

**AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION**

| | | | |
|---------------|-------------------------|----------------|------------------------------|
| JURISDICTION: | WASHINGTON | DATE PREPARED: | 04/16/2015 |
| CASE NO.: | UE-150204 & UG-150205 | WITNESS: | Don Kopczynski |
| REQUESTER: | UTC Staff - Nightingale | RESPONDER: | Larry La Bolle |
| TYPE: | Data Request | DEPT: | State & Federal Regulation |
| REQUEST NO.: | Staff - 114 | TELEPHONE: | (509) 495-4710 |
| | | EMAIL: | larry.labolle@avistacorp.com |

REQUEST:

See page 16 - section III.K. Please provide the study demonstrating that the AMI project will result in a “potential benefit” of \$1,053,322 associated with “identifying more ... diversion cases.” Please include all assumptions, worksheets and any other material relied upon by the study to determine the above-referenced cost savings.

RESPONSE:

The work processes of curbing theft of energy service and reducing the incidence of unbilled usage is significantly enhanced by the availability of advanced metering systems and data. The four areas of focus are diversion of service (theft), unbilled usage, slow and failing meters, and stopped meters. Each of these situations represents an opportunity to align metering with the actual energy consumption at the premise.

Theft Diversion

Diversion of service can include instances of complete diversion, partial diversion, and intermittent diversion. A common trade reference on the significance of service diversion cites a range of revenue impact from 0.5% to 3.0%. Several other articles support this range. For purposes of this analysis, Avista started with a more conservative estimate of 0.4% of Washington revenues as the potential diversion occurring in our service area. We then subtracted our documented level of diversion activity, 0.012% of revenue, for a remaining diversion potential of 0.388 %, or \$2.24 million for both electric and gas.

Recognizing that there is a cost associated with investigating and resolving diversion cases, we estimated the cost associated with the initial field visit from Avista’s meter staff, billing analyst’s time to prepare a new bill, and a subsequent cost to perform additional investigation and resolution. That cost was approximately \$190 per investigation (\$125 dispatch cost for service person + \$58.13 service person time to service the meter + \$9.75 for billing analyst’s time to rebill). Subtracting these investigation costs (1,387 potential cases X \$190) reduces our estimated savings potential to approximately \$2.1 million. Finally, Avista assumed it would detect approximately half of these potential diversion cases, resulting in a potential for annual savings of \$1.05 million in unbilled revenue, or 0.18% of total revenue.

The computation, determination, or source of these values is provided in Excel format in Staff_DR_114 Attachment A, under the tab labeled “Benefits Meter Shop Rev Pro.” This worksheet contains the financial and other information used to calculate the benefit value, and the source of each element of information is also provided. Where values are calculated in the worksheet, the particular computation, as well as the location of the data used, is provided by “mouse clicking” on the referenced cell.

