn
- = Total Number of Customers experiencing more than *n* **interruptions** / Total Number of Customers Served
- = $\frac{CNT_{(k>n)}}{N_T}$

## MED - Major Event Day

A major event day is a day in which the daily system SAIDI exceeds a threshold value. Its purpose is to allow major events to be studied separately from daily operation, and in the process, to better reveal trends in daily operation that would be hidden by the large statistical effect of major events.

$T_{MED}$ is calculated (taken from the IEEE 1366-2003 Standard)
The major event day identification threshold value, $T_{MED}$, is calculated at the end of each reporting period (typically one year) for use during the next reporting period as follows:

a) Collect values of daily SAIDI for five sequential years ending on the last day of the last complete reporting period. If fewer than five years of historical data are available, use all available historical data until five years of historical data are available.

b) Only those days that have a SAIDI/Day value will be used to calculate the $T_{MED}$ (do not include days that did not have any interruptions).

c) Take the natural logarithm (ln) of each daily SAIDI value in the data set.

d) Find $\alpha$ (Alpha), the average of the logarithms (also known as the log-average) of the data set.

e) Find $\beta$ (Beta), the standard deviation of the logarithms (also known as the log-standard deviation) of the data set.

f) Compute the major event day threshold, TMED, using equation (25).

$$T_{MED} = e^{\langle \alpha + 2.5\,\beta \rangle} \qquad (25)$$

g) Any day with daily SAIDI greater than the threshold value TMED that occurs during the subsequent reporting period is classified as a major event day. Activities that occur on days classified as major event days should be separately analyzed and reported.

## Numbers of Customers Served

The following numbers of customers were based on the customers served at the beginning of the year. These numbers were used to calculate indices for this report.

| Office | Customers | % of Total |
|---|---|---|
| Coeur d'Alene | 49531 | 13.8% |
| Colville | 17906 | 5.0% |
| Davenport | 6852 | 1.9% |
| Deer Park | 10419 | 2.9% |
| Grangeville | 10119 | 2.8% |
| Kellogg/St. Maries | 14178 | 4.0% |
| Lewis-Clark | 29055 | 8.1% |
| Othello | 6672 | 1.9% |
| Palouse | 38208 | 10.6% |
| Sandpoint | 14422 | 4.0% |
| Spokane | 161401 | 45.0% |
| **System Total** | **358763** | |