Sources Supporting Energy Theft and Unbilled Energy Usage

1. AUSTIN ENERGY : NOTED THAT THEY HAD .5% WITH EVIDENCE OF THEFT AND OR TAMPERING (CONVERSATION POST AMI IMPLEMENTATION IN 2010)
2. SMUD : .7% OF REVENUE (CONVERSATION WITH AUGI - MGR OF CORPORATE PERFORMANCE)
3. ELP - ELECTRIC LIGHT AND POWER ARTICLE : A NATIONAL STUDY FOUND THAT .5 TO 3 % SHOWED EVIDENCE OF THEFT.
4. APS : SAMPLE STUDY SHOWED 1.7% OF ALL METERS HAD SOME TAMPERING WITH AN NET .51% LOSS IN REVENUE
5. BC HYDRO & CENTERPOINT ENERGY: BC HYDRO 3 % OF REVENUE AND CENTERPOINT 2% OF RES AND SMALL CUSTOMER
6. DTE ENERGY : BETWEEN 1-3 %
7. SEEING THE FOREST, THEN THE TREES BY BY MICHAEL MADRAZO, FOUNDER AND PRESIDENT OF DETECTANT
8. ACCENTURE : BETWEEN 2-4 % WITH UP TO 80% BEING THEFT
9. DETECTANT - DEPUTIZING DATA: USING AMI FOR REVENUE PROTECTION : GREATER THAN 1% (FROM PRIOR LITERATURE)
10. METERING.COM : ~1%
11. IDAHO POWER : < 1% -- GRAESCH ARNOLD, MARY [MGRAESCHARNOLD@IDAHOPOWER.COM] IT TENDS TO VARY GREATLY BASED ON LOCAL SOCIAL ACCEPTANCE AND CRIME RATE. IDAHO IS LOW ON BOTH COUNTS.
12. METERINGAMERICA.COM : ~1% - ROI ON INVESTIGATION IS 4:1
13. SAP : >1%
14. SDG&E : 1-2%
15. CP&L : 0.40%
16. PORTLAND GENERAL : 0.10%
17. UAI : RECENT ARTICLE - COMMENTS THAT REV PRO IS THE DEFAULT FIRST ANALYTICS INITIATIVE
18. [HTTP://SITES.ENERGETICS.COM/MADRI/TOOLBOX/PDFS/BACKGROUND/KING.PDF](http://sites.energetics.com/MADRI/TOOLBOX/PDFS/BACKGROUND/KING.PDF)

Revenue Protection (Electric Meters)

Revenue Protection entails identifying meters where consumption is occurring at a rate greater than what is being billed. Currently, 80% of Avista's theft cases are represented by accounts where the customer has turned an inactive meter on or damaged the meter to the point where it stops reading triggering a stopped meter investigation. National and anecdotal statistics indicate that a 0.5% (005) - 3% of meters are considered revenue protection candidates. Information with instructions are available online, which means that the ability to learn how to tamper with a meter is a click away and easy to share with others. Even in situations where preventive measures are in place, there are creative ways to circumvent the measures. In one instance, FP&L discovered counterfeit tags being used on meters that were near perfect copies of their tags.

In addition to identifying meters, there is an associated cost to mitigate. The assumption here is that we will not spend money investigating criminal aspect, but there will be associated costs to travel and repair/mitigate the tampering. Adjustments to the revenue have been made to reflect the count and dollar differences between residential and non residential

| Benefits Description | Electric | | | Gas | | |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| | Low | Medium | High | Low | Medium | High |
| 1 Current Cases of theft and tampering Idaho 2012 | 36 | 36 | 36 | 36 | 36 | 36 |
| 2 Current Cases of theft and tampering Oregon 2012 | 104 | 104 | 104 | 104 | 104 | 104 |
| 3 Current Cases of theft and tampering Washington 2012 | 109 | 109 | 109 | 109 | 109 | 109 |
| 4 Current Cases Dollars of theft and tampering Idaho 2012 | \$10,409 | \$10,409 | \$10,409 | \$10,409 | \$10,409 | \$10,409 |
| 5 Current Cases Dollars of theft and tampering Oregon 2012 | \$19,562 | \$19,562 | \$19,562 | \$19,562 | \$19,562 | \$19,562 |
| 6 Current Cases Dollars of theft and tampering Washington 2012 | \$40,498 | \$40,498 | \$40,498 | \$40,498 | \$40,498 | \$40,498 |
| 7 Idaho Revenue 2012 | \$159,280,288 | \$159,280,288 | \$159,280,288 | \$140,661,772 | \$140,661,772 | \$140,661,772 |
| 8 Oregon Revenue 2012 | \$0 | \$0 | \$0 | \$11,939,853 | \$11,939,853 | \$11,939,853 |
| 9 Washington Revenue 2012 | \$327,679,587 | \$327,679,587 | \$327,679,587 | \$250,276,119 | \$250,276,119 | \$250,276,119 |
| 10 Idaho Meters 2012 | 132,114 | 132,114 | 132,114 | 77,427 | 77,427 | 77,427 |
| 11 Oregon Meters 2012 | - | - | - | 108,065 | 108,065 | 108,065 |
| 12 Washington Meters 2012 | 250,926 | 250,926 | 250,926 | 153,274 | 153,274 | 153,274 |
| 13 Current Idaho theft identified as percent of Idaho Revenue 2012 | 0.007% | 0.007% | 0.007% | 0.007% | 0.007% | 0.007% |
| 14 Current Oregon theft identified as percent of Oregon Revenue 2012 | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% |
| 15 Current Washington theft identified as percent of Washington Revenue 2012 | 0.012% | 0.012% | 0.012% | 0.012% | 0.012% | 0.012% |
| 16 Opportunity: Idaho theft identified as percent of Idaho Revenue 2012 | 0.500% | 0.500% | 0.500% | 0.250% | 0.250% | 0.250% |
| 17 Opportunity: Oregon theft identified as percent of Oregon Revenue 2012 | 0.250% | 0.250% | 0.250% | 0.250% | 0.250% | 0.250% |
| 18 Opportunity: Washington theft identified as percent of Washington Revenue 2012 | 0.400% | 0.400% | 0.400% | 0.250% | 0.250% | 0.250% |
| 19 Net Opportunity: Idaho theft identified as percent of Idaho Revenue 2012 | 0.493% | 0.493% | 0.493% | 0.493% | 0.493% | 0.493% |
| 20 Net Opportunity: Oregon theft identified as percent of Oregon Revenue 2012 | 0.250% | 0.250% | 0.250% | 0.250% | 0.250% | 0.250% |
| 21 Net Opportunity: Washington theft identified as percent of Washington Revenue 2012 | 0.388% | 0.388% | 0.388% | 0.388% | 0.388% | 0.388% |
| 22 Net Opportunity: Idaho 2012 | \$785,992 | \$785,992 | \$785,992 | \$694,116 | \$694,116 | \$694,116 |
| 23 Net Opportunity: Oregon 2012 | \$0 | \$0 | \$0 | \$29,850 | \$29,850 | \$29,850 |
| 24 Net Opportunity: Washington 2012 | \$1,270,220 | \$1,270,220 | \$1,270,220 | \$970,172 | \$970,172 | \$970,172 |
| 25 Estimated Visits: Idaho 2012 (row 21 * row 15) | 661 | 661 | 661 | 194 | 194 | 194 |
| 26 Estimated Visits: Oregon 2012 | - | - | - | 270 | 270 | 270 |
| 27 Estimated Visits: Washington 2012 | 1,004 | 1,004 | 1,004 | 383 | 383 | 383 |
| 28 Cost per meter serviceman per minute | \$0.96 | \$0.96 | \$0.96 | \$0.96 | \$0.96 | \$0.96 |
| 29 Time per visit per serviceman including travel time | 45 | 45 | 45 | 45 | 45 | 45 |
| 30 Travel Costs Per Visit | 15 | 15 | 15 | 15 | 15 | 15 |
| 31 Cost per visit for serviceman (row 21 * row 22) + row 20 | \$58.13 | \$58.13 | \$58.13 | \$58.13 | \$58.13 | \$58.13 |
| 32 Average time to prepare rebill (mins) | 15 | 15 | 15 | 15 | 15 | 15 |
| 33 Billing Analyst cost per minute | \$0.65 | \$0.65 | \$0.65 | \$0.65 | \$0.65 | \$0.65 |
| 34 Cost per rebill | \$9.75 | \$9.75 | \$9.75 | \$9.75 | \$9.75 | \$9.75 |
| 35 Cost Per Investigation | \$125.00 | \$125.00 | \$125.00 | \$125.00 | \$125.00 | \$125.00 |
| 36 Total cost per visit and rebill (row 22 + row 25) | \$192.88 | \$192.88 | \$192.88 | \$192.88 | \$192.88 | \$192.88 |
| 37 Estimated Resolution Costs: Idaho (row 30 * row 41) | \$127,407.44 | \$127,407.44 | \$127,407.44 | \$37,334.33 | \$37,334.33 | \$37,334.33 |
| 38 Estimated Resolution Costs: Oregon (row 31 * row 41) | \$0.00 | \$0.00 | \$0.00 | \$52,107.59 | \$52,107.59 | \$52,107.59 |
| 39 Estimated Resolution Costs: Washington (row 32 * row 41) | \$145,192.06 | \$96,794.70 | \$48,397.35 | \$55,430.11 | \$36,953.40 | \$18,476.70 |
| 40 Total Net Estimated Benefits - All | \$1,783,612.40 | \$1,832,009.76 | \$1,880,407.11 | \$1,549,266.24 | \$1,567,742.94 | \$1,586,219.65 |
| 41 Total Net Estimated Benefits - Washington Only | \$1,125,028 | \$1,173,425 | \$1,221,823 | \$914,742 | \$933,219 | \$951,696 |
| 42 Estimated Percent Found | 75% | 50% | 25% | 75% | 50% | 25% |
| 43 Net Opportunity | \$843,771 | \$586,713 | \$305,456 | \$686,057 | \$466,610 | \$237,924 |
| Max % of Revenue | | | | | | 0.061% |

| Permanent Reduction of Annual Cost | Re-deployment of Annual Cost | Avoided Annual Cost | Additional Billed Revenue |
|------------------------------------|------------------------------|---------------------|---------------------------|
| | | | \$1,053,322 |

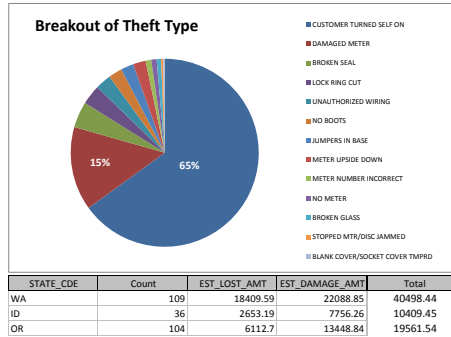
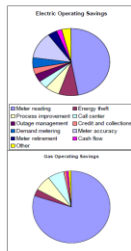
Austin Energy
 SMUD
 ELP - Electric Light and Power Article
 APS
 DataSource
[CenterPoint Energy](#)
[DTE Energy](#)
[Accenture](#)
[Detectant - Deputizing Data: Using AMI for Revenue Protection](#)
[Metering.com](#)
[Idaho Power](#)
[MeteringAmerica.com](#)
[SAP](#)
[SDG&E](#)
[CP&L](#)
[Portland General](#)
[UAI](#)
<http://sites.energies.com/MADRI/toolbox/pdfs/background/king.pdf>

Noted that they had .3% with evidence of theft and or tampering
 .7% of revenue (Conversation with Augi - Mgr of corporate performance)
 A national study found that .5 to 3 percent showed evidence of theft.
 Sample study showed 1.7% of all meters had some tampering with an net .51% loss in revenue
 Showed an Average of .08% of revenue (which would be a good ongoing number)
 Susan Neel, Senior Director of Electricity Market Operations at CenterPoint Energy, a utility with 5 million metered electric and gas customers headquartered in Houston. Ms. Neel estimated the problem there to be about 1% of total electric load, and about 2% of the electricity provided to the residential and small commercial sector
 Between 1-3 percent
 Between 2-4 percent with up to 80% being theft
 Greater than 1% (from prior literature)
 ~1%
 < 1% - Graesch Arnold, Mary [MGraeschArnold@idahopower.com] It tends to vary greatly based on local social acceptance and crime rate. Idaho is low on both counts.
 ~1% - ROI on investigation is 4:1
 >1%
 1-2%
 0.40%
 0.10%
 Recent article - comments that Rev Pro is the default first analytics initiative

Benefits - Utility Operations
 Puget Sound Energy Example

| Source | Share of benefits | Electric | Gas |
|------------------------|-------------------|-------------|-----|
| Meter reading | 47% | 82% | |
| Energy theft | 8% | 3% | |
| Process improvement | 6% | 7% | |
| Call center | 4% | 7% | |
| Outage management | 4% | 0% | |
| Credit and collections | 3% | 1% | |
| Demand metering | 5% | 0% | |
| Meter accuracy | 13% | 0% | |
| Meter retirement | 4% | 0% | |
| Cash flow | 2% | 1% | |
| Other | 4% | 1% | |
| TOTAL | 100% | 100% | |

PSE Payback:
 Operations Only = 9 years
 Operations w/TOU = 5 years



Permanent Reduction of Annual Cost Re-deployment of Annual Cost Avoided Annual Cost Additional Billed Revenue

Avisia does not turn meters off between customers when a prior customer closes an account and new customer has not yet opened an account at the same service location. The benefit to this approach is that a field visit is avoided to turn power off and subsequently another visit is not required to turn service back on. There are instances where a person or business has moved into the service location but has not opened an account. An edit kicks in Workplace to indicate if usage is occurring at a service address where the account is listed as inactive. Accounts with unbilled usage get shut off after \$30 and there is a process to send a field request automatically from Work Place. While some usage is recaptured by assigning the usage to the new customer, there are instances where the billing group is not able to assign usage to the customer.

In most instances, there is minimum usage and would indicate the premise is vacant. The average accumulated usage\costs during this vacancy can be less than the associated costs of disconnect and reconnect field visits. There is however a percentage where the premise has been reoccupied and notable consumption is being used. In these cases where usage has significantly increased and the meters remain inactive, an earlier indicator and prioritization would allow a more proactive approach to prevent non recoverable usage.

The current process is to use the register read which can mask consumption when the customer closes an account mid billing cycle.

This would be an advanced edit that would flag accounts earlier in the process and would require some process change such as automating the steps that mimic the auto request for field visits. Access to daily reads would enable a more accurate response to rebilling if it is required.

| Benefits Description | Electric | Gas | Total | Sources or References |
|---|---------------|--------------|------------|--|
| Non App Meters in Washington | 3,646 | 1,783 | 5,428 | Table 1 - source: Unbilled Data tab |
| Usage adjusted off in Washington | 1,009,563 | 50,895 | | Table 1 - Pivot Data - source: Unbilled Data tab |
| Estimated Dollars not Billed Washington | \$ 91,497.88 | \$ 45,678.63 | \$ 137,177 | Calculation: Unbilled usage * Rate (see pivot) |
| Loaded labor rate for billing analyst (per min) | 0.65 | 0.65 | | |
| Billing Edit Process in Minutes per account | 5 | 5 | | |
| Cost per Review and Administration | 3.25 | 3.25 | | Calculation: Loaded labor rate * edit processing time |
| Estimated Review & Admin costs | \$ 11,848.20 | \$ 5,794.10 | \$ 17,642 | Calculation: Cost per Review and Admin * Non Apps ServicemenLaborCostsEstimate tab |
| Cost per meter serviceman per minute | 0.96 | 0.96 | | |
| Time per visit to drop off notice including travel time | 15 | 15 | | |
| Cost Per visit travel costs | \$ 15.75 | \$ 15.75 | | ServicemenLaborCostsEstimate tab |
| Costs to post notice | \$ 53,902.13 | \$ 26,359.65 | \$ 80,262 | Calculation: Cost per meter serviceman per minutes * time per visit |
| Total Costs | \$ 157,248.21 | \$ 77,832.37 | \$ 235,081 | Calculation: Unbilled Revenue + Billing Analyst Time + Servicemen Time |

Table 1
 BILL_CORRECT_CDE (Multiple Items)

| Row Labels | Column Labels | 2010 | 2011 | 2012 | 2013 | 2014 | Average | Ratio | Unit Costs | Revenues |
|--|--------------------------------|------------------|------------------|----------------|------------------|----------------|-----------|-------|--------------|---------------|
| E Excluded all electric accounts with usage over 90,000 and gas accounts with usage greater than 9,000 | | | | | | | | | | |
| 01 | Average of Days | 24.23 | 26.19 | 28.48 | 32.28 | 32.12 | | | | |
| | Sum of SumOfUSAGE_QTY | 898,811 | 918,452 | 918,911 | 888,242 | 850,114 | | | Revenue/Unit | Estimated Rev |
| | Count of USAGE_PT_KY | 3,863 | 3,926 | 3,462 | 3,196 | 3,010 | 894,906 | 89% | \$ 0.988 | \$ 78,304.28 |
| 21 | Average of Days | 53.92 | 49.30 | 47.70 | 50.77 | 46.40 | | | | |
| | Sum of SumOfUSAGE_QTY | 145,046 | 114,756 | 48,276 | 157,515 | 107,693 | 114,657 | 11% | \$ 0.115 | \$ 13,193.60 |
| | Count of USAGE_PT_KY | 183 | 188 | 151 | 119 | 130 | | | | |
| | E Average of Days | 25.57 | 27.24 | 29.29 | 32.95 | 32.71 | 30 | | | |
| | E Sum of SumOfUSAGE_QTY | 1,043,857 | 1,033,208 | 967,187 | 1,045,757 | 957,807 | 1,009,563 | | | \$ 91,497.88 |
| | E Count of USAGE_PT_KY | 4,046 | 4,114 | 3,613 | 3,315 | 3,140 | 3,646 | | | |
| G | | | | | | | | | | |
| 01 | Average of Days | 29.84 | 32.05 | 34.05 | 35.06 | 33.38 | | | | |
| | Sum of SumOfUSAGE_QTY | 40,087 | 44,767 | 38,109 | 37,562 | 30,887 | 38,282 | 75% | \$ 0.870 | \$ 33,304.92 |
| | Count of USAGE_PT_KY | 1,840 | 1,876 | 1,678 | 1,612 | 1,414 | | | | |
| 21 | Average of Days | 48.61 | 49.73 | 52.22 | 45.80 | 58.15 | | | | |
| | Sum of SumOfUSAGE_QTY | 10,711 | 18,840 | 7,777 | 9,976 | 15,757 | 12,612 | 25% | \$ 0.981 | \$ 12,373.70 |
| | Count of USAGE_PT_KY | 123 | 130 | 88 | 86 | 67 | | | | |
| | G Average of Days | 31.02 | 33.19 | 34.95 | 47.538 | 34.50 | 34 | | | |
| | G Sum of SumOfUSAGE_QTY | 50,798 | 63,607 | 45,886 | 47,538 | 46,644 | 50,895 | | | \$ 45,678.63 |
| | G Count of USAGE_PT_KY | 1,963 | 2,006 | 1,766 | 1,698 | 1,481 | 1,783 | | | |

New Install Verification

Validate meter multipliers are set correctly

New meter installs occasionally are installed incorrectly.

| Benefits Description | | Permanent Reduction of Annual Cost | Re-deployment of Annual Cost | Avoided Annual Cost | Additional Billed Revenue |
|----------------------|--|------------------------------------|------------------------------|---|---------------------------|
| Component Estimate | | Sources or References | | | |
| 1 | Avista Washington Electric Billing issues Counts (Avg 2013-2014) | | 41 | Billing Analyst Report | |
| 2 | Avista Washington Electric Billing issues Dollars | \$223,704 | | Billing Analyst Report (used an average to reduce impact of year over year variances) | |
| 3 | Avista Washington Gas Billing issues Counts (Avg 2013-2014) | | 21 | Billing Analyst Report | |
| 4 | Avista Washington Gas Billing issues Dollars | \$74,580 | | Billing Analyst Report (used an average to reduce impact of year over year variances) | |
| 5 | Avista Washington Total Billing issues Counts (Avg 2013-2014) | | 61 | Billing Analyst Report | |
| 6 | Avista Washington Total Billing issues Dollars | \$298,284 | | Billing Analyst Report (used an average to reduce impact of year over year variances) | |
| 7 | Additional Meters Found Through Better Data | 33% | | Estimate of additional meters that would be found with better analytics | |
| 8 | Additional Found | \$99,328 | | Estimate of additional meters that would be found with better analytics | |
| 9 | Reduction in Existing Billing Issues times by finding sooner | 24% | | Qualitative Assessment | |
| 10 | Benefit from Finding Meter Issues Sooner | \$70,488 | | Calculation | |
| 11 | Total Estimated Benefit | \$169,817 | | Calculation: Total (Additional Found + Benefit from Finding Meter Issues Sooner) | \$169,817 |

State WA Source: Billing Analyst Billing Issues report

| Year | Values | | | |
|--------------------|--------------------------------|------------------------------|---------------------------|-------------------------|
| | Count of Lost electric revenue | Sum of Lost electric revenue | Count of Lost gas revenue | Sum of Lost gas revenue |
| 2013 | 36 | \$ 298,930 | 11 | \$ 67,242 |
| 2014 | 45 | \$ 148,478 | 30 | \$ 81,917 |
| Grand Total | 81 | \$ 447,408 | 41 | \$ 149,159 |
| | 40.5 | \$ 223,704 | 20.5 | \$ 74,580 |

Billing & Meter Shop

Currently, Workplace performs a series of daily edits on customer billing data to determine if a meter is potentially stopped. A list consisting of several hundred pages is printed in a pdf report that is sent to the billing group to review daily. The report is on average 1500-3000 accounts. There is some grouping, but the data is static and cannot be sorted or filtered. The billing group now has a macro enabled Excel file that extracts the information into a table to enable more efficient organization and review of the data. The review process requires using Workplace to review customer information such as past field visits, comments, and billing read information, because the daily read information is not available to them to use. The analysts have some ability to code he accounts as seasonal to identify those accounts where zero use is expected. In addition, the analyst can provide information that would indicate that zero usage is expected such as appliances have been removed, etc.

The challenge is that metered data is only available at the billing cycle level, which means that a change mid cycle will not show up until there is a complete cycle where there is no usage. The current edits also preclude certain edits to kick when a prior event has occurred such as if usage was zero for three months during the summer and then usage subsequently drops to zero in the winter months, an edit would not kick until there were three additional months of zero usage. The limitations of the data and the algorithms used result in longer durations of stopped meters. In addition, the longer the stopped meter is not caught, the more work is required to prepare a rebill.

Tami Judge led a BPI project that pretty well captured the opportunity to improve processes up to the point of using better analytics. Tami's group said the most significant share of the opportunity lies in reducing the visit in the first place, which is heavily dependent upon the utilization of analytics. Much of the data used to calculate savings is derived from Tami's team, which I was able to participate in.

The savings model below does not include savings from identifying problems sooner such as the time involved in rebilling such as estimating bills, contacting the customer, or handling phone calls from the customer questioning the new bill (which is captured in the rebill benefits model). Ultimately the goal would be to identify stopped meters before a billing cycle so that the customer is not impacted.

Note: What is not included is the savings from finding stopped meters that would not have been found with conventional reporting. These are additional savings derived from not having to rebill and increased cashflows.

| Benefits Description | Electric | | | Gas | | | Permanent Reduction of Annual Cost | Re-deployment of Annual Cost | Avoided Annual Cost | Additional Billed Revenue |
|--|------------|------------|------------|------------|------------|------------|------------------------------------|------------------------------|---------------------|---------------------------|
| | Low | Medium | High | Low | Medium | High | | | | |
| 1 Field Visits to investigate stopped meters in Idaho | 1,591 | 1,591 | 1,591 | 1,957 | 1,957 | 1,957 | | | | |
| 2 Field Visits to investigate stopped meters in Oregon | 0 | 0 | 0 | 2,089 | 2,089 | 2,089 | | | | |
| 3 Field Visits to investigate stopped meters in Washington (Stopped Meter Report) | 4,233 | 4,233 | 4,233 | 3,295 | 3,295 | 3,295 | | | | |
| 4 Percent Meters investigate resulting in stopped in Idaho | 4.8% | 4.8% | 4.8% | 5.2% | 5.2% | 5.2% | | | | |
| 5 Percent Meters investigate resulting in stopped in Oregon | 0% | 0% | 0% | 6.5% | 6.5% | 6.5% | | | | |
| 6 Percent Meters investigate resulting in stopped in Washington (Stopped Meter Report) | 13.7% | 13.7% | 13.7% | 7.1% | 7.1% | 7.1% | | | | |
| 7 Percent Meters investigate resulting in stopped in Idaho - Predicted Rate | 20% | 45% | 70% | 15% | 45% | 75% | | | | |
| 8 Percent Meters investigate resulting in stopped in Oregon - Predicted Rate | 0% | 0% | 0% | 15% | 33% | 50% | | | | |
| 9 Percent Meters investigate resulting in stopped in Washington - Predicted Rate 1 | 40% | 60% | 80% | 45% | 60% | 75% | | | | |
| 10 Improvement in investigation Rate in Idaho (row 7 - row 4) | 15% | 40% | 65% | 10% | 40% | 70% | | | | |
| 11 Improvement in investigation Rate in Oregon (row 8 - row 5) | 0% | 0% | 0% | 9% | 26% | 44% | | | | |
| 12 Improvement in investigation Rate in Washington (row 9 - row 6) | 26% | 46% | 66% | 38% | 53% | 68% | | | | |
| 13 Estimated Avoided Visits Idaho (row 10 * row 1) | 241 | 639 | 1,037 | 191 | 778 | 1,365 | | | | |
| 14 Estimated Avoided Visits Oregon (row 11 * row 2) | 0 | 0 | 0 | 177 | 543 | 908 | | | | |
| 15 Estimated Avoided Visits Washington (row 12 * row 3) | 1,113 | 1,959 | 2,806 | 1,248 | 1,743 | 2,237 | | | | |
| 16 Billing analyst additional time to investigate stopped meter (mins) | 5 | 5 | 5 | 5 | 5 | 5 | | | | |
| 17 Loaded labor rate for billing analyst (per min) | \$0.65 | \$0.65 | \$0.65 | \$0.65 | \$0.65 | \$0.65 | | | | |
| 18 Total cost per investigation for billing analyst | \$3.25 | \$3.25 | \$3.25 | \$3.25 | \$3.25 | \$3.25 | | | | |
| 19 Total additional analyst time to investigate | \$3,617.25 | \$6,366.75 | \$9,119.50 | \$4,056.00 | \$5,664.75 | \$7,270.25 | | | | |
| 20 Transportation Costs | 15.75 | 15.75 | 15.75 | 15.75 | 15.75 | 15.75 | | | | |
| 21 Cost per meter serviceman per minute | \$0.96 | \$0.96 | \$0.96 | \$0.96 | \$0.96 | \$0.96 | | | | |
| 22 Time per visit per serviceman including travel time | 45 | 45 | 45 | 45 | 45 | 45 | | | | |
| 23 Cost per visit for serviceman (row 21 * row 22) + row 20 | \$58.88 | \$58.88 | \$58.88 | \$58.88 | \$58.88 | \$58.88 | | | | |
| 24 Estimated benefit from avoided visits (row 23 * row 15) - (row 18 * row 15) | \$61,911 | \$108,969 | \$156,084 | \$69,420 | \$96,954 | \$124,433 | | | | \$205,924 |

Cost per Stopped Meter Field Visit by Gas Serviceman:

| | |
|---------------------------------------|-----------------------------------|
| Hourly Costs | |
| Loaded labor/hour | 57.51 |
| Transportation cost | 15.75 |
| | 73.26 |
| Estimated hours per visit | 0.75 <-reduced this to 45 minutes |
| Total Labor & Vehicle Costs per Visit | 58.88 |

Value represented above includes avoided costs, efficiencies with benefits redeployed in the utility, net present value of long-lived asset programs, re-invested sourcing benefits & power supply cost reductions.

1) Puget Sound Energy conversion (Sept 2011) on the reduction in visits (used a more conservative value)

Gas